

The Interpersonal Implications of Perceiving Others' Attitudinal Ambivalence

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Philosophy

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Statement on Published Work

This thesis includes research that has been published in the *Journal of Experimental Social Psychology* (2023, Volume 109). I am the first author on the paper, titled “How people perceive dispositionally (non-)ambivalent others and why it matters.” My co-authors on this publication are Travis Proulx, Frenk van Harreveld, and Geoff Haddock.

Experiments 1, 7, and 9 in this thesis are original experiments that were not included in the published paper. They are presented in Chapters 2, 4, and 5, respectively.

Experiments 2-6 & 8 from the thesis are the same as Experiments 1-6 from the paper, though presented in a different order:

- Thesis Chapter 2, Experiment 2 = Paper Experiment 1
- Thesis Chapter 2, Experiment 3 = Paper Experiment 6
- Thesis Chapter 3, Experiment 4 = Paper Experiment 2
- Thesis Chapter 3, Experiment 5 = Paper Experiment 4
- Thesis Chapter 3, Experiment 6 = Paper Experiment 5
- Thesis Chapter 4, Experiment 8 = Paper Experiment 3

Chapter 1 provides a more detailed literature review beyond the paper’s introduction. Experiments 2-6 and 8 are described in more detail, with additional analyses. Chapter 5 covers the new Experiment 9 on cross-cultural perceptions of ambivalence. Chapter 6, the thesis’ General Discussion, also significantly expands on the paper’s discussion.

In summary, Chapters 2-4 contain a mix of peer-reviewed published work completed in collaboration with my co-authors and supervisors (Experiments 2-6 & 8) and original research not included in the paper (Experiments 1, 7, and 9). Chapters 1, 5 and 6 present new material that I developed to significantly extend the published research.

Summary

This thesis examined how people perceive and evaluate others with dispositionally ambivalent or non-ambivalent attitudes. Across nine experiments using different methodologies, dispositionally ambivalent targets were consistently perceived as warmer but less competent than non-ambivalent targets. These perceptions mediated downstream effects on expectations of the targets' behaviours, values, and interpersonal interactions.

Key findings include:

1. People can infer targets' attitudinal ambivalence from both verbal descriptions and facial images.
2. Ambivalent targets were perceived as warmer but less competent than non-ambivalent targets.
3. The non-ambivalent target was expected to share fewer resources in economic games, be less suitable for job roles requiring warmth, and less likely to engage in moral behaviours.
4. The non-ambivalent target was perceived as attaching less importance to self-transcendence values and more importance to self-enhancement values, relative to ambivalent targets.
5. Participants could match ambivalent and non-ambivalent faces to corresponding verbal descriptions.
6. Warmth and competence consistently mediated the effects of perceived ambivalence on social judgments and behavioural expectations.
7. While many findings replicated across UK and Chinese samples, some cultural differences emerged in the role of warmth in ambivalence perception.

This research establishes dispositional ambivalence as an important factor in impression formation with interpersonal consequences. It extends theories of attitude strength by demonstrating that dispositional ambivalence, as a dimension of attitude strength, has broader social implications beyond intrapersonal effects. The findings integrate and extend key frameworks in social cognition, including the Stereotype Content Model, the ABC approach to cooperation, and trait space theory. By showing how dispositional ambivalence operates within these frameworks, this work offers a more comprehensive understanding of how people organise and apply social knowledge across diverse domains of person perception.

Further, the research highlights the utility of both direct and indirect measures and demonstrates cross-cultural validity, with some boundary conditions. It underscores the value of integrating diverse methodologies and theoretical perspectives in understanding how people navigate the social world by perceiving and evaluating others' attitudinal ambivalence.

Overall, this thesis provides a novel and nuanced investigation of the interpersonal consequences of dispositional ambivalence, contributing to our understanding of attitude formation, social perception, and cross-cultural psychology.

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Chapter 1 General Introduction

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair.”

— *Charles Dickens, A Tale of Two Cities*

Being ambivalent can benefit us in many ways, especially in a world that is becoming more and more polarised (Overgaard & Collier, 2023). Having an ambivalent attitude involves recognising the merits of different viewpoints in a debate, understanding the complexity and uncertainty of situations, and refraining from oversimplifying issues. Being ambivalent can help us cope with difficult situations, learn from different perspectives, and find creative solutions (Fong, 2006).

In this thesis, I examine the interpersonal implications of dispositional attitudinal ambivalence. That is, how do people perceive and evaluate others who generally have ambivalent or non-ambivalent attitudes? This is an important topic because our attitudes affect how we interact with others, how we form social networks, and how we influence and are influenced by others. The research I will present explores how people make judgements about targets with ambivalent or non-ambivalent attitudes on various dimensions, such as likeability, warmth, competence, and more *downstream* outcomes, such as how ambivalent and non-ambivalent targets are perceived as suitable for different roles (e.g., politician, business executive, social worker, work colleague), their proclivity to act in a moral versus immoral way, and their resource sharing. The main question being addressed is whether being perceived as dispositionally ambivalent (versus dispositionally non-ambivalent) leads one to be seen by others as more or less likeable, trustworthy, dominant, and competent. I

also consider variables that moderate and mediate observed effects.

This introductory chapter offers an overview of relevant literature, before highlighting the research questions addressed in the thesis. I start by introducing the concept of attitude ambivalence, discussing how it has been conceptualised, measured and operationalised, at the level of a single attitude object and at the dispositional level. Next, I consider how people might infer whether a target has an ambivalent or non-ambivalent attitude, and how such targets are evaluated. I conclude the chapter by highlighting the questions being addressed in the thesis and offer an overview of the subsequent empirical chapters.

Attitudinal Ambivalence

This section is structured as follows: First, I provide an overview of unidimensional and bidimensional perspectives on attitudes and the conceptualisation of attitudinal ambivalence, reviewing key models and measurement approaches. Next, I introduce the concept of dispositional ambivalence and discuss research on its operationalisation. Finally, I review literature on the antecedents and consequences of attitudinal ambivalence at intrapersonal level, highlighting the need for more research on its interpersonal implications.

Attitude Perspectives: Unidimensional or Bidimensional

An attitude represents an individual's overall evaluation of an object, person, group, event, or idea. According to the multicomponent model, attitudes have three components: affective, cognitive, and behavioural (Maio et al., 2019). The affective component refers to the emotional reaction one associates with an attitude object, such as happiness or anger. The cognitive component involves the beliefs and thoughts one associates with the attitude object, such as its attributes or characteristics. The behavioural component reflects the actions or intentions one has toward the attitude object, such as approaching or avoiding it. Attitude valence and strength are two important dimensions of attitudes. Attitude valence refers to the positivity/negativity of an attitude object, whereas strength refers to the degree of certainty,

intensity, and importance of an attitude (Petty & Krosnick, 2014). Both valence and strength can influence how attitudes affect behaviour, persuasion, and social judgment.

A core topic within attitude research concerns the dimensionality of attitudes. The unidimensional perspective assumes that attitudes reflect a single dimension that ranges from positive to negative. The bidimensional perspective, on the other hand, proposes that attitudes have two dimensions: positive and negative (Kaplan, 1972). These positive and negative components operate in parallel and have some degree of mutual independence. That is, an attitude object can elicit a profile of reactions. For example, a person may positively value a politician's integrity while negatively judging their leadership capabilities (Thompson et al., 1995). This bidimensional approach, initially championed by Kaplan (1972), has become widely accepted in contemporary social-psychological attitude models to account for negativity and positivity as distinct influences (Reich & Wheeler, 2016). Within a bidimensional framework, ambivalence arises from the joint accessibility and intensity of these valence components when they contradict one another, rather than from a singular attitude (DeMarree et al., 2014).

Attitudinal ambivalence exists when an attitude consists of strong positive and strong negative elements. Ambivalence has important implications, as it can affect how people process information, make decisions, and behave in relation to attitude objects (Maio et al., 2019). For instance, people who are ambivalent may be more motivated to seek out additional information to reduce their uncertainty, or they may avoid information that could increase their conflict. Moreover, people who are ambivalent may experience more difficulty in making choices or expressing their opinions, or they may change their attitudes more easily in response to persuasive messages or social influence (van Harreveld et al., 2009a, 2009b).

How to Conceptualise Attitudinal Ambivalence

The concept of ambivalence has its roots in extensive philosophical debates around

conflicts between reason and passion by thinkers like Plato and Aristotle (Thompson & Zanna, 1995). Early attitude researchers occasionally acknowledged the possibility of mixed feelings and inconsistencies, challenging a unidimensional perspective on attitudes (Allport, 1935). However, the prevailing assumption was that attitudes exist on a single bipolar continuum ranging from negative to positive. Models emphasised the drive toward consistency, leaving little room to examine ambivalence (Festinger, 1957; Heider, 1944). Nevertheless, some attitude theorists expressed dissatisfaction with this conceptualisation (Allport, 1935; Edwards, 1946; Green & Goldfried, 1965).

Scott (1966) presented an initial precise definition of attitudinal ambivalence. Specifically, Scott (p. 394) stated that ambivalence is “conceived as a region in the total field of meaning or attributes possessed by the attitude object.” Highlighting the focus on properties of the attitude itself, Scott suggested two necessary conditions - high similarity and intensity of conflicting positive and negative reactions. Integrating Lewin’s (1951) field theory and Brown and Farber’s (1951) conflict theory, Scott proposed that ambivalence increases with both the number and equality of opposing reactions. That is, an attitude representing more extreme positive and negative reactions would be classified as more ambivalent than an attitude with less extreme positive and negative reactions.

Kaplan (1972) echoed similar ideas but critiqued typical single-response attitude measures for confounding ambivalence with indifference. For example, a response at the midpoint of a scale of positive versus negative might be interpreted in two ways: as “both positive and negative equally,” indicating a balanced perspective where both options are applicable, or as “neither positive nor negative” suggesting no clear preference towards the concept. This suggests that an attitude report at the midpoint can reflect either a recognition that both responses are valid (suggesting ambivalence) or a lack of an attitude (suggesting indifference) towards the object. Put differently, ambivalence means having mixed or

contradictory feelings about something, while indifference means having no interest or concern. For example, if a person is asked to rate their attitude toward a political candidate on a scale from 1 (strongly dislike) to 7 (strongly like), a response of 4 could mean that the person is ambivalent, meaning that they have both positive and negative aspects of the candidate, or indifferent, meaning that they do not know or care about the candidate.

Kaplan's approach to measuring ambivalence incorporates separate "liking" and "disliking" components to isolate ambivalent responses. By representing attitudes this way, his model differentiates among total affect, polarisation, and ambivalence. Specifically, Kaplan defines ambivalence as the difference between total affect and polarisation, occurring when the "liking" and "disliking" components perfectly counterbalance each other. This method underscores the concept of *objective ambivalence*, as it quantitatively assesses the presence and balance of positive and negative evaluations toward an attitude object, based on instructions that guide participants to focus on one set of qualities at a time - either positive or negative - without considering their opposites.

Attitude models have built upon Kaplan's work in important ways. For example, Thompson et al. (1995) put forth an improved mathematical formula, termed the Griffin Formula, for measuring ambivalence based on the co-activation of positive and negative reactions (see the next section for additional details). Additionally, Thompson et al. (1995) systematically studied individual difference variables serving as potential antecedents to ambivalence across attitude objects. In one study, participants were asked to report their positive and negative feelings (satisfied-dissatisfied), beliefs (beneficial-harmful), and overall evaluations (favourable-unfavourable) towards a wide variety of attitude objects (e.g., euthanasia), using a 4-point scale ranging from "not at all" to "extremely". The authors then calculated ambivalence scores for each object using the Griffin Formula and then averaged these scores across objects to create an index of what they referred to as *chronic ambivalence*,

capturing the extent to which individuals tend to hold mixed evaluations across various attitude objects. Thompson et al. found that having an ambivalent attitude about one object was linked with having ambivalent attitudes toward other objects. These findings suggest that beyond state ambivalence provoked situationally, individuals seem to differ in their chronic ambivalent mindsets. Some people may be more prone to experiencing conflicting thoughts and feelings across various aspects of their lives, while others may tend towards more univalent evaluations. Participants also completed measures of need for cognition (Cacioppo & Petty, 1982), which assesses an individual's tendency to engage in and enjoy effortful cognitive activities, and personal fear of invalidity (Thompson et al., 1989), which measures the extent to which individuals are concerned about making errors or mistakes in their judgments. By examining the relationships between these individual difference variables and ambivalence scores derived from the Griffin Formula, Thompson et al. (1995) found that higher levels of need for cognition were associated with lower ambivalence across attitude objects, while higher levels of personal fear of invalidity were related to greater levels of ambivalence. The authors discuss the possibility that those high in need for cognition may seek out and perceive conflicting reactions to attitudinal objects, subsequently experiencing greater attitudinal ambivalence. By relating personality traits such as need for cognition to ambivalent attitude states, their work set the foundation for studying ambivalence as a dispositional tendency. Specifically, their findings offered initial evidence that people's inherent inclinations may foster experiencing attitudinal ambivalence chronically. Following on from Thompson et al.'s advances, my own research program aims to further examine the implications of dispositional attitudinal ambivalence by considering the evaluative implications of being perceived as dispositionally ambivalent or non-ambivalent.

Priester and Petty (1996) found that no existing model fully captures the empirical relationships between the components of *objective ambivalence* and *subjective ambivalence*.

Their Gradual Threshold Model (GTM) defines objective ambivalence as the interaction of dominant reactions (e.g., number/extremity of positive thoughts) and conflicting reactions (e.g., number/extremity of negative thoughts), akin to how ambivalence was conceptualised by Kaplan (1972) and Thompson et al. (1995). Priester and Petty define *subjective ambivalence* as the psychological experience of conflict and indecision, that is, one's feelings of whether or not they are attitudinally ambivalent. The GTM posits that objective and subjective ambivalence are linked, but that as conflicting reactions increase, dominant reactions have a gradually smaller impact on subjective ambivalence until a threshold is reached. At this point, subjective ambivalence depends solely on the magnitude of conflicting reactions, evidenced by the finding that "subjective ambivalence is positively associated with conflicting reactions and negatively associated with dominant reactions" (Priester & Petty, 1996, p. 439). A key contribution of the GTM is the proposal that the threshold emerges gradually rather than abruptly. While early models assumed objective and subjective ambivalence were directly correlated, the GTM demonstrates that the translation of reactions to felt ambivalence depends on the extent of conflict. The introduction of threshold models advanced understanding of the link between objective and subjective ambivalence.

Taken together, the conceptualisation of attitudinal ambivalence evolved from early theories centred on simultaneous approach-avoidance conflicts to multidimensional definitions. With sophisticated measurement models distinguishing it from related concepts, research on antecedents and consequences of ambivalence continues to grow. In the experiments described in thesis, I focus on both objective ambivalence and subjective ambivalence.

Approaches to the Measurement of Ambivalence

Given the multifaceted nature of attitudes, researchers have developed different approaches for the assessment of ambivalence. The two broad approaches are summarised

below.

(I) *Subjective measures* - These self-report indices assess the subjective degree of ambivalence people experience (Priester & Petty, 1996). On such measures, participants state directly how torn, conflicted, or mixed their reactions feel about an object. Examples of these direct measures would include: “When it comes to policy X, I feel... (no conflict at all to maximum conflict)” and “My thoughts/feelings about politician X are... (completely one-sided to completely mixed)”. Such measures have advantages and disadvantages. Advantages include that these measures are intuitive and adaptable across contexts and issues. In other words, researchers can readily compare levels of subjective ambivalence across attitude objects. These measures can also have some disadvantages. First, they may prompt reactive effects in which participants alter their responses due to the self-reflection required. Directly asking people to report their ambivalence could make salient the possibility of internal conflict and artificially inflate ambivalence reports. Furthermore, such self-reports rely on introspective access, but individuals may lack insight into subtle evaluative conflicts underlying their judgments (Nisbett & Wilson, 1977). Lastly, perceived social desirability concerns could inhibit reporting conflicting reactions on controversial issues due to fears of appearing incompetent.

(II) *Objective measures* - These measures quantify ambivalence from the balance between separate assessments of positivity and negativity using a mathematical formula (Kaplan, 1972). The split semantic differential technique asks people to first rate the intensity of favourability and negativity toward aspects of some concept, ignoring opposing reactions (e.g., “Thinking about only the positive aspects of X, how positive do you think X is?”). Scores for the positive and negative components are then used to calculate an index of ambivalence. Perhaps the most common index is the Griffin index (see Thompson et al., 1995), which uses the following formula:

$$\text{Ambivalence} = (P + N)/2 - |P - N|$$

Within this formula, P and N are separate ratings of positivity and negativity toward the same object, and inherent in the formula is when positive and negative ratings increase, so does ambivalence. Advantages of this approach include an avoidance of relying upon metacognitions, as well as its mathematical approach to assess ambivalence. That said, these measures may have disadvantages. First, dividing evaluations into separate positive and negative ratings eliminates qualitative, subjective insights into experienced ambivalence that more direct measures can provide. Furthermore, this approach weighs all evaluative reactions equally in the ambivalence calculation. However, ambivalence stems from very specific attributes rather than global evaluations. For instance, someone may feel positively about a politician's character but negatively view their policy record, creating ambivalence. Structural measures ignore such qualitative distinctions by simply averaging across all separate ratings.

My thesis investigates the implications of perceiving others' ambivalence by focusing on both objective and subjective aspects. This approach is important as it acknowledges the complex nature of attitudinal ambivalence. Subjective ambivalence represents the felt experience of conflict, directly affecting decision-making and other cognitive processes. Objective ambivalence, though often latent, represents the underlying structure of attitudes and can significantly influence behaviour when triggered by certain situations. By exploring both dimensions, I aim to provide a more holistic understanding of how perceived ambivalence impacts interpersonal evaluations and interactions. This approach is intended to contribute to a deeper understanding of the intricate nature of attitudinal ambivalence and its broader implications.

Operationalisation of Ambivalence Toward Specific Attitude Objects

A foundation for exploring interpersonal perceptions of dispositional ambivalence is

understanding how ambivalence toward specific attitude objects has been operationalised. Across several studies reviewed (Cavazza & Butera, 2008; Jonas et al., 1997; Maio et al., 1996), researchers employed self-report measures to quantify participants' ambivalence toward particular topics.

The general approach involved: 1) Having participants list positive and negative cognitive (e.g. beliefs, traits) and affective (e.g. emotions) reactions to the attitude object. 2) Rating the valence (favourability/unfavourability) of each reaction on a unipolar scale. 3) Calculating an ambivalence index by combining the separate positive and negative valence ratings using formulas.

In Jonas et al. (1997), participants rated positive and negative aspects of fictional shampoo products. Their ambivalence was calculated as the combined difference between the positive and negative ratings using Kaplan's (1972) index. Importantly, higher ambivalence measured this way predicted greater consistency between participants' attitudes and behavioural intentions toward buying the shampoos.

Maio et al. (1996) used an open-ended listing procedure where participants reported positive and negative reactions toward "Oriental people" and rated each reaction's valence. Ambivalence scores were then calculated using a formula derived from Thompson et al. (1995) to yield a representation of subjective conflict between the positive and negative dimensions. Higher ambivalence quantified this way was associated with more systematic processing of persuasive messages about immigration from Hong Kong.

In research by Cavazza and Butera (2008), participants selected positive and negative adjectives/emotions about "traffic restrictions" and evaluated the valence of each adjective/emotion. These separate positive and negative valence ratings were combined into ambivalence scores using a formula adapted from prior work by Bell et al. (1996). Higher levels of ambivalence operationalised in this manner predicted different responses to a

counter-attitudinal message sourced to the participants' ingroup majority, depending on the level of influence.

Measuring ambivalence toward specific objects using self-report scales was crucial for investigating how dispositional ambivalence tendencies impact interpersonal perceptions and evaluations. By using formulas to quantify the conflict between positive and negative reactions (Maio et al., 1996), these measures provided a consistent operationalisation of ambivalence at the object level. This approach laid the groundwork for examining how individuals exhibiting general ambivalence or non-ambivalence tendencies across multiple objects are perceived and evaluated by others. Establishing a reliable method for assessing ambivalence toward specific topics allowed researchers to explore the interpersonal consequences of ambivalent or non-ambivalent dispositions more broadly.

Operationalisation of Ambivalence on a Dispositional Level

The studies above focus on ambivalence about one attitude object. What about more general (i.e., dispositional) ambivalence? As noted earlier, research by Thompson et al. (1995) considered this perspective in more detail. These authors assessed what they referred to as chronic ambivalence by assessing people's general tendency to experience attitudinal ambivalence across situations and targets. This was done by having participants report their positive and negative reactions to a diverse set of attitude objects, such as legalised abortion, capitalism, and exercising. The authors then calculated ambivalence scores for each object using the Griffin formula and averaged these scores across objects to create an index of general ambivalence.

Following from this approach, research by Schneider and colleagues has also considered how individuals vary in their tendency to hold and express ambivalent attitudes. For example, Simons et al. (2018) investigated the magnitude of individual differences in attitudinal ambivalence using a comprehensive approach. In two studies, they had

participants rate a large number of stimuli (29 images in Study 1; 61 words in Study 2) that were drawn from widely-used, standardised sets (the International Affective Picture System and the Affective Norms for English Words, respectively). For each object, participants provided ratings of both objective ambivalence and subjective ambivalence. The researchers then used mixed-effect modelling to analyse these data. Mixed-effect models allowed them to estimate the degree to which ambivalence ratings varied across individuals, while accounting for the fact that some attitude objects may elicit more ambivalence than others. In other words, these models could separate the influence of the person providing the ratings from the influence of the stimuli being rated. Using this approach, Simons et al. (2018) found that individual differences accounted for 16-28% of the variance in ambivalence ratings, whereas differences between attitude objects only accounted for 3-10%. This suggests that an individual's level of ambivalence is relatively consistent across topics, and that ambivalence varies more strongly between individuals than between attitude objects.

Building upon these results, Schneider et al. (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 from the scale is "Many topics make me feel conflicted". Schneider et al. (2021) found that people scoring high on the TAS expressed fewer attributional biases, while Hohnsbehn et al. (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 et al., 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 less than 14%

of the variance with TAS scores (Schneider, 2023).

In my thesis, I adapt the Trait Ambivalence Scale to create text-based personality profiles of hypothetical targets who differ in their self-reported dispositional ambivalence. Specifically, I generate profiles depicting individuals high versus low in ambivalent tendencies across attitude objects. These ambivalent and non-ambivalent target descriptions serve as experimental stimuli to immerse participants in the mindset of someone with chronically mixed (or non-mixed) reactions. I also used instructions adapted from the Trait Ambivalence Scale to visualise mental representations of (non-) ambivalent targets. This visualisation approach allows testing effects of dispositional ambivalence in relation to face perception. Together, my research aims to evaluate downstream social judgments shaped by a target's ambivalent disposition across verbal and facial cues.

The Antecedents and Consequences of Attitudinal Ambivalence

Research has identified intrapersonal and interpersonal factors linked with attitudinal ambivalence. Intrapersonally, ambivalence can arise from certain personality traits and cognitive styles. For example, differences in need for cognition and fear of invalidity make some people intolerant of ambiguity and particularly motivated to resolve ambivalence (Thompson & Zanna, 1995). Ambivalence can also stem from semantic incongruence - when a target is described in equally positive ways along differing dimensions (e.g. both agentic and communal), not just evaluative incongruity between positive and negative traits (Gebauer et al., 2013). The discrepancy between one's actual attitudes and desired attitudes, reflecting inner conflict, also predicts feelings of ambivalence (DeMarree et al., 2014). Additionally, just anticipating that there may be unknown conflicting information can promote subjective ambivalence even before exposure to actual conflicting views (Priester et al., 2007).

Interpersonally, ambivalence can result from perceiving a difference between one's own view and the views of liked or close others. This reflects tension between connecting

with others versus individually held views (Priester & Petty, 2001). Contextually, situations that highlight conflicting values in society can give rise to ambivalence. As Keele and Wolak (2008) discuss, most public policy issues involve debates around conflicting core values (e.g. equality versus free market economics). Contexts that make these societal-level value tensions particularly salient can promote attitudinal ambivalence at the individual level.

Research has also uncovered various intrapersonal, interpersonal, and behavioural consequences of attitudinal ambivalence. At the intrapersonal level, ambivalence can produce discomfort, particularly when individuals anticipate making a decision that requires commitment. This discomfort stems from the simultaneous accessibility of conflicting reactions, motivating ambivalent individuals to reduce their ambivalence (van Harreveld et al., 2009a). Attitudinal ambivalence has been associated with several cognitive effects, including response amplification, greater indecision, greater confirmation biases, and compensatory order perceptions (Rothman et al., 2017). For example, ambivalent individuals may exhibit more extreme judgments or attitudes in an attempt to reduce their internal conflict. They may also experience vacillation and rumination about their goals (Emmons & King, 1988; van Harreveld et al., 2009b). Additionally, ambivalence can lead to selective elaboration of one-sided information and confirmatory information processing as individuals attempt to resolve their ambivalence (Clark et al., 2008). To compensate for the uncertainty of their ambivalent attitudes, individuals may also develop false perceptions of order in other domains (van Harreveld et al., 2014). While these effects are largely viewed as negative, some research suggests ambivalence may also lead to deeper and more balanced processing of relevant information in certain contexts (Briñol et al., 2006; Jonas et al., 1997; Windsor-Shellard & Haddock, 2014).

Interpersonally, attitudinal ambivalence has complex and sometimes counterintuitive consequences. Research by Pillaud et al. (2013) found that expressing ambivalence about

controversial issues can be used strategically for self-presentation, allowing individuals to appear open-minded by demonstrating consideration of multiple perspectives.

In terms of behavioural outcomes, the effects of attitudinal ambivalence are nuanced. Conner et al. (2002) found that ambivalence can attenuate attitude-behaviour consistency when framed as a feature of attitude weakness. However, ambivalence may also cause resistance to persuasion attempts if viewed as an adaptive function for holding socially controversial attitudes (Cavazza & Butera, 2008). Siev and Petty (2024) further complicate this picture by showing that ambivalence can actually increase support for extreme political actions, despite reducing normative political actions like voting. They found that individuals with more ambivalent attitudes were more willing to engage in extreme pro-attitudinal behaviours, an effect that was particularly strong for those with more polarised attitudes or ideologies.

Overall, the interpersonal and behavioural consequences of attitudinal ambivalence appear to differ across contexts. The effects can vary based on factors such as the controversial nature of the topic, the perception of ambivalence as weakness or adaptiveness, and the extremity of the behaviours in question. This complexity highlights the need for nuanced understanding of how ambivalence operates in social and political contexts.

Taken together, considerable research has examined the antecedents and consequences of attitudinal ambivalence (Maio et al., 2019; van Harreveld et al., 2015). While some studies have explored the *interpersonal* implications of ambivalence, this area remains relatively underexplored, particularly regarding dispositional ambivalence. Thus, in my thesis, I examined whether people can perceive others who are (or are not) dispositionally ambivalent, and the broader interpersonal implications of knowing if someone tends to hold ambivalent or non-ambivalent attitudes across various issues. This approach extends beyond issue-specific ambivalence to explore how general tendencies toward ambivalence affect

social perceptions and interactions.

At the Interpersonal Level: Can Attitudinal Ambivalence Be Perceived?

In this section, first, I discuss how attitudinal ambivalence can be instantiated through observable behaviours and facial expressions, reviewing key studies on body movement, mouse trajectories, and facial muscle activation. Next, I explore whether people can infer ambivalence in others based on some of these cues, discussing research on the perception of emotional ambivalence and its social consequences. However, I highlight the limitations of these studies, which have primarily focused on emotional ambivalence, and introduce my own research question on the perception of *attitudinal* ambivalence and its interpersonal implications.

Instantiations of Attitudinal Ambivalence

There are different ways in which attitudinal ambivalence can be instantiated. At a behavioural level, evidence has shown that people exhibit noticeable behaviour when experiencing ambivalence, providing observers with discernible signals regarding their ambivalence. For example, Schneider et al. (2013) conducted two studies investigating the relationship between attitudinal ambivalence and detectable body movements. Adapting a metaphor that ambivalence is linked with wavering, the authors posited that there would be an association between ambivalence and greater side to side body movements. In Study 1, participants were placed on a Wii Balance Board, in order measure their body movement. Participants were divided into two groups: participants were induced to experience ambivalence, others not. The participants in the ambivalent condition moved more from side to side compared to participants in the univalent condition, suggesting a relationship between ambivalence and side to side movement. In Study 2, participants were randomly assigned to move from side-to-side (the ambivalence condition) or up-and-down (the control condition), and their experiences of attitude ambivalence were measured. The study found that when

participants were moved from side to side, their experience of ambivalence was enhanced. Together, the two studies suggest a bidirectional relationship between attitude ambivalence and body movement.

In another line of research, Schneider and colleagues (2015) monitored how participants moved their computer mouse when making choices between positive and negative evaluations. Participants were presented with attitude objects and had to select between negative and positive evaluations of these objects. The participants' mouse movements were tracked as they made their choices. The mouse trajectories of participants evaluating ambivalent attitude objects showed more pull towards the non-chosen evaluative option compared to univalent attitude objects, suggesting a conflict between opposing evaluations. This implies that when people experience ambivalence, there are tangible behaviours that are consistent with the ambivalence.

In another line of research, Nohlen and colleagues (2016) examined facial muscle activation when participants were presented with ambivalent information. They designed two distinct tasks: one where participants were exposed to ambivalent stimuli, and another involving forced-choice decisions in different evaluative contexts. In Study 1, participants were presented with positive, negative, or ambivalent information about different target persons. When participants only observed the information without responding, ambivalent information elicited the same affective response as positive stimuli, with more positive affect and less negative affect compared to negative stimuli. Facial EMG measurements showed increased activation of the zygomaticus muscle (associated with positive affect) and decreased activation of the corrugator muscle (associated with negative affect) in response to ambivalent information. In Study 2, participants were presented with a target person's name followed by two personality traits, which were either both positive, both negative, or one of each (to elicit ambivalence). Participants then had to answer a dichotomous choice question

about the target person (e.g. “Would you vote for X if he was a politician?”). When participants had to make a choice about the target person based on the positive, negative or ambivalent information, ambivalent information elicited the same affective response as negative information. The presence of a choice conflict led to a relative decrease in positive affect when ambivalent information was inconsistent, resulting in more negative affect. Facial EMG measurements showed a decrease in zygomaticus activation (positive affect) and an increase in corrugator activation (negative affect) in response to ambivalent information when there was a choice conflict. These findings again suggest that individuals manifest tangible cues, in this case, particular facial expressions, when confronted with ambivalence.

Taken together, these lines of research demonstrate that when people are ambivalent, they can express detectable behaviours and facial expressions. This allows us to further investigate the ability of observers to perceive ambivalence in others.

Inferring Others’ Ambivalence

While there is a substantial literature on the influence of ambivalence, limited work has examined whether people can perceive ambivalent displays in others. Research by Rothman (2011) addressed whether people can perceive when a target displays *emotional ambivalence* (e.g., the simultaneous experience of positive and negative emotions), and, if so, whether this perceiving such emotional ambivalence influences subsequent behaviour. In one study, participants watched four pre-recorded videos. In each video, a professional female actor was trained to express one of four different emotions: happiness, sadness, anger, or ambivalence. Participants watched the videos one by one and then selected one of a set of emotions that best represented the target’s state. The results showed that individuals were able to distinguish emotional ambivalence from the other emotions.

In a follow-up study, participants learned information about a target before answering questions about their views of the target and how they would react upon meeting the target.

In this study, participants were randomly assigned to watch one of a set of videos of an individual they believed would be their partner in a next stage of the study. The target's emotional display was of happiness, sadness, anger, or ambivalence (in addition to a control condition with no video presented). When asked to evaluate their partner, Rothman (2011) found that when participants detected more emotional ambivalence from their partner, they showed more dominant intentions and behaviour. Further, the link between perceived ambivalence and dominant behaviour was mediated by the perception of the target's submissiveness. This implies that being perceived by others as emotionally ambivalent can have negative consequences. That said, in other circumstances, researchers have found that being perceived by others as emotionally ambivalent can lead to positive social consequences. For example, emotional ambivalence expressed by leaders could be considered as evidence of cognitive flexibility and openness to diverse views (Rothman & Melwani, 2017).

Taken together, while these findings are instructive in highlighting the perception of ambivalence and the impact of being perceived as ambivalent, these studies focused on perceptions of a target's emotional ambivalence. The current research examines something qualitatively different – whether people can perceive when other people have *ambivalent attitudes*, and the consequences of perceiving others' ambivalence.

The Implications of Attitude Ambivalence – Do We Like Ambivalent People?

In this section, I first review research on how people perceive others who express ambivalence about a single attitude object, noting the differential effects on perceived warmth and competence. Next, I introduce the question of how people perceive others who differ in dispositional ambivalence, proposing that dispositional ambivalence may be linked to reduced competence but greater warmth, and outline my research aims to test these ideas and their downstream consequences.

People Who Are Objectively Ambivalent About a Single Object

Limited research has addressed how objective ambivalence toward a *single* attitude object influences how a target is perceived. The existing evidence suggests that expressing ambivalence can have both negative and positive interpersonal consequences, depending on the context.

On the negative side, research by Siev et al. (2024) found that expressing ambivalence about political issues can undermine a target's likeability. Across several studies, using topics like COVID-19 mask mandates, immigration, and the death penalty, they found that targets expressing a given position with more (versus. less) ambivalence were liked less, regardless of whether perceivers agreed or disagreed with their overall position. In fact, when perceivers agreed with targets' overall positions, they judged those with more (versus. less) ambivalent attitudes as less likeable, warm, and competent. These findings suggest that expressing ambivalence can reduce liking among allies, while maintaining disliking among adversaries.

On the more positive side, across a set of studies, Pillaud and colleagues (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 towards immigration (a controversial issue in the country where the data were collected). One target expressed a positive attitude toward the topic, a second expressed a negative attitude, while a third target expressed an ambivalent attitude. The targets' attitudes were created by the researchers varying the targets' supposed responses to a series of questions about their views on immigration. In the two univalent conditions, the targets' responses were all pro- or anti-immigration (depending upon condition). In the ambivalent condition, some of the target's responses were pro-immigration, whereas others were anti-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 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 this time about a non-controversial issue (organic products). In this case, the target who expressed a 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 can differ as a function of whether a target is ambivalent about a controversial or non-controversial issue.

These contrasting findings highlight the complex nature of how ambivalence expression is perceived. While it may signal reduced liking in some contexts, it can also lead to enhanced liking. Experiment 1 of the thesis builds upon the work of Pillaud et al. (2018) by investigating how people perceive others who express objective ambivalence toward *multiple* attitude objects, both controversial and non-controversial. While Pillaud et al. focused on evaluations of targets who were ambivalent about a single issue, Experiment 1 extends this research by examining perceptions of targets who express ambivalence toward various issues simultaneously. This novel approach contributes to the broader goals of the thesis by exploring the nuanced interpersonal consequences of dispositional ambivalence across different contexts. By presenting participants with targets who express ambivalence toward controversial issues only, non-controversial issues only, or both types of issues, Experiment 1 aims to provide new insights into how patterns of ambivalence shape social judgments and evaluations. The findings from this study advance our understanding of the

complex social implications of holding and expressing mixed views on a range of topics, furthering the thesis' investigation of the interpersonal effects of attitudinal ambivalence.

How Do People Perceive Dispositionally (Non-) Ambivalent Others?

While research has started to consider how people evaluate individuals who are attitudinally ambivalent about a single topic, research has not considered how people perceive and evaluate individuals who differ in dispositional ambivalence. It is possible that effects observed at the level of a single attitude object might diverge from those at the dispositional level. For example, knowing that a target is *objectively* ambivalent (or not) about a single controversial topic (as assessed by Pillaud et al., 2018) 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, I posit that someone who describes themselves as *generally* feeling ambivalent across attitude objects (e.g., someone who describes themselves as often feeling ambivalent between two sides of an issue, mainly for controversial issues) 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 mixed across issues) is likely to signal enhanced competence given that (a) 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 perceived as competent (e.g., Klofstad et., 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 social groups, a desire for social

harmony, and a willingness to establish connections and understanding with others (Abele & Wojciszke, 2018).

To the best of my knowledge, links between dispositional ambivalence, warmth, and competence have not been addressed. However, various strands of research, studying concepts relevant to dispositional ambivalence, are consistent with my 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 and colleagues (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 and colleagues (2012) found that displaying competitive behaviour, which has been conceptualised as indicative of strength (see Fong et al., 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 my research, I 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.

Overview

In my thesis, I examined how people make evaluations and judgements of others whose attitudes reflect dispositional ambivalence or non-ambivalence. This is examined across multiple experiments, using different methods, in order to obtain a comprehensive overview of how people perceive and evaluate others' attitudinal ambivalence. I explore whether people make inferences about a target based on the target's perceived attitudinal ambivalence and whether people expect ambivalent and non-ambivalent targets to behave in different ways. I also explore the degree to which a target's perceived warmth and competence plays a role in understanding people's expectations about dispositionally ambivalent and non-ambivalent targets. Toward the end of the thesis, I consider the extent to which there might be cross-cultural differences in relation to the perception of ambivalent and non-ambivalent individuals.

I report four empirical chapters and nine 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 their attitudes were generally ambivalent or non-ambivalent. In other experiments, I presented participants with images of ambivalent or non-ambivalent targets that were derived from a reverse correlation procedure (Dotsch & Todorov, 2012). By using different paradigms, I sought to assess whether the effects of attitudinal 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 ambivalence about a single object are influenced by what a target is ambivalent about (i.e., something that is or is not controversial; Pillaud et al., 2018), I incorporated targets who differed in whether they were ambivalent toward only controversial issues, ambivalent toward controversial issues, or non-ambivalent. This approach to structuring the experiments

means they are presented in an order that does not fully align with the sequence in which they were conducted. The chapter organisation allows for a useful comparison between different methodologies for presenting ambivalence. This does mean that some components of individual studies (e.g., individual difference measures) are included in some experiments.

In Chapter 2, I examined how people perceive dispositionally (non-) ambivalent others using a methodology where participants were presented with written information regarding targets' attitudes. Across three experiments, I examined how people evaluated targets who differed in their expressed general levels of attitude ambivalence. Specifically, Experiment 1 addressed whether people can perceive objective ambivalence when shown what they believed to be others' attitudes toward a variety of topics. Experiment 2 examined how fairly participants expected a dispositionally ambivalent or non-ambivalent target to behave in an economic game. Experiment 3 built upon these findings by further exploring the behavioural implications associated with being dispositionally (non-) ambivalent.

In Chapter 3, I examined how people perceive (non-) ambivalent others using a more nuanced methodology. Here, rather than written information about targets' general level of attitudinal ambivalence, participants were presented with images of ambivalent and non-ambivalent targets that were generated via a reverse correlation methodology (see Dotsch & Todorov, 2012). In the experiments reported in Chapter 3, a sample of participants (i.e., raters) was shown images of non-ambivalent and ambivalent targets that were generated by a separate group of participants (i.e., generators). Across experiments, the raters evaluated the faces on a series of dimensions, without knowing how the individual faces were generated or what they represented. This allowed me to investigate whether people make inferences about others' ambivalence just by seeing a face. Experiment 4 tested whether dispositionally ambivalent and non-ambivalent faces were judged differently on a series of attributes (e.g., open-mindedness, likeability, warmth, and competence). Experiment 5 tested whether

dispositionally ambivalent and non-ambivalent faces would be expected to show less or more dominant behaviour in an economic game. Experiment 6 further explored how perceived ambivalence influences social interactions by introducing additional behavioural outcomes (i.e., donation behaviour), to offer additional downstream evidence.

In Chapter 4, I present experiments that integrate the two methods of presentation (i.e., verbal information and reverse correlation images). Experiment 7 examined whether people could link attitudinally ambivalent and non-ambivalent faces, as generated in Chapter 2, to targets who verbally described themselves as dispositionally ambivalent or non-ambivalent. Building upon these findings, Experiment 8 examined whether people could link attitudinally ambivalent and non-ambivalent faces to targets who provided both their negative and positive response to a range of attitude issues.

In Chapter 5, I begin to consider potential cross-cultural implications of evaluations of dispositional ambivalence. In Experiment 9, I compared how British and Chinese participants perceive and judge ambivalent individuals.

Across the experiments that examined consequences of being perceived as dispositionally ambivalent (or not), I consider the roles of warmth and competence in mediating observed effects. Warmth and competence are seen as important determinants of person perception, most specifically in Fiske's (2018) Stereotype Content Model. Further, some of the experiments examine potential moderating variables, such as how often people themselves are ambivalent (Schneider et al., 2021), personal need for structure (Neuberg & Newsom, 1993), empathy (Spreng et al., 2009) and dialectical thinking style (Spencer-Rodgers et al., 2004). However, the early experiments revealed no consistent moderation effects, so these were not included in some of the later experiments. All experiments received approval from the Cardiff University School of Psychology Ethics Committee.

Chapter 2 How do Verbal Reports about a Target's Ambivalence Influence Perceptions of Them?

This chapter examined the ability to perceive attitudinal ambivalence in others based on *verbal* descriptions, as well as downstream consequences of perceiving ambivalent attitudes for interpersonal perceptions and expectations. The rationale guiding this research was grounded in theory and evidence on the importance of recognising ambivalent attitudes (Pillaud et al., 2018), where ambivalence about a single issue signalled perceptions of warmth and competence.

Across three experiments, verbal descriptions were created depicting targets with varying levels of ambivalent and non-ambivalent attitudes regarding controversial and non-controversial attitude objects. In Experiment 1 ($N = 144$), participants learned about four targets with attitudes suggesting high or low general ambivalence. After each attitude description, participants rated the target's perceived ambivalence, before evaluating the targets. The results showed that participants can perceive ambivalence across targets and that controversial issues elicited higher perceived ambivalence. The target with ambivalent attitudes only about controversial issues was evaluated most positively.

Experiment 2 ($N = 223$) extended effects to expectations of cooperative behaviour, using an economic game paradigm. Participants read about three targets, with verbal descriptions suggesting general ambivalent or non-ambivalent dispositions. The results that the dispositionally non-ambivalent target shared fewer resources than ambivalent targets, an effect mediated by reduced perceptions of warmth and enhanced perceptions of competence associated with non-ambivalent dispositions.

Experiment 3 ($N = 164$) was designed to replicate and extend Experiment 2 by considering more interpersonal implications. The target described as dispositionally non-ambivalent was seen as colder and less moral compared to targets with ambivalent

descriptions. Together, results underscore novel effects regarding people's ability to perceive ambivalence in attitudinal descriptions with meaningful interpersonal consequences.

Experiment 1

Experiment 1 examined whether people can perceive ambivalence when shown what they believed to be others' attitudes. Building upon research by Pillaud et al. (2018), the primary question was whether, when presented with others' attitudes, people can perceive others' attitudinal ambivalence. I also tested whether people differentially evaluate targets who expressed ambivalence about controversial and/or non-controversial issues.

To test these questions, participants learned about the attitudes held by four fictitious targets. Participants were shown the targets' attitudes toward eight different attitude objects, where the target indicated their level of positivity *and* negativity regarding each attitude object. Of the eight attitude objects, four were controversial (nuclear energy, immigration, genetically modified food, and the death penalty; see Luttrell et al., 2022) and four were non-controversial (cigarette smoking, pollution, organic food, and recycling). Each target differed in their level of ambivalence. Target A-C was ambivalent toward controversial issues and univalent about non-controversial issues; target A-NC was univalent toward controversial issues and ambivalent about non-controversial issues; target A-ALL was ambivalent about both controversial and non-controversial issues; target NA was non-ambivalent about both controversial and non-controversial issues. Immediately after seeing each target's attitudes, participants rated each target in terms of the target's general level of ambivalence, as well as evaluating the target in terms of liking, warmth, and competence.

Based on Pillaud et al. (2018), I expected that participants would be able to infer the general level of objective ambivalence expressed by each target, and that participants would evaluate the target who was ambivalent only about controversial issues as most likable, warm, and competent.

Method

Participants

144 participants (133 females, 10 males, 1 prefer not to say; $M_{\text{age}} = 19.80$ years; range = 18 to 38) were recruited from Cardiff University. Each participant received course credit for their participation. 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.106$.

Materials

Attitudes of Four Targets.

Four targets were created that differed in the degree to which they expressed objective ambivalence toward controversial and non-controversial objects. To create profiles that fit the intended structure, for each attitude, the targets purportedly responded to questions assessing the level of positivity and the level of negativity in their attitude. Figure 2.1 offers an example of what participants were presented for one attitude object for one target.

For these two questions, we want you to think about your opinion about NUCLEAR ENERGY.

Considering **only** the positive qualities of NUCLEAR ENERGY and **ignoring** its negative ones, please evaluate how positive its positive qualities are.

1 2 3 4 5
Not at all
positive
Extremely
positive

Considering **only** the negative qualities of NUCLEAR ENERGY and **ignoring** its positive ones, please evaluate how negative its negative qualities are.

1 2 3 4 5
Not at all
negative
Extremely
negative

Figure 2.1. Sample of presented target's ambivalence

The positivity and negativity values were created in a way to correspond with high or low objective ambivalence, as indexed by the Griffin formula (Thompson et al., 1995). The individual attitudes for each target and each object are presented within the Appendix.

Assessments of Each Target.

Evaluation of Target's Attitudinal Ambivalence. Participants rated how ambivalent they perceived each target's attitudes to be (e.g., In your view, how mixed is Person A's view about nuclear energy? 1 = *not all mixed*; 9 = *extremely mixed*).

Liking. To assess participants' liking of each target, participants were asked "Overall, based on how mixed their views are, how much do you like Person A?". Responses range from 1 (*not at all*) to 9 (*extremely*).

Warmth. To assess participants' rating of a target's warmth, participants were asked "Overall, based on how mixed their views are, to what extent does Person A possess the following qualities? Pleasant, warm". Responses range from 1 (*not at all*) to 7 (*very much*).

Competence. To assess participants' rating of a target's competence, participants were asked "Overall, based on how mixed their views are, to what extent does Person A possess the following qualities? Competent, smart". Responses range from 1 (*not at all*) to 7 (*very much*).

Individual Difference Measures and Demographic Information

Trait Ambivalence. Trait ambivalence was assessed with the Trait Ambivalence Scale (TAS; Schneider et al., 2021). This measure consists of 10 items (e.g., "I usually see both the positive as well as the negative side of things"). Responses range from 1 (*Does not apply to me*) to 7 (*Strongly applies to me*), with higher scores indicating greater levels of trait ambivalence. This scale has strong reliability and validity (Schneider et al., 2021). In the current research, the measure demonstrated excellent reliability (α ranging from .86 to .92 across all experiments).

Personal Need for Structure. Personal need for structure was measured by Personal Need for Structure Scale (PNS; Neuberg, & Newsom, 1993). This questionnaire consists of 12 items (e.g., “It upsets me to go into a situation without knowing what I can expect from it”). Responses range from 1 (*strongly disagree*) to 6 (*strongly agree*), with items scored such that higher scores indicate a greater need for structure. The scale has strong reliability and validity (e.g., Noordewier & Rutjens, 2021). In the current research, the measure demonstrated excellent reliability (α ranging from .81 to .86 across all experiments).

Dialectical Thinking. Dialectical thinking was measured by a brief version of the Dialectical Self Scale (DSS; Spencer-Rodgers et al., 2004). This scale consists of 14 items, which assess three dimensions of dialectical thinking. The contradiction dimension includes four items (e.g., “When I hear two sides of an argument, I often agree with both”), the cognitive change dimension includes four items (e.g., “I often find that my beliefs and attitudes will change under different contexts”), the behavioural change dimension includes six items (e.g., “I often change the way I am, depending on who I am with”). Participants indicated the extent of their dialectical self to each item on a seven-point scale (1 = *strongly disagree*, 7 = *strongly agree*), with items scored such that higher scores indicate a greater level of dialectical thinking. This questionnaire has demonstrated good psychometric properties in previous research (Spencer-Rodgers et al., 2004). For simplicity, analyses using this measure used an overall score. In this study, the overall Cronbach α ranges from .75 to .76.

Additional Questions. Participants’ own attitude toward each of the eight objects, as well as their perceptions of others’ attitudes toward each of the eight objects, were measured (“Please indicate your own attitude toward each of the issues”: 1 = *Extremely negative*, 9 = *Extremely positive*). Also, participants’ own ambivalence, as well as their perceptions of others’ general levels of ambivalence, were measured (How mixed is your own view toward

each of the issues? To what extent do people in general have mixed views toward each of these issues? 1 = *Not at all mixed*, 9 = *Extremely mixed*). Finally, participants were asked how comfortable and how often they have mixed feelings (“When you have mixed feelings about something, how comfortable do you feel about this sensation?” 1 = *Very uncomfortable*, 7 = *Very comfortable*; “How often do you have mixed views on things?” 1 = *Never*, 7 = *Always*).

Procedure

This study was carried out online, via a Qualtrics link. After providing consent, participants were informed that they would be presented with information about four targets, and how each target responded to a series of questions about their attitudes. For each target, participants were shown eight attitudes. Participants were shown all eight attitudes of one target before learning about the next target. After seeing a target’s attitude for a given object, participants rated the target’s attitudinal ambivalence towards that object. This process was repeated for each of the eight attitude objects, with participants rating the target’s ambivalence towards each object individually before moving onto the next target.

After they had been presented with and rated the ambivalence of the eight attitudes of one target, participants were reminded of their ratings and then indicated their perceptions of the target’s likeability, warmth, and competence. The order in which the objects were presented, as well as the order in which the targets were presented, was randomised across participants.

After completing this task, participants then indicated their own attitudes toward the eight objects, their own ambivalence about each of the eight objects, their perceptions of other people’s attitudes toward the eight objects, and their perceptions of other people’s ambivalence toward the eight objects. Next, participants completed the trait ambivalence scale (TAS), personal need for structure (PNS), and dialectical thinking (DSS) measures and a series of demographic items. Finally, participants were debriefed.

Data Analysis Overview

First, I report paired-sample *t*-tests examining whether the controversial issues elicited greater ambivalence than the non-controversial issues, for participants themselves and in general. Then, I report one-way ANOVA and within-person correlation analyses examining participants' ability to infer others' ambivalence. Finally, I report ANOVAs regarding the implications of perceiving others' ambivalence.

Results

Preliminary Analyses

I conducted paired-sample *t*-tests to assess whether participants rated the controversial and non-controversial issues as more or less likely to elicit ambivalence. First, participants expressed greater personal ambivalence towards controversial ($M_{\text{con}} = 3.94$) compared to non-controversial ($M_{\text{non-con}} = 2.26$) issues, $t(143) = 14.15$, $p < .001$, Cohen's $d = 1.43$. Similarly, participants' rating of others' ambivalence towards the controversial and non-controversial issues was significantly different ($M_{\text{con}} = 5.85$, $M_{\text{non-con}} = 3.86$, $t(143) = 14.31$, $p < .001$, Cohen's $d = 1.67$). These results indicate that participants were personally more ambivalent and expected more ambivalence from others when it comes to controversial issues than non-controversial issues.

Perceptions of Objective Ambivalence

Ambivalence perception was assessed via different analyses. To start, I examined whether participants were able to perceive the ambivalence reported by each target by conducting a 4 (target: ambivalent toward controversial issues only, ambivalent toward non-controversial issues only, ambivalent toward all issues, non-ambivalent) \times 2 (attitudinal issues: controversial, non-controversial) repeated measures ANOVA. The main effect of attitude issue was significant, $F(1, 142) = 15.26$, $MSE = 0.82$, $p < .001$, $\eta^2_p = 0.10$; the targets were rated as having more mixed views toward controversial issues ($M = 4.77$) compared to

non-controversial issues ($M = 4.56$). The main effect of target was significant, $F(1.76, 249.15) = 134.59$, $MSE = 3.66$, $p < .001$, $\eta^2_p = 0.49$. Overall, the A-ALL target was rated as the most ambivalent ($M = 6.00$), followed by the A-C target ($M = 4.60$) and the A-NC target ($M = 4.48$), both $p < .001$, who themselves did not differ ($p = .176$). The NA target was rated as the least ambivalent ($M = 3.57$), all $p < .001$. More importantly, the interaction was significant, $F(1.61, 228.97) = 126.90$, $MSE = 4.19$, $p < .001$, $\eta^2_p = 0.47$. To interpret the interaction, I conducted one-way ANOVAs that examined participants' perceptions of the targets' ambivalence towards controversial issues and non-controversial issues (see Table 2.1 for descriptive statistics). The results revealed that there were significant differences across the four targets, $F(1.64, 233.86) = 111.47$, $MSE = 4.49$, $p < .001$, $\eta^2 = 0.44$ for controversial issues; $F(1.77, 251.25) = 157.65$, $MSE = 3.29$, $p < .001$, $\eta^2 = 0.53$ for non-controversial issues. As seen in Table 2.1, for the controversial issues, the perceived ambivalence of targets A-C and A-ALL was significantly greater than those of targets A-NC and NA (all $p < .001$). For the non-controversial issues, the perceived ambivalence levels of targets A-NC and A-ALL were significantly greater than those of targets A-C and NA (all $p < .001$). These data strongly suggest that participants inferred the targets' objective ambivalence toward controversial and non-controversial issues.

Building upon the analyses above, I conducted within-person correlations to examine the extent to which participants' ratings of the targets' ambivalence towards the eight attitude objects were correlated with the actual level of ambivalence (as indexed by the Griffin formula). The results showed that 87.5% of participants showed a significant positive correlation between their perceptions of targets' ambivalence and targets' actual ambivalence. I then computed a one-sample t -test to compare the average within-person correlation with zero. The correlation was significantly greater than zero, $M = 0.52$ [0.45, 0.60], $SD = 0.45$, $t(143) = 14.10$, $p < .001$, $d = 1.18$.

Taken together, both the ANOVA and within-person correlation analyses imply that participants were able to perceive and differentiate the levels of ambivalence expressed by the targets. The ANOVA results showed that participants distinguished between the targets' ambivalence based on the type of attitude object (controversial vs. non-controversial) and the target's overall level of ambivalence. The within-person correlations further demonstrated that participants' perceptions of the targets' ambivalence were strongly associated with the actual ambivalence scores derived from the Griffin formula.

Table 2.1

Mean Levels of Targets' Perceived Ambivalence Level for Controversial and Non-Controversial Issues - Experiment 1

	Controversial issues	Non-controversial issues
	<i>M</i> [95%CI]	<i>M</i> [95%CI]
Target A-C	5.85 ^a [5.59, 6.10]	3.34 ^c [3.10, 3.58]
Target A-NC	3.30 ^c [3.04, 3.56]	5.65 ^b [5.41, 5.89]
Target A-ALL	6.02 ^a [5.76, 6.28]	5.99 ^a [5.76, 6.22]
Target NA	3.87 ^b [3.63, 4.11]	3.25 ^c [3.05, 3.45]

Note. Within columns, different subscripts represent $p < .05$. A-C = target who was ambivalent toward controversial issues and univalent about consensual issues; A-NC = target who was univalent toward controversial issues and ambivalent about non-controversial issues; A-ALL = target who was ambivalent about both controversial and consensual issues; NA = target who was non-ambivalent about neither controversial nor consensual issues.

The Implications of Perceiving Others' Ambivalence

Following from Pillaud et al. (2018), I tested whether perceived ambivalence influenced liking, warmth, and competence of each target. To test these questions, I conducted one-way within-participant ANOVAs (see Table 2.2). The results showed that levels of liking, warmth, and competence were significantly different across targets ($F(2.68, 383.01) = 18.88, MSE = 2.20, p < .001, \eta^2 = 0.12$ for liking; $F(2.64, 376.99) = 68.75, MSE = 1.12, p < .001, \eta^2 = 0.33$ for warmth, and $F(2.62, 374.03) = 50.31, MSE = 1.29, p < .001, \eta^2 = 0.26$ for competence). As seen in Table 2.2, Target A-C was liked most, followed by Target A-ALL and NA (who themselves did not differ, $p = .829$), and Target A-NC was liked least, all $p < .05$. Pairwise comparisons for warmth showed that target A-C was perceived as significantly the warmest, followed by Targets A-ALL, NA, and A-NC, who themselves also differed, all $p < .022$. Pairwise comparisons for competence showed that perceptions of competence were also significantly different, in which perceived competence of Target A-C was also the highest, followed by person NA, A-ALL, and A-NC, all $p < .020$. Overall, the target who was ambivalent about only controversial issues was evaluated most positively, whereas the target who was ambivalent about only non-controversial issues was evaluated most negatively.

Table 2.2*Mean Ratings of Liking, Warmth, and Competence - Experiment 1*

	Liking	Warmth	Competence
	<i>M</i> [95%CI]	<i>M</i> [95%CI]	<i>M</i> [95%CI]
Target A-C	5.18 ^a [4.94, 5.42]	4.07 ^a [3.90, 4.24]	4.15 ^a [3.94, 4.36]
Target A-NC	3.96 ^c [3.72, 4.12]	2.50 ^d [2.36, 2.64]	2.72 ^d [2.59, 2.85]
Target A-ALL	4.43 ^b [4.17, 4.69]	3.41 ^b [3.21, 3.60]	3.30 ^c [3.08, 3.52]
Target NA	4.39 ^b [4.11, 4.67]	3.10 ^c [2.88, 3.32]	3.83 ^b [3.61, 4.05]

Note. Within columns, different subscripts represent $p < .05$. A-C = target who was ambivalent toward controversial issues and univalent about consensual issues; A-NC = target who was univalent toward controversial issues and ambivalent about non-controversial issues; A-ALL = target who was ambivalent about both controversial and consensual issues; NA = target who was non-ambivalent about controversial and consensual issues.

Multilevel Modelling Analyses

To more formally examine the extent to which participants could detect others' ambivalence and whether individual differences moderated this ability, I conducted multilevel modelling analyses. Specifically, I was interested in examining whether participants could infer targets' ambivalence, and whether these inferences would be influenced by individual differences in trait ambivalence, personal need for closure, and dialectical thinking. In this analysis, the restricted maximum likelihood estimation was adopted, because it works better for small groups (Heck et al., 2013; Snijders & Bosker, 1999). I developed a random intercepts model and a random intercepts and slopes model, and the difference between the two models was significant ($\chi^2 = 1135.4, p < .001$). Therefore, I adopted the random intercepts and slopes model. In this model, perceived ambivalence of the target was predicted by actual ambivalence (as indexed by the Griffin formula), the participant's own ambivalence toward the object, and the participant's perception of others' ambivalence toward the object (i.e., general ambivalence). The model showed that actual ambivalence was positively associated with participants' perceived ambivalence ($\beta = 0.53, SE = 0.04, p < .001$), suggesting that participants inferred the targets' ambivalence independent of their own ambivalence or general ambivalence. Participants' own ambivalence also positively predicted their perceptions of the target's ambivalence ($\beta = 0.03, SE = 0.1, p < .05$). Thus, people perceived the targets as more ambivalent when they themselves were more ambivalent.

To test for potential moderation effects, I included interactions between participants' ambivalence and trait ambivalence, need for closure, and dialectical thinking in separate models. None of these interactions were statistically significant (all $p > .137$), indicating that these individual difference variables did not moderate the relationship between actual and perceived ambivalence. Given these null findings, I do not report further analyses of individual differences in subsequent experiments. The primary drivers of perceived

ambivalence appear to be more directly related to target and perceiver factors specified in the main effects models, rather than interactions with broader psychological constructs.

Table 2.3*Results of Multilevel Modelling on Perceived Ambivalence – Experiment 1*

	β	<i>SE</i>	<i>t</i>	95% CI
Intercept	0.00	0.02	0.12	[-0.04, 0.04]
Actual ambivalence	0.53	0.04	14.04***	[0.45, 0.61]
Participants' ambivalence	0.03	0.01	2.00*	[0.01, 0.05]
General ambivalence	0.00	0.01	0.31	[-0.02, 0.02]
Trait ambivalence	0.01	0.02	0.47	[-0.03, 0.05]
Need for closure	0.01	0.02	0.77	[-0.03, 0.05]
Dialectical thinking	-0.01	0.02	-0.52	[-0.05, 0.03]

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

Discussion

Experiment 1 addressed two primary questions. First, I examined the basic issue of when presented with others' attitudes, whether people can infer others' attitudinal ambivalence. Second, I examined whether people differentially evaluate targets who are ambivalent about controversial and/or non-controversial issues, and whether liking of ambivalent targets varies across people.

The results revealed a number of novel and important findings. Regarding my first question, consistent with my hypothesis, participants' perceptions of targets' ambivalence was significantly associated with the targets' actual objective ambivalence. When targets' attitudes suggested the presence of high/low ambivalence, participants perceived the attitude as being high/low in reported ambivalence. Regarding my second question, I found that the target who was only ambivalent toward controversial issues was considered as the most likeable, warm and competent. These latter results are consistent with a previous study showing that people preferred a target who was ambivalent toward a controversial issue (Pillaud et al., 2018).

The multilevel modelling analyses further supported the finding that participants could accurately infer targets' ambivalence. The results showed that actual ambivalence was positively associated with participants' perceived ambivalence, indicating that participants inferred the targets' ambivalence independent of their own ambivalence or general ambivalence. Additionally, participants' own ambivalence positively predicted their perceptions of the target's ambivalence, suggesting that people perceived the targets as more ambivalent when they themselves were more ambivalent.

Interestingly, the interaction analyses between participants' ambivalence and

other psychological constructs (i.e., trait ambivalence, need for closure, and dialectical thinking) did not reach statistical significance. These findings contribute to our understanding of ambivalence perception, suggesting that while individual differences such as trait ambivalence, need for closure, and dialectical thinking may play a role in how ambivalence is perceived, their impact does not significantly alter the basic relationships established by direct personal and target ambivalence. Further research may explore these interactions with larger sample sizes or different contexts to fully ascertain their potential effects.

Overall, the results of Experiment 1 provide valuable insights into how people perceive and respond to others' attitudinal ambivalence. The findings highlight the importance of considering both the nature of the attitudes (controversial vs. non-controversial) and individual differences in cognitive and personality traits when examining the consequences of ambivalence perception in interpersonal contexts.

Experiment 2

Experiment 2 explored the links between a target's dispositional ambivalence and expectations regarding their attributes and behaviour. Specifically, I 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 behaviour. This was tested using the Dictator Game (DG; Forsythe et al., 1994; Kahneman et al., 1986), a commonly used economic game in which a dictator decides how many (of 100) 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 et al., 2011), whereas competence is associated with dominance and less sharing of resources (Cheng et al., 2013), I considered whether warmth and competence might underly effects of inferred dispositional ambivalence on a target's expected behaviour.

I adapted the DG paradigm game 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 reported generally being ambivalent toward controversial issues, one who reported generally being ambivalent toward everything, and one who reported being generally being non-ambivalent. I excluded the A-NC target as its low preference evaluations might be attributed to its unrealistic nature; it is atypical for an individual to have non-ambivalent attitudes toward controversial issues and ambivalent attitudes about non-controversial issues. 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 behaviour. 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 behaviour might be affected by expectations about the target.

I hypothesised that participants would perceive a dispositionally non-ambivalent target as more competent and less warm relative to the ambivalent targets, and that the non-ambivalent target would be expected to share fewer resources as the

dictator. As discussed in Chapter 1, while ambivalence about a single controversial issue may signal cognitive flexibility and knowledge, leading to enhanced perceptions of competence (Pillaud et al., 2018), I posited that dispositional non-ambivalence across issues would be perceived as more decisive and assertive (Anderson & Kilduff, 2009). Non-ambivalent attitudes are generally viewed as strong and resolute (van Harreveld et al., 2015), and being perceived as strong is associated with greater perceived competence (Klofstad et al., 2015). Regarding warmth, I reasoned that dispositional ambivalence may signal a willingness to consider diverse perspectives, demonstrating an openness to and desire for social harmony with different groups (Abele & Wojciszke, 2018). This hypothesis diverges somewhat from Experiment 1, where a target ambivalent only about controversial issues was evaluated most positively. However, Experiment 2 focuses on dispositional rather than issue-specific ambivalence, which I expected may elicit different interpersonal perceptions. It was unclear if participants would alter their own dictator game behaviour based on whether they were paired with an ambivalent or non-ambivalent partner.

Method

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 et al., 2017; alpha = 0.05, power = 0.80) indicated that, with my 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.104$.

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 (of 100) 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.

Individual Difference Measures and Demographic Information

Participants completed measures of trait ambivalence, personal need for structure, empathy and two additional questions about ambivalence (see details in

Experiment 1). The measurement of empathy (Spreng et al., 2009) was also included in this experiment as an exploratory measure.

Empathy. Empathy was measured by Toronto Empathy Questionnaire (TEQ, Spreng et al., 2009). This scale consists of 16 items (e.g., “When someone else is feeling excited, I tend to get excited too”). Participants responded to each item on a seven-point scale (0 = *Never*, 6 = *Always*), with items scored such that higher scores indicate a greater level of empathy. This questionnaire has demonstrated good psychometric properties in previous research (Kourmoussi et al., 2017). In the current research, the measure demonstrated excellent reliability (α ranging from .85 to .89 across all experiments).

Results

Did the Targets Differ in their Perceived Ambivalence?

Firstly, I 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 2.4). This implies that the text descriptions differentiated between dispositionally ambivalent and non-ambivalent targets.

Table 2.4*Mean Ratings on the Attributes for the Three Targets - Experiment 2*

	A-C (<i>n</i> = 74)	A-ALL (<i>n</i> = 72)	NA (<i>n</i> = 77)		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Mixed	5.24 ^a [5.02, 5.46]	5.35 ^a [5.10, 5.59]	1.70 ^b [1.41, 1.99]	<i>F</i> (2, 220) = 269.26 ^{***}	0.71
Warm	5.31 ^a [4.97, 5.66]	5.56 ^a [5.16, 5.95]	3.77 ^b [3.38, 4.16]	<i>F</i> (2, 220) = 26.77 ^{***}	0.20
Likeable	5.38 ^a [5.02, 5.74]	5.32 ^a [4.94, 5.70]	4.23 ^b [3.88, 4.59]	<i>F</i> (2, 220) = 12.65 ^{***}	0.10
Dominant	3.62 ^b [3.27, 3.97]	3.43 ^b [3.04, 3.82]	6.56 ^a [6.14, 6.98]	<i>F</i> (2, 220) = 82.14 ^{***}	0.43
Competent	4.99 ^b [4.57, 5.41]	5.40 [4.99, 5.82]	5.78 ^a [5.37, 6.19]	<i>F</i> (2, 220) = 3.67 [*]	0.03

Note. Superscripts that differ in one row represent a mean difference < .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* = .052, ****p* < .001; **p* < .05.

Structure And Ratings of The Attributes

The non-ambivalent target was perceived as more dominant, less warm and less likeable compared to both ambivalent targets (all $p < .001$; see Table 2.4). The non-ambivalent target was also perceived as more competent compared to the A-C target ($p = .007$).

To explore the factorial structure of the attributes, all four items (warmth, likeability, dominance, and competence) were subjected to an exploratory factor analysis with Varimax rotation. The Kaiser-Meyer-Olkin sampling adequacy indicated that correlation structure was adequate for factor analyses, $KMO = .53$, Bartlett's test of sphericity $\chi^2 (6) = 281.22$, $p < .001$. The principal axis factor analysis with a cut-off point of .50 and the Kaiser's criterion of eigenvalues greater than 1 (see Field, 2009; Stevens, 2002) yielded a two-factor solution as the best fit for the data, accounting for 67.56% of the variance (Table 2.5).

Table 2.5*Exploratory Factor Analysis of the Attributes in Experiment 2*

Items	Factor		Dimension
	1	2	
Likeability	.858		WARMTH
Warmth	.812		
Competence		.749	COMPETENCE
Dominance		.678	

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 2.6). The non-ambivalent target was perceived as less warm and more competent compared to both ambivalent targets (all $p < .001$).

Table 2.6*Mean Ratings on The Attributes for the Three Targets - Experiment 2*

	A-C (<i>n</i> = 74)	A-ALL (<i>n</i> = 72)	NA (<i>n</i> = 77)		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
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 $< .05$. 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. $***p < .001$.

The Number of Tokens Allocated

To examine whether the target's description influenced the sharing of tokens, I conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) \times 2 (Dictator: target, self) mixed ANOVA (see Table 2.7). The main effect of target was significant, $F(2, 220) = 7.71, p < .001, \eta^2_p = 0.07$; 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, $F(1, 220) = 0.65, p = .420, \eta^2_p = 0.003$. More importantly, there was a significant interaction, $F(2, 220) = 20.61, p < .001, \eta^2_p = 0.16$. When the target was the dictator, the non-ambivalent target was expected to share significantly fewer tokens than both ambivalent targets, $F(2, 220) = 24.82, p < .001, \eta^2_p = 0.18$. However, when the participant was the dictator, the number of tokens expected to be shared did not differ across targets, $F(2, 220) = 1.12, p = .330, \eta^2_p = 0.01$.

Table 2.7*The Number of Tokens the Dictator Would Offer - Experiment 2*

	TARGET was the dictator	PARTICIPANT was the dictator
	<i>M</i> [95% CI]	<i>M</i> [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]
	<i>F</i> (2, 220) = 24.82 ^{***}	<i>F</i> (2, 220) = 1.12
η^2_p	0.18	0.01

Note. Superscripts that differ in one column represent a mean difference < .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.

The Importance of Target Information on Judgments

I conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) x 2 (Dictator: self, other) mixed ANOVA to examine the effect of information on dictators' allocations. The main effect of dictator was significant, $F(1, 220) = 53.91, p < .001, \eta^2_p = 0.20$. The information was rated as more important when participants predicted the target's behaviour as the dictator ($M = 6.51$) compared to their own behaviour ($M = 5.12$). The main effect of the target was not significant, $F(2, 220) = 0.07, p = .93, \eta^2_p = 0.001$; nor was the interaction, $F(2, 220) = 0.39, p = .68, \eta^2_p = 0.004$.

Individual Difference Variables

I conducted exploratory regression analyses to examine whether participants' expectations of shared tokens were predicted by their own trait ambivalence level, personal need for structure, empathy, how often they feel mixed and how comfortable they are when feeling mixed. Overall, the results showed no clear pattern across the measures (Table 2.8; generated by stargazer package in R, Hlavac & Marek, 2022).

Table 2.8*Regressions Analysis of Individual Differences on the Expectation of Shared Tokens – Experiment 2*

	Dependent variable	
	TARGET was the dictator	PARTICIPANT was the dictator
TA	-1.295 (1.331)	3.282** (1.288)
PNS	-0.061 (1.465)	-0.535 (1.417)
Empathy	1.001 (1.819)	2.754 (1.760)
Mixed_ Frequency	0.012 (0.225)	-0.388* (0.218)
Mixed_ Comfortable	-1.059 (1.031)	-0.152 (0.998)
Constant	57.669** (25.992)	15.756 (25.151)
Observations	219	219
R^2	0.011	0.045
Adjusted R^2	-0.012	0.022
Residual Std. Error ($df = 213$)	16.828	16.283
F Statistic ($df =$ 5; 213)	0.465	1.993*
significance levels	* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$	

Note. TA = Trait ambivalence, PNS = personal need for structure.

Mediation Analyses

To examine whether the relationship between the targets' perceived ambivalence and their allocated resources was influenced by their perceived warmth and competence, I conducted a mediation analysis using the PROCESS package in SPSS (Hayes, 2018). In this model, I 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 Figure 2.2) revealed that, firstly, the total effect of ambivalence on expected 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, I found that the expected allocation was 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 standardised 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.

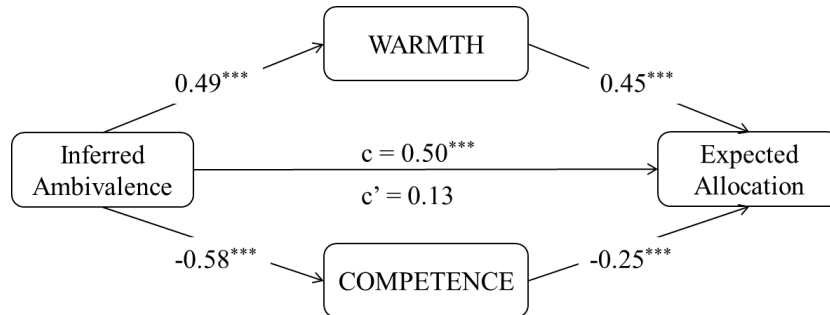


Figure 2.2. The effect of inferred ambivalence and expected allocation through warmth and competence

Discussion

Experiment 2 examined how a target’s dispositional ambivalence would influence how they were evaluated, as well as participants’ allocation judgments. Consistent with my 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. In Experiment 1, I found that the target who was ambivalent about only controversial issues was considered as the most likable, warm, and competent. These results are consistent with Pillaud et al.’s (2018) findings that people prefer individuals who are ambivalent toward controversial issues. However, in the current experiment, I found that the target who described themselves as dispositionally non-ambivalent was rated as colder but more competent than the ambivalent targets.

These divergent patterns could be attributable to different processes. First, in Pillaud et al.'s (2018) study and my Experiment 1, the valence of targets' attitude (positive, negative, or ambivalent) was salient, which was not the case in the current experiment. Further, and of particular importance, Pillaud et al. and Experiment 1 focused on objective ambivalence toward specific attitude objects, whereas the current experiment focused on general dispositions (about subjective ambivalence).

Regarding mediation, perceived ambivalence predicted warmth and competence, with warmth positively related to expected allocation and competence negatively related. This is consistent with previous research showing that warmth predicts friendly behaviours like sharing, whereas competence predicts reduced resource sharing (Cheng et al., 2013). These findings underscore the role of warmth and competence as fundamental dimensions in person perception (Fiske, 2018) that influence not only evaluations of others but also expectations of their behaviour. Notably, the current experiment did not find consistent effects of individual difference variables on these perceptions. Overall, Experiment 2 provides novel evidence that dispositional ambivalence shapes social judgments and behavioural expectations via the key dimensions of warmth and competence.

Experiment 3

In Experiments 1 and 2, I examined whether depictions of general ambivalence and non-ambivalence were judged differently on warmth and competence, and behavioural consequences (i.e., sharing resources). Experiment 3 built upon these earlier experiments by examining additional behavioural implications associated with being dispositionally (non-) ambivalent. After learning about targets and evaluating them on their perceived warmth and competence, participants indicated 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 2, I expected the dispositionally non-ambivalent target to be perceived as colder but more competent than ambivalent targets, to engage in more dominant behaviour, and be perceived as more suitable for particular roles. I selected a series of professions where ambivalence, warmth, and competence might be particularly relevant (e.g., politician, social worker, soldier, salesperson, business executive, scientist) and two office roles (colleague and boss). Further, I tested whether such effects would be mediated by warmth and competence.

Further, 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 behaviour. Specifically, I 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 would engage in prosocial behaviour (e.g., volunteering at a homeless shelter and donating money to charity), and the likelihood of voting for a target. For parsimony, I refer to these first three items as moral behaviours, with the final item labelled political support. Building upon the findings in Experiment 2 that the non-ambivalent target was perceived as less warm, I expected this target to be perceived as less likely to engage in the moral behaviours. This experiment was pre-registered

(<https://doi.org/10.17605/OSF.IO/R86AQ>).

Method

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. The use of a non-student sample is a novel aspect of this experiment, as it allows for greater generalisability of the findings to a broader population. 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 my 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.245$.

Method

In this experiment participants read a verbal description of a target's dispositional ambivalence (see details from Experiment 2 Method section). The participants indicated how they would expect the target to behave and their suitability for different jobs.

Apparatus/Materials

After providing consent, participants completed the questionnaire via Qualtrics. First, participants rated all three descriptions on the fourteen attributes, including those measured in Experiment 2. The inclusion of additional attributes in Experiment 3 was designed to provide a more comprehensive assessment of the potential interpersonal consequences of dispositional ambivalence. The descriptions and attributes were presented in a random order (except for having mixed views, which was presented at first).

Second, participants were randomised into one of three conditions and indicated how they would expect to interact with one of the three descriptions in a

range of scenarios.

a) 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*).

b) Imagine that you are a car salesperson interacting with this person. Based solely on the given information, 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*).

c) How much would you trust this person to look after a sick relative of yours? (1 = *Not at all*; 6 = *Extremely*)

d) How likely is it that this person volunteers at a homeless shelter? (1 = *Not at all*; 6 = *Extremely*)

e) How likely is it that this person donates money every month to a children's charity? (1 = *Not at all*; 6 = *Extremely*)

f) How likely would you be to vote for this person if they were running for Prime Minister? (1 = *Not at all likely*; 6 = *Extremely likely*)

g) How much would you want to date someone who describes themselves like this person? 1 = *Not at all*; 6 = *Extremely*).

Third, participants were presented with an attention check item ("This is an

attention check, please answer somewhat agree to this item.”).

Finally, I asked participants to indicate how suitable their assigned target was for each of six different professions (politician, social worker, soldier, salesperson, business executive, scientist) and two office roles (colleague and boss). These were presented in random order across participants. All the participants answered which one of the three targets was most suitable for each profession and roles (e.g., “Which person would make the best scientist?”).

Results

Evaluation of Attributes

The target who was non-ambivalent was judged as the least mixed, open-minded, trustworthy, likeable, and warm, while they were also judged as the most competitive, decisive, dominant, and masculine. The non-ambivalent target was also perceived as older than the other targets (who themselves did not differ). Table 2.10 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 composites. Ratings for the individual attributes are found in Table 2.9.

First, I 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, I examined whether the three descriptions differed in perceived warmth and competence. 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 $p < .032$).

Table 2.9*Mean Ratings on Fourteen Attributes for the Three Descriptions - Experiment 3*

	A-C	A-ALL	NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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
Open-minded	5.45 ^b [5.29, 5.61]	5.61 ^a [5.44, 5.78]	2.63 ^c [2.42, 2.84]	$F(1.50, 245.21) = 293.36^{***}$	0.64
Trustworthy	4.84 ^b [4.68, 5.00]	5.01 ^a [4.84, 5.19]	3.60 ^c [3.41, 3.78]	$F(1.59, 258.48) = 83.22^{***}$	0.34
Likeable	4.98 ^a [4.82, 5.14]	4.96 ^a [4.79, 5.13]	3.20 ^b [2.99, 3.14]	$F(1.50, 244.37) = 115.88^{***}$	0.42
Warm	4.82 ^b [4.66, 4.97]	5.04 ^a [4.86, 5.21]	3.09 ^c [2.88, 3.29]	$F(1.51, 246.78) = 122.82^{***}$	0.43
Competent	4.60 ^a [4.43, 4.78]	4.60 ^a [4.40, 4.81]	4.18 ^b [3.96, 4.41]	$F(1.63, 266.00) = 5.38^{**}$	0.03
Attractive	4.43 ^a [4.27, 4.58]	4.48 ^a [4.29, 4.66]	3.38 ^b [3.19, 3.57]	$F(1.74, 283.68) = 47.97^{***}$	0.23
Well-educated	4.97 ^a [4.82, 5.12]	4.81 ^b [4.64, 4.99]	3.94 ^c [3.72, 4.15]	$F(1.56, 254.26) = 33.80^{***}$	0.17
Dominant	3.52 ^b [3.34, 3.70]	3.34 ^b [3.09, 3.58]	5.02 ^a [4.76, 5.27]	$F(1.57, 256.23) = 54.37^{***}$	0.25
Masculine	3.88 ^b [3.68, 4.07]	3.75 ^b [3.53, 3.97]	4.64 ^a [4.41, 4.87]	$F(1.48, 241.50) = 17.19^{***}$	0.10
Age	31.23 ^b [29.89, 32.57]	30.73 ^b [29.30, 32.16]	40.09 ^a [37.87, 42.31]	$F(1.49, 237.51) = 38.52^{***}$	0.20
Rich	3.98 ^{ab} [3.82, 4.13]	3.88 ^b [3.70, 4.07]	4.20 ^a [4.02, 4.37]	$F(1.69, 274.68) = 3.07^*$	0.02
Competitive	3.70 ^b [3.50, 3.90]	3.59 ^b [3.34, 3.83]	4.78 ^a [4.53, 5.03]	$F(1.42, 231.41) = 28.86^{***}$	0.15
Decisive	3.50 ^b [3.27, 3.73]	3.20 ^c [2.95, 3.44]	5.24 ^a [4.96, 5.53]	$F(1.52, 248.45) = 69.07^{***}$	0.30

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

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

Table 2.10*Mean Ratings on Attributes for the Three Descriptions - Experiment 3*

	A-C	A-ALL	NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 $< .05$. 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.

*** $p < .001$.

Expectations of Interactions with the Targets

To examine how participants would expect to interact with the individuals depicted in the descriptions, I conducted one-way ANOVAs (see Table 2.11). Starting with the scenario items, I 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 behaviour, political support, and dating items are presented in the bottom portion of Table 2.11. 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.

Table 2.11*Judgments About Interacting with Target - Experiment 3*

	A-C (<i>n</i> = 56)	A-ALL (<i>n</i> = 58)	NA (<i>n</i> = 50)		η^2
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 $< .05$. 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. PN = positive and/or negative information. $**p < .01$, $***p < .001$.

Professions and Office Role Ratings

I conducted chi-square tests and one-way ANOVAs to assess the degree to which participants perceived each description as suitable for each profession and office role. The results are presented in Table 2.12. 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 ($p < .001$).

Table 2.12*Judgments on Professions and Roles - Experiment 3*

	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	$\chi^2 (2) = 38.83^{***}$	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 $< .05$. 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. $*p = .051$, $***p < .001$

Mediation Analyses

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, I conducted mediation analyses. The analysis combined data across the three targets.

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 2.13).

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

Table 2.13*The Effect of Inferred Ambivalence on Expected Social Interactions Through Warmth and Competence – Experiment 3*

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. PN = positive and/or negative information. * $p < .05$, ** $p < .01$, *** $p < .001$

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 2.14).

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

Third, taking perceived ambivalence, warmth and competence into consideration together, I 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 2.14*The Effect of Inferred Ambivalence on Suitability for Professions Through Warmth and Competence – Experiment 3*

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)	-0.13 ² (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 $p = .095$, *** $p < .001$, ** $p < .01$, * $p < .05$

Discussion

The aim of Experiment 3 was to replicate and extend the findings from Experiment 2 by assessing how verbal descriptions of dispositional ambivalence influence perceptions of the targets' suitability for various professions and office roles, expectations of their moral behaviours and political support, and participants' willingness to date them. Additionally, this experiment examined whether any effects of perceived ambivalence were mediated by warmth and competence.

Consistent with Experiment 2, participants in Experiment 3 were able to infer the targets' ambivalence based on the verbal descriptions. Further, the non-ambivalent target was judged as colder and more competent than the ambivalent targets, replicating the findings from the previous experiment.

Extending the findings of Experiment 2, the targets in Experiment 3 differed in their perceived suitability for various professions and office roles. The non-ambivalent target was seen as more suitable for roles that require assertiveness and decisiveness, such as politician, soldier, salesperson, and business executive. In contrast, the ambivalent targets were judged as more suitable for roles that involve empathy and understanding, such as social worker and colleague.

The results also showed that the non-ambivalent target was perceived as less likely to engage in moral behaviours, such as looking after a sick relative, volunteering at a homeless shelter, and donating to charity. Furthermore, participants reported being less willing to date the non-ambivalent target compared to the ambivalent targets. Together, this is important because it highlights how people make expectations about ambivalent and non-ambivalent targets regarding their perceived moral behaviours.

Mediation analyses highlighted the important role of warmth and competence

in underlying these effects. The perceived ambivalence of the targets influenced their perceived warmth and competence, which in turn affected participants' judgments about their suitability for different roles, likelihood of engaging in moral behaviours, and desirability as a dating partner.

Overall, the results of Experiment 3 provide additional evidence for the interpersonal consequences of dispositional ambivalence. The findings demonstrate that the inference of a target's dispositional ambivalence has implications for a range of social judgments and expectations, and that these effects are mediated by perceptions of warmth and competence. These results are consistent with and build upon the findings from Experiment 2, further supporting the idea that dispositional ambivalence plays a significant role in shaping social perceptions and interpersonal evaluations.

Chapter 2 Summary

The three experiments in Chapter 2 investigated how verbal descriptions of dispositional ambivalence influence perceptions of warmth, competence, and expectations of behaviour. Building on research by Pillaud et al. (2018), which found that ambivalence about a single attitude object affected perceptions of competence, these experiments extended the investigation to dispositional ambivalence across multiple attitude objects.

Experiment 1 demonstrated that participants could infer targets' ambivalence from their reported attitudes, with controversial issues eliciting higher perceived ambivalence. Experiment 2 showed that a dispositionally non-ambivalent target was expected to share fewer resources in an economic game, an effect mediated by perceptions of reduced warmth and increased competence of the non-ambivalent target. Experiment 3 further revealed that a non-ambivalent target was seen as less

warm, less moral, less suitable for roles requiring warmth, and less likely to engage in prosocial behaviours compared to ambivalent targets.

Together, these findings provide novel evidence that dispositional ambivalence, as conveyed through verbal descriptions, influences social judgments and expectations. The next chapter will explore whether similar effects emerge when ambivalence is conveyed in a more nuanced way, through facial images.

Chapter 3 How Do Facial Images about a Target's Ambivalence Influence Perceptions of Them?

Chapter 2 examined the effects of verbal descriptions of targets depicted as dispositionally attitudinally ambivalent versus non-ambivalent. In the current chapter, I built upon these findings by shifting focus to the non-verbal cues of ambivalent and non-ambivalent targets. Specifically, I extended this work using the reverse correlation paradigm to examine the visual mental representations of such targets. The experiments in this chapter examine how people mentally represent dispositionally ambivalent and non-ambivalent targets, and how these mental representations are evaluated by others.

The reverse correlation approach involves a two stage process. The first stage involves having a sample that generates facial images associated with a group or category. The second stage involves having naïve raters (i.e., raters who have no information about how the faces were generated or what they represent) evaluate the images (Dotsch & Todorov, 2012; see below for further details). In the image generation phase of Experiment 4 ($N = 292$), participants created images of targets described as ambivalent about only controversial issues (A-C condition), ambivalent about controversial and non-controversial issues (A-ALL condition), or non-ambivalent (NA condition). In the rating phase ($N = 196$), new participants, without having access to how the faces were generated, evaluated the images on their perceived warmth, competence, likely social interactions, values, and suitability for various roles.

Experiment 5 ($N = 91$) used the images from Experiment 4 and exposed new participants to variants of the Dictator Game featuring fair, moderately unfair, and very unfair resource allocation. Participants then rated how likely each image matched

each “dictator”. Experiment 6 ($N = 98$) had new raters judge the likelihood that the images would engage in moral behaviours and political support, along with their values.

Across experiments, the non-ambivalent image was seen as colder and more competent than the ambivalent images. The non-ambivalent image was also expected to be more unfair in the Dictator Game (Experiment 5) and less likely to engage in moral behaviours (Experiment 6). This provides initial evidence that subtle visual representations based solely on targets’ dispositional ambivalence can lead to meaningful differences in social perceptions, expectations, and attributed values.

Experiment 4

Experiments 2 and 3 found that verbal descriptions of targets’ dispositional ambivalence influenced how they were evaluated and how they were expected to behave. Experiment 4 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, I would predict the non-ambivalent target to be perceived as colder and more competent than the ambivalent targets, and that warmth and competence would mediate further effects.

To test this question, I 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 my 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 and colleagues (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 and colleagues (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 et al., 2017) and perceptions of liberals and conservatives (Proulx et al., 2022).

Experiment 4 used the reverse correlation paradigm to assess how people mentally represent individuals whose attitudes generally tend to be ambivalent or non-ambivalent. Specifically, I 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 I 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 et al., 2013). Building upon the findings from Experiment 3, after judging the targets on

their perceived warmth and competence, I 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 advantageous. Experiment 3 found that a non-ambivalent target was seen as less warm, less moral, less suitable for roles requiring warmth, and less likely to engage in prosocial behaviours compared to ambivalent targets. Extending these findings, the current experiment aimed to assess the potentially diverse effects of encountering a dispositionally ambivalent or non-ambivalent individual using the reverse correlation paradigm (Dotsch & Todorov, 2012).

Building upon Experiments 2 and 3, I expected the dispositionally non-ambivalent target to engage in more dominant behaviour, be perceived as more suitable for roles such as soldier and business executive, and less suitable as a social worker. Further, I 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.

Method

Image Generation Phase

Participants.

292 participants (217 females, 69 males, 4 other, 2 did not answer; $M_{\text{age}} = 30.80$ years; range = 18 to 74) were recruited. 116 students ($M_{\text{age}} = 19.74$ years; range = 18 to 35) were recruited from Cardiff University; 176 ($M_{\text{age}} = 38.10$ 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).

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 (I 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 Figure 3.1) were used in the study's rating phase, where new participants evaluated the images.

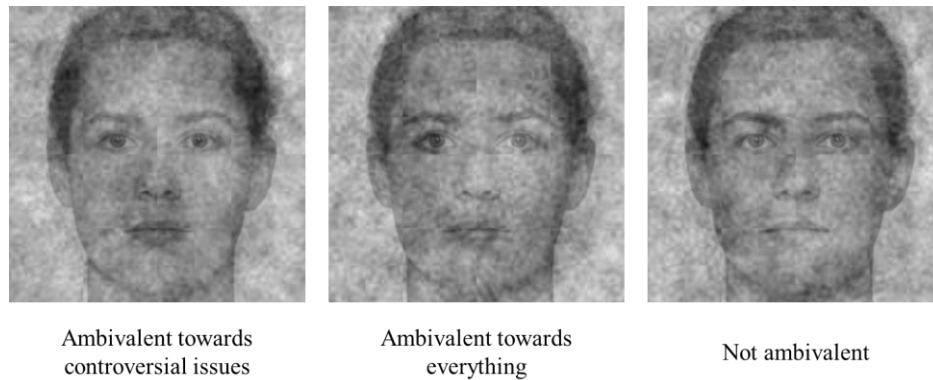


Figure 3.1. Average classification images

Image Rating Phase

Participants.

196 participants (140 females, 53 males, 1 other, 2 prefer not to say; $M_{\text{age}} = 34.14$ 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 my 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.223$.

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 randomised into one of three conditions and answered how they would expect to interact with one of the three generated faces in two different scenarios:

a) 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*).

b) 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, I 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 I asked participants to consider the differences and similarities between two of the three images. Participants were randomised into one of three groups: 1) comparing the images of the targets who were ambivalent about controversial issues versus all issues, 2) comparing the images of the target who was ambivalent about controversial issues and the non-ambivalent target, or 3) comparing the images of the target who was ambivalent about all issues and the non-ambivalent target. Participants compared the assigned pair of faces on seven features: the size of their pupils, the shape of their jawline, the shape of their lips, the size of their forehead, the shape of their nose, the prominence of their cheekbones, and the space between the eyes (1 = *Not at all different*, 6 = *Extremely different*). These regions were selected based on research examining how facial features can be linked with personality inferences (e.g., Berry & McArthur, 1985; Paunonen, 2006).

Individual Difference Measures and Demographic Information

The scales and items were the same as Experiment 2.

Results

Attributes

For the attributes (see Table 3.1), the image of the target who was ambivalent toward controversial issues was judged as the most open-minded, trustworthy, likeable, and warm (all $p < .001$). In contrast, the image of the target who was non-ambivalent was judged as the most competent, attractive, dominant, and masculine (all $p \leq .015$). The non-ambivalent target was also perceived as older than the other targets (who themselves differed, all $p \leq .004$).

Table 3.1*Mean Ratings on Ten Attributes for The Three Classification Images - Experiment 4*

	A-C	A-ALL	NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Open-mindedness	4.19 ^a [4.02, 4.36]	3.90 ^b [3.73, 4.07]	3.58 ^c [3.40, 3.76]	$F(1.89, 368.01) = 16.14^{***}$	0.08
Trustworthiness	4.19 ^a [4.01, 4.37]	3.85 ^b [3.68, 4.03]	3.76 ^b [3.58, 3.93]	$F(2, 390) = 11.30^{***}$	0.06
Likeability	4.30 ^a [4.12, 4.48]	4.10 ^b [3.94, 4.26]	3.90 ^c [3.72, 4.08]	$F(2, 390) = 8.94^{***}$	0.04
Warmth	3.89 ^a [3.69, 4.09]	3.57 ^b [3.40, 3.73]	3.38 ^b [3.20, 3.56]	$F(1.93, 377.16) = 10.30^{***}$	0.05
Competence	4.31 ^b [4.16, 4.47]	4.36 ^b [4.19, 4.53]	4.80 ^a [4.63, 4.96]	$F(2, 388) = 17.56^{***}$	0.08
Attractiveness	3.85 ^b [3.66, 4.04]	3.96 ^b [3.76, 4.17]	4.22 ^a [4.02, 4.42]	$F(1.83, 357.82) = 7.19^{**}$	0.04
Dominance	3.46 ^c [3.26, 3.66]	3.82 ^b [3.64, 4.01]	4.94 ^a [4.74, 5.13]	$F(1.92, 373.45) = 84.70^{***}$	0.30
Masculinity	3.32 ^b [3.14, 3.50]	3.13 ^b [2.94, 3.33]	4.77 ^a [4.56, 4.97]	$F(1.87, 365.46) = 116.42^{***}$	0.37
Age	24.82 ^c [24.04, 25.60]	25.60 ^b [24.85, 26.36]	26.77 ^a [25.97, 27.56]	$F(1.93, 370.57) = 23.11^{***}$	0.11
Decisiveness	3.90 ^b [3.73, 4.08]	4.09 ^b [3.91, 4.27]	4.94 ^a [4.76, 5.12]	$F(2, 390) = 53.10^{***}$	0.21

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

*** $p < .001$; ** $p < .01$.

Factor Analyses

To explore the factor structure of the attributes, all 10 items were subjected to an exploratory factor analysis with Varimax rotation for each target. One item (age) was taken out in the first factor analysis because the coefficient was smaller than 0.40. Nine items were then subjected to a second exploratory factor analysis. The Kaiser-Meyer-Olkin sampling adequacy indicated that correlation structure is adequate for factor analyses. The principal axis factor analysis with a cut-off point of .40 and the Kaiser's criterion of eigenvalues greater than 1 (see Field, 2009; Stevens, 2002) yielded a two-factor solution as the best fit for the data, accounting for 41.91% of the variance (Table 3.2).

Table 3.2*Exploratory Factor Analysis of the Nine Attributes in Experiment 4*

	Factor		Dimension
	1	2	
Likeability	.716		WARMTH
Trustworthiness	.698		
Warmth	.677		
Open-mindedness	.575		
Attractiveness	.506		
Dominance		.694	COMPETENCE
Decisiveness		.664	
Competence		.520	
Masculinity		.447	

KMO = .78, Bartlett's test of sphericity $\chi^2(36) = 1249.04, p < .001$

Ratings of Attributes

I conducted a one-way ANOVA on both dimensions (see Table 3.3). The non-ambivalent target was perceived as less warm than the A-C target ($p < .001$), and more competent compared to both ambivalent targets (both $p < .001$), who themselves marginally differed ($p = .067$). These findings show strong overlap with the results of Experiments 2 and 3, using a more nuanced procedure to assess a target's dispositional ambivalence.

Table 3.3*Mean Ratings on the Attributes for The Three Classification Images - Experiment 4*

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

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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. *** $p < .001$.

Expectations of Interactions with the Targets

To examine how participants would expect to interact with the targets, I conducted one-way ANOVAs (see top portion of Table 3.4). Building upon Experiments 2 and 3, I expected the non-ambivalent target to engage in more dominant behaviour. Starting with the judgment of how likely the target would be to take the lead when working together with the participant, I 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 $p \geq .200$).

Professions and Office Role Ratings

I 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 3.4). 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 ($p = .060$). These results closely align with those of Experiment 3, demonstrating consistent effects of perceived dispositional ambivalence on expectations of interactions and professional suitability.

Table 3.4*Judgments about Interacting with Target and Judgments on Professions and Roles - Experiment 4*

	A-C (<i>n</i> = 64)	A-ALL (<i>n</i> = 65)	NA (<i>n</i> = 66)		η^2
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 $< .05$. 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. PN = positive and/or negative information. $*p = .060$, $***p < .001$.

Differences Among Pairs of Faces

I conducted one-way ANOVAs to examine perceived differences among the three sets of paired faces (see Table 3.5). There were no differences across pairs on the forehead, eyes, pupils, and cheekbone items. On the jawline and lips items, pairs involving the non-ambivalent face were rated as more different than the pair involving the two ambivalent faces (both $p \leq .029$). This implies that the non-ambivalent target was perceived as having a distinctive jawline and lip profile relative to the two ambivalent targets. On the nose item, pairs involving the non-ambivalent face were rated as less different than the pair involving the two ambivalent faces. This implies that the non-ambivalent face was perceived as having a less distinctive nose relative to the two ambivalent faces.

Table 3.5*Differences Between Three Pairs of Faces on Facial Attributes - Experiment 4*

	A-C & A-ALL	A-C & NA	A-ALL & NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Forehead	2.21 [1.91, 2.52]	2.36 [2.05, 2.67]	2.45 [2.15, 2.76]	$F(2, 193) = 0.63$	0.01
Eyes	3.35 ^b [3.00, 3.70]	3.61 ^{ab} [3.25, 3.97]	3.88 ^a [3.53, 4.23]	$F(2, 193) = 2.19$	0.02
Pupils	3.64 [3.31, 3.97]	3.50 [3.16, 3.84]	3.85 [3.52, 4.18]	$F(2, 193) = 1.08$	0.01
Cheekbones	3.00 [2.68, 3.33]	3.19 [2.86, 3.52]	3.27 [2.95, 3.60]	$F(2, 193) = 0.71$	0.01
Nose	3.68 ^a [3.35, 4.01]	3.08 ^b [2.74, 3.41]	2.97 ^b [2.64, 3.30]	$F(2, 193) = 5.21^{**}$	0.05
Lips	2.83 ^b [2.52, 3.14]	3.59 ^a [3.28, 3.91]	3.85 ^a [3.54, 4.16]	$F(2, 193) = 11.26^{***}$	0.10
Jawline	2.61 ^b [2.24, 2.97]	3.33 ^a [2.96, 3.70]	3.18 ^a [2.82, 3.55]	$F(2, 193) = 4.22^*$	0.04

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

Mediation Analyses

To examine whether the relationship between the targets' ambivalence and outcomes was affected by perceived warmth and competence, I conducted mediation analyses. The analysis combined data across the three targets. The 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. I 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 3.6).

Table 3.6*The Effect of Ambivalence on Expected Social Interactions Through Warmth and Competence – Experiment 4*

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

Discussion

The aim of Experiment 4 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 I found in Experiments 2 and 3. 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 that these representations contain information that influences raters' perceptions and behavioural 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. I found that participants expected the non-ambivalent target to be most likely to take the lead when working together with the participant. I 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 et al., 2008; Maio et al., 1996). My evidence is novel in suggesting that mental images of what it means to be (non-) ambivalent led 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, 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 my 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 et al., 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).

Experiment 5

Given the findings of Experiments 2, 3 and 4, my next step was to further understand how people expect ambivalent and non-ambivalent targets to behave. This was most directly addressed in Experiment 2, where I found that knowing a target's dispositional ambivalence influenced how participants expected the target to behave as a dictator. In Experiment 5, I returned to the Dictator Game and examined whether fair versus unfair dictators would be linked with the reverse correlation classification images.

In Experiment 5, participants learned about three fictitious dictators, each of whom shared their resources with different levels of fairness. After learning about an individual dictator's behaviour, 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 Experiments 2-4, 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), I 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.

Method

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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.134$.

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 judgements 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 behaviour, 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 a 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 for the three dictators, 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; e.g., "How important was each of the following factors when deciding you thought is most likely to be Dictator A?" 1 = *Not at all important*, 9 = *Extremely important*) as well as completing measures of ambivalence, personal need for closure, and empathy, along with demographic items.

Results

Differences in Likelihood Ratings

To examine differences in participants' likelihood ratings, I 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, $F(2, 180) = 2.40, p = .093, \eta^2_p = 0.03$. 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, $F(2, 180) = 3.54, p = .031, \eta^2_p = 0.04$. 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

$M_{A-ALL} = 4.74$, $M_{A-C} = 5.03$, $M_{NA} = 5.11$, 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, $F(3.15, 283.46) = 8.00$, $p < .001$, $\eta^2_p = 0.08$. To understand the pattern of the interaction, I 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 3.7).

I 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 3.7, participants were significantly more likely to perceive the non-ambivalent target as the unfair dictator, with no differences for the fair and moderately fair dictators.

Table 3.7*The Likelihood and Frequency That Each Target Was Each Dictator - Experiment 5*

	Fair Dictator	Mod. Unfair Dictator	Unfair Dictator
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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]
	<i>F</i> (2, 180) = 5.12 ^{**}	<i>F</i> (2, 180) = 0.85	<i>F</i> (1.86, 167.01) = 12.39 ^{***}
η^2_p	0.05	0.01	0.12
A-C	32	27	23
A-ALL	35	35	21
NA	24	29	47
	χ^2 (2) = 2.13	χ^2 (2) = 1.14	χ^2 (2) = 13.80 ^{***}

Note. Superscripts that differ in one row represent a mean difference < .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.

The Importance of the Attributes in Deriving Likelihood Judgements

I examined the perceived importance of various attributes in making the likelihood judgments. I did this by conducting a one-way ANOVA for each attribute. The results revealed that four attributes (open-mindedness, trustworthiness, likeability, and warmth) were rated as particularly important when making judgments about the fair dictator relative to the two others (all $p \leq .008$). In contrast, dominance was seen as more important when making judgments about the unfair dictator relative to the two others, which also differed from each other (all $p \leq .010$; see Table 3.8).

Table 3.8

Mean Ratings on the Importance of the Attributes When Making Judgements about the Likelihood of Each Target to Be Each Dictator - Experiment 5

	Fair Dictator	Mod. Unfair Dictator	Unfair Dictator		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Open-mindedness	4.85 ^a [4.36, 5.34]	4.20 ^b [3.76, 4.64]	3.85 ^b [3.38, 4.31]	$F(2, 180) = 11.10^{***}$	0.11
Trustworthiness	5.58 ^a [5.08, 6.08]	4.63 ^b [4.14, 5.11]	4.84 ^b [4.32, 5.35]	$F(2, 180) = 7.86^{***}$	0.08
Likeability	6.15 ^a [5.66, 6.65]	5.09 ^b [4.62, 5.55]	5.33 ^b [4.79, 5.87]	$F(2, 180) = 8.83^{***}$	0.09
Warmth	6.90 ^a [6.50, 7.30]	6.05 ^b [5.56, 6.55]	5.98 ^b [5.45, 6.50]	$F(2, 180) = 9.54^{***}$	0.10
Dominance	4.63 ^c [4.12, 5.13]	5.86 ^b [5.37, 6.34]	6.43 ^a [5.93, 6.93]	$F(1.67, 149.97) = 24.56^{***}$	0.21
Competence	4.59 [4.12, 5.07]	4.76 [4.26, 5.25]	4.64 [4.14, 5.13]	$F(2, 180) = 0.25$	0.00
Decisiveness	4.76 [4.31, 5.21]	4.93 [4.47, 5.40]	5.20 [4.69, 5.70]	$F(1.82, 164.07) = 1.69$	0.02

Note. Superscripts that differ in one row represent a mean difference $< .05$. $***p < .001$.

Differences in Importance Ratings

I examined the perceived importance of various attributes in making the likelihood judgments. I factor analysed responses to the attributes (see Table 3.9). The factor analysis yielded two dimensions, one representing warmth and the second representing competence. I conducted a one-way ANOVA on these dimensions and found that targets were evaluated significantly differently on both (see Table 3.10). Warmth was perceived as more important to make the judgements for the fair dictator than for the unfair dictators (both $p < .001$), who themselves did not differ ($p = 0.970$), whereas competence perceived as less important to make the judgements for the fair dictator than for the unfair dictators (both $p < .001$), who themselves did not differ ($p = 0.170$).

Table 3.9*Exploratory Factor Analysis of The Nine Attributes in Experiment 5*

	Factor	
	1	2
Likeable	.783	
Warm	.713	
Trustworthy	.677	
Openminded	.494	.472
Decisive		.782
Competent		.730
Dominant		.428

Table 3.10*Mean Ratings on the Importance of the Attributes When Making Judgements about the Likelihood of Each Target to Be Each Dictator -**Experiment 5*

	Fair Dictator	Mod. Unfair Dictator	Unfair Dictator		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Warm	5.87 ^a [5.49, 6.25]	4.99 ^b [4.63, 5.35]	5.00 ^b [4.62, 5.38]	$F(1.88, 168.77) = 18.90^{***}$	0.17
Competent	4.66 ^b [4.28, 5.04]	5.18 ^a [4.81, 5.56]	5.42 ^a [5.03, 5.81]	$F(1.72, 154.90) = 10.20^{***}$	0.10

Note. Superscripts that differ in one row represent a mean difference $< .05$. $^{***}p < .001$.

Discussion

To summarise, I 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 2, where the non-ambivalent target was expected to share the least resources. This suggests that participants have different expectations for representations of dispositionally ambivalent and non-ambivalent targets, and that participants linked the images with different levels of cooperative behaviour. What makes these effects particularly striking is that participants in Experiment 5 had no knowledge regarding how the classification images were created.

The analysis of the perceived importance of various attributes in making likelihood judgments provides valuable insights into the role of warmth and competence in shaping perceptions of fair and unfair dictators. The factor analysis revealed two distinct dimensions, warmth and competence, consistent with the fundamental dimensions of social perception identified in the Stereotype Content Model (Fiske, 2018) and my previous experiments. Participants rated warmth as more important when making judgments about the fair dictator, while competence was seen as more important for the unfair dictators. These findings suggest that people rely on different dimensions of social perception when evaluating individuals who engage in fair versus unfair behaviour. Warmth, which encompasses traits such as trustworthiness and likeability, seems to be a key factor in identifying fair individuals, whereas competence, which includes attributes like decisiveness and dominance, appears to be more salient when judging unfair individuals. This distinction highlights the differential importance of warmth and competence in social judgments, depending on the context and the target's behaviour (Abele et al., 2021).

Overall, Experiments 2 and 5 demonstrate links 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).

Experiment 6

Experiments 2-5 have demonstrated that perceived ambivalence influences how people evaluated dispositionally ambivalent and non-ambivalent targets and their expectations of a target's behaviour. Building upon these findings, Experiment 6 sought to further extend the understanding of the implications of dispositional ambivalence, this time by focusing on potential effects on targets' perceived values. Experiment 6 also sought to further consolidate the results of Experiment 3 by examining how facial representations of a target's dispositional ambivalence would impact the moral behaviour outcomes assessed in Experiment 3.

Values are important in serving as abstract ideals that influence people's goals, attitudes, and behaviour (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 6, I 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), I 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 6 also sought to further consolidate the results of Experiment 3 by examining how facial representations of a targets dispositional ambivalence would impact the moral behaviour outcomes assessed in Experiment 3. Given the links between self-transcendence values, which emphasise concern for others' welfare and transcending selfish interests (Schwartz et al., 2012), and prosocial moral behaviours, such as helping and fairness (Boer & Fischer, 2013), I expected the non-ambivalent target would be seen as less likely to engage in moral behaviours compared to the ambivalent targets.

Together, Experiment 6 examined whether the mental representations of ambivalent and non-ambivalent targets would be perceived differently on their values and political and moral behaviours. I expected to replicate the primary findings from Experiments 2-5. This experiment was pre-registered (<https://doi.org/10.17605/OSF.IO/7ZMXJ>).

Method

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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.099$.

Apparatus/Materials

This experiment built upon the methodology used in the rater component of Experiment 4, but included new items assessing and behavioural 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 were included for exploratory purposes). Then, participants were presented with an attention check item (“This is an attention check, please answer somewhat disagree to this item.”).

The three classification images generated in Experiment 4 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 (self-transcendence)
- b) Ambition, wealth, power, success (self-enhancement)
- c) Freedom, curiosity, adventurousness, excitement (openness)
- d) Politeness, respect for tradition, social order (conservation)

Third, participants answered how they would expect to interact with one of the

three images scenarios representing moral behaviours 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 likely*; 6 = *Extremely likely*)

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

Results

First, I 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 ($p = .838$).

Attributes

For the individual attributes, the image of the target who was ambivalent toward controversial issues was judged as the most open-minded, trustworthy, likeable, and warm. In contrast, the image of the target who was non-ambivalent was judged as the most competent, attractive, dominant, and masculine. The non-ambivalent target was also perceived as older than the other targets (who themselves differed; see Table 3.11).

Table 3.11*Mean Ratings on Fourteen Attributes for the Three Classification Images - Experiment 6*

	A-C	A-ALL	NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]		
Mixed	3.94 ^a [3.70, 4.18]	3.92 ^a [3.68, 4.16]	3.68 ^b [3.42, 3.95]	$F(1.88, 182.09) = 3.05^1$	0.03
Open-minded	4.16 ^a [3.96, 4.37]	4.13 ^a [3.93, 4.34]	3.87 ^b [3.63, 4.11]	$F(1.86, 179.98) = 3.06^1$	0.03
Trustworthy	4.18 ^a [3.98, 4.39]	4.13 ^a [3.90, 4.36]	3.89 ^b [3.64, 4.14]	$F(2, 194) = 2.73^2$	0.03
Likeable	4.34 ^a [4.15, 4.52]	4.17 ^{ab} [3.96, 4.39]	4.09 ^b [3.83, 4.36]	$F(1.88, 182.16) = 1.82$	0.02
Warm	4.02 ^a [3.78, 4.26]	3.90 ^a [3.63, 4.16]	3.45 ^b [3.18, 3.72]	$F(2, 194) = 8.37^{***}$	0.08
Competent	4.39 ^b [4.15, 4.63]	4.44 ^b [4.21, 4.66]	4.81 ^a [4.58, 5.04]	$F(2, 194) = 5.39^{**}$	0.05
Attractive	4.12 ^b [3.87, 4.37]	4.28 ^b [4.04, 4.52]	4.53 ^a [4.29, 4.77]	$F(2, 194) = 5.40^{**}$	0.05
Well-educated	4.63 ^b [4.44, 4.83]	4.67 ^b [4.45, 4.89]	4.95 ^a [4.74, 5.16]	$F(2, 194) = 4.17^*$	0.04
Dominant	3.45 ^c [3.18, 3.72]	3.86 ^b [3.60, 4.11]	4.69 ^a [4.41, 4.98]	$F(1.71, 165.99) = 37.22^{***}$	0.28
Masculine	3.49 ^b [3.20, 3.78]	3.15 ^c [2.85, 3.45]	4.71 ^a [4.41, 5.02]	$F(1.87, 181.20) = 44.51^{***}$	0.32
Age	26.87 ^c [25.74, 28.01]	27.94 ^b [26.81, 29.07]	29.39 ^a [28.42, 30.36]	$F(2, 188) = 21.13^{***}$	0.18
Rich	3.96 ^b [3.72, 4.20]	4.11 ^b [3.89, 4.33]	4.58 ^a [4.31, 4.86]	$F(2, 194) = 10.87^{***}$	0.10
Competitive	4.14 ^b [3.87, 4.42]	4.27 ^b [4.02, 4.51]	4.99 ^a [4.71, 5.27]	$F(2, 194) = 19.19^{***}$	0.17
Decisive	4.11 ^b [3.87, 4.35]	4.00 ^b [3.77, 4.23]	4.89 ^a [4.65, 5.13]	$F(2, 194) = 21.55^{***}$	0.18

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

*** $p < .001$; ** $p < .01$, * $p < .05$, 1 $p = .053$, 2 $p = .068$.

Next, I examined whether the three images differed in their perceived warmth and competence components (using the same items as in Experiment 4). 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 ($p = .976$). These findings are consistent with the results of Experiments 4 and 5.

Table 3.12*Mean Ratings on Attributes for the Three Classification Images - Experiment 6*

	A-C	A-ALL	NA		η^2_p
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 $< .05$. 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 $p = .053$.

Perceptions of the Targets' Values

To examine whether the targets differed in their perceived values, I conducted a 3 (target: A-C, A-ALL, NA) \times 4 (value type: self-transcendence, self-enhancement, openness to change, conservation) repeated-measures ANOVA. The main effect of target was not significant, $F(1.89, 181.03) = 0.24, p = .776, \eta^2_p = 0.002$. The main effect of value type was marginally significant, $F(2.59, 248.58) = 2.50, p = .069, \eta^2_p = 0.025$. 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, $F(4.73, 454.20) = 15.47, p < .001, \eta^2_p = 0.14$, which was followed up via one-way ANOVAs (see Table 3.13). I 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.

Table 3.13*Judgments about Values of Each Target - Experiment 6*

	A-C	A-ALL	NA		η^2
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [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 ^c [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 $< .05$. 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. *** $p < .001$.

Expectations of Moral Behaviours and Political Support

For each of the four scenarios, I conducted a one-way ANOVA (see Table 3.14). I 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 ($p = .481, .282, .546$, 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 ($p = .560$). These results largely replicate Experiment 3.

Table 3.14*Judgments about Interacting with Target - Experiment 6*

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

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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. $**p < .01$, $***p < .001$.

Professions and Office Role Ratings

I 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 3.15. 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 Experiments 3 and 4.

Table 3.15*Judgments on Professions and Roles - Experiment 6*

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

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

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

Mediation analyses

I had anticipated using inferred ambivalence as the independent variable in my mediation analyses. However, because inferred ambivalence was not correlated with warmth and competence, I used condition as the distal variable (as in Experiment 4), where I grouped the two ambivalent images together and compared that to the non-ambivalent image.

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.

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, $\beta = -0.47$, $SE = 0.05$, $F(1, 292) = 72.46$, $p < .001$, $R^2 = 0.20$. See Table 3.16 for details.

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

Table 3.16*The Effect of Ambivalence on Values Through Warmth and Competence – Experiment 6*

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

Political Support and Moral Behaviours

The results revealed that, firstly, the total effects of ambivalence suggested that the non-ambivalent target was perceived as less suitable/likely to engage in moral behaviours.

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

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

Table 3.17*The Effect of Ambivalence on Expected Social Interactions Through Warmth and Competence – Experiment 6*

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

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. Secondly, as noted earlier, ambivalence positively predicted warmth and negatively predicted competence. Taking ambivalence, warmth and competence into consideration together, I found that warmth and competence both played a role in mediating outcomes.

Table 3.18*The Effect of Ambivalence on Suitability for Professions Through Warmth and Competence – Experiment 6*

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)	-0.10 ² (0.07)	0.17 ^{**} (0.07)	0.10 (0.04)	[0.02, 0.18]
Boss	-0.05 (0.09)	0.20 ^{***} (0.10)	0.12 ¹ (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 $p = .084$, *** $p < .001$, ** $p < .01$, * $p < .05$

Discussion

Experiment 6 built upon my previous findings by further assessing how people evaluated classification images associated with dispositional ambivalence and non-ambivalence. Consistent with Experiment 4, 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 4. Building upon my 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 behaviours, and in political support.

The results on the values and moral behaviours 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 behaviours. 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 behaviour 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 6 showed strong convergence with those of Experiment 4. 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. My 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 behaviours.

Chapter 3 Summary

Chapter 3 extended the investigation of dispositional ambivalence perceptions using facial images generated via a reverse correlation paradigm (Dotsch & Todorov, 2012). This approach allowed for an examination of mental representations of ambivalent and non-ambivalent targets.

Experiment 4 found that a non-ambivalent face was judged as colder, more competent, and more suitable for assertive roles than ambivalent faces. Experiment 5 showed that the non-ambivalent face was most likely to be perceived as an unfair dictator in an economic game. Experiment 6 revealed that the non-ambivalent face was seen as endorsing more self-enhancement values, less self-transcendence values, and being less likely to engage in moral behaviours.

These findings align with the results from Chapter 2, demonstrating that the effects of dispositional ambivalence on social judgments and expectations are consistent across verbal and visual representations. The next chapter will directly compare these two methods of conveying ambivalence.

Chapter 4 Comparing the Verbal and Image Methods of Dispositional (Non-) Ambivalence

As reviewed above, previous chapters have examined the perception of attitudinal ambivalence through two key methods: direct verbal descriptions (Chapter 2) and indirect visual representations via reverse correlation classification images (Chapter 3). While both approaches yield meaningful effects, it remains unclear whether these methods convey compatible information about ambivalence that is processed similarly.

Integrating these distinct approaches into one paradigm can address important questions. First, can people link verbal descriptions and visual depictions of targets that correspond on levels of dispositional ambivalence? If the verbal and visual cues regarding ambivalence are processed comparably, then descriptions and images that match on ambivalence level should be perceived as highly associated. Second, do any asymmetries emerge for ambivalent versus non-ambivalent targets? For instance, are non-ambivalent descriptions more easily linked to corresponding non-ambivalent images than ambivalent descriptions are linked to ambivalent images?

Experiment 7 ($N = 98$) provides an initial test of these questions by combining the attitude descriptions from Experiment 1 with the classification images from Experiment 4. The verbal materials were targets describing themselves as frequently ambivalent about controversial issues (A-C condition) or about all issues (A-ALL condition) versus rarely ambivalent (NA condition). After reading about each target, participants rated the likelihood that each classification image matched that verbal description. If information about ambivalence is conveyed across methods, the highest rated image should directly correspond to the description on ambivalence level.

Experiment 8 ($N = 86$) utilizes a similar approach but with verbal materials

focused specifically on subjective attitudinal ambivalence assessed by reported evaluative reactions. The descriptions depict targets with ambivalent views on controversial issues only, ambivalent views on all issues, or no ambivalence. If ambivalence level is processed comparably across modes of depiction, the facial images and textual descriptions that match on ambivalence level should again be perceived as highly associated.

Experiment 7

In Experiment 1, I addressed people's ability to perceive others' objective ambivalence in a straightforward way, that is, presenting people with reports of others' attitudes. However, in daily interactions, it is unusual to see others' attitudes, rather non-verbal cues might be more salient. Regarding different non-verbal cues, previous research has demonstrated that based merely on an image of a face, participants are able to make accurate judgements about a target's emotion (Elfenbein, 2013), personality (e.g., warmth, competence; Sutherland & Young, 2022), profession (Hehman et al., 2015), political ideologies (Proulx et al., 2022), and behaviours (Haselhuhn & Wong, 2012). More specifically, for instance, Rule and Ambady (2008a) showed participants a series of images of male targets, and participants were asked to infer each target's sexual orientation. The results showed that participants were able to make correct inferences at a level significantly better than chance, even when the images were presented for a brief amount of time (i.e., as short as 50ms). Another study by Rule and Ambady (2008b) showed that participants could perceive CEOs' power and warmth, aligned with company profits, based on short exposures to images of their faces. Together, these studies highlight individuals' ability to make precise social judgments from quickly presented static images.

In Experiment 7, I tested whether participants could link targets' objective ambivalence to facial images that were previously created to reflect attitudinal ambivalence or non-ambivalence. Participants were shown the attitude reports of three targets from Experiment 1: the target who was ambivalent toward controversial issues only (A-C), the target who was ambivalent toward both controversial and non-controversial issues (A-ALL), and the non-ambivalent target (NA). My primary interest was assessing whether participants could link the classification images (A-C, A-ALL, NA) with the three targets' attitude reports (A-C, A-ALL, NA).

I expected to build upon the findings from Experiment 1, showing that perceptions of a target's ambivalence would be linked with their actual ambivalence. Specifically, I hypothesised that the NA description would be most strongly associated with the NA image and most weakly linked to both ambivalent images. Given the similarity between the two ambivalent images and the lack of consistent differentiation between them in previous experiments, I did not make specific predictions about the strength of the associations between the A-C and A-ALL descriptions and their corresponding images. The main focus was on testing whether participants could match the non-ambivalent description with the non-ambivalent image, as this would provide evidence for the successful communication of dispositional ambivalence across verbal and visual modalities.

Method

Participants

98 participants (79 females, 10 males, 9 others; $M_{\text{age}} = 18.85$ years; range = 17 to 25) were recruited via a participant panel from Cardiff University. Two additional participants were excluded because they failed an attention check (see below). The

observed effect size was $f = 0.129$ (alpha = 0.05, power = 0.80; G*Power software; Faul et al., 2017).

Procedure

Participants completed the study online, via a Qualtrics survey link. To start, participants read information about one of three targets' attitudes toward a series of objects. The stimuli were taken from Experiment 1. Specifically, I used the attitude reports from (a) the target who was ambivalent toward everything, (b) the target who was only ambivalent toward controversial issues, and (c) the non-ambivalent target. Participants were presented with a target's ratings of positivity and negativity on eight topics. After learning each target's attitudes, participants indicated how mixed each target's overall attitudes were. Then, participants were presented with the three classification images (see details in Experiment 4) and indicated the likelihood of each image being each target. This sequence was then repeated for the remaining two targets, with the presenting order randomised, after which participants were presented with an attention check ("This is an attention check, please answer strongly agree to this item."). Finally, participants answered two additional questions and reported their age and gender.

Additional questions. Finally, participants were asked how comfortable and how often they have mixed feelings ("When you have mixed feelings about something, how comfortable do you feel about this sensation?", "How often do you have mixed views on things?").

Results

Perceptions of Objective Ambivalence

To start, I examined whether participants were able to perceive the ambivalence reported by each target by conducting a 3 (target: ambivalent toward

controversial issues, ambivalent toward all issues, non-ambivalent) \times 2 (attitudinal issues: controversial, non-controversial) repeated measures ANOVA. As can be seen in Table 4.1, the main effect of attitude issue was significant, $F(1, 97) = 85.94$, $MSE = 1.50$, $p < .001$, $\eta^2_p = 0.47$; the targets were rated as having more mixed views toward controversial issues ($M = 5.24$) compared to non-controversial issues ($M = 4.30$), $p < .001$. The main effect of target was significant, $F(1.45, 140.61) = 134.50$, $MSE = 3.42$, $p < .001$, $\eta^2_p = 0.58$. The A-ALL target was rated as the most ambivalent ($M = 6.12$), followed by the A-C target ($M = 4.65$) and the NA target ($M = 3.52$), all $p < .001$. More importantly, the interaction was significant, $F(1.62, 157.29) = 53.13$, $MSE = 1.87$, $p < .001$, $\eta^2_p = 0.35$. To interpret the interaction, I conducted a one-way repeated measures ANOVA for the controversial and non-controversial issues.

Regarding ratings on controversial issues, the results revealed that the two targets who had ambivalent attitudes toward the controversial issues were rated as more ambivalent than the non-ambivalent target (both $p < .001$). There was also a difference between the two ambivalent targets ($p = .015$), with target A-ALL perceived as more ambivalent than A-C. Regarding the non-controversial issues, the target who was ambivalent about these issues was rated as more ambivalent than the other two targets (both $p < .001$). There was no difference between the two non-ambivalent targets ($p = .830$). Overall, these results replicate Experiment 1 and demonstrate that participants were able to identify targets' ambivalence.

Building upon the analyses above, I conducted within-person correlations to examine the extent to which participants' ratings of the targets' objective ambivalence towards the attitude objects were correlated with the actual level of ambivalence (as indexed by the Griffin formula). The results showed that 89.80% of participants showed a significant positive correlation between their perceptions of targets'

ambivalence and targets' actual ambivalence. I then computed a one-sample t -test to compare the average within-person correlation with zero. The correlation was significantly greater than zero, $M = 0.55$ [0.47, 0.63], $SD = 0.41$, $t(97) = 13.20$, $p < .001$, $d = 1.34$.

Taken together, both the ANOVA and within-person correlation analyses imply that participants were able to infer the levels of ambivalence expressed by the targets. This largely replicated what I found in Experiment 1.

Linking Objective Ambivalence to Classification Images

To examine whether participants linked the targets' objective ambivalence with the reverse correlation classification images, I conducted a 3 (Target: A-C, A-ALL, NA) \times 3 (Image: A-C, A-ALL, NA) repeated measures ANOVA. As can be seen in Table 4.1, neither main effect was significant, $F_{\text{target}}(2, 194) = 0.48$, $MSE = 2.06$, $p = .621$, $\eta^2_p = 0.005$; $F_{\text{image}}(2, 194) = 0.34$, $MSE = 1.84$, $p = .713$, $\eta^2_p = 0.003$. However, as expected, the interaction was significant, $F(3.68, 357.26) = 2.95$, $MSE = 2.96$, $p = .024$, $\eta^2_p = 0.029$. To interpret the interaction, I conducted one-way repeated measure ANOVAs for each target. The results revealed a significant effect for the target whose attitudes were non-ambivalent ($M_{\text{imageA-C}} = 4.94$, $M_{\text{imageA-ALL}} = 4.51$, $M_{\text{imageNA}} = 5.22$, $p = .007$; see Table 4.1). This target was more likely to be perceived as the non-ambivalent classification image relative to the classification image of the individual who was ambivalent about everything ($p = .003$); there was no difference compared to the classification image of the individual who was ambivalent about controversial issues ($p = .216$). There were no significant effects for either of the targets who reported ambivalent attitudes.

Table 4.1*The Likelihood That Each Image Was Each Target - Experiment 7*

	Target A-C	Target A-ALL	Target NA
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]
<i>Con</i>	5.86 ^b [5.53, 6.20]	6.22 ^a [5.92, 6.51]	3.63 ^c [3.34, 3.91]
	$F(1.55, 149.82) = 89.18^{***}, MSE = 2.81, \eta^2_p = 0.48$		
<i>Non-con</i>	3.44 ^b [3.19, 3.70]	6.03 ^a [5.74, 6.33]	3.42 ^b [3.17, 3.67]
	$F(1.42, 137.76) = 120.74^{***}, MSE = 2.58, \eta^2_p = 0.56$		
<i>All</i>	4.65 ^b [4.48, 4.83]	6.12 ^a [5.85, 6.40]	3.52 ^c [3.29, 3.75]
	$F(1.45, 140.61) = 134.50^{***}, MSE = 1.71, \eta^2_p = 0.58$		
Image A-C	5.08 [4.76, 5.41]	4.84 [4.49, 5.19]	4.94 ^a [4.58, 5.30]
Image A-ALL	5.04 [4.73, 5.35]	5.15 [4.80, 5.50]	4.51 ^b [4.18, 4.84]
Image NA	4.90 [4.60, 5.20]	4.86 [4.47, 5.24]	5.22 ^a [4.87, 5.58]
	$F(2, 194) = 0.42, MSE = 2.17,$	$F(2, 194) = 1.16, MSE = 2.64,$	$F(2, 194) = 5.12^{**}, MSE = 2.47,$
η^2_p	0.004	0.012	0.050

Note. *** $p < .001$; ** $p < .01$. Con = Perceived ambivalence toward controversial issues, Non-con = Perceived ambivalence toward non-controversial issues, All = Overall perceived ambivalence. 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.

I also conducted a chi-square test to examine differences in the frequency with which each description was linked with each image (see Table 4.2). While the overall effect was not significant, $\chi^2(4) = 6.70, p = .153$, I found evidence suggesting that the target whose attitudes were non-ambivalent was most likely to be perceived as the non-ambivalent classification image ($p = .078$). No differences were found for the targets who reported ambivalence toward controversial or all objects.

Table 4.2*The Frequency of Each Image Was Selected for Each Target - Experiment 7*

	Target A-C	Target A-ALL	Target NA
Image A-C	34	27	31
Image A-ALL	36	31	24
Image NA	27	39	42
	$\chi^2 (2) = 1.38$	$\chi^2 (2) = 2.31$	$\chi^2 (2) = 5.09^*$

Note. * $p = .078$. 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.

Discussion

In Experiment 7, I examined whether participants linked targets' objective ambivalence with the reverse correlation classification images generated by another sample. The results showed effects that were generally consistent with expectations. The non-ambivalent target showed patterns that were consistent with expectations, but no meaningful differences were found between the two ambivalent targets. The more equivocal pattern of results on the ambivalent targets is perhaps unsurprising. In the current experiment, participants learned the purported targets' rating of how positive and how negative toward a range of attitudinal issues, instead of providing the descriptions of the attitudinal ambivalence. Therefore, in the current experiment, participants inferred targets' ambivalence by evaluating their positive and negative attitudes toward different issues, rather than directly learning about their ambivalence. This required a more complex cognitive process, where participants deduced the extent of each target's mixed feelings based on observable cues. This approach mirrors everyday social interactions, where people often rely on indirect information to understand others' internal states.

Experiment 8

Experiment 7 demonstrated that people perceived that the non-ambivalent description to best fit the non-ambivalent image. Building upon these findings, Experiment 8 considers whether participants perceived the three reverse classification images as differing in their dispositional ambivalence, when using the verbal descriptions adapted from the Trait Ambivalence Scale (and first used in Experiment 2). By directly examining the degree to which the classification images are linked with the verbal descriptions of dispositional ambivalence, I can further understand how people conceptualize dispositional ambivalence, as well as addressing the breadth of effects associated with the reverse correlation images.

I presented participants with the written target descriptions used in Experiment 2, 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. I hypothesised that participants would be able to differentiate between the ambivalent and non-ambivalent targets and the reverse correlation images, such that the non-ambivalent description would be most strongly associated with the non-ambivalent image and most weakly linked to both ambivalent images. Given the visual similarities between the two ambivalent reverse correlation images, I was uncertain as to whether participants would show a clear differentiation between these two images.

Method

Participants

86 participants (77 females, 7 males, 2 other; $M_{\text{age}} = 18.94$ 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.138$.

Individual Difference Measures and Demographic Information

In this experiment, I assessed two items that were relevant to ambivalence: “How often do you have mixed views on things?” (1 = *Never*, 7 = *Always*), “When you have mixed feelings about something, how comfortable do you feel about this sensation?” (1 = *Very uncomfortable*, 7 = *Very comfortable*).

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 2.

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 (“This is an attention check, please answer strongly agree to this item.”). Participants then rated themselves on the same two additional questions as previous experiments and reported their age and gender before debriefing.

Results

To start, I conducted a one-way repeated measures ANOVA assessing how ambivalent (or mixed) each target was perceived to be (see upper portion of Table 4.3). The results revealed a significant effect, $F(1.75, 148.54) = 296.02, p < .001, \eta^2_p = 0.78$. 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 $p < .001$.

To examine whether participants linked the target's ambivalence with the classification images, I conducted a 3 (Target: A-C, A-ALL, NA) \times 3 (Image; A-C, A-ALL, NA) repeated measures ANOVA. Neither main effect was significant, $F_{\text{target}}(1.83, 155.18) = 0.71, p = .481, \eta^2_p = 0.01$; $F_{\text{image}}(2, 170) = 0.87, p = .419, \eta^2_p = 0.01$. However, as expected, there was a significant interaction, $F(3.65, 310.44) = 11.84, p < .001, \eta^2_p = 0.12$ (see Table 4.3). To understand the pattern of the interaction I 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, $p = .967$.

I 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 4.3, 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.

Table 4.3*The Likelihood and Frequency That Each Image Was Each Target - Experiment 8*

	A-C	A-ALL	NA
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]
<i>How mixed</i>	4.76 ^a [4.52, 4.99]	5.33 ^b [5.12, 5.53]	1.66 ^c [1.44, 1.88]
	$F(1.75, 148.54) = 296.02^{****}$, $\eta^2_p = 0.78$		
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^2_p	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. **** $p < .001$; *** $p < .01$, ** $p < .05$, * $p = .053$.

Discussion

The aim of Experiment 8 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 4. 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.

A comparison of the effect sizes for the key interaction in both Experiments 7 and 8 was feasible because the experimental design of both experiments was the same (within-participant; see Baguley, 2009; Lakens, 2013). I calculated 95% CIs of the effect sizes of the interaction between targets and images for both experiments, and the results revealed a minor overlap between them (Experiment 7: [0.000, 0.063], Experiment 8: [0.055, 0.184]); I also conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) \times 3 (Image: image that is ambivalent toward controversial issues, image that is ambivalent toward all issues, image who is non-ambivalent) \times 2 (Experiment: 7 versus 8) mixed-ANOVA. The 3-way interaction was significant, $F(4, 728) = 4.82, p = .001, \eta^2_p = 0.03$. The interaction suggests that the effect in the current experiment was stronger than the effect in the previous experiment. Specifically, participants showed better performance in linking subjective ambivalence to the images compared to objective ambivalence. This suggests that subjective ambivalence, which focuses on the individual's perceived experience of conflicting attitudes, may be more readily associated with the visual representations of ambivalence compared to objective ambivalence, which is derived from the structure of one's attitudes. The additional

steps required for participants to infer objective ambivalence from the attitude ratings, as opposed to the more direct statements of subjective ambivalence, could account for the stronger effect observed in Experiment 8. This finding highlights the importance of considering the specific conceptualisation and measurement of ambivalence when examining its interpersonal consequences.

Chapter 4 Summary

Chapter 4 integrated the verbal and visual methods used in the previous chapters to investigate whether people can link dispositional ambivalence across these two modes of representation.

Experiment 7 showed that participants could link non-ambivalent faces with objectively non-ambivalent verbal descriptions, although less successfully for ambivalent targets. Experiment 8 replicated this finding using descriptions focused on subjective attitudinal ambivalence, with participants matching non-ambivalent faces to non-ambivalent descriptions and perceiving them as worse fits for ambivalent descriptions.

These findings provide evidence that dispositional ambivalence is perceived consistently across verbal and visual representations, supporting the validity of the reverse correlation approach in capturing this construct. The next chapter will explore potential cross-cultural differences in the perception of ambivalence.

Chapter 5 Cross-Cultural Perceptions of Others' Ambivalence

Previous research has documented cross-cultural differences between individuals from Western and Eastern cultural backgrounds in the experience of ambivalence, mixed emotions, and dialectical thinking (Luttrell et al., 2017; Peng & Nisbett, 1999; Spencer-Rodgers et al., 2010). However, there is limited research on how people from different cultures perceive ambivalence in others and the downstream consequences for social judgments and decision-making.

This chapter aims to be to address this gap via an experiment examining potential cross-cultural differences in the perception and judgment of ambivalent targets between Chinese and British individuals. Experiment 9 ($N = 86$) was conducted where Chinese participants read descriptions of targets who varied in their level of ambivalence (ambivalent about controversial issues only, ambivalent about everything, non-ambivalent). Participants rated the targets on various attributes, expected behaviours, suitability for different professions/roles, and allocation of resources in a dictator game. Their responses were compared to those of the British participants from Experiment 3, as the text descriptions used in Experiment 9 were translated from those in Experiment 3, and all of the items comparing the targets were similar across the two experiments. This comparison allowed for an examination of potential cultural differences in the perception and evaluation of dispositional ambivalence.

Experiment 9

In this section, I first review research documenting cross-cultural differences in the experience of ambivalence, mixed emotions, and indecisiveness between individuals from Western and Eastern cultural backgrounds, highlighting the role of dialectical thinking. Next, I discuss the limited research on the interpersonal

implications of these cross-cultural differences, particularly in terms of how people infer others' ambivalence. Drawing on research on cross-cultural emotion recognition, I propose that individuals from different cultural backgrounds may differ in their strategies for detecting ambivalence in others, with Easterners focusing more on the eyes and Westerners on the mouth.

Cross-Cultural Differences in Ambivalence, Mixed Emotions, Dialectical Thinking, and Indecisiveness

The concept of dialectical thinking offers a useful starting point in considering cross-cultural differences in relation to ambivalence. The concept of dialectical thinking, as defined by Peng and Nisbett (1999), involves three key principles: the principle of *change* (the world is constantly changing), the principle of *contradiction* (opposites coexist and are interrelated), and the principle of *holism* (the part cannot be understood except in relation to the whole). These principles guide Chinese individuals to tolerate contradiction, expect change, and perceive interconnectedness among seemingly opposed entities.

Peng and Nisbett (1999) provided empirical evidence for the long-standing notion that Chinese and Western cultures have distinct approaches to reasoning about contradictions. They argued that Chinese culture, influenced by Taoism and Buddhism, promotes enhanced levels of dialectical thinking, which emphasises accepting contradictions and finding a “middle way” between opposing perspectives. In contrast, Western thinking, rooted in Greek philosophy and formal logic, places greater importance on non-contradiction and the resolution of opposing views. Across five studies, Peng and Nisbett demonstrated such cultural differences in reasoning styles. They found that Chinese participants preferred dialectical proverbs and arguments, which accept the coexistence of opposites, while American participants

favoured more non-dialectical proverbs and arguments that adhered to logical principles. Further, when resolving social conflicts, Chinese participants sought compromise solutions that acknowledged both sides, whereas Americans tended to choose one-sided resolutions. Faced with contradictory research findings, Americans often resolved the contradiction by siding with one perspective, while Chinese were more likely to accept both perspectives as somewhat true, seeking a “middle way.” These findings are consistent with the idea that Eastern participants might be more comfortable with attitudinal ambivalence.

Peng and Nisbett’s work was developed by research investigating the cross-cultural difference of ambivalence and other similar variables, with dialectical thinking as potential mechanism. In one relevant line of work, Luttrell et al. (2021) investigated attitudinal ambivalence across American and Taiwanese samples. Participants reported their positive and negative reactions to various attitude objects (e.g., “death penalty,” “nuclear power,” “recycling”) to assess objective ambivalence. Subjective ambivalence was measured by asking participants to rate how conflicted, mixed, and indecisive they felt about each topic. Taiwanese participants, who engaged in more dialectical thinking as measured by the Dialectical Self Scale, showed greater objective ambivalence. They also demonstrated a weaker association between objective ambivalence and subjective ambivalence, which Luttrell and colleagues suggested was indicative of greater comfort holding ambivalent attitudes.

Zheng and colleagues (2021) explored cultural differences in mixed emotions and discomfort in response to conflicting stimuli. In one study, participants were presented with predominantly pleasant or unpleasant situations. This was done by presenting participants with advertisements with conflicting images and messages (e.g., a pleasant image with a negative message about the death of a grandparent, or

an unpleasant image with a positive message about moving to a new neighbourhood). After seeing the stimuli, participants then rated their emotional experiences and discomfort. In predominantly pleasant situations, Chinese participants reported greater mixed emotions and discomfort, compared to American participants. However, in predominantly unpleasant situations, American participants reported greater discomfort than Chinese participants. Dialectical thinking, as measured by the Dialectical Self Scale, mediated the cultural differences in mixed emotions and discomfort in pleasant situations.

The impact of dialectical thinking extends beyond mixed emotions and ambivalence to decision-making processes. Research by Ng and Hynie (2016) showed that East Asian Canadians exhibited more indecisiveness than European Canadians, as reflected in greater decision difficulty, post-decision regret, and decision latency. Participants reported their experiences with a real-life decision (choosing a university program) while controlling for the number of alternatives. Indecisiveness was mediated by naïve dialecticism, measured using the Dialectical Self Scale.

Together, these findings highlight cultural variations in ambivalence, mixed emotions, dialecticism, and indecisiveness between East Asian and Western populations. The studies used a range of methods including self-report measures, recall tasks, and responses to hypothetical situations to assess these constructs. East Asians generally experience these ambivalent-relevant states more frequently but also feel less discomfort about them compared to Westerners.

Despite the growing literature on cross-cultural differences in these experiences at the intrapersonal level, there is limited research on their interpersonal implications, particularly in terms of how people perceive ambivalence in others. The current study aims to begin to address this gap by examining cross-cultural

differences in the perception and judgment of ambivalent targets. Specifically, I investigated whether ambivalence is perceived differently by Chinese and British individuals and explore the downstream consequences of these perceptions on social judgments and decision-making.

Cross-cultural differences in inferring ambivalence

Differences in ambivalence perception as a function of different cultural backgrounds has not been addressed in previous research. However, research on cross-cultural emotion recognition has generated findings that are worthy of discussion. On the one hand, Darwin (1872) expressed a *universality* perspective, positing that facial expressions are evolved and universal to all cultural groups (Nelson & Russell, 2013). Consistent with this view, Tracy and Robins (2008) suggested that “basic” emotions (e.g., happiness, sadness and anger) are universally expressed and recognised, as are some emotions of cognitive complexity (e.g., pride, contempt, and shame). On the other hand, Mead (1975) argued that facial expressions are something we learn and control as a function of one’s cultural background. Supporters of this perspective maintain a *perceiver-constructed* view of emotion perception: individuals are active perceivers who understand facial expressions with emotion concepts learned from different social backgrounds. Elfenbein (2013) raised a new theoretical structure to integrate these perspectives: a dialect theory of emotion. This is a linguistic metaphor which acknowledges the basic universality and regards diversity as different “accent” or “dialects” among cultures. As outlined below, this perspective fits well with potential cross-cultural differences in emotion recognition.

First, dialect theory suggests that culturally different emotion expression and recognition are complementary processes. For example, Easterners express happiness primarily through their eyes, while Westerners do so mainly through their mouths

(Park et al., 2014). Consistent with this notion, eye-tracking studies have shown that Easterners focus more on the eyes when detecting others' happiness, whereas Westerners focus more on the mouth (Jack et al., 2009). Moreover, Chinese individuals tend to suppress emotion expression (e.g., "I keep my emotions to myself.") more than Americans (Wei et al., 2013). In the context of emotion recognition, the eyes may provide cues to hidden or suppressed emotions among Chinese perceivers. This suggests that Chinese individuals should be more focused on others' eyes when perceiving others' ambivalence, relative to Westerners.

Second, members from different cultural groups show an in-group advantage in judging emotions from non-verbal cues, including facial expressions, voice, and body expression (Elfenbein, 2013). Evidence from cultural neuroscience has demonstrated that both Japanese and American participants had greater amygdala activation when presented with emotional faces of ingroup members compared to outgroup members (Barrett et al., 2011; Chiao et al., 2008). Taken together, these lines of research suggest that 1) individuals should be able to detect ambivalence from targets within and beyond their own culture and 2) Easterners and Westerners should adopt different strategies in ambivalence perception from facial expressions, with Easterners focusing greater attention on the eyes, and Westerners focusing greater attention on the mouth.

In my previous experiments, I investigated how dispositional ambivalence was perceived among participants from the UK. Across these experiments, a subjectively non-ambivalent target was perceived as less warm but more competent than subjectively ambivalent targets. Additionally, the non-ambivalent target was perceived as placing greater importance on self-enhancement values, being particularly well suited for assertive professions, and sharing fewer resources. However, there is

evidence suggesting that individuals from different cultural backgrounds may perceive ambivalence-related constructs differently. For instance, individuals from Eastern backgrounds tend to have more mixed evaluations of self-concepts, self-evaluations, and group affiliations compared to those from Western backgrounds. These cultural differences are likely influenced by dialectical thinking (Hamamura et al., 2008; Luttrell et al., 2021). Therefore, in my current experiment, I aim to replicate Experiment 3 while localising certain items, specifically examining if ambivalence is perceived differently within an Eastern cultural context. As in previous experiments, I also tested the mediating role of warmth and competence.

Method

Participants.

86 participants (64 females, 14 males, 1 other, 7 prefer not to say; $M_{\text{age}} = 20.82$ years; range = 18 to 46) were recruited from Wuhan University. Each participant received a payment of ¥ 10 (~ £1.10) for their participation. Seven additional participants failed the attention check and were excluded from the analysis. 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 my sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.138$.

Method

In this experiment participants read a verbal description of a target's dispositional ambivalence. The presented descriptions and questions were based on those used in Experiments 2-6, with minor some changes. I also asked participants to predict the targets' behaviour in a dictator game and link the classification images with the written descriptions.

Apparatus/Materials

After providing consent, participants completed the questionnaire via Qualtrics. First, participants rated all three descriptions on the attributes measured in Experiment 5. These descriptions that were forward translated and backward translated by the researcher and an undergraduate student. The descriptions and attributes were presented in random order (except for having mixed views, which was presented at first).

Second, participants rated the three targets (in a random order) on how they would expect to interact with the three targets in a range of scenarios. These included items from Experiments 4 and 6, with some minor adjustments made to ensure the items were relevant and meaningful to the Chinese student sample.

a) Imagine that you are a *computer* salesperson interacting with the person in the picture above.

b) Based solely on this picture, how easy do you think it will be to persuade them to buy the *laptop*?

c) How likely would you be to vote for this person if they were running for the *NPC deputy*? How much would you trust this person to look after a sick *friend* of yours?).

Third, participants rated the three targets on their perceived values, suitability for different professions and roles, and how they expected the targets to behave. That is, they indicated:

a) how many tokens they believed the target would share with them if the target was the dictator.

b) how many tokens they would share with the target if they were the dictator.

Finally, participants were individually presented with the three classification images from Experiment 4 (presented in a random order) and indicated the likelihood

that the image was the target described in the text, before being presented with the three images together, and selecting the single image they thought was most likely to be the individual in one of the written descriptions. This sequence was then repeated for the two remaining descriptions. After completing the image rating and matching tasks, participants filled out an attention check question that instructed them to “Please select the fifth option” from a list of choices (1, 2, 3, 4, 5, 6, 7). They then completed measures of trait ambivalence, intellectual humility, dialectical thinking, time spent on different social media, how easy the questions were, and demographic questions.

Results

I begin the results by discussing the findings based on the Chinese sample. Following those analyses, I explore differences between the British sample from Experiments 2 (dictator game) and 3 (behaviour items and job fit) and the Chinese sample, when the outcome measures are aligned.

Evaluation of Attributes

Table 5.1 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 Table 5.2.

First, I 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 $p \leq .008$). These findings are consistent with the results I obtained with UK participants.

Next, I examined whether the three descriptions differed in perceived warmth and competence (using the same items as in Experiment 6). The results showed that the A-C target was evaluated as warmer than both the A-ALL and NA targets (both p

$\leq .009$), who themselves did not differ ($p = .782$)

The NA target was evaluated as more competent than both the A-C and A-ALL targets, who themselves differed (all $p \leq .039$). Again, these findings replicate the results I obtained with UK participants.

Table 5.1*Mean Ratings on the Aggregated Attributes for the Three Descriptions - Experiment 9*

	A-C	A-ALL	NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Mixed	3.85 ^b [3.49, 4.21]	4.29 ^a [3.96, 4.63]	2.58 ^c [2.26, 2.9]	$F(2, 170) = 34.33, MSE = 1.97, p < .001, \eta^2_p = .288$
Warm	4.18 ^a [3.97, 4.40]	3.77 ^b [3.52, 4.01]	3.81 ^b [3.6, 4.02]	$F(2, 166) = 5.61, MSE = 0.78, p = .004, \eta^2_p = .063$
Competent	3.30 ^b [3.09, 3.51]	3.06 ^c [2.84, 3.27]	4.83 ^a [4.6, 5.06]	$F(2, 164) = 74.09, MSE = 1.04, p < .001, \eta^2_p = .475$

Note. Superscripts that differ in one row represent a mean difference $p < .05$. 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 5.2*Mean Ratings on Fourteen Attributes for the Three Descriptions - Experiment 9*

	A-C	A-ALL	NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Mixed	3.85 ^b [3.49, 4.21]	4.29 ^a [3.96, 4.63]	2.58 ^c [2.26, 2.90]	$F(2, 170) = 34.33, MSE = 1.97, p < .001, \eta^2_p = .288$
Openness	4.42 ^a [4.11, 4.73]	3.92 ^b [3.58, 4.26]	3.73 ^b [3.41, 4.05]	$F(2, 170) = 5.01, MSE = 2.16, p = .008, \eta^2_p = .056$
Trustworthiness	4.33 ^a [4.06, 4.59]	3.63 ^b [3.31, 3.94]	3.83 ^b [3.51, 4.14]	$F(2, 170) = 6.82, MSE = 1.63, p = .001, \eta^2_p = .074$
Warmth	4.20 ^a [3.92, 4.48]	3.88 ^{ab} [3.57, 4.20]	3.57 ^b [3.32, 3.82]	$F(2, 170) = 6.03, MSE = 1.41, p = .003, \eta^2_p = .066$
Educated	4.66 ^a [4.40, 4.92]	4.43 ^{ab} [4.14, 4.72]	4.16 ^b [3.89, 4.44]	$F(2, 170) = 4.69, MSE = 1.15, p = .010, \eta^2_p = .052$
Decisiveness	3.05 ^b [2.76, 3.33]	2.49 ^c [2.22, 2.75]	5.01 ^a [4.69, 5.33]	$F(2, 170) = 88.40, MSE = 1.71, p < .001, \eta^2_p = .510$
Competence	4.01 ^b [3.75, 4.27]	3.67 ^c [3.37, 3.96]	4.43 ^a [4.13, 4.73]	$F(2, 166) = 8.11, MSE = 1.51, p < .001, \eta^2_p = .089$
Attractiveness	3.94 ^a [3.68, 4.21]	3.64 ^b [3.33, 3.94]	4.04 ^a [3.73, 4.34]	$F(2, 168) = 2.71, MSE = 1.37, p = .070, \eta^2_p = .031$
Dominance	2.98 ^b [2.69, 3.27]	2.82 ^b [2.52, 3.12]	5.00 ^a [4.65, 5.35]	$F(2, 166) = 56.54, MSE = 2.20, p < .001, \eta^2_p = .405$
Masculinity	3.14 ^b [2.89, 3.39]	3.24 ^b [2.95, 3.54]	4.69 ^a [4.38, 4.99]	$F(2, 170) = 37.46, MSE = 1.71, p < .001, \eta^2_p = .306$
Rich	3.54 ^b [3.25, 3.82]	3.40 ^b [3.11, 3.70]	3.94 ^a [3.66, 4.22]	$F(2, 166) = 5.05, MSE = 1.30, p = .007, \eta^2_p = .057$
Competitive	3.36 ^b [3.06, 3.67]	3.33 ^b [3.01, 3.65]	4.68 ^a [4.33, 5.04]	$F(2, 168) = 21.01, MSE = 2.41, p < .001, \eta^2_p = .200$
Age	23.86 ^b [22.39, 25.34]	23.22 ^b [21.93, 24.51]	30.47 ^a [27.56, 33.37]	$F(2, 144) = 12.85, MSE = 91.38, p < .001, \eta^2_p = .151$
Likeability	3.95 [3.68, 4.22]	3.67 [3.37, 3.97]	3.80 [3.52, 4.08]	$F(2, 168) = 1.52, MSE = 1.11, p = .221, \eta^2_p = .018$

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

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

Expectations of Interactions with the Targets

To examine how participants would expect to interact with the targets, I conducted one-way ANOVAs (see Table 5.3). Starting with the items used in Experiment 2, I found that the non-ambivalent target was judged as being more likely to take the lead when working in a pair. This replicates what I found in previous experiments.

Participants reported that the A-C target was better suited to look after the participant's sick friend, as well as being more likely to donate to a charity. Participants reported that they were more willing to date and vote for the A-C target compared to the A-ALL target. There was no effect on judgments of volunteering at a homeless shelter and perceived persuadability.

Interestingly, the findings on the moral behaviour, political support, and dating items are somewhat different from what I found with UK participants. 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.

Table 5.3*Judgments about Interacting with Target - Experiment 9*

	A-C	A-ALL	NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Take the Lead	3.12 ^b [2.84, 3.39]	2.13 ^c [1.85, 2.41]	4.23 ^a [3.85, 4.61]	$F(2, 170) = 39.80, MSE = 2.40, p < .001, \eta^2_p = .319$
Look After	3.81 ^a [3.55, 4.07]	3.22 ^b [2.94, 3.50]	3.85 ^a [3.56, 4.14]	$F(2, 170) = 6.37, MSE = 1.68, p = .002, \eta^2_p = .070$
Date	3.55 ^a [3.27, 3.82]	2.86 ^b [2.58, 3.14]	3.21 ^{ab} [2.93, 3.48]	$F(2, 170) = 6.16, MSE = 1.64, p = .003, \eta^2_p = .068$
Donate	3.95 ^a [3.73, 4.17]	3.50 ^b [3.25, 3.75]	3.62 ^b [3.37, 3.86]	$F(2, 166) = 4.11, MSE = 1.13, p = .018, \eta^2_p = .047$
Vote	3.76 ^a [3.47, 4.04]	2.93 ^b [2.63, 3.23]	3.36 ^{ab} [3.04, 3.68]	$F(2, 170) = 6.51, MSE = 2.25, p = .002, \eta^2_p = .071$
Volunteer	3.98 ^a [3.77, 4.19]	3.71 ^b [3.46, 3.96]	3.64 ^{ab} [3.38, 3.90]	$F(2, 170) = 2.13, MSE = 1.28, p = .122, \eta^2_p = .024$
Persuade	3.69 [3.41, 3.96]	3.94 [3.60, 4.29]	3.48 [3.14, 3.81]	$F(2, 170) = 1.98, MSE = 2.36, p = .142, \eta^2_p = .023$

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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. ** $p < .01$, *** $p < .001$.

Professions and Office Role Ratings

I 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 5.4. The non-ambivalent target was judged as best suited for the roles of soldier, salesperson, business executive and boss (all $p < .001$). These results largely replicate my previous results. The A-C target was judged as best suited for the roles of social worker, colleague and scientist (all $p \leq .013$).

Among UK participants, 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 ($p < .001$) and a boss ($p = .051$).

Table 5.4*Judgments on Professions and Roles - Experiment 9*

	Target A-C	Target A-ALL	Target NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Soldier	2.84 ^b [2.57, 3.10]	2.45 ^c [2.18, 2.72]	4.55 ^a [4.24, 4.85]	$F(2, 170) = 62.07, MSE = 1.72, p < .001, \eta^2_p = .422$
Salesperson	3.23 ^b [2.96, 3.50]	2.93 ^b [2.67, 3.19]	3.81 ^a [3.52, 4.11]	$F(2, 170) = 10.82, MSE = 1.60, p < .001, \eta^2_p = .113$
Business Exec	3.27 ^b [2.96, 3.57]	3.02 ^b [2.70, 3.35]	4.07 ^a [3.73, 4.41]	$F(2, 170) = 9.71, MSE = 2.65, p < .001, \eta^2_p = .103$
Boss	3.16 ^b [2.85, 3.47]	2.92 ^b [2.62, 3.22]	3.97 ^a [3.65, 4.28]	$F(2, 170) = 11.15, MSE = 2.31, p < .001, \eta^2_p = .116$
Social worker	3.95 ^a [3.70, 4.21]	3.50 ^b [3.20, 3.80]	3.38 ^b [3.10, 3.67]	$F(2, 170) = 4.43, MSE = 1.76, p = .013, \eta^2_p = .050$
Colleague	4.20 ^a [3.98, 4.42]	3.52 ^b [3.25, 3.79]	3.27 ^b [2.97, 3.56]	$F(2, 170) = 14.05, MSE = 1.41, p < .001, \eta^2_p = .142$
Scientist	3.84 ^a [3.55, 4.12]	3.99 ^a [3.66, 4.32]	3.23 ^b [2.90, 3.57]	$F(2, 170) = 5.67, MSE = 2.43, p = .004, \eta^2_p = .063$
Politician	3.48 [3.19, 3.77]	3.26 [2.93, 3.59]	3.64 [3.31, 3.96]	$F(2, 168) = 1.30, MSE = 2.34, p = .275, \eta^2_p = .015$

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

The Number of Tokens Allocated

To examine whether the target's description influenced the sharing of tokens, I conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) \times 2 (Dictator: target, self) repeated ANOVA (see Table 5.5). The main effect of target was significant, $F(2, 160) = 15.07, p < .001, \eta^2_p = 0.159$; participants reported that fewer tokens would be shared in response to the non-ambivalent target compared to the ambivalent targets ($M_{NA} = 36.24, M_{A-C} = 45.72, M_{A-ALL} = 46.64$, both $p < .001$). The means for the two ambivalent targets did not differ ($p = .555$). The main effect of dictator was not significant, $F(1, 80) = 0.27, p = .608, \eta^2_p = 0.003$. These largely replicate my previous experiments with UK participants.

More importantly, there was a significant interaction, $F(2, 160) = 3.72, p = .026, \eta^2_p = 0.044$. When the target was the dictator, the non-ambivalent target was expected to share significantly fewer tokens than both ambivalent targets, $F(2, 166) = 17.47, MSE = 389.74, p < .001, \eta^2_p = .174$. Similarly, when the participant was the dictator, they would share significantly fewer tokens with the non-ambivalent target than with both ambivalent targets, $F(2, 162) = 4.01, MSE = 233.14, p = .020, \eta^2_p = .047$.

Table 5.5*The Number of Tokens the Dictator Would Offer - Experiment 9*

	A-C	A-ALL	NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
T_Dictator	46.93 ^a [43.52, 50.34]	49.33 ^a [46.15, 52.52]	32.68 ^b [26.86, 38.50]	$F(2, 166) = 17.47, MSE = 389.74, p < .001, \eta^2_p = .174$
P_Dictator	44.18 ^a [40.09, 48.28]	43.71 ^a [39.71, 47.70]	38.11 ^b [33.35, 42.87]	$F(2, 162) = 4.01, MSE = 233.14, p = .020, \eta^2_p = .047$

Note. Superscripts that differ in one row represent a mean difference $< .05$. T_Dictator = target is the dictator; P_Dictator = participant is the dictator. 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.

Perceptions of the Targets' Values

To examine whether the targets differed in their perceived values, I 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 significant, $F(2, 170) = 7.01, p = .001, \eta^2_p = 0.076$. Overall, the A-ALL target was perceived to attach least importance to the values compared to the A-C and NA targets (both $p < .041$), who themselves did not differ ($M_{A-ALL} = 58.91, M_{NA} = 61.85, M_{A-C} = 63.88$). The main effect of value type was significant, $F(3, 255) = 22.83, p < .001, \eta^2_p = 0.212$. Overall, the targets were perceived to attach least importance to openness to change values compared to other three values (all $p < .001$), and more importance to conservation values compared to self-enhancement values ($p = .005, M_{Conservation} = 66.49, M_{ST} = 64.65, M_{SE} = 61.70, M_{OIC} = 53.35$). The means between the other values did not differ ($p \geq .127$).

More importantly, there was a significant interaction, $F(6, 510) = 11.43, p < .001, \eta^2_p = 0.119$, which was followed up via one-way ANOVAs (see Table 5.6). I found that that the non-ambivalent target was perceived to attach less importance to self-transcendence values compared to both ambivalent targets (both $p \leq .002$), who themselves did not differ ($p = .153$). 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 $p = .013$. These results closely replicate my findings using classification images with participants from the UK. The A-C targets was perceived as attaching more importance to openness to changes values than the A-ALL target at $p = .021$, and more importance to conservation values than the NA target at $p = .030$.

Table 5.6*Judgments about Values of Each Target - Experiment 9*

	A-C	A-ALL	NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Self-transcendence	69.87 ^a [65.96, 73.78]	66.79 ^a [62.62, 70.96]	57.29 ^b [52.04, 62.54]	$F(2, 170) = 12.03, MSE = 307.53, p < .001, \eta^2_p = .124$
Self-enhancement	58.01 ^b [53.68, 62.34]	52.06 ^c [46.72, 57.40]	75.02 ^a [70.69, 79.36]	$F(2, 170) = 33.49, MSE = 364.70, p < .001, \eta^2_p = .283$
Openness to change	57.50 ^a [52.81, 62.19]	50.64 ^b [44.82, 56.46]	51.92 ^{ab} [45.63, 58.2]	$F(2, 170) = 1.78, MSE = 643.35, p = .172, \eta^2_p = .021$
Conservation	70.15 ^a [66.12, 74.19]	66.15 ^{ab} [61.25, 71.05]	63.16 ^b [57.89, 68.44]	$F(2, 170) = 2.72, MSE = 388.48, p = .069, \eta^2_p = .031$

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

Linking the Classification Images to the Verbal Descriptions

To examine whether participants linked the target's ambivalence with the classification images, I 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. The main effect of image was insignificant, $F_{\text{image}}(2, 170) = 0.06, p = .941, \eta^2_p = 0.001$. The main effect of target was significant, $F_{\text{target}}(2, 170) = 4.08, p = .019, \eta^2_p = 0.046$. Overall, the A-ALL target was perceived least likely to be linked with the images (both $p \leq .044$; $M_{\text{A-ALL}} = 4.85, M_{\text{NA}} = 5.28, M_{\text{A-C}} = 5.12$). However, as expected, there was a significant interaction, $F(4, 340) = 10.25, p < .001, \eta^2_p = 0.108$ (see Table 5.7). To understand the pattern of the interaction I conducted a one-way repeated measures ANOVA for each target. For the target who described themselves as ambivalent about controversial issues, there was no effect ($p \geq .201$). For the target who described themselves as ambivalent about everything, the non-ambivalent image was judged as least likely to be that individual compared to both ambivalent images, both $p < .012$, with no difference between the ambivalent images, $p = .383$. 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, $p = .886$. These largely replicate what I found with the UK participants.

Table 5.7*The Likelihood That Each Image Was Each Target - Experiment 9*

	Image A-C	Image A-ALL	Image NA	
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Target A-C	5.27 [4.86, 5.67]	5.22 [4.82, 5.62]	4.86 [4.42, 5.30]	$F(2, 170) = 1.11, MSE = 3.85, p = .332, \eta^2_p = .013$
Target A-ALL	5.06 ^a [4.62, 5.50]	5.29 ^a [4.89, 5.69]	4.21 ^b [3.77, 4.65]	$F(2, 170) = 7.12, MSE = 3.92, p = .001, \eta^2_p = .077$
Target NA	4.83 ^b [4.35, 5.30]	4.79 ^b [4.40, 5.18]	6.21 ^a [5.76, 6.66]	$F(2, 170) = 14.19, MSE = 3.97, p < .001, \eta^2_p = .143$

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

Mediation Analyses

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, I 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 previous experiments.

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.

Secondly, perceived ambivalence did not predict warmth, $\beta = -0.03$, $SE = 0.03$, $F(1, 244) = 0.16$, $p = .688$, $R^2 = 0.00$; while negatively predicting competence, $\beta = -0.29$, $SE = 0.05$, $F(1, 244) = 23.19$, $p < .001$, $R^2 = 0.09$. In other words, targets who were perceived as more ambivalent were also perceived as less competent (for total and direct effects, see Table 5.8).

Taking perceived ambivalence, warmth and competence into consideration together, I found that competence played a predominant role in mediating outcomes, whereas there was no effect for warmth.

Table 5.8*The Effect of Inferred Ambivalence on Expected Social Interactions Through Warmth and Competence – Experiment 9*

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect [Bootstrap 95% CI]	
					Total	Competence
Take the Lead	-0.12* (0.06)	-0.04 (0.10)	0.43*** (0.08)	-0.24*** (0.06)	-0.13 [-0.19, -0.07]	-0.13 [-0.19, -0.07]
Look After	-0.09 (0.05)	0.13*¹ (0.08)	0.13*² (0.07)	-0.13* (0.05)	-0.04 [-0.09, 0.01]	-0.04 [-0.09, 0.01]
Date	0.07 (0.05)	0.18** (0.08)	0.17* (0.07)	0.01 (0.05)	-0.05 [-0.11, 0.00]	-0.04 [-0.09, -0.00]
Donate	-0.04 (0.04)	0.17* (0.07)	-0.04 (0.06)	-0.03 (0.04)	0.01 [-0.04, 0.06]	0.01 [-0.03, 0.06]
Vote	0.03 (0.05)	0.24*** (0.09)	0.15* (0.08)	-0.02 (0.05)	-0.05 [-0.11, 0.01]	-0.04 [-0.09, -0.00]
		X + M -> Y			Total effect	
Take the Lead	$F(3, 242) = 23.01, p < .001, R^2 = 0.22$			$F(1, 244) = 15.35, p < .001, R^2 = 0.06$		
Look After	$F(3, 242) = 4.70, p = .003, R^2 = 0.06$			$F(1, 244) = 4.14, p = .043, R^2 = 0.02$		
Date	$F(3, 242) = 6.61, p < .001, R^2 = 0.08$			$F(1, 244) = 0.04, p = .835, R^2 = 0.00$		
Donate	$F(3, 236) = 2.30, p = .079, R^2 = 0.03$			$F(1, 238) = 0.19, p = .659, R^2 = 0.00$		
Vote	$F(3, 242) = 8.55, p < .001, R^2 = 0.10$			$F(1, 244) = 0.09, p = .763, R^2 = 0.00$		

Note. *1 $p = .056$, *2 $p = .065$, * $p < .05$, ** $p < .01$, *** $p < .001$

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 a soldier, and less suited for a scientist (see Table 5.9).

Secondly, as noted earlier, perceived ambivalence did not predict warmth and negatively predicted competence.

Third, taking perceived ambivalence, warmth and competence into consideration together, I 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. These largely replicate what I found with the UK participants.

Table 5.9*The Effect of Inferred Ambivalence on Suitability for Professions Through Warmth and Competence – Experiment 9*

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect [Bootstrap 95% CI]	
					Total	Competence
Soldier	-0.17** (0.05)	-0.10* (0.09)	0.43*** (0.08)	-0.30*** (0.06)	-0.13 [-0.20, -0.06]	-0.13 [-0.20, -0.06]
Salesperson	-0.05 (0.05)	-0.02 (0.08)	0.28*** (0.07)	-0.13* (0.05)	-0.08 [-0.14, -0.03]	-0.08 [-0.14, -0.03]
Business Exec	-0.01 (0.06)	0.04 (0.09)	0.43*** (0.08)	-0.14* (0.06)	-0.13 [-0.20, -0.06]	-0.13 [-0.20, -0.06]
Boss	-0.01 (0.05)	0.06 (0.09)	0.39*** (0.08)	-0.13* (0.06)	-0.12 [-0.18, -0.06]	-0.11 [-0.17, -0.06]
Social worker	-0.03 (0.05)	0.14* (0.08)	-0.15* (0.07)	0.01 (0.05)	0.04 [-0.00, 0.09]	0.04 [0.00, 0.09]
Colleague	-0.01 (0.05)	0.25*** (0.08)	-0.14* (0.07)	0.03 (0.05)	0.03 [-0.02, 0.09]	0.04 [-0.00, 0.09]
Scientist	0.16* (0.06)	0.13* (0.10)	-0.02 (0.08)	0.17** (0.06)	0.00 [-0.05, 0.05]	0.01 [-0.04, 0.05]
		X + M -> Y			Total effect	
Soldier		$F(3, 242) = 26.83, p < .001, R^2 = 0.25$			$F(1, 244) = 23.98, p < .001, R^2 = 0.09$	
Salesperson		$F(3, 242) = 7.31, p < .001, R^2 = 0.08$			$F(1, 244) = 4.02, p = .046, R^2 = 0.02$	
Business Exec		$F(3, 242) = 19.77, p < .001, R^2 = 0.20$			$F(1, 244) = 4.57, p = .034, R^2 = 0.02$	
Boss		$F(3, 242) = 16.73, p < .001, R^2 = 0.17$			$F(1, 244) = 4.23, p = .041, R^2 = 0.02$	
Social worker		$F(3, 242) = 2.38, p = .070, R^2 = 0.03$			$F(1, 244) = 0.05, p = .831, R^2 = 0.00$	
Colleague		$F(3, 242) = 5.22, p = .002, R^2 = 0.06$			$F(1, 244) = 0.16, p = .692, R^2 = 0.00$	
Scientist		$F(3, 242) = 3.65, p = .013, R^2 = 0.04$			$F(1, 244) = 6.98, p = .009, R^2 = 0.03$	

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

Cross-Cultural Analyses

To examine whether ambivalent others were perceived differently across cultural backgrounds, I conducted a series of 2 (Culture: China, UK) \times 3 (Target: A-C, A-ALL, NA) mixed measures ANOVAs. For parsimony, some outcome variables (e.g., the 4 behavioural items) were aggregated. The focus of the interpretation is on interaction effects, as these reflect differences between the British and Chinese samples. The results are shown in Tables 5.10-5.14.

It is important to note that the behavioural items, such as the sharing behaviour in Experiment 2, the take the lead and moral behaviours in Experiment 3, and the job fit items in Experiment 3, were assessed using a between-subjects design with the UK sample. However, with the Chinese sample, these items were measured using a within-subjects design. To ensure comparability of the results in the two-way ANOVA, I selected the Chinese participants' ratings of the first target they rated and entered those data into the ANOVA. This approach allowed for a more direct comparison of the cross-cultural differences in perceptions of ambivalent and non-ambivalent targets on these behavioural and job fit outcomes.

For simplicity, I focused on looking at the interactions of the attributes (see Table 5.10). For the perceptions of attributes, Chinese participants rated the ambivalent targets as more mixed, warm, and competent compared to the UK participants (all $p < .001$). Chinese participants rated the non-ambivalent target as less mixed, and warm compared to the UK participants (all $p < .005$).

Table 5.10

Two-Way ANOVA Results for Perceptions of Ambivalent Others on Attributes: Cross-Cultural Comparison Between China and the UK – Experiment 9

	A-C	A-ALL	NA	Interactions
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Mixed	5.91 ^b [5.74, 6.07]	6.34 ^a [6.18, 6.49]	2.04 ^c [1.83, 2.24]	$F(2, 496) = 75.72, MSE = 1.68, p < .001, \eta^2_p = .234$
	3.85 ^b [3.49, 4.21]	4.29 ^a [3.96, 4.63]	2.58 ^c [2.26, 2.90]	
Warmth	4.90 ^b [4.79, 5.01]	5.02 ^a [4.89, 5.14]	3.18 ^c [3.04, 3.32]	$F(2, 492) = 71.03, MSE = 0.74, p < .001, \eta^2_p = .224$
	4.18 ^a [3.97, 4.40]	3.77 ^b [3.52, 4.01]	3.81 ^b [3.60, 4.02]	
Competence	3.88 ^b [3.74, 4.01]	3.72 ^c [3.56, 3.89]	4.77 ^a [4.60, 4.94]	$F(2, 490) = 7.39, MSE = 1.16, p = .001, \eta^2_p = .029$
	3.30 ^b [3.09, 3.51]	3.06 ^c [2.84, 3.27]	4.83 ^a [4.60, 5.06]	

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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. **For each item, the top row represents data from the UK sample, while the bottom row represents data from the China sample.**

Table 5.11*Two-Way ANOVA Results for Perceptions of Ambivalent Others on Behaviours: Cross-Cultural Comparison between China and the UK – Experiment 9*

	A-C	A-ALL	NA	Interactions
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
LookAfter	4.23 ^a [3.90, 4.56]	3.83 ^b [3.49, 4.17]	2.82 ^c [2.51, 3.13]	$F(2, 244) = 8.60, MSE = 1.44, p < .001, \eta^2_p = .066$
	3.26 [2.67, 3.86]	2.92 [2.54, 3.30]	3.31 [2.87, 3.75]	
Date	3.80 ^a [3.47, 4.13]	3.38 ^b [3.00, 3.76]	2.34 ^c [1.97, 2.71]	$F(2, 244) = 7.04, MSE = 1.68, p = .001, \eta^2_p = .055$
	2.63 [2.17, 3.09]	2.68 [2.26, 3.10]	2.79 [2.29, 3.30]	
Volunteer	3.55 ^a [3.24, 3.87]	3.76 ^a [3.47, 4.05]	2.44 ^b [2.17, 2.71]	$F(2, 244) = 4.19, MSE = 1.22, p = .016, \eta^2_p = .033$
	3.79 [3.22, 4.36]	3.71 [3.40, 4.02]	3.38 [2.89, 3.87]	
Donate	3.66 ^a [3.37, 3.95]	3.66 ^a [3.39, 3.92]	2.66 ^b [2.39, 2.93]	$F(2, 242) = 3.28, MSE = 1.08, p = .039, \eta^2_p = .026$
	3.63 [3.03, 4.24]	3.50 [3.14, 3.86]	3.31 [2.96, 3.66]	
TakeLead	2.91 ^b [2.56, 3.26]	2.33 ^c [2.03, 2.62]	4.60 ^a [4.22, 4.98]	$F(2, 244) = 0.00, MSE = 1.67, p = .996, \eta^2_p = .000$
	2.37 ^b [1.78, 2.95]	1.76 ^b [1.42, 2.11]	4.07 ^a [3.40, 4.74]	
Persuade	3.80 [3.49, 4.12]	4.02 [3.65, 4.38]	3.58 [3.16, 4.00]	$F(2, 244) = 0.95, MSE = 1.97, p = .389, \eta^2_p = .008s$
	4.05 ^{ab} [3.31, 4.80]	4.26 ^a [3.75, 4.77]	3.28 ^b [2.74, 3.81]	
Vote	2.89 [2.51, 3.27]	2.45 [2.02, 2.88]	2.74 [2.32, 3.16]	$F(2, 244) = 1.75, MSE = 2.01, p = .176, \eta^2_p = .014$
	3.58 ^a [2.99, 4.17]	2.34 ^b [1.97, 2.72]	2.59 ^b [2.13, 3.05]	

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

For each item, the top row represents data from the UK sample, while the bottom row represents data from the China sample.

Table 5.12

Two-Way ANOVA Results for Perceptions of Ambivalent Others on Professions and Roles: Cross-Cultural Comparison between China and the UK – Experiment 9

	A-C	A-ALL	NA	Interactions
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Politician	2.89 ^b [2.49, 3.30]	2.38 ^c [2.01, 2.75]	3.62 ^a [3.14, 4.10]	$F(2, 243) = 3.30, MSE = 2.36, p = .039, \eta^2_p = .026$
	3.69 [3.15, 4.24]	2.92 [2.28, 3.56]	3.17 [2.56, 3.77]	
Scientist	3.88 ^a [3.53, 4.22]	3.79 ^a [3.38, 4.21]	2.46 ^b [2.06, 2.86]	$F(2, 244) = 4.06, MSE = 2.13, p = .019, \eta^2_p = .032$
	3.56 [3.06, 4.05]	4.12 [3.48, 4.75]	3.50 [2.87, 4.13]	
Salesperson	3.11 ^b [2.80, 3.41]	2.41 ^c [2.10, 2.73]	4.44 ^a [4.03, 4.85]	$F(2, 244) = 6.56, MSE = 1.70, p = .002, \eta^2_p = .051$
	2.83 [2.39, 3.28]	2.92 [2.29, 3.56]	3.33 [2.80, 3.87]	
Social worker	4.32 ^a [3.97, 4.67]	3.33 ^b [2.92, 3.73]	2.38 ^c [2.03, 2.73]	$F(2, 244) = 6.39, MSE = 1.89, p = .002, \eta^2_p = .050$
	3.89 [3.44, 4.34]	3.92 [3.32, 4.53]	3.50 [2.94, 4.06]	
Colleague	4.20 ^a [3.86, 4.53]	4.09 ^a [3.74, 4.44]	2.90 ^b [2.49, 3.31]	$F(2, 244) = 3.60, MSE = 1.60, p = .029, \eta^2_p = .029$
	4.39 ^a [4.03, 4.74]	3.73 ^b [3.28, 4.18]	3.71 ^b [3.20, 4.21]	
Boss	3.46 ^a [3.08, 3.85]	2.79 ^b [2.45, 3.14]	3.12 ^{ab} [2.67, 3.57]	$F(2, 244) = 3.01, MSE = 2.18, p = .051, \eta^2_p = .024$
	3.17 ^{ab} [2.62, 3.72]	2.46 ^b [1.91, 3.01]	3.88 ^a [3.24, 4.51]	
CEO	2.89 ^b [2.58, 3.21]	2.40 ^c [2.06, 2.74]	4.28 ^a [3.85, 4.71]	$F(2, 244) = 1.27, MSE = 2.00, p = .282, \eta^2_p = .010$
	3.39 ^{ab} [2.83, 3.95]	2.65 ^b [2.05, 3.26]	4.04 ^a [3.40, 4.68]	
Soldier	2.64 ^b [2.32, 2.97]	1.83 ^c [1.54, 2.11]	4.78 ^a [4.33, 5.23]	$F(2, 244) = 1.83, MSE = 1.82, p = .162, \eta^2_p = .015$
	2.72 ^b [2.19, 3.25]	2.42 ^b [1.85, 3.00]	4.50 ^a [3.96, 5.04]	

Note. Superscripts that differ in one row represent a mean difference $< .05$. 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.

For each item, the top row represents data from the UK sample, while the bottom row represents data from the China sample.

Structure and Ratings of the Behaviours

To explore the factorial structure of the behaviour items with significant interactions, all four items (look after a sick friend, date, volunteer, and donate) were subjected to an exploratory factor analysis with Varimax rotation. The Kaiser-Meyer-Olkin sampling adequacy indicated that correlation structure was adequate for factor analyses, KMO = .68, Bartlett's test of sphericity $\chi^2 (6) = 270.99, p < .001$. The principal axis factor analysis with a cut-off point of .40 and the Kaiser's criterion of eigenvalues greater than 1 (see Field, 2009; Stevens, 2002) yielded a one-factor solution as the best fit for the data, accounting for 44.50% of the variance (Table 5.13).

Table 5.13*Exploratory Factor Analysis of the Moral Behaviour Items*

Items	Factor	Dimension
	1	
Volunteer	.706	
Donate	.696	Behaviour
Look After	.686	composite
Date	.571	

Table 5.14

Two-Way ANOVA Results for Perceptions of Ambivalent Others on Moral and Sharing: Cross-Cultural Comparison between China and the UK – Experiment 9

	A-C	A-ALL	NA	Interactions
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	
Behaviour composite	3.81 ^a [3.57, 4.06]	3.66 ^a [3.41, 3.90]	2.56 ^b [2.32, 2.81]	$F(2, 242) = 9.86, MSE = 0.73, p < .001, \eta^2_p = .075$
	3.33 [3.03, 3.63]	3.23 [2.99, 3.46]	3.20 [2.89, 3.51]	
T_Dictator	43.26 ^a [40.39, 46.12]	40.63 ^a [37.49, 43.76]	26.74 ^b [22.30, 31.18]	$F(2, 301) = 4.43, MSE = 285.14, p = .013, \eta^2_p = .029$
	46.85 ^a [39.26, 54.45]	54.75 ^a [49.21, 60.29]	25.18 ^b [16.45, 33.91]	
P_Dictator	39.47 [35.92, 43.03]	35.43 [31.14, 39.72]	38.68 [34.56, 42.79]	$F(2, 299) = 2.54, MSE = 321.87, p = .081, \eta^2_p = .017$
	46.54 ^a [38.21, 54.87]	44.26 ^{ab} [36.53, 51.99]	35.94 ^b [28.88, 42.99]	

Note. Superscripts that differ in one row represent a mean difference $< .05$. T_Dictator = target is the dictator; P_Dictator = participant is the dictator. 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. **For each item, the top row represents data from the UK sample, while the bottom row represents data from the China sample.**

Discussion

The aim of the current experiment was to serve as an initial investigation of whether ambivalence is perceived differently among individuals with an Eastern background. Consistent with my previous experiments with UK samples, participants inferred targets' ambivalence, and the non-ambivalent target was judged as colder and more competent than the ambivalent targets. Also consistent with previous experiments, the targets differed in their suitability for professions and office roles. Overall, the results regarding how participants make judgement about a target's dispositional ambivalence on downstream variables (e.g., moral behaviours and sharing) largely replicated what I found in the UK.

However, the underlying mechanism was different across Chinese and UK samples. Consistent with previous findings, warmth and competence predicted outcome variables. Within the UK sample in Experiment 3, warmth played a predominant role in mediating how perceived ambivalence influenced outcome variables. Among the Chinese sample, perceived ambivalence did not directly predict perceived warmth or outcome variables. Instead, competence *fully* mediated the link between perceived ambivalence and outcome variables. My ANOVA analyses also suggest the same pattern. That is, the ambivalent targets were evaluated as less warm, and the non-ambivalent target was perceived warmer in the Chinese sample compared to the British sample. The non-ambivalent target was perceived as less likely to be engaged in moral behaviour by the Chinese participants than the UK participants. Taken together, perceived ambivalence influences perceived warmth and warmth related items more for the UK participants than for the Chinese participants.

In terms of the negative link between perceived ambivalence and perceived competence for both Chinese and UK participants, this may be because ambivalence

can signal uncertainty or inconsistency, which may be perceived as a lack of expertise or competence (Pillaud et al., 2018). This finding is consistent with the results from previous experiments in this thesis, where the non-ambivalent target was consistently perceived as more competent than the ambivalent targets (e.g., Experiments 2-6). The consistency of this finding across different methodologies (i.e., verbal descriptions and facial images) and cultural contexts (i.e., UK and China) suggests that the link between ambivalence and perceived competence may be a robust phenomenon.

Moreover, the current findings highlight the importance of considering both warmth and competence dimensions in understanding the social perception of ambivalence. While ambivalence consistently predicted reduced competence perceptions across cultures, its impact on perceived warmth and warmth-related behaviours (e.g., moral behaviours) varied between Chinese and British participants. This underscores the need for a nuanced approach that takes into account the interplay between these fundamental dimensions of social cognition (Fiske, 2018) and cultural factors when examining the interpersonal consequences of attitudinal ambivalence.

With regards to the links between warmth, competence and downstream variables (e.g., being engaged in moral behaviours, suitability for different professions), the results were convergent with both the Chinese and UK participants. There are consistent with the Stereotype Content Model's (Fiske, 2018) premise that warmth and competence are two fundamental composites of social perception, and my findings are consistent with the notions that these apply across cultures.

The cross-cultural analyses revealed some notable differences in how Chinese and UK participants perceived ambivalent targets. While participants in both cultures were able to infer targets' levels of ambivalence, the role of perceived warmth differed across cultures. For UK participants, perceived ambivalence strongly influenced

warmth ratings, with ambivalent targets rated as warmer than non-ambivalent targets. However, for Chinese participants, differences in perceived warmth between ambivalent and non-ambivalent targets were attenuated. This suggests that perceived attitudinal ambivalence may be less closely tied to judgments of warmth in Chinese culture. Interestingly, this cultural difference in warmth perceptions manifested in downstream consequences, such as Chinese participants rating the non-ambivalent target as less likely to engage in moral behaviours compared to UK participants. These findings highlight the importance of considering cultural factors and differences in how ambivalence relates to fundamental dimensions like warmth and competence when examining the interpersonal implications of dispositional attitudinal ambivalence across cultures (see more details in General Discussion).

Overall, it seems that there may be cultural differences in the relationship between perceived attitudinal ambivalence and perceived warmth. The exact mechanisms underlying this relationship are not yet clear, but it may be related to differences in social cognition and social perception, as well as differences in the values and norms of different cultures. Further research in this area could help to shed more light on the cultural factors that influence social judgments.

Chapter 5 Summary

Chapter 5 investigated cross-cultural differences in the perception and judgment of dispositional ambivalence. Experiment 9, conducted with Chinese participants, largely replicated the findings from the UK sample. The non-ambivalent target was perceived as less warm, more competent, less likely to engage in moral behaviours, and less suitable for roles requiring warmth. However, perceived ambivalence influenced warmth less for Chinese participants than UK participants, suggesting potential cultural differences in the role of warmth in ambivalence

perception. These findings highlight the importance of considering cultural factors in the study of dispositional ambivalence and its interpersonal consequences.

Chapter 6 General Discussion

The overarching aim of this thesis 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), my research integrated these findings, allowing me to ask conceptually important and novel questions about attitude ambivalence. Across nine experiments, I addressed (a) whether people perceive dispositionally ambivalent and non-ambivalent targets differently on related attributes and behavioural 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, and (f) the cross-cultural similarities and differences on ambivalence perceptions. 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 level of dispositional ambivalence was made salient in different ways, I 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.

In Chapter 2, Experiment 1 showed that participants could infer targets' ambivalence from the targets' reported attitudes. The target ambivalent only about controversial issues was evaluated most positively relative to the others. Experiment 2 found that a dispositionally non-ambivalent target was expected to share fewer resources in an economic game, an effect mediated by reduced warmth and increased competence perceptions. Experiment 3 extended these findings, showing that a non-ambivalent target was seen as less warm, less moral, less suitable for roles requiring warmth, and less likely to engage in prosocial behaviours compared to ambivalent targets.

Chapter 3 explored perceptions of ambivalence using facial images generated via a reverse correlation paradigm. In Experiment 4, a non-ambivalent face was judged as colder, more competent, and more suitable for assertive roles (e.g., politician, soldier) than ambivalent faces. Downstream effects on expected behaviours and role suitability were mediated by warmth and competence. Experiment 5 found that the non-ambivalent face was most likely to be perceived as an unfair dictator in an economic game. Experiment 6 revealed that the non-ambivalent face was seen as endorsing more self-enhancement values, less self-transcendence values, and being less likely to engage in moral behaviours such as volunteering and donating to charity.

Chapter 4 integrated the verbal and visual methods. Experiment 7 showed that participants could link non-ambivalent faces with objectively non-ambivalent verbal descriptions, although less successfully for ambivalent targets. Experiment 8 replicated this finding using descriptions focused on subjective attitudinal ambivalence, with participants matching the non-ambivalent face to a non-ambivalent description and perceiving them as a worse fit for ambivalent descriptions.

Finally, Chapter 5 offered an initial consideration of cross-cultural differences in ambivalence perception. Experiment 9, conducted with Chinese participants, largely replicated the findings from the UK sample. The non-ambivalent target was perceived as less warm, more competent, less likely to engage in moral behaviours, and less suitable for roles requiring warmth. However, perceived ambivalence influenced warmth less for Chinese participants than UK participants, suggesting potential cultural differences in the role of warmth in ambivalence perception.

The findings of this research have important implications for theories of attitude strength, ambivalence, and social perception. Firstly, our results extend the literature on attitude strength by demonstrating that dispositional ambivalence, as a dimension of attitude strength (Petty & Krosnick, 1995), has significant interpersonal consequences. While previous research has primarily focused on the *intrapersonal* effects of ambivalence (e.g., van Harreveld et al., 2015), my findings highlight the importance of considering the social implications of holding ambivalent attitudes across multiple attitudinal objects.

Moreover, my research contributes to the understanding of ambivalence by showing that dispositional ambivalence, as opposed to ambivalence towards specific objects (e.g., Pillaud et al., 2018), appears to elicit distinct patterns of social perception and judgment. The consistent effects of dispositional ambivalence on perceived warmth and competence suggest that the interpersonal consequences of ambivalence may operate differently at the dispositional level compared to the object-specific level.

Furthermore, my findings integrate theories of attitude ambivalence with the Stereotype Content Model (Fiske, 2018) and the ABC (Attitudes, Beliefs, Contributions) approach to cooperation (Weber et al., 2023). The SCM integration

demonstrates that warmth and competence mediate the effects of perceived dispositional ambivalence on social judgments and behavioural expectations. This integration extends the applicability of the SCM to the domain of attitude perception and further highlights the fundamental role of warmth and competence in shaping the interpersonal consequences of attitudinal ambivalence.

It is worth noting that my research reveals intriguing parallels with the SCM's framework of ambivalent stereotypes. While the SCM focuses on group perceptions, my work shows similar patterns in judgments of individuals based on their attitudinal tendencies. Non-ambivalent targets were perceived as more competent but less warm, while ambivalent targets were seen as warmer but less competent. This mirrors the SCM's high-competence/low-warmth and high-warmth/low-competence quadrants, respectively. These findings suggest that warmth and competence are fundamental not only to group stereotypes but also to judgments of individuals' attitudinal dispositions. The mediating role of warmth and competence supports their status as core dimensions of social perception driving emotional and behavioural responses.

The ABC approach aligns with my findings on dispositional ambivalence, highlighting the interplay between attitudes and beliefs in shaping behaviour. While Weber et al. (2023) found cooperative attitudes are consistent across cultures, beliefs about others' cooperativeness varied and explained cross-cultural differences in voluntary cooperation. Similarly, my research shows that perceptions of ambivalence consistently influence warmth and competence judgments, but that the impact of these judgments on behavioural expectations varies culturally. I return to this later in the chapter, when discussing cross-cultural effects.

Furthermore, this research provides novel insights into trait space theory (Stolier et al., 2018, 2020) by demonstrating how dispositional ambivalence operates

within the broader framework of social perception. The consistent mediating roles of warmth and competence across various methodologies and outcome measures suggest that dispositional ambivalence may be a fundamental dimension in the conceptual trait space that guides social judgments. By showing how perceptions of ambivalence systematically relate to warmth and competence judgments, which in turn predict a range of social and behavioural outcomes, this work extends trait space theory beyond its original focus on personality traits to include attitudinal dispositions. This extension offers a more comprehensive understanding of how people organise and apply social knowledge across diverse domains of person perception, from facial impressions to behavioural expectations.

By employing diverse methodologies, such as verbal descriptions and reverse correlation techniques, my research also offers novel insights into the mental representations of ambivalent and non-ambivalent individuals. The consistency of findings across these methods underscores the robustness of the effects and provides a more comprehensive understanding of how dispositional ambivalence is perceived and evaluated by others.

Overall, these experiments provide a nuanced understanding of how dispositional ambivalence shapes social judgments, with warmth and competence consistently emerging as key mediators. The findings underscore the interpersonal consequences of attitudinal ambivalence and highlight the value of integrating diverse methodologies and theoretical frameworks, including the SCM, ABC approach, and trait space theory, to study this phenomenon.

How do We Perceive Attitudinal Ambivalence?

Taken together, my findings support a number of perspectives fundamental to social cognition. First and foremost, my 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 et al., 2021; Fiske, 2018). Across a series of experiments, I 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 behavioural 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, my 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 my work, the classification images impacted perceptions of warmth and competence, and are aligned with research from the face perception literature demonstrating that warmth and competence are fundamental to visual cognition (see e.g., Sutherland & Young, 2022; Todorov et al., 2008, 2015; Walker & Vetter, 2016). Further, my research provides evidence that reverse correlation classification images can be differentiated along the warmth and competence dimensions (see also Imhoff et al., 2013, Oliveira et al., 2019). My findings extend previous work by offering mediational evidence of warmth and competence judgments derived from classification images.

Warmth and Competence as Mediators

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 et al., 2018, 2020). As noted earlier, this framework considers how bottom-up and top-down processes work together to construct a trait space that serves to guide social perception processes. My findings align with this perspective, as a target's perceived dispositional ambivalence was linked with perceptions of warmth and competence, which in turn influenced a range of social judgments and behavioural predictions. Trait space theory suggests that conceptual knowledge about trait relationships shapes how traits are perceived and inferred across different domains of social cognition. This is consistent with my findings that conceptual associations between traits predicted similar patterns in trait inferences across face perception, person knowledge, and group stereotypes. These results not only support trait space theory but also extend it by demonstrating how dispositional ambivalence fits into this framework, offering a more comprehensive understanding of how conceptual knowledge structures social perception across diverse domains.

At the same time, there are three caveats that I 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 operationalised 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 et al., 1993). Second, whilst I 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 patterns might reflect different processes regarding how people make judgments about other people and their attributes versus making judgments about the self.

Regarding warmth and competence, I 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 (see e.g., Carrier et al., 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).

Ambivalence towards Specific Objects versus Ambivalence at a Dispositional Level

It is worth noting that my 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 I 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 single 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 I successfully captured the characteristics of dispositional ambivalence and indicates that the concept of dispositional ambivalence differs from that of state ambivalence.

Regarding suitability for profession/office roles, across multiple experiments I 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 my findings relates to political judgements. On the one hand, I 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 emphasise attributes that relate to social desirability (e.g., agreeableness) and attributes they value most in themselves (Koppensteiner & Stephan, 2014). In my 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.

Cross-Cultural Differences

The cross-cultural differences in the perception of warmth among ambivalent and non-ambivalent targets are noteworthy. UK participants showed a clear differentiation in their warmth ratings for the A-C, A-ALL, and NA targets, with the ambivalent targets (A-C and A-ALL) being rated as warmer than the non-ambivalent target (NA). In contrast, Chinese participants exhibited less differentiation in their warmth ratings for the same targets, with the ambivalent targets being rated only slightly warmer than the non-ambivalent target. This suggests that Chinese participants were less likely to use attitudinal ambivalence as a salient cue for making warmth judgments compared to their UK counterparts. There are several potential explanations.

With regards to perceived warmth, it is possible that this construct may be valued differently across cultures. For instance, Chinese culture places a high value on interpersonal warmth and friendliness, which may make it less sensitive to the presence of attitudinal ambivalence. Another potential explanation is that the relationship between ambivalence and warmth may be influenced by cultural differences in the extent to which emotions are valued and expressed. In Western cultures, there is a greater emphasis on expressing positive emotions such as warmth and affection, whereas in Eastern cultures, there may be a greater emphasis on suppressing emotions in order to maintain social harmony. For example, research has found that participants from collective backgrounds attenuated their emotion expression in the presence of others (Matsumoto, 2006).

A second potential explanation is that cultural differences may reflect differences in the ways that people process information about attitudes. In Experiment 9 I found weaker links between perceived ambivalence and downstream variables. For example, research has suggested that East Asians tend to rely more on situational information when making judgments about others, whereas Westerners tend to rely more on dispositional information (see Choi & Nisbett, 1998). This difference in processing may lead Chinese participants to be less influenced by perceived ambivalence in others' attitudes and more influenced by other factors when making judgments about outcomes.

A third explanation could derive from the growing body of research highlighting the role of cultural differences in shaping social perceptions and judgments. Luttrell et al. (2021) demonstrated that individuals from Eastern cultural backgrounds tend to have more mixed evaluations of self-concepts, self-evaluations, and group affiliations compared to those from Western backgrounds. The authors argue that these differences can be attributed to the higher prevalence of dialectical thinking in Eastern cultures, which encourages the acceptance and reconciliation of contradictory beliefs and emotions (Spencer-Rodgers et al., 2010). As a result, Chinese participants in the present study may have been more accustomed to experiencing and expressing ambivalent attitudes, leading to a reduced reliance on attitudinal ambivalence as a cue for making warmth judgments.

Furthermore, the reduced differentiation in warmth perceptions among Chinese participants aligns with the anthropological perspective proposed by Eisenbruch and Krasnow (2022). According to their framework, ancestral humans faced greater variability in the warmth of potential cooperative partners compared to their competence. They argue that while warmth varied more across different

cooperative partners, competence exhibited greater variability over time within specific cooperative relationships. These differences in the distributions of warmth and competence, rather than their inherent consequentiality, are thought to contribute to the increased predictive power of warmth for future benefits. In the context of Experiment 9, Chinese participants' higher levels of ambivalence and dialectical thinking may have led them to perceive less variability in the warmth of the ambivalent and non-ambivalent targets, resulting in a reduced differentiation in their warmth ratings.

As noted earlier, the cross-cultural differences in cooperative behaviour can be further understood through the ABC (Attitudes, Beliefs, Contributions) approach to cooperation (Weber et al., 2023). This framework posits that cooperative attitudes and beliefs about others' cooperativeness jointly determine actual cooperative contributions. Weber et al. (2023) found that when comparing Western (UK and US) to non-Western (Morocco and Turkey) samples, cooperative attitudes were largely consistent across cultures, but beliefs about others' cooperativeness played a crucial role in explaining differences in cooperative behaviour. This aligns with my findings, where I observed that the influence of beliefs on cooperation varied across cultures. Specifically, in my study, Chinese participants showed greater variance in their expectations of others' sharing behaviour, and these expectations had a stronger influence on their own cooperative decisions compared to UK participants.

The ABC approach revealed that in both Western and non-Western samples, the combination of attitudes and beliefs accurately predicted contributions (a(b) → c). This suggests the methodology is robust across diverse cultural contexts. Moreover, it highlights that while cooperative attitudes may be relatively stable across cultures, the role of beliefs about others' cooperativeness can vary significantly and play a crucial

role in determining actual cooperative behaviour.

These findings emphasise the importance of considering cultural differences not just in the content of beliefs about cooperation, but also in how those beliefs influence behaviour. In some cultural contexts, individuals may be more strongly influenced by their expectations of others' behaviour, while in others, cooperative decisions might be more independent of these expectations. This nuanced understanding of the interplay between beliefs and behaviours across cultures could inform more effective strategies for promoting cooperation in diverse settings.

Recognising Others' Attitudinal Ambivalence

Across experiments, 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 I 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, I am 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 et al., 2006) or from properties of a speaker's voice (e.g., vocal confidence; see Vaughan-Johnston et al., 2021). Moreover, in Experiment 4 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 et al., 2016).

Future research

While the results of this thesis generated many novel research questions, they have also generated questions for future research. Some important areas for future research are described below.

One important area for future research is to continue to explore cross-cultural differences in the perception and visualisation of ambivalence. As noted above, 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 et al., 2009), self-evaluations (Spencer-Rodgers et al., 2004) and the groups to which they belong (Ma-Kellams et al., 2011), compared to people from Western backgrounds. Cultural differences in dialectical thinking may lie at the heart of these differences (Hamamura et al., 2008; Luttrell et al., 2021). Future research could explore whether people from different cultural backgrounds visualise 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 favour mouth-oriented cues when expressing their emotions, whereas people from collectivistic backgrounds favour eye-oriented cues (Park et al., 2014). Similarly, other work has found that Easterners use distinctive eye clues to represent their emotion (Jack et al., 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 favourably. Future research could examine the cross-cultural perception of ambivalent and non-ambivalent targets. For example, future research could generate mental representations of (non-) ambivalent targets in both cultural background and examine if they are perceived comparably, and if the differences appear in the same facial area. Also, 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.

Future research in this area could also explore several avenues to further our understanding of how ambivalent individuals process persuasive messages and effective strategies for persuading ambivalent audiences. Researchers could examine the influence of emerging communication technologies and social media platforms on persuasion processes and message processing among ambivalent individuals (Bail et al., 2018). Additionally, further investigating the role of individual differences, such as ambivalence tolerance and need for cognitive closure (Webster & Kruglanski, 1994), in moderating persuasion outcomes for ambivalent individuals could provide valuable insights. Need for cognitive closure, which refers to an individual's desire for firm answers and aversion to ambiguity, may influence how ambivalent individuals respond to persuasive messages and their motivation to resolve attitude ambivalence. Furthermore, longitudinal studies could shed light on the long-term

effects of persuasive attempts on ambivalent individuals' attitudes and behavioural intentions over time.

Finally, future research could also explore the implications of understanding others' ambivalence in different contexts. For example, Tan et al. (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. In the relationship context, researchers could explore whether the ability to detect a partner's ambivalence benefits the relationship quality of relationship.

Conclusion

This thesis presents a comprehensive investigation of how people perceive and respond to others' dispositional attitudinal ambivalence. Across nine experiments using diverse methodologies, the research establishes dispositional ambivalence as a key factor in impression formation, with significant interpersonal consequences. The findings demonstrate that people can infer others' attitudinal ambivalence from both verbal descriptions and facial images, and that dispositional ambivalence influences perceptions of warmth, competence, and downstream social judgments and behavioural expectations.

The research makes several important contributions to the literature on attitudes, social cognition, and stereotype content. First, it extends the study of ambivalence beyond the intrapersonal level by examining its interpersonal implications. Second, it introduces a novel approach to studying ambivalence using the reverse correlation technique, demonstrating the utility of this method in capturing

the social consequences of ambivalence. Third, it provides cross-cultural evidence for the effects of perceived ambivalence on social judgments, highlighting both similarities and differences between UK and Chinese samples.

However, the research is not without limitations. The experiments relied primarily on hypothetical scenarios and targets, which may not fully capture the complexity of real-world social interactions. Additionally, the cross-cultural comparison was limited to two countries, and future research could benefit from examining a wider range of cultural contexts.

Future research could address these limitations by investigating the perception of ambivalence in more naturalistic settings, such as in-person interactions or real-world decision-making contexts. Moreover, researchers could explore the role of individual differences, such as political orientation or cognitive style, in shaping the perception and evaluation of ambivalent others. Extending the cross-cultural investigation to include a more diverse set of cultures could also provide valuable insights into the universality and cultural specificity of the effects of perceived ambivalence.

In conclusion, this thesis offers a novel and nuanced understanding of the interpersonal consequences of dispositional attitudinal ambivalence. By integrating theories and methods from attitudes research, social cognition, and cross-cultural psychology, the research highlights the importance of considering ambivalence not only as an intrapersonal phenomenon but also as a key factor in social perception and interaction. The findings have important implications for understanding how people navigate an increasingly complex and interconnected social world, where the ability to recognise and respond to others' ambivalence may be crucial for effective communication, decision-making, and relationship building.

References

- 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.
- Abele, A., & Wojciszke, B. (Eds.). (2018). *Agency and communion in social psychology*. London: Routledge.
- Allport, G. (1935). Attitudes. In C. Murchison (Ed.), *Handbook of Social Psychology* (pp. 789–844). Clark University Press.
- 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.
- Baguley, T. (2009). Standardized or simple effect size: What should be

- reported? *British Journal of Psychology*, 100(3), 603-617.
- Bail, C. A., Argyle, L. P., Brown, T. W., Bumpus, J. P., Chen, H., Hunzaker, M. F., ... & Volfovsky, A. (2018). Exposure to opposing views on social media can increase political polarization. *Proceedings of the National Academy of Sciences*, 115(37), 9216-9221.
- Bell, D. W., Esses, V. M., & Maio, G. R. (1996). The utility of open-ended measures to assess intergroup ambivalence. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, 28(1), 12-18.
- Berry, D. S., & McArthur, L. Z. (1985). Some components and consequences of a babyface. *Journal of Personality and Social Psychology*, 48(2), 312-323.
- Barrett, L. F., Mesquita, B., & Gendron, M. (2011). Context in Emotion Perception. *Current Directions in Psychological Science*, 20(5), 286-290.
- Boer, D., & Fischer, R. (2013). How and when do personal values guide our attitudes and sociality? Explaining cross-cultural variability in attitude-value linkages. *Psychological Bulletin*, 139(5), 1113.
- Briñol, P., Petty, R. E., & Wheeler, S. C. (2006). Discrepancies between explicit and implicit self-concepts: Consequences for information processing. *Journal of Personality and Social Psychology*, 91(1), 154-170.
- Brown, J. S., & Farber, I. E. (1951). Emotions conceptualized as intervening variables—With suggestions toward a theory of frustration. *Psychological Bulletin*, 48(6), 465-495.
- 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), 116–131.
- Carrier, A., Louvet, E., Chauvin, B., & Rohmer, O. (2014). The primacy of agency over competence in status perception. *Social Psychology*, 45(4), 347-356.
- Cavazza, N., & Butera, F. (2008). Bending without breaking: Examining the role of attitudinal ambivalence in resisting persuasive communication. *European Journal of Social Psychology*, 38(1), 1–15.
- 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.
- Chiao, J. Y., Iidaka, T., Gordon, H. L., Nogawa, J., Bar, M., Aminoff, E., Sadato, N., & Ambady, N. (2008). Cultural Specificity in Amygdala Response to Fear Faces. *Journal of Cognitive Neuroscience*, 20(12), 2167–2174.
- Choi, I., & Nisbett, R. E. (1998). Situational salience and cultural differences in the correspondence bias and actor-observer bias. *Personality and Social Psychology Bulletin*, 24(9), 949-960.
- 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.

- Conner, M., Sparks, P., Povey, R., James, R., Shepherd, R., & Armitage, C. J. (2002). Moderator effects of attitudinal ambivalence on attitude–behaviour relationships. *European Journal of Social Psychology, 32*(5), 705-718.
- Cuddy, A. J., Glick, P., & Beninger, A. (2011). The dynamics of warmth and competence judgments, and their outcomes in organizations. *Research in Organizational Behaviour, 31*, 73-98.
- Darwin, C. (1872). *The expression of the emotions in man and animals*. Chicago: University of Chicago Press.
- DeMarree, K. G., Christian Wheeler, S., Briñol, P., & Petty, R. E. (2014). Wanting other attitudes: Actual–desired attitude discrepancies predict feelings of ambivalence and ambivalence consequences. *Journal of Experimental Social Psychology, 53*, 5–18.
- 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.
- Edwards, A. L. (1946). A critique of ‘neutral’ items in attitude scales constructed by the method of equal appearing intervals. *Psychological Review, 53*(3), 159–169.
- 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.
- Elfenbein, H. A. (2013). Nonverbal dialects and accents in facial expressions of emotion. *Emotion Review, 5*(1), 90–96.

- Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology*, 54(6), 1040-1048.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2017). G* Power 3.1 manual.
- Field, A. (2009). *Discovering statistics using SPSS*. London (UK): Sage Publications Ltd.
- Fiske, S. T. (2018). Stereotype content: Warmth and competence endure. *Current Directions in Psychological Science*, 27(2), 67-73.
- Fong, C. T. (2006). The Effects of Emotional Ambivalence on Creativity. *Academy of Management Journal*, 49(5), 1016–1030.
- 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, 109907.
- Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic Behaviour*, 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.
- Gebauer, J. E., Maio, G. R., & Pakizeh, A. (2013). Feeling torn when everything seems right: Semantic incongruence causes felt ambivalence. *Personality and Social Psychology Bulletin*, 39(6), 777-791.
- Green, R. E., & Goldfried, M. R. (1965). On the bipolarity of semantic space. *Psychological Monographs: General and Applied*, 79(6), 1–31.

- Haddock, G., Foad, C. M., & Thorne, S. (2022). How do people conceptualize mindfulness? *Royal Society Open Science*, 9, 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.
- Haselhuhn, M. P., & Wong, E. M. (2012). Bad to the bone: facial structure predicts unethical behaviour. *Proceedings of the Royal Society B: Biological Sciences*, 279(1728), 571-576.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2nd edition)*. New York: Guilford.
- Heck, R. H., Thomas, S., & Tabata, L. (2013). *Multilevel modeling of categorical outcomes using IBM SPSS*. London: Routledge.
- 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. (1944). Social perception and phenomenal causality. *Psychological Review*, 51(6), 358–374.
- Hlavac, Marek (2022). stargazer: Well-Formatted Regression and Summary Statistics Tables. R package version 5.2.3. <https://CRAN.R-project.org/package=stargazer>
- 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, 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., Blais, C., Scheepers, C., Schyns, P. G., & Caldara, R. (2009). Cultural confusions show that facial expressions are not universal. *Current Biology*, 19(18), 1543–1548.
- 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.
- Jonas, K., Diehl, M., & Brömer, P. (1997). Effects of attitudinal ambivalence on information processing and attitude-intention consistency. *Journal of Experimental Social Psychology*, 33(2), 190–210.
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986). Fairness and the assumptions of economics. *Journal of Business*, 59, 285-300.
- Kaplan, K. J. (1972). On the ambivalence-indifference problem in attitude theory and measurement: A suggested modification of the semantic differential technique. *Psychological Bulletin*, 77(5), 361–372.
- Keele, L., & Wolak, J. (2008). Contextual sources of ambivalence. *Political Psychology*, 29(5), 653-673.
- 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), 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.*
- Kourmoussi, N., Amanaki, E., Tzavara, C., Merakou, K., Barbouni, A., & Koutras, V. (2017). The Toronto Empathy Questionnaire: Reliability and validity in a nationwide sample of Greek teachers. *Social Sciences, 6*(2), 62.
- 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.
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*, 62627.
- Lewin, K. (1951). Field theory in social science: Selected theoretical paper (R. Cartwright, Ed.). Harper & Row.
- Luttrell, A., Petty, R. E., Chang, J., & Trogans, L. J. (2022). The role of dialecticism in objective and subjective attitudinal ambivalence. *British Journal of Social Psychology*. Advance online publication: <https://doi.org/10.1111/bjso.12504>
- 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.
- 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. (2019). *The psychology of attitudes and attitude change*. London: Sage.
- Matsumoto, D. (2006). Culture and nonverbal behavior. In V. Manusov & M.

- Patterson, *The SAGE handbook of nonverbal communication* (pp. 219–236).
London: Sage Publications, Inc.
- Mead, M. (1975). Review of “Darwin and facial expression.” *Journal of Communication*, 25, 209-213.
- Nelson, N. L., & Russell, J. A. (2013). Universality revisited. *Emotion Review*, 5(1), 8–15.
- Neuberg, S. L., & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simpler structure. *Journal of Personality and Social Psychology*, 65(1), 113–131.
- Ng, A. H., & Hynie, M. (2016). Naïve dialecticism and indecisiveness: Mediating mechanism and downstream consequences. *Journal of Cross-Cultural Psychology*, 47(2), 263-276.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84(3), 231–259.
- 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.
- Noordewier, M. K., & Rutjens, B. T. (2021). Personal need for structure shapes the perceived impact of reduced personal control. *Personality and Individual Differences*, 170, 110478.
- 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.

- Overgaard, C. S. B., & Collier, J. R. (2023). In different worlds: The contributions of polarization and platforms to partisan (mis)perceptions. *New Media & Society*, 146144482311765.
- 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.
- Paunonen, S. V. (2006). You are honest, therefore I like you and find you attractive. *Journal of Research in Personality*, 40(3), 237-249.
- Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, 54(9), 741-754
- Petty, R. E., & Krosnick, J. A. (1995). Attitude strength: An overview. *Attitude Strength: Antecedents and Consequences*, 1, 1-24.
- Petty, R. E., & Krosnick, J. A. (2014). *Attitude strength: Antecedents and consequences*. New York: Psychology Press.
- Pillaud, V., Cavazza, N., & Butera, F. (2013). The social value of being ambivalent: Self-presentational concerns in the expression of attitudinal ambivalence. *Personality and Social Psychology Bulletin*, 39(9), 1139-1151.
- Pillaud, V., Cavazza, N., & Butera, F. (2018). The social utility of ambivalence: Being ambivalent on controversial issues is recognised as competence. *Frontiers in Psychology*, 9, 961.
- Priester, J. R., & Petty, R. E. (1996). The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology*, 71(3), 431-449.
- Priester, J. R., & Petty, R. E. (2001). Extending the bases of subjective attitudinal

- ambivalence: Interpersonal and intrapersonal antecedents of evaluative tension. *Journal of Personality and Social Psychology*, 80(1), 19-34.
- Priester, J. R., Petty, R. E., & Park, K. (2007). Whence univalent ambivalence? From the anticipation of conflicting reactions. *Journal of Consumer Research*, 34(1), 11-21.
- 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.
- Reich, T., & Wheeler, S. C. (2016). The good and bad of ambivalence: Desiring ambivalence under outcome uncertainty. *Journal of Personality and Social Psychology*, 110(4), 493–508.
- Rothman, N. B. (2011). Steering sheep: How expressed emotional ambivalence elicits dominance in interdependent decision making contexts. *Organizational Behavior and Human Decision Processes*, 116(1), 66–82.
- Rothman, N. B., & Melwani, S. (2017). Feeling mixed, ambivalent, and in flux: The social functions of emotional complexity for leaders. *Academy of Management Review*, 42(2), 259–282.
- Rothman, N. B., Pratt, M. G., Rees, L., & Vogus, T. J. (2017). Understanding the dual nature of ambivalence: Why and when ambivalence leads to good and bad outcomes. *Academy of Management Annals*, 11(1), 33-72.
- 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.
- Rule, N. O., & Ambady, N. (2008a). Brief exposures: Male sexual orientation is accurately perceived at 50 ms. *Journal of Experimental Social Psychology*,

44(4), 1100-1105.

- Rule, N. O., & Ambady, N. (2008b). The face of success: Inferences from chief executive officers' appearance predict company profits. *Psychological Science, 19*(2), 109-111.
- Schneider, I. K. (2023). Relationship between trait ambivalence and the Big 5. Unpublished raw data.
- Schneider, I. K., Eerland, A., van Harreveld, F., Rotteveel, M., van der Pligt, J., van der Stoep, N., & Zwaan, R. A. (2013). One way and the other: The bidirectional relationship between ambivalence and body movement. *Psychological Science, 24*(3), 319–325.
- Schneider, I. K., & Schwarz, N. (2017). Mixed feelings: The case of ambivalence. *Current Opinion in Behavioural Sciences, 15*, 39-45.
- Schneider, I. K., Novin, S., & van Harreveld, F. (2022, May 3). The ambivalent individual: Validation studies for the Trait Ambivalence Scale. <https://doi.org/10.31219/osf.io/4cbex>
- 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., van Harreveld, F., Rotteveel, M., Topolinski, S., van der Pligt, J., Schwarz, N., & Koole, S. L. (2015). The path of ambivalence: Tracing the pull of opposing evaluations using mouse trajectories. *Frontiers in Psychology, 6*(996), 996–996.
- 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.), *Advances in experimental social psychology*, Vol. 25, 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.
- Scott, W. (1966). Brief report: Measures of cognitive structure. *Multivariate Behavioral Research, 1*(3), 391–395.
- Siev, J. J., & Petty, R. E. (2024). Ambivalent attitudes promote support for extreme political actions. *Science Advances, 10*(24), eadn2965.
- Siev, J. J., Philipp-Muller, A., Durso, G. R., & Wegener, D. T. (2024). Endorsing both sides, pleasing neither: Ambivalent individuals face unexpected social costs in political conflicts. *Journal of Experimental Social Psychology, 114*, 104631.
- 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.
- Snijders T. A. B., Bosker R. J. 1999. *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. London: Sage.
- 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. (2010). Dialecticism and the co-occurrence of positive and negative emotions across cultures. *Journal of Cross-Cultural Psychology, 41*(1), 109-115.
- 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.
- Spreng, R. N., McKinnon, M. C., Mar, R. A., & Levine, B. (2009). The Toronto

- Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91(1), 62-71.
- Stevens, J. (2002). *Applied multivariate statistics for the social sciences* (Vol. 4). Mahwah, NJ: Lawrence Erlbaum Associates.
- 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, 104373.
- Thompson, M. M., Naccarato, M. E., & Parker, K. E. (1989). Assessing cognitive need: The development of the personal need for structure and personal fear of invalidity scales. Annual Meeting of the Canadian Psychological Association, Halifax, Nova Scotia, Canada.
- 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.

- Thompson, M. M., Zanna, M. P., & Griffin, D. W. (1995). Let's not be indifferent about (attitudinal) ambivalence. In *Attitude strength: Antecedents and consequences* (pp. 361–386). Lawrence Erlbaum Associates, Inc.
- 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.
- Tracy, J. L., & Robins, R. W. (2008). The nonverbal expression of pride: Evidence for cross-cultural recognition. *Journal of Personality and Social Psychology, 94*(3), 516–530.
- 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. (2009a). 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.
- Van Harreveld, F., Rutjens, B. T., Schneider, I. K., Nohlen, H. U., & Keskinis, K. (2014). In doubt and disorderly: Ambivalence promotes compensatory perceptions of order. *Journal of Experimental Psychology: General, 143*(4), 1666-1676.
- van Harreveld, F., van der Pligt, J., & de Liver, Y. N. (2009b). The agony of ambivalence and ways to resolve it: Introducing the MAID Model. *Personality*

and Social Psychology Review, 13(1), 45–61.

- 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 Behaviour*, 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.
- Weber, T. O., Schulz, J. F., Beranek, B., Lambarraa-Lehnhardt, F., & Gächter, S. (2023). The behavioral mechanisms of voluntary cooperation across culturally diverse societies: Evidence from the US, the UK, Morocco, and Turkey. *Journal of Economic Behavior & Organization*, 215, 134-152.
- Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, 67(6), 1049-1062.
- Wei, M., Su, J. C., Carrera, S., Lin, S.-P., & Yi, F. (2013). Suppression and interpersonal harmony: A cross-cultural comparison between Chinese and European Americans. *Journal of Counseling Psychology*, 60(4), 625–633.
- Windsor-Shellard, B., & Haddock, G. (2014). On feeling torn about one’s sexuality: The effects of explicit–implicit sexual orientation ambivalence. *Personality and Social Psychology Bulletin*, 40(9), 1215–1228.
- Zheng, W., Yu, A., Li, D., Fang, P., & Peng, K. (2021). Cultural differences in mixed emotions: The role of dialectical thinking. *Frontiers in Psychology*, 11, 538793.

Appendix

Table A1

Targets' Level of Ambivalence Towards Different Objects - Experiment 1

Targets	Objects	Positive	Negative	Ambivalence	Sum of ambivalence	
A-C	Nuclear Energy	5	5	5		
	GM food	4	3	2.5		
	Death Penalty	2	2	2		
	Immigration	4	4	4	13.5	
	Cigarette Smoking	2	4	1		
	Pollution	1	3	0		
	Organic Food	4	1	-0.5		
	Recycling	5	2	0.5	1	14.5
A-NC	Nuclear Energy	1	4	-0.5		
	GM food	5	1	-1		
	Death Penalty	4	2	1		
	Immigration	1	3	0	-0.5	
	Cigarette Smoking	5	4	3.5		
	Pollution	3	4	2.5		
	Organic Food	3	3	3		
	Recycling	4	4	4	13	12.5
A-ALL	Nuclear Energy	3	3	3		
	GM food	4	5	3.5		
	Death Penalty	4	4	4		

	Immigration	5	4	3.5	14	
	Cigarette Smoking	5	5	5		
	Pollution	2	3	1.5		
	Organic Food	5	3	2		
	Recycling	5	5	5	13.5	27.5
NA	Nuclear Energy	5	1	-1		
	GM food	1	1	1		
	Death Penalty	5	2	0.5		
	Immigration	1	4	-0.5	0	
	Cigarette Smoking	2	5	0.5		
	Pollution	1	5	-1		
	Organic Food	3	1	0		
	Recycling	3	2	1.5	1	1

Note. A-C = target who is ambivalent toward controversial issues only; A-NC = target who was univalent toward controversial issues and ambivalent about non-controversial issues; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$; ** $p < .01$.