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Do they dislike us as much as we think? Positive contact as a potential rectifier of meta-attitude inaccuracy in conflictual intergroup settings

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Abstract:	Intergroup meta-attitude inaccuracy - the extent to which perceptions of outgroup views towards the ingroup diverge from what they actually think – fuels intergroup hostility, yet research on its precursors is scarce. Through four correlational studies, we examined whether and how intergroup contact predicts meta-attitude (in)accuracy in three conflict contexts (Black/White British in the United Kingdom, Turks/Kurds in Turkey, and Catholics/Protestants in Northern Ireland). Regardless of context or status, all groups perceived themselves to be evaluated more negatively than in reality. Positive contact predicted increased meta-attitude accuracy (through increased shared reality) which was, in turn, associated with more positive outgroup attitudes. The role of negative contact and affective mediators (such as intergroup anxiety and fear) was not consistent and depended on group and context. The use of positive intergroup contact as a potential rectifier of overestimated negative meta-attitudes in conflict contexts is discussed.

Running head: Contact and Meta-attitude Accuracy

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Abstract

Intergroup meta-attitude inaccuracy - the extent to which perceptions of outgroup views towards the ingroup diverge from what outgroup members *actually* think – fuels intergroup hostility, yet research on its precursors is scarce. Through four correlational studies, we examined whether and how intergroup contact predicts meta-attitude (in)accuracy in three conflict contexts (Black/White British in the United Kingdom, Turks/Kurds in Turkey, and Catholics/Protestants in Northern Ireland). Regardless of context or status, all groups perceived themselves to be evaluated more negatively by the outgroup than in reality. Positive contact predicted increased meta-attitude accuracy (through increased shared reality) which was, in turn, associated with more positive outgroup attitudes. The role of negative contact and affective mediators (such as intergroup anxiety and fear) was not consistent and depended on group and context. The use of positive intergroup contact as a potential rectifier of overestimated negative meta-attitudes in conflict contexts is discussed.

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Our behaviors, feelings, and thoughts in social encounters, whether with an acquaintance or a close relationship partner, are shaped, in part, by how we think these other individuals view us. These meta-perceptions often guide how we interact with people, because we tend to treat our interaction partners with behaviors that correspond to these meta-perceptions (Carlson, 2016; Human et al., 2020; Hirschi et al., 2022; Kteily et al., 2016). In other words, we engage in positive behaviors (e.g., greater expectations of enjoyment for a forthcoming interaction, Vezzali, 2017; greater relationship quality, Carlson, 2016) when we believe our interaction partner has a positive view of us. In contrast, when we believe that our interaction partner holds negative attitudes towards us, it leads to increased hostility and intergroup prejudice (e.g. Moore-Berg et al., 2020) because we tend to reciprocate this evaluation and respond back negatively (e.g., Owuamalam et al., 2013).

Past research has overwhelmingly focused on interpersonal-level meta-perceptions (e.g., see Elsaadawy & Carlson, 2021) including personality judgements (Vazire, 2010) and liking (e.g., Boothby et al., 2018). Recently, however, scholars have started to examine meta-perceptions from an intergroup perspective (e.g., Bruneau et al., 2021; Frey & Tropp, 2006; Lees & Cikara, 2020; Moore-Berg et al., 2020; Stathi, Di Bernardo et al., 2020). Understanding meta-perceptions from an intergroup perspective is important because, particularly in intergroup contexts where group identities become salient, individuals' judgements of what the outgroup thinks about the ingroup (i.e., group-level meta-perceptions) become a critical driver of intergroup behaviors (Lees & Cikara, 2020; Moore-Berg et al., 2020; Shelton & Richeson, 2006). Confirming this, previous research demonstrates that meta-perceptions at the group level elicit various attitudinal and behavioral responses towards outgroup members (Pavetich & Stathi, 2021a, b; Vorauer et al., 2000), including policy support (O'Brien et al., 2018, Mernyk et al., 2022) and reciprocal dehumanization (Kteily et al., 2016). While previous research has examined different types of meta-perceptions in the literature such as meta-dehumanization (Kteily et al., 2016), meta-beliefs (e.g., Adra et al., 2020) and misperceived polarization (Lees & Cikara, 2021; also known as false polarization, Fernbach & Van Boven, 2022), we specifically focused on meta-attitudes in the current research given that these include a broader range of perceptions and evaluations than the other constructs.

Critically, meta-attitudes may not always accurately represent what the other group thinks and feels about the ingroup in reality. They often include biased and overly negative assumptions (Frey & Tropp, 2006; Stathi, Pavetich et al., 2020b) and may be false, exaggerated, or overestimated (Landry et al., 2023; Moore-Berg et al., 2020; Ruggeri et al., 2021). This potential discrepancy between the actual attitudes of the outgroup and what people tend to believe about those attitudes, i.e., meta-attitude inaccuracy, is likely to have serious implications for the justification of hostile outgroup behaviors, triggering corresponding negative responses from ingroup members (e.g., Owuamalam et al., 2013; Moore-Berg et al., 2020; Pauketat et al., 2020; Pavetich & Stathi, 2021a). This is especially relevant for conflict contexts, where biased memories and narratives, as well as beliefs about the 'violent and evil opponent', constitute central elements of the conflict cycle (e.g., Bar-Tal et al., 2009; Noor et al., 2017). The current research investigates the potential precursors of these inaccurate judgments by specifically testing whether and how (positive and negative) intergroup contact experiences predict meta-attitude (in)accuracy in three different intergroup contexts (Whites/Blacks in the United Kingdom, Turks/Kurds in Turkey, and Catholics/Protestants in Northern Ireland).

Intergroup meta-attitude (in)accuracy

Past research examining individuals' group-based meta-perceptions has typically examined what type of attitudinal and behavioral responses they produce in various intergroup contexts. For example, negative meta-attitudes are associated with greater prejudice and hostility towards the outgroup (Moore-Berg et al., 2020; Putra, 2014; Putra & Wagner, 2017; Vorauer et al., 1998; 2000) and support for aggressive policies (Kteily et al., 2016). Negative meta-emotions and meta-stereotypes also elicit responses of anger, which in turn relates to more hostile behavioral tendencies towards the outgroup (Owualamam et al., 2013; Pauketat et al., 2020). On the other hand, positive meta-attitudes or stereotypes improve intergroup relations, through more positive intergroup contact expectations (Vezzali, 2017).

Despite increasing interest in meta-attitudes, research specifically examining intergroup meta-attitude (in)accuracy, the extent to which our perceptions of what the other group thinks diverges from what they *actually* think, and its precursors, is relatively rare. For example, Lees and Cikara (2020) demonstrated that in contexts of political party affiliation and gender, people tend to have highly inaccurate and negatively biased evaluations of what outgroup members think of them, which consequently results in more negative attributions to the outgroup. Similarly, Moore-Berg et al. (2020) showed that both Democrats and Republicans in the US overestimate the extent to which they perceive negative attitudes and dehumanization from the outgroup, and these exaggerated negativities independently predict intergroup hostility. Findings demonstrating the ubiquity of meta-attitude inaccuracy in the context of political polarization and its implications on further polarizing beliefs have been replicated in a large-scale study including 26 countries (Ruggeri et al., 2021).

We know much less, however, about the social psychological processes that fuel or hinder meta-attitude accuracy in contexts characterized by conflict. Given that meta-attitudinal inaccuracy predicts increased hostility in highly polarized intergroup contexts, it is critical to understand factors that explain how these (overly negative) perceptions form in the first place. Recent research, in the context of interpersonal relationships, suggest that three potential sources - perceivers, meta-perceivers, and the dyads - explain the accuracy of judgements (Elsaadawy et al., 2021). Hence, direct intergroup contact involving face-to-face communication and interaction is likely to include the aforementioned elements. This suggests that an intergroup contact setting, where perceivers and meta-perceivers engage in interaction and form attitudes about each other's groups, may play a critical role in the understanding of meta-attitude accuracy.

Intergroup contact and meta-attitude (in)accuracy

Intergroup contact has long been proposed as an irreplaceable prejudice-reduction strategy across various intergroup contexts (Allport, 1954; Pettigrew & Tropp, 2006). Contact can change and inform existing stereotypes (e.g., Brambilla et al., 2012; Zingora et al., 2021), and result in the revision of ethnocentric belief systems (Hodson et al., 2018). Contact also provides important information about whether the interaction partner is interested in the interaction. For example, Stathi, di Bernardo et al. (2020) showed that people form 'contact meta-perceptions' regarding the outgroup, and such meta-perceptions related to the outgroup's willingness to engage in contact predict one's own willingness to engage in contact. In fact, previous research has drawn a link between positive, high-quality contact and reduced negative meta-perceptions (Techakesari et al., 2015), and meta-dehumanization (Bruneau et al., 2021).

Extending these initial studies, we posit that beyond predicting meta-perceptions *per se*, intergroup contact may function as a critical agent that prompts meta-attitude accuracy in intergroup contexts. As such, previous theoretical research suggested contact interventions to be an effective tool to correct erroneous meta-perceptions (Moore-Berg & Hameiri, 2024). Contact has the potential to act as a medium by which important cues enable both interaction partners to form (more accurate) meta-perceptions and reveal how the interaction partner feels about them and their ingroup (Letzring et al., 2021; Kenny & DePaulo, 1993). Indeed, research has suggested that people actively attempt to learn more about what others think of them (Mallett et al., 2008; Vorauer et al., 1998), through both verbal and non-verbal feedback from the target (Kenny & DePaulo, 1993). This feedback mechanism may include explicit information regarding the actual attitude or implicit cues, which can be processed by the meta-perceiver during contact. Recently, Bar-Tal and Hameiri (2020) indicated that intergroup contact has the potential to provide changes in the 'long-lasting frozen attitudes' in conflict settings by transforming individuals' overly negative meta-perceptions. Therefore, we posit that intergroup contact provides individuals with an opportunity to form more accurate judgments of what the outgroup thinks about them.

It is important to note, however, that not all types of intergroup interactions are positive; some contact experiences involve substantial negativity, which may confirm and/or exacerbate biases in meta-attitudes. Previous research has shown negative contact to more strongly predict prejudice than positive contact, due to greater category salience (e.g., Barlow et al., 2012), therefore, recent studies have increasingly considered negative intergroup contact when studying contact effects (see Schäfer et al., 2021, for a recent review). Negative contact experiences often result in generalized outgroup avoidance tendencies, decreasing one's willingness to seek further contact experiences (Meleady & Forder, 2019). While Techakesari et al. (2015) showed that negative contact was associated with more negative meta-perceptions, whether and how such contact experiences predict meta-attitude accuracy have not been investigated.

In the current research, we are also interested in the potential mediating mechanisms that explain the relationship between intergroup contact and meta-attitude accuracy, since these psychological processes may underline alternative ways whereby contact contributes to the correction of inaccurate meta-perceptions. We suggested two potential routes – cognitive and affective – following previous theoretical and empirical studies that suggest contact effects on outgroup attitudes are mediated by these two different pathways (e.g., Dovidio et al., 2004; Pettigrew & Tropp, 2008; Visintin et al., 2016). Moreover, meta-attitude inaccuracy is likely to be driven by both cognitive and affective factors and differentiating these mediating mechanisms in the light of intergroup contact may contribute to the design of contact interventions that are the most effective in rectifying inaccurate meta-perceptions.

Cognitive route to meta-attitude accuracy

We suggest that specific cognitive processes are pertinent to explaining how intergroup contact predicts meta-attitude accuracy. One such mechanism is *outgroup knowledge*. It is well established that intergroup contact leads to greater knowledge about the outgroup (Pettigrew et al., 2011). Through increased outgroup knowledge, contact may reveal more realistic accounts of how the ingroup is perceived and thereby update meta-perceivers' judgements about how the outgroup perceives them in reality (Letzring et al., 2006). In fact, in the context of interpersonal relationships, the extent to which the partner is well-known predicts meta-perceptions' accuracy (Elsaadawy & Carlson, 2022). Therefore, positive forms of intergroup contact may lead to a more accurate perception about what the outgroup thinks, by increasing information and cues from the outgroup's perspective. While previous research has not studied the extent to which negative contact provides outgroup knowledge, negative intergroup experiences (for example, involving discrimination and conflict) are likely to verify and/or increase existing negative beliefs and emotions during contact, which may impair individuals' motivation to actively learn about the outgroup (e.g., Paolini et al., 2018; Techakesari et al., 2015).

Perspective taking may further function as a mediator in the association between contact and meta-attitude accuracy. Frey and Tropp (2006) argued that perspective taking is a potential route to the formation of meta-perceptions. At the same time, perspective taking and empathy are robust mediators of the contact-attitudes path (Pettigrew & Tropp, 2008). While positive contact encourages perspective taking towards outgroup members, negative contact is likely to hinder it (e.g., Bagci & Gungor, 2019). In turn, taking the perspective of the outgroup may help individuals correct their inaccurate judgements about how outgroup members evaluate them, by providing a better understanding of the other group. Through perspective taking, individuals understand the outgroup's mental state more, which may create a more realistic perception of what they think. In contrast, negative contact is likely to constrain perspective taking and thereby inhibit accessing relevant cues for forming or correcting meta-perceptions, hence resulting in less meta-attitude accuracy.

Shared reality, how much individuals perceive the world in the same way as outgroup members (Conley et al., 2016), is another potential mechanism that links contact to meta-attitude accuracy. By interacting with each other, people often verify and validate their perceptions, and ultimately establish a shared reality. Creating a shared reality usually involves a meaningful conversation between group members, paying attention and being attuned to each other, turn-takings and tuning, as well as shared understanding of the environment that constitutes a common ground for communication (Koudenburg, 2018). Contact experiences are likely to involve shared reality elements between different group members and may provide individuals with more actual and parallel understandings of each other. Indeed, research has found that while positive intergroup contact is associated with increased shared reality, negative contact relates to decreases in this variable (Lutterbach & Beelmann, 2020). Shared reality, in turn, predicts lower intergroup conflict and better intergroup relationships (Conley et al., 2016). Hence, it is possible that contact experiences predict meta-attitude accuracy through shared reality perceptions.

Affective route to meta-attitude accuracy

Affective mediators may also play a role in how contact shapes meta-attitude accuracy. *Intergroup anxiety* has been consistently found to decrease or increase as a function of positive and negative contact, respectively, in empirical research (e.g., Page-Gould et al., 2008; Pettigrew & Tropp, 2008; Techakesari et al., 2015). In turn, intergroup anxiety can lead to biased intergroup perceptions (Stephan, 2014) and is associated with negative meta-perceptions (Techakesari et al., 2015). More specifically, intergroup anxiety can enhance incorrect assumptions of others' judgements by diminishing individuals' cognitive capacity to process relevant cues and thereby may cause a cognitive blockage of processing relevant cues for making a correct judgement about how the ingroup is seen (Frey & Tropp, 2006).

We suggest that two other intergroup emotions are also relevant - *outgroup anger* and *fear*. As with intergroup anxiety, both positive and negative contact have been found to relate with less or more, outgroup fear and anger, respectively (e.g., Hayward et al., 2017; Miller et al., 2004). On the other hand, these group-based emotions are consequential for intergroup relations, as they predict motivational aggression towards the outgroup (Spanovic et al., 2010). However, unlike intergroup anxiety which is followed by avoidant responses, both fear and anger may trigger anticipatory defensive reactions (e.g., Bagci et al., 2023), or offensive action tendencies (Mackie et al., 2000). Nevertheless, both anger and fear contribute to biased information processing and result in selective, biased, and distorted beliefs, perpetuating intergroup conflicts (e.g., Brown et al., 2008; Halperin, 2008). Therefore, we posit that positive contact experiences would be associated with less anxiety, fear, and anger, which would be associated with greater meta-attitude accuracy. On the other hand, negative contact experiences are likely to be associated with greater anxiety, fear, and anger and in turn relate to lower meta-attitude accuracy.

The current research

Past research provided evidence that inaccurate meta-perceptions predict greater hostility towards outgroups (Kteily et al., 2016; Moore-Berg et al., 2020; Lees & Cikara, 2020). Therefore, the study of meta-attitude inaccuracy and its precursors may be especially critical in conflict contexts where individuals become even more sensitive to biased information processing, which plays an important role in the perpetuation of conflict (Bar-Tal, 2009). Conflict contexts often involve long-held frozen beliefs and make individuals less open to processing alternative information, which may result in erroneous meta-perceptions (e.g., Bar-Tal & Hameiri, 2020). As such, especially in polarized and competitive intergroup contexts, inaccurate meta-perceptions may fuel political violence and outgroup hostility (Mernyk et al., 2022; see also Lees & Cikara, 2020), which requires greater efforts to understand social-psychological processes that potentially reduce such inaccurate beliefs. Hence, in the current study, we focused on three different polarized contexts in order to increase the generalizability of our findings across settings. Despite socio-cultural, political, and historical differences (e.g., Bagci et al., 2023), these contexts are each characterized by varying degrees of intergroup conflict (see White et al., 2019 for the Catholic-Protestant context; Bagci et al., 2021 for the Turkish-Kurdish context and Bagci et al., 2023 for the White-Black British context), where understanding social psychological processes that rectify meta-attitude inaccuracies may have critical implications.

In Studies 1 and 2, we tested a basic model where positive and negative intergroup contact were associated with outgroup attitudes through meta-attitude accuracy among both advantaged and disadvantaged group members in two different contexts (the United Kingdom and Turkey). In Studies 3 (Northern Ireland) and 4 (Turkey), we further tested a serial mediation model where we included cognitive (outgroup knowledge, perspective taking, and shared reality) and affective (intergroup anxiety, outgroup anger and fear) mediators in the path from intergroup contact to meta-attitude accuracy.

In line with previous research (Lees & Cikara, 2020; Ruggeri et al., 2021), across all samples and studies, we expected participants to generally display meta-attitude inaccuracy (more negative assumptions about the other group's judgments compared to their actual attitudes, H1). While group status has not previously been studied in meta-attitude accuracy research, we expected all groups to show some level of inaccuracy and contact to predict attitudes through meta-attitude accuracy regardless of group status. We base this on the historically conflictual nature of the current intergroup contexts (especially in Turkey and Northern Ireland) as well as previous research showing both majority and minority groups to display concerns about how they are evaluated in intergroup interactions (Shelton et al., 2006; Stathi, Pavetich et al., 2021).

We also expected that positive intergroup contact would be associated with greater meta-attitude accuracy, which would relate to more positive outgroup attitudes (H2a), whereas negative intergroup contact would be associated with lower meta-attitude accuracy, which would relate to more negative outgroup attitudes (H2b).

In Studies 3 and 4, we further hypothesized that the role of contact on meta-attitude accuracy would be mediated by cognitive (H3a) and affective (H3b) mediators; we expected positive contact to be associated with greater outgroup knowledge, shared reality and, perspective-taking, as well as lower anxiety, anger and fear, which would then be associated with higher accuracy. We hypothesized the opposite relationships for negative contact.

Study 1

Study 1 was conducted among White and Black British participants in the United Kingdom and provides an initial assessment of meta-attitude accuracy across group status and its mediating role between contact and outgroup attitudes. While overt acts of prejudice towards Black people have decreased over the years, evidence shows that this group still suffers from pervasive discrimination and structural disadvantage (e.g., West et al., 2021).

Method

Participants and procedure

We used data from a published study (Bagci et al., 2023) after getting permission from the authors. Data were collected in the United Kingdom through research credits platform for university students and Prolific Academic participants. The original data were pooled of both samples (N = 351 British participants, 163 White and 188 Black British, 268 Females and 78 Males, M_{age} = 31.47, SD = 10.84). Post-hoc power analyses are indicated in Supplementary Materials.

Measures

All study materials are available online at:

https://osf.io/nwzae/?view_only=f4915364c86d426db0a32eed2affa402. We report all measures that are not used in the current study in Supplementary Materials. All measures were only assessed for the target outgroup in the original dataset.

Positive and negative contact were assessed with one item each (e.g., Barlow et al., 2012; "How often do you have a positive/negative contact with White/Black group members?"). The response scale ranged from 1 (*Never*) to 7 (*Extremely frequently*).

Outgroup attitudes were assessed via the feeling thermometer (Esses et al., 1993). Participants were asked to rate how warm they felt towards White [Black] group members whereby responses ranged from 0 (*Extremely unfavorable*) to 100 (*Extremely favorable*), and 50 degrees represented neutral attitudes.

Meta-attitude accuracy. Participants beliefs regarding how they think that the outgroup would think of them are operationalized as 'meta-attitudes'. Participants were asked to rate how they think Whites [Blacks] would rate them on the feeling thermometer whereby degrees ranged from 0 (*Extremely unfavorable*) to 100 (*Extremely favorable*) and 50 degrees representing neutral attitudes (e.g., Esses et al., 1993). We computed accuracy scores by extracting each individuals' meta-attitudes from the mean of the outgroup's actual outgroup attitudes, following the same procedure used by Lees and Cikara (2020, see also Moore-Berg et al., 2020). Therefore, more negative scores indicate greater discrepancy (i.e., less accuracy).

Results

Descriptive statistics

Table 1 presents descriptive statistics (outgroup attitudes, meta-attitudes and meta-attitude accuracy) across groups and studies. Descriptive statistics and correlations between main variables are presented in Table 2 for Studies 1 and 2. An independent samples t-test indicated a significant difference between Blacks and Whites in their accuracy scores [Mean $(SD)_{\text{White}}$ = -12.48 (22.68), Mean $(SD)_{\text{Black}}$ = -29.66 (25.40); $t(347) = 6.61$, $p < .001$], such that Blacks were (more than two times) less accurate in their estimation of how the outgroup perceives them compared to Whites.

Table 1. Outgroup attitudes, meta-attitudes, and meta-attitude accuracy for Studies 1-4

Study 1	**Outgroup attitudes**	**Meta-attitudes**	**Meta-attitude accuracy**
Whites	73.35 (22.45)	52.81 (22.68)	-12.48 (22.68)
Blacks	65.30 (23.65)	43.69 (25.40)	-29.66 (25.40)
	$p = .001$	$p = .001$	$p < .001$
Study 2	**Outgroup attitudes**	**Meta-attitudes**	**Meta-attitude accuracy**
Turks	53.38 (25.89)	49.41 (27.21)	-15.33 (27.21)
Kurds	64.75 (25.81)	48.31 (24.50)	-5.06 (24.5)
	$p < .001$	$p = .707$	$p = .001$
Study 3	**Outgroup attitudes**	**Meta-attitudes**	**Meta-attitude accuracy**
Turks	57.23 (25.38)	47.08 (25.90)	-17.66 (25.90)

Kurds	66.26 (23.32)	36.13 (23.89)	-21.09 (23.89)
	p = .004	p = .001	p = .277
Study 4	**Outgroup attitudes**	**Meta-attitudes**	**Meta-attitude accuracy**
Catholics	67.50 (20.91)	51.40 (23.63)	-21.26 (23.63)
Protestants	72.66 (22.03)	53.57 (23.12)	-13.92 (23.12)
	p = .056	p = .457	p = .012

Note. p values indicate independent t-tests comparing outgroup attitudes, meta-attitudes, and meta-attitude accuracy across group status in each study.

Mediational role of meta-attitude accuracy

We conducted a multigroup path analysis in MPlus Version 8.5 (Muthén & Muthén, 1998). The bootstrapping procedure (5000 samples) with 95% confidence intervals was performed to test for indirect effects. We used positive and negative contact as the independent variables, meta-attitude accuracy as the mediator variable, group status as the grouping variable and outgroup attitudes as the dependent variable.

The indirect effect of positive contact on outgroup attitudes through meta-attitudinal accuracy was significant for only Whites, $\beta = .08$, $SE = .03$, 95% CI [.02, .14], but not for Blacks, $\beta = .06$, $SE = .036$, 95% CI [.00, .15]. The indirect effects of negative contact on outgroup attitudes were only significant for Blacks, $\beta = -.09$, $SE = .03$, 95% CI [-.14, -.01], but not for Whites (Figure 1). All direct and indirect paths were reported in Table S1 in Supplementary Materials.

Table 2. Descriptive statistics and correlation between the main variables in Study 1 and 2

Study 1	Mean (SD) Whites	Mean (SD) Blacks	1	2	3	4
1. Positive Contact	4.91 (1.61)	5.77 (1.34)	-	.02	.14	.27**
2. Negative Contact	1.85 (1.11)	3.14 (1.40)	.01	-	-.21**	-.26**
3. Meta-accuracy	-12.48 (22.68)	-29.65 (25.40)	.30**	-.11	-	.50**
4. Outgroup attitudes	73.35 (22.45)	65.30 (23.65)	.44**	-.31**	.52**	-

Study 2	Mean (SD) Turks	Mean (SD) Kurds	1	2	3	4
1. Positive Contact	4.55 (1.93)	5.51 (1.47)	-	-.03	.36**	.56**
2. Negative Contact	2.14 (1.56)	2.65 (1.69)	.16**	-	-.15	-.03
3. Meta-accuracy	-15.33 (27.21)	-5.06 (24.5)	.23**	.18**	-	.64**
4. Outgroup attitudes	53.38 (25.89)	64.75 (25.81)	.36**	.03	.64**	-

Note. Correlations for ethnic minorities (Blacks and Kurds) were presented on the right of the diagonal and correlations for ethnic minorities were presented on the left of the diagonal. Correlations are significant at * .05 and ** .01.

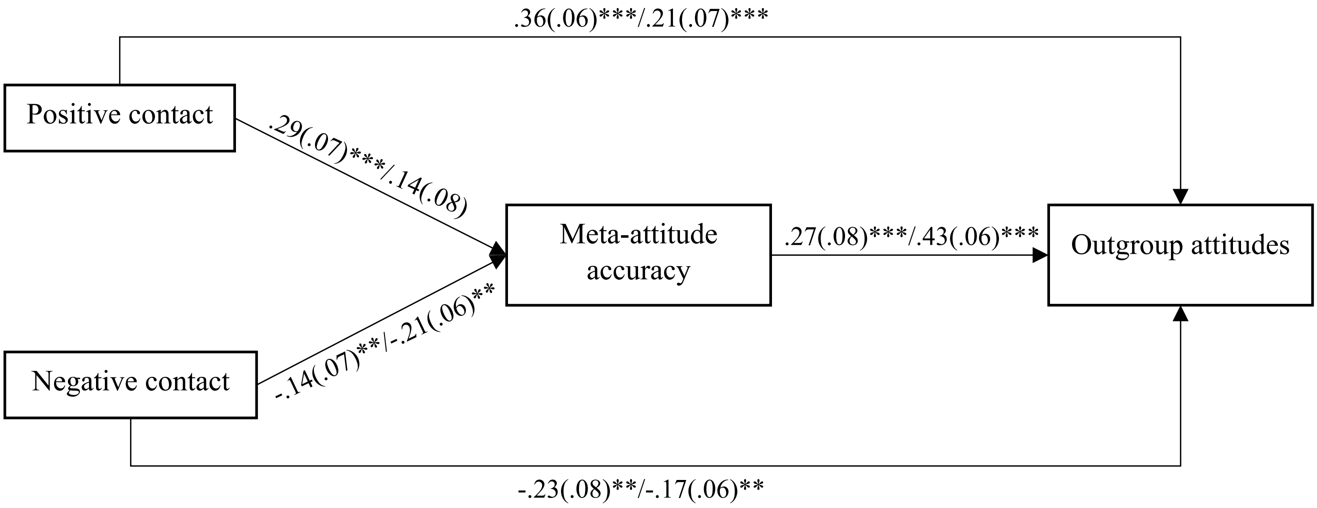

Figure 1. The mediational effect of meta-accuracy among positive and negative contact and outgroup attitudes in Study 1. Note that the left placed coefficients are for Whites and right placed coefficients for Blacks, $N = 347$. $p < .05$*, $p < .01$**, $p < .001$***.

Discussion

Confirming H1, meta-perceptions were overly negative in both groups. Positive contact was associated with increased meta-accuracy only among White British participants, while negative contact was associated with decreased meta-accuracy among Black British participants. In turn, meta-attitude accuracy predicted outgroup attitudes for both groups (particularly strongly among the minority group). The inconsistent effect of positive contact across group status maybe explained by the overwhelming evidence in the contact literature demonstrating contact to be more transformative and exert greater prejudice reduction for majority group members compared to minority ones (Barlow et al., 2013; Tropp & Pettigrew, 2005). Our results suggest partial evidence for H2a and H2b.

Study 2

Study 2 aimed to replicate Study 1 in a different intergroup context, Turkish-Kurdish relationships in Turkey, characterized by strong intractable conflict over the years (e.g., Uluğ et al., 2021). Despite their status differentials, with Turks being the advantaged group, both groups report strong negative stereotypes about the relevant outgroup (e.g., Bilali et al., 2014). Research also shows the existence of strongly biased conflict narratives which are likely to shape negative intergroup relationships in this context (Uluğ et al., 2021).

Method

Participants and procedure

We used data from a published study (Bagci et al., 2023) after getting permission from the authors. Data were collected online from 397 Turkish nationals (265 ethnic Turks and 132 ethnic Kurds, 248 Females and 149 Males, $M_{age} = 32.81$, $SD = 11.67$). A post-hoc power analysis can be found in Supplementary Materials.

Materials

All measures were identical to Study 1 and were adapted to Turks/Kurds as the target groups.

Results

Descriptive statistics

Table 1 displays mean outgroup attitudes, meta-attitudes and meta-attitude accuracy scores. Independent samples t-test indicated a significant difference among Turks and Kurds in their accuracy scores [Mean $(SD)_{Turk} = -15.33$ (27.21), Mean $(SD)_{Kurd} = -5.06$ (24.5); $t(354) = -3.49$, $p = .001$]. Turks were (three times) less accurate in their estimation of their ingroup evaluation by Kurds than were Kurds in their ingroup evaluation by Turks.

Mediational role of meta-attitude accuracy

We ran a multigroup path analysis in MPlus 8.5 as in Study 1. The indirect effects of positive contact on outgroup attitudes through meta-attitude accuracy were significant for both Turks, $\beta = .16$, $SE = .04$, 95% CI [.07, .25], and Kurds, $\beta = .15$, $SE = .05$, 95% CI [.08, .28]. The indirect effects of negative contact on outgroup attitudes through meta-attitude accuracy were only significant for Turks, $\beta = .10$, $SE = .04$, 95% CI [.01, .19], but not for

Kurds (see Figure 2). All direct and indirect paths were reported in Table S2 in Supplementary Materials.

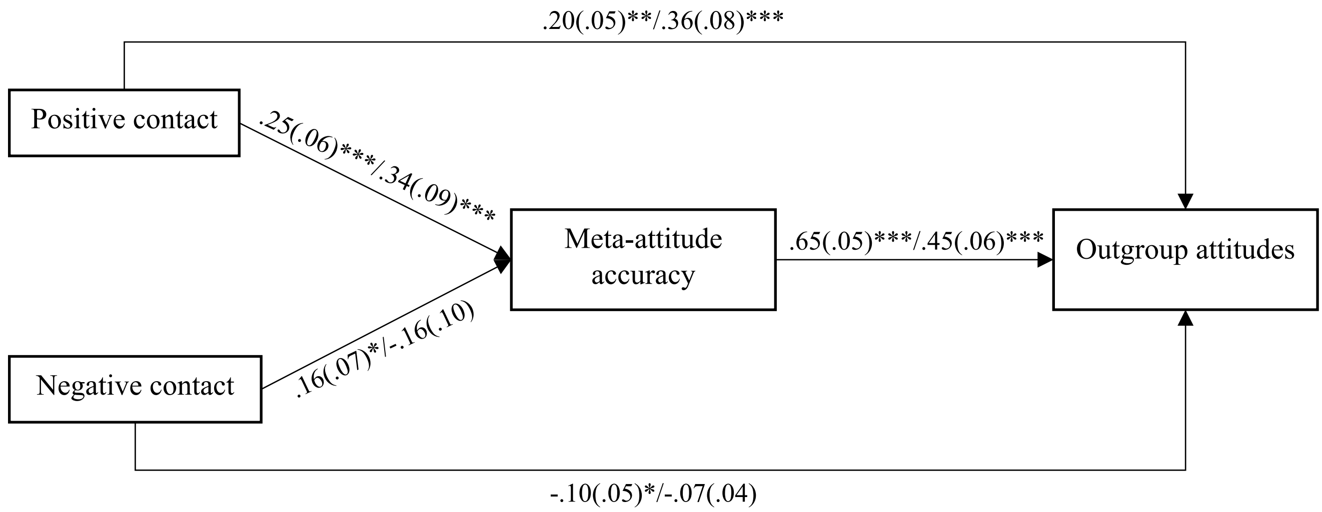

Figure 2. The mediational effect of meta-accuracy among positive and negative contact and outgroup attitudes in Study 2, $N = 333$. Note that the left placed coefficients are for Turks and right placed coefficients for Kurds, $p < .05$*, $p < .01$**, $p < .001$***.

Discussion

Study 2 demonstrated further evidence for a discrepancy in group members' judgments of what the outgroup thinks of them and their actual attitudes. For all groups, regardless of status, meta-perceptions were largely inaccurate, demonstrating evidence for H1. Study 2 was conducted in Turkey, in a more conflictual and prejudicial context whereby Turks, as the majority group, were less accurate in their meta-attitudes. As expected, positive contact was consistently associated with greater meta-attitude accuracy for Turks and Kurds, which was in turn associated with positive outgroup attitudes (H2a). For Kurds, who are arguably more familiar with negative treatment and prejudice from Turks (e.g., Bagci & Çelebi, 2017), negative contact did not predict meta-attitude accuracy. Interestingly, negative contact predicted increased meta-attitude accuracy in the case of Turks (no support for H2b), for whom both types of contact, regardless of valence, was associated with greater accuracy.

Study 3

Studies 1 and 2 established the mediating role of intergroup meta-attitude accuracy in the relationship between contact experiences and outgroup attitudes and demonstrated particularly positive contact to be a consistent precursor of meta-attitude accuracy. Yet, the mechanisms that link contact to meta-attitude accuracy are not known. Study 3, conducted in the Turkish-Kurdish context, further aimed at exploring social psychological processes that explain how contact is associated with meta-attitude accuracy, which is in turn linked with more positive outgroup attitudes.

Method

Participants and procedure

We recruited participants through social media platforms and by distributing QR code brochures in Istanbul. Participants completed an online survey including demographic questions, positive and negative contact, intergroup anxiety, fear, and anger, outgroup knowledge, perspective taking, shared reality, meta-attitudes and outgroup attitudes measures. Required sample size was estimated by an a priori power analysis (see Supplementary Materials).

In total, 433 Turkish citizens were recruited for the study. We excluded 127 participants in total (27 of them were excluded because they indicated their ethnicity was neither Turk nor Kurd, 96 participants failed to provide data on the main dependent variables[1], and finally we excluded four participants due to their age being below 18). The final sample consisted of 306 participants (136 male; 44.4%, 165 female; 53.9%, M_{age} = 29.84, *SD* = 10.77; 214 ethnic Turks and 92 ethnic Kurds).

Materials

[1] Note that many respondents who failed to provide data on the main dependent variables did not continue to the study after checking the informed consent page. This may be due to the focus of the research, being either sensitive or uninteresting to the potential participants.

Unless otherwise stated, all response scales ranged from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Positive and negative contact, as well as meta-accuracy scales were the same as the previous studies.

Outgroup knowledge was assessed with two items; "I think I have a good degree of knowledge about Turks [Kurds]." and "I believe I know Turkish [Kurdish] people well." (r = .86).

Shared reality was assessed with seven items developed by Conley et al. (2016). Participants were asked to indicate how far they think their attitudes, experiences, and social as well as political viewpoints agree with the outgroup members' (e.g., "My attitudes are quite similar to those held by most Turkish [Kurdish] people") (α = .67).

Perspective-taking was measured with two items adapted from Aberson and Haag (2007); "I think I can understand the way Turks [Kurds] think." and "I can see the perspective of Turks [Kurds]." (r = .71).

Outgroup emotions were measured by four items (Bagci et al., 2022). Participants were asked to indicate the extent to which they feel anger, fury, fear, worry towards the outgroup.[2] The response scale ranged from 1 (*not at all*) to 7 (*quite a lot*, r = .80 for outgroup anger, r = .67 for fear).

Intergroup anxiety was measured by three items (adapted by Bagci & Gungor, 2019; Stephan & Stephan, 1985): "To what extent would you feel awkward, anxious, tense in a social interaction with a Turkish [Kurdish] person?". The response scale ranged from 1 (*not at all*) to 7 (*quite a lot)*, α = .89.

Results

Descriptive statistics

[2] Positive emotions (respect and admiration) were also added to counterbalance the positivity-negativity of items and were not included in the analysis.

Table 1 indicates mean outgroup attitudes, meta-attitudes and meta-attitude accuracy scores across groups. Table 3 indicates descriptive statistics and correlations among main variables for Studies 3. An independent samples t-test indicated that there is no statistically significant difference among Turks and Kurds in their accuracy scores [Mean $(SD)_{\text{Turks}}$ = -17.66 (25.90), Mean $(SD)_{\text{Kurds}}$ = -21.09 (23.89); $t(304) = .277$, $p = .60$] and both groups seem to have substantial discrepancy in terms of actual attitudes of the outgroup and their perception of it.

Mediational role of meta-attitude accuracy

Similar to Studies 1 and 2, we first conducted a multigroup path analysis whereby positive and negative contact were introduced as predictor variables, meta-attitude accuracy as the mediator and outgroup attitudes as the outcome variable. The indirect effects of positive contact on outgroup attitudes through meta-attitude accuracy were significant for Turks, $\beta = .23$, $SE = .04$, 95% CI [.15, .33], but not for Kurds, indicating partial evidence for H2a. The indirect effects of meta-attitude accuracy in the link between negative contact and outgroup attitudes were non-significant for both Turks and Kurds (No evidence for H2b). Table S3 shows all direct and indirect path coefficients in Supplemental Materials.

Cognitive Route

To test the cognitive route, we used multi-group path analyses. We treated positive and negative contact as the independent variables; outgroup attitudes as the dependent variable; shared reality, perspective taking, outgroup knowledge (parallel) and meta-attitude accuracy (serial) as mediators. The initial model fit indices indicated a poor fit, CFI = .67, RMSEA = .50, SRMR = .12, $\chi^2(6) = 237.39$. After adding the covariances between perspective-taking and outgroup knowledge, the model fit became excellent, CFI = .998, SRMR = .03, RMSEA = .05, $\chi^2(4) = 5.73$, $p = .22$.

We found significant indirect effects of positive contact on meta-attitude accuracy only through shared reality for both groups: Turks, $\beta = .03$, $SE = .01$, 95% CI [.01, .06]; Kurds, $\beta = .06$ $SE = .03$, 95% CI [.02, .16]. Similarly, the indirect association between negative contact and meta-attitude accuracy was significant via shared reality only among Turks ($\beta = -.03$, $SE = .01$, 95% CI [-.06, -.005]), but not for Kurds. While positive contact was associated with greater outgroup knowledge and perspective-taking, in turn, these variables were not associated with meta-accuracy. Figure 3 displays the cognitive route, and all direct and indirect paths were reported in Table S4 in Supplementary Materials.

Table 3. Descriptive statistics and correlation between the main variables in Study 3

Study 3	Mean (SD) Turks	Mean (SD) Kurds	1	2	3	4	5	6	7	8	9	10
1. Positive Contact	4.76 (1.97)	5.98 (1.41)	-	-.16	.27**	.46**	.22*	.30**	.41**	-.61**	-.32**	-.32**
2. Negative Contact	2.36 (1.77)	3.05 (1.72)	-.08	-	-.14	-.23*	.10	.04	-.25*	.24*	.41**	.28**
3. Meta-accuracy	-17.66 (25.90)	-21.09 (23.89)	.43**	-.16*	-	.58**	-.17	.007	.49**	-.14	-.35**	-.14
4. Outgroup attitudes	57.23 (25.38)	66.26 (23.32)	.55**	-.27**	.71**	-	.09	-.23*	.55**	-.33**	-.54**	-.20
5. Outgroup knowledge	4.09 (1.86)	5.80 (1.34)	.33**	.08	.12	.30**	-	.67**	-.10	-.17	.04	-.03
6. Perspective Taking	4.24 (1.71)	5.59 (1.45)	.35**	.05	.16*	.36**	.78**	-	.005	-.31**	-.14	-.18
7. Shared Reality	3.95 (.99)	3.92 (1.30)	.24**	-.22**	.39**	.41**	-.02	-.01	-	-.35**	-.41**	-.24**
8. Intergroup Anxiety	1.79 (1.29)	2.35 (1.64)	-.23**	.30**	-.26**	-.29**	-.12	-.13*	-.26**	-	.46**	.40**
9. Outgroup fear	2.32 (1.41)	3.35 (1.59)	-.15*	.22**	-.24**	-.15*	-.12	-.05	-.32**	.51**	-	.62**
10. Outgroup anger	2.57 (1.49)	2.72 (1.60)	-.21**	.39**	-.38**	-.40**	.06	.04	-.50**	.44**	.60**	-

Note. Correlations for Kurds were presented on the right of the diagonal and correlations for ethnic minorities were presented on the left of the diagonal. Correlations are significant at * .05 and ** .01.

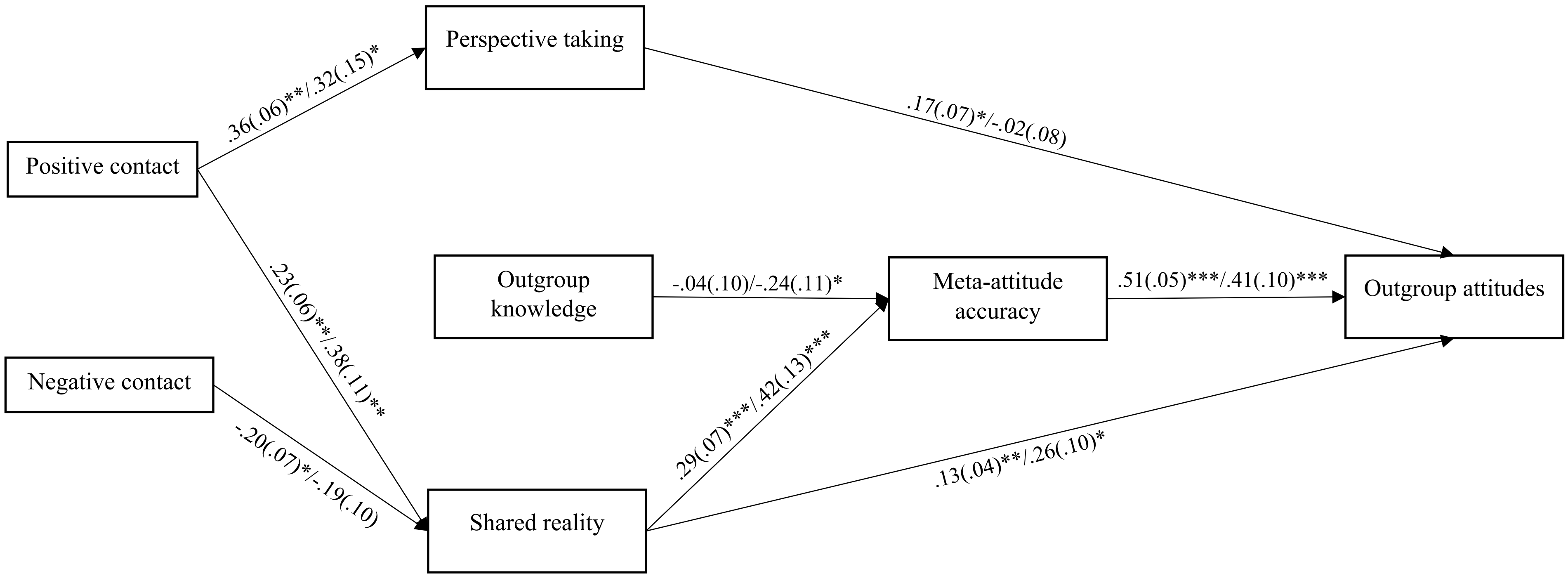

Figure 3. Cognitive route from contact to outgroup attitudes, Study 3, *N* = 306. Note that the left placed coefficients are for Turks and right placed coefficients for Kurds. *p* < .05*, *p* < .01**, *p* < .001***. Non-significant path coefficients were not displayed for simplicity.

Affective Route

To test the affective route, we used multigroup path analysis where positive contact and negative contact were independent variables; outgroup fear, outgroup anger, intergroup anxiety (parallel) and meta-attitude accuracy (serial) were mediators, and outgroup attitudes were the dependent variable. The initial model indicated a poor fit, CFI = .75, RMSEA = .43, SRMR = .13, χ^2 (6) = 179.27. After adding covariances among outgroup fear, anger and intergroup anxiety, the final model indicated a perfect fit.

Figure 4 displays the affective route. The indirect effects for meta-attitude accuracy were only significant through fear for Kurds (from positive contact to outgroup attitudes; β = .04, *SE* = .02 , CI [.007, .13]; from negative contact to outgroup attitudes, β = -.06, SE = .02 CI [-.12, -.009]), and through anger for Turks (from positive contact to outgroup attitudes; β = .03, *SE* = .01, CI [.004, .06]; and from negative contact to outgroup attitudes, β = -.06 SE = .02 CI [-.11, -.02]). The mediational role of intergroup anxiety was non-significant for both groups. All direct and indirect paths were reported in Table S5 in Supplementary Materials.

Discussion

Confirming our initial expectation and replicating the results of Study 2, both groups displayed substantial inaccuracy in their perceptions (confirming H1). However, we did not replicate the group status effect detected in Study 2; although actual attitudes towards Kurds were similar in both Studies 2 and 3, Kurds seemed to report greater inaccuracy (as much as Turks) in Study 3. One reason for this inconsistency might relate to the differences in terms of time period in data collection. Data for Study 3 were collected recently, during a time of increased political and economic instability in the country, which might have led Kurds to believe that they are more negatively perceived by Turks than in reality. On the other hand, data in Study 2 included a more diverse sample recruited from cities outside Istanbul, whereas Study 3 sample was mainly from Istanbul.

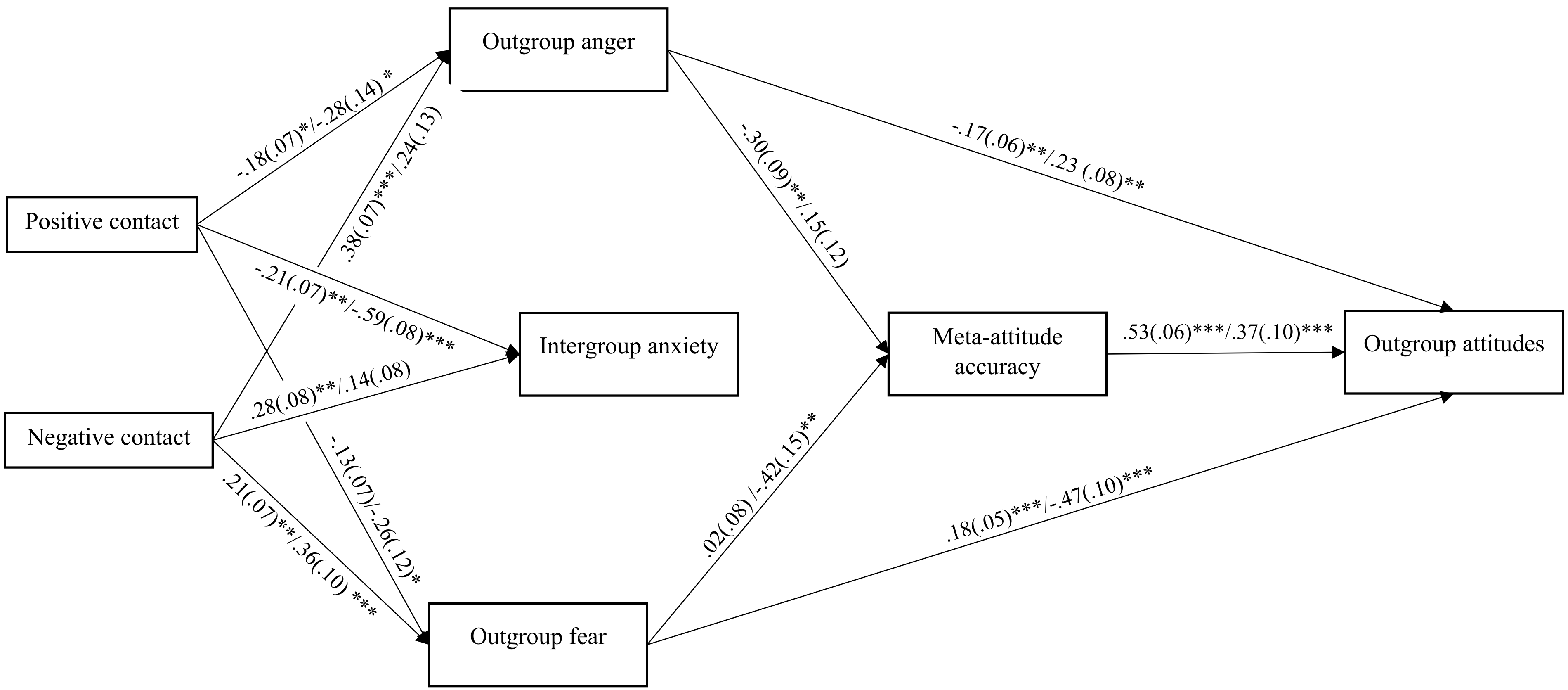

Figure 4. Affective route from contact to outgroup attitudes, Study 3, $N = 306$. Note that the left placed coefficients are for Turks and right placed coefficients for Kurds. $p < .05$*, $p < .01$**, $p < .001$***. Path coefficients from intergroup anxiety to outgroup attitudes are -.07 (.04) / .02 (.10). Non-significant path coefficients were not displayed for simplicity.

Furthermore, shared reality was as a consistent mediator for both groups (partial support for H3a). We also found different emotions to predict meta-attitude accuracy across group status: while fear was a critical mediator for Kurds, anger was more pertinent for Turks (providing partial support for H3b). This is unsurprising given the positions of these groups in society and previous findings demonstrating specific emotions to play differential roles across perceiver and target groups (Seger et al., 2017). Therefore, while at a cognitive level, shared reality through positive contact might be a crucial driver of meta-attitudinal accuracy, different negative emotions may trigger inaccurate meta-attitudes depending on group status and broader sociopolitical circumstances.

Study 4

The aim of Study 4 was to test our hypotheses in an additional intergroup context. We concentrated on the Northern Irish context to generalize the current findings. Similar to the previous study contexts, Northern Irish context has a long history of conflict (albeit contextually different, e.g., Turner et al., 2013). Moreover, sectarian division is still highly prevalent (Hewstone & Hughes, 2015). Nevertheless, in contrast to the Turkish-Kurdish and Black-White contexts examined in the previous studies, Northern Ireland is characterized by institutionalized segregation through the education system (Turner et al., 2013).

Method

Participants and procedure

We recruited participants from the Prolific Academic online survey platform. The eligibility criteria for recruiting participants were residing in Northern Ireland and being either Irish or British. Sample size was calculated by a priori power analysis and is included in the Supplementary Materials. In total, 290 Northern Ireland residents was recruited for the study. We excluded 26 participants in total (23 of them were excluded because they indicated their religious background was neither Catholic nor Protestant, and three participants failed to provide data on the main dependent variables). The final sample consisted of 264 participants (139 female; 52.7%, M_{age} = 38.62, *SD* = 12.18; 154 Protestant and 110 Catholic participants). Subjective socioeconomic status was assessed by a single item (M_{SES} = 3.84, *SD* = 1.21; 1 = *Very low*, 7 = *Very high*). Overall, 0.4% of the participants were primary school graduates, 32.2% were high school graduates, 44.7% were university graduates and 22.7% had post-graduate level education.

Materials

The measures were identical to Study 3 and were adapted to the context (Reliabilities: r = .88 for outgroup knowledge, r = .77 for perspective taking, r = .69 for anger and r = .67 for fear, α = .93 for intergroup anxiety and α = .83 for shared reality).

Results and Discussion

Descriptive statistics

Table 1 indicates meta-attitude accuracy scores across groups. An independent samples t-test indicated a significant difference among Catholics and Protestants in their accuracy [Mean $(SD)_{\text{Catholics}}$ = -21.26 (23.63), Mean $(SD)_{\text{Protestants}}$ = -13.92 (23.12); $t(262)$ = -2.51, p = .012]. Catholics were less accurate than Protestants in their estimation of their ingroup evaluation by the outgroup. Table 4 indicates descriptive statistics and correlations among main variables for Studies 4.

Mediational role of meta-attitude accuracy

We initially tested the mediational role of meta-attitude accuracy through multigroup path analysis as in Studies 1-3. The indirect effects of positive contact on outgroup attitudes through meta-attitude accuracy were significant for both Catholics, β = .13, *SE* = .05, 95% CI [.02, .24], and Protestants, β = .18, *SE* = .03, 95% CI [.10, .25]. The indirect effects of meta-attitude accuracy in the link between negative contact and outgroup attitudes were significant for both Catholics, β = -.12, *SE* = .06, 95% CI [-.23, -.01] and Protestants, β = -.06, *SE* = .03, 95% CI [-.12, -.009]. Table S6 shows all direct and indirect path coefficients in the Supplemental Materials.

Cognitive Route

We followed the same steps as in Study 3. The initial model fit indices indicated a poor fit, CFI = .76, RMSEA = .41, SRMR = .12, χ^2 (6) = 144.76. As shown by modification indices, we included covariances between perspective taking, outgroup knowledge and shared reality, which improved the model fit.

We found significant indirect effects for meta-attitude accuracy through shared reality for both groups (Catholics, β = .05, *SE* = .02, 95% CI [.01, .11]; Protestants, β = .04 *SE* = .01, 95% CI [.01, .08]). As in Study 3, positive contact was associated with greater outgroup knowledge and perspective taking, yet these variables did not further significantly relate to meta-attitude accuracy. None of the cognitive mediators significantly mediated the role of negative contact on meta-attitude accuracy (see Figure 5). All direct and indirect paths are reported in Table S7 in Supplementary Materials.

Table 4. Descriptive statistics and correlation between the main variables in Study 4

Study 4	Mean (SD) Catholics	Mean (SD) Protestants	1	2	3	4	5	6	7	8	9	10
1. Positive Contact	5.70 (1.36)	5.74 (1.38)	-	-.18*	.46**	.65**	.32**	.34**	.41**	-.37**	-.11	-.30**
2. Negative Contact	2.02 (1.00)	1.92 (.98)	-.40**	-	-.23**	-.27**	.006	-.07	-.18*	.40**	.40**	.32**
3. Meta-accuracy	-21.60 (23.63)	-13.92 (23.12)	.32**	-.30**	-	.64**	.26**	.24**	.44**	-.30**	-.18*	-.23**
4. Outgroup attitudes	67.50 (20.91)	72.66 (22.03)	.53**	-.40**	.69**	-	.28**	.37**	.52**	-.41**	-.19*	-.44**
5. Outgroup knowledge	5.15 (1.12)	5.17 (1.20)	.38**	-.19*	.29**	.35**	-	.63**	.31**	-.13	.01	.06
6. Perspective Taking	4.70 (1.21)	5.08 (1.13)	.32**	-.23*	.46**	.50**	.60**	-	.44**	-.20**	-.06	-.17*
7. Shared Reality	4.40 (1.01)	4.66 (.97)	.35**	-.30**	.57**	.55**	.25**	.47**	-	-.30**	-.16*	-.38**
8. Intergroup Anxiety	1.87 (1.15)	1.53 (.90)	-.41**	-.37**	-.41**	-.52**	-.24**	-.36**	-.41**	-	.52**	.24**
9. Outgroup fear	2.04 (1.19)	1.58 (.87)	-.28**	.34**	-.34**	-.35**	-.08	-.22	-.31**	.60**	-	.53**
10. Outgroup anger	1.73 (.97)	1.46 (.88)	-.28**	.40**	-.41**	-.45**	-.15	-.41**	-.40**	.54**	.65*	-

Note. Correlations for Protestants were presented on the right of the diagonal and correlations for ethnic minorities were presented on the left of the diagonal. Correlations are significant at * .05 and ** .01.

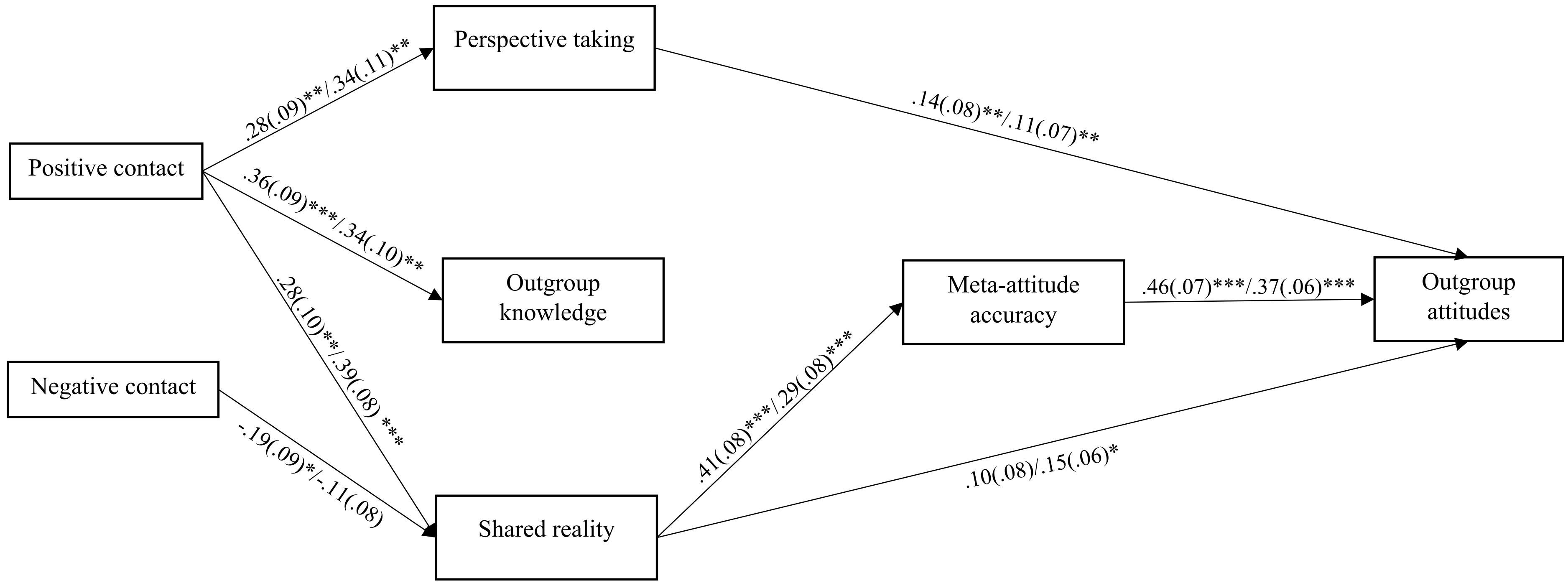

Figure 5. Cognitive route from contact to outgroup attitudes, Study 4, $N = 264$. Note that the left placed coefficients are for Catholics and right for Protestants. $P < .05$*, $p < .01$**, $p < .001$***.

Affective Route

To test meta-attitude accuracy through affective mediators we applied multigroup path analysis. This model initially indicated a poor fit, CFI = .75, RMSEA = .44, SRMR = .12, χ^2 (6) = 161.25. After adding covariances among outgroup fear, anger and intergroup anxiety, the final model indicated a perfect fit. The indirect links between *positive* or *negative* contact and meta-attitude accuracy were not significant through any outgroup emotions (see Figure 6). All direct and indirect paths were reported in Table S8 in Supplementary Materials.

Discussion

Replicating the previous studies, participants in Study 4 also reported an overestimation of perceived dislike from the outgroup (Confirming H1). We found this inaccuracy particularly pronounced among Catholic participants, who have been the lower status group in Northern Ireland historically and experienced significant discrimination (BBC, 2014). Although this status difference is now thought to have been largely eliminated structurally (e.g., equal numbers of Catholic and Protestants in employment, reflecting a considerable change since 2002; BBC, 2022), Catholics' beliefs about being negatively viewed seem to persist., and partly confirming H3a, shared reality functioned as a critical social psychological mechanism that explains how positive contact might be associated with increased meta-attitude accuracy. Replicating the effect of mediational effect of shared reality in the Northern Irish context may indicate more generalizable evidence. On the other hand, negative emotions did not significantly explain meta-attitude accuracy in this context (No support for H3b).

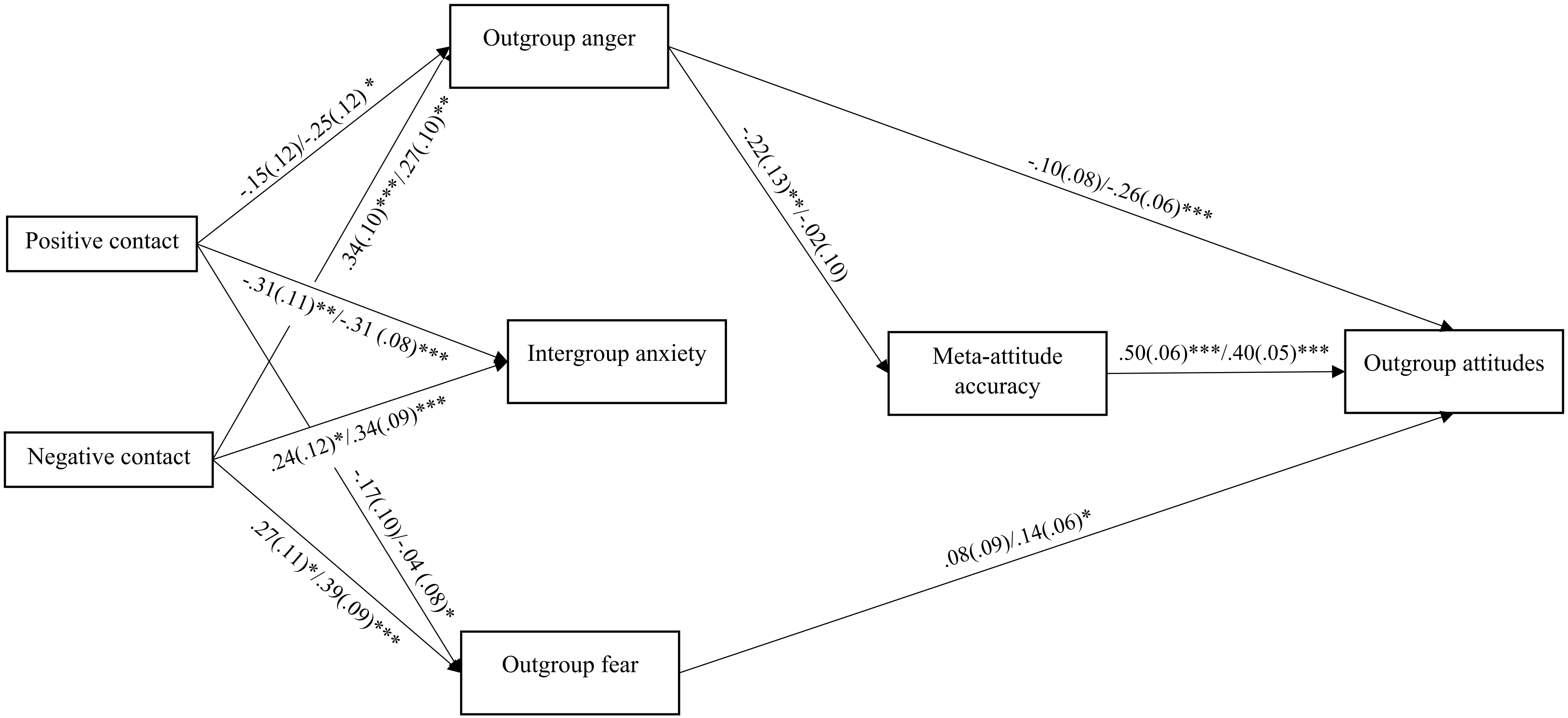

Figure 6. Affective Route from Contact to Outgroup Attitudes, Study 4, $N = 264$. Note that the left placed coefficients are for Catholics and right placed coefficients for Protestants. $p < .05$*, $p < .01$**, $p < .001$***. Path coefficients from intergroup anxiety to outgroup attitudes are .16 (.08) /-.13 (.06)*.

General Discussion

The current research showed that people tend to believe that their ingroup is perceived more negatively by the outgroup than in reality, as the recently growing meta-attitude inaccuracy literature has demonstrated (Frey & Tropp, 2006; Moore-Berg et al., 2020; Lees & Cikara, 2020; Ruggeri et al., 2021). This finding was consistent across four studies and three different socio-cultural settings. While inaccurate intergroup meta-perceptions existed among both majority and minority status group members, some status differences were observed. Overall, the minority status groups in the UK (Blacks) and Northern Ireland (Catholics) reported significantly greater inaccuracy than the majority status group in the relevant context. This is in line with previous research demonstrating minority status groups to internalize discrimination more and display generally more sensitivity to how they are evaluated in society compared to majority status groups (e.g., Mendoza-Denton et al., 2002; Schmitt et al., 2002). On the other hand, Turks in Turkey, as the majority group, indicated greater inaccuracy (Study 2), which is in line with previous research demonstrating Turks to also report a significant level of collective victimhood in the conflict (Bagci et al., 2018). However, this status effect disappeared in Study 3, which may indicate such (mis)perceptions to be potentially malleable and dynamic over time and across context.

Extending past research, we found that having positive intergroup contact is associated with greater accuracy about the outgroup members' attitudes towards the ingroup among all groups, in line with recent theoretical suggestions (Moore-Berg & Hameiri, 2024). Therefore, individuals' positive interactions with outgroup members were associated with having a less distorted view of the outgroup's attitudes towards their ingroup, which was in turn associated with improved outgroup attitudes. The mediational effects of meta-attitude accuracy in the link between negative contact and outgroup attitudes were however mixed across groups and contexts. Negative contact was associated with more negative outgroup attitudes via lower meta-attitude accuracy only among Blacks in Study 1 and among both Catholics and Protestants in Study 4. Contrary to our expectations, negative contact was associated with greater accuracy among Turks in Study 2. This may suggest that despite its negativity, some contact experiences may still provide a more 'realistic' account of what the other group thinks.

Several factors may explain inconsistent findings regarding the effect of negative contact across studies such as methodological issues and contextual differences. Although we have conducted power analyses, statistical power does not necessarily address issues related to representative sampling. For example, in Study 1, our post-hoc power analysis indicated that the power for detecting a significant effect for negative contact was .67 (see Supplementary Materials). Apart from methodological issues, how negative contact functions in each context may also vary. For example, in Turkey, the Turkish-Kurdish relationships represent a high conflict-high contact context (Bagci & Çelebi, 2017) where negative contact may not stand as a transformative experience especially for Kurds, which may explain why particularly for this group negative contact was not associated with meta-attitude accuracy. Further research is needed to understand better the links between negative contact and meta-attitudinal accuracy.

Cognitive Route

The current research also examined (in Studies 3 and 4) potential underlying mechanisms among contact and meta-attitude accuracy. Shared reality was the only significant and consistent mediator via meta-attitude accuracy in the relationship between contact and outgroup attitudes. We believe that this may reflect the fact that individuals perceiving shared reality may partially reflect a 'projection heuristic' for the meta-perceiver, as they believe that they share similar experiences and agree on many issues, so that the outgroup member may also think like them. In other words, if they think they like the outgroup and they perceive some proportions of shared reality at the same time, they may also think the outgroup member would use the same heuristic. On the other hand, shared reality is the only variable that emphasizes a 'commonality' with the outgroup and implies an inclusive understanding of the two groups, unlike the other mechanisms that only consider how the participants think. As such, previous research has shown that shared mentalities and perceptions such as inclusive victimhood beliefs also encourage reconciliation processes in conflictual contexts (e.g., Vollhardt, 2015). Similar to inclusive victimhood beliefs, shared reality may imply that the two individuals, despite group differences, are on the same page mentally; this may provide a basis for the formation of common perceptions, greater understanding of intergroup attitudes and eventually correct biased meta-perceptions. On the other hand, shared reality mainly mediated the role of *positive* intergroup contact, but not the role of negative contact in Studies 3 (except Turks) and 4, demonstrating valence to have a significant role on the generation of a shared reality in intergroup relations (Conley et al., 2016; Lutterbach & Beelmann, 2020).

Contrary to our expectations, outgroup knowledge and perspective taking were not associated with greater meta-attitude accuracy. We initially posited that contact may act as an avenue or a tool for transferring information about what the outgroup thinks about the ingroup and thereby reveal some information about meta-perceptions. Therefore, we expected knowledge about the outgroup and taking their perspective may also signal cues about the outgroup's perception of the ingroup. Nevertheless, these processes may not fully reflect what the outgroup actually think. Moreover, in highly polarized intergroup contexts, topics that are related to group memberships in intergroup interactions are likely to be avoided. For example, in a previous study conducted among Turks and Kurds, the contents of imagined contact were depicted to specifically exclude topics related to intergroup relationships (Bagci et al., 2019). Hence, processing information about and taking the perspective of the outgroup may not necessarily involve what the outgroup generally thinks about the ingroup, especially when concerns about being discriminatory or prejudiced are high.

Affective Route

The affective route to meta-attitude accuracy was inconsistent. In Study 3, we only found significant indirect effects for meta-attitude accuracy through outgroup fear among Kurds and anger among Turks in the context of Turkish-Kurdish interethnic conflict. As suggested, outgroup anger and fear may distort processing the relevant information regarding the outgroup's actual attitudes towards the ingroup (Brown et al., 2008; Cheung-Blunden & Blunden, 2008). It is not surprising that different emotions are at play for different status level groups based on the nature of the conflict (Seger et al., 2017). While minority Kurds' meta-perceptions may be distorted due to the fear of oppression and discrimination by the majority Turks, Turks' meta-perceptions may be distorted due to anger because of the various violent acts that have historically occurred in Turkey. On the other hand, the lack of significant findings in the Northern Irish context may be attributed to relatively lower levels of emotional responses to the outgroup, given that the conflict ended over 26 years ago and is therefore perhaps not as salient today as it once was, despite continued segregation (NICIE, 2007).

Limitations and Future Directions

One of the biggest limitations of the current research is the correlational nature of our data. The four studies that we conducted used correlational designs, and we must highlight that this methodology is not sufficient for inferring causation (Rohrer et al., 2022). Past research has argued that the association between contact and meta-perceptions may be bidirectional (e.g., Bruneau et al., 2021) and some research has also suggested that meta-perceptions about contact may imply contact willingness (Stathi, Di Bernardo et al., 2020). Future research should test the causal role of contact using experimental designs.

Another important limitation of our study was the representativeness of the samples across studies. We should note that it is not ideal to study meta-attitude (in)accuracy with student and convenience samples, since outgroup attitudes reported may not necessarily represent what the overall group actually think. While outgroup attitudes reported in Studies 2 and 3 (in Turkey) were comparable to previous studies[3], further research is needed to compute meta-attitude inaccuracy based on more representative sample's attitudes.

A further methodological issue may be related to our assessment of meta-attitude inaccuracy. Although previous empirical studies have used similar self-report measures to examine meta-attitude inaccuracies (e.g., Lees & Cikara, 2020), it is possible that especially in some intergroup contexts, participants' self-reported outgroup attitudes may partly reflect politically correct attitudes rather than true attitudes. Therefore, some group members' inaccurate judgments may be due to the outgroup's self-serving bias rather than their own misperceptions. Future research may solve this issue by using behavioral items (such as approach or avoidance tendencies) or implicit measures that potentially reflect more realistic assessments of intergroup perceptions. Additionally, measuring other constructs more objectively such as actual outgroup knowledge rather than perceived outgroup knowledge would have increased the predictability of meta-attitude accuracy.

More research is also needed to examine the role of shared reality on meta-attitude accuracy. One possible avenue is to further reveal which aspects of shared reality was particularly associated with meta-attitude accuracy. For example, previous research has demonstrated shared reality to reduce prejudice towards outgroups through reducing conflict perception and differential closeness (Conley et al., 2016). In a similar vein, shared reality may result in more accurate judgments about what the outgroup thinks through generating a

[3] Mean outgroup attitudes was 57.38 for the Turkish group and 63.57 for the Kurdish group (Yılmaz et al., 2018).

similar understanding about conflict and group memberships. At the applied level, shared reality may be easily integrated into indirect contact interventions such as imagined or vicarious contact strategies. An alternative methodology may be the use of VR (virtual reality) to implement positive intergroup contact experiences (see Tassinari et al., 2024) and generate a sense of shared reality simultaneously in order to promote meta-attitude accuracy.

While the intergroup contexts examined here represent a variety of settings with more or less conflict and status differential, previous research has also focused on *polarized* political group memberships (e.g., Lees & Cikara, 2019). An interesting avenue might be to explore to what extent findings could be generalized to less polarized intergroup contexts. A related avenue may be to assess the extent to which these different intergroup contexts favored Allport's (1954) optimal contact conditions. Although the role of positive contact on meta-attitude inaccuracy through shared reality was consistent across different contexts in the current study, it is possible that some inconsistent findings were due to the lack of some optimal contact conditions in some intergroup contexts. For example, 'equal status' is less likely to be satisfied in Turkey than the two other contexts where egalitarian values are endorsed more strongly. As such, Kende et al. (2018) demonstrated that contact–prejudice association may be stronger in egalitarian cultures. Moreover, Turkey represents a highly polarized interethnic context where policies that support interethnic integration ('support of the authorities') are relatively weaker. Future research is needed to assess how contextual differences that facilitate or hinder intergroup contact may reflect on the effectiveness of contact in correcting inaccurate meta-perceptions.

In terms of practical implications, previous research has shown disclosure interventions whereby individuals were presented with more accurate perceptions of the outgroup have been found to successfully reduce negative outgroup motive attributions (Lees & Cikara, 2020) and negative beliefs (Ruggeri et al., 2021). These studies have used disclosure in non-contact contexts, yet even more fruitful outcomes could be obtained by incorporating disclosure into intergroup contact interventions which may eventually improve intergroup relationships. Structured interventions through both direct and indirect forms of contact (e.g., mass-mediated contact, extended contact or electronic contact) may be therefore used as additional tools to rectify existing overestimations (see also Moore-Berg & Hameiri, 2024).

Conclusion

We contribute to the growing literature on meta-perceptions by showing consistently that group members in conflictual intergroup contexts tend to believe that they are more disliked by outgroup members than in reality. Our findings further indicate that particularly positive intergroup contact has the potential to rectify these inaccurate perceptions that reinforce existing conflicts. This work paves the path for further experimental research to allow a more in-depth understanding of the links between contact and meta-attitude accuracy.

Notes (Acknowledgements)

1. These studies are conducted as a part of doctoral studies of [REDACTED].

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Supplementary Materials

Tables

Table S1. Direct and indirect path coefficients in multigroup path analysis among Black and White groups in Study 1

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Whites				
PC -> MA	.29	.07	< .001	[.14, .43]
MA -> OA	.27	.08	.001	[.10, .43]
PC -> OA	.36	.06	< .001	[.22, .48]
PC -> MA -> OA	.08	.03	.011	[.02, .14]
NC -> MA	-.14	.07	.059	[-.29, .006]
NC -> OA	-.23	.08	.004	[-.38, -.07]
NC -> MA -> OA	-.04	.02	.108	[-.09, .001]
Blacks				
PC -> MA	.14	.08	.094	[.000, .33]
MA -> OA	.43	.06	< .001	[.29, .54]
PC -> OA	.21	.07	.004	[.11, .40]
PC -> MA -> OA	.06	.04	.103	[.00, .15]
NC -> MA	-.21	.07	.002	[-.31, -.04]
NC -> OA	-.17	.06	.004	[-.26, -.02]
NC -> MA -> OA	-.09	.03	.003	[-.14, -.01]

PC = Positive Contact, NC = Negative Contact, MA = Meta-attitude accuracy, OA = Outgroup Attitudes

Table S2. Direct and indirect path coefficients in multigroup path analysis among Turkish and Kurdish groups in Study 2

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Turks				
PC -> MA	.25	.06	< .001	[.11, .37]
MA -> OA	.65	.05	< .001	[.53, .75]
PC -> OA	.20	.05	.001	[.08, .31]
PC -> MA -> OA	.16	.04	.001	[.07, .25]
NC -> MA	.16	.07	.023	[.02, .29]
NC -> OA	-.10	.05	.066	[-.22, .00]
NC -> MA -> OA	.10	.04	.024	[.01, .19]
Kurds				
PC -> MA	.34	.09	< .001	[.21, .58]
MA -> OA	.45	.07	< .001	[.30, .56]
PC -> OA	.36	.09	< .001	[.23, .58]
PC -> MA -> OA	.15	.05	.003	[.08, .28]
NC -> MA	-.16	.10	.101	[-.35, .03]
NC -> OA	.07	.04	.140	[-.02, .16]
NC -> MA -> OA	-.07	.04	.106	[-.16, .01]

PC = Positive Contact, NC = Negative Contact, MA = Meta-attitude accuracy, OA = Outgroup Attitudes

Table S3. Direct and indirect path coefficients in multigroup path analysis among Turkish and Kurdish groups in Study 3

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Turks				
PC -> MA	.42	.05	< .001	[.30, .53]
MA -> OA	.56	.06	< .001	[.44, .68]
PC -> OA	.29	.05	< .001	[.18, .40]
PC -> MA -> OA	.23	.04	< .001	[.15, .33]
NC -> MA	-.13	.07	.066	[-.27, .006]
NC -> OA	-.15	.05	.003	[-.26, -.05]
NC -> MA -> OA	-.07	.04	.083	[-.16, .003]
Kurds				
PC -> MA	.26	.19	.181	[-.04, .69]
MA -> OA	.48	.09	< .001	[.24, .61]
PC -> OA	.31	.08	< .001	[.25, .59]
PC -> MA -> OA	.12	.07	.109	[-.02, .29]
NC -> MA	-.10	.13	.413	[-.36, .14]
NC -> OA	-.11	.06	.085	[-.24, .02]
NC -> MA -> OA	-.05	.06	.404	[-.01, .06]

PC = Positive Contact, NC = Negative Contact, MA = Meta-attitude accuracy, OA = Outgroup Attitudes

Table S4. Direct and indirect path coefficients in multigroup path analysis for cognitive route among Turkish and Kurdish groups in Study 3

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Turks				
PC -> SR	.23	.06	< .001	[.09, .35]
PC -> PT	.36	.06	< .001	[.23, .49]
PC -> OK	.11	.08	.170	[.21, .47]
PC -> MA	.33	.06	< .001	[.21, .45]
SR -> MA	.29	.07	< .001	[.15, .42]
PT -> MA	.08	.11	.465	[-.15, .28]
OK -> MA	-.04	.10	.704	[-.23, .18]
PC -> OA	.20	.04	< .001	[.10, .29]
MA -> OA	.51	.05	< .001	[.40, .63]
SR -> OA	.13	.04	.001	[.05, .21]
PT -> OA	.17	.07	.014	[.03, .30]
OK -> OA	.05	.07	.422	[-.07, .19]
PC -> MA -> OA	.17	.04	< .001	[.10, .26]
PC -> SR -> MA -> OA	.03	.01	.007	[.01, .06]
PC -> OK -> MA -> OA	-.007	.02	.712	[-.04, .03]
PC -> PT -> MA -> OA	.01	.02	.483	[-.02, .06]
NC -> SR	-.20	.07	.010	[-.34, -.04]
NC -> PT	.08	.08	.305	[-.07, .23]
NC -> OK	.11	.08	.170	[-.05, .26]
NC -> MA	-.07	.06	.266	[-.20, .05]
NC -> OA	-.15	.05	.002	[-.24, -.05]
NC -> MA -> OA	-.04	.03	.286	[-.11, .02]
NC -> SR -> MA -> OA	-.03	.01	.036	[-.06, -.005]
NC -> OK -> MA -> OA	-.002	.008	.765	[-.02, .01]
NC -> PT -> MA -> OA	.003	.007	.631	[-.01, .02]
Kurds				
PC -> SR	.38	.11	.001	[.24, .70]
PC -> PT	.32	.15	.038	[.09, .70]
PC -> OK	.24	.17	.148	[-.04, .62]
PC -> MA	.11	.19	.549	[-.20, .51]
SR -> MA	.42	.13	.002	[.18, .71]
PT -> MA	.13	.11	.249	[-.09, 36]
OK -> MA	-.24	.11	.033	[-.47, -.03]
PC -> OA	.19	.10	.080	[.03, .46]
MA -> OA	.41	.10	< .001	[.16, .57]
SR -> OA	.26	.10	.016	[.07, .50]
PT -> OA	-.02	.08	.765	[-.22, .12]
OK -> OA	.17	.09	.061	[.008, .38]
PC -> MA -> OA	.04	.07	.506	[-.08, .19]
PC -> SR -> MA -> OA	.07	.04	.078	[.02, .17]
PC -> OK -> MA -> OA	-.02	.03	.419	[-.11, .003]
PC -> PT -> MA -> OA	.01	.02	.487	[-.01, .08]
NC -> SR	-.19	.10	.073	[-.40, .26]
NC -> PT	.10	.12	.419	[-.14, .34]
NC -> OK	.14	.12	.234	[-.10, .38]
NC -> MA	-.003	.12	.981	[-.23, .23]
NC -> OA	-.09	.07	.181	[-.22, .06]
NC -> MA -> OA	-.001	.04	.980	[-.09, .09]

NC -> SR -> MA -> OA	-.03	.02	.168	[-.09, .003]
NC -> OK -> MA -> OA	-.01	.01	.338	[-.05, .009]
NC -> PT -> MA -> OA	.006	.009	.529	[-.01, .02]

PC = Positive Contact, NC = Negative Contact, MA = Meta-attitude accuracy, OA = Outgroup Attitudes, SR = Shared Reality, PT = Perspective Taking, OK = Outgroup Knowledge

Table S5. Direct and indirect path coefficients in multigroup path analysis for affective route among Turkish and Kurdish groups in Study 3

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Turks				
PC -> IA	-.21	.07	.004	[-.35, -.06]
PC -> A	-.18	.07	.010	[-.31, -.04]
PC -> F	-.13	.07	.005	[-.27, .006]
PC -> MA	.36	.06	< .001	[.24, .47]
IA -> MA	-.05	.07	.445	[-.20, .08]
A -> MA	.30	.09	.001	[-.46, -.12]
F -> MA	.02	.08	.767	[-.14, .19]
PC -> OA	.28	.05	< .001	[.17, .30]
MA -> OA	.53	.06	< .001	[.41, .65]
IA -> OA	-.07	.05	.151	[-.16, .02]
A -> OA	-.17	.06	.004	[-.28, -.05]
F -> OA	.18	.05	< .001	[.07, .28]
PC -> MA -> OA	.19	.04	< .001	[.11, .28]
PC -> IA -> MA -> OA	.006	.009	.466	[-.01, .02]
PC -> F -> MA -> OA	-.002	.007	.795	[-.01, .01]
PC -> A -> MA -> OA	.029	.015	.059	[.004, .06]
NC -> IA	.28	.08	.001	[.11, .44]
NC -> A	.38	.07	< .001	[.23, .51]
NC -> F	.21	.07	.005	[.06, .35]
NC -> MA	-.008	.07	.910	[-.16, .13]
NC -> OA	-.11	.05	.026	[-.21, -.01]
NC -> MA -> OA	-.005	.04	.911	[-.09, .07]
NC -> IA -> MA -> OA	-.008	.01	.496	[-.03, .01]
NC -> F -> MA -> OA	.003	.010	.785	[-.01, .02]
NC -> A -> MA -> OA	-.061	.023	.009	[-.11, -.02]
Kurds				
PC -> IA	-.59	.08	< .001	[-.84, -.52]
PC -> A	-.28	.14	.042	[-.62, -.08]
PC -> F	-.26	.12	.028	[-.59, -.12]
PC -> MA	.29	.19	.128	[-.01, .72]
IA -> MA	.17	.13	.193	[-.06, .45]
A -> MA	.15	.12	.202	[-.08, .37]
F -> MA	-.42	.15	.006	[-.72, -.12]
PC -> OA	.29	.11	.010	[.15, .61]
MA -> OA	.37	.10	< .001	[.13, .52]
IA -> OA	.02	.20	.807	[-.17, 22]
A -> OA	.23	.08	.004	[.05, .38]
F -> OA	-.47	.09	< .001	[-.64, -.26]
PC -> MA -> OA	.109	.06	.109	[-.005, .27]
PC -> IA -> MA -> OA	-.03	.04	.360	[-.14, .01]
PC -> F -> MA -> OA	.042	.03	.207	[.007, .13]
PC -> A -> MA -> OA	-.016	.02	.427	[-.06, .01]
NC -> IA	.14	.08	.066	[-.002, .31]
NC -> A	.24	.13	.078	[-.02, .50]
NC -> F	.36	.10	< .001	[.16, .55]
NC -> MA	-.013	.13	.920	[-.27, .22]
NC -> OA	-.016	.07	.816	[-.15, .12]
NC -> MA -> OA	-.005	.04	.918	[-.10, .08]

NC -> IA -> MA -> OA	.009	.01	.371	[-.002, .03]
NC -> F -> MA -> OA	-.058	.02	.044	[-.12, -.009]
NC -> A -> MA -> OA	.014	.01	.363	[-.008, .05]

PC = Positive Contact, NC = Negative Contact, MA = Meta-accuracy, IA = Intergroup Anxiety, F = Outgroup Fear, A = Outgroup Anger

Table S6. Direct and indirect path coefficients in multigroup path analysis among Catholic and Protestant groups in Study 4

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Catholics				
PC -> MA	.24	.10	.015	[.04, .43]
MA -> OA	.56	.05	< .001	[.45, .67]
PC -> OA	.31	.07	< .001	[.16, .44]
PC -> MA -> OA	.13	.05	.015	[.02, .24]
NC -> MA	-.20	.10	.037	[-.40, -.02]
NC -> OA	-.10	.07	.154	[-.23, .05]
NC -> MA -> OA	-.12	.05	.041	[-.23, -.01]
Protestants				
PC -> MA	.43	.06	< .001	[.27, .54]
MA -> OA	.42	.06	< .001	[.30, .53]
PC -> OA	.44	.06	< .001	[.29, .55]
PC -> MA -> OA	.18	.03	< .001	[.10, .25]
NC -> MA	-.15	.07	.028	[-.29, -.02]
NC -> OA	-.09	.05	.095	[-.20, .01]
NC -> MA -> OA	-.06	.03	.028	[-.12, -.009]

PC = Positive Contact, NC = Negative Contact, MA = Meta-accuracy, OA = Outgroup Attitudes

Table S7. Direct and indirect path coefficients in multigroup path analysis for cognitive route among Catholic and Protestant groups in Study 4

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Catholics				
PC -> SR	.28	.10	.006	[.07, .47]
PC -> PT	.28	.09	.002	[.10, .45]
PC -> OK	.36	.09	< .001	[.17, .54]
PC -> MA	.06	.10	.544	[-.13, .25]
SR -> MA	.41	.08	< .001	[.24, .57]
PT -> MA	.22	.11	.052	[-.007, .43]
OK -> MA	.007	.10	.947	[-.19, .21]
PC -> OA	.27	.07	< .001	[.13, .40]
MA -> OA	.46	.07	< .001	[.32, .61]
SR -> OA	.10	.08	.207	[-.06, .24]
PT -> OA	.14	.08	.088	[-.02, .30]
OK -> OA	-.01	.07	.854	[-.16, .14]
PC -> MA -> OA	.03	.04	.550	[-.06, .11]
PC -> SR -> MA -> OA	.05	.02	.044	[.01, .11]
PC -> OK -> MA -> OA	.001	.02	.951	[-.03, .04]
PC -> PT -> MA -> OA	.03	.02	.117	[-.001, .07]
NC -> SR	-.19	.09	.049	[-.37, .007]
NC -> PT	-.12	.08	.154	[-.29, .04]
NC -> OK	-.05	.10	.624	[-.23, .14]
NC -> MA	-.10	.09	.284	[-.29, .07]
NC -> OA	-.09	.07	.219	[-.22, .06]
NC -> MA -> OA	-.04	.04	.301	[-.14, .03]
NC -> SR -> MA -> OA	-.03	.02	.086	[-.08, .001]
NC -> OK -> MA -> OA	.000	.006	.978	[-.01, .01]
NC -> PT -> MA -> OA	-.01	.01	.269	[-.04, .007]
Protestants				
PC -> SR	.39	.08	< .001	[.21, .53]
PC -> PT	.34	.11	.002	[.11, .55]
PC -> OK	.34	.10	.002	[.12, .54]
PC -> MA	.30	.07	< .001	[.12, .43]
SR -> MA	.29	.08	< .001	[.12, .44]
PT -> MA	-.09	.08	.286	[-.26, .08]
OK -> MA	.13	.08	.117	[-.02, .31]
PC -> OA	.39	.07	< .001	[.23, .50]
MA -> OA	.37	.06	< .001	[.26, .49]
SR -> OA	.15	.06	.015	[.02, .26]
PT -> OA	.11	.07	.141	[-.04, .25]
OK -> OA	-.05	.06	.380	[-.18, .07]
PC -> MA -> OA	.11	.03	.001	[.008, .11]
PC -> SR -> MA -> OA	.04	.01	.010	[.01, .07]
PC -> OK -> MA -> OA	.01	.01	.237	[-.003, .05]
PC -> PT -> MA -> OA	-.01	.01	.34	[-.03, .01]
NC -> SR	-.11	.08	.169	[-.27, .04]
NC -> PT	-.01	.08	.856	[-.18, .13]
NC -> OK	.07	.09	.448	[-.10, .25]
NC -> MA	-.13	.06	.051	[-.26, .000]
NC -> OA	-.07	.05	.149	[-.18, .02]
NC -> MA -> OA	-.05	.02	.052	[-.10, .000]
NC -> SR -> MA -> OA	-.01	.01	.242	[-.03, .004]

NC -> OK -> MA -> OA	.004	.006	.550	[-.008, .01]
NC -> PT -> MA -> OA	.001	.004	.896	[-.007, .01]

PC = Positive Contact, NC = Negative Contact, MA = Meta-accuracy, OA = Outgroup Attitudes, SR = Shared Reality, PT = Perspective Taking, OK = Outgroup Knowledge

Table S8. Direct and indirect path coefficients in multigroup path analysis for affective route among Catholic and Protestant groups in Study 4

Effects	Standardized Beta	Standard Error	*p*	95% Confidence Intervals
Catholics				
PC -> IA	-.31	.11	.006	[-.51, -.07]
PC -> A	-.15	.12	.233	[.12, .53]
PC -> F	-.17	.10	.108	[-.37, .04]
PC -> MA	.14	.10	.183	[-.06, .35]
IA -> MA	-.20	.10	.057	[-.40, .01]
A -> MA	-.22	.13	.098	[-.48, .05]
F -> MA	.002	.13	.987	[-.26, .24]
PC -> OA	.27	.07	< .001	[.12, .40]
MA -> OA	.50	.06	< .001	[.38, .63]
IA -> OA	-.16	.08	.053	[-.33, .01]
A -> OA	-.10	.08	.205	[-.24, .07]
F -> OA	.08	.09	.402	[-.11, .27]
PC -> MA -> OA	.07	.05	.190	[-.03, .18]
PC -> IA -> MA -> OA	.03	.01	.085	[-.004, .07]
PC -> F -> MA -> OA	.000	.01	.989	[-.03, .02]
PC -> A -> MA -> OA	.01	.02	.378	[-.01, .06]
NC -> IA	.24	.12	.041	[-.001, .46]
NC -> A	.34	.10	.001	[.12, .53]
NC -> F	.27	.11	.020	[.02, .48]
NC -> MA	-.08	.09	.405	[-.26, .10]
NC -> OA	-.06	.07	.421	[-.20, .09]
NC -> MA -> OA	-.04	.05	.414	[-.13, .05]
NC -> IA -> MA -> OA	-.02	.02	.228	[-.07, .004]
NC -> F -> MA -> OA	.000	.02	.988	[-.04, .03]
NC -> A -> MA -> OA	-.04	.03	.187	[-.10, .008]
Protestants				
PC -> IA	-.31	.08	< .001	[-.45, -.14]
PC -> A	-.25	.12	.034	[-.44, .01]
PC -> F	-.04	.08	.610	[-.20, .10]
PC -> MA	.40	.07	< .001	[.22, .52]
IA -> MA	-.09	.09	.306	[-.26, .08]
A -> MA	-.02	.10	.804	[-.20, .19]
F -> MA	-.04	.11	.734	[-.28, .17]
PC -> OA	.35	.06	< .001	[.20, .46]
MA -> OA	.40	.05	< .001	[.29, .51]
IA -> OA	-.13	.06	.031	[-.25, -.01]
A -> OA	-.26	.06	< .001	[-.39, -.16]
F -> OA	.14	.06	.024	[.01, .27]
PC -> MA -> OA	.16	.03	< .001	[.08, .22]
PC -> IA -> MA -> OA	.01	.01	.337	[-.01, .03]
PC -> F -> MA -> OA	.001	.005	.890	[-.007, .01]
PC -> A -> MA -> OA	.003	.01	.799	[-.01, .02]
NC -> IA	.34	.09	< .001	[.15, .50]
NC -> A	.27	.10	.008	[.08, .48]
NC -> F	.39	.09	< .001	[.21, .57]
NC -> MA	-.09	.08	.239	[-.25, .06]
NC -> OA	-.03	.06	.653	[-.15, .10]
NC -> MA -> OA	-.04	.03	.242	[-.10, .03]
NC -> IA -> MA -> OA	-.01	.01	.359	[-.04, .01]

NC -> F -> MA -> OA	-.006	.02	.760	[-.06, .02]
NC -> A -> MA -> OA	-.003	.01	.827	[-.02, .02]

PC = Positive Contact, NC = Negative Contact, MA = Meta-attitude accuracy, IA = Intergroup Anxiety, F = Outgroup Fear, A = Outgroup Anger

Power Analyses

Study 1 post-hoc power analysis. Since we used published data, we did not have the chance to make an a priori power analysis. We calculated power via Monte Carlo Simulation web application created by Schoemann, Boulton and Short (2017; https://schoemanna.shinyapps.io/mc_power_med/). For a single mediator model with 351 participants and for 1000 replications we used correlation coefficients between X, Y and M and standard deviations as parameters; $r_{XM} = .30$, $r_{XY} = .45$, $r_{MY} = .65$; $SD_X = 1.84$, $SD_M = 26.73$, $SD_Y = 26.38$. The results indicate 1.0 power at 99% confidence level where X is positive contact, M is meta-accuracy and Y is outgroup attitudes. For negative contact, post-hoc power analysis indicated .67 power at 80% confidence level where X is negative contact, Y is outgroup attitudes and M is meta-accuracy (see additional parameters; $r_{XY} = .03$, $r_{XM} = .09$, $SD_X = 1.62$).

Study 2 post-hoc power analysis. We followed the same steps as in Study 1. For a single mediator model with 356 participants and for 1000 replications, we used correlation coefficients between X, Y and M and standard deviations as parameters; $r_{XM} = .10$, $r_{XY} = .29$, $r_{MY} = .53$; $SD_X = 1.53$, $SD_M = 26.62$, $SD_Y = 23.42$. The results indicate 0.73 power at 80% confidence level; where X is positive contact, Y is outgroup attitudes and M is meta-accuracy. For negative contact the results indicated 1.0 power 99% confidence level where X is negative contact, Y is outgroup attitudes and M is meta-accuracy (see additional parameters; $r_{XY} = -.324$, $r_{XM} = .533$, $SD_X = 1.43$).

Study 3 a priori power analysis. The a priori sample size was estimated by Monte Carlo Simulation web application created by Schoemann, Boulton and Short (2017; https://schoemanna.shinyapps.io/mc_power_med/). For a three parallel mediators model, to achieve a .80 power, for small regression coefficients (.20 each; because social psychology usually produces small effect sizes; Stanley et al., 2018) with 95% CI and 5000 replications, minimum required sample size was 260 (430 participants, for 99% power with .20 regression coefficients for each path).

Study 4 a priori power analysis. The a priori sample size was estimated by Monte Carlo Simulation web application created by Schoemann, Boulton and Short (2017; https://schoemanna.shinyapps.io/mc_power_med/). For a three parallel mediators model, to achieve a

.80 power, for small regression coefficients (.20 each; because social psychology usually produces small effect sizes; Stanley et al., 2018) with 95% CI and 5000 replications, minimum required sample size was 260 (430 participants, for 99% power with .20 regression coefficients for each path).

Additional Measures in Study 1 and 2

Study 1 and 2 included the following measures that are nonrelevant for the current study; social identity threat, ethnic collective narcissism, ethnic ingroup satisfaction, and psychological wellbeing. This part of the data has been published as:

Bagci, S. C., Stathi, S., & Golec de Zavala, A. (2023). Social identity threat across group status: Links to psychological well-being and intergroup bias through collective narcissism and ingroup satisfaction. Cultural Diversity and Ethnic Minority Psychology, 29(2), 208-220. https://doi.org/10.1037/cdp0000509

Unanalyzed Measures in Study 3 and 4

Below measurements are measured but were not included in any analysis to simplify the research questions.

Intergroup contact frequency. We assessed intergroup contact frequency with a single item adapted by Bagci et al. (2021; **'**How often do you interact with Kurds/Turks [Catholics/Protestants]?'). This item was presented on a 7-point scale (1 =Never, 7 = Extremely frequently), higher scores referred to a greater amount of time spent together.

Contact quantity. Intergroup contact quantity was measured with a single item (e.g., Bagci, Rutland, Kumashiro, Smith, & Blumberg, 2014), by asking participants to indicate the number of Kurdish friends they have ("How many Kurdish/Turkish [Catholics/Protestants] friends do you have?", response scale ranged from 1 = None to 7 = More than 31).

Contact quality. Intergroup contact quality was measured with a single item. How often do you share your secrets with Kurdish/Turkish [Catholics/Protestants] group members? (1= Never, 7 = Always).

Ingroup identification. Four items were used to measure ingroup identification on a 7-point Likert type scale which is adapted by Verkuyten (2007). The items mainly assess a sense of belonging to the group (''I belong to my ethnic group.''), how proud they feel as a part of the group (''I am proud of my ethnic group.'') and how central the group is to the participants' self-concept (''I identify with my ethnic group.'' and ''My ethnic identity is an important part of my identity.''). Responses range from 1: strongly disagree to 7: strongly agree and higher scores indicate greater ingroup identification.

Methodology

M1. Main scales used in Study 1

Scale items
Group
“How would you describe your ethnic background?”
Positive Contact
“How frequently do you form positive contact with [Black people] White people?”
Negative Contact
“How frequently do you have negative contact with [Black people] White people?”
Outgroup Attitudes
“Please indicate how warm you feel towards the following groups on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes. – Blacks [Whites]”
Meta-attitudes
“The following is about how warm others feel towards your ethnic group. Please indicate how warm these groups feel towards your group on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes. – Kurds [Turks]”

M2. Main scales used in Study 2

Scale items
Group "How would you describe your ethnic background?"
Positive Contact "How frequently do you form positive contact with [Turks] Kurds?"
Negative Contact "How frequently do you have negative contact with [Turks] Kurds?"
Outgroup Attitudes "Please indicate how warm you feel towards the following groups on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes. – Kurds [Turks]"
Meta-attitudes "The following is about how warm others feel towards your ethnic group. Please indicate how warm these groups feel towards your group on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes. – Kurds [Turks]"

M3. Main scales used in Study 3

Scale items
Ethnicity "We are all Republic of Turkey citizens, but we may also be from different origins. Which group do you feel you belong to?"
Positive Contact "How frequently do you form positive contact with [Turks] Kurds?"
Negative Contact "How frequently do you have negative contact with [Turks] Kurds?"
Outgroup knowledge "I think I have a good degree of knowledge about [Turks] Kurds." "I believe I know [Turkish] Kurdish people well."
Shared reality "My attitudes are quite similar to those held by most [Turkish] Kurdish people." "Most [Turks] Kurds haven't gone through the same experiences that I have." (r) "If I were to interact with a [Turkish] Kurdish person, chances are good that we would agree about lots of things." "I don't agree with [Turks] Kurds about most social and political issues." (r) "[Turks] Kurds and I share the same outlook on the world." "My life history is pretty different from that of most [Turks] Kurds." (r) "In general, my viewpoints are directly opposed to those of [Turks] Kurds." (r)

Perspective taking
"I can see the perspective of [Turks] Kurds."
"I think I can understand the way [Turks] Kurds think."

Outgroup fear
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Fear"
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Worry"

Outgroup anger
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Anger"
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Fury"

Positive emotions
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Admiration"
"This question aims to measure your emotions towards [Turks] Kurds. Please indicate the extent you feel the following emotions in general. – Respect"

Intergroup anxiety
"To what extent would you feel .... in a social interaction with a [Turkish] Kurdish person? – Tense"

"To what extent would you feel .... in a social interaction with a [Turkish] Kurdish person? – Awkward"
"To what extent would you feel .... in a social interaction with a [Turkish] Kurdish person? – Anxious"

Outgroup Attitudes

"Please indicate how warm you feel towards [Turks] Kurds on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes."

Meta-attitudes

"The following is about how warm others feel towards your community. Please indicate how warm you think [Turks] Kurds feel towards your group on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes."

M4. Main scales used in Study 4

Scale items
Community
“We appreciate that people vary in terms of how strongly they identify with their community but broadly speaking, what community would you typically say you are a member of?”
Positive Contact
“How frequently do you form positive contact with [Catholics] Protestants?”
Negative Contact
“How frequently do you have negative contact with [Catholics] Protestants?”
Outgroup knowledge
“I think I have a good degree of knowledge about [Catholics] Protestants.”
“I believe I know [Catholic] Protestant people well.”
Shared reality
“My attitudes are quite similar to those held by most [Catholic] Protestant people.”
“Most [Catholics] Protestants haven’t gone through the same experiences that I have.” (r)
“If I were to interact with a [Catholic] Protestant person, chances are good that we would agree about lots of things.”
“I don’t agree with Catholics [Protestants] about most social and political issues.” (r)
“[Catholics] Protestants and I share the same outlook on the world.”
“My life history is pretty different from that of most [Catholics] Protestants.” (r)
“In general, my viewpoints are directly opposed to those of [Catholics] Protestants.” (r)
Perspective taking
“I can see the perspective of Catholics [Protestants].”
“I think I can understand the way Catholics [Protestants] think.”
Outgroup fear
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Fear”
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Worry”
Outgroup anger
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Anger”
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Fury”
Positive emotions
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Admiration”
“This question aims to measure your emotions towards [Catholics] Protestants. Please indicate the extent you feel the following emotions in general. – Respect”
Intergroup anxiety

"To what extent would you feel .... in a social interaction with a [Catholic] Protestant person? – Tense"
"To what extent would you feel .... in a social interaction with a [Catholic] Protestant person? – Awkward"
"To what extent would you feel .... in a social interaction with a [Catholic] Protestant person? – Anxious"

Outgroup Attitudes

"Please indicate how warm you feel towards [Catholics] Protestants on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes."

Meta-attitudes

"The following is about how warm others feel towards your community. Please indicate how warm you think [Catholics] Protestants feel towards your group on a range between 0 degree (extremely unfavourable) to 100 degrees (extremely favourable), with 50 degrees representing neutral attitudes."

RESPONSE LETTER TO THE EDITOR AND THE REVIEWERS

Dear Editor and Reviewers,

Thank you very much for your email dated 29 May 2024, regarding the manuscript we submitted to Group Processes and Intergroup Relations entitled "*Do they dislike us as much as we think? Positive contact as a potential rectifier of meta-attitude inaccuracy in conflictual intergroup settings*".

We are grateful for the positive response to our research. The constructive comments we received have helped us to revise our manuscript. We want to thank to the Reviewers and to the Editor for giving us this opportunity to develop our manuscript. We are very pleased to resubmit it in the current form. Although we perceive each comment as equally important in informing us for improving our manuscript, we must admit that the discussion parts of the previous version of the manuscript indeed was weak. Therefore, we have undertaken an extensive re-write of this section.

We enclose the revised manuscript with this cover letter. In this letter, we outline the changes we have made to the previous manuscript with reference to all of the concerns raised by the reviewers in detail. All the relevant changes have been included in the manuscript in red font.

<u>**Responses to Reviewer 1**</u>

Comment #1: Overall, this paper does a good job of demonstrating evidence for its findings. It is generally well organized and written, and shows an extensive review of the literature. The paper is interesting in how it explores different contexts and psychological routes for meta-attitude inaccuracy. However, there are some sections where explanations and organization may be improved, as well as places where more minor revisions may be necessary.

Response #1: We thank the Reviewer for the positive response and constructive feedback.

Comment #2: Throughout the paper, it would be good to make references to Allport's four conditions for optimal contact. You are exploring several rather different contexts, and each of them likely satisfy different conditions for optimal contact differently. You could even use this to explain the different results between Studies 2 and 3 (which are in a similar context). This may also explain different correlations between items across contexts (as is the case for some of Table S2). Integrating this concept throughout would strengthen the explanations for results. Generally, adding detail about why you chose these different contexts would also improve readability of the paper. One of the more interesting things about this paper is that the contexts of different studies are so different. As such, it would be good to explain more about the implications of these different results and what they mean for this line of research.

Response #2: We thank the Reviewer for raising this important issue in our paper. We will start our response in relation to the different contexts where we conducted our research. Indeed, we sought to explore different contexts that vary in terms of socio-

political structure, power, cultural norms, and history. Nevertheless, all three contexts involved a degree of intergroup conflict. Our paper aimed to test the main research questions in three different contexts mainly to generalize our model across these varied intergroup settings, rather than specifically evaluating the broader contextual variables. We have now added a broader section on the context on p.11 (Please note that we also give details of the particular settings at the beginning of each study):

"The study of meta-attitude inaccuracy and its precursors may be especially critical in conflict contexts where individuals become even more sensitive to biased information processing, which plays an important role in the perpetuation of conflict (Bar-Tal, 2009). Conflict contexts often involve long-held frozen beliefs and make individuals less open to processing alternative information, which may result in erroneous meta-perceptions (e.g., Bar-Tal & Hameiri, 2020). As such, especially in polarized and competitive intergroup contexts, inaccurate meta-perceptions may fuel political violence and outgroup hostility (Mernyk et al., 2022; see also Lees & Cikara, 2020), which requires greater efforts to understand social-psychological processes that potentially reduce such inaccurate beliefs. Hence, in the current study, we focused on three different polarized contexts in order to increase the generalizability of our findings across settings. While these contexts are likely to involve socio-cultural, political, and historical differences (e.g., Bagci et al., 2023), they all contain varying degrees of intergroup conflict (see White et al., 2019 for the Catholic-Protestant context; Bagci et al., 2021 for the Turkish-Kurdish context and Bagci et al., 2023 for the White-Black British context), where understanding social psychological processes that rectify meta-attitude inaccuracies may have critical implications."

As regards Allport's optimal conditions for contact, while we agree with the Reviewer that the satisfaction of these conditions across different contexts may be critical, we may not integrate contact conditions throughout the whole paper, since a) this was not among our main research questions, b) we do not have either objective or subjective assessments of these conditions, c) these conditions may only function as facilitators rather than prerequisites (see Pettigrew & Tropp, 2006). Nevertheless, we believe speculating about at least some of these conditions in our discussion and indicating these for future directions may be a helpful avenue as the Reviewer suggested. Please see the added section in the limitations and future directions (p.40):

"A related avenue may be to assess the extent to which these different intergroup contexts favored Allport's (1950) optimal contact conditions. Although the role of positive contact on meta-attitude inaccuracy through shared reality was consistent across different contexts in the current study, it is possible that some inconsistent findings were due to the lack of some optimal contact conditions in some intergroup contexts. For example, 'equal status' is less likely to be satisfied in Turkey than the two other contexts where egalitarian values are endorsed more strongly. As such, Kende et al. (2018) demonstrated that contact–prejudice association may be stronger in egalitarian cultures. Moreover, Turkey represents a highly polarized interethnic context where policies that support interethnic integration ('support of the authorities') are relatively weaker. Future research is needed to assess how contextual differences that facilitate or hinder intergroup contact reflect on the effectiveness of contact in correcting inaccurate meta-perceptions."

Comment #3: The framing/organization of certain concepts of the paper is not optimally readable. It is good that you separate the cognitive and affective routes to meta-attitude accuracy – but it would also be important to note – why should we care about these as separate processes/what are the implications? The way the paper reads can sometimes feel like the cognitive/affective routes are afterthoughts to the broad questions about meta-attitude inaccuracy. It would be good to specify the reasoning behind expanding on Studies 1 and 2 with these additional variables. It would also be good to express in more detail what you see as the broader implications of these linkages.

Response #3: We thank the Reviewer for nudging us to critically think about the reasoning behind the classification of the suggested and tested mediators. In p.7-8 we added this new section:

"In the current research, we are also interested in the potential mediating mechanisms that explain the relationship between intergroup contact and meta-attitude accuracy, since these psychological processes may underline alternative ways whereby contact contributes to the correction of inaccurate meta-perceptions. We suggested two potential routes – cognitive and affective – following previous theoretical and empirical studies that suggest contact effects on outgroup attitudes are mediated by these two different pathways (e.g., Dovidio et al., 2004; Pettigrew & Tropp, 2008; Visintin et al., 2016). Moreover, meta-attitude inaccuracy is likely to be driven by both cognitive and affective factors and differentiating these mediating mechanisms in the light of intergroup contact may contribute to the design of contact interventions that are the most effective in rectifying inaccurate meta-perceptions."

Comment #4: Somewhere: Add a Table 2 for other study items? (Outgroup knowledge, perspective taking, shared reality, intergroup anxiety, outgroup emotions, etc.)

Response #4: Thank you for your suggestion. We have put Table S1 and S2 into the main text by renaming them as Table 2, 3 and 4.

Comment #5: Page 2, Lines 6-8: The first sentence is a little wordy, consider simplifying the definition of intergroup meta-attitude inaccuracy. (maybe something like (?): "the extent to which perceptions of outgroup views towards the ingroup diverge from actual perspectives")

Response #5: Thank you for this suggestion. We have changed the first sentence of the abstract as 'the extent to which perceptions of outgroup views towards the ingroup diverge from what they actually think'.

Comment #6: Page 3, Line 38: Is the Stathi, Di Bernardo et al., 2020 citation in the correct format? (Same occurs in other places as well)

Response #6: To our knowledge, APA requires to use the second author and avoid using a and b now. However, we have two 2021 papers with the same two authors. Therefore, we have put a and b for identifying those.

Comment #7: Page 11, Lines 54-56: Explain how these data are fielded from both Prolific and university students – are they pooled or separate?

Response #7: The data we accessed were pooled. We added 'The original data were pooled of both samples.'

Comment #8: Page 12, Line 19: Were respondents only assessed on positive/negative contact for the outgroup target? If so, it may be helpful to specify here.

Response 8#: Yes, the original data only assessed these variables for the outgroup target. We have explicitly specified it as 'All measures assessed the target outgroup only in the original dataset.'

Comment #9: Page 12, Lines 45-49: Maybe move up the outgroup attitudes section above the meta-attitude accuracy section – it feels a bit clunky to re-introduce the same item in this order.

Response #9: Thank you for your comment. Now we have moved outgroup attitudes above meta-perceptions.

Comment #10: Page 13, Line 27: Is meta-attitude accuracy for Blacks only inaccurate because of self-serving bias of Whites reporting attitudes towards minority groups (making it so they rate higher than their attitudes actually are?). This could also be discussed in the discussion section: why or why wouldn't a respondent's desire to appear friendly to outgroups be relevant here? How do we know that the experimental meta-attitude inaccuracies are consistent with real world expressions of sentiment towards outgroups?

Response #10: Thank you for bringing up this important issue. We agree with the Reviewer that one potential explanation for why Black people reported the highest inaccuracy might be White people behaving 'politically correct', such that their self-report may be indeed more positive than their actual behavior. This may indeed be the case in the other contexts too (perhaps less likely in Turkey where political correctness is less prevalent) and stand as a potential methodological issue. We therefore added the following section to the discussion (p. 39):

"A further methodological issue may be related to our assessment of meta-attitude inaccuracy. Although previous empirical studies have used similar self-report measures to examine meta-attitude inaccuracies (e.g., Lees & Cikara, 2020), it is possible that especially in some intergroup contexts, participants' self-reported outgroup attitudes may partly reflect politically correct attitudes rather than true attitudes. Therefore, some group members' inaccurate judgments may be due to the outgroup's self-serving bias rather than their own misperceptions. Future research may solve this issue by using behavioral items (such as approach or avoidance tendencies) or implicit measures that potentially reflect more realistic assessments of intergroup perceptions."

Comment #11: Page 14, Line 4: You put * here, but not on any other significant results – perhaps add * for all results in this table, or remove it here.

Response #11: Thank you for your attention to this, we have deleted it.

Comment #12: Page 18, Line 3: Here or in a later section, give an explanation for why so many respondents failed to provide data?

Response #12: We have decided to have main dependent variables in the participants' responses a deletion criterion. Many respondents did not continue to the study after looking at the first page, informed consent. This may be due to the sensitivity of the subject or the subject being out of interest of the potential participants.

We added a footnote (footnote 1) about this:

'Note that many respondents who failed to provide data on the main dependent variables did not continue to the study after looking at the informed consent page. This may be due to the focus of the research, being either sensitive or uninteresting to the potential participants.'

Comment #13: Page 18, Line 13: At the top of the "materials" section, specify that all the same items from the first studies were included here.

Response 13#: Thank you for your comment. We added this statement.

Comment #14: Page 22, Line 45-49: I'm not sure these explanations are sufficient alone for why the results were so different. It may also be good to talk about the different recruitment formats, and sample characteristics (social media vs other format)

Response #14: We thank R1 for this comment. The recruitment method was the same for both studies, nevertheless, Study 2 included a relatively more diverse sample from cities outside Istanbul too.

Comment #15: Page 24, Line 40: The Gallagher citation is not recent enough to support this point. Add a newer citation as well?

Response #15: We have now replaced the Gallagher citation with a more recent one (Hewstone & Hughes, 2015).

<u>**Responses to Reviewer 2**</u>

In the current manuscript, entitled "Do they dislike us as much as we think? Positive contact as a potential rectifier of meta-attitude inaccuracy in conflictual intergroup settings", the authors examined what predicts erroneous meta-perceptions (specifically, meta-prejudice), focusing on prior intergroup contact, in three contexts. They found that, generally speaking, positive contact predicted more accurate meta-perceptions, and that this was explained by perceived shared reality. I thought that the manuscript was well-written, deals with an important construct (i.e., meta-perceptions) in an important context (i.e., intergroup conflict), and that it was commendable that the authors conducted research among both high and low status groups in three different contexts. However, I believe that there are some issues that should be addressed to make it a substantial contribution with theoretical significance to the literature. I list these issues below, and I hope that the authors would find them useful.

Comment #1: I don't think that it's true that "...few researchers examining meta-perceptions from an intergroup perspective". The literature on meta-perceptions, and interventions to correct erroneous meta-perceptions have been blooming in the past couple of decades and in particular in the last 8-10 years or so, whether it's the work by Jacquie Vorauer and colleagues (e.g., 1998, 2000), to more recent work by Kteily, Bruneau, Moore-Berg and colleagues on meta-dehumanization (e.g., Bruneau et al., 2021; PSPB; Moore-Berg & Hameiri, 2024, TiCS) etc. There has also been work connecting between meta-perceptions and contact specifically, including the above-mentioned, as well as work by the group by Di Bernando, Capozza and colleagues (2014; TPM). I think that the authors should make sure they review the relevant literature (for reviews, see e.g., Capozza et al., 2014; Moore-Berg, 2023; Moore-Berg & Hameiri, 2024; Shelton & Richeson, 2006) - and I think that they already review considerable parts of it - and position their contribution within this literature.

Response #1: We thank the Reviewer for these important suggestions and constructive feedback. We have changed the wording in the introduction and added references in the relevant places.

Comment #2: I tend to agree with the authors that intractable conflicts might have particularly high levels of meta-perception inaccuracy, but I think that the authors should invest some more in explaining why. Also, I'm not entirely sure that it's necessary to focus on intractable conflicts, as I think a more general comment about conflict could be similarly made.

Response #2: Thank you for this suggestion. The reason why we specifically focused on intractable conflicts was because the two of our contexts are explicitly suggested to involve intractable conflicts; Turks and Kurds and Catholics and Protestants (see Bar-Tal, 2013) and as the Reviewer noted such contexts are relatively more convenient for the development of inaccurate meta-perceptions. Nevertheless, we agree with the Reviewer that meta-perception inaccuracy may emerge in both intractable and non-intractable contexts in general (potentially even in less conflictual intergroup contexts). Therefore, we removed the construct of 'intractable conflicts' from the main text, and instead concentrated on 'intergroup conflict'.

Comment #3: I don't think that it serves the authors well when they argue repeatedly that research on the topic of current research is scarce. I think that they should make this argument perhaps once in the bottom paragraph on p. 5. There is indeed less work on what predicts meta-perceptions (we do know that contact is associated with less negative meta-perceptions - also in contexts of intractable conflict - but it wasn't tested specifically about meta-perception accuracy; e.g., Bruneau et al., 2021). Again, not sure that the focus on intractable conflicts is necessary for the paper.

Response #3: We agree with the Reviewer on these issues. We have toned down these points throughout and acknowledged all the relevant work in the manuscript. We have also removed the focus on intractable conflicts.

Comment #4: I am not sure if I understand what the authors mean by perceivers, meta-perceivers, and the dyads (p. 5). On the intergroup level, there are numerous other ways to get exposed to information that could potentially inform meta-perceptions (e.g., being exposed to outgroup members through the media; being exposed to mass media and social media, etc.) This is not to say that interpersonal contact is not important, but I'm just not sure the extent to which this insight from interpersonal relations about the perceivers, meta-perceivers, and the dyads is useful here. Unless I don't understand it, and in that case, it might be useful to elaborate on it.

Response #4: We agree with the Reviewer on this insightful comment. Indeed, some information of the outgroup could be delivered not only via direct contact, but also through mass media, or even through indirect forms of contact such as extended contact or mass-mediated contact. While we elaborate intergroup contact at an interpersonal level with this statement and use the interpersonal relationship literature on meta-attitude accuracy, in later parts of the manuscript, we also refer to other means such as

mass-media as potential sources of meta-attitude accuracy. Please see our revised version as:

"Hence, direct contact involving face-to-face communication and interaction is likely to include the aforementioned elements."

Please note that, we do not think direct contact is the only mean to correct meta-perceptions, but we rather believe that such contact involves perceiver and meta-perceiver elements as sources of meta-accuracy, therefore providing a useful interpersonal context where inaccurate perceptions might change.

Comment #5: The paper mentions intractable conflicts several times in the introduction. As I noted above, I don't think that it's necessary for the paper to focus on this specific context. But, if nonetheless the authors think that it's important, I think that some more attention to this part of their argument is important - this includes some more elaboration on what intractable conflicts are, and why should meta-perceptions be particularly inaccurate in this context.

Response #5: We removed the focus on intractable conflicts, and we agree that it is not a vital element in the paper.

Comment #6: I see that the focus is on meta-prejudice. It might also be good to talk a little bit about the different types of meta-perceptions that are studied in the literature (e.g., meta-prejudice, meta-dehumanization, meta-perceptions about policy support) and whether the research is relevant to all of them.

Response #6: Thank you for this very important suggestion. Now, we have taken the opportunity to mention relevant studies including O'Brien et al., 2018, Mernyk et al., 2022, Lees & Cikara, 2021 and Fernbach & Van Boven, 2022.

We have added on p. 4:

"While previous research has also examined different types of meta-perceptions in the literature such as meta-dehumanization (Kteily et al., 2016), meta-beliefs (e.g., Adra et al., 2020) and misperceived polarization (Lees & Cikara, 2021; as known as false polarization, Fernbach & Van Boven, 2022), we specifically focused on meta-attitudes in the current research given that these include a broader range of perceptions and evaluations than the other constructs."

Comment #7: It should be noted that it's not ideal to study meta-perceptions accuracy with student sample or convenience samples that are not representative in any way. Making an argument that meta-perceptions are accurate or not with such a sample is severely limited given that the perceptions (and meta-perceptions) do not necessarily represent what the groups actually think. As the meta-perception questions were about the outgroup in general, and not what students from a certain university think. This should be discussed in the general discussion.

Response #7: We thank reviewers for this very important comment. We believe this is one of the critical limitations of the study. While we believe the outgroup attitudes driven from less representative samples may not fully reveal the more general 'public opinions' about these groups. Nevertheless, we could at least cross-check from previous

studies whether the 'outgroup attitudes' we obtained in the current studies match other studies. For example, for the Turkish-Kurdish context, the outgroup attitudes we had for both groups were similar to what previous studies indicated (Yılmaz et al., 2018), which is added as a footnote now. We noted this as a limitation on p. 39:

"Another important limitation of our study was the representativeness of the samples across studies. We should note that it is not ideal to study meta-attitude inaccuracy with student and convenience samples, since outgroup attitudes reported may not necessarily represent what the overall group actually think. While outgroup attitudes reported in Studies 2 and 3 (in Turkey) were comparable to previous studies (see footnote 3), further research is needed to compute meta-attitude inaccuracy based on more representative sample's attitudes."

Comment #8: I think that it makes more sense to me to use the absolute value of the difference between meta-perceptions and actual perceptions - people can be off in their meta-perceptions in both directions compared to actual perceptions, and I think that using absolute values will take that into consideration.

Response #8: We thank the Reviewer for bringing this plausible alternative approach. We considered using the absolute value for the differences, but we refrained from using this approach for two main reasons. First of all, the computation of meta-attitude inaccuracy scores was based on previous research that used the similar procedure (e.g., Moore-Berg et al., 2020), therefore we did not want to deviate from an already established procedure. Second, while we believe that the absolute values would show how different the perceived and actual scores are, this approach would restrict our understanding of the direction of the discrepancy. In other words, if we simply used absolute values, then it would have been impossible to understand whether there was a positivity or negativity bias, which was one of the main focus of our research. Therefore, we decided not to use the absolute values, unless this is considered necessary by the Reviewer and the Editor in a further revision.

Comment #9: I think that it'll be good to add a short discussion of the results for each study. If the authors want to add an interim summary after study 2, it might make more sense to call the first two studies 1a and 1b (especially taking into account that these databases are taken from a previous publication).

Response #9: As suggested, we have now added a discussion section after Study 1.

Comment #10: In all studies, it'll be good to address issues of power more thoroughly (see recent paper by Giner-Sorolla et al., 2024).

Response #10: Since we did not want to overload the main text (given that we already added a number of sections now), we kept power analyses in SM. Yet, we discussed power related issues in the general discussion section in the main text.

Comment #11: In all studies, what was the order in which participants responded to the measures? Also, in Study 3, the method section does not include all measures used in the study.

Response #11: We did not want to repeat the same measures used in the previous studies and thereby noted the following on p. 21:

"Positive and negative contact, as well as meta-accuracy scales were the same as the previous studies."

For Study 1 and 2 the order was positive contact, negative contact, outgroup attitudes and meta-perceptions. In Study 3 and 4 the order was positive and negative contact, outgroup attitudes, meta-perceptions, outgroup knowledge, shared reality, perspective taking, emotions, intergroup anxiety.

Comment #12: I am not sure I understand the reasoning behind separating between the cognitive and affective routes in the analysis. Why not looking into all potential mechanisms in parallel? Also, for sake of simplicity, I suggest removing the "outgroup attitudes" variable from this analysis. I don't think it's important in this analysis. Alternatively, the authors can have just one model rather than running two separate models.

Response #12: Please also see our response to R1's Comment #3 for why we theoretically included two different routes. Unfortunately, including all the mediating mechanisms in a single model would have overloaded our models statistically, with six parallel mediators. As regards the role of outgroup attitudes, in both Studies 1 and 2, this was the main outcome variable (therefore was necessary to include) and in the following studies (3 and 4), it would have been inconsistent to remove this outcome from the model. Therefore, while we believe this was a less important variable, especially in the latter two studies as suggested by the Reviewer, we believe replicating the whole model with additional variables in a consistent way was a priority.

Comment #13: In the introduction to Study 4, the authors write that one of the reasons for choosing this context is the potential intervention value, but it's not clear to me how this is different from the previous contexts.

Response #13: We have updated this sentence as 'similar to the first two study contexts, the Northern Irish context has a long (albeit contextually different) history of conflict'.

Comment #14: In the general discussion, before moving to the cognitive route, I think that it's not clear what can we take from the results on the role of contact as a predictor of meta-perceptions accuracy. The results are complicated and not consistent, so some more unpacking is needed, I think.

Response #14: We believe that the main inconsistency the Reviewer refers to was rather about the role of negative contact, since positive contact was a more consistent predictor of meta-attitude accuracy. We explained the mixed results based on sample characteristics, contextual differences among the studies and low statistical power for negative contact in Study 1. We added on p. 36:

"Several factors may explain inconsistent findings regarding the effect of negative contact across studies such as methodological issues and contextual differences. Although we have conducted power analyses, statistical power does not necessarily address issues related to representative sampling. For example, in Study 1, our post-hoc power analysis indicated that the power for detecting a significant effect for negative contact was .67 (see Supplementary Materials). Apart from methodological issues, how negative contact functions in each context may also vary. For example, in Turkey, the Turkish-Kurdish relationships represent a high conflict-high contact context (Bagci & Çelebi, 2017) where negative contact may not stand as a transformative experience especially for Kurds, which may explain why particularly for this group negative contact was not associated with meta-attitude accuracy. Further research is needed to understand better the links between negative contact and meta-attitudinal accuracy."

Comment #15: I don't completely understand the reasoning behind shared reality as a mechanism, and I think that there's a logical leap here. Yes, people may think that they are on the same page, but that doesn't necessarily mean that they are, and this could also be misleading (see e.g., Saguy et al., 2009). I guess that I don't understand how perceiving being on the same page actually translates to being on the same page, as is supposedly evidenced by more meta-perception accuracy. It makes more sense to me that learning actual information on the outgroup perceptions can both correct the perceived shared reality and meta-perception accuracy. The outgroup knowledge measure does not necessarily capture it because it does not ask about knowing what the outgroup members think about the ingroup. Finally, just a thought, but could it be that this shared reality measure primed some people (if it was measured before the meta-perception accuracy) - and people that responded higher on this scale, also provided responses that are more similar on the meta-prejudice and prejudice measures in order to be consistent with how they responded to the shared reality measure?

Response #15: We agree that shared reality may not entirely capture what they actually shared, and this is still based on the subjective perception of the participants. Hence, how participants responded to the shared reality items may also involve some bias, naturally as with all measures of self-reports. In the current study, we posited that contact may be a medium for increasing shared reality as well as knowledge about the outgroup. However, as the Reviewer suggested contact may not necessarily transfer it objectively and entirely (although previous empirical research has demonstrated positive intergroup contact experiences to be associated with shared reality, Lutterbach & Beelmann, 2020).

We also agree that outgroup knowledge measure does not necessarily capture 'actual information about the outgroup perception', but as we explained in the relevant section, it has the potential to capture this indirectly. Recent research has indicated that providing information about the actual perception of the outgroup is indeed an effective intervention that increases meta-attitude accuracy (Lees & Cikara, 2020; Mernyk et al., 2022). Nevertheless, these strategies usually do not require intergroup contact (at least direct) as a direct medium, and they are thereby out of the scope of this study.

We added this brief section on p. 37:

"We initially posited that contact may act as an avenue or a tool for transferring information about what the outgroup thinks about the ingroup and thereby reveal some information about meta-perceptions. Therefore, we expected knowledge about the outgroup and taking their perspective may also signal cues about the outgroup's perception of the ingroup. Nevertheless, these processes may not fully reflect what the outgroup actually think."

As we noted on Comment #11 to R2, in both Studies 3 and 4, shared reality items were presented after attitude measures, therefore, it is not possible that this construct primed attitudinal measures.

Comment #16: In the general discussion, I think that it's also important to note the limitations in using path analysis in general and to establish mechanisms in particular (see e.g., Rohrer et al., 2022).

Response #16: Thank you for your suggestion. We have added this citation and noted limitations related to causality (p. 38).

Minor issues:

Comment #17: In the first paragraph, I think that it's important to include the work by Shelton and Richeson (2006; AESP). Also, it might be good to provide an example for what positive or negative behaviors mean.

Response #17: We thank the Reviewer for this suggestion, we have added this citation in the bottom of the 2nd paragraph and gave examples of behaviors.

Comment #18: In study 1, are there any differences between the two samples?

Response #18: The sample characteristics were generally the same across the two groups as the data were collected from Prolific. Nevertheless, we did not measure other differences across the groups statistically (apart from meta-attitude accuracy and attitude differences reported in Table 1).

Comment #19: It will be good to include tables with descriptive statistics for all measures in the main text. It might be the case that negative contact is less consequential because people are not exposed to it as much, and there is no variance.

Response #19: We moved Table S1 and Table S2 to the main text from the Supplementary Materials.

Comment #20: In the discussion of Study 3, the differences of the results between Study 2 and 3 could also be attributed to the sampling procedure.

Response #20: The sampling procedures were similar in Study 2 and 3, but the sample in Study 2 included more participants from outside Istanbul (see p. 26).

Comment #21: Note that not all references that are mentioned in the text are listed in the reference list.

Response #21: Thank you for your comment. We have added missing references to the reference list.

Responses to Reviewer 3

Comments to the Author

I enjoyed reading this manuscript examining predictors of inaccurate intergroup meta-perceptions. Very little research exists on the predictors of these inaccurate beliefs, so this manuscript has the potential to make a significant impact on our understanding of intergroup (mis)perceptions, and is of direct interest to me (Jeff Lees) and my work. I also appreciated the reporting of mixed results. One could imagine a version of this manuscript that attempts to make a "cleaner" story where many of the null results here end up in the "file draw", but here we get to see all the messy findings, and I appreciate that! Below I lay out some thoughts and comments, in the hopes they are helpful to the authors.

Comment #1: My biggest suggestion would be to expand the general discussion to speak more to the findings. Currently the GD largely just summarizes the findings, but what I think is most interesting about this work is that it tests many plausible hypotheses (as laid out in the introduction), and really only finds evidence for one mechanism path: positive contact -> shared reality -> meta-accuracy. Why do the authors believe that this one finding was consistently supported, and the others not? For example, Lees & Cikara finds that meta-perceptions were less inaccurate for forecasts of ingroup perceptions of the outgroup (versus outgroup perceptions of the ingroup), suggesting identification as a mechanism of (in)accuracy….but shared reality is also a possible/competing explanation for that finding. The identification explanation suggests we expect those we see as close to be less hostile of our group, whereas the shared reality explanation is closer (I think) to a knowledge/projection explanations…i.e., I think we agree on things so I think you'll be less hostile because I'm less hostile. I'd like to see the authors expand more upon what they think the underlying reason why a sense of shared reality affords more accurate meta-perceptions, and why all the other hypotheses were not supported. And perhaps something in the GD about how future research might follow up on this finding.

Response #1: We thank Jeff Lees for this fruitful comment, as well as their positive response to our research. We added the following section on p. 36 -37:

"Shared reality was the only significant and consistent mediator via meta-attitude accuracy in the relationship between contact and outgroup attitudes. We believe that this may reflect the fact that individuals perceiving shared reality may partially reflect a 'projection heuristic' for the meta-perceiver, as they believe that they share similar experiences and agree on many issues, so that the outgroup member may also think like them. In other words, if they think they like the outgroup and they perceive some proportions of shared reality at the same time, they may also think the outgroup member would use the same heuristic. On the other hand, shared reality is the only variable that emphasizes a 'commonality' with the outgroup and implies an inclusive understanding of the two groups, unlike the other mechanisms that only consider how the participants think."

We also added this section to future directions on p. 39:

"More research is also needed to examine the role of shared reality on meta-attitude accuracy. One possible avenue is to further reveal which aspects of shared reality was particularly associated with meta-attitude accuracy. For example, previous research has demonstrated shared reality to reduce prejudice towards outgroups through reducing conflict perception and differential closeness (Conley et al., 2016). In a similar vein, shared reality may result in more accurate judgments about what the outgroup thinks through generating a similar understanding about conflict and group memberships. At the applied level, shared reality may be easily integrated into indirect contact interventions such as imagined or vicarious contact strategies. An alternative methodology may be the use of VR (virtual reality) to implement positive intergroup contact experiences (see Tassinari et al., 2024) and generate a sense of shared reality simultaneously in order to promote meta-attitude accuracy."

Comment #2: There are a few limitations that I also think need to be acknowledged more. The first is the (lack of) representativeness in the samples. These are all convenience samples (at least as far as I can tell about Studies 1 and 2), and convenience samples can potentially bias estimates of the "true values," and therefore of inaccuracy. From my personal experience study intergroup meta-perceptions, representative samples tend to show less intergroup negativity, and therefore estimates of the inaccuracy of meta-perceptions are smaller. This is an important limitation to discuss. Second, some of the theorized and tested mechanisms, notably outgroup knowledge, are not best tested with self-report. A measure of objective knowledge would have been a better test, and the limitations of self-report for this and other items should be discussed.

Response #2: Thank you for noting these important limitations. The representativeness of the samples is problematic and we have dealt with this issue in our previous responses (please see Comment #7 to R2 and p. 39).

We also added the following for outgroup knowledge on p. 39:

"Additionally, measuring other constructs more objectively such as actual outgroup knowledge rather than perceived outgroup knowledge would have increased the predictability of meta-attitude accuracy."

Comment #3: Lastly, there any many places in the manuscript where model fit stats are not presented because the models are "saturated." I'm not sure what this means, surely it cannot mean that in the statistical sense of there being zero degrees of freedom (i.e., as many predictors as there are data points). So maybe this is a term being used in another manner, but I don't see how there's any situation where fit statistics could not be provided. Please clarify.

Response #3: We thank Jeff Lees for this comment. Our models indicated 0 for RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual) and 1 for CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index), indicating a perfect fit. We edited the main text accordingly.

Minor comments

Comment #4: Out of curiosity, why was Study 4 a near direct replication of Study 3 when Study 3 found such inconclusive results? This isn't a criticism of that design, but as a reviewer I see a missed opportunity to perhaps test questions related to shared reality.

Response 4#: We fully understand the Reviewer's point here and we are in agreement, we could have indeed taken the opportunity to delve deeper into the more critical variables in Study 4. Yet, the two studies were simultaneously planned before analyzing the first dataset, and aimed to replicate our theoretical propositions in a further context. Because we were also changing the context, we did not want to change the overall model from Study 3 to Study 4. Now we have included more detail about shared reality in the future directions.

Comment #5: Studies 1 and 2 are based on "Bagci et al., 2021," but that citation isn't in the references, and it looks like it might actually be Bagci et al., 2023, based on the supplemental materials? Please clarify/update.

Response #5: We have replaced the citation year as 2023.

Comment 6#: On pg. 33 it says "Previous research has shown disclosure interventions whereby individuals were presented with more accurate perceptions of the outgroup have been found to successfully reduce inaccurate meta-attitudes (Lees & Cikara, 2020; Ruggeri et al., 2021)." In those studies, the DV that was affected by the corrective interventions was negative outgroup motive attributions, not meta-accuracy per se ☺

Response 6#: We thank the Reviewer for his attention. We have updated this section as:

'**…**negative outgroup motive attributions (Lees & Cikara, 2020) and negative beliefs (Ruggeri et al., 2021).'

Comment #7: Why do the authors think the correlations between positive and negative contact are so low? That seem odd to me. Just curious.

Response #7: Contact research suggests that the relationship between positive and negative contact is complex and not entirely consistent. Studies have shown statistically significant positive, but also negative correlations (some medium/strong and some less so), while other studies have shown no statistically significant correlation between positive and negative contact (see Bagci & Turnuklu, 2019 for example). These 'messy' results have been explained differently by contact scholars, usually pointing to contextual differences, possible moderating variables, construct measurement. Some studies also suggested that positive and negative contact may even interact with each other (e.g., Arnadottir et al., 2018). Nevertheless, previous research has not considered this specific research question *per se*, which might be an interesting research avenue.

Comment #8: I', pretty confident Study 3 is using the same meta-perceptions items as Studies 1-2, but it doesn't state it anywhere.

Response #8: We have added this information in Study 3 Method section (see also response to Comment #13 to R1).