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RESEARCH ARTICLE

Improving attitudes towards minority groups by thinking about the thoughts and meta-cognitions of their members

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Abstract

Research on persuasion has shown that for attitudes to change people need to take into consideration not only the thoughts message recipients generate in response to proposals but also how people think about their own thoughts (metacognition). In the present research, we introduce a new perspective for improving outgroup attitudes focused on the distinction between cognition and metacognition but this time applied to the perceptions of others' minds. Specifically, we examined to what extent thinking about the mental processes of outgroup members influences attitudes towards those outgroups. We compared the impact of thinking about how others think (perceived primary cognition) with how others think about their own thoughts (perceived secondary cognition or metacognition). In the primary cognition treatment, participants answered questions about the thinking processes of outgroup members. In the secondary cognition treatment, participants answered questions that required them to consider how outgroup members think about their own thoughts (i.e., metacognition). Compared to controls, these treatments were capable of improving attitudes of Spanish citizens towards Syrian refugees, South American immigrants, and Roma people. A third study used a minimal group paradigm in which a fictitious outgroup was described as having primary (vs. secondary) cognition. A final study also tested the implications of assuming that groups have one type of cognition or another. The effects of the two treatments varied depending on the type of outgroup.

KEYWORDS

attitudes, dehumanization, metacognitive interventions, minorities outgroups, prejudice reduction

1 | INTRODUCTION

The accumulated research on prejudice reduction has shown that reductions in prejudice towards minority groups can occur by a variety of low deliberation processes, such as mere exposure (Pettigrew & Tropp, 2006) and classical conditioning (Dovidio et al., 2003). However, decades of research have also demonstrated that low-thinking

processes are not the only means of attitude change. According to current dual-process models, attitude change can also be produced by thoughtful processes (Forscher & Devine, 2014; Petty & Briñol, 2014). For example, based on the assumption that ignorance promotes prejudice (Pettigrew (1998), Stephan and Stephan (1984) proposed that 'learning about others' is a critical step towards improving intergroup relations via increased intergroup contact (Allport, 1954). In accord

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with this view, numerous examples illustrate how prejudice can be reduced by attendance at diversity group seminars, and learning new information about other social groups (Fisher, 1968; Rudman et al., 2001). We distinguish research on reducing prejudice as relying either on primary or on secondary cognitive processes (BLINDED CITATION).

Metacognition is sometimes referred to as secondary cognition to distinguish it from the initial (primary) thoughts people have (see Briñol & DeMarree, 2012, for a review on the use of this terminology). Primary cognition involves an initial association of an object with some attribute, and it occurs at a direct level of cognition. For example, if a person thinks 'This group of people always dresses very nicely', it is a primary cognition. A secondary cognition refers to a person's thoughts about his or her own primary thoughts or thought processes. These other thoughts occur at a second, metacognitive level and they involve reflections on the first-level, initial thoughts. Thus, if a person thinks, 'I am not so sure that the group always dresses nicely', this is a secondary thought. Relevant to the present studies, thinking that a particular group of people dresses nicely would be considered an initial (primary) cognition, whereas thinking about the validity of that thought (how certain am I that my perception of the out-group is correct?) would be the metacognitive (secondary) cognition.

1.1 | Primary cognition

Although educational campaigns promoting diversity can be effective, persuasion research clearly demonstrates that an individual's initial idiosyncratic thoughts about a proposal (or a seminar, or a contact-based initiative) are more important than learning its specific content. That is, in contrast to the traditional view in which the efficacy of educational campaigns was assumed to depend on learning the message content (e.g., Hovland et al., 1953), contemporary research has demonstrated that an individual's own initial (primary) thoughts about a message are critical for persuasion (Petty et al., 1981). In general, more favourable thoughts towards a message lead to more persuasion regardless of message learning. Similarly, more unfavourable thoughts towards a message lead to less persuasion, or can even change the recipient's attitude in a direction opposite to the advocacy even if the message is learned well. In line with this approach, the current research considers people's initial (primary) thoughts. Importantly, instead of focusing on how peoples' own thoughts affect their attitudes as in much prior research, the current research examines how perceiving the primary cognition of others can change one's own attitudes. In line with previous research on person perception (Fiske, 2019; Quinn & Macrae, 2014), we argue that what people think about the primary thoughts of others can influence their own attitudes.

1.2 | Secondary cognition

Contemporary research has also shown that in order for primary thoughts to impact prejudice-related attitudes, people must also believe their thoughts are correct (cognitive validation) or feel good about them (affective validation). This validation of thoughts is a pro-

cess that emphasizes secondary or metacognition (thoughts about thoughts; Petty et al., 2002). In one illustrative set of studies relevant to prejudice (Requero et al., 2020), participants were asked to generate either positive or negative thoughts about the benefits of hiring people from a variety of underrepresented, stigmatized groups. Then, the perceived validity of those thoughts was manipulated by having participants engage in confident (vs. doubtful) memories and actions (DeMarree et al., 2015), or by providing them with convergent (vs. divergent) evidence matching their thoughts (Clark et al., 2009; Evans & Clark, 2012), or by highlighting the entitative nature of the groups evaluated (Clark & Thiem, 2015). As expected, thoughts were more likely to impact attitudes (enhancing or reducing prejudice depending on whether the thoughts were positive or negative) under high (vs. low) confidence conditions (see Briñol & Petty, 2022, for a review of thought validation research).

These results demonstrate how changing prejudiced attitudes can involve not only primary cognition (i.e., one's positive or negative thoughts), but also metacognitive processes (i.e., thinking about the validity of one's thoughts). In the present research, we build on the distinction between primary and secondary cognition and introduce a new perspective focused on perceiving the thoughts that people have about other people's thoughts. Importantly, just as thoughts about one's own thoughts are important in affecting prejudiced attitudes, we argue that considering the thoughts people have about the primary and secondary cognition of others can also be important in affecting one's prejudicial attitudes towards minority groups.

1.3 | Perceiving the primary and secondary cognitions of others

Having described previous research showing that what people initially think (e.g., primary cognition) and what people think about their own thoughts (e.g., secondary or metacognition) both play a role in prejudiced attitudes, we next describe a new line of research examining how what people think about others' thoughts—both their primary and secondary cognition—can also influence prejudiced attitudes about those others. Specifically, the current research tested whether and to what extent the attitudes of majority group members can be affected by thinking about the primary and metacognitions of minority (outgroup) members, including Syrian refugees, South American immigrants, and Roma people.

Perceiving whether other people have sophisticated minds is a well-studied and important phenomenon in psychology. For instance, consider the vast work on *theory of mind* in developmental psychology revealing the link between learning about one's own mental processes and those of others (Astington et al., 1988; Carruthers & Smiths, 1996; Fonagy et al., 2018; Wellman, 1992). Theory of mind or mentalizing refers to one's ability to read the mental state of any potential agent (Burge, 2018; Chiavarino et al., 2012; Premack & Woodruff, 1978; see also Quesque & Rossetti, 2020). Importantly, when thinking about the mental states of others, people can make inferences about the other's primary cognitions as well as any accompanying metacognitions (e.g.,

Jost et al., 1998, see Briñol & DeMarree, 2012, for a review). Indeed, research in different domains is consistent with the idea that it is important to fully consider all kinds of psychological processes that people might attribute to others. These domains include person perception (e.g., Fiske & Taylor, 1991; Kenny, 2019; Shechtman & Kenny, 1994), attribution (e.g., Heider, 1958; Jones, 1990; Ross, 1977), empathy and perspective-taking (e.g., Davis, 2018; Galinsky & Moskowitz, 2000; Kawakami et al., 2017), and interpersonal relationships (Vorauer, 2012; Wolf et al., 2020). Unlike these previous approaches, in the current studies we do not ask participants to take the role of another person, or to imagine how members of outgroups might feel, or to have an accurate understanding of other's perspective, or to gain a better insight into their views by asking open questions. As described next, in the current studies, participants are simply required to rate a few items about the primary and secondary cognitions of others leading them to consider whether and to what extent other people have primary or secondary cognition.

In the current research, our goal was to examine whether thinking about others' primary or secondary thoughts would be relevant for reducing prejudiced attitudes towards those others. Specifically, we compared the impact on prejudiced attitudes of thinking about how members of minority outgroups generate initial thoughts (perceived primary cognition) or how they think about their own thoughts (perceived secondary cognition). We chose to compare these two conditions because they mapped well onto how a person's own primary and secondary cognition affects their own judgments as in the research described above. In addition, there is some previous evidence suggesting that distinguishing between primary and secondary emotions is useful in the domain of dehumanization (Bain et al., 2009; Leyens et al., 2000, 2001, 2007). Specifically, research on dehumanization has shown that prejudiced evaluations can reflect attributions that constrain the ability of stigmatized groups to experience mostly primary emotions (brief, physiologically embedded affective reactions such as anger or joy) while denying their ability to experience secondary emotions (i.e., affective reactions that are the result of social construction through the attachment of meaning to experiences such as admiration or remorse; Kteily et al., 2015; Loughnan et al., 2010; Tapias et al., 2007). Infra-humanizing is characterized not only by the lack of attribution of sophisticated (secondary) sentiments, but also by the attribution of low-level primitive and rudimentary feelings (e.g., Waytz et al., 2015). Recent research has warned about how this process is so pervasive that even blatant dehumanization might be more widespread than previously thought (Petsko et al., 2020), suggesting the importance of using different indicators to analyse it. Thus, according to Vaes et al. (2021), dehumanized groups are perceived to have greater or lesser humanity based on the attribution of very different human attributes such as secondary emotions.

1.4 | Overview

Just as distinguishing between primary and secondary emotions has been useful in understanding outgroup evaluations, we argue that

separating between perceived primary and secondary cognition potentially can be useful when thinking about others, opening the possibility of reducing prejudiced attitudes towards different minority groups. In this research, participants were randomly assigned to one of two different experimental conditions. In the primary cognition treatment, participants answered questions about the primary thinking processes of outgroup members. In the secondary cognition treatment, participants answered questions about the metacognition of outgroup members, that is, questions focused on the ability of outgroup members to reflect on their own thoughts and thinking processes. First, we conducted a Pilot Study to ensure that these two treatments were capable of affecting the perceptions of participants with regard to how members of the outgroup are more likely to think, whether mostly in terms of primary or secondary cognition. Then, in Study 1, the effect of each of these two treatments on attitudes towards the outgroup was compared to a control group in which participants answered 10 neutral questions about dressing and clothing.

On the one hand, a treatment focusing on primary cognition could be the more effective one in improving attitudes towards minority groups because this treatment could remind people of a belief they already hold about the group, a belief that would not be spontaneously accessed. Because it is a familiar belief, it might be more accepted than an unfamiliar belief about metacognition and thus be more effective in reducing prejudice. On the other hand, a treatment focusing on secondary cognition could be better for improving attitudes towards minority groups because primary cognition might already be salient and mentioning secondary cognition might invoke novel inferences that the outgroup engages in a more sophisticated mental process. Of course, it could be that making salient either type of mental process for a stigmatized group could be more effective in improving attitudes towards the group than not making either mental process salient. We designed the present research to examine these possibilities. To examine empirically which treatment would be more effective we examined these treatments across several different minority groups (Studies 1–2). Furthermore, we also examined these treatments using the minimal group paradigm in which participants had no prior experience or knowledge about the group (Study 3). A final exploratory study tested the implications of assuming that groups have one type of cognition or another by default. This study examined the natural preconceptions that people have regarding the primary cognition and metacognition of the outgroups.

2 | PILOT STUDY

We conducted a pilot study that included the primary and secondary cognition treatments used in the main studies. In the primary cognition treatment, participants answered questions about the primary thinking processes of outgroup members. In the secondary cognition treatment, participants answered questions about the metacognition of outgroup members (i.e., questions focused on the ability of outgroup members to reflect on their own thoughts and thinking processes). As described next, we assessed the impact of those two treatments on

participants' perceptions about the primary and secondary cognition of the outgroups to determine if the treatments had the intended effects in guiding the perceptions of participants. For the target outgroup in this pilot study, we used Roma people.

2.1 | Method

2.1.1 | Participants

One hundred and twenty-two undergraduate students (112 female, $M_{\text{age}} = 20.44$, $SD = 4.63$) participated in the study anonymously and on a voluntary basis.

2.1.2 | Procedure

First, participants were randomly assigned to one of the two experimental conditions. Participants had to complete a questionnaire containing 10 items that varied in content based on the experimental condition (primary cognition or metacognition). As will be described in more detail in the main studies, the response options for these items were worded in such a way as to bias participants' responses in the intended direction (i.e., to lead participants to perceive that the outgroup had primary cognition or metacognition). After participants were exposed to these treatments, they were asked 'To what extent were you thinking about what a Roma person thinks while reading the items?' (manipulation check for the primary cognition treatment) and 'To what extent were you thinking about how a Roma person thinks about their own inner mental states while reading the items?' (manipulation check for the metacognition treatment).

2.2 | Results

Both manipulation checks (for primary cognition and metacognition) were submitted to a repeated measures ANOVA, with the type of manipulation check entered as the within-subjects factor and type of treatment (primary cognition vs. metacognition treatment) entered as the between-subjects factor. The results of this analysis showed that the main effect of type of check was significant, $F(1, 120) = 5.166$, $p = .025$, $\eta_p^2 = 0.041$, as well as the interaction term between type of check and type of treatment, $F(1, 120) = 10.445$, $p = .002$, $\eta_p^2 = 0.080$. Regarding the primary cognition check, the ANOVA revealed a significant effect of the treatments on the check, $F(1, 120) = 6.232$, $p = .014$, $\eta_p^2 = 0.049$. This indicated that the primary cognition treatment group ($M = 5.78$; $SD = 1.80$) reported significantly having thought more about primary cognition than the metacognition group ($M = 4.88$; $SD = 2.04$). For the metacognition check, the ANOVA revealed a main effect of the treatments on the check, $F(1, 120) = 4.088$, $p = .045$, $\eta_p^2 = 0.033$. This indicated that the metacognition treatment group ($M = 6.28$; $SD = 1.71$) reported having thought more about the metacognition of outgroups than the primary cognition treatment group ($M = 5.54$; $SD = 1.98$).

2.3 | Discussion

This pilot study suggested that our manipulation had its intended impact on perceptions of the outgroup. That is, participants reported having thought more about primary cognitions of the outgroup following the primary cognition treatment, whereas they reported having thought more about the metacognition of the outgroup after the metacognition treatment. Although both treatments were capable of affecting perceptions, we will discuss further the possibility that one treatment could be more impactful than the other depending on the circumstances (see, General Discussion).

3 | STUDY 1

The goal of Study 1 was to provide an initial exploration of the effect of perceived primary and metacognition in others on improving attitudes towards a stigmatized group. As noted, we chose to examine the effect of these two different treatments because current research on attitudes and persuasion (e.g., Briñol & Petty, 2009), as well as past research on dehumanization (e.g., Leyens et al., 2000), both highlight the importance of distinguishing between primary and secondary cognition. In our first study, participants were randomly assigned to one of three conditions: a primary cognition treatment, a metacognition treatment, or a control treatment. We evaluated the influence of these conditions on attitudes towards Syrian refugees. Although the number of Syrian refugees in Spain (home of the participants) keeps growing, the attitudes towards this group remain relatively under-studied compared to other stigmatized groups (see Alpak et al., 2015; Yigit & Tatch, 2017, for a few exceptions). Yet its members are at extreme risk of exclusion (Baban et al., 2017). Among the EU countries, Spain recorded 2775 asylum applications from Syria in 2018, which ranks the third country overall in terms of number of applications (Comisión Española de Ayuda al Refugiado [CEAR], 2019).

We predicted that participants would report more positive attitudes towards Syrian refugees in both treatment groups compared to the control group. We did not make predictions about differences between the two treatment groups. As explained in the introduction, we hypothesized that both treatments would probably be superior to control, but either treatment might be better than the other or they might not differ in their effectiveness.

3.1 | Method

3.1.1 | Participants and design

Two hundred twenty-eight students (38 males and 190 females) from [CONCEALED INFORMATION] participated in the experiment anonymously and on a voluntary basis. Participants were randomly assigned to one of the three experimental conditions. The age of participants ranged from 17 to 38 ($M_{\text{age}} = 19.41$, $SD = 2$). To determine the

sample size, an a priori power analysis was conducted using G*Power (Faul et al., 2009). Because no prior research had examined the predicted effect of these particular treatments on attitudes towards this particular group, we planned for a generic relatively small effect (η_p^2 values around 0.04). Results of a G*Power analysis indicated that the desired sample size for a power of .80 is $N = 244$. Recruiting until the end of the semester yielded a sample size just short of this number.¹ The sample size for Study 1 had .8 power to detect an effect of $\eta_p^2 = 0.041$.

3.1.2 | Procedure

The experiment was described as a study on social interaction. All participants received a questionnaire containing several tasks. First, participants were randomly assigned to one of the three experimental conditions. As part of the experimental treatment, they had to complete a questionnaire containing 10 items that varied in content based on the experimental condition (primary cognition treatment, metacognition treatment, or control treatment). They had to respond regarding the extent to which they agreed that Syrian refugees were characterized by the statement in the item. Importantly, the response options for these items were worded in such a way as to bias participants' responses in the intended direction (e.g., to lead participants to perceive that the outgroup had primary or secondary cognitions). We constructed this leading questionnaire by framing the response options as 'slightly agree', 'moderately agree', 'agree', 'strongly agree', and 'extremely agree', so all the options fell in the range of agreement (cf. Salancik & Conway, 1975). Therefore, we guided participants to provide answers agreeing (rather than disagreeing) with the items, thus obtaining a score that confirms that they are the type of person who agrees with such items. For example, to induce participants to respond as if they perceived that the minority group possessed primary cognition, the Likert-type scale ranged from (1 = 'slightly agree' to 5 = 'extremely agree'), implying that they agreed with the statements. After completing the questionnaire, participants were led to believe that their responses were very high in the distribution of average scores (in the top 25th percentile). The score and percentile systems were designed to provide false feedback regarding participants' beliefs about Syrian refugees. This false feedback has worked in the past to influence people's beliefs (see Petty & Brock, 1979; Petty et al., 2006). Finally, all participants reported their attitudes towards Syrian refugees, and were thanked and debriefed.

3.1.3 | Independent variable

Participants were randomly assigned to one of three experimental conditions. In the *primary cognition treatment*, participants were asked 10 questions about the primary cognition of Syrian refugees. These

items were coded on a Likert-type scale with the options labelled as: 1 (slightly agree), 2 (agree), 3 (quite agree), 4 (strongly agree), and 5 (extremely agree). As noted, primary cognition refers to one's initial associations of an object (e.g., Syrian refugees) with a dimension of judgment (e.g., perceive the world around them). Therefore, questions in this condition focused on the refugees' primary thinking dimensions such as their initial perception, attention, processing, and recalling of information. Two examples of the items are: 'Syrian refugees tend to think about the world', and 'Syrian refugees are able to process information.'

In the *metacognition treatment*, participants were asked 10 questions that required them to consider how Syrian refugees think about their own thoughts. Questions focused on the ability of the refugees to reflect on their own thoughts and thought processes. Two examples of the items are 'Syrian refugees realize there are things that they don't know', and 'Syrian refugees have confidence in their own thoughts.' In the *control group*, the 10 items included questions about another unique human activity: dressing. Instead of asking questions about primary thinking or metacognitions, the questions were about clothing. Two examples of the items are: 'Syrian refugees own different shoes', and 'Syrian refugees wear socks.'

After completing the appropriate questionnaire, all participants were instructed to compute their score and percentile. To compute their score, they were asked to sum up their responses to the 10 items. To look at the corresponding percentile, we provided them with a misleading table with the biased scores and the corresponding percentiles. This table was designed so the responses of all participants would fall within the top 25th percentile. This top percentile indicated that participants rated the minority group as possessing, depending on condition, high primary cognition, high metacognition, or were high in ratings of having clothes compared to the rest of the population.

3.1.4 | Dependent variable

To assess attitudes towards the minority group used in Study 1, participants rated Syrian refugees using three 9-point semantic differential scales (negative-positive, not intelligent-intelligent, and not warm-warm). Ratings were intercorrelated ($\alpha = .68$), thus were averaged to create a composite attitude index. Higher values on this index indicated more positive attitudes towards Syrian refugees. These items were selected based on previous research in the domain of attitudes and person perception (Briñol et al., 2012; Fiske et al., 2002).

3.2 | Results

The dependent variable (attitudes towards Syrian refugees) was submitted to an analysis of variance (one-way ANOVA) with Experimental Condition (three levels) as the between-subjects factor. All analyses were carried out using the statistical package SPSS, model 23 (IBM Corp, 2013). The ANOVA revealed a significant effect of Experimen-

¹ We commit to upload all data used in this research to a repository (e.g., OSF) upon eventual acceptance of the article.

tal Condition on the attitudes index, $F(2, 226) = 3.527, p = .031, \eta_p^2 = 0.030$. Cell comparisons indicated that the metacognition treatment group ($M = 6.48; SD = 1.31$) reported significantly more favourable (less prejudiced) attitudes towards Syrian refugees than the control group ($M = 6.04; SD = 1; p = .047$), but was no different than the primary cognition treatment group ($M = 6.09; SD = 1.10; p = .112$). Furthermore, there was no difference between the primary cognition and the control group ($p = .99$).²

3.3 | Discussion

Study 1 revealed that receiving a metacognition treatment based on thinking about how others think about their thoughts led to more positive attitudes towards Syrian refugees compared to a control condition, and also compared to the primary cognition treatment group. These results suggest that how people think about the thoughts of others can make a difference in improving attitudes towards minority groups. That is, focusing participants on the metacognition of Syrian refugees was particularly effective in creating favourable attitudes. Given that Study 1 focused exclusively on Syrian refugees as a minority group, the goal of Study 2 was to test whether this pattern of effects in which the metacognition treatment seems superior to the primary cognition treatment in influencing attitudes would generalize to two other stigmatized minority groups (i.e., South American immigrants and Roma people).

² A reviewer suggested that we also include the responses to the items in the manipulation as another variable in the regression analysis. This analysis was conducted to explore the extent to which the effect is driven by the extent of agreement with the particular thoughts attributed to Syrian refugees as expressed in the survey. If the responses to the manipulation items predict attitudes, then it would suggest that it is thinking about (agreeing with) the cognition of the particular groups that contributes to the effect observed. In this analysis, the ratings on the 10 manipulation items in the three experimental conditions (new continuous variable) was added to the original equation. Type of treatment (multi-categorical), and the two-way interaction term (Ratings \times Type of treatment) were entered as predictors. Using the PROCESS add-on for SPSS (model 1; Hayes, 2013), the regression analysis revealed a significant effect of Experimental Condition on attitudes, $B = 0.248, t(221) = 2.668, p = .008, 95\% CI: 0.065, 0.431$. In accord with the analysis just reported, this main effect revealed that the metacognition treatment was effective in reducing prejudiced attitudes compared to the control group ($B = 0.8835, t(220) = 3.601, p < .001, 95\% CI: 0.400, 1.366$), but was no different than the primary cognition treatment group ($B = -0.475, t(220) = -1.730, p = .085, 95\% CI: -1.017, 0.066$). Importantly, the main effect of the new variable included in the equation (ratings on the manipulation items) was not significant, $B = 0.005, t(221) = 1.202, p = .231, 95\% CI: -0.003, 0.012$. However, the resulting two-way interaction between ratings and type of treatment was significant, $B = 0.016, t(220) = 2.011, p = .046, 95\% CI: 0.001, 0.033$. In the metacognition treatment condition, participants displayed significantly more favourable attitudes towards the outgroup when the ratings on the metacognition survey were high (one SD above the mean) than when the ratings were low (one SD below the mean), $B = 0.022, t(220) = 2.328, p = .021, 95\% CI: 0.003, 0.042$. However, in the primary cognition treatment condition, there were no differences as a function of the ratings for the primary cognition survey, $B = 0.006, t(220) = 1.532, p = .127, 95\% CI: -0.002, 0.014$, nor was there any impact of the survey in the control group, $B = -0.010, t(220) = -1.224, p = .222, 95\% CI: -0.027, 0.006$. This simple slope analysis suggests that in the metacognition treatment group, thinking about the metacognition of this particular group contributes to the effect, and not just thinking about metacognition in general. We also conducted an ANCOVA entering the new variable (ratings on the manipulation items) as a control variable. The predicted main effect of Type of treatment remained significant when controlling for ratings as a covariate, $F(2, 220) = 7.566, p = .001, \eta_p^2 = 0.064$. The ratings covariate also had a significant effect on attitudes, $F(1, 220) = 8.400, p = .004, \eta_p^2 = 0.037$. Showing that the effect is still present when controlling for the ratings suggests that, even though the ratings are important (as they produce the aforementioned two-way interaction with type of treatment), the content of the manipulation is also important.

4 | STUDY 2

Although in Spain attitudes towards South American immigrants tend to be positive in absolute terms (i.e., on the positive side of a scale), these attitudes are less favourable than those towards the majority group (Spaniards). Given that whether an attitude is prejudiced or not is a relative (rather than an absolute) question, such evaluations can be considered prejudiced towards these immigrants (Cárdaba et al., 2013).³ Individuals from South America have historically been the main source of immigration to Spain for decades, representing 36.21% of the total immigration in 2017, which equates to approximately 1,500,600 immigrants (Instituto Nacional de Estadística, 2019a). Roma people also suffer from prejudice and discrimination in Spain and are one of the most economically marginalized groups in Southern Spain (Aoyama, 2007; Rodríguez-Bailón et al., 2009). The discrimination they have suffered could be due to the fact that for centuries, Roma people were the largest minority group in Spain (Gómez-Berrocal & Ruiz-Romero, 2001; Pérez et al., 2007). Recent data indicates that approximately 650,000 individuals identifying as Roma currently live in Spain (Instituto Nacional de Estadística, 2019b).

Participants were randomly assigned to receive one of three experimental treatments: a primary cognition treatment, a metacognition treatment, or a control treatment. Following the experimental manipulation, participants in each condition reported their attitudes towards the stigmatized group. As with Study 1, it could be that the metacognition treatment would work better than the other treatment and the control group, or it could be that the results for the two new minority groups would differ from Study 1.

4.1 | Method

4.1.1 | Participants and design

Four hundred and fifty-seven students (78 males and 379 females) from [CONCEALED INFORMATION] participated in the experiment anonymously and on a voluntary basis. Participants were randomly assigned to the cells of a 2 (Type of minority group: South-American immigrants vs. Roma people) \times 3 (Experimental Condition: primary cognition, metacognition, or control) between-subjects factorial design. The age of participants ranged from 17 to 57 ($M = 22.29, SD = 5.72$). A power analysis was performed using G*Power (Faul et al., 2007). This value was calculated as a function of the effect size of the main effect of experimental condition uncovered in Experiment 1 ($\eta_p^2 = 0.031$). Results of the power analysis concluded that the

³ To verify our assumption of prejudice towards South American immigrants in Spain, we collected data from the current subject population by randomly assigning a sample of 158 students to indicate how much they liked either Spaniards or South Americans on scales ranging from 1 (not at all) to 9 (extremely). Consistent with the idea that evaluations of immigrants are less favourable than those towards natives, participants' evaluations towards the outgroup (South American immigrants) were significantly less positive ($M = 5.7, SD = 1.09$) than participants' evaluations of the in-group (Spaniards) ($M = 6.23, SD = .93, t(152) = 3.27, p = .001$). That is, even though attitudes towards South American immigrants were on the positive side of the scale, attitudes were still less favourable than those towards the dominant (majority) group.

desired sample size for a two-tailed test ($\alpha = .05$) with .80 power was $N = 315$ participants for a three-cell design. Our final sample of $N = 457$ exceeded that number because we included an additional factor (type of minority group). Although we had no reason to expect any difference as a function of type of minority group, we wanted to have sufficient sample size to detect a possible two-way interaction between experimental condition and type of minority group. The sample size for Study 2 had .8 power to detect an effect of $\eta_p^2 = 0.021$.

4.1.2 | Procedure

The experiment was described as a study on social interactions and attitudes. All participants received a questionnaire containing several tasks. First, participants were randomly assigned to one of two minority groups as the target. Then, participants were randomly assigned to one of the three experimental conditions. As in Experiment 1, they had to complete a leading questionnaire containing 10 questions depending on the experimental condition to which they were assigned. Finally, all participants reported their attitudes towards either South American immigrants or Roma people, then were thanked and debriefed.

4.2 | Independent Variables

4.2.1 | Type of minority group

Half of the participants were required to think about South American immigrants and half about the Roma people.

4.2.2 | Experimental conditions

As in Study 1, participants were randomly assigned to one of three experimental conditions. After completing the questionnaire, participants were asked to wait a few seconds while the computer processed their previous responses. All participants received false feedback on their beliefs about the minority groups as they were told that their scores corresponded to a high percentile. That is, participants were told that they were above 75% of the population in how much primary cognition, or metacognition, or in having clothes they rated the outgroup to have.

4.3 | Dependent variable

To assess attitudes towards a minority group, participants rated South American immigrants/Roma people using the same three 9-point semantic differential scales as in Experiment 1 (positive-negative, not intelligent-intelligent, and not warm-warm). Ratings were intercorrelated ($\alpha = .82$) and thus were averaged to create a composite attitude index. Higher values on this index indicated more favourable (less prejudiced) attitudes towards the minority groups.

4.4 | Results

The dependent variable (attitudes towards the minority group) was submitted to an analysis of variance (ANOVA) based on a 3 (Experimental Conditions) \times 2 (Type of Minority Group) between-subjects factorial design. The ANOVA revealed a significant main effect of Experimental Condition on the attitudes index, $F(2, 451) = 4.267$, $p = .015$, $\eta_p^2 = 0.019$. A main effect of Type of Minority Group also emerged, $F(2, 451) = 52.846$, $p < .001$, $\eta_p^2 = 0.105$, indicating that attitudes towards South American immigrants ($M = 6.42$; $SD = 1.83$) were more favourable (less prejudiced) than attitudes towards Roma people ($M = 5.25$; $SD = 1.51$). The main effect of Experimental Conditions was not further moderated by Type of Minority Group, $F(2, 451) = 1.611$, $p = .201$, $\eta_p^2 = 0.007$. The metacognition treatment group ($M = 6.13$; $SD = 1.80$) reported significantly more favourable (less prejudiced) attitudes towards the minority groups than the control group ($M = 5.58$; $SD = 1.61$; $p = .013$), but was no different than the primary cognition group ($M = 6.07$; $SD = 1.92$; $p = .99$). This replicates the pattern of effects found in Study 1. In this experiment, however, there was also a significant difference between the primary cognition and control group ($p = .034$), suggesting that both the primary and the metacognition treatment groups were effective in reducing prejudice towards the minority groups.⁴

4.5 | Discussion

Study 2 examined the impact of the two treatments in affecting attitudes towards two different minority groups, South American immigrants and Roma people. The main finding of this experiment showed that, for both outgroups, it did not matter what type of treatment applied as both were effective in improving attitudes. Given that Studies 1 and 2 focused on three natural outgroups that might spontaneously be perceived as having different levels of primary and

⁴ We conducted the same additional analyses as in Study 1 by including the responses to the items in the manipulation as another variable. The regression analysis indicated that there was a significant effect of Experimental Condition on the attitudes index, $B = 0.357$, $t(449) = 3.417$, $p = .001$, 95% CI: 0.152, 0.563. This main effect revealed that treatments were effective in reducing prejudiced attitudes compared to the control group. The main effect of the ratings was also significant, $B = 0.013$, $t(449) = 3.586$, $p < .001$, 95% CI: 0.006, 0.020. Moreover, there was also a significant two-way interaction between ratings and type of treatment, $B = 0.014$, $t(448) = 2.439$, $p = .015$, 95% CI: 0.003, 0.024. In the metacognition treatment condition, participants displayed more favourable attitudes towards the outgroup when the ratings on the metacognition survey were high (one SD above the mean) than when the ratings were low (one SD below the mean), $B = 0.028$, $t(448) = 3.964$, $p < .001$, 95% CI: 0.014, 0.041. In the primary cognition treatment condition, participants also displayed more favourable attitudes towards the outgroup when the ratings on the primary cognition survey were high rather than low, $B = 0.014$, $t(448) = 3.839$, $p < .001$, 95% CI: 0.007, 0.021. However, there were no differences as a function of the ratings for the control group, $B = 0.001$, $t(448) = 0.076$, $p = .939$, 95% CI: -0.012, 0.013. In Study 2, the responses to the items were more associated with the attitudes both in the primary and in the metacognition treatments, suggesting that both thinking about the primary cognition and thinking about the metacognition of the particular group contributes to obtaining the effect, and not merely just thinking about metacognition or primary cognition in general. We also conducted an ANCOVA with the new variable (ratings on the manipulation items) entered as a control variable. The predicted main effect of type of treatment remained significant when controlling for ratings as a covariate, $F(2, 448) = 6.728$, $p = .001$, $\eta_p^2 = 0.029$. The ratings covariate also had a significant effect on attitudes, $F(1, 448) = 13.313$, $p < .001$, $\eta_p^2 = 0.029$. Again, given that the effect was still present when controlling for the specific ratings, it suggests that even though the ratings are a contributing factor, the content of the manipulation is also important.

secondary cognitions, the goal of Study 3 was to examine what pattern of effects would occur for a completely unfamiliar (fictional) group.

5 | STUDY 3

In this experiment, we changed both the nature of the treatment and the nature of the outgroup. Using the minimal group paradigm, this study examined a fictitious outgroup for which participants had no prior experience or knowledge (Tajfel et al., 1971). The fictitious group was first described as having mostly primary cognition or metacognition. Then, participants orthogonally received the primary cognition or metacognition treatments used in the previous studies. Finally, participants reported their attitudes towards the outgroup. We examined to what extent the effects of the treatments might vary as a function of the initial type of cognition attributed to the group. For example, it might be the case that getting people to think about the type of cognition (primary cognition or metacognition) that the group was *not* already known to possess would be most effective in reducing prejudice. Or, it could be that thinking about the type of cognition the group already was known to have would be more effective because initial thoughts would be validated.

5.1 | Method

5.1.1 | Participants and design

Four hundred and sixty-seven students (332 females, 123 males, and 12 missing data) from [CONCEALED INFORMATION] were randomly assigned to one of the four conditions in a 2 (Outgroup: with Primary cognition or Metacognition) \times 2 (Type of Treatment: Primary Cognition or Metacognition) between-subjects factorial design. The age of participants ranged from 18 to 65 ($M_{age} = 25.93$, $SD = 8.91$). A power analysis was performed using G*Power (Faul et al., 2007), which assumed a small value for a 2 \times 2 interaction effect size ($\eta_p^2 = 0.02$) as we used a new design in this experiment. Results of this analysis suggested that the desired sample size for a two-tailed test ($\alpha = 0.05$) with 0.80 power was $N = 387$. We obtained more than this number of participants because we continued to collect data until the end of the term.

5.1.2 | Procedure

First, participants were asked to choose between two paintings (by Kandinsky and Klee) using the original procedure from Tajfel (1970; Tajfel et al., 1971). After choosing one or the other painting, they were randomly assigned to read a description about the other group as either possessing primary cognition or emphasizing metacognition.⁵ Following this manipulation in the description of the new group, par-

ticipants received the same two treatments (primary cognition vs. metacognition) used in Studies 1 and 2. That is, participants were induced to think about the primary thoughts or the metacognitions of the new outgroup members by completing a biased questionnaire. Finally, participants reported their attitudes towards the outgroup using the same three items we used in Studies 1 and 2, responded to some sociodemographic information, and were debriefed.

5.2 | Independent variables

5.2.1 | Initial outgroup style of thinking

Participants were asked to choose between a Kandinsky or a Klee painting (the painting contained a subheading with the name of the artist). Whatever they did not choose became the outgroup. After they chose one of these two paintings, they were thanked for their selection and reminded what that selection was. Then they were randomly assigned to one of two experimental conditions. That is, the outgroup (i.e., whatever painter was not chosen) was described as having primary or secondary cognition (e.g., 'People who like paintings by Klee/Kandinsky are described as a group characterized by...'). In the initial primary cognition condition, participants read that the group was characterized by 'reading about different topics, thinking about several subjects, observing what happens in their surroundings, looking at the trees, etc.'. In the metacognition condition, participants read that the group was characterized by 'paying attention to their own thoughts, knowing that there are things that they don't know, feeling good about what they think, etc.'.

5.2.2 | Type of treatment

As with Studies 1 and 2, participants were randomly assigned to one of the two treatment conditions used in the prior studies (primary cognition or metacognition group). After completing the appropriate questionnaire, participants were asked to wait a few seconds while the computer processed their previous responses. All participants received false feedback on their beliefs about the outgroup as they were told that their scores corresponded to a high percentile. That is, participants were told that they were above 75% of the population in how much primary cognition or metacognition they rated the outgroup to have.

5.3 | Dependent variable

To assess attitudes, participants rated the fictitious outgroups using the same three 9-point semantic differential scales as in Studies 1 and 2 (positive-negative, not intelligent-intelligent, and not warm-warm). Ratings were intercorrelated ($\alpha = .97$) and thus were averaged to

⁵ We emphasized one type of cognition or the other, but that did not imply that only one of them was possible. So if participants were told that the outgroup had primary cognition, that did not necessarily imply that they did not have metacognition, and vice versa. In theory, groups

could be high or low in both forms of cognition, although we only highlighted the focus of attention to be on one of them to make it especially salient.

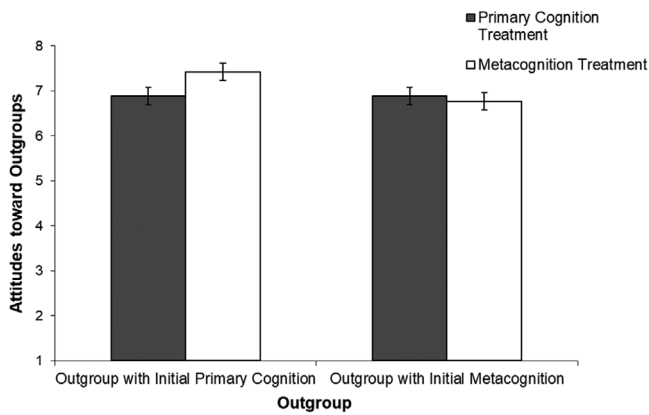


FIGURE 1 Study 3. Attitudes towards outgroups as a function of initial outgroup cognition and type of treatment.

create a composite attitude index. Higher values on this index indicated more favourable (less prejudiced) attitudes towards the fictitious outgroups.

5.4 | Results

Attitudes were submitted to a 2 (Initial outgroup style of thinking: primary cognition or metacognition) \times 2 (Type of treatment: primary cognition vs. metacognition) between-subjects analysis of variance. The ANOVA 2 \times 2 revealed a main effect of the Initial outgroup style of thinking, $F(1, 463) = 5.146, p = .024, \eta^2 = .011$, indicating that attitudes towards the outgroup said to have primary cognitions ($M = 7.14; SD = 1.54$) were more positive than attitudes towards the outgroup said to have metacognitions ($M = 6.82; SD = 1.57$).

More interestingly, as shown in Figure 1, there was a significant two-way interaction between Outgroup and Type of Treatment, $F(1, 463) = 5.043, p = .025, \eta^2 = .011$. In the metacognition treatment condition, participants significantly displayed more favourable attitudes towards the outgroup initially perceived to have primary cognitions ($M = 7.42; SD = 1.50$) than towards the outgroup initially perceived to have metacognitions ($M = 6.77; SD = 1.49$), $F(1, 463) = 10.178, p = .002, \eta^2 = .022$. This supports the notion that providing information about the group's metacognition when people initially believe a group has primary cognition can be more effective than if metacognition is already salient for the group. This pattern of results mirrors that in Study 1 for Syrian refugees where the metacognition treatment proved superior to the primary cognition treatment. On the other hand, there were no differences in the primary cognition treatment between the outgroup perceived initially to have primary cognitions ($M = 6.89; SD = 1.55$) and the outgroup initially perceived to have metacognitions ($M = 6.88; SD = 1.60$), $F(1, 463) < .001, p = .987, \eta^2 < .001$.

Describing this interaction differently, in the outgroup with initial primary cognitions, participants displayed significantly more favourable attitudes towards the outgroup after receiving the metacognition ($M = 7.42; SD = 1.50$) than the primary cognition treatment ($M = 6.89; SD = 1.55$), $F(1, 463) = 6.973, p = .009, \eta^2 = .015$.

However, in the outgroup with initial metacognition, there were no differences between the treatments, $F(1, 463) = 0.303, p = .582, \eta^2 = .001$.⁶

5.5 | Discussion

In sum, this final study revealed that metacognition treatments might be especially beneficial for changing attitudes towards outgroups for which people do not initially think about their metacognition by default. In other words, the metacognition treatment is particularly effective when it makes accessible what otherwise might not be considered spontaneously. Thus, for outgroups, like Syrian refugees, for which people might assume they have mostly primary cognition, but not as much metacognition, the metacognition treatment is especially effective in improving attitudes. This interpretation is speculative, and future research can benefit from further exploring to what extent underlying processes are similar for familiar groups for which people have high prior knowledge.

6 | GENERAL DISCUSSION

Previous research has examined the distinction between primary and secondary cognition, especially with regard to people's own thoughts. Furthermore, past work has studied how the difference between primary and secondary emotions is relevant when perceiving and dehumanizing outgroups. The current research examined to what extent the perceived primary and metacognition of outgroup members can influence prejudiced attitudes towards those outgroup members. Specifically, we compared the impact of having participants think about the primary thoughts of an outgroup with having them think about

⁶ Again, we conducted additional analyses by including the responses to the items in the manipulation as another variable. The regression analysis revealed a significant effect of type of treatment on the attitudes index, $B = 0.330, t(461) = 2.336, p = .020, 95\% \text{ CI: } 0.052, 0.608$. There was also a significant main effect of the initial type of cognitions of the outgroup, $B = -0.289, t(461) = -2.067, p = .039, 95\% \text{ CI: } -0.564, -0.014$, and a main effect of the responses to the leading survey, $B = 0.030, t(461) = 5.665, p < .001, 95\% \text{ CI: } 0.020, 0.040$. The predicted two-way interaction between type of treatment and type of outgroup was significant, $B = -0.645, t(463) = -2.246, p = .025, 95\% \text{ CI: } -1.209, -0.081$. Also relevant, there was no significant type of treatment \times ratings interaction, $B = 0.003, t(463) = 0.322, p = .748, 95\% \text{ CI: } -0.017, 0.024$, nor type of outgroup \times ratings interaction, $B = -0.009, t(463) = -0.824, p = .411, 95\% \text{ CI: } -0.029, 0.012$. Unlike the previous two studies, there was no significant treatment \times ratings interaction in this study. There are multiple possible reasons for that result. For example, because the groups are artificial in this study, it might be that the responses to the items in the manipulation were not as meaningful as when the groups were previously known and familiar. Moreover, there was no three-way interaction between ratings, type of treatment and type of outgroup, $B = 0.019, t(457) = 0.879, p = .380, 95\% \text{ CI: } -0.023, 0.061$. There was a significant two-way interaction between type of treatment and type of outgroup at low ratings (one SD below the mean), $B = -1.139, t(457) = -2.851, p = .005, 95\% \text{ CI: } -1.923, -0.354$, but not at high ratings (one SD above the mean), $B = -0.633, t(457) = -1.562, p = .119, 95\% \text{ CI: } -1.430, 0.164$. We also conducted an ANCOVA with ratings on the manipulation items as a control variable. The predicted two-way interaction between type of outgroup and type of treatment remained significant when controlling for ratings as a covariate, $F(1, 460) = 8.697, p = .003, \eta_p^2 = 0.019$. The ratings covariate also had a significant effect on attitudes, $F(1, 460) = 35.399, p < .001, \eta_p^2 = 0.071$. Once again, the effect is still there when controlling for the specific ratings provided to the items, suggesting that the content of the items is important. Finally, we analysed the direct and reverse items as two separate factors and found that that factor did not influence the results. Therefore, the induction had equivalent effects when considering only the direct items, only the inverse items, or all items as a whole.

how others think about their own thoughts (perceived secondary or metacognition). Compared to a control condition, both treatments were capable of improving attitudes towards at least some outgroups. This research introduces a potential novel approach for researchers and practitioners of psychosocial interventions interested in promoting more egalitarian attitudes by emphasizing the primary and metacognition of others.

According to the current results, the effects of the two treatments might seem to vary depending on the type of outgroup. Specifically, the metacognition induction tended to have stronger effects than the primary cognition induction when examining attitudes towards Syrian refugees. That is, for Syrian refugees, the metacognition treatment produced more positive attitudes than the control group, whereas this was not the case for the primary cognition treatment (Study 1). For the other outgroups studied (South Americans and Roma people), the pattern was different. For these, both primary and metacognition treatments were more effective than a control (Study 2).

Although our findings suggest that how we think about the thoughts of others can be important for improving attitudes towards minority groups, there are some pending questions worth noting. For example, one might wonder what is the specific process involved in the effect. It is about *thinking* of outgroup cognition in general or about *assigning* these particular cognitions to outgroups that can improve attitudes? The analysis including the responses to the specific items contained in the manipulation as an additional variable in the equation provides some support for one of these views. That is, one interpretation of the benefit of the treatments is that it is merely thinking that other people have 'minds' is sufficient to produce the effect. The other interpretation is that improving attitudes towards minority groups with these treatments requires thinking about the particular cognitions of particular groups of people. In this view, it is considering the particular types of thoughts (primary or metacognitive) attributed to the groups that produces the reduction in prejudice. To examine this view, we tested whether participants' responses to the leading questions that constituted the manipulation could predict the improvement in attitudes towards the outgroups. For example, in the metacognition treatment group, the more a participant agrees with statements such as, 'Syrian refugees have confidence in their own thoughts', the less prejudiced they should be towards that group. However, if it is just thinking about metacognition or people's minds in general that produces the effect, responses to these items should not predict prejudice. As demonstrated in the aforementioned analyses of Studies 1 and 2, responses to these manipulation items predicted reduced prejudice in the relevant conditions. However, this was not the case in Study 3, which used unfamiliar groups. This might suggest that it is thinking about the cognition of actual groups that is critical to obtain the effect. That is, people might need to have some knowledge of the groups for consideration of their particular cognitions to matter.

Although the results suggested that the effects of the treatments operate by the assignment of cognition and metacognition to known outgroups, it is still not possible to fully decipher precisely how those attributions then reduced prejudiced attitudes. For example, it might be that thinking about the cognition and metacognition of an outgroup

leads people to infer similarity between the outgroup and themselves (e.g., I have metacognition and refugees have metacognition, so we are similar, therefore I like them more). There also could be additional possibilities such as people liking outgroups more because responding to the items increased empathy for them, or because it humanized them. Prior research has shown that similarity, empathy, and humanization all can be linked to positive evaluations. Future research should disentangle how thinking about an outgroup's primary cognition or metacognition translates into reducing prejudiced attitudes.

Another interesting question worth asking is when one type of treatment would be more effective than the other in affecting prejudiced attitudes. One possibility is that the effects of the treatments might depend on the preconceptions that one has about the cognitions of particular minority groups. For example, it could be that a minority group benefits most from a treatment that completes what is missing in participants' preconceptions. For example, if people already believe that a minority group engages in metacognition, making that salient in a treatment would not confer much benefit, but if people believed that a group engaged in primary but not secondary cognition, a metacognition treatment would be especially beneficial, as the results of Study 3 seem to indicate. Thus, future research should identify which groups are perceived as lacking metacognition by default because those groups might benefit the most from receiving the metacognition treatment.

Before closing this section, it is also worth noting that although a focus on primary cognition sometimes produced an effect that was comparable to a focus on metacognition, it never had a superior effect. This could be because all outgroups are assumed to have at least some degree of primary cognition by default. It might be hard to imagine groups with high levels of secondary cognition, but low levels of primary cognition.⁷ Of course, this interpretation is speculative at this point and more research is needed. The take home message is that having people think about how others think is helpful in reducing prejudice. Furthermore, having people think about an outgroup's metacognition, an aspect that has received relatively little attention in previous research in the domain of reducing prejudice, might be a particularly fruitful avenue for future research.

6.1 | The role of preconceptions about outgroups

We suggested that one possible contributing factor to the differential effectiveness of the primary and secondary cognition treatments are the naturally attributed cognitions or metacognitions for the outgroups. For instance, in Study 1 using Syrian refugees as the target minority group, there was some evidence that the metacognition treatment produced more favourable attitudes than the control group whereas the primary cognition treatment did not. The metacognition

⁷ An example of high levels of metacognition but low levels of primary cognition can be found in the 'tip of the tongue' phenomenon, which refers to the metacognitive experience in which a person is certain of their knowledge on a given topic, yet is momentarily unable to retrieve the specific information from memory, so the primary cognition is not really there at that time (Schwartz & Brown, 2014; Stavraki et al., 2017).

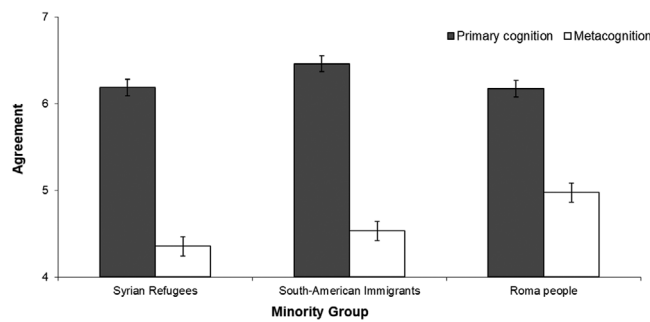


FIGURE 2 Primary cognition versus metacognition for the minority groups examined in the studies (Syrian refugees, South American immigrants, and Roma people).

treatment could have been especially effective for Syrian refugees because this group was seen as lacking in that metacognitive dimension. Similarly, Study 3 showed that when an outgroup is described as possessing mostly primary cognitions, a metacognition treatment is more effective to improve the attitudes towards that outgroup as compared to a primary cognition treatment.

To explore the role of participants' preconceptions about the outgroups examined in the current research, we conducted a fourth study asking participants to rate different outgroups with regard to the extent to which they agree that the members of that group were likely to have primary cognition and/or metacognition. Seventy psychology undergraduate students participated in a 2 (type of cognition: agreement with 10 statements about the primary cognition of the group vs. agreement with 10 statements about the metacognition of the group) \times 3 (type of group rated: Syrian refugees, South-American immigrants, and Roma people) mixed design. All participants rated the three outgroups (within-subject variable) but participants only reported the extent to which they agreed with ten statements describing either primary cognitions about the group or metacognition about the group (between-subject variable). The questions used in the survey of this study to manipulate type of cognition were the same questions used in the main studies.

Results of the repeated measures ANOVA revealed a significant main effect of manipulated type of cognition, $F(1, 68) = 94.322$, $p < .001$, $\eta_p^2 = 0.581$, indicating that participants perceived the three groups as possessing more primary cognition ($M = 6.27$; $SD = 0.85$) than metacognition ($M = 4.62$; $SD = 0.54$). A main effect of minority group also emerged, $F(2, 136) = 11.002$, $p < .001$, $\eta_p^2 = 0.139$, indicating that participants rated Roma people ($M = 5.57$; $SD = 1.10$) and South American immigrants ($M = 5.50$; $SD = 1.17$) as having more overall cognition (primary and metacognition) on average than Syrian refugees ($M = 5.27$; $SD = 1.18$). The contrast between Roma and South American people was not significant ($p = .904$).

More relevant to the idea that different groups might be perceived to differ in their type of cognition, a significant two-way interaction between type of cognition and type of group also emerged, $F(2, 136) = 17.288$, $p < .001$, $\eta_p^2 = 0.203$. As shown in Figure 2, with regard to primary cognition, participants rated South American immigrants ($M = 6.46$; $SD = 0.74$) as having more primary cognition than Roma

people ($M = 6.17$; $SD = 1.07$; $p = .001$) and Syrian refugees ($M = 6.18$; $SD = 0.87$; $p = .023$). With regard to perceived metacognition, participants rated Roma people ($M = 4.97$; $SD = 0.75$) as having more metacognition than South American immigrants ($M = 4.53$; $SD = 0.54$; $p < .001$) and Syrian refugees ($M = 4.35$; $SD = 0.60$; $p < .001$). Also, the contrast between South American immigrants and Syrian refugees was significant ($p = .044$), suggesting that Syrian refugees were seen as having the least metacognition. Recall that in Study 1 using Syrian refugees as the target minority group, there was some evidence that the metacognition treatment produced more favourable attitudes than the control group whereas the primary cognition group did not. Thus, it could have been that the metacognition treatment tended to be especially effective for Syrian refugees because this group was seen as most lacking in this dimension.

Indeed, one can speculate that the metacognition treatment can outperform the primary cognition treatment in some cases (e.g., for some specific groups, when primary cognitions are considered by default). For example, the metacognition treatment might be particularly effective when it makes accessible what otherwise might not be considered spontaneously. Thus, for outgroups for which people might assume they have mostly primary cognition but not as much metacognition, the metacognition treatment might be especially effective in reducing prejudiced attitudes. Another reason why there might be no special benefit of focusing participants on primary cognition in some cases is probably because all outgroups are assumed to have at least some degree of primary cognition by default, but there is more room for metacognition to make an impact.

6.2 | Theoretical implications and practical applications of the current research

This research reveals that attitudes towards outgroups can be improved by having people think about other's thoughts and their metacognitions. This work provides some practical recommendations for those interested in improving attitudes towards minority groups. In addition to exposing people to relevant information, having them engage in training programmes, and gaining perspective through contact with group members alone, the present research takes a different approach by focusing on how people think about minority groups' primary and secondary cognition. Thus, the present approach offers a key question that practitioners could ask themselves when they promote interventions to reduce prejudice towards minority groups: 'Is the minority group assumed to engage in metacognition?'

We believe that our interventions are relatively easy to implement and might be a useful complement to other approaches designed to promote an appreciation for others' minds. For example, interventions based on perspective-taking require people to consider how others might see something and walk in their shoes by using open questions (Batson et al., 1997; Boag & Carnelley, 2016; Clore & Jeffery, 1972; Shih et al., 2009). In contrast, in the present studies we merely asked participants to rate several items. Furthermore, previous work has focused on promoting empathy beyond perspective-taking by

asking people to consider how others might feel. For instance, a typical intervention in perspective-taking instructs the participants to imagine themselves in the position of the main character and to try to imagine how the character feels about what is happening (e.g., Shih et al., 2009). By answering our simple items, we do not ask participants to take any role or to imagine how others feel or to have an accurate understanding of another's perspective, but just merely to respond to a few simple questions. As noted, simply rating the items about primary cognition or metacognition was enough to improve attitudes towards minority groups over thinking about some non-cognitive feature of the outgroup (their clothing). Therefore, future research aimed at examining how others think about their own thoughts and how moving people from 'taking another's perspective' to 'gaining' a deeper appreciation for the sophisticated mental processes of all groups (e.g., Batson et al., 1997; Bloom, 2017; Eisenberg et al., 1994, 1995; Murphy et al., 2018; Todd et al., 2011; Tuller et al., 2015) can also potentially benefit from including several items about perceived primary and secondary cognition. It is worth noting that although the average effect size of the interventions found in this research can be considered small, this small effect could potentially accumulate over time to be consequential and meaningful (Abelson, 1985; Loyka et al., 2020).

Furthermore, future research conducted in more natural settings might also benefit from including this technique and assessing to what extent the observed changes in evaluation translate into fewer discriminatory behaviours. Given that the ability of attitudes to guide behaviour depends on the amount of thinking involved in the process underlying change, we expect that the obtained attitude changes have the potential to be stable and guide behaviour in applied settings (e.g., Briñol & Petty, 2020; Petty & Krosnick, 1995). Moreover, future research could explore whether the treatments introduced here are capable of reducing outgroup dehumanization in addition to changing attitudes.

We note that the present research relied on convenience samples of college students and was comprised of mostly female participants. As can be consulted in the [supplemental material](#), gender did not qualify the observed results in any of the studies. However, the samples included too few male participants to draw more informative conclusions regarding the role of gender in this research. Thus, future research could benefit from including a more balanced sample regarding gender and age. In sum, the current studies suggest that receiving either a primary cognition or a metacognition treatment can be effective in changing prejudiced attitudes for certain minority groups. Therefore, policymakers and researchers might design effective interventions focused not only on the primary cognitions held by minority groups but also on the metacognitions that these minority groups have. Based on the results of our three studies, it might not always be the case that either a primary cognition or a metacognition treatment is equally effective in producing the intended outcomes. We tentatively suggest that the treatment that works best could depend on the initial levels of primary (vs. secondary) cognition that others already perceive for the stigmatized group. Our Study 3 seemed to indicate that attitudes towards outgroups already perceived as having high levels of metacognition do not improve after receiving a primary or

metacognition treatment. However, attitudes towards outgroups perceived as having high levels of primary cognition did improve after receiving a metacognition treatment as compared to a primary cognition treatment. Thus, if the group was not assumed to engage in much metacognition, a metacognition treatment could be more effective than a primary cognition treatment. Nonetheless, future research can benefit from additional work aimed at understanding *when* and *for which groups* these different treatments might be more effective alone or in combination.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

All files will be archived in a secure location for at least 10 years following publication of the article. The corresponding author would allow access to the anonymized raw data and related coding information underlying all findings reported in the article to other competent professionals who request them, provided that (a) the confidentiality and informed consent of participants are not compromised, (b) legal rights concerning proprietary data do not preclude their release, and (c) professionals requesting data agree in writing in advance that shared data will be used exclusively for the purpose of verifying the substantive claims through reanalysis or for some other agreed-upon use.

ETHICS STATEMENT

(a) Research was conducted ethically, responsibly, and legally. (b) Results are reported clearly, honestly, and without fabrication, falsification or inappropriate data manipulation. (c) New findings are presented in the context of previous research, which is accurately represented. (d) Researchers are willing to make their data available to the editor when requested. (e) Methods are described clearly and unambiguously. (f) Submitted work is original, not (self-)plagiarized, and has not been published elsewhere. (g) Authorship accurately reflects individuals' contributions. (h) Funding sources and conflicts of interest are disclosed.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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