Awareness of the Psychological Bias of Naïve Realism Can Increase Acceptance of Cultural Differences

Lucía López-Rodríguez[1,2] (iD), Eran Halperin[3],
Alexandra Vázquez[2,4] (iD), Isabel Cuadrado[1],
Marisol Navas[1], and Ángel Gómez[2,4]

Abstract
Acceptance of cultural differences can contribute to diversity. However, naïve realism—the conviction that one's views are objective whereas others' are biased—might hinder intercultural coexistence. We tested, in three experimental studies, whether a cognitive strategy based on raising awareness of the naïve realism, without any reference to culture and free of emotional involvement, can have a beneficial effect on cultural acceptance. Results revealed that participants showed more acceptance of cultural differences once they were aware of this bias (Study 1). The intervention had an indirect effect on acceptance via openness, especially for participants higher in prejudice (Study 2). Participants aware of this bias could not maintain an enhanced self-view, which mediated the effect of the manipulation on acceptance (Study 3). These findings suggest that strategies based on "cold" cognition, without an explicit emphasis on culture, might be beneficial for increasing the acceptance of cultural differences in an era of xenophobia.

Migration creates new social realities where different ethno-cultural groups, with diverse cultural backgrounds, coexist. During the last decade, nationalist parties with xenophobic and intolerance claims have gained power in Europe (e.g., Vox in Spain, La Lega in Italy). The need to find new and subtle strategies to increase acceptance of cultural differences in a context with a rapid rise of an anti-immigration political atmosphere motivated this work.

Acceptance of cultural differences refers to the understanding and ability to value cultural traditions of individuals of different ethnicity (Wang et al., 2003). This acceptance can be related to the openness to understand others' acculturation preferences. The firm adherence to the own perspectives and the blindness to others' views constitute a significant barrier to peaceful coexistence (Nasie et al., 2014). On the contrary, if people become more open to alternative information about the issue in conflict, they might be able to understand others' point of view, to appreciate more similarities, or to acknowledge that there is more variability among the outgroup.

Being open to alternative narratives about integration seems crucial in any cultural conflict. In the field of intercultural relations, one of the main narratives apparently in conflict in European societies pertains to the level of preferred assimilation for minority groups whose values are perceived as "too" different from those of the majority. Values generally related to religious practices or gender relations seem to be some of the core themes in this negotiation for integration in Spain, especially with Moroccan immigrants (see Navas et al., 2004). Members of the dominant culture often find it difficult to understand minorities' cultural values—especially those perceived to pose a threat to the identity of the ingroup. That is one reason why some policies or interventions based on multicultural enrichment to reduce prejudice might rise resistance and be ineffective among more conservative people who feel that their core values are under threat.

[1]Universidad de Almería, CEMyRI, Almería, Spain
[2]ARTIS International, Saint Michaels, MD, USA
[3]Hebrew University of Jerusalem, Jerusalem, Israel
[4]Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain

Corresponding Author:
Lucía López-Rodríguez, Universidad de Almería, Carretera Sacramento s/n, La Cañada de San Urbano, 04120 Almería, Spain.
Email: lucialopez@ual.es

Traditional and New Indirect Strategies to Promote Change

A way to increase acceptance of cultural differences and openness to alternative information about integration might be to recognize the value of diversity (e.g., Plaut, 2010) or to increase empathy and perspective-taking. However, the salience of multiculturalism is not always effective and can even have a backfire effect, especially under threatening interactions (Vorauer & Sasaki, 2011), and for people high in authoritarianism (Kauff et al., 2013) or strongly identified with their ethnicity (Rios Morrison et al., 2010). Although interculturalism can lead to positive attitudes toward immigrant-origin groups among liberals, it has no positive effects on conservatives (Verkuyten & Yogeeswaran, 2020). Similarly, perspective-taking instructions seem not useful for opponents of immigration, since they tend to increase their perception of other's competitiveness (Klimecki et al., 2020). These strategies are direct as participants might be aware of the objective of the intervention and the categorization process is activated. They might also involve motivated reasoning (i.e., information processing that entails some kind of emotional involvement ["hot" cognition]) as they include motivational aspects related to intergroup empathy. However, new paradigms of attitude change might be adequate to promote a transformation in a politized and polarized context.

Recently, Zmigrod and colleagues (2018) have shown that people with strongly nationalist attitudes tend to process information in a more categorical way, even in neutral cognitive tasks without any ideological or emotional content, showing that not only emotional processing ("hot" cognition) but also cold cognitive information-processing styles ("cold" cognition) play a role in the adoption of nationalistic ideologies. If nationalists and opponents to immigration show rigidity in their thinking, traditional strategies that activate social categorization and issues in conflict would not be beneficial for attitude change as they elicit defensiveness and reactance. We propose that indirect strategies exclusively based on "cold" cognition (logical and reasoned processing), without an explicit emphasis on culture and that do not involve the emotional processing characteristic of "hot" cognition, might avoid psychological resistance and reactance and be useful for increasing acceptance of cultural differences.

According to the approach–avoidance conflict model of persuasion, a way to promote change is by minimizing or avoiding resistance (Knowles & Linn, 2004). Recent works have explored different ways to promote change among those more reluctant to such change through subtle and indirect techniques (e.g., Elad-Strenger et al., 2019; Halperin et al., 2014; Hameiri et al., 2014, 2018; Nasie et al., 2014). These alternative strategies such as the "paradoxical thinking," can constitute a new paradigm of attitude change that, among other advantages, do not raise intense defensive reactions and do not provide counter-information (see Bar-Tal et al., 2021). In the words of Knowles and Linn (2004, p. 138), acknowledging the resistance to change might be a way to avoid the resistance itself as this awareness "may have the paradoxical effect of [. . .] rendering that resistance less influential." At this point, we may wonder whether it is possible to make people aware of the resistance, doubt about their way of thinking, so they might question their validity and, consequently, be more flexible in their judgments.

In the present work, we propose an alternative and innovative way to increase acceptance of cultural differences and openness to alternative information in the context of intercultural relations in Europe in a time of a rise of xenophobia. We adapted a subtle strategy based on raising awareness of people's psychological bias of naïve realism (i.e., the conviction that one's own views are objective and unbiased).

The Psychological Bias of Naïve Realism

The naïve realism bias refers to an assumption of isomorphism between people's subjective perceptions and an objective reality (Ross et al., 2010). Accordingly, people have the conviction that their own views are objective and unbiased, whereas others' views are biased by ideology and/or irrationality, something that contributes to social misunderstanding and creates barriers to negotiate positions (Ross & Ward, 1996). A possible way to reduce overconfidence or belief superiority is to provide feedback about actual knowledge (Hall & Raimi, 2018). Awareness of the naïve realism bias can have positive consequences in this regard. As far as we know, only one research conducted by Nasie et al. (2014) has shown that a combined strategy including raising awareness of the naïve realism bias ("cold" cognition independent of emotional involvement) plus training about its consequences in real conflicts ("hot" cognition) have benefits for considering the outgroup narrative and alternative information about the Palestinian-Israeli conflict. This intervention has also proved to avoid reactance and was useful among those individuals with a combative perspective. This work also revealed that those who tend to be closed to the adversary's narrative were more identified with the bias, that is, they were more aware of using naïve realism in their judgments.

Although the original manipulation used by Nasie et al. (2014) was subtle, the second part of the intervention included contextual specific content to provoke emotional engagement. After a "cold" description of the bias, a "warmer" text was added showing that the bias of naïve realism intensified conflicts and misunderstandings between individuals and groups. Then, they provided a specific example of the bias for interpersonal conflict between married couples, in Study 1; and for intergroup conflict between Protestants and Catholics in Northern Ireland, in Study 2: "[. . .] they tended to perceive their violent actions against the other side as reasonable, justified, and defensive, while perceiving the actions of the other side as unreasonable, unjustified, and a product of cruelty and psychopathy" (p. 1550).

Even though the overall intervention was quite indirect, its contextual specific content might provoke an emotional involvement that can entail still a threat, elicit psychological reactance, or activate defensive reactions among people identified with one side. To avoid these potential side effects, we aimed at determining whether a purely "cold" cognitive approach, bare of any reference to culture (ethnic categorization), based on mere awareness of the naïve realism bias and without providing information about its consequences for a conflict (emotional component), can foster openness to alternative information about integration of immigrants and acceptance of cultural differences.

Interventions to improve intercultural relations can have a different impact depending on the motivations of the target group (Klimecki et al., 2020). We propose that being aware of the naïve realism bias would be particularly effective for people with more negative attitudes about immigrants. Contrary to other strategies, we expect that this cognitive intervention—sufficiently cold, brief, and subtle—could increase acceptance of cultural differences among people with high prejudice (more concerned about immigrants being a burden to the economic system and a threat to meritocratic values).

The reason why becoming aware of the existence of the naïve realism bias can increase acceptance of cultural differences might be motivated by reduced overconfidence, as there is a strong link between naïve realism and striving for a positive view of the self (Ross et al., 2010). Realizing that our perception does not exactly correspond to reality could make it difficult to maintain an enhanced view of oneself. This reduction in self-enhancement, in turn, may lead to question our beliefs, including those about the superiority of the ingroup, which would pave the way to accept others' culture.

In the field of intergroup relations, previous research has recognized the importance of ethnic bias awareness in intergroup attitudes (see e.g., Perry et al., 2015). However, being aware of personal ethnic biases might work for those participants who are motivated to change or already disagree with such biases, but it also can make social categorization salient and might elicit a strong reactance and defensive strategies in an increasing xenophobic context where people might feel threaten when facing interventions to change their attitudes. Being aware that our general social perception is biased (instead of our ethnic attitudes) is a different strategy that can avoid the activation of social categorization and prevent emotional reactions. As far as we know, no previous research has tested whether being aware of the naïve realism bias might influence acceptance of cultural differences.

Sociocultural Context and Overview of the Studies

We conducted three experimental studies in Almería, a region located in the southeast corner of Spain on the Mediterranean Sea. This province was selected due to its geopolitical importance regarding immigration and its recent electoral results. According to the National Institute of Statistics (Instituto Nacional de Estadística, INE, 2020), Almería has the highest proportion of immigrants across the country (21.24% of its population has no Spanish nationality). Regarding the composition of immigrants (INE, 2020), half of the foreigners come from Africa (50.35%). Moroccans are the most numerous community of immigrants in Almería (8.41% of the total population of the province, and 39.61% of the population with no Spanish nationality). The rest of the immigrant communities constitute <3.50% of the population. Besides its representation, Moroccans are the most stigmatized immigrant group: They provoke more perceived realistic and symbolic threat (e.g., Navas et al., 2012), and are perceived as less moral (trustworthy) compared with other immigrant communities (López-Rodríguez et al., 2013).

Besides its diversity, in the regional elections, Almería was one of the main sources of votes for Vox, a far-right political party with xenophobic views, reaching 16.79% of votes in the province, and becoming the first party (with 29.51% of votes) in some locations characterized by a great proportion of immigrants (El País, 2018). Its political leaders have an intense discourse especially against Muslims and they propose that immigration should be addressed according to immigrants' ability to integrate and that quotas should give preference to nationalities that share the language and have important ties of friendship and culture with Spain (see Vox, 2019). These characteristics make this area perfectly suitable for the studies.

In this specific sociocultural context, we first tested if the awareness of the psychological bias of naïve realism (using a simplified version without emotional involvement) had an effect on openness to alternative information about integration of Moroccans in Spain, which in turn, would increase acceptance of Moroccans' cultural differences (Study 1).

Study 2 explored if the intervention had a different impact depending on previous attitudes toward Moroccans. According to the cold and indirect nature of the intervention, we predict that the effect of the naïve realism manipulation on accepting cultural differences will be stronger among those higher in prejudice toward Moroccans. The specific nature of this intervention fits well with the needs and motivations of these individuals. People with high prejudice and opposing views on immigration tend to process social reality in a rigid way (e.g., Zmigrod et al., 2018). Being aware of the naïve realism bias might affect those individuals because the superiority of their views is called into question, but, more importantly, it does indirectly and subtly, without an explicit threat to their interpretations, something that tends to be counterproductive. Accordingly, the "cold" nature of the intervention could prevent any negative reaction on those who are concerned about Moroccans being a burden or violating meritocratic values. As no social categorization is made salient and the manipulation does not provoke emotional engagement, there is no need for defensive strategies to protect and adhere to previous positions.

Finally, it was explored a possible reason that could explain why the effect worked. Among other possible mediators, and based on the relation between naïve realism and strivings for a positive self-view, Study 3 tested whether being aware of the bias could reduce self-enhancement perceptions and if this could be related to acceptance of cultural differences.

The investigation was in line with APA ethical standards and was approved by the University Ethics Committee. We report all manipulations and exclusions in these studies. Additional exploratory dependent variables (not considered essential for the purposes of the present argument) are described in Supplementary Information. Study and analysis plan pre-registration does not exist. All study materials and data used in this research are publicly available and can be accessed at https://osf.io/zyj56/?view_only=3d28d42e6cb64 a8ca56750c4ca9b2afb

Study 1

We endeavored to test the effect of the awareness of the bias of naïve realism on openness to alternative information about the integration of Moroccans in Spain and acceptance of Moroccans' cultural differences using a simplification of the original manipulation used by Nasie et al. (2014), without emotional content, by only describing the psychological bias, without additional information regarding intercultural conflict. We also explored if openness to alternative information about integration could mediate the relationship between awareness of the naïve realism bias and acceptance of cultural differences.

Method

Participants. Data were prescreened for completeness and duplications, resulting in a sample of 251 volunteer participants. Not spending enough time reading the text of the manipulation (pre-established in a pilot study[1]) or expressing invalid ideas were established as minimum criteria of exclusion to guarantee the quality of the data. Fourteen participants did not meet those criteria. The final sample was comprised of 237 participants (65.8 % females, 93.7% Spaniards) from 18 to 78 years old ($M = 25.16$, $SD = 12.03$). We used a convenience sampling: First-year undergraduate psychology students completed the online questionnaire and then sent a link to their acquaintances in exchange for academic credits in a snowball procedure (with a result of 16.5% students and 83.5% acquaintances). There were no significant differences in the proportion of psychology and non-psychology students between conditions, $\chi^2(1) = 2.05$, $p = .152$. Regarding their political position, 36.3% were neither left-wing nor right-wing, 47.7% were left-leaning, and 16% were right-leaning. A sensitivity analysis with G*Power (Faul et al., 2009) revealed that, with the present sample size ($n = 237$), an ANOVA (fixed effects, special, main effects, and interactions) with two groups had 80% power to detect a minimum effect size of $f = .183$ ($\eta^2_p = .032$).

Procedure and measures

Naïve realism manipulation. Participants were randomly allocated to two different conditions: A control condition without instructions ($n = 134$) where participants did not do any task nor read any text, or the naïve realism condition ($n = 103$), where they were instructed to read about a well-known bias in psychology. Here they read a short text describing the psychological bias of naïve realism (see Nasie et al., 2014, p. 1546), but without mentioning how it affected interpersonal or intergroup conflict or making any other allusion to intercultural relationships:

> Naïve Realism is the human tendency to form one's own worldview regarding various subjects, perceived by an individual as the only truth. Accordingly, the individual believes that other people's reluctance to share his or her views arises from ignorance, irrationality, an inability to draw reasonable conclusions from objective evidence, ideological biases, or self-interest. The psychological bias of naïve realism causes people to see the world in a unilateral and simplistic manner. As a result of this bias, people tend to ignore or reject any information that does not fit their pre-existing worldview, which is perceived by them as the only truth. Consequently, they fail to see things from several points of view and may miss opportunities for change and progress.

Understanding of the manipulation. Participants were asked to write three main ideas about the text. A four-item true/false scale adapted from Nasie et al. (2014) was used to assess if participants had understood the manipulation: Naïve realism makes people see the world in a complex way, by valuing all perspectives; one of the problems with naïve realism is the challenge of seeing things from different points of view; naïve realism often makes people tend to believe that their way of seeing the world is the correct one; according to naïve realism, people often ignore information that does not fit their worldview. Thirteen participants failed at least one reading check, however, this was not used as a selection criterion. Analyses were conducted without controlling by comprehension, but we also tested if the comprehension altered the results when it was included as a covariate.

To measure the dependent variable of openness to new alternative information about integration of Moroccan immigrants, participants first read a summary of a set of recent findings showing the Spanish and the Moroccan perspective regarding the controversial issue of cultural/social integration. Some of these statements were extracted from real interviews in a previous field study (Navas et al., 2004):

> We recently conducted a series of interviews with Spanish and Moroccan immigrants. Regarding integration, our interviews revealed that many of the Spanish people (women and men) interviewed consider that the Moroccan immigrants living here should adopt the customs and values of Spanish culture, especially regarding the absence of religious manifestations in public spheres and gender equality. On the other hand, many of the Moroccan people (women and men) interviewed declare to make efforts adopting customs and values of the Spanish

Table 1. Correlations of Measures in Studies 1–3.

Study 1	1	2
1. Openness to alternative information	1	**.60****
2. Acceptance of cultural differences		1

Study 2	1	2	3
1. Modern prejudice	1		
2. Openness to alternative information	−.61**	1	
3. Acceptance of cultural differences	−.68**	**.58****	1

Study 3	1	2	3	4	5	6
1. Modern prejudice	1					
2. Exaggeration of cultural differences	−.01	1				
3. Openness to alternative information	−.46**	−.05	1			
4. Acceptance of cultural differences	−.61**	.08	**.42****	1		
5. Self-enhancement	.11*	−.19**	**.02**	−.19**	1	
6. Perceived ability to process reality	−.02	.02	**.04**	−.01	**.36****	1

Note. Correlations among dependent variables are in bold font.
*p < .05. **p < .01.

culture, although they also want to maintain customs and values of their culture of origin, especially regarding to religion as a principle to regulate people's life and morality, and the division of spaces between men and women.

After reading the narratives, participants were asked about their openness to new alternative information about the integration of Moroccan immigrants.

Openness to new alternative information about integration of Moroccan immigrants. It was measured by adapting the items used by Nasie et al. (2014, Study 2): To what extent would you be willing to watch movies that present the Moroccan view regarding the integration issue?; To what extent would you be willing to personally meet with a Moroccan and hear his or her view about the integration issue?; To what extent would you be willing to receive information about the issue of Moroccans integrating into Spain, if it comes from foreign sources that portray it in a light that's different from the one you already know? (α = .85). The answer scale ranged from 1 (*not at all*) to 5 (*very much*).

Acceptance of cultural differences. This variable was measured by using one of the dimensions of the Scale of Ethno-Cultural Empathy (SEE, Wang et al., 2003). This dimension is comprised of the following five items: I feel irritated when Moroccans speak their language around me; I feel annoyed when Moroccans do not speak Spanish; I get impatient when communicating with Moroccans, regardless of how well they speak Spanish; I do not understand why Moroccans keep their ethnic cultural traditions instead of trying to fit into the mainstream culture; I do not understand why Moroccans enjoy wearing traditional clothing. The answer scale ranged

from 1 (*completely disagree*) to 5 (*completely agree*). All items were reversed to show acceptance of cultural differences (α = .82).

Other additional exploratory measures, here and in all other studies, are described in Supplementary Information.

Socio-demographics. Participants also indicated their sex, age, education, nationality, and political orientation with a 7-point Likert-type scale (1 = *strongly left*; 7 = *strongly right*). There were no significant differences between control and experimental conditions in participants' socio-demographics, *p* > .154.

Results

Dependent variables were highly correlated (see Table 1). We conducted a multivariate analysis of variance (MANOVA) with the manipulation of naïve realism as independent variable and openness to alternative information about the integration of Moroccans and acceptance of cultural differences as dependent variables. The multivariate effect of condition on both measures was not significant, Wilks's λ = .98, $F(2, 234)$ = 2.26, *p* = .107, η^2_p = .019. However, the univariate analyses revealed that participants showed more acceptance of cultural differences in the naïve realism (M = 3.95, SD = 0.93) than in the control condition (M = 3.69, SD = 0.98), $F(1, 235)$ = 4.09, *p* = .044, η^2_p = .017; and were marginally more open to alternative information about the integration of Moroccan immigrants in the naïve realism condition (M = 4.06, SD = 0.91) than in the control condition (M = 3.84, SD = 0.96), $F(1, 235)$ = 3.03, *p* = .083, η^2_p = .013. Results did not vary substantially when political orientation was included as a covariate and

slightly improved when the understanding of the manipulation (using the right answers to the dichotomous readings checks) was controlled for as a covariate.

Discussion

This exploratory study revealed that exposure to the bias of naïve realism seemed to increase acceptance of Moroccans' cultural differences. However, the effect size was small, and there was no significant effect of the intervention on openness to alternative information about integration. Although the finding was modest, we found it encouraging given the subtleness of the intervention. No previous research had proved that a cold intervention undressed of any cultural or emotional content can affect acceptance of cultural differences.

The subtleness of the manipulation had its limitations. Thirteen participants failed the dichotomous reading checks, so we cannot guarantee maximum control over the understanding of the manipulation to ensure the validity of the manipulated construct. The fact that the results improved when the comprehension of the manipulation was controlled might lead to think that a deep understanding of the manipulation is important to guarantee the effectiveness of the manipulation.

Another limitation was that this study did not consider initial levels of participants' prejudice, and it was assumed that the control and naïve realism groups were equivalent in prejudice prior to the manipulation. The next study was designed to guarantee that participants in both conditions did not differ in their initial levels of prejudice and aimed to test whether previous levels of prejudice could moderate the effect of the intervention.

Study 2

Not all strategies to change attitudes are efficient for all people. Indirect interventions might avoid the reactance of people with strong opposing views. Under this new paradigm of attitude change, previous studies have shown that the awareness of the naïve realism bias especially affected participants with hawkish political ideologies (Nasie et al., 2014). Study 2 aimed to test if participants' prior levels or prejudice could moderate the effect of awareness of naïve realism on openness to alternative information about integration and acceptance of cultural differences. Measuring participants' initial levels of prejudice can increase the confidence in the results as we can control that no differences of prejudice existed between conditions. We also explored if openness could mediate the relationship between awareness of the bias and acceptance of cultural differences, and if this process could also be moderated by participants' prior prejudice.

Method

Participants. After controlling for completeness and duplicates, the final sample was comprised of 255 participants. Criteria for exclusion were the same as in Study 1. Twenty-one

participants did not achieve such criteria. The final sample was composed of 234 participants (63.2% females, 96.2% Spaniards) from 18 to 73 years old ($M = 27.20$, $SD = 13.76$). The convenience sample included 17.5% first-year undergraduate psychology students and 82.5% were other participants invited by psychology students. There were no significant differences in the proportion of psychology students and non-psychology students between conditions, $\chi^2(1) = 0.16$, $p =$. 692. Regarding their political position, 35.5% were center (nor left-wing, nor right-wing), 41.9% were left-leaning and 22.7% were right-leaning. A sensitivity analysis conducted with G*Power (Faul et al., 2009) revealed that this sample ($n = 234$) had 80% power to detect a minimum effect size of $f^2 = .034$ in a multiple regression, and of $f = .184$ ($\eta^2_p = .033$) in an ANOVA.

Procedure and measures

Prejudice. Prejudice was measured before the manipulation as a moderator variable. We used the 11-item Spanish version of the Modern Racism Scale (McConahay, 1986) adapted by Navas (1998). Some items were: In recent years, Moroccans living in Spain have received more than what they deserve; Moroccans living in Spain are being too demanding in their fight for equal rights ($\alpha = .89$). The answer scale ranged from 1 (*completely disagree*) to 5 (*completely agree*).

Manipulation. Participants were randomly assigned to the naïve realism condition ($n = 85$) or the control condition where they did not read any text ($n = 149$) and answered to the same reading checks used in Study 1. Samples in both conditions were imbalanced because of the selection criteria based on the reading time and the validity of ideas reported in the naïve realism condition.

Dependent variables. Openness to new alternative information about the integration of Moroccan immigrants ($\alpha = .85$) and acceptance of cultural differences ($\alpha = .82$) were measured as in Study 1.

Socio-demographics were assessed as in Study 1. There were no significant differences in sex, education, or political orientation between control and experimental conditions, *ps* > .192. There were only marginal significant differences in age, $t(200.30) = 1.91$, $p = .057$.

Results

As shown in Table 1, prejudice was negatively correlated to openness to new alternative information about the integration of Moroccan immigrants and acceptance of cultural differences. Openness and acceptance were positively correlated. Participants in the naïve realism condition and in the control condition seemed to not vary significantly in their initial levels of prejudice, $F(1, 232) = 0.60$, $p = .439$, $\eta^2_p = .003$.

The multivariate effect of condition on both measures was marginally significant, Wilks's $\lambda = .98$, $F(2, 231) = 2.72$, $p = .068$, $\eta^2_p = .023$. The univariate analyses revealed that
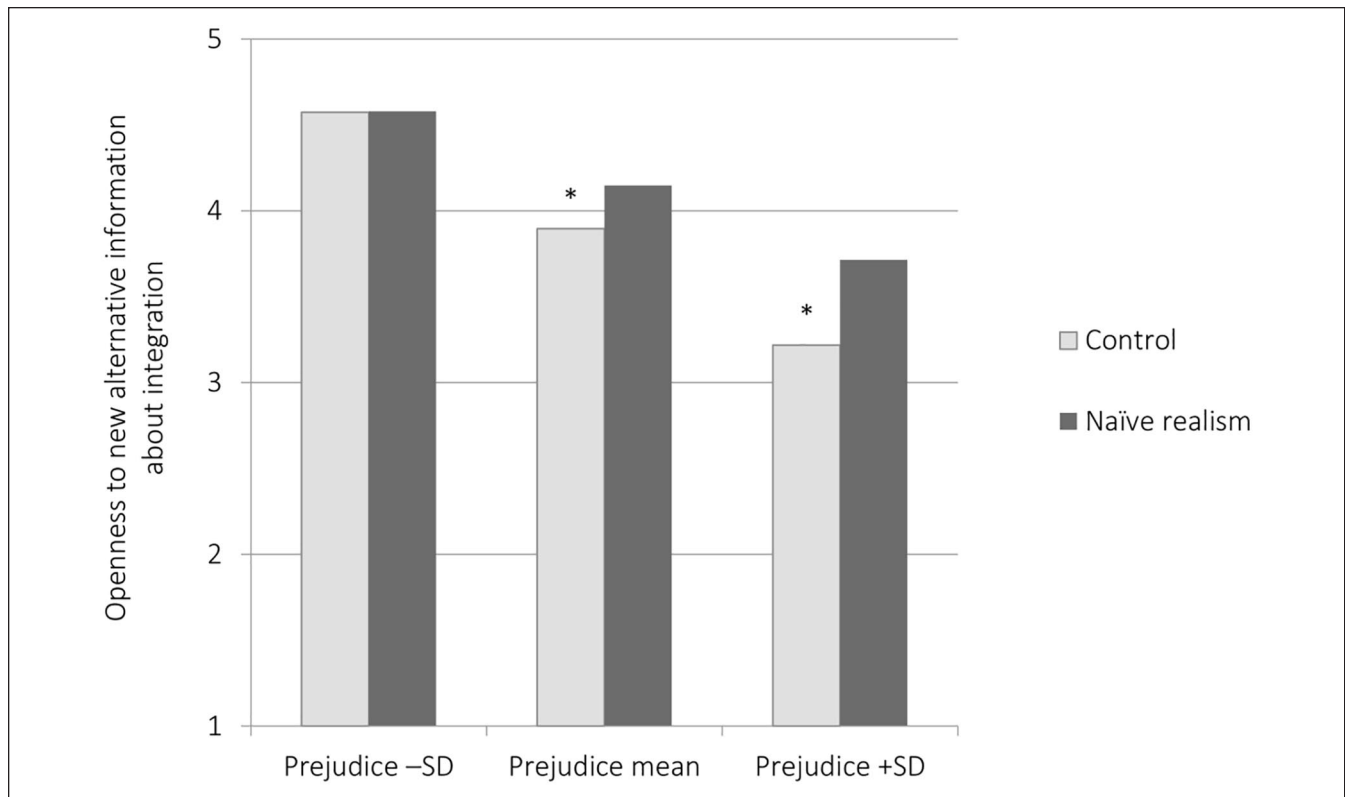
Figure 1. Effect of naïve realism on openness to alternative information about Moroccan integration in the function of participants' prejudice (Study 2).
*$p < .05$.

participants were more open to alternative information about the integration of Moroccan immigrants in the naïve realism condition ($M = 4.18$, $SD = 0.84$) than in the control condition ($M = 3.87$, $SD = 1.03$), $F(1, 232) = 5.44$, $p = .021$, $\eta_p^2 = .023$. No significant main effects were found for acceptance (naïve realism: $M = 3.84$, $SD = 0.89$; vs. control condition: $M = 3.67$, $SD = 1.03$), $F(1, 232) = 1.52$, $p = .219$, $\eta_p^2 = .007$. Results slightly improved when political orientation or the understanding of the manipulation was included as covariate and did not vary when controlled by prejudice.

We tested a two-way interaction between the manipulation (control 0; naïve realism 1) and prejudice (−SD, mean, +SD) on the dependent variables. We used the macro PROCESS 3.5 (Model 1; Hayes, 2018), controlled by heteroscedasticity. The effect of the manipulation on openness to alternative information about the integration of Moroccan immigrants was moderated by prejudice, $b = 0.27$, $SE = 0.14$, $t(230) = 1.97$, $p = .050$, $R^2 = .403$, $\Delta R^2 = .014$. The conditional effects revealed that the awareness of naïve realism had an effect for participants high in prejudice (+SD from the mean), $b = 0.50$, $SE = 0.19$, $t(230) = 2.56$, $p = .011$, and medium prejudice (mean), $b = 0.25$, $SE = 0.10$, $t(230) = 2.40$, $p = .017$ (see Figure 1). There was no effect for those with low prejudice (−SD from the mean), $b = 0.01$, $SE = 0.12$, $t(230) = 0.05$, $p = .960$. No interaction effect

was found on acceptance ($p = .180$). Results did not vary substantially when political orientation or comprehension was included as covariate.

A moderated mediation analysis was conducted with the macro PROCESS 3.5 (Model 7, Hayes, 2018). The index of moderated mediation was significant, $b = 0.16$, $SE = 0.08$, 95% CI [0.01, 0.32], $F(2, 231) = 37.60$, $p < .001$, $R^2 = .334$. Awareness of naïve realism was found to have an indirect effect on acceptance of cultural differences through openness to alternative information about integration only for those high in prejudice, $b = 0.29$, $SE = 0.11$, 95% CI [0.08, 0.51], and medium prejudice, $b = 0.15$, $SE = 0.06$, 95% CI [0.03, 0.27]. The indirect effect was not significant for those low in prejudice: $b = 0.01$, $SE = 0.07$, 95% CI [−0.14, 0.14].

Discussion

Study 2 showed that the awareness of naïve realism on openness to alternative information about integration was effective only for those participants with high or medium levels of prejudice but not for those with low levels. It also showed that awareness of the bias indirectly increased acceptance of cultural differences through openness to alternative information, but only for high- and medium-prejudiced individuals.

Results were not stable and consistent between Studies 1 and 2. Study 1 found a significant direct effect on acceptance, but not on openness, whereas Study 2 found the opposite pattern. This inconsistency might be due to power issues as studies were underpowered and had problems detecting small effect sizes. There were other limitations related to the samples. Studies 1 and 2 mixed samples of psychology students and no-psychology students. As psychology students might be more open to diversity and more aware of their psychological biases, the manipulation of the naïve realism should be tested with a sample that does not include them.

Regarding the procedure of Studies 1 and 2, the cognitive load of participants in the control condition (where they did not do any task) and the naïve realism condition was different. Participants in the naïve realism condition might have shown more fatigue than participants in the control condition. Study 3 would equilibrate this by introducing a similar task in the control condition.

Although Study 2 found an effect of awareness of naïve realism on openness and an indirect effect on acceptance, we do not know yet the psychosocial mechanisms that might guide the effect of naïve realism awareness. Given that naïve realism is related to a basic human motivation of striving for a positive view of the self (Ross et al., 2010), we propose, for the first time, that realizing that our perception does not exactly correspond to reality could make difficult to maintain an enhanced view of oneself. This reduction in self-enhancement, in turn, may lead to question our beliefs, including those about the superiority of the ingroup, which would pave the way to accept others' culture.

Study 3

The awareness of naïve realism can involve some motivational aspects that directly affect people's identity. People generally have a tendency for self-enhancement as a strategy to preserve their self-esteem (see Sedikides & Alicke, 2019). In Study 3, we tried to explore this motivational process as a mechanism to explain the effect of the manipulation on intercultural attitudes. As naïve realism is related to strivings for a positive view of the self (Ross et al., 2010), the awareness of the naïve realism bias can make it difficult to maintain a self-enhanced view. Consequently, a reduced self-enhanced view can be associated with more openness to alternative information about integration and acceptance of cultural differences. Alternatively, participants aware of the naïve realism bias could feel that they have less ability to process their surrounded reality when they realized they are also susceptible to biases in judgments. We contrasted both hypotheses: Naïve realism influences intercultural attitudes because participants cannot maintain an enhanced view of themselves, or alternatively, because they feel they are not able to process reality adequately.

Study 3 included some procedural improvements. To guarantee the stability of the results we increased the sample size to overpass the limitation of underpowering in Studies 1 and 2. In addition, this study was conducted among a more heterogeneous sample (no psychology students). We also introduced a text of similar length in the control condition (about a topic of organizational psychology) to guarantee that participants would spend approximately the same amount of time and cognitive effort as those in the experimental condition. The measure of prejudice, the manipulation of awareness of naïve realism, and the outcomes were presented as separate studies combined for convenient reasons.

Method

Participants. After controlling for completeness and duplicates, the final sample was composed of 420 participants. Criteria for exclusion of participants were the same as in previous studies. Forty-seven participants did not achieve such criteria. The final sample was comprised of 373 participants (58.2% females, 90.1% Spaniards[2]) from 18 to 75 years old ($M = 28.55$, $SD = 13.24$). We used a convenience sample. Undergraduate psychology students sent the link to their relatives and acquaintances. They signed an agreement wherein they committed not to send the link to any student of psychology. Regarding their political position, 45% were centered, 39.1% were left-leaning and 15.9% were right-leaning. A sensitivity analysis conducted with G*Power (Faul et al., 2009) revealed that this sample had 80% power to detect a minimum effect size of $f^2 = .021$ in multiple regression, and of $f = .145$ ($\eta^2_p = .021$) in an ANOVA.

Procedure and measures. This study was conducted with no psychology students. Participants were instructed that the measures presented were related to different and separate studies. Before being exposed to the manipulation, participants reported their attitudes toward Moroccans to capture their level of prejudice, measured as in Study 2 ($\alpha = .89$). For more guarantees, we also measured the exaggeration of cultural differences. We used the Spanish version of the exaggeration of cultural differences, a dimension of Subtle Prejudice (Pettigrew & Meertens, 1995; Spanish version adapted by Molero et al., 2003). Participants indicated how different or similar they thought Moroccan immigrants were to Spaniards in their: beliefs and religious practices, beliefs about the relationships between men and women, education they give to their children, ways of being and seeing life, habits and dietary habits, ways of speaking and communicating with people; and hygiene and cleaning habits. The answer scale ranged from 1 (*very different*) to 5 (*very similar*). Scores were inverted to create a measure of exaggeration of cultural differences ($\alpha = .85$). They then were thanked and redirected to a different study related to the way people process the information of their environment.

Manipulation. Participants were randomly assigned to the control ($n = 215$) or naïve realism condition ($n = 158$) as in

Studies 1 and 2. This time, participants read a text about a process of organizational psychology (Bakker et al., 2012, p. 67) in the control condition to equilibrate the cognitive load.

> Engagement is described as a positive work-related state of mind characterized by vigor, dedication, and absorption. Vigor is characterized by high levels of energy and mental endurance at work, by a desire to put forth effort in the work being done even before difficulties arise. Dedication refers to high job involvement, along with the expression of a feeling of meaning, enthusiasm, inspiration, pride, and challenge for the job. Finally, absorption occurs when the person is fully focused on her work, when time passes quickly, and when she has difficulties disconnecting from what she is doing, due to the strong dose of enjoyment and concentration experienced.

After the manipulation, participants answered the following questions:

Perceived ability to process reality. We used three items from our own creation: I feel different from most people when analyzing reality I think I analyze reality better than most people do; and I analyze reality in a more complex way than most people do (α =.69).

Self-enhancement. It was measured through an adaptation from the Self-Enhancement and Self-Protection Strategies Scale (Hepper et al., 2010). We used only 6 items from the total of 60 items used by the original authors, those that were most related to our objectives (i.e., Above-Average/ Positivity Bias). Participants answered to what extent each item was characteristic of them using a response scale from 1 (*not at all characteristic of me*) to 5 (*very characteristic of me*): I am more objective in my judgments than most people, I think about how I have grown and improved as a person over time, how much more good/honest/skilled I am now than I used to be; I believe that I am changing, growing, and improving as a person more than other people are; I think that my weaknesses and flaws are common but that my skills and abilities are rare; I think I possess positive personality traits or abilities to a greater extent than most people; I think I possess negative personality traits or flaws to a greater extent than most people (reversed). This last item was not included as it saturated in a different factor. This five item-scale showed a Cronbach's alpha of .69.

Participants were then thanked again for their participation and were asked to dedicate a few minutes more to answer to a different study about their opinion regarding some relevant events in their country. Openness to new alternative information about the integration of Moroccans (α = .86) and acceptance of cultural differences (α = .83) were measured as in previous studies.

Socio-demographics were assessed as in previous studies. There were no significant differences in sex, age, education, or political orientation between control and experimental conditions, $ps > .164$.
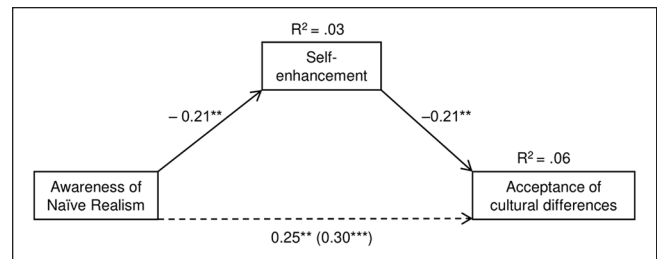

Figure 2. Motivation of self-enhancement as mediator of the effect of naïve realism on acceptance of cultural differences (Study 3).
Note. Total effect in brackets.
**$p < .01$. ***$p = .001$.

Results

Inter-variable correlations are reported in Table 1. Participants in the naïve realism condition and in the control condition seemed to not vary significantly in their initial levels of prejudice, $F(1, 371) = 2.67$, $p = .103$, $\eta^2_p = .007$; or their exaggeration of cultural differences, $F(1, 371) = 1.73$, $p = .189$, $\eta^2_p = .005$.

Prejudice or exaggeration of cultural differences did not moderate the effects. Only main effects were found. The multivariate effect of condition was significant, Wilks's $\lambda = .96$, $F(4, 368) = 4.02$, $p = .003$, $\eta^2_p = .042$. The univariate analyses showed that participants revealed more acceptance of cultural differences in the naïve realism condition ($M = 4.15$; $SD = 0.81$) than in the control condition ($M = 3.85$; $SD = 0.95$), $F(1, 371) = 10.21$, $p = .002$, $\eta^2_p = .027$.[3] Participants also showed less self-enhancement in the naïve realism condition ($M = 2.94$; $SD = 0.69$) than in the control condition ($M = 3.15$; $SD = 0.74$), $F(1, 371) = 8.12$, $p = .005$, $\eta^2_p = .021$. No main effects were found on openness to alternative information or perceived ability to process reality, $p > .521$. Results did not vary substantially when political orientation, prejudice or exaggeration of cultural differences were included as covariates. Controlling for comprehension of the manipulation increased the effect sizes.

A simple mediation analysis using ordinary least squares based on 5,000 bootstraps and controlling for heteroscedasticity showed that less self-enhancement mediated the effect of awareness of naïve realism on acceptance of cultural differences, $b = 0.05$, $SE = 0.02$, CI 95 % [0.01, 0.09]. Total effects (in brackets) and direct effects are shown in Figure 2.

Discussion

Study 3 tested if awareness of naïve realism could affect people's self-enhancement or their perceived ability to process reality. The results showed that it actually reduced self-enhancement, but not their perceived ability to process reality. Participants who were aware of the bias showed a less positive view of themselves compared with others than participants in the control condition. This finding might

Table 2. Summary of Effect Sizes (Cohen's d) in Studies 1–3 and the Additional Study.

| | Acceptance of cultural differences | | | | | | | Openness to alternative information | | | | | | |
| | Naïve realism | | | Control | | | Cohen's | Naïve realism | | | Control | | | Cohen's |
Study	n	M	SD	n	M	SD	d	n	M	SD	n	M	SD	d
Study 1	103	3.95	0.93	134	3.70	0.98	.261	103	4.06	0.91	134	3.84	0.96	.234
Study 2	85	3.84	0.89	149	3.67	1.03	.173	85	4.18	0.84	149	3.87	1.03	.321
Study 3	158	4.15	0.81	215	3.85	0.95	.336	158	3.98	0.92	215	3.93	0.92	.054
Additional study	126	3.90	1.00	205	3.80	0.92	.105	126	3.89	0.95	205	3.74	0.92	.161
	$Z = 3.75$, 95% CI = 0.107 to 0.342							$Z = 2.88$, 95% CI = 0.055 to 0.289						
	Mean d = .225							Mean d = .172						

Note. CI = confidence interval.

suggest that awareness of the bias may affect participants' identity by reducing their enhanced view, and this might mediate the effect of the manipulation on acceptance of cultural differences. We should be cautious about the interpretation of the mediation effect. The indirect effect was small, and the cross-sectional design does not guarantee that self-enhancement might always work as a mediator. The manipulation had no direct effect on openness to alternative information; further, neither prejudice nor exaggeration of cultural differences moderated the effect of the manipulation. The moderation effect of prejudice and cultural ideologies should be clarified in future research.

Additional Study

An additional study was conducted following the same procedure as in Study 3 ($n = 331$ participants) to confirm the effect on openness to alternative information, acceptance of cultural differences, and other variables. Results were not conclusive. Without controlling by comprehension of the bias, the analysis revealed no significant main effect on openness or acceptance, $p > .157$. However, if comprehension was controlled as covariate, results changed, and awareness of the naïve realism affected both openness and acceptance. The full description of this study can be consulted in Supplementary Information, made available online.

Mini Meta-Analysis

To understand the overall main effects, we conducted a mini meta-analysis with our four studies on acceptance of cultural differences and openness to alternative information about the integration of Moroccan immigrants. The mini meta-analysis was conducted based on Cohen's d (between subjects) using inverse variance weighting by applying an updated template created by Goh et al. (2016). Table 2 shows the summary of effect sizes (Cohen's d) across the four studies. Overall, the effect on acceptance of cultural differences was small (see Cohen, 1988) but highly significant, $M_d = .225$; $SE_{Md} = 0.06$, $Z = 3.75, p < .001$, 95% CI [0.11, 0.34], such that participants

in the naïve realism condition showed more acceptance of cultural differences than in the control condition. Overall, the effect on openness to alternative information about the integration of Moroccan immigrants was rather small (see Cohen, 1988) but also significant, $M_d = .172$; $SE_{Md} = 0.06$, $Z = 2.88$, $p = .004$, 95% CI [0.05, 0.29], such that participants in the naïve realism condition showed more openness to alternative information than in the control condition.

Pooled Analysis

In addition to the mini meta-analysis, we also carried out a pooled analysis, a method used "when individual studies are too small to allow any definite conclusion" (Taioli & Bonassi, 2003) for the main and indirect effects (pooling Studies 1–3 plus the additional study) and the two-way interaction with prejudice (pooling Studies 2 and 3 plus the additional study) as the same measures were used across studies. The specific study was always introduced as covariate.[4]

The pooled analysis with Studies 1–3, and the additional study (N full sample = 1,175: naïve realism = 472; control condition = 703) revealed a main effect of the experimental condition on acceptance of cultural differences and openness to alternative information about integration. The multivariate effect of the condition was significant, Wilks's $\lambda = .99$, $F(2, 1169) = 7.56$, $p = .001$, $\eta^2_p = .013$. The univariate analyses indicated that participants showed more acceptance of cultural differences, $F(1, 1170) = 14.11$, $p < .001$, $\eta^2_p = .012$; and more openness to alternative information about integration, $F(1, 1170) = 8.12$, $p = .004$, $\eta^2_p = .007$ in the naïve realism condition than in the control condition. Equality of variances was violated for acceptance of cultural differences, but results were also confirmed with the nonparametric Kruskal–Wallis test. In the pooled analysis (controlling for the study), the experimental manipulation showed an indirect effect on acceptance through openness ($b = 0.08$, $SE = 0.03$, 95% CI [0.03, 0.14]), $R^2 = .30$. Controlling for political orientation did not alter the results. Controlling for the comprehension of the manipulation slightly increased the effect size and the magnitude of the indirect effect.

The pooled analysis with Studies 2 and 3 and the additional study (naïve realism = 369; control condition = 569), in which initial levels of prejudice were measured, revealed that the two-way interaction between the intervention and prejudice (controlling for the study) was neither significant for acceptance, $b = 0.05$, $SE = 0.05$, $t(932) = 1.02$, $p = .308$; nor for openness, $b = 0.09$, $SE = 0.06$, $t(932) = 1.45$, $p = .148$. An inspection to the conditional effects revealed that the awareness of naïve realism had a marginal significant effect on openness for participants high in prejudice ($+SD$ from the mean), $b = 0.18$, $SE = 0.09$, $t(932) = 1.91$, $p = .056$, and medium in prejudice (mean), $b = 0.09$, $SE = 0.05$, $t(932) = 1.78$, $p = .075$; but not for low in prejudice ($-SD$ from the mean), $b = 0.01$, $SE = 0.06$, $t(932) = 0.21$, $p = .830$. Controlling for the comprehension of the manipulation made significant the conditional effects for participants high and medium prejudice.

Overall, the results from the mini-meta and the pooled analyses allow us to reconcile the discrepancies found in the analyses across studies supporting the stability of the main effects, the indirect effects, but not the interaction effects. We do not discard the possibility that the level of understanding of the manipulation might have influenced such discrepancies.

General Discussion

This work examined whether and why the sole awareness of the psychological bias of naïve realism (i.e., the conviction that one's own views are objective and unbiased) can have an influential benefit for improving cultural attitudes, especially for people with higher prejudice who show more reactance and resistance to change. This "cold" cognition strategy has never been used to promote cultural understanding in the context of majority–minority relations in Europe. We found direct and indirect effects of the awareness of the bias of naïve realism on acceptance of cultural differences. Participants who were aware of the bias showed more acceptance of the cultural differences of Moroccan immigrants.

Study 2 showed that the manipulation might be especially useful for opening those high in prejudice to new alternative information, although this finding should be taken with caution as it was not replicated in the pooled analysis. These findings are important because previous literature has found that interventions making salient cultural diversity or perspective-taking might not be effective for conservatives (e.g., Verkuyten & Yogeeswaran, 2020) or opponents to immigration (Klimecki et al., 2020)—who are precisely the main target of these strategies—since they might provoke psychological reactance and defensive reactions. This intervention based on the awareness of the bias of naïve realism, with no activation of ethnic categorization and no references to culture (emotional content), might be effective for those who feel threatened by diversity.

We believe that the awareness of this bias can be useful for prejudiced individuals because it affects people's identities in an indirect and subtle way rather than posing a direct attack that usually generates rebound effects. It seemed that the effect of the manipulation on acceptance of cultural differences was mediated by a decrease of self-enhancement, and not specifically by a decreased perceived ability to analyze reality. We found that knowing that we are also biased in our judgments makes it difficult to maintain a self-enhanced view, and this might motivate us to be more prudent in our judgments about others.

In line with the idea of using a pure cognitive intervention free of ideological and emotional content, this work aimed at confirming if a simplified version of the original manipulation could keep its effects. In its original application (Nasie et al., 2014), the intervention included an important emotional component that more closely connects people to their own situation and makes the entire context of the intervention more emotionally charged. Explaining how this bias can be related to the intercultural conflict could involve strong emotional and even ideological aspects that could threaten people with high prejudice, and this could be counterproductive. On the contrary, by not making salient how the bias is related to intercultural conflicts, we undress the intervention from any emotional content, and avoid threatening in a direct way the most prejudiced participants. The findings of these new studies show that the use of a "cold" cognitive version of this manipulation, avoiding any reference to how the bias can apply to conflicts or intergroup relations (that is, free of emotional content), can have an effect on openness to alternative information about integration and acceptance of cultural differences even for individuals with high prejudice. Future studies should compare two intervention options ("cold" vs. "hot") more directly to contrast their effects in highly prejudiced individuals.

Although this set of experiments gathered some evidence and contributed to our knowledge, there are still open questions. The sizes of the indirect effects were small; thus, alternative explanations might be leading the effect of the manipulation, and the directionality of the mediational analyses cannot be confirmed with a cross-sectional design. Another limitation of this design is that it does not allow tracking attitudes over time. Future studies should maximize statistical power by using within-subjects designs with a variable interval of time to confirm its persistence and accumulative effects.

Findings should not be interpreted categorically, but in a continuum of certainty and in terms of not only statistical but also social significance. Although the p values yielded in the mini-meta and the pooled analyses for main effects were below a threshold of .005, the effect sizes were still small. The manipulation was very simple and subtle, and it required a lot of attention. An important proportion of participants did not answer the reading checks questions satisfactorily and did not take adequate time to read the text. The comprehension of the manipulation might be crucial in some points with such a subtle strategy. New ways of increasing awareness of the bias of naïve realism could maximize its effects.

In a nutshell, the present work confirmed the effect of the awareness of the naïve realism bias, with a "cold" cognitive version of the manipulation (without emotional content), on the acceptance of cultural differences of a stigmatized immigrant group. Although we need to be cautious about the interpretation of these findings, the main effect of the manipulation seemed quite stable, and this strategy might be combined with other strategies to pave the way to cultural understanding. New evidence is required for a clarification of the differential efficacy of the naïve realism awareness for people with different levels of prejudice.

These findings have clear implications for application. The use of a simple and cognitive manipulation, with no threat to highly prejudiced individuals, can be implemented in multiple contexts with minimum cost. We can introduce the learning and awareness of this bias in different institutions such as schools, hospitals, courts, and administration and governmental offices. Learning about naïve realism may lead people to be more thoughtful and aware across a wide number of situations and domains, such as political opinions or attitudes on sports teams. The bottom line is that being aware of the bias of naïve realism might be beneficial for the resolution of conflicts because it helps to break dichotomies, highlight the complexity, and open up minds. The study of (social) psychology, and the practice of techniques that allow becoming more aware of our biases, can help everyone to understand that we do not have the whole truth in our hands, and, in the long term, it can contribute to a more open and tolerant society.

Declaration of Conflicting Interests

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ORCID iDs

Lucía López-Rodríguez [iD] https://orcid.org/0000-0002-9153-0220
Alexandra Vázquez [iD] https://orcid.org/0000-0002-6040-9102

Supplemental Material

Supplemental material is available online with this article.

Notes

1. We performed a pilot study with psychology students ($n = 122$; aged from 18 to 51 [$M = 20.27$, $SD = 4.07$]; 76.2% females; 80.3% of Spanish nationality) to measure the minimum time (in seconds) that was required to read the text of the manipulation of naïve realism ($n = 63$). Students in the naïve realism took from 23.16 to 117.47 s ($M = 51.91$; $SD = 18.70$) to read the text. Five of them did not understand completely the manipulation and failed at least one of the reading checks (4.1%). Considering only those who understood the manipulation or had Spanish nationality did not alter the minimum time.
2. Five participants had Moroccan nationality, but results did not vary substantially once they were excluded from the analyses.
3. Kruskal–Wallis test confirmed the differences, $H = 9.17$, $p = .002$.
4. Three dummy variables were created to compare studies.

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