

RESEARCH ARTICLE

Positive Intergroup Interdependence, Prejudice, Outgroup Stereotype and Helping Behaviors: The Role of Group-Based Gratitude

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The present paper investigates a positive, other-oriented moral emotion: group-based gratitude, in reaction to intergroup positive interdependence or outgroup contributions to ingroup's goals. Three studies support the notion that group-based gratitude plays a role in improving intergroup attitudes between natives and immigrants in the French context. In Study 1, positive intergroup interdependence was associated with group-based gratitude, which in turn was negatively associated with prejudicial attitudes and behavioral intentions. In the last two studies, highlighting historical outgroup contributions elicited group-based gratitude, which in turn reduced prejudice, increased perceived warmth and reciprocity (i.e., helping behavioral intentions), compared to control condition and positive condition. Links with indebtedness and common ingroup are discussed.

Keywords: gratitude; group-based emotions; intergroup relations; interdependence

France is one of Europe's oldest countries of immigration (Weil, 2003). Since the middle of the nineteenth century, France has experienced three major periods of immigration: The Industrial Revolution, World War I and World War II. Nowadays, while 10% of its habitants are immigrants (Insee, 2020), only 14% of the French natives believe that immigration has had a positive impact in France (Ipsos, 2017). Yet immigrants have contributed to addressing several French needs, such as security or economic needs. For example, many Africans, Malagasy, Maghrebi and Asian soldiers from colonies enrolled in the French armies (some as volunteers) during both World Wars (Deroo & Champagneaux, 2013). During World War II, they contributed to the Provence landings (Temime, 1991) and some of them, such as Addi Bâ, were engaged in the resistance against the Nazis (Guillermond, 2004). Immigration also sustained French economic needs when France faced a strong economic growth but lacked the necessary workforce due to the heavy human casualties of the World Wars (e.g., Noiriél, 1986; Tribalat, 1991). Today, the global impact of immigration on public finance remains positive (Chojnicki & Ragot, 2012). Finally, immigration contributed to the French culture. Besides its influence on arts and gastronomy, many figures in politics (e.g., Gambetta) or sciences (e.g., Marie Curie) are immigrants (Noiriél, 2001). Regarding such contributions,

during the inauguration of the National Museum of the History of Immigration in Paris in 2014, the former President of the French Republic, François Hollande, expressed a specific emotion on behalf of French people towards the immigrants who helped to liberate, build and enrich the country: an emotion of gratitude.

The present article aims to investigate to what extent intergroup positive interdependence, and more precisely, the outgroup's contributions to the ingroup's goals, can elicit gratitude as a group-based emotion (i.e., experienced on behalf of one's group; Smith, 1993) and can foster positive intergroup relations. We argue that intergroup positive interdependence triggers group-based gratitude, which in return fosters positive intergroup attitudes and behaviors.

Positive Intergroup Relationships and Group-Based Emotions

Social psychological research has extensively investigated negative intergroup relations (e.g., prejudice), and how to reduce prejudice and resolve intergroup conflict. To this end, when confronted with negative intergroup events or structural relations, such as ingroup past wrongdoings (e.g., Brown & Cehajic, 2008; Doosje et al., 1998) or illegitimate ingroup advantage (e.g., Harth et al., 2008), individuals experience negative group-based emotions, such as guilt, shame or regret. Those group-based emotions have beneficial effects on intergroup relations, such as reduced prejudice and reparation behaviors (Brown & Cehajic, 2008; Doosje et al., 1998; Imhoff et al., 2012).

Yet, examples of positive intergroup events or relations, such as being allies during a war, do exist, and

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could foster positive intergroup relations. As per Jonas and Mummendey (2008), positive intergroup relations referred to 'judgments (e.g., expressions of appreciation, attraction, admiration and warm emotions), attitudes, and behavior between groups that are intended to reach or maintain a mutual, and positively perceived relationship' (211) and could stem from, for example, intergroup contact, intergroup helping or joint goals.

These latter group phenomena seem to imply (positive) interdependence. Interdependence refers to situations where individuals or group's outcomes are influenced or determined by how another individual/group acts (Brewer, 2000; De Dreu et al., 2020). According to Fiske (2000), positive interdependence refers to 'how needing another person (...) create the condition for seeing that person as an ally' (115). Hence, positive intergroup interdependence should occur when the outgroup's behaviors improve the ingroup's situation by achieving more than it could have achieved itself (Fiske, 2000). Thus, it could arise from the perception that the outgroup has been cooperative or by acknowledging the value of the outgroup's behaviors, its help or contribution.

Positive interdependence is associated with more favorable group stereotype, particularly on perceived warmth (Fiske et al., 1999, 2002), which is in turn associated with facilitating behaviors, such as helping (Cuddy et al., 2007). Moreover, positive interdependence determines intergroup relations (Brewer & Brown, 1998): when there is a positive interdependence between two groups, intergroup bias is weakened (e.g., Deschamps & Brown, 1983; Marcus-Newhall et al., 1993). As posed by the realistic conflict theory (Sherif, 1966), when two groups cooperate (positive interdependence) rather than compete, their attitudes towards each other are more positive (LeVine & Campbell, 1972). Moreover, cooperative interdependence and common goals are prerequisites for intergroup contact to produce positive intergroup attitudes (Dovidio et al., 2003; Hewstone & Brown, 1986). Cooperative intergroup contact reduces prejudice (Dovidio et al., 2003; Kuchenbrandt et al., 2013; Pettigrew & Tropp, 2008), and fosters intergroup helping behaviors (Dovidio et al., 1997). Finally, when the outgroup has acted positively towards the ingroup or has treated it fairly, the ingroup reciprocates these positive behaviors or attitudes (Doosje & Haslam, 2005). This reciprocity can also be indirect: ingroup members can reward an outgroup for behaving nicely to other ingroup members, even if ingroup reciprocators were not personally targeted by the outgroup's behavior (Chiang, 2020). Thus, positive interdependence is associated with lower prejudice, more favorable outgroup perception (i.e., as warmer), and reciprocity behaviors towards outgroups (e.g., helping).

The influence of positive interdependence on intergroup relations is often mediated/explained by affective factors (e.g., Dovidio et al., 2003). Indeed, intergroup contact reduces intergroup anxiety, while increasing empathy and trust towards outgroups (Finlay & Stephan, 2000; Kuchenbrandt et al., 2013). Previous research has also shown that outgroups can elicit positive group-based

emotions, such as admiration: Ingroup members experience group-based admiration towards competent or high-status outgroups when the social hierarchy is seen as legitimate and unstable (Onu et al., 2015; Onu et al., 2016). In turn, admiration is associated with emulation strategies, namely 'learning-related help' (Onu et al., 2015). When directed to a low-status outgroup (i.e., immigrants), admiration leads to more positive attitudes towards it (Sweetman et al., 2013). Admiration can also stem from the perception that outgroup members have acted heroically, for the greater good, and is in turn associated with the support of the heroes' actions (Sweetman et al., 2013).

Extending previous research on improving intergroup relations, the present research aimed to examine whether the actions of an outgroup that benefit ingroup members, or positive interdependence, would elicit non-aversive group-based emotions (in contrast to guilt or shame), namely other-oriented and other-praising emotions, and particularly group-based gratitude.

From Individual Gratitude to Group-Based Gratitude

Gratitude is a moral, other-oriented emotion stemming from the perception of being the beneficiary of a valued action from others (e.g., McCullough et al., 2001). Along with admiration and elevation, gratitude is thus an other-praising emotion (Haidt, 2003). Admiration is elicited by the excellence of others, through their high skills or their actions, which are not targeted to the perceiver. It is an upward assimilative emotion, that motivates self-improvement (Algoe & Haidt, 2009; Onu, Kessler & Smith, 2016). However, gratitude is experienced when praising others who, by their action, have been responsive to one's needs (Algoe, 2012). Gratitude is then a 'benefit detector' (McCullough et al., 2008).

Gratitude motivates and promotes *direct reciprocity* (Horberg et al., 2011; Ma et al., 2017). Indeed, gratitude functions as a moral motivator and thus decreases aggressive behaviors (DeWall et al., 2011) and promotes prosocial behaviors directed to the source of gratitude (e.g., Bartlett & DeSteno, 2006). In contrast to indebtedness (i.e., the feeling that one is obligated to repay another; Mathews & Green, 2010), gratitude goes beyond a simple 'economic' exchange between the benefactor and the beneficiary, aiming at restoring equity. Therefore, gratitude promotes two types of *indirect reciprocity*. It fosters *upstream indirect reciprocity*, that is to a person familiar with the grateful individual or even to a stranger (Bartlett & DeSteno, 2006; Ma et al., 2017), and *downstream indirect reciprocity*: when the benefactor experiences a gain in reputation, and thus is helped by someone who is not the beneficiary (Ma et al., 2017). Hence, gratitude is a moral motive that underlies reciprocal relations, and that might be experienced in situations of positive interdependence (Fehr et al., 2017).

In addition, gratitude strengthens social bonds (Algoe, 2012). When gratitude is experienced, the responsive partner is perceived as a 'social opportunity' characterized by a

high perceived interpersonal warmth (Williams & Bartlett, 2015). Thus, gratitude is associated with greater feeling of confidence in social relationships (Gino & Schweitzer, 2008), and an increased perceived interpersonal closeness with the helper (Algoe et al., 2008).

The benefits of gratitude extend to outgroup members. Grateful individuals are more inclined to make internal attributions of positive behaviors to an outgroup target, even though these behaviors are counter-stereotypical (Jackson et al., 2001). Moreover, when the benefactor is an outgroup member, they can be credited for their exemplary action just as much as an ingroup member, leading ingroup members to experience gratitude, to perceive the benefactor as warmer and to reciprocate (Collange & Guegan, 2020). Those results suggest that being the beneficiary of outgroups' help may reflect benevolence and thus can elicit gratitude (Nadler, 2016). In return, the feeling of gratitude fosters direct and indirect reciprocity (e.g., helping back) and increases perceived warmth of the outgroup.

Overview

Previous research has thus shown that gratitude is an emotion that arises from being the beneficiary of a valued action from an ingroup or an outgroup member and/or positive interdependence and that both positive intergroup interdependence and gratitude are associated with reduced prejudice or lower stereotypic attributions, increased perceived warmth, and reciprocity behaviors.

The present research investigated the influence of positive interdependence between immigrants and French natives – that is, the contribution of immigrants to the French needs and goals – on group-based gratitude, prejudice, perceived warmth and helping behaviors towards immigrants. We conducted three studies. Study 1 examined the link between perceived positive interdependence (i.e., perceived contribution of the outgroup to the host country), group-based gratitude, prejudice and facilitating/harmful behavioral tendencies. Extending Study 1, Studies 2 and 3 aimed to investigate experimentally whether historical contributions of immigrants to the host country would elicit group-based gratitude, reduce the expression of prejudice, foster perceived warmth and helping behavioral tendencies. We expected that positive interdependence between natives and immigrants (Study 1) or contributions of immigrants to France (Studies 2 & 3) would be associated with increased group-based gratitude (H1), with reduced prejudice (H2), more positive perception of immigrants, especially on warmth (H3), and increased helping/facilitation behavioral tendencies towards them (H4). Moreover, we expected group-based gratitude to mediate the link between immigrants' positive contributions and positive intergroup attitudes and behaviors (H5).

Study 1

Study 1 aimed to investigate the relationships between perceived intergroup interdependence and group-based gratitude, prejudice and behavioral tendencies towards

immigrants. Group-based gratitude relies on perceiving that the benefactor, here immigrants, is responsive to the ingroup's needs. Thus, we expected group-based gratitude to mediate the link between positive interdependence and prejudice and behavioral tendencies. In contrast, negative interdependence – the perception that the outgroup competes with the ingroup for resources – should be associated with negative attitudes and behaviors towards the outgroup.

Method

Participants & Procedure

To determine the sample size, we looked at studies examining the link between group-based emotion and behavior and the link between dispositional gratitude and prosociality. The lowest expected correlation was $r = 0.18$. The required sample size to detect such correlation was set to 237 participants (G*Power; Faul et al., 2009).

Two hundred and eighty-four students participated voluntarily (84.9% women, $M_{age} = 20.83$, $SD = 4.86$). We excluded 37 participants who were not French and/or not born in France and 21 participants who did not fully complete the survey. Our final sample comprised 226 participants (85.4% women, $M_{age} = 20.27$, $SD = 3.59$).

Participants were approached during large class sessions to complete a survey about their perception of immigration. After providing consent, participants completed demographic information (sex, age, language, nationality, country of birth) and several measures:¹ group-based gratitude, perceived positive and negative interdependence, prejudice and behavioral tendencies towards immigrants. The order of the different measures was randomized. Participants were then collectively debriefed and thanked for their participation.

Measures

For all measures, participants endorsed each item on a seven-point scale ranging from 1 = 'strongly disagree' to 7 = 'strongly agree'.

Group-based gratitude was measured using nine items reflecting three aspects of gratitude (Steindl-Rast, 2004): the emotional aspect ('It is gratitude that I experience when I think about the contribution of foreigners to France and French people'), the importance of acknowledgment aspect ('It is important to me to acknowledge the different contributions of immigrants in France'), and the thankful aspect ('I think that we, French people, should reciprocate towards immigrants regarding their contribution to our country'). All items were submitted to an exploratory factorial analysis (EFA), using principal axis factoring. This yielded a single factor that explained 62.96% of variance ($\lambda = 5.67$; $a = 0.93$).

Positive and negative interdependence was assessed with six items based on Fiske et al. (2002). The EFA yielded a two-factors solution explaining 47.5% of variance. The first factor explained 29.2% of variance ($\lambda = 1.75$; $a = 0.63$) and gathered the three items assessing negative interdependence between French and immigrants (e.g., 'Giving more rights to immigrants would restrict French people's

rights'). The second factor explained 18.4% of variance ($\lambda = 1.10$, $a = 0.81$) and gathered the positive independence items (e.g., 'Without immigrants' help, French people couldn't have reached many of their goals').

Prejudice towards immigrants was measured with 14 items based on the discrimination and diversity scale (Wittenbrink et al., 1997; $a = 0.89$)

Behavioral tendencies were measured by 12 items, based on the BIAS map (Cuddy et al., 2007), reflecting either facilitating or harmful behavioral tendencies. The EFA revealed two factors that explained 53.9% of variance. The first factor ($\lambda = 3.52$) explained 29.3% of variance and gathered the *facilitating* behavioral tendency items ($a = 0.84$). The second factor ($\lambda = 2.95$) explained 24.6% of variance and gathered the *harmful* behavioral tendency items ($a = 0.88$).

Results and Discussion

Descriptive statistics and correlations are presented in **Table 1**. As expected, all variables correlated at least moderately and significantly with one another. To examine the hypothesized model, we conducted a structural equation modeling analysis. For group-based gratitude, prejudice and both types of behavioral intentions, we used parcels to optimize the measurement structure of the construct (Little et al., 2002; see Schori-Eyal et al., 2017, for a similar procedure). Satisfactory fit is indicated by a non-significant χ^2 , a χ^2/df ratio equal to or below 3, a comparative fit index (CFI), a normed fit index (NFI) and a Tucker Lewis Index (TLI) equal to or above 0.95. Lastly, the RMSEA should be equal to or below 0.08 and the SRMR equal to or below 0.06 (Hu & Bentler, 1999; Steiger, 2007).

Measurement Model

The measurement model,² where our measures are distinct but related, displayed a good fit to the data, $\chi^2(120, N = 226) = 252.811$, $p < 0.001$, $\chi^2/df = 2.107$, TLI = 0.94, CFI = 0.95, RMSEA = 0.070 [0.058–0.082], and

SRMR = 0.056. Moreover, all factor loadings were significant, ranging from 0.51 to 0.91.

Structural Model

The hypothesized model linking positive and negative interdependence, via the mediating role of group-based gratitude (for the former) was tested with our three dependent variables in the same model. To assess model fit, the same previous indicators were used. As shown in **Figure 1**, standardized estimates are consistent with our predictions. Positive interdependence is associated with an increase in group-based gratitude, which in turn is negatively linked to prejudice and harmful behavioral tendencies and positively to facilitating ones.

Two alternative models were tested. In the first one, the order of gratitude and interdependence indicators was reversed. In the second one, as the type of interdependence could determine outgroup images (e.g., LeVine & Campbell, 1972), we examined to what extent prejudice and behavioral tendencies could mediate the link between positive interdependence and group-based gratitude. For each alternative model, we considered the Akaike Information Criterion (AIC) for comparison. As indicated in **Table 2**, these alternative models did not fit the data as well as the hypothesized model.

Lastly, using the bootstrap estimation procedure in AMOS (a bootstrap of 5000 was specified), we examined the hypothesized mediating effect of group-based gratitude in the relationship between positive interdependence and our different outcomes. As expected, the indirect effect of positive interdependence through group-based gratitude is significant for prejudice ($\beta = -0.16$, SE = 0.05, $p = 0.003$, 95% CI [-0.26, -0.06]), facilitating behaviors ($\beta = 0.18$, SE = 0.06, $p = 0.004$, 95% CI [0.06, 0.30]) and harmful ones ($\beta = -0.12$, SE = 0.05, $p = 0.02$, 95% CI [-0.22, -0.02]).

Thus, acknowledging the positive interdependence between immigrants and French natives, and more precisely, the contributions of immigrants to the ingroup's

Table 1: Means, Standard Deviations, and Correlations between Variables (Study 1).

	M	SD	2.	3.	4.	5.	6.
1. Positive interdependence	4.87	1.25	–	0.50**	–	0.40**	–
			0.46**		0.48**		0.50**
2. Negative interdependence	3.03	1.51		–	0.67**	–	0.70**
				0.44**		0.53**	
3. Group-based gratitude	4.71	1.29			–	0.48**	–
					0.50**		0.50**
4. Prejudice	2.92	1.09				–	0.76**
						0.54**	
5. Facilitating behaviors	5.06	1.22					–
							0.63**
6. Harmful behaviors	2.59	1.39					

Note: ** $p \leq 0.001$.

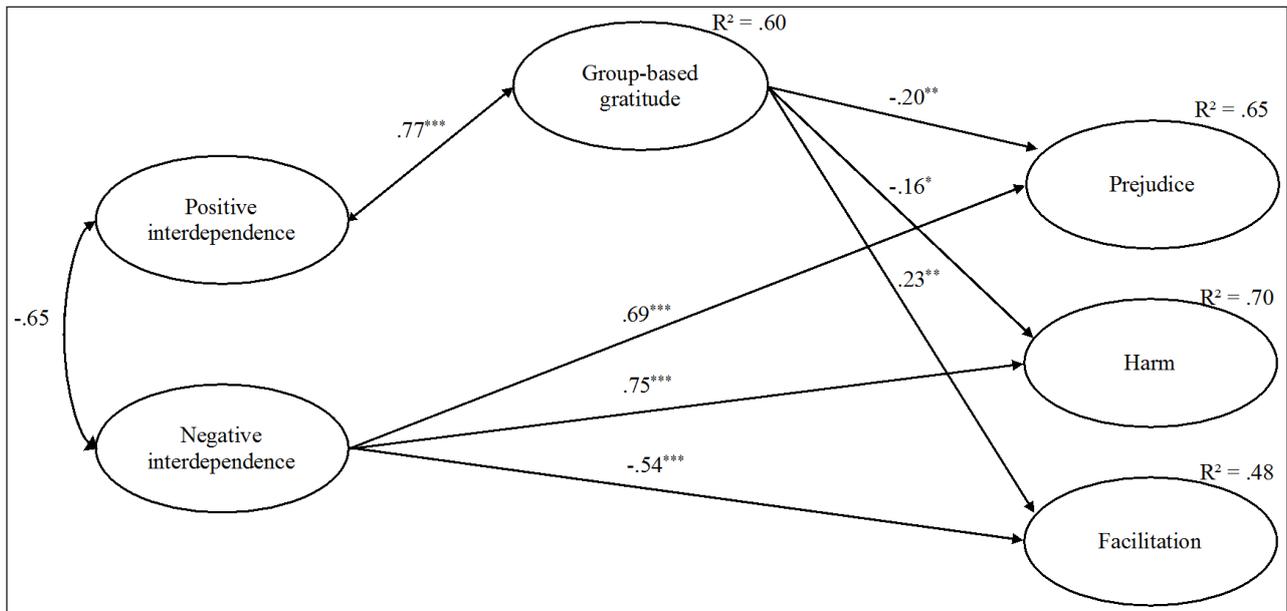


Figure 1: Models linking positive and negative interdependence to prejudice and facilitating and harmful behavioral tendencies via group-based gratitude (Study 1).

Note: *** $p \leq 0.001$; ** $p < 0.01$; * $p < 0.05$.

goals, is associated with group-based gratitude (H1). In turn, group-based gratitude is associated with lower prejudice (H2), lower harmful behavioral intentions and higher facilitating behaviors (H4 & H5). In the second study, we aimed to build on those effects: we examined whether experimentally highlighting one side of the interdependent unit – the positive contributions of immigrants – would lead to increased group-based gratitude and decreased prejudice.

Study 2

Study 2 extended Study 1 by investigating to what extent highlighting (or not) past contributions of immigrants would decrease prejudice towards them. Indeed, learning information about others may act as an extended intergroup contact, and is thus a critical factor in improving intergroup relationships (e.g., Pettigrew, 1998). Increasing knowledge about historical examples of cooperation may reduce bias by increasing the recognition of an outgroup’s contributions and/or intergroup positive interdependence. We thus aimed to show that highlighting historical positive contributions of immigrants would increase group-based gratitude. In turn, group-based gratitude should decrease the level of prejudice towards immigrants in France.

Method

Participants

Based on previous research on gratitude (e.g., Collange & Guegan, 2020), we expected a medium effect size (lowest effect size: $d = 0.54$). Using G*Power (Faul et al., 2009), the required total sample size to detect a medium size effect with a regression analysis that includes four conditions (0.80 power, $\alpha = 0.05$), is 80.

One hundred and forty-nine participants completed the study in exchange for course credits (81.2%

women; $M_{age} = 21.65$, $SD = 5.34$). Among them, 24 participants were identified as immigrants (i.e., without French nationality and/or born abroad) and were thus excluded. Our final sample was composed of 121 French students (83.5% women, $M_{age} = 20.80$, $SD = 3.29$).

Procedure

Participants were recruited for an alleged study about a high school history program. After signing the consent form, participants were presented with a fictitious mock-up of a history textbook and asked to read it carefully. In the control condition, the fictitious mock-up included the description of the different waves of immigration in France and the number of immigrants according to their country of origin. In the other three conditions, participants were presented with either the *economic*, *cultural* or *security* positive contributions of immigration in France. As described before, the contribution to *economics* referred to the economic activities of immigrants, from the Industrial Revolution to present day, and the resulting gains for France. The *cultural* contribution presented immigrants’ foods and habits that are now part of the French culture, and famous figures in art, science and politics that enriched French culture. Finally, contribution to France’s *security* described the enrolment of immigrants’ soldiers during the two World Wars to help defend and liberate the nation. All four mock-ups followed the same historical chronology and mentioned the three main groups of immigrants in France: North Africans, Asians and Central Africans. Participants were then invited to complete the same measures of group-based gratitude ($\alpha = 0.91$) and prejudice ($\alpha = 0.86$) as in Study 1. Lastly, they completed a set of demographic information. Participants were then debriefed and thanked for their participation.

Table 2: Fit indices between competing models (Study 1).

Model	SRMR	GFI	CFI	TLI	NFI	RMSEA	PCLOSE	AIC	χ^2	df	χ^2/df
<i>Hypothesized models</i>											
Interdependence → Gratitude → DVs Full mediation	0.056	0.894	0.950	0.938	0.908	0.068 [0.056–0.080]	0.007	348.001	254.001	124	2.048
Interdependence → Gratitude → DVs Partial mediation	0.055	0.894	0.949	0.935	0.908	0.070 [0.058–0.082]	0.004	353.712	253.712	121	2.097
<i>Alternative models (full mediation)</i>											
Interdependence → DVs → Gratitude	0.063	0.880	0.935	0.919	0.895	0.078 [0.067–0.090]	0.000	387.977	289.977	122	2.377
Gratitude → Interdependence → DVs	0.144	0.879	0.928	0.911	0.887	0.082 [0.070–0.093]	0.000	404.638	310.638	124	2.505

Note: Errors were allowed to correlate between our three dependent variables (DV's).

Results & Discussion

We expected that participants in the three immigrants' contributions conditions would report higher group-based gratitude (H1) and lower levels of prejudice (H2) than those in the control condition. To test these hypotheses, we ran a regression analysis in which we included three contrasts. The first contrast (C1) tested our hypothesis and opposed the three contributions conditions (each coded +1) to the control condition (coded -3). The other contrasts (C2 and C3) tested the remaining variance (Judd & McClelland, 1989): C2 compared the security contribution (coded -2) to economic and cultural contributions (both coded 1) and C3 opposed the economic (coded -1) and cultural (coded 1) contributions.

Group-Based Gratitude & Prejudice

As expected (see **Table 3**), participants in the three conditions highlighting immigrants' contributions reported higher group-based gratitude ($M = 5.58$, $SD = 0.87$; $M = 5.34$, $SD = 1.09$; $M = 5.35$, $SD = 1.13$ for security, economics and culture, respectively) than those in the control condition ($M = 4.63$, $SD = 1.05$), $d = 0.75$. The two residual contrasts were not significant.

Moreover, participants in the control condition reported a higher level of prejudice ($M = 3.09$, $SD = .98$) than those in the immigrants' contributions ones ($M = 2.58$, $SD = .87$; $M = 2.65$, $SD = 0.88$; $M = 2.90$, $SD = 0.93$ for security, economics and culture, respectively), $d = 0.39$. The two residual contrasts were not significant.

Mediation Analysis

As shown above, mentioning immigrants' contributions to French society increased group-based gratitude and reduced prejudice towards immigrants. The mediation analysis conducted with the PROCESS macro for SPSS (Hayes, 2013) indicated that the indirect effect through group-based gratitude was significant ($B = -0.05$, $SE = 0.14$, 95% CI [-0.10, -0.02], $z = -2.49$, $p = 0.013$). Moreover, when group-based gratitude was controlled, C1 – which opposed the immigrants' contribution conditions to the control one – was no longer significant (see **Table 3**); thus suggesting that group-based gratitude fully mediated the relationship between our conditions and prejudice towards immigrants.

This study suggests that highlighting the positive contributions of immigration to the host country induces gratitude in the native inhabitants (H1) and decreases prejudice towards immigrants (H2). Moreover, group-based gratitude mediates the effects of immigrants' contributions on prejudice (H5). However, given the small effect size, the number of participants seems inadequate to reach sufficient statistical power. Moreover, one could argue that it is not gratitude per se that drives our effects, but just a positive affective experience towards them. Finally, since political orientation is associated with negative attitudes towards immigrants (e.g., Duckitt et al., 2002), our induction might not be as effective for rightists participants compared to leftists participants (e.g., Badea et al., 2017). We thus conducted a third study to go beyond those limitations.

Study 3

Study 3 aimed to replicate and extend Study 2. First, we aimed to ensure that the identified effects of immigrants' contributions in Study 2 were driven by a feeling of gratitude and not by a general positive affect. To do so, we used another induction. Given the similarities between autobiographical memory and collective memory (Topcu & Hirst, 2020), we adapted the 'counting blessing' procedure (Emmons & McCullough, 2003) and asked participants either to list up contributions of immigrants to France, or positive characteristics of immigrants, or immigration waves (i.e., neutral instructions but still related to immigration). Moreover, we assessed a larger spectrum of group-based emotions using a different measure: affective adjectives (e.g., Harth et al., 2008; Onu et al., 2015). We also controlled the effect of participants' political orientation and its potential moderating effect. Finally, we extended Study 2 by investigating the influence of immigrants' contributions on perceived warmth and helping intentions towards immigrants (Collange & Guegan, 2020).

If the beneficial effects observed in Study 2 are not driven by a merely positive affect, but by the specific effect attributed to gratitude (i.e., reciprocity and binding), then participants who generated outgroup's contributions would report more group-based gratitude (H1), perceive immigrants as warmer (H3) and to be more willing to provide them with help (H4) than participants in a general positive condition or in a control condition. We expected group-based gratitude to mediate those effects (H5).

Method

Participants

In order to reach sufficient statistical power, we used G*Power to conduct a power analysis (0.80 power and $\alpha = 0.05$; Faul et al., 2009). We anticipated a significant contrast opposing the gratitude condition to the other two conditions. The required sample size to detect this effect, assuming a small effect size ($d = 0.39$ in Study 2) is 291.

Four hundred and forty-nine participants voluntarily completed this study online (83.3% women, $M_{age} = 27.51$, $SD = 10.95$). We excluded 53 individuals who were not French and/or were born abroad. Among the remaining participants, we also excluded 25 participants whose answers were not relevant and coherent regarding the given instructions (e.g., lack of answers, answers unrelated to the given instruction in gratitude and positive conditions). The final sample consists of 371 participants (85.4% women, $M_{age} = 27.15$, $SD = 10.59$).

Procedure

Participants were recruited online via social networks. After giving their consent and completing socio-demographic information (e.g., nationality, etc.), participants were randomly assigned to one of the three experimental conditions. In the *gratitude condition*, participants were invited to list up to five elements or contributions of immigrants for which French people felt thankful for. In the *positive condition*, participants were asked to list up to

Table 3: Regression and mediation analysis including group-based gratitude as mediator, contribution of immigrants as independent variable and prejudice as dependent variable (Study 2).

	Group-based gratitude			Prejudice		
	β	t	p	β	t	p
Step 1						
C1: Contributions vs. Control	0.33	3.76	<0.001	-0.18	-2.04	0.04
C2: Security vs. Economics & Culture	-0.08	-0.963	0.34	0.08	0.882	0.38
C3: Economics vs. Culture	0.004	0.042	0.97	-0.09	-1.05	0.30
R ²	0.11			0.05		
Step 2						
C1: Contributions vs. Control				-0.08	-0.884	0.38
C2: Security vs. Economics & Culture				0.05	0.613	0.54
C3: Economics vs. Culture				-0.09	1.08	0.28
Group-based gratitude				-0.33	-3.60	<0.001
R ²				0.14		

five characteristics or positive aspects of immigrants that are perceived by the French. Finally, in the *control condition*, participants had to list up to five different waves of immigration in France. Then, participants reported their group-based emotions (i.e., as French citizen), perceived warmth and competence of immigrants, their willingness to support helping behaviors towards immigrants, and finally their political orientation.

Measures

Group-based emotions were assessed with a list of twelve emotions. Three emotions concerned *gratitude* (i.e., gratitude, thankfulness, appreciative, $\alpha = 0.82$). The remaining list of emotions was constructed from literature on group-based emotions (Cuddy et al., 2007; Doosje et al., 1998; Iyer et al., 2003; Onu et al., 2016). This list included *ingroup-condemnation* emotions (i.e., shame, regret, guilt, $\alpha = 0.68$), *outgroup-condemnation emotions* (i.e., anger, disgust, contempt, $\alpha = 0.70$), *admiration* (i.e., admiration, respect, inspiration, $\alpha = 0.76$). Participants indicated to what extent they experienced each emotion as a French person using a seven-point scale (1 = 'very low intensity' to 7 = 'very high intensity').

Perceived warmth and competence were assessed with five items for each dimension. Participants indicated to what extent each trait described immigrants, using a seven-point scale (1 = 'Not at all' to 7 = 'Absolutely'). After excluding one competence item (i.e., confident) that lowered internal consistency, the internal consistency was satisfactory for both dimensions ($\alpha = 0.79$ and $\alpha = 0.91$ for competence and warmth, respectively).

Helping behavioral intentions towards immigrants were assessed with 14 items created for the purpose of this study. Seven items assessed *autonomy-oriented help* (Nadler, 2002), that is, giving immigrants the tools to solve their problems by their own (e.g., 'Training immigrants for job searches (CV, cover letter, interview) so they can find one by themselves'). Seven items assessed *dependency-oriented*

help, that is, giving immigrants the full solution to their problems (e.g., 'Create public solidarity funds to solve the problems faced by immigrants'). Participants indicated to what extent they would support each behavior on a seven-point scale (1 = 'Not at all' to 7 = 'Absolutely'). The conducted PCA (Oblimin rotation) yielded to two components. The first component gathered the items related to dependency-oriented help ($\lambda = 6.31$, 45.04% of variance; we excluded one item that loaded on the second component). The autonomy-oriented help items loaded on the second component ($\lambda = 2.2$, 15.76% of variance). The internal consistency was satisfactory ($\alpha = 0.86$ and $\alpha = 0.91$, for dependency and autonomy respectively).

Political orientation was assessed with a single item. Participants positioned themselves on a scale ranging from 1 = 'far-left' to 11 = 'far-right' ($M = 4.39$, $SD = 2.14$, $Min = 1$, $Max = 11$).

Results & Discussion

We expected participants who indicated immigrants' contributions to report more group-based gratitude (H1), to perceive immigrants as warmer (H3) and to be more inclined to support helping behaviors towards them (H4) than participants in positive and control conditions. To test these hypotheses, we created two orthogonal contrasts. The first one (C1) opposed the gratitude condition (coded +0.67) to the positive and control conditions (both coded -0.33). The second one (C2) tested the residual variance by comparing the positive condition (coded +0.5) to the control condition (coded -0.5). Then, we conducted a series of multiple regressions. In a first step, we examined the effects of our two contrasts. We added political orientation (mean-centered) in a second step, and the interaction between contrasts and political orientation in a third step. For each dependent variable, all effects remained once political orientation was controlled for and the third step did not explain a significant part of variance. Thus, we will not discuss those results.³

Group-Based Emotions

The results are displayed in **Table 4**. As expected, participants in the gratitude condition reported significantly more *group-based gratitude* ($M = 3.63, SD = 1.58$) than those in the other two conditions ($M = 3.08, SD = 1.42; M = 2.93, SD = 1.50$ for positive and control conditions, respectively). The residual contrast was not significant.

Moreover, participants in the gratitude condition reported higher group-based *admiration* ($M = 4.53, SD = 1.42$) than participants in the positive and control conditions. Participants in the positive condition also reported more admiration ($M = 4.30, SD = 1.42$) than participants in the control condition ($M = 3.68, SD = 1.49$).

To a lesser extent, the gratitude condition seemed to also induce more *ingroup-condemnation* emotions ($M = 3.40, SD = 1.66; M = 2.71, SD = 1.33; M = 3.27, SD = 1.52$ for gratitude, positive and control conditions, respectively). Moreover, participants in the positive condition reported significantly less *ingroup-condemnation* emotions than those in the control condition.

Finally, for *outgroup-condemnation* emotions, the contrast opposing the gratitude condition to the other two was not significant, while participants in the positive condition reported less *outgroup-condemnation* emotions than in the control condition.

Perceived Competence and Warmth

As presented in **Table 5**, the analysis revealed a significant effect of the contrast opposing the gratitude condition to the other two conditions on perceived competence ($M = 5.46, SD = 1.08; M = 4.90, SD = 1.19; M = 4.94, SD = 1.20$ for gratitude, positive and control, respectively) and warmth ($M = 4.89, SD = 1.21; M = 4.30, SD = 1.19; M = 4.35, SD = 1.30$). Thus, participants in gratitude condition perceived immigrants as warmer and more competent than in the other conditions. The residual contrast was not significant.

Helping Behaviors

For *autonomy-oriented helping behaviors*, our contrasts did not explain a significant share of variance, $R^2 = 0.003, F(2, 356) = 0.554, p = 0.575$. Contrary to what was expected, participants in the gratitude condition were not significantly more willing to support those helping behaviors ($M = 5.83, ET = 1.17$) compared to those in the two remaining conditions ($M = 5.73, ET = 1.20$ and $M = 5.66, ET = 1.21$ for the positive and control conditions respectively), $t(356) = 1.04, p = 0.299$. However, for *dependency-oriented help* (see **Table 5**), participants in the gratitude condition were more prone to support those helping behaviors ($M = 4.70, ET = 1.26$) than those in the two remaining conditions ($M = 4.08, ET = 1.49$ and

Table 4: Regression analysis including group-based emotion induction, political orientation as independent variables and group-based emotions as dependent variable (Study 3).

	Gratitude					Admiration				
	B	SE	t	p	95% IC	B	SE	t	p	95% IC
Step 1										
C1: Gratitude vs. Other	0.65	0.18	3.64	<0.001	[0.30, 0.99]	0.57	0.17	3.32	<0.001	[0.23, 0.91]
C2: Positive vs. Control	0.10	0.19	0.513	0.608	[-0.27, 0.46]	0.59	0.18	3.26	<0.001	[0.23, 0.94]
R ²	0.036**					0.057***				
Step 2										
C1: Gratitude vs. Other	0.59	0.18	3.34	0.001	[0.24, 0.94]	0.48	0.17	2.85	<0.001	[0.15, 0.81]
C2: Positive vs. Control	0.12	0.18	0.65	0.518	[-0.24, 0.48]	0.63	0.17	3.60	<0.001	[0.29, 0.97]
Political Orientation	-0.11	0.04	-2.85	0.005	[-0.18, -0.03]	-0.18	0.04	-5.16	<0.001	[-0.25, -0.11]
ΔR ²	0.021**					0.066***				
	Ingroup-condemnation					Outgroup-condemnation				
	B	SE	t	p	95% IC	B	SE	t	p	95% IC
Step 1										
C1: Gratitude vs. Other	0.43	0.18	2.42	0.016	[0.08, 0.78]	-0.05	0.16	-0.315	0.753	[-0.36, 0.26]
C2: Positive vs. Control	-0.55	0.19	-2.98	0.003	[-0.91, -0.19]	-0.52	0.16	-3.21	0.001	[-0.84, -0.20]
R ²	0.040**					0.028**				
Step 2										
C1: Gratitude vs. Other	0.36	0.18	2.06	0.04	[0.02, 0.71]	-0.01	0.16	-0.057	0.955	[-0.32, 0.30]
C2: Positive vs. Control	-0.52	0.18	-2.86	0.004	[-0.88, -0.16]	-0.54	0.16	-3.326	0.001	[-0.86, -0.22]
Political Orientation	-0.13	0.04	-3.45	<0.001	[-0.19, -0.05]	0.08	0.03	2.328	0.02	[0.01, 0.14]
ΔR ²	0.031***					0.015*				

Table 5: Regression and mediation analysis including group-based emotion induction as independent variable and competence, warmth and dependence-oriented behaviors as dependent variable (Study 3).

	Competence					Warmth					Dependency-oriented Helping				
	B	SE	t	p	95% IC	B	SE	t	p	95% IC	B	SE	t	p	95% IC
Step 1															
Gratitude vs. Other	0.54	0.14	3.92	<.001	[0.27, 0.80]	0.56	0.15	30.90	<0.001	[0.28, 0.85]	0.49	0.18	2.81	.005	[.15, .84]
Positive vs. Control	-0.09	0.14	-0.64	0.53	[-0.37, 0.19]	-0.11	0.15	-0.75	0.455	[-0.41, 0.18]	-0.25	0.18	-1.35	.179	[-.61, .11]
R ²	0.04**					0.04**					0.03**				
Step 2															
Gratitude vs. Other	0.47	0.13	3.49	0.001	[.20, .73]	0.45	0.13	3.32	0.001	[0.18, 0.71]	0.34	0.16	2.12	0.034	[0.03, 0.66]
Positive vs. Control	-0.06	0.14	-0.44	0.657	[-.34, .21]	-0.06	0.14	-0.45	0.653	[-0.34, 0.21]	-0.18	0.17	-1.09	0.276	[-0.51, 0.15]
Political orientation	-0.13	0.03	-4.62	<0.001	[-.18, -.07]	-0.22	0.03	-7.96	<0.001	[-0.28, -0.17]	-0.29	0.03	-8.46	<0.001	[-0.35, -0.22]
ΔR ²	0.05***					0.15***					0.16***				

$M = 4.32, ET = 1.63$ for the positive and control conditions respectively). The residual contrast was not significant.

Mediation Analysis

We expected group-based gratitude to mediate the influence of our critical contrast and our dependent variables (H5). We conducted the mediation analysis with PROCESS (Model 4, 95% bias-corrected bootstrap, 10,000 samples) using a multicategorical predictor (Helmert coding). Thus, our target contrast (i.e., gratitude versus positive/control) and the residual contrast (i.e., positive vs. control) were our independent variable, group-based gratitude, admiration and ingroup-condemning group-based emotions our mediators. Political orientation and interactions were included as covariates.

As shown in **Figure 2**, when group-based emotions are controlled for, the direct effect of our contrast opposing gratitude to positive and control conditions remained significant, yet weaker, for perceived competence, and became not significant for warmth and dependency-oriented helping behaviors. Group-based gratitude and admiration were significant predictors of all three dependent variables, while ingroup-condemnation emotions were not. Indirect effects through group-based gratitude and group-based admiration were significant for perceived competence ($B = 0.08, SE = 0.04, 95\%CI [0.03, 0.18]$ and $B = 0.09, SE = 0.04, 95\%CI [0.03, 0.20]$, respectively), for perceived warmth ($B = 0.11, SE = 0.05, 95\%CI [0.04, 0.22]$ and $B = 0.09, SE = 0.04, 95\%CI [0.03, 0.19]$, for gratitude and admiration respectively). Finally,

for dependency-oriented helping behaviors, both indirect effects, through gratitude and admiration, were significant ($B = 0.08, SE = 0.04, 95\%CI [0.02, 0.19]$ and $B = 0.15, SE = 0.046, 95\%CI [0.05, 0.29]$, respectively).

Consistent with our hypotheses, participants who reported immigrants' contributions that make French people grateful reported more group-based gratitude than those in the positive and control conditions (H1). They also reported more group-based admiration, and so did participants in the positive condition. Moreover, as expected, participants in the gratitude condition perceived immigrants as warmer (H3) and more competent. Additionally, partially consistent with our hypothesis H4, participants were more willing to support dependency-oriented (but not autonomy-oriented) helping behaviors towards them, than those in the positive and control conditions. Finally, as expected, group-based other-praising emotions – gratitude and admiration – mediated those effects (H5).⁴

General Discussion

The present paper extends previous research on positive intergroup relations by investigating the role of group-based gratitude. We hypothesized that group-based gratitude stems from positive intergroup interdependence or outgroup contributions and results in decreased prejudice, but also in a more positive impression of immigrants and in increased reciprocity behavioral intentions. The results of three studies support that group-based gratitude stems from positive interdependence (Study 1) or historical infor-

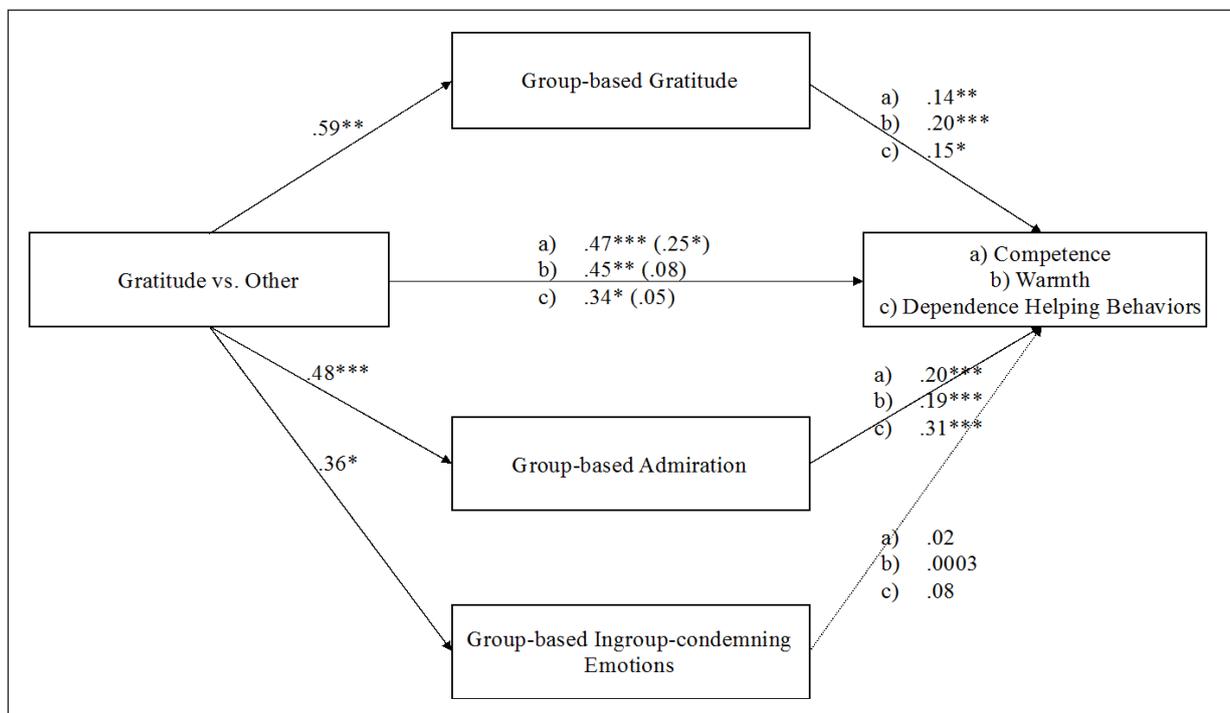


Figure 2: Mediation models of the influence of the emotion induction on competence, warmth, and dependency-oriented helping behaviors, via group-based emotions: gratitude, admiration and ingroup-condemning emotions. Effects are shown controlling for the contrast testing the residual variance and political orientation. Unstandardized coefficients are presented for each dependent variables referred as following a) competence, b) warmth, and c) dependence helping behaviors (Study 3).

Note: *** $p \leq 0.001$; ** $p < 0.01$; * $p < 0.05$.

mation/knowledge about outgroup contributions (Studies 2 & 3). In turn, group-based gratitude reduces prejudiced views, and increases perceived warmth (and competence) and facilitating behaviors towards the outgroup.

Our findings are consistent with and extend previous work on positive interdependence and intergroup attitudes by examining the beneficial effect of a positive emotion. Consistent with the intergroup contact theory and realistic conflict theory, positive intergroup interdependence reduces prejudice and acts through affective factors, especially gratitude (Dovidio et al., 2003). The present findings are also consistent with the identified functions of gratitude (McCullough et al., 2001) by indicating a positive change in the relationship with the benefactor: gratitude decreased prejudice and increased warmth (Collange & Guegan, 2020). Moreover, our results reaffirm that gratitude motivated reciprocity (Ma et al., 2017): group-based gratitude is associated with facilitation behaviors and helping intentions (Studies 1 & 3).

Present results also showed that group-based gratitude mediated those effects, along with group-based admiration. In Study 3, both group-based gratitude and admiration mediated the effect of our group-based gratitude induction on perceived competence and warmth, and dependency-oriented helping behaviors. One could argue that our induction is not specific enough to elicit only gratitude. However, intergroup situations can elicit an array of emotions that belong to the same ‘family’. For example, ingroup wrongdoings elicit ingroup-condemning emotions: group-based guilt and shame (e.g., Brown & Cehajic, 2008). In our case, both admiration and gratitude stem from the praiseworthy actions of other (Haidt, 2003). Although they elicit distinct behavioral motives (prosocial versus self-improvement), gratitude and admiration are both associated with acknowledging the positive actions (e.g., saying thank you), but also with a more favorable impression of other (Algoe & Haidt, 2009): while gratitude is related to perceived warmth (Williams & Bartlett, 2015), admiration is directed towards skilled targets. Consequently, it is not surprising that those two other-praising emotions mediate the effect of the outgroup contribution on our outcomes. However, caution is needed while interpreting these mediations. First, study 2 is underpowered. Moreover, while Study 3 reached sufficient power to detect a small effect size, our post-hoc power analysis for the mediation (see OSF supporting information) revealed that Study 3’s indirect paths are underpowered. Thus, replications in larger sample are therefore needed.

Moreover, interdependence may trigger another emotion: indebtedness. If gratitude and indebtedness are triggered by receiving favor (Tsang, 2006), indebtedness arises when benefactors have ulterior motives or high expectations of returns (Tsang, 2006; Watkins et al., 2006). Scholars suggested that indebtedness produces negative evaluations and behaviors towards the benefactor (Watkins et al., 2006), but also drives the motivation to reciprocate in order to restore equity (e.g., Peng et al., 2018). Recent theoretical contributions suggest distinguishing two kinds of indebtedness (Ting, 2017). Firstly, in

the line of the classical view, when receiving favors from someone with ulterior motives or expectations of return, indebtedness arises from obligation, and the motivation of reciprocity is to fulfill an obligation to repay. This seems consistent with the notion of ‘obligatory interdependence’ (e.g., Brewer, 2004): if humans depend on others’ assistance, shared resources for survival, they are also obligated to reciprocate. Secondly, when benefactors have no ulterior motives or expectations, indebtedness arises from gratitude, and even more so when interdependence is salient (Oishi et al., 2019). In this case, one can speak of a ‘debt of gratitude’: while gratitude fosters proximity seeking (e.g., increased in perceived warmth), indebtedness drives the motivation to reciprocate the favor. However, empirical evidence investigating gratitude and indebtedness together are scarce and inconsistent. Receiving costly favors evokes both gratitude and indebtedness. However, if indebtedness predicts the motivation to reciprocate after receiving the favor (Peng et al., 2018), only gratitude predicts relationship promotion (Algoe et al., 2010) or reciprocity behavior (Tsang, 2007). Nonetheless, group-based indebtedness remains a plausible alternative or complementary hypothesis to explain present results. Thus, future studies should measure group-based indebtedness along with gratitude in order to disentangle their effects on outgroup perception and helping behaviors.

However, using group-based emotions as mediators, as we did in Studies 2 and 3, is not without limits. Indeed, the measure of group-based emotions (e.g., gratitude) could be understood as a manipulation check. With regard to recent recommendations, using a manipulation check as mediator should be avoided as it would just be another measure of the independent variable, and thus be highly correlated (Yzerbyt et al., 2018).

Finally, the association between group-based gratitude and helping/facilitation behaviors suggests that group-based gratitude motivates reciprocity and could lead to intergroup upstream benefits. However, Study 3 showed that gratitude promotes more dependency-oriented helping behaviors than a positive or a neutral affect. No such effect was found for autonomy-oriented behaviors. One could argue that receiving help from immigrants and settling in a positive reciprocity relationship threaten the dominance of native French people (Nadler, 2002). Hence, they would be more prone to provide immigrants with dependency-oriented help in order to maintain their privileged position (e.g., Nadler et al., 2009). However, although no difference appeared on autonomy-oriented behaviors between our experimental conditions, participants were highly inclined to provide such help (i.e., range means: 5.66–5.83). Thus, our results do not allow us to conclude whether it is a need for the native French to maintain their dominance over immigrants or simply a desire to return to the favor. Another explanation could be that our participants appraised dependency-oriented helping behaviors as an access to the French social protection system, which is based on solidarity (Béland & Hansen, 2000). In France, political parties do not question the existence of such protection system. However, its access, particularly by immigrants, is questioned by

right-wing parties (Béland & Hansen, 2000). Thus, granting immigrants with those helping behaviors would not aim to keep immigrants dependent on the system, but to include them within the ingroup. In consequence, gratitude would foster the inclination to prompt immigrants with assistance rights. This explanation is consistent with studies suggesting that positive effect, induced by receiving a gift, leads individuals to create more inclusive social categories (Isen, 1987) or superordinate social categories (Dovidio et al., 1995), and so does positive interdependence (Brewer, 2000). Thus, gratitude could allow the creation of a common ingroup identity in which outgroup members are included (Dovidio et al., 1998).

Data Accessibility Statement

The materials, data, and supplemental materials that support the findings of these studies are available at <https://osf.io/rhny3/>.

Notes

- ¹ A measure of assignment of gratitude was also completed by participants in Studies 1 and 2. The description of this measure and results are presented in Supplemental Material available here: <https://osf.io/rhny3/>.
- ² Because of the potential conceptual overlap between group-based gratitude and other constructs, we examined to what extent a one-factor solution (i.e., a single latent for the group-based gratitude scale and one of the other scales) displayed lower fit indexes than a two-factor solution (i.e., distinct but correlated latent variables). Results are presented here: <https://osf.io/rhny3/>.
- ³ Results are available here: <https://osf.io/rhny3/>.
- ⁴ Post-hoc power analysis for the mediation analysis showed this Study is underpowered, see Supplemental Table 8 available at: <https://osf.io/rhny3/>.

Competing Interests

The authors have no competing interests to declare.

References

- Algoe, S. B.** (2012). Find, Remind, and Bind: The Functions of Gratitude in Everyday Relationships. *Social and Personality Psychology Compass*, 6(6), 445–469. DOI: <https://doi.org/10.1111/j.1751-9004.2012.00439.x>
- Algoe, S. B., Gable, S. L., & Maisel, N. C.** (2010). It's the little things: Everyday gratitude as a booster shot for romantic relationships. *Personal Relationships*, 17(2), 217–233. DOI: <https://doi.org/10.1111/j.1475-6811.2010.01273.x>
- Algoe, S. B., & Haidt, J.** (2009). Witnessing excellence in action: the 'other-praising' emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology*, 4(2), 105–127. DOI: <https://doi.org/10.1080/17439760802650519>
- Algoe, S. B., Haidt, J., & Gable, S. L.** (2008). Beyond reciprocity: Gratitude and relationships in everyday life. *Emotion*, 8(3), 425–429. DOI: <https://doi.org/10.1037/1528-3542.8.3.425>
- Badea, C., Tavani, J. L., Rubin, M., & Meyer, T.** (2017). Self-affirmation, political value congruence, and support for refugees. *Journal of Applied Social Psychology*, 47(7), 355–365. DOI: <https://doi.org/10.1111/jasp.12441>
- Bartlett, M. Y., & DeSteno, D.** (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science*, 17(4), 319–325. DOI: <https://doi.org/10.1111/j.1467-9280.2006.01705.x>
- Béland, D., & Hansen, R.** (2000). Reforming the French welfare state: Solidarity, social exclusion and the three crises of citizenship. *West European Politics*, 23(1), 47–64. DOI: <https://doi.org/10.1080/01402380008425351>
- Brewer, M. B.** (2000). Superordinate goals versus superordinate identity as bases of intergroup cooperation. In D. Capozza & R. J. Brown (Eds.), *Social Identity Processes: Trends in Theory and Research* (pp. 118–132). SAGE Publications Ltd. DOI: <https://doi.org/10.4135/9781446218617.n8>
- Brewer, M. B.** (2004). Taking the social origins of human nature seriously: Toward a more imperialist social psychology. *Personality and Social Psychology Review*, 8(2), 107–113. DOI: https://doi.org/10.1207/s15327957pspr0802_3
- Brewer, M. B., & Brown, R. J.** (1998). Intergroup relations. In *The Handbook of Social Psychology*, Vols. 1–2, 4th ed. (pp. 554–594). McGraw-Hill.
- Brown, R. J., & Cehajic, S.** (2008). Dealing with the past and facing the future: Mediators of the effects of collective guilt and shame in Bosnia and Herzegovina. *European Journal of Social Psychology*, 38(4), 669–684. DOI: <https://doi.org/10.1002/ejsp.466>
- Chiang, Y. S.** (2020). Indirect reciprocity for mitigating intergroup hostility: A vignette experiment and an agent-based model on intergroup relations between mainland Chinese and Taiwanese. *Journal of Conflict Resolution*, 1–24. DOI: <https://doi.org/10.1177/0022002720962209>
- Chojnicki, X., & Ragot, L.** (2012). Immigration, vieillissement démographique et financement de la protection sociale [Immigration, demographic ageing and social welfare financing]. *Revue Économique*, 63(3), 501. DOI: <https://doi.org/10.3917/reco.633.0501>
- Collange, J., & Guegan, J.** (2020). Using virtual reality to induce gratitude through virtual social interaction. *Computers in Human Behavior*, 113(August), 106473. DOI: <https://doi.org/10.1016/j.chb.2020.106473>
- Cuddy, A. J. C., Fiske, S. T., & Glick, P.** (2007). The BIAS map: Behaviors from intergroup affect and stereotypes. *Journal of Personality and Social Psychology*, 92(4), 631–648. DOI: <https://doi.org/10.1037/0022-3514.92.4.631>
- De Dreu, C. K. W., Gross, J., Fariña, A., & Ma, Y.** (2020). Group cooperation, carrying-capacity stress, and intergroup conflict. *Trends in Cognitive Sciences*, 24(9), 760–776. DOI: <https://doi.org/10.1016/j.tics.2020.06.005>
- Deroo, E., & Champeaux, A.** (2013). Panorama des troupes coloniales françaises dans les deux guerres

mondiales [An overview of French colonial troops in the two world wars]. *Revue Historique Des Armées*, 271, 1–22.

- Deschamps, J.-C., & Brown, R.** (1983). Superordinate goals and intergroup conflict. *British Journal of Social Psychology*, 22(3), 189–195. DOI: <https://doi.org/10.1111/j.2044-8309.1983.tb00583.x>
- DeWall, C. N., Lambert, N. M., Pond, R. S., Kashdan, T. B., & Fincham, F. D.** (2011). A grateful heart is a non-violent heart: Cross-sectional, experience sampling, longitudinal, and experimental evidence. *Social Psychological and Personality Science*, 3(2), 232–240. DOI: <https://doi.org/10.1177/1948550611416675>
- Doosje, B. E. J., Branscombe, N. R., Spears, R., & Manstead, A. S. R.** (1998). Guilty by association: When one's group has a negative history. *Journal of Personality and Social Psychology*, 75(4), 872–886. DOI: <https://doi.org/10.1037/0022-3514.75.4.872>
- Doosje, B. E. J., & Haslam, S. A.** (2005). What have they done for us lately? The dynamics of reciprocity in intergroup contexts. *Journal of Applied Social Psychology*, 35(3), 508–535. DOI: <https://doi.org/10.1111/j.1559-1816.2005.tb02133.x>
- Dovidio, J. F., Gaertner, S. L., Isen, A. M., & Lowrance, R.** (1995). Group representations and intergroup bias: Positive affect, similarity, and group size. *Personality and Social Psychology Bulletin*, 21(8), 856–865. DOI: <https://doi.org/10.1177/0146167295218009>
- Dovidio, J. F., Gaertner, S. L., & Kawakami, K.** (2003). Intergroup contact: The past, present, and the future. *Group Processes & Intergroup Relations*, 6(1), 5–21. DOI: <https://doi.org/10.1177/1368430203006001009>
- Dovidio, J. F., Gaertner, S. L., Validzic, A., Matoka, K., Johnson, B., & Frazier, S.** (1997). Extending the benefits of recategorization: Evaluations, self-disclosure, and helping. *Journal of Experimental Social Psychology*, 33(4), 401–420. DOI: <https://doi.org/10.1006/jesp.1997.1327>
- Dovidio, J. F., Isen, A. M., Guerra, P., Gaertner, S. L., & Rust, M.** (1998). Positive affect, cognition, and the reduction of intergroup bias. In *Intergroup Cognition and Intergroup Behavior*. (pp. 337–366). Lawrence Erlbaum Associates Publishers.
- Duckitt, J., Wagner, C., du Plessis, I., & Birum, I.** (2002). The psychological bases of ideology and prejudice: testing a dual process model. *Journal of Personality and Social Psychology*, 83(1), 75–93. DOI: <http://www.ncbi.nlm.nih.gov/pubmed/12088134>
- Emmons, R. A., & McCullough, M. E.** (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, 84(2), 377–389. DOI: <https://doi.org/10.1037/0022-3514.84.2.377>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G.** (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. DOI: <https://doi.org/10.3758/BRM.41.4.1149>
- Fehr, R., Fulmer, A., Awtrey, E., & Miller, J. A.** (2017). The grateful workplace: A multilevel model of gratitude in organizations. *Academy of Management Review*, 42(2), 361–381. DOI: <https://doi.org/10.5465/amr.2014.0374>
- Finlay, K. A., & Stephan, W. G.** (2000). Improving intergroup relations: The effects of empathy on racial attitudes. *Journal of Applied Social Psychology*, 30(8), 1720–1737. DOI: <https://doi.org/10.1111/j.1559-1816.2000.tb02464.x>
- Fiske, S. T.** (2000). Interdependence and the reduction of prejudice. In S. Oskamp (Ed.), *Reducing Prejudice and Discrimination*. (pp. 115–135). Lawrence Erlbaum Associates Publishers.
- Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J.** (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82(6), 878–902. DOI: <https://doi.org/10.1037/0022-3514.82.6.878>
- Fiske, S. T., Xu, J., Cuddy, A. J. C., & Glick, P.** (1999). (Dis)respecting versus (Dis)liking: Status and interdependence predict ambivalent stereotypes of competence and warmth. *Journal of Social Issues*, 55(3), 473–489. DOI: <https://doi.org/10.1111/0022-4537.00128>
- Gino, F., & Schweitzer, M. E.** (2008). Blinded by anger or feeling the love: How emotions influence advice taking. *Journal of Applied Psychology*, 93(5), 1165–1173. DOI: <https://doi.org/10.1037/0021-9010.93.5.1165>
- Guillermond, E.** (2004). Sur les traces d'Addi Bâ, héros vosgien d'origine guinéenne [On Addi Bâ's footsteps, heroes from the Vosges of Guinean origin]. *Hommes et Migrations*, 1247(1), 60–66. DOI: <https://doi.org/10.3406/homig.2004.4123>
- Haidt, J.** (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of Affective Sciences* (pp. 852–870). Oxford University Press. DOI: <https://doi.org/10.1037/a0022408>
- Harth, N. S., Kessler, T., & Leach, C. W.** (2008). Advantaged group's emotional reactions to intergroup inequality: The dynamics of pride, guilt, and sympathy. *Personality and Social Psychology Bulletin*, 34(1), 115–129. DOI: <https://doi.org/10.1177/0146167207309193>
- Hayes, A. F.** (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Press.
- Hewstone, M., & Brown, R. J.** (1986). *Social Psychology and Society. Contact and Conflict in Intergroup Encounters*. Basil Blackwell.
- Horberg, E. J., Oveis, C., & Keltner, D.** (2011). Emotions as moral amplifiers: An appraisal tendency approach to the influences of distinct emotions upon moral judgment. *Emotion Review*, 3(3), 237–244. DOI: <https://doi.org/10.1177/1754073911402384>
- Hu, L., & Bentler, P. M.** (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. DOI: <https://doi.org/10.1080/10705519909540118>

- Imhoff, R., Bilewicz, M., & Erb, H. P.** (2012). Collective regret versus collective guilt: Different emotional reactions to historical atrocities. *European Journal of Social Psychology, 42*(6), 729–742. DOI: <https://doi.org/10.1002/ejsp.1886>
- Insee.** (2020). *Population immigrée et étrangère en France*. Retrieved from <https://www.insee.fr/fr/statistiques/2381757>
- Ipsos.** (2017). *Attitude à l'égard de l'immigration et de la crise des réfugiés dans le monde [Attitude towards immigration and the refugee crisis]*. Retrieved from https://www.ipsos.com/sites/default/files/ct/news/documents/2017-09/Global%40dvisor_Immigration_2017_FR.pdf
- Isen, A. M.** (1987). Positive affect, cognitive processes, and social behavior. *Advances in Experimental Social Psychology, 20*(C), 203–253. DOI: [https://doi.org/10.1016/S0065-2601\(08\)60415-3](https://doi.org/10.1016/S0065-2601(08)60415-3)
- Iyer, A., Leach, C. W., & Crosby, F. J.** (2003). White guilt and racial compensation: The Benefits and Limits of Self-Focus. *Personality and Social Psychology Bulletin, 29*(1), 117–129. DOI: <https://doi.org/10.1177/0146167202238377>
- Jackson, L. A., Lewandowski, A. D., Fleury, R. E., & Chin, P. P.** (2001). Effects of affect, stereotype consistency, and valence of behavior on causal attributions. *The Journal of Social Psychology, 141*(1), 31–48. DOI: <https://doi.org/10.1080/00224540109600521>
- Jonas, K. J., & Mummendey, A.** (2008). Positive intergroup relations: From reduced outgroup rejection to outgroup support. In *Improving Intergroup Relations* (pp. 210–224). Blackwell Publishing Ltd. DOI: <https://doi.org/10.1002/9781444303117.ch14>
- Judd, C. M., & McClelland, G. H.** (1989). *Data Analysis: A Model Comparison Approach*. Harcourt Brace Jovanovich.
- Kuchenbrandt, D., Eyssele, F., & Seidel, S. K.** (2013). Cooperation makes it happen: Imagined intergroup cooperation enhances the positive effects of imagined contact. *Group Processes & Intergroup Relations, 16*(5), 635–647. DOI: <https://doi.org/10.1177/1368430212470172>
- LeVine, R. A., & Campbell, D. T.** (1972). *Ethnocentrism: Theories of Conflict, Ethnic Attitudes, and Group Behavior*. Wiley.
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F.** (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 151–173. DOI: https://doi.org/10.1207/S15328007SEM0902_1
- Ma, L. K., Tunney, R. J., & Ferguson, E.** (2017). Does gratitude enhance prosociality? A meta-analytic review. *Psychological Bulletin, 143*(6), 601–635. DOI: <https://doi.org/10.1037/bul0000103>
- Marcus-Newhall, A., Miller, N., Holtz, R., & Brewer, M. B.** (1993). Cross-cutting category membership with role assignment: A means of reducing intergroup bias. *British Journal of Social Psychology, 32*(2), 125–146. DOI: <https://doi.org/10.1111/j.2044-8309.1993.tb00991.x>
- Mathews, M. A., & Green, J. D.** (2010). Looking at me, appreciating you: Self-focused attention distinguishes between gratitude and indebtedness. *Cognition & Emotion, 24*(4), 710–718. DOI: <https://doi.org/10.1080/02699930802650796>
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B.** (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*(2), 249–266. DOI: <https://doi.org/10.1037/0033-2909.127.2.249>
- McCullough, M. E., Kimeldorf, M. B., & Cohen, A. D.** (2008). An adaptation for altruism? The social causes, social effects, and social evolution of gratitude. *Current Directions in Psychological Science, 17*(4), 281–285. DOI: <https://doi.org/10.1111/j.1467-8721.2008.00590.x>
- Nadler, A.** (2002). Inter-group helping relations as power relations: Maintaining or challenging social dominance between groups through helping. *Journal of Social Issues, 58*(3), 487–502. DOI: <https://doi.org/10.1111/1540-4560.00272>
- Nadler, A.** (2016). The historical and relational contexts of the study of positive behaviors across group boundaries. *Journal of Social Issues, 72*(3), 601–613. DOI: <https://doi.org/10.1111/josi.12184>
- Nadler, A., Harpaz-Gorodeisky, G., & Ben-David, Y.** (2009). Defensive helping: Threat to group identity, ingroup identification, status stability, and common group identity as determinants of intergroup helping. *Journal of Personality and Social Psychology, 97*(5), 823–834. DOI: <https://doi.org/10.1037/a0015968>
- Noiriel, G.** (1986). *Les Ouvriers dans la société française XIX-XXe siècle [Working class in the french society of the XIX-XX century]*. Seuil.
- Noiriel, G.** (2001). *État, nation et immigration: vers une histoire du pouvoir [State, nation and immigration: toward an history of power]*. Belin.
- Oishi, S., Koo, M., Lim, N., & Suh, E. M.** (2019). When gratitude evokes indebtedness. *Applied Psychology: Health and Well-Being, 11*(2), 286–303. DOI: <https://doi.org/10.1111/aphw.12155>
- Onu, D., Kessler, T., Andonovska-Trajkovska, D., Fritsche, I., Midson, G. R., & Smith, J. R.** (2016). Inspired by the outgroup: A social identity analysis of intergroup admiration. *Group Processes and Intergroup Relations, 19*(6), 713–731. DOI: <https://doi.org/10.1177/1368430216629811>
- Onu, D., Kessler, T., & Smith, J. R.** (2016). Admiration: A conceptual review. In *Emotion Review, 8*(3), 218–230. DOI: <https://doi.org/10.1177/1754073915610438>
- Onu, D., Smith, J. R., & Kessler, T.** (2015). Intergroup emulation: An improvement strategy for lower status groups. *Group Processes and Intergroup Relations, 18*(2), 210–224. DOI: <https://doi.org/10.1177/1368430214556698>
- Peng, C., Nelissen, R. M. A., & Zeelenberg, M.** (2018). Reconsidering the roles of gratitude and

- indebtedness in social exchange. *Cognition and Emotion*, 32(4), 760–772. DOI: <https://doi.org/10.1080/02699931.2017.1353484>
- Pettigrew, T. F., & Tropp, L. R.** (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, 38(6), 922–934. DOI: <https://doi.org/10.1002/ejsp.504>
- Schori-Eyal, N., Klar, Y., Roccas, S., & McNeill, A.** (2017). The shadows of the past. *Personality and Social Psychology Bulletin*, 43(4), 538–554. DOI: <https://doi.org/10.1177/0146167216689063>
- Sherif, M.** (1966). In *Common Predicament Social Psychology of Intergroup Conflict and Cooperation*. Houghton Mifflin.
- Smith, E. R.** (1993). Social identity and social emotions: Toward new conceptualizations of prejudice. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, Cognition, and Stereotyping: Interactive Processes in Group Perception* (pp. 297–315). Academic Press. DOI: <https://doi.org/10.1016/B978-0-08-088579-7.50017-X>
- Steiger, J. H.** (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, 42(5), 893–898. DOI: <https://doi.org/10.1016/j.paid.2006.09.017>
- Steindl-Rast, D.** (2004). Gratitude as thankfulness and as gratefulness. In R. A. Emmons & M. E. McCullough (Eds.), *The Psychology of Gratitude* (pp. 282–289). Oxford University Press. DOI: <https://doi.org/10.1093/acprof:oso/9780195150100.003.0014>
- Sweetman, J., Spears, R., Livingstone, A. G., & Manstead, A. S. R.** (2013). Admiration regulates social hierarchy: Antecedents, dispositions, and effects on intergroup behavior. *Journal of Experimental Social Psychology*, 49(3), 534–542. DOI: <https://doi.org/10.1016/j.jesp.2012.10.007>
- Temime, E.** (1991). Immigrés et étrangers dans la libération de la Provence [Immigrants and foreigners in the liberation of Provence]. *Hommes et Migrations*, 1148(1), 48–52. DOI: <https://doi.org/10.3406/homig.1991.1750>
- Ting, S.** (2017). The difference between gratitude and indebtedness. *American International Journal of Contemporary Research*, 7(4), 55–62.
- Topcu, M. N., & Hirst, W.** (2020). Remembering a nation's past to imagine its future: The role of event specificity, phenomenology, valence, and perceived agency. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 46(3), 563–579. DOI: <https://doi.org/10.1037/xlm0000746>
- Tribalat, M.** (1991). Chronique de l'immigration [Chronical of immigration]. *Population (French Edition)*, 46(1), 113. DOI: <https://doi.org/10.2307/1533613>
- Tsang, J.-A.** (2006). The effects of helper intention on gratitude and indebtedness. *Motivation and Emotion*, 30(3), 198–204. DOI: <https://doi.org/10.1007/s11031-006-9031-z>
- Tsang, J.-A.** (2007). Gratitude for small and large favors: A behavioral test. *The Journal of Positive Psychology*, 2(3), 157–167. DOI: <https://doi.org/10.1080/17439760701229019>
- Watkins, P. C., Scheer, J., Ovnicek, M., & Kolts, R. L.** (2006). The debt of gratitude: Dissociating gratitude and indebtedness. *Cognition & Emotion*, 20(2), 217–241. DOI: <https://doi.org/10.1080/02699930500172291>
- Weil, P.** (2003). Races at the gate. Racial distinctions in immigration policy: A comparison between France and the United States. In A. Fahrmeir, O. Faron, & P. Weil (Eds.), *Migration Control in the North Atlantic World: The Evolution of State Practices in Europe and the U.S. from the French Revolution to the Inter-War Period* (pp. 271–300). Berghahn books.
- Williams, L. A., & Bartlett, M. Y.** (2015). Warm thanks: Gratitude expression facilitates social affiliation in new relationships via perceived warmth. *Emotion*, 15(1), 1–5. DOI: <https://doi.org/10.1037/emo0000017>
- Wittenbrink, B., Judd, C. M., & Park, B.** (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology*, 72(2), 262–274. DOI: <https://doi.org/10.1037/0022-3514.72.2.262>
- Yzerbyt, V., Muller, D., Batailler, C., & Judd, C. M.** (2018). New recommendations for testing indirect effects in mediational models: The need to report and test component paths. *Journal of Personality and Social Psychology*, 115(6), 929–943. DOI: <https://doi.org/10.1037/pspa0000132>

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