



# Intergroup contact in computer-mediated communication: The interplay of a stereotype-disconfirming behavior and a lasting group identity on reducing prejudiced perceptions <sup>☆</sup>



Salvador Alvírez <sup>\*</sup>, Valeriano Piñeiro-Naval, María Marcos-Ramos, José Luis Rojas-Solís

Department of Sociology and Communication, University of Salamanca, Spain

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## ABSTRACT

The present study investigated the impact of online intergroup contact on prejudiced and stereotyped perceptions toward an outgroup. Informed by research on contact in computer-mediated communication, a model of contact in which individual outgroup members displayed a stereotype-disconfirming (vs confirming) behavior in virtual teams made up of ingroup members was tested. Moreover, this hypothesized model of contact was examined across two visual conditions of group identification: one in which a pre-existing ethnic category (i.e. lasting membership) was made salient, and one without salient group identities. Results showed that when participants were conscious of their lasting identities, the enacted disconfirming behavior reduced prejudiced perceptions by the mediation of perceived attraction towards the individual outgroup member. Conversely, stereotyped perceptions were not affected by this behavior. These findings suggest that the generalization of the contact effect in CMC is more likely to occur in attitudinal variables than in cognitive ones, and as long as participants are aware of intergroup memberships when participating in short online interactions.

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## 1. Introduction

Current perspectives on intergroup contact focus on the contact that takes place in settings other than face-to-face (FtF) encounters (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011; Schiappa, Gregg, & Hewes, 2005). In this regard, the exclusive features of computer-mediated communication (CMC) such as its accessibility and lower costs for interactions can offer some advantages for intergroup contact over non-mediated meetings. The limited social cues conveyed in this medium may occlude differences in status that otherwise would be more evident in offline interactions (e.g., ethnicity, socioeconomic status), thus leading to form impressions of more balanced intergroup exchanges (Amichai-Hamburger & McKenna, 2006). In addition, as this type of communication does not involve any physical risk, group members might experience less anxiety and fewer negative expectations about meeting the

outgroup member (Harwood, 2010). In this way, contact opportunities may become more feasible even for groups with a long history of conflict (Ellis & Maoz, 2007).

In spite of the potential benefits of virtual communication for contact, it remains unclear whether the processes involved in reducing latent intergroup bias in offline interactions work in the same way in CMC. Research in the contact literature suggests that interactions with individual outgroup members who behave in such a manner that disconfirms group stereotypes, and who nevertheless are regarded as *typical* members of their respective groups, result in positive evaluations of the whole outgroup by favoring changes in prejudiced and stereotyped perceptions (Johnston & Hewstone, 1992; Weber & Crocker, 1983; Wilder, 1984). For these changes to occur, both intergroup boundaries and group membership must be made salient during the contact in order to foster the individual-to-group generalization effect (Hewstone & Brown, 1986). Moreover, research has recently moved on from cognitive to affective bases to better predict contact outcomes (e.g., Pettigrew, Tropp, Wagner, & Christ, 2011; Turner, Tam, Hewstone, Kenworthy, & Cairns, 2013). The meta-analytic study of Pettigrew and Tropp (2008), for example, revealed that affective variables such as empathy and anxiety reduction were stronger mediators of contact on prejudice reduction than the cognitive-oriented variable of knowledge.

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<sup>\*</sup> Corresponding author at: Facultad de Ciencias Políticas y Administración Pública, Campus Mederos, Ave. Praga y Trieste s/n, Col. Residencial Las Torres, C.P.: 64930 Monterrey, Mexico. Tel.: +52 8183294000x2280.

E-mail address: [salvidrez@hushmail.com](mailto:salvidrez@hushmail.com) (S. Alvírez).

For its part, the CMC literature has mainly provided evidence on the group identity processes that take place in virtual environments (Postmes, Spears, Sakhel, & de Groot, 2001; Spears, Postmes, Lea, & Wolbert, 2002). Based largely on the social identity model of deindividuation effects (SIDE), this approach suggests that when the users' individual information is occluded (i.e., personal information) and a social identity is emphasized in a virtual interaction (i.e., ethnicity, gender, religious group, etc.), personal differences tend to be blurred and the social group category becomes salient. As such, these depersonalized perceptions would lead them to see themselves and others as prototypical members of the virtual group, thereby increasing social attraction (Lea, Spears, & de Groot, 2001). Former outgroup members could be cognitively assimilated into this local group "leading to heightened feelings of attachment and camaraderie among the participants" (Amichai-Hamburger & McKenna, 2006, p. 835), and consequently, to lowered negative attitudes or animosity resulting from group categorizations.

Research in SIDE, however, has been inconsistent in supporting group effects in terms of attraction to ingroup members (e.g., Lea et al., 2001; Postmes, Spears, & Lea, 2002, study 1; Walther, 2009). Results in similar studies suggest that the cognizance of subgroup membership (i.e., knowing about members of the local group who share membership in other different groups) leads to more negative outgroup stereotypes when interacting in depersonalized rather than in personalized CMC exchanges (Postmes & Spears, 2002; Postmes et al., 2002). On the other hand, Wang, Walther, and Hancock (2009) purported that perceived attraction to group members depend on users' behavior rather than their in/out group membership. These findings imply that social identification may not be sufficient alone to increase positive perceptions regarding group members, which in turn might contribute to reduce bias towards the outgroup resulting from cognizance of subgroup membership, but that the involvement of some kind of active behavior by group instances might be necessary.

On the purpose of verifying the potential benefits of intergroup contact in a CMC, the present study investigated how the interplay between group identification and the behavior of individual outgroups might contribute to reduce biased perceptions towards the entire outgroup. Specifically, a stereotype-disconfirming behavior was introduced in a contact setting of ethnic majorities and minorities, in which social structures play an important role in stereotyping outgroups and the expectations regarding its members. Furthermore, in order to clarify *how* contact may affect outcome variables in virtual interactions, this paper focuses on two mediators: the affective variable of attraction and the cognitive variable of typicality. Likewise, in order to address *when* a generalization of the contact effect may take place, this model is tested across two levels of group identity salience: one in terms of a personal identity and one in terms of a pre-existing ethnic category.

## 2. Literature review

### 2.1. Contact in CMC: awareness of lasting group identities

Whilst empirical investigation on the bias-reducing effect of CMC-contact is scarce, promising results in changing attitudes have been obtained in correlational studies (Schumann, Linden, & Klein, 2012; Tynes, Giang, & Thompson, 2008). Moreover, the work of other scholars maintains that offline intergroup bias could actually be transferred to online interactions; for example, Finchilescu (2010) reported increases in stereotypes and anxiety in Caucasian students when participating in a simulated interethnic CMC-contact in South Africa, whereas Weisband, Schneider, and Conolly (1995) suggested that group status differences in

computer-mediated channels work in a similar way to offline contexts. Hence, it seems pertinent to examine how and when CMC-contact can reduce negative intergroup perceptions.

Theoretical assumptions in the SIDE model, derived from the social identity theory (Tajfel & Turner, 1986), invoke group identity dynamics in CMC in a similar way to FtF interactions (Lea & Spears, 1991; Postmes & Baym, 2005). The SIDE model accounts for effects of depersonalization of online participants: when users in a CMC remain anonymous (i.e., visually unidentifiable), and a social identity is salient, members' interpersonal differences tend to be blurred, while perceptions of groupness are expected to increase. Categorization processes lead to a cognitive distinction between ingroups and outgroups and, because of this division, intragroup similarities and intergroup differences become exaggerated: thus, members tend to favor ingroup and to dislike outgroup members. Depersonalized perceptions of the self and others lead them to see themselves as identical or interchangeable in terms of the salient identity, thereby increasing attraction to prototypical ingroup members (Lea & Spears, 1995). It is this type of attraction, resulting from a positive group identification, that makes it possible to compare the effect of sharing common group goals in offline (Allport, 1954) and online settings (Amichai-Hamburger & McKenna, 2006).

In relation to CMC, a social identity is the extent to which users identify with a preexisting category such as gender or nationality. Previous studies have managed to trigger social identification by hiding personal information about participants (e.g., blocking each participant's name or photo) while making salient a group category by introducing ostensible numbers, logos or codes shared by all participants. Conversely, displaying individual visual cues (e.g., photos of faces) was thought to diminish group identification as users focused their attention on idiosyncratic characteristics rather than on depersonalized perceptions of group members. This categorization of the self and others in terms of the ad-hoc group was designated a *transient* group membership, whereas the preexisting wider social identity was called *lasting* group membership (Lea, Spears, Watt, & Rogers, 2000; Lea et al., 2001).

In line with the contact approach, Amichai-Hamburger and McKenna (2006) referred to the theoretical capacity of CMC to reduce prejudice as long as subgroup constituents (i.e., former outgroups) within a singular group pursue superordinate goals and experience identification with a wider social category that is made salient. Scholars in offline contact have termed this model recategorization, which meets stipulations of making salient intergroup membership within a superordinate category for generalization purposes (Gaertner & Dovidio, 2000). From a SIDE point of view this would represent a paradoxical circumstance in which members of the local group are cognizant of the subgroup (outgroup) membership of certain virtual partners.

Lea, Spears, and Watt (2007) were successful in creating attraction and cohesion in virtual group members by varying the target of lasting identification. Male and female participants in this study comprising groups consisting of British and Dutch people tended to categorize themselves according to their respective gender or nationality (lasting memberships) when each category was made salient in discussion topics across two levels of interaction (personally identifiable and anonymous). For nationality, attraction and cohesion effects were only found in the anonymous condition whereas the same effects were found for gender in the personally identifiable one. According to the authors, some categories such as gender are easier to be visually cued (e.g., most people distinguish between male and female) than other abstract categories such as nationality. Nevertheless, the introduction of an international topic in the anonymous condition (e.g., talking about British food) led members to see themselves in terms of their lasting identity. Moreover, knowing that people of different gender and nationalities took part within a same online group did not boost negative

perceptions, but rather increased attraction to their respective group members. In the model purported by the researchers the prototypicality of group members – the extent to which a person is perceived as representative of his/her salient group –, mediated the effect of the anonymity of group members on attraction and cohesion in their model of indirect effects. This cognitive variable, traditionally introduced as a moderator in offline studies, has been verified to mediate the effect of different independent variables in online interventions where the cues for prototype comparisons are low (e.g., Berthold, Mummendey, Kessler, Luecke, & Schubert, 2012; Lea et al., 2001; Lea et al., 2007; Wang et al., 2009).

Making subgroups present in a virtual local group, including attachment to wider pre-existing social categories, seems to fulfill the key stipulation of intergroup awareness for contact-generalization purposes. For this study, we expect more consciousness of subgroup memberships in groups where a lasting identity is salient than in groups where it is not. We will return to this point later.

## 2.2. Disconfirming behavior of individual outgroup members

One line of research in intergroup contact focuses on changes in stereotyped perceptions produced by contact interventions with individual group members who present a stereotype-disconfirming behavior. Group stereotypes comprise averaged attributes on which people base their judgments about the likelihood of members possessing one or more of these traits, and when such members reveal a behavior that does not match those attributes, both these traits and the likelihood of possessing them are thought to be challenged. Findings in distinct works have corroborated the effectiveness of this strategy (Brown, Vivian, & Hewstone, 1999; Carnaghi & Yzerbyt, 2007; Cook, 1984; Hewstone & Hamberger, 2000; Kunda & Oleson, 1995).

The link between the group stereotype and its members is crucial because, in view of that membership, these instances can effectively deviate from the stereotype by disconfirming its attributes. However, when disconfirmation is extreme these instances are regarded as atypical of the group stereotype, and therefore, they are clustered into an alternative category that is mentally isolated from the rest of the outgroup. Because of this process, the perceived typicality or representativeness of the instance emerges as an indispensable cognitive factor in connecting the disconfirming individual with his/her group. The more typical the member is considered the lesser his or her chance of being subtyped (Deutsch & Fazio, 2008; Rothbart & John, 1985).

According to the social identity theory (Tajfel, 1986), stereotype disconfirmation may be used as an individual strategy for *social mobility*, which refers to a personal motivation for “moving” from a socially devaluated or stigmatized group to a more prestigious group in order to reach a positive social identity. If the intention is to enact more positive attributes of the disadvantaged group then it becomes a collective strategy. In any case, the individual upward strategy will only be successful when group boundaries are permeable, that is to say, if status differences are thick (e.g., the caste system in India) then a disconfirmation strategy could be ineffective or fail (Klein & Snyder, 2003).

While the enactment of a stereotype-disconfirming behavior in offline settings is privileged by multiple social cues, this is only partially possible in online contexts. Because of the limited capacity of CMC interactions to convey social cues the presentation of disconfirming information in a synchronous exchange would rest mostly on the communicative behavior of the outgroup member. This is, the information disclosed and the style of communication used by the outgroup person must ostensibly deviate from stereotyped attributions in order to produce disconfirming impressions. Despite failures in reaching a significant impact of disconfirming

behavior in short interactions (Wolsko, Park, Judd, & Bachelor, 2003), we assume that, because of the magnification of initial impressions in online exchanges as compared to FtF interactions, one CMC-contact intervention would be enough to produce changes in attitudes even if they are small (see Postmes et al., 2002; Sprecher, Treger, & Wondra, 2013; Walther, 1997). Overall, we expect that the disconfirming behavior of outgroup members in CMC, compared to a confirming behavior, will reduce biased perceptions toward the entire outgroup.

## 2.3. The intergroup context: ethnic minorities in Spain

The intergroup contact in this study was set in an ethnic majority-minority group context in Spain. Ethnic minority groups have settled and expanded in a relatively short period of time with the increase of immigration flows to Spain in the mid-1990s. People looking for jobs, asylum seekers, or family members in the process of reunification made up the first generation of immigrants. In December 2013, the foreign population living legally in Spain represented 10.49% of the overall 47 million population (<http://extranjeros.meyss.es>). Although there are several other ethnic groups in the country, Latin Americans are one of the largest immigrant group from non-EU countries. Among other nationalities, Ecuadorians represented 4.52% of this foreign portion, Colombians 3.29%, and Bolivians 2.66%.

As well as in other host countries, situational factors such as growth in unemployment rates and the repetition of negative portrayals of immigration by news media contribute to increases in xenophobia and stereotyping of minorities (Cea D’Ancona, 2004; Mu6niz, Igartua, de la Fuente, & Otero, 2007). Because ethnicity is the most ostensible link to their foreign origin due to its “visual” nature, second-generation immigrants – born and raised in Spain – are also linked to the negative attributions of immigrants without legal residence. In this view, Latin Americans are often seen as possessing similar stereotyped characteristics with little regard of their nationality (e.g., delinquency, poverty, low education levels, etc.) (Cea D’Ancona and Valles Mart6nez, 2010).

Because of the large number of people from Ecuador living in Spain, Ecuadorians will be introduced in this study as representing the Latin American outgroup. We assume that, for the Spanish population, the likelihood of having contact with Ecuadorians would be greater than any other Latin American nationality and that such interaction would activate stereotyped attributions regarding this group as a whole.

## 2.4. A hypothesized contact model in CMC

Taking into account the theoretical stipulations for intergroup contact a path model of intergroup contact in CMC was hypothesized to test the effect of a disconfirming behavior on stereotyped and prejudiced perceptions. The amount of change in the outcome variables would depend on the interaction of behavior and perceived typicality: something that may seem difficult given that disconfirming instances tend to be evaluated as atypical of their groups. However, there is empirical evidence to demonstrate that this is not impossible to achieve (Hewstone & Hamberger, 2000; Wolsko et al., 2003). Although disconfirming behaviors are usually moderated by the extent to which the individual member is perceived as typical of his/her group, previous CMC studies have operationalized a similar variable as a cognitive-oriented mediator (i.e., prototypicality, Lea et al., 2001; Lea et al., 2007). Contrary to FtF interventions, the lower capacity of CMC to convey social cues to ethnic membership in short interactions might render typicality as a mediating factor in the relationship between the stereotype disconfirmation and changes in the outcome variables rather than

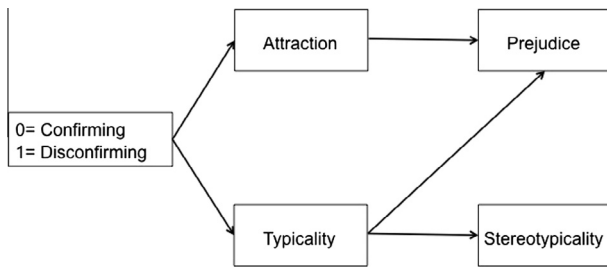


Fig. 1. The hypothesized model of contact in CMC.

bolstering or diminishing these changes. Hence, we put forth the following hypothesis:

**H1.** The disconfirming behavior of the individual outgroup member will lead to perceptions of typicality, which in turn, will correlate negatively to a) stereotyped and b) prejudiced perceptions toward the outgroup.

In addition to cognitive variables, affective variables have been found to be effective mediators of contact (Pettigrew & Tropp, 2008). In these terms, although depersonalized attraction to group members has only been tested as a mediator for aspects of conformity or cohesion (e.g., Lea et al., 2007), we predict that the perceived attraction to the outgroup disconfirming member who takes part in the local group might be a potential mediator of contact on the negative perceptions towards his/her outgroup. Furthermore, as stereotypes are cognitive beliefs posited to be resistant to modification (Amichai-Hamburger & McKenna, 2006), we expect that attraction would only affect prejudice, which is also an affective variable. Thus, we formulate:

**H2.** The disconfirming behavior of the individual outgroup member will lead to perceptions of attraction, which in turn, will correlate negatively to prejudiced perceptions but not to stereotyped ones toward the outgroup.

The SIDE model suggests that the depersonalization of users can foster group identification in terms of the local group, but in this monolithic identification the stereotype-disconfirming behavior of the outgroup member might be ignored if both his/her subgroup membership and the stereotype linked to it are not mentally present. Therefore, stereotypic associations regarding the Latin American ethnic minority are more likely to be activated if this lasting identity is prompted, leading the disconfirming behavior to provoke changes in these perceptions but only in the condition where this lasting membership is salient. On the contrary, personalization of group members is expected to weaken both group identification and stereotyping. Thus we formulate:

**H3.** The relationships between the mediating variables and the biased perceptions toward the outgroup will be stronger in the depersonalized condition than the same relationships in the personalized condition.

The hypothesized CMC-contact model is shown in Fig. 1.

### 3. Method

#### 3.1. Participants

A total of 104 undergraduate students (41 males and 63 females) from different academic disciplines and backgrounds at a large university in central Spain participated in return for extra credits. The selection was made using a pre-test questionnaire that was filled out at least 15 days before the meeting session. Only

Spanish-born students were invited to participate in order to examine the effect of contact in members of the dominant ingroup.

#### 3.2. Procedure

The experimental test was carried out in isolated rooms with desktop computers. All participants were told that they were taking part in an online task session with students from different university faculties and other academic institutes within the same city. A new version of the PISCO software (Moral-Toranzo, Canto-Ortiz, & G6mez-Jacinto, 2007) was used for this purpose. The program notifies users that they conform a group made up of six virtual participants (five Spanish students including the experimental participant, and one from Latin America). Four participants were not actually real: the software employs automatic scripts with pre-recorded written answers that are successively shown with a few seconds' delay; thus, simulating synchronic responses by partners with textual communication. The only "real" partner is the Latin American member. This procedure was chosen in order to prevent the creation of unwanted group norms by interdependence of group members (Kim, 2009).

The online task was split into three consecutive stages. In the introductory stage each participant was asked to introduce him/herself to the other team members: the pictures of the team partners were shown on the left side of the screen and their replies in a text-box place right next to each picture. The second stage aimed to induce local-group identification by asking team members to solve a puzzle-task in order to compare time scores with scores in other nearby cities. At the end of this task the program displayed outstanding scores for the team. In the final discussion-stage, the PISCO program simulated a random pairing from the six members: without exception, each experimental participant was paired with the Latino member in order to discuss some controversial topics in Spanish society (e.g., special taxes for the Catholic Church) and to come to some sort of agreement by using a text-based IM application. This activity was intended to make salient the condition of the Latin American as a member of an ethnic minority in Spain. Irrespective of their performance, the computer displayed excellent scores for the whole team. Once the thematic discussion was concluded participants filled in a post-test questionnaire. Overall, the session lasted 60 min on average (30–40 min for the first and second stages, and 20–30 min for the third stage).

#### 3.3. Manipulations

In previous studies, lasting group identities under depersonalized conditions have been stimulated not only by blocking any personally identifiable cue, but also by introducing ostensible symbols or avatars as visual representations of participants (e.g., Kim, 2009). For this study, national flags were introduced to instill a lasting ethnic identity in the depersonalized condition (five Spanish flags and one from Ecuador). This identification might result too intuitive itself, but considering that national identities have been verified to be salient with the sole introduction of conversation topics (Lea et al., 2007), we assume that introducing an ostensible national symbol, along with the information disclosed by the Latin American instance during the task stages, would visually cue the notion that a person from an ethnic minority is present among the team members. After all, our interest is the stereotype that comes together with the recognition of a group that is relatively familiar, although, lower in status within the Spanish society. The participants in this condition are expected to share both a lasting (ethnic) membership and a transient (local) membership simultaneously. Meanwhile, in order to contrast this degree of salience, a control group will be made personally identifiable through

the exposure of photos of the participants' faces.<sup>1</sup> Users in this condition are not expected to hold any group membership.

For the behavior manipulation, two profiles for the same fictional character were created: an Ecuadorian immigrant with long-term residence in Spain and Spanish nationality. The Latin American confederates who collaborated in this study were prompted to display either a confirming or disconfirming behavior based on two positive attributes (*sociable, cheerful*), and two negative attributes (*male chauvinist, religious conservative*). These stereotyped attributes were drawn from a series of focus groups with Spanish participants that took place months before the experimental meeting. The behavior of confederates was operationalized to be displayed during the third stage (discussion) as follows: in the confirming condition, for example, the confederate made more "friendly" comments and talked more about personal issues to give an impression of sociability, expressed disagreement about letting his girlfriend be friends with other men, and made frequent references to morality and God, revealing attitudes of male chauvinism and religious conservatism. In opposition, the disconfirming confederate focused more on accomplishing the final activity rather than trying to be sociable, expressed a scientific point of view rather than a religious one during the discussion of topics, and made continuous claims defending gender equality. All participants were randomly distributed into each of the four conditions: confirming-personalized, confirming-depersonalized, disconfirming-personalized, and disconfirming-depersonalized.

#### 3.4. Measures

In order to evaluate changes in stereotyped attributions, a *stereotypicality* measure was calculated from scores of the percent estimate task (Judd, Park, Ryan, Brauer, & Kraus, 1995). The participants were asked to consider typical attributes of Latin Americans (*sociable, cheerful, male chauvinist, religious conservative*) and to estimate the percentage of group members who possessed each of these attributes (0–100). In addition, two counter-stereotypic attributes (i.e., typical of other ethnic groups) were included: two positively valenced (*cultured, open minded*) and two negatively valenced (*hermetic, apathetic*). The stereotypicality rating ( $\alpha = .71$ ) was calculated by subtracting the counter-stereotypic scores (averaged across all four stereotypic traits) out of the stereotypic attributes. Larger scores reflect the prevalence of stereotypic perceptions (Wolsko et al., 2003).

Similarly, Pettigrew and Meertens' (1995) subtle prejudice scale was used to measure prejudiced perceptions against Latin Americans ( $\alpha = .80$ ), whereas attraction ( $\alpha = .86$ ) was rated by implementing McCroskey and McCain's (1974) subscale of social attraction. In both measures, the subjects indicated their opinion on a six-point Likert-like scale (1 = *completely disagree*, 6 = *completely agree*). The perceived typicality of the confederate was measured with a single item adapted from Spears, Doosje, and Ellemers (1997): "How typical of his ethnic group do you consider your discussion partner?" (1 = *Not at all typical*, 6 = *Very typical*).

In addition, the 8-item scale, identification with the national ethnic group (adapted from Hogg & Hains, 1996), was introduced as a measure of lasting group identification. It included statements

like: "I prefer to belong to my ethnic group over other ethnic groups" ( $\alpha = .87$ ).

#### 4. Results

The effectiveness of the experimental manipulations was checked first. A lasting identification in terms of the national ethnic group was expected to emerge in the depersonalized condition rather than in the personalized one: the test showed a significant difference in this variable ( $F(1, 101) = 4.74, p = .03$ ), with more lasting identification in the depersonalized condition ( $M = 4.20, SD = 1.10$ ) than in the personalized one ( $M = 3.80, SD = 1.19$ ). Spanish participants identified themselves in terms of their lasting membership in the presence of Spanish flags, which also included the Ecuadorian flag; thereby it was assumed that participants noticed the subgroup membership of their Latin American partner.

On the other hand, the stereotypicality measure was used to check the behavior manipulation. If this manipulation was successful, the confirming confederate would be evaluated as having more stereotypic attributes than the disconfirming one. Although minimal, the test showed significant differences for this manipulation ( $t[102] = 2.07, p < .05$ ), with greater prevalence of stereotypic attributions for the confirming instance ( $M = 0.37, SD = 1.10$ ) than for the disconfirming one ( $M = -0.04, SD = 0.95$ ). As in Wolsko et al. (2003), we used the typicality measure to provide additional support for this manipulation. Statistically significant differences were observed in perceived typicality ( $F(1, 101) = 5.67, p = .01$ ): participants evaluated the Latin American confederate as more typical of his ethnic group when he acted in a manner that confirmed stereotyped attributions ( $M = 4.18, SD = 1.24$ ) than when he disconfirmed such attributions ( $M = 3.58, SD = 1.32$ ). Hence, the behavior manipulation was successful.

The hypothesized model was tested with structural equation modeling using AMOS 21 (Arbuckle, 2012). The behavior of the confederate was coded for contrast (0 = Confirming, 1 = Disconfirming). Overall, the model showed a good fit ( $\chi^2(5) = 5.23, p = .38, \chi^2/df = 1.04, CFI = .99, RMSEA = .02$ ). Hypothesis 1 predicted that the disconfirming behavior of the Latin American instance would lead to perceptions of typicality, which in turn, would correlate negatively to stereotyped and prejudiced perceptions toward the outgroup. However, the disconfirming behavior significantly decreased perceptions of typicality, which in turn significantly increased prejudiced perceptions. Moreover, there were no significant direct effects on stereotypicality, therefore, the disconfirming instance was always perceived as atypical. Hypothesis 1 was not supported.

On the other hand, as predicted by Hypothesis 2, the disconfirming behavior led to increases in attraction, which in turn, reduced prejudiced perceptions but not stereotyped beliefs.<sup>2</sup> Furthermore, we performed a formal test of this mediated effect on the basis of the bootstrap method (1000 samples). The bootstrapping procedure revealed that the mediation effect was significant as none of the bias-corrected 95% confidence intervals for the mediated

<sup>1</sup> 10 students (5 males and 5 females) who did not participate in the study were presented with 10 photographs and asked to evaluate the typicality and attractiveness of Latin American male and female faces in a 6-point scale. Those pictures rated at any of the extreme points in the scale of attractiveness (e.g., "very unattractive/attractive") were dropped, whereas those assessed as "very typical" in both sex were kept. Overall, female faces were rated more attractive ( $M = 4.82, SD = 0.90$ ) than male faces ( $M = 3.34, SD = 1.16$ ). Thus, in order to avoid undesired effects of physical attractiveness in the main study, a male face was introduced to represent the Latin American instance.

<sup>2</sup> Since a male Latin American character was introduced instead of a female character in order to avoid assessments based on physical attractiveness, potential differences in evaluations may have emerged due to an identity overlapping (i.e., gender differences considered as the intergroup setting rather than ethnic differences), especially for female participants. In order to address this potential shortcoming we performed first an independent sample *t* test for differences between male and female participants in evaluations on perceived attraction; however, no significant differences were observed in the attraction perceived towards the male Latin American constituent ( $t(102) = -0.61, p = .54$ ). Furthermore, we ran separated ANOVAs with prejudice and stereotypicality as dependent variables: if the intersection between behavior, visual condition, and sex of participants was significant in any of these variables, then the overlap could have taken place. Nevertheless, this interaction was not significant in none of these variables ( $p = n.s.$ ).

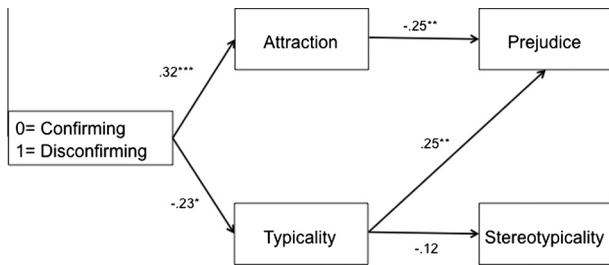


Fig. 2. Results in the hypothesized model. Note:  $\chi^2(5) = 5.23, p = .38, \chi^2/df = 1.04, CFI = .99, RMSEA = .02$  (standardized coefficients) \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

paths included zero. Hence, Hypothesis 2 was fully supported. The results of the SEM model can be seen in Fig. 2.

To this point, the disconfirming behavior of the Latin American confederate has been mediated by perceived attraction and typicality, with typicality in an opposite direction to the hypothesis. However, whether this model works in similar way across conditions of identity salience is yet to be verified. In order to test Hypothesis 3, a multigroup SEM analysis was performed. The procedure for this test involves a comparison of paths across models: a constrained path model is compared to one that is fully unconstrained. If the constrained model fit became significantly worse than the unconstrained one, then the paths in the constrained model are significantly different across conditions. Accordingly, the paths from attraction and typicality to prejudice were both constrained in the personalized condition to be compared to the same model in the depersonalized one (at this point, stereotypicality was no longer included). The results of the multigroup analysis revealed that the path from attraction to prejudice ( $\beta = -.32, p < .01$ ), and perceived typicality to prejudice ( $\beta = .33, p < .05$ ) in the depersonalized condition significantly differed from the same paths in the personalized condition ( $\beta = -.17, p = .23; \beta = .13, p = .35$ ) ( $\Delta\chi^2 = 1.67, p < .05$ ). Even if the stereotype disconfirmation, mediated through attraction, took place in the condition where the lasting ethnic identity was made salient, perceived typicality stayed in the opposite direction. The Hypothesis 3 was partially corroborated.

## 5. Discussion

The present study investigated how the interplay between group identification and the disconfirming behavior of an individual outgroup member contributed to reducing biased perceptions in CMC. The generic outgroup was an ethnic minority in Spain. To achieve this goal, this study compared a contact model across two conditions of visual identification: one where a lasting category was highlighted, and one where the personal identity of users were accentuated. The lasting category in the depersonalized condition was induced in order to create awareness of subgroup memberships within a same electronic group as a way of emulating a recategorization process in offline contact.

In line with theoretical assumptions in FtF contact, the stereotypical behavior of the Latin American member led his virtual partners to see him as typical of his ethnic group when he confirmed stereotypical attributions associated to his outgroup, whereas he seemed less typical when those stereotypical attributions were disconfirmed. Moreover, differences in group salience and identification led to a generalization of the positive effect of contact when it was mediated by attraction. This effect provided support not only for the recategorization principle (Gaertner & Dovidio, 2000), which poses that making participants aware of subgroup memberships may favor extending the contact effect to the rest of the

group (see also Hewstone & Brown, 1986), but also to the SIDE's model regarding group recategorization of former outgroup members in depersonalized interactions. In contrast, members in the personalized condition did not identify with any salient group category: that is why there was no generalization of contact in this condition.

On the other hand, although flags were successful in maintaining cognizance of subgroup membership and instilling identification in terms of the lasting ethnic identities, stereotypical perceptions remained intact even in the presence of disconfirming information. The visually-cued category may have activated stereotypes associated with the Latin American minority, but his behavior was not mediated by typicality and thereby no changes in stereotypical attributions were observed. An explanation for this is that the disconfirming confederate was indeed cognitively subtyped from the stereotype as he was seen to be atypical of his ethnic group (Allport, 1954; Reid & Anderson, 2010). The mediation effect of perceived typicality provides additional support for this explanation by showing a negative relationship between the disconfirming behavior and typicality but a positive relationship with prejudice. Similar to the experiment carried out by Wolsko et al. (2003), it is also possible that the time for interaction was too short to develop clear-cut impressions that linked the disconfirming instance and his group membership, so the stereotype remained somehow frozen.

These results provide partial support for utopic perspectives of communication technologies that consider the Internet as an ideal space for intergroup-relationship development otherwise unlikely in real milieus. Although changes in attitudes are not expected to last in the long term, the initial positive impressions reported in this study could contribute to maintaining or increasing intentions for contact. In this sense, CMC potentially offers an option for preliminary interventions to face-to-face meetings: particularly for people in marginalized intergroup contexts who do not have opportunities for contact with members of other groups due to geographical, social, physical or personal barriers (see Hoteer, Shonfeld, & Ganayem, 2009). The Catalan project Xarxa Punt TIC (<http://punttic.cat/>), for instance, exemplifies a tangible proposal of the use of a virtual platform as a preparatory stage for the integration of immigrants to the largest host population.

A practical implication of this study is that, although an exclusive type of behavior was displayed, this contact was effective as long as it took place in a supervised and pre-organized online setting. The introduction of cooperative tasks where institutional support is provided and group norms are clear can lead to more positive outcomes than unstructured meetings. Despite the fact that supervision of contact interventions is neither a new nor an original observation; this experiment contested the notion that affective responses emerge only from informal or relaxed virtual environments (such as, for example, in a social network site). Research on international collaborative projects where members from different cultural backgrounds are involved, and share membership in groups with common goals, suggest that intercultural barriers and bias can more easily be improved when international members meet in structured electronic communication exchanges before sharing a physical space (Niedergassel, Kanzler, Alvidrez, & Leker, 2011). Once again, subgroup awareness in supervised CMC might complement potential contact effects in short online interactions while this kind of contact gradually evolves to physical meetings.

### 5.1. Limitations and directions for future research

While we believe that our study points to some interesting aspects for intergroup contact in CMC, it is necessary to underline the foremost limitations of this study: First, the time for interaction

could have reduced attention to stereotyped perceptions and overlooked disconfirming information. Future research must devote more time to CMC meetings in order to let participants develop broader impressions of their outgroup peers. Also, the contact meeting was arranged on the basis of a simulated group interaction with pre-recorded scripts. Then, scholars might devote time to analyzing how CMC-contact takes place in online environments with real team members in order to compare effects of contact on intergroup bias.

Another limitation is related to the skewed examination of contact effects. Future research should examine both changes in majority and minority groups' perceptions as well as involve different social groups while varying their level of stigmatization (e.g., men and women, gay and straight people) in order to discover how effects of contact in CMC varies for each group. As suggested by Harwood (2010), it is important to examine how moving from mediated forms of contact to traditional FtF encounters contributes to enhancing or improving intergroup relationships.

Intergroup communication in virtual channels is affected by several elements: By understanding how personal and social identities interplay with technological features, and how communications are shaped by these aspects, it would be possible to make accurate predictions of intergroup contact in this medium.

## 6. Conflict of Interest

The authors declare that no competing financial interests exist.

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