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**CONTACT HYPOTHESIS
TESTING MODELS WITH DIFFERENT PARADIGMS**

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Abstract

Across three studies, we tested the contact hypothesis (Allport, 1954) and its theoretical developments. In particular, we compared the decategorization model (Brewer & Miller, 1984, 1988), the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000).

The aim of the first study, cross-sectional, was to examine the effects of contact of non-disabled working with disabled colleagues with psychiatric problems on intergroup relations and to compare the effectiveness of contact strategies. Moreover, we tested a model of generalization from contact to attitudes and emotions relative to the whole category of disabled. In addition to explicit measures concerning relations with both proximal and distal outgroup members, a measure of implicit attitudes (GNAT; see Nosek & Banaji, 2001) was included. Results revealed that contact positively influenced relations with both known and unknown outgroup members, and its effects extended to implicit attitudes. Furthermore, perceptions of belonging to a common group favored especially attitudes and emotions toward disabled co-workers; generalization concerning explicit measures was more pronounced when dual identity was salient; contact reduced implicit prejudice more when salience of common identity, dual identity or respective group memberships was high. Finally, mediation analyses indicated that contact improved relations with known outgroup members through heightened perceptions of being part of a superordinate group; attitudes and emotions toward proximal outgroup members mediated the effects of contact on both explicit and implicit outcome measures concerning disabled in general.

In the second study, experimental, we compared the effectiveness of two contact strategies – separate groups and common ingroup identity – on cognitive performance and on relations between Italians and Albanians. Moreover, the effects of prior levels of explicit and implicit prejudice were examined. Participants were Italian students. We created three experimental conditions. In two conditions, in which respondents interacted with an Albanian confederate, the contact setting was structured so as to increase the salience of a superordinate identity (one-group condition) or of group membership (two-groups condition). The third was a control condition; in this case, participants interacted with an ingroup member (i.e., an Italian confederate). Results showed that cognitive performance, as measured by a Stroop task (see Richeson & Shelton, 2003), was slightly worse in the two-groups condition than in the one-group condition; the control condition did not differ from the other two conditions. Furthermore, implicit prejudice predicted higher cognitive

impairment for those with high levels of explicit prejudice, but only in the two-groups condition. With respect to explicit measures, intergroup perceptions were more positive in both the two-groups and the one-group conditions than in the control condition; highly implicitly and explicitly prejudiced participants were those who benefited more from intergroup contact, but only when salience of separate groups was high (i.e., in the two-groups condition).

The aim of the third study, experimental, was to replicate and extend findings obtained in the second study. In this case, we considered the relationship between Northerners and Southerners. The experimental manipulation was varied; moreover, we added two contact conditions. Furthermore, in addition to explicit and implicit prejudice, we examined the influence of prior levels of internal and external motivation to respond without prejudice (Plant & Devine, 1998). Northern psychology students were allocated to one of five experimental conditions. In four (intergroup contact conditions), contact was with an outgroup member (i.e., a Southern confederate); in one, contact was with an ingroup member (i.e., a Northern confederate). In the intergroup contact conditions, interpersonal differences (separate individuals condition), group membership (two-groups condition), common ingroup identity (one-group condition), dual identity (dual identity condition) were made salient; in the control condition, we increased the salience of interpersonal differences. Criterion variables were: cognitive performance (measured by a Stroop task), explicit measures concerning proximal and distal outgroup members. Findings revealed that cognitive performance did not differ between conditions, though there was a tendency toward a worse performance in the two-groups condition than in the remaining conditions; moreover, internal motivation tended to reduce performance in the Stroop task when respective identities were salient, that is, in the two-groups and dual identity conditions. The four contact conditions were equally effective in improving attitudes toward the Southern confederate (proximal outgroup); generalization to the distal outgroup was more pronounced in the two-groups and dual identity conditions. Finally, contact modes had moderator effects: in general, the negative effects of predictor variables were neutralized in the four intergroup contact conditions; results, however, were weaker than expected.

In conclusion, we have provided further support for the effectiveness of the contact hypothesis (Allport, 1954) and of contact modes in ameliorating intergroup relations. Moreover, we showed that cooperative contact may, in some conditions, limit negative consequences of intergroup interactions, such as cognitive impairment (see Richeson & Shelton, 2003).

Riassunto

Si sono realizzati tre studi al fine di verificare l'ipotesi del contatto (Allport, 1954) e i modelli da essa derivati. In particolare, abbiamo confrontato tra loro il modello della decategorizzazione (Brewer & Miller, 1984, 1988), la teoria del contatto intergruppi (Brown & Hewstone, 2005; Hewstone & Brown, 1986), il modello dell'identità dell'ingroup comune (Gaertner & Dovidio, 2000), il modello dell'identità duplice (Gaertner et al., 2000).

L'obiettivo del primo studio, correlazionale, era di analizzare gli effetti del contatto al lavoro tra normodotati e colleghi disabili con problemi psichici e di confrontare tra loro l'efficacia delle strategie di contatto. Inoltre, si è testato un modello di generalizzazione dal contatto agli atteggiamenti ed emozioni espressi nei confronti della categoria generale dei disabili. In aggiunta alle misure esplicite riguardanti le relazioni con i membri dell'outgroup prossimale e distale, si è inclusa una misura di atteggiamento implicita (GNAT; vedi Nosek & Banaji, 2001). I risultati hanno indicato che il contatto influenzava positivamente sia le relazioni con i membri dell'outgroup prossimale sia quelle con gli appartenenti all'outgroup distale; inoltre, i suoi effetti positivi si estendevano agli atteggiamenti impliciti. Per quanto riguarda le strategie di contatto: la percezione di appartenere a un gruppo comune migliorava atteggiamenti ed emozioni nei confronti dei colleghi disabili; la generalizzazione sulle misure esplicite era maggiore quando era saliente l'identità duplice; il contatto riduceva il pregiudizio implicito di più quando vi era elevata salienza dell'identità comune, dell'identità duplice o delle rispettive appartenenze. Infine, le analisi di mediazione hanno mostrato che il contatto migliorava le relazioni con i membri dell'outgroup conosciuti perché aumentava la percezione di appartenere a un gruppo sovraordinato; gli atteggiamenti e le emozioni riguardanti i membri dell'outgroup conosciuti mediavano la relazione tra contatto e misure sia esplicite sia implicite riferite ai disabili in generale.

Nel secondo studio, sperimentale, si è confrontata l'efficacia di due strategie di contatto – gruppi separati e identità comune – sulla prestazione in un compito cognitivo e sulle relazioni tra Italiani e Albanesi. Inoltre, si sono analizzati gli effetti di livelli precedenti di pregiudizio esplicito e implicito. I partecipanti erano studenti italiani. Si sono create tre condizioni sperimentali. In due condizioni, in cui il contatto era con un albanese (collaboratore dello sperimentatore), si è aumentata la salienza di un'identità sovraordinata (condizione un-gruppo) o delle rispettive appartenenze (condizione due-gruppi). La terza era una condizione di controllo; in questo caso, i partecipanti interagivano con un membro dell'ingroup (cioè, con un collaboratore dello sperimentatore italiano). I risultati hanno mostrato che la prestazione cognitiva, misurata da uno

Stroop test (vedi Richeson & Shelton, 2003), era leggermente peggiore nella condizione due-gruppi che in quella un-gruppo; la prestazione nella condizione di controllo non era diversa da quella ottenuta nelle altre due condizioni. Inoltre, il pregiudizio implicito peggiorava la prestazione cognitiva per quelli con alto pregiudizio esplicito, ma solo nella condizione due-gruppi. Rispetto alle misure esplicite, le relazioni con gli Albanesi erano migliori nelle condizioni due-gruppi e un-gruppo che nella condizione di controllo; i partecipanti con alti livelli di pregiudizio esplicito e implicito erano quelli che beneficiavano maggiormente del contatto, ma solo quando la salienza delle rispettive identità era elevata (cioè, nella condizione due-gruppi).

L'obiettivo del terzo studio, sperimentale, era di replicare ed estendere i risultati ottenuti nel secondo studio. In questo caso, abbiamo considerato la relazione tra Settentrionali e Meridionali. Si è utilizzata una manipolazione sperimentale differente; inoltre, si sono aggiunte due condizioni di contatto. Come predittori, oltre al pregiudizio esplicito e implicito, si sono considerate la motivazione interna ed esterna a controllare il pregiudizio (Plant & Devine, 1998). Studenti di psicologia settentrionali erano assegnati a una di cinque condizioni sperimentali. In quattro (condizioni di contatto intergruppi), il contatto era con un membro dell'outgroup (cioè, con un collaboratore dello sperimentatore meridionale); in una, il contatto era con un membro dell'ingroup (cioè, con un collaboratore dello sperimentatore settentrionale). Nelle condizioni di contatto intergruppi, si rendevano salienti le differenze interpersonali (condizione di individui separati), le appartenenze di gruppo (condizione due-gruppi), l'identità comune (condizione un-gruppo), l'identità duplice (condizione di identità duplice). Le variabili dipendenti erano: prestazione in un compito cognitivo (misurata dallo Stroop test), misure esplicite riguardanti outgroup prossimale e distale. I risultati hanno mostrato che la prestazione nello Stroop test non era diversa nelle cinque condizioni sperimentali; tuttavia, vi era una tendenza verso una prestazione peggiore nella condizioni due-gruppi, rispetto alle altre condizioni; inoltre, la motivazione interna tendeva a ridurre la prestazione quando le rispettiva identità erano salienti, cioè, nelle condizioni due-gruppi e identità duplice. La valutazione del collaboratore meridionale (outgroup prossimale) era uguale nelle quattro condizioni di contatto intergruppi; le generalizzazione all'outgroup distale era più elevata nelle condizioni due-gruppi e identità duplice. Infine, i modi di contatto avevano effetti moderatori: in generale, gli effetti negativi dei predittori erano neutralizzati nelle quattro condizioni di contatto intergruppi; i risultati, tuttavia, erano più deboli di quanto ipotizzato.

In conclusione, i risultati ottenuti sostengono l'efficacia del contatto (Allport, 1954) e delle strategie di contatto per migliorare le relazioni intergruppi. Inoltre, si è dimostrato che il contatto cooperativo può, in alcune condizioni, limitare le conseguenze negative delle interazioni tra membri di gruppi diversi, come il decremento della prestazione cognitiva (vedi Richeson & Shelton, 2003).

Introduction

The aim of the present research is to test the contact hypothesis (Allport, 1954) and some of its theoretical developments. In particular, the decategorization model (Brewer & Miller, 1984, 1988), the intergroup contact theory (Brown & Hewstone, 2005), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000) were considered.

For the past fifty years, social psychologists have tested intergroup contact as an effective remedy against conflict between groups. The contact hypothesis, however, is not clear with respect to the processes involved in prejudice reduction and in the generalization of positive attitudes from known outgroup members to the general outgroup (Pettigrew, 1998). To address these issues, some models have been proposed, focusing on the role of categorization in the contact situation (Tajfel, 1981; Tajfel & Turner, 1979). The decategorization model (Brewer & Miller, 1984, 1988) suggests the usefulness of reducing the salience of the available social categories. In contrast, the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986) proposes that generalization is facilitated if group memberships are psychologically salient in the contact setting and outgroup members are perceived as sufficiently typical of their group. The authors of the common ingroup identity model (Gaertner & Dovidio, 2000) argue that contact situations should be transformed so that ingroup and outgroup become part of a larger superordinate ingroup. However, since previous identities may not always be easily abandoned, a dual identity strategy, in which original groups of belonging remain salient within the common group, may be more profitable in some intergroup settings (Gaertner et al., 2000).

Across three studies, we tested the role of intergroup contact in improving intergroup relations and we compared the four contact models presented above.

In the first study, cross-sectional, we examined the effects of intergroup contact in a naturalistic context on relations with disabled co-workers with psychiatric problems and its potential for generalization to disabled not yet encountered. Moreover, we compared the effectiveness of the four contact modes – decategorization, categorization, recategorization, dual identity – and of an additional strategy, in which interpersonal differences and group membership were simultaneously salient (see Brown & Hewstone, 2005), in producing more positive intergroup relations. Finally, we proposed a model explaining the process of generalization from the contact situation to the whole outgroup. Several criterion variables were considered, with respect to both known and unknown outgroup members. Furthermore, a measure of implicit attitudes was used.

The aim of the second study, experimental, was to test the effectiveness of two contact modes on the relationship between Italians and Albanians and on cognitive performance. Moreover,

we considered the effects of prior levels of explicit and implicit prejudice on dependent variables. Italian students were allocated to one of three experimental conditions: in the two contact conditions, we increased the salience of group membership (two-groups condition) or of a superordinate identity (one-group condition) during contact with an Albanian confederate; in the control condition, contact was with an ingroup member (i.e., an Italian confederate). Hypotheses concerned the effects of contact modes on cognitive performance and on relations with Albanians in general and their moderator role in the relationship between prior levels of explicit and implicit prejudice and dependent variables.

The third study, experimental, was designed to replicate and extend results obtained in the second study, by using a different experimental manipulation and considering as outcome variables measures on the relation with the proximal outgroup, in addition to cognitive performance and measures concerning distal outgroup members. Furthermore, effects of internal and external motivation to avoid prejudice (Plant & Devine, 1998) on dependent variables, in addition to those produced by explicit and implicit prejudice, were examined. In this study, we considered the relationship between Northerners and Southerners. Five experimental conditions were created. Northern psychology students interacted with either a Southern (intergroup contact conditions) or a Northern (control condition) confederate. When contact was with a Southerner, interpersonal differences (separate individuals condition), group membership (two-groups condition), superordinate identity (one-group condition), respective identities within a shared group (dual identity condition) were made salient; salience of interpersonal differences was enhanced in the control condition. Predictions were relative to the effects of contact modes on dependent variables and to their moderator role of the effects of prior level of prejudice – explicit and implicit – and of motivation to avoid prejudice – internal and external – on outcome measures.

Our research represents an important contribution to the study of intergroup contact and its derived model. First, contact strategies were compared in a naturalistic context with respect to a relevant intergroup relationship in the contemporary Italian society, such as that between non-disabled and disabled in the work place. The effectiveness of contact modes was tested, together with processes leading to prejudice reduction, by considering both explicit and implicit measures. Second, we examined, by using a different experimental manipulation and by varying the intergroup relation considered, a potential negative consequence of intergroup contact (i.e., cognitive impairment; see Richeson and Shelton, 2003) and the contact strategies which limit such an undesired effect. Third, we considered the effects of prior levels of prejudice and motivation to respond without prejudice on intergroup relations, often neglected in the contact research, and the possible ways to manage their negative consequences.

Chapter 1

The contact hypothesis and its developments

1. The contact hypothesis

Among social psychologists, intergroup contact has long been considered one of the most promising strategies to reduce prejudice. The contact hypothesis, formulated by Allport in his classic book *The nature of prejudice* (1954), proposes that contact may improve intergroup relations, when some conditions are present. The interest in contact as a potential way to reduce prejudice increased in the first part of last century and especially after World War II. Zelig and Hendrickson (1933) found that contact with different races was important to predict social tolerance toward several groups (except toward Blacks), whereas Horowitz (1936) did not detect any differences in racial attitudes held by White children in segregated and integrated schools. Baker (1934) expected interracial contact under conditions of equality to create premises for stronger conflict; in contrast, Lett (1945) proposed that contact between races could improve reciprocal understanding, and Bramfield (1946) observed that segregation and isolation of groups may increase prejudice. Studies by the mid 1940s started to consistently provide evidence supporting the beneficial effects of contact. Smith (1943) described a program where White American students who had positive contact experiences with Blacks in high social status positions showed significant reduction of prejudice, whereas this change was not observed in a control group of participants who did not experience contact. Brophy (1945) found significant improved attitudes of White seamen voyaging with Blacks; Kephart (1957) observed that White policemen who had worked in contact with Black colleagues were less complaining about the possibility of collaborating with Blacks in the near future. Gray and Thompson (1953) examined White and Black students from Georgia and demonstrated that more intergroup friendships were associated with less social distance between groups. Stouffer (1949) found that American soldiers with more frequent contact with German civilians rated Germans more favorably than soldiers with less social contact.

An initial formulation of the contact theory was proposed by Williams (1947), who noted that contact would be more effective when groups involved had equal status, shared the same interests, cooperates and there was potential to develop more intimate friendships. Robust evidence

was provided by studies on public housing and, in particular, by the study of Deutsch and Collins (1951). They compared the effects of the assignments of apartments irrespective of race relative to a segregated project that assigned Whites and Blacks to separate buildings. The dependent variable was attitudes held by White housewives toward Blacks. Results revealed that those who participated in the integrated project had more frequent and positive contact with Blacks, showed less racial stereotyping and more positive interracial attitudes. It is worth noting the Robbers' Cave field study by Sherif (1966), who found that contact alone was not sufficient to improve intergroup relations between 11-year old boys arbitrarily divided in two groups during a summer camp. Instead, relations became more harmonious only after the introduction of superordinate goals.

Within this theoretical background, Allport (1954) proposed his formulation of the contact hypothesis. The basic idea is that contact can have beneficial effects on intergroup relations. However, intergroup contact might increase intergroup tension and prejudice in some situations. Typical examples are the history of anti-Semitism in Europe and of relations between White and Blacks in the United States: centuries of intergroup contact have not been able to completely dissipate stereotypes and negative attitudes between groups; prejudice is still present, even if in recent years it is taking more subtle forms (e.g., aversive racism, see Gaertner & Dovidio, 2005). Evidence for the inconsistency of contact effects is also provided by more systematic research. For instance, Kramer (cited in Allport, 1954, pp. 269-270) divided an urban area into five zones, from the closer to an area where Blacks were the majority of residents to the more segregated and distant area. The results revealed that, the closer the area with Black residents, the more overt were the expressions of hostility showed by White residents (however, stereotypes associated with Blacks decreased with proximity). Another example of increase in intergroup tension where conflicting outgroup members live close by can be found in the violent conflict that afflicted relations between Catholics and Protestants in Northern Ireland in the last few decades.

With respect to inconsistent results of intergroup contact, Cook (1962) observed that the question is not if intergroup contact reduces prejudice, but "in what types of contact situation [...] will interaction and attitude change of specified types occur [p.76]." Allport (1954) hypothesized that contact *per se* is not sufficient to reduce prejudice. Casual contact might reinforce negative expectations and thus increase prejudice. Only intimate contact can increase knowledge of outgroup members and thus change attitudes. What is important is the *nature* of contact. Allport proposed that contact, to be maximally effective, should be characterized by four key conditions: equal group status within the contact situation, intergroup cooperation, common goals, institutional support (see also Pettigrew, 1998). When optimal conditions are present, contact can effectively improve intergroup relations.

We now review the research pertaining to the four key conditions proposed by Allport (1954) and other potential factors relevant to explain contact effects and then we present limitations and recent developments of the contact hypothesis.

Intimate contact

Casual contact is not sufficient to improve intergroup relations. The mere quantity of contact may even increase prejudice. Superficial contacts do not allow a deep knowledge of the other: during casual contact, attention is easily focused on negative and stereotypic characteristics of outgroup members and thus negative stereotypes associated to outgroup members may be reinforced and discrimination might increase. In contrast, intimate contact has the potential to provide more accurate information about the outgroup that can disconfirm its negative stereotypes (Allport, 1954; Cook, 1978; see also Hewstone & Brown, 1986) and increase perceived intergroup similarity (Pettigrew, 1971; Stephan & Stephan, 1984). Cook (1962) called “acquaintance potential” the opportunity provided by the contact situation to develop a deeper knowledge of others. The importance of personalized interactions was elaborated by Pettigrew (1997, 1998), who considered “friendship potential” as a fundamental process in the reduction of prejudice through contact. Pettigrew’s analysis and re-elaboration of the contact hypothesis will be discussed later (see this Chapter, paragraph 6). Preliminary evidence for the beneficial effects of intimate contact is provided by a study of Gray and Thompson (1953), who administered a social distance scale to White and Black students in Georgia and found that more intergroup friendships were associated with less social distance, whereas attitudes toward groups with whom participants did not have personal acquaintance were more negative. Selltiz and Cook (1962) compared the effectiveness of different types of university settings on improving attitudes of foreign students in the United States. Conclusions were that small colleges, compared with intermediate and larger colleges, provided more opportunity for contact and possibilities to develop intimate and personalized interactions. The importance of intimate contact was revealed also in different housing projects (e.g., Deutsch & Collins, 1951; Wilner, Walkley, & Cook, 1952), where it was generally shown that Whites living in integrated areas were more likely to change their attitudes toward Blacks in the direction of more acceptance than White residents living in more segregated areas. Evidence is also provided by educational settings. With respect to school experiences, Allport (1954) underscored the role of cultural trips, where students have the opportunity to live together for a period and develop greater reciprocal knowledge. For instance, van Til and Raths (1944) examined students visiting Chicago for one week. During their stay, students lived together and developed close friendships. Results indicated that social distance between students, including perceived distance toward members of

minority groups, was generally reduced after the trip, except for people who revealed unfriendly attitudes toward the rest of the group.

Intimate contact not only has the potential to disconfirm stereotypes and improve intergroup relations, but it can also favor generalization of positive attitudes outside the contact situation. Cook (1962) noted that positive intergroup behavior following contact may be limited to a specific situation, as in Minard's (1952) study, who examined relationships between White and Black workers of a mining community in the South of United States. He found that, despite the fact that Whites and Blacks experienced positive contact at work, they lived completely segregated at the end of the working day. Miller (2002) argued that personalization, by promoting familiarity, facilitates the processing of individuating information irrespective of group membership. This process helps to disconfirm stereotypes and perceptions of the outgroup as a homogeneous unit. Pettigrew's analysis (1997) on intergroup friendship demonstrated that cross-group friendship is essential for the generalization of contact effects.

Equal status

Allport (1954) pointed out the importance for contact to be based on equal status *within* the contact situation. Allport noted that minority group members often occupy low social status positions, and contact with the majority groups takes place in conditions of disparity of status. When majority high status group members meet minority low status group members, negative stereotypes can be reinforced and prejudice may even increase. For example, MacKenzie (1948) found that 64% of veterans who served in the army with Blacks with a similar skill level expressed favorable attitudes toward Blacks, whereas the percentage was reduced to 5% among those who had contact with unskilled Blacks. Similar results were found for college students who worked in the war industry and for White employers in contact with Blacks with equal or higher job positions. Kramer (1950) recognized the importance of equal status within the contact situation. He observed that it is sometimes easier to assign members of different groups to equal status positions than to create contact situations between members having similar social status. An important evidence for the role of equal status was provided by a study of Manheimer and Williams (1949). Their data from World War II revealed that American soldiers who experienced integration with Black soldiers accepted more readily the idea of creating integrated troops than American soldiers belonging to more segregated units. Test scores revealed that the educational level and the Army General Classification Test scores of Blacks in the integrated troops were lower than that of American soldiers. Thus, attitude change was determined more by factors relevant to the specific contact situation than by general social characteristics. Other studies concerning occupational

contact and interracial housing projects supported the idea that contact with equal status group members facilitates prejudice reduction. For instance, Allport and Kramer (1946) found that residential contact between middle-class Whites and Blacks or between upper-class Protestants and Jews under equal status conditions improved reciprocal attitudes. Gundlach (1950) examined attitudes of Whites toward Blacks co-workers with similar job positions, and showed that 90% of the sample declared that Blacks should have the same opportunities as Whites, whereas the percentage of people who responded affirmatively to the same question in the White population, according to a National Opinion Research Center survey, was only the 50%. The importance of equal status within the contact situation to obtain positive contact effects was demonstrated also by research concerning educational settings. An example can be found in the study of Yarrow, Campbell, and Yarrow (1958), who showed the positive effects of intergroup relations in establishing interracial friendships during a two-week stay at a summer camp.

Some studies further suggest that contact between majority group members and high status outgroup members can improve intergroup relations. In this case, encounters with high status minority members disconfirm negative stereotypes associated with the outgroup and create the conditions for attitude change. Evidence can be found in the classic study conducted by Smith (1943), cited above. The author examined interracial attitudes of White students who visited, over a period of two weeks, the homes of high status Black families. Results revealed that attitudes toward Blacks became positive and were still favorable 11 months after contact, whereas attitudes of a control group of participants showed no significant changes.

Cooperation and common goals

Allport (1954) stressed the importance for contact to be goal-oriented. He affirmed that only contact, which leads people to *do* something together has the potential to change attitudes. An example can be found in multi-ethnic sport teams (see also Chu & Griffey, 1985). In this case, the goal is the most important factor, whereas the team composition has minimal effects. Similarly, Allport suggested that attainment of shared goals in factories, residential areas, schools, is more important than simple ethnic contact. For instance, official and non-official interethnic commissions raised in the United States in the first part of the 1940s with the aim of reducing prejudice failed and broke up when specific goals were not fixed. The importance of the two principles of cooperation and common goals was demonstrated in a somewhat different vein by Sherif (1966) in the famous Robbers' Cave field study. He found that simple contact between conflicting groups produced more intergroup rivalry. Beneficial effects of contact were revealed only when superordinate goals were introduced and the groups cooperated to obtain a positive outcome. The pursuit of common goals is

possible when groups cooperate, whereas competition may produce detrimental effects on intergroup relations. Simple cooperation, however, was not sufficient, in Sherif's study, to reduce intergroup tension if common goals were not present. Furthermore, intergroup conflict increased for just a short time after groups cooperated for a shared goal, and only the introduction of several common goals in different situations produced the expected positive attitude change toward the outgroup. Another example of the importance of cooperation for shared goals is offered by a study conducted by Burnstein and McRae (1962), who examined the relationship between threat and prejudice. White participants were assigned to task-oriented cooperative work groups under conditions of threat or no-threat. A Black confederate was always present as group member. It was found that attitudes toward the Black confederate were more positive when the group was threatened. In this case, threat, serving as a superordinate goal, created the conditions for more intragroup solidarity and cooperation.

Intergroup cooperation in schools provides strong evidence supporting the idea that common goals attained through cooperation create the basis for the reduction of prejudice (see Johnson, Johnson, & Maruyama, 1984; Slavin, 1983). These principles originated different strategies such as Aronson's jigsaw classroom (Aronson & Patnoe, 1997), which highlights the importance of cooperating for common goals and which proved to be effective for a variety of children in different Nations (e.g., Araragi, 1983). The implementation of cooperative learning programs in desegregated school classroom projects probably represents one of the most extensive applications of the contact hypothesis. Consistent evidence confirms that cooperative learning methods are superior to individualistic or competitive learning in promoting intergroup friendship and improved intergroup relations (Johnson et al., 1984).

Institutional support

Intergroup contact is more effective when it is sanctioned by institutional support. The sources of support may be the law, customs, community leaders or any authority accepted by the groups in contact, and it may be represented also by a positive social atmosphere or public agreement (see also Amir, 1969). Institutional support is important in creating a social norm of acceptance and solidarity accepted by group members. Institutions may promote integration goals and encourage their attainment. In the case of social norms, the reward for conforming people can be a more positive social consideration and enhanced self-esteem (Tajfel, 1981). Allport (1954) proposed as an example the Fair Employment Practices Commissions, created by President Roosevelt during World War II with the aim of combating discrimination in business and industry sectors. Allport argued that a law proposed by the FEPC did not have the possibility to

automatically eliminate prejudice, and much “psychology” was needed to persuade businessmen to employ minority group members in high status job positions. However, if the law adopted the new measures without prior discussions with people to whom the norm was directed, the resolution was readily accepted. Brophy (1945), cited above, examined White seamen who had contact with Black sailors. He noted that White seamen were initially opposed to the idea of sailing with Blacks and accepting them as members of the National Maritime Union. In this case, authorities were determined to promote the anti-segregation project, supporting it with advertisements and appeals for solidarity. In a short time, navigating with Blacks was accepted and attitudes toward them improved with the contact experiences. One explanation is that a lot of people are ambivalent toward prejudice. The fact of acting against one’s own prejudice, or the “dissonance” between thoughts and behaviors (see Festinger, 1957), can create a state of uneasiness that leads people to interiorize the new norm and reduce discrimination tendencies.

An important function of institutional support is that it has the potential to create a social atmosphere of acceptance and solidarity, that makes it easier to reduce prejudice. An example of that can be found in the study of James (1955), who showed that White children’s attitudes toward Blacks were more favorable after contact with African women teachers. The author noted that attitude change was supported by a positive general climate favorable to integration. In the study by Deutsch and Collins (1951), the importance of social norms was evident. In the segregated project, most White residents expressed negative intentions to mix with Blacks publicly. In contrast, the social atmosphere and the official policy in the integrated project were clearly favorable to social integration. As expected, reduced discrimination was found only among White residents in the integrated project.

Personality factors

Allport (1954) noted that it is impossible to expect that contact produces favorable effects for all people involved in intergroup interactions. It is easy to find hindering factors that resist the influence of contact. Moreover, contact may have limited or undesired effects on some personalities. Mussen (1950) studied attitudes of White and Black boys during a 4-week stay in an unsegregated summer camp. Results revealed that Whites as a group did not improve their attitudes toward Blacks. However, 25% of White boys increased their level of prejudice, whereas almost another 25% reduced discrimination. The boys who improved their attitudes enjoyed their experience more than those who increased their prejudice level. Moreover, the latter exhibited greater aggression tendencies and needs to defy authority on some personality tests administered

before starting the summer camp. Thus, aggression needs seemed responsible for the negative effects of contact on these boys.

Amir (1969) suggested that it is important to consider the intensity and direction of initial attitudes. Contact may be ineffective in changing the direction of initial attitudes, but it may polarize their intensity. Thus, those with positive attitudes toward an outgroup may become more favorable after contact, whereas contact may increase hostility of those with prior negative intergroup attitudes. Supportive of this hypothesis, Hogrefe, Evans, and Chein (1947) found that, although interracial attitudes of White children attending an interracial play center once a week for some months did not differ from those expressed by a control group of participants, projective tests showed a shift toward the extreme of attitudes of White children in the experimental group. Guttman and Foa (1951) examined attitudes of a sample of the Israeli population toward government employees. They showed that almost half of the participants expressed positive attitudes, whereas the other half expressed negative attitudes. Significant changes were obtained in the intensity of attitudes, which became more extreme as contact with government employees increased. Sapir (1951) studied contact between low-status children and high status hosts and found that the initial level of prejudice influenced children's adaptability.

Williams (1964) commented that highly prejudiced people are more likely to dislike and to avoid intergroup contact. When contact is unavoidable, they will try to manipulate it. In contrast, contact is more likely to produce positive effects for low-prejudiced people. At this regard, it is important to mention two individual variables that might potentially influence contact effects. The first is social dominance orientation (SDO, Sidanius & Pratto, 1999). SDO refers to a general desire for unequal relationships among relevant social groups and it is associated with tendencies to positively evaluate groups with high status and power. SDO is not an immutable trait of personality, although it is fairly stable over time. Rather, it is determined by several factors, such as gender, socialization experiences, personality, relevant group memberships (Pratto, Sidanius, & Levin, 2006). The second individual variable is right-wing authoritarianism (RWA, Altemeyer, 1998), which expresses a generalized ethnocentric predisposition mainly determined by personality. Both variables are correlated with prejudice, but they represent distinct constructs: whereas people high in SDO desire power, people with high levels of RWA are easily threatened, assign an important value to security and perceive the world as a dangerous place (e.g., Duckitt & Fisher, 2003). It is possible that people high in RWA and SDO tend more to avoid contact situations and that, when contact is unavoidable, are more resistant to attitude change.

1.1 Contact hypothesis: limitations and developments

The contact hypothesis (Allport, 1954) has received considerable attention for its theoretical validity and policy importance (Pettigrew, 1971) and has guided research on intergroup contact for the past 50 years. There is now impressive evidence supporting the basic idea that contact leads to more favorable intergroup relations, ranging across a large variety of groups, situations and cultural contexts. The validity of the contact hypothesis is further supported by the variety of methods and procedures used, which include archival research (e.g., Fine, 1979), field studies (e.g., Sherif, 1966), laboratory experiments (e.g., Cook, 1978), surveys (e.g., Pettigrew, 1997).

The recent meta-analysis by Pettigrew and Tropp (2006), which included 515 contact studies, 713 independent samples and more than 250,000 participants, concluded that contact is effective in reducing prejudice. Pettigrew noticed that a lot of studies report positive contact effects even if they lack the key conditions proposed by Allport (1954): equal status, common goals, intergroup cooperation, supportive norms. A problem common to most studies is that they do not address the problem of generalization of contact effects to outgroup members not present in the contact situation (see also Hewstone & Brown, 1986). Moreover, they raise an important question: why does contact have positive effects even if Allport's conditions are not present? Pettigrew (1998) highlighted some of the problems usually associated to contact studies.

First, the causal sequence problem associated to many cross-sectional studies: is it optimal contact reducing prejudice, or prejudiced people avoiding contact? Pettigrew suggested three methods that might overcome this problem: finding contact situations that limit the choice to participate; use of statistical methods that allow for the comparison of path from contact to prejudice and vice versa; use of longitudinal design.

A second problem underlined by Pettigrew (1998) is that the list of optimal conditions has dramatically increased over the years, scholars often confused facilitating and essential conditions. The presence of all the conditions included in this "laundry list" might exclude too many contact situations and hence limit the interest and applicability of the contact hypothesis.

A third limitation is that contact hypothesis can tell when contact will have positive effects, but nothing about the processes involved. For an integrated contact theory to be complete, it is important to specify not only when, but also how and why contact produces its effects.

Finally, the original contact hypothesis does not address the problem of generalization of contact effect beyond the contact situations. Pettigrew distinguished three types of generalization: across situations, from outgroup members involved in contact to unknown outgroup members; to outgroups not involved in contact. The study of generalization across situations has often been neglected. The second form of generalization (i.e., from outgroup members encountered to the

whole outgroup) has received considerable attention, especially in the studies related to contact models that extend the contact hypothesis and that will be reviewed next. The final form of generalization, from the immediate outgroup to different outgroups, is considered by Allport the higher-order form of generalization. This kind of generalization, even if unlikely, is possible (see Pettigrew, 1997).

During the 1980s, some theoretical models were proposed with the aim of extending the contact hypothesis (Allport, 1954) and explaining *when* intergroup contact will be most effective. These models draw upon research on social categorization and in particular on social identity theory (Tajfel, 1981; Tajfel & Turner, 1979) and on self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), but they reach rather different conclusions about how the categorization in ingroup and outgroup should be structured so as to maximize prejudice reduction.

Some key points of social identity perspective (Tajfel, 1981; Tajfel & Turner, 1979) are relevant here. First, individuals organize their social world on the basis of categorical distinctions. Categorization minimizes perceived differences *within* categories and accentuates *differences* between categories. Categorization in groups implies ingroup-outgroup distinctions. Research has demonstrated that categorization in ingroup and outgroup has a deep impact on affective, cognitive and behavioral responses toward group members. A basic assumption of social identity theory is that individuals internalize memberships to relevant groups as aspects of their self-concept. Since people strive to maintain or enhance their self esteem, they will try to belong to groups which provide a positive social identity and to positively differentiate the ingroup from relevant outgroups on pertinent comparison dimensions. Differentiation permits maintaining or achieving superiority over an outgroup. Thus, individuals try to derive positive distinctiveness of the ingroup from the outgroup. Competition can be motivated either by social or realistic goals; the former pertain to self-evaluations and are achieved through self-comparisons; the latter are based on realistic self-interest. Research has consistently shown that people favor the ingroup over the outgroup (see Mullen, Brown, & Smith, 1992). For instance, there is evidence that people tend to experience more positive affect toward ingroup members than toward members of the outgroup (Otten & Moskowitz, 2000), especially toward those more prototypical of the ingroup (Turner, 1987).

When a particular group identity becomes salient, there will be pressures toward intragroup assimilation and intergroup differentiation and, consequently, toward ingroup bias. Social identity theory (Tajfel, 1981) proposed that interpersonal and intergroup behaviors can be placed at the two extreme poles of a continuum: at the intergroup pole, group identities are salient and interactions between individuals will be determined exclusively by respective memberships; in contrast, at the interpersonal pole, interactions are fully driven by interpersonal characteristics. However, pure

forms of interpersonal and intergroup situations are unlikely, and behaviors will usually be determined by both intergroup and interpersonal differences, even if with different intensity. Alternatively, self-categorization theory (Turner et al., 1987) proposed three main levels of self-categorization: superordinate, where human identity is salient and comparisons are made with respect to other species; intermediate, where ingroup-outgroup distinctions are relevant; subordinate, where the interpersonal characteristics are salient and relations with others are based on individual differences. According to social identity and self-categorization theories, when the intergroup pole or intermediate level of categorization are salient, respectively, individuals will increase intragroup similarity and intergroup differences. Positive affect will be directed mainly toward ingroup members, whereas intergroup differentiation will characterize relations with the outgroup. Thus, individuals will show ingroup bias when group memberships or any particular dimension of categorization become salient. With respect to this point, it is important to note that it is not possible to predict a causal relationship between salience of group identities and ingroup bias, as unfortunately it has often been done. Ingroup favoritism is only one of the several potential strategies that individuals can use to achieve positive ingroup distinctiveness (other strategies may be individual mobility and social creativity; see Tajfel & Turner, 1979) and it was never equated to aggression or hostility by social identity theory (Turner & Reynolds, 2004).

Because of the potential role of categorization in promoting discrimination, social categorization processes can be important in reducing bias. The theoretical models proposed in the 1980s addressed the issue of how intergroup contact should be structured so as to alter cognitive group representations in ways that maximally reduce prejudice. The decategorization model (Brewer & Miller, 1984, 1988) suggests the usefulness of reducing salience of the available social categories by rendering salient interpersonal differences. In contrast, the intergroup contact model (Brown & Hewstone, 2005; Hewstone & Brown, 1986) hypothesizes that generalization is facilitated if group memberships are psychologically salient in the contact settings and outgroup members are perceived as sufficiently typical of their group. A third approach is the common ingroup identity model (Gaertner & Dovidio, 2000). Gaertner and Dovidio agree with Brewer and Miller's suggestion that, since categorization fosters discrimination (Tajfel, Billig, Bundy, & Flament, 1971), it is better – in contact settings – to reduce the salience of categorical memberships. However, they propose that, instead of promoting interpersonal relations, contact situations should be transformed so that ingroup and outgroup become part of a larger superordinate ingroup. The dual identity strategy, developed in the 1990s, integrates the perspective of the intergroup contact model and of the common ingroup identity model by suggesting that, if original social identities

remain salient within the common group, positive attitudes toward former ingroup members should be achieved and generalization to unknown outgroup members would be facilitated.

In addition to studying the conditions that facilitate beneficial effects of contact, recent research has focused on *how* contact works. In particular, the psychological processes and mediating mechanisms that explain contact effects became of interest. In line with this, it is worth noting the reformulation of the contact hypothesis by Pettigrew (1998), who focused on mediating processes, and research addressing the role of emotions (see Paolini, Hewstone, Voci, Harwood, & Cairns, 2006).

A further extension of the contact hypothesis that we will take into consideration is relative to extended contact (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997), namely the positive effects of having friends with intergroup friendships on prejudice reduction.

Only recently researcher have begun to address the role of intergroup contact in shaping implicit attitudes. With respect to this point, we will present some of the studies which showed that implicit attitudes change following contact.

Finally, it is worth noting a recent line of research (see Richeson & Shelton, 2003) which extended the contact hypothesis by studying the conditions that bring individuals to cognitive impairment in contact situations and how to structure contact in ways that minimize such negative effects. We will consider this new approach by presenting its most relevant studies.

2. The decategorization model

Brewer and Miller (1984, 1988) argue that, because prejudice stems from categorization of people in groups (Tajfel et al., 1971), decreasing the salience of available social categories should allow the reduction of intergroup discrimination. According to social identity theory (Tajfel, 1981), when the intergroup pole, as opposed to the interpersonal pole of the psychological continuum proposed by Tajfel (1978), is salient, group memberships assume priority, outgroup members are considered as part of a homogeneous category and, consequently, they are treated on the basis of their belonging. Brewer and Miller suggest that interpersonal, or decategorized contact, is composed by two distinct processes: differentiation and personalization. The goal of the first (i.e., differentiation) is to achieve greater distinctiveness among outgroup members, so as to reduce intragroup homogeneity that follows the depersonalization process outlined by self-categorization theory (Turner et al., 1987). The personalization process refers to the exchange of unique and idiosyncratic information about the self during contact. Individuation should permit the acquisition of unique information about outgroup members actually encountered. An important component of the personalization process is self-disclosure, which refers to provision of intimate information to

another person (Miller, 2002). The importance of self-disclosure in promoting more harmonious intergroup relations has been acknowledged by several authors (see Pettigrew, 1997, 1998). An interpersonal and non category-based orientation allow members to “attend to information that replaces category identity as the most useful basis for classifying each other” (Brewer & Miller, 1984, p. 288). Decategorized contact should lead to a more individuated mode of thinking and, thus, has the potential for group stereotype disconfirmation (see also Miller & Brewer, 1986). The original categories, in fact, lose their usefulness for organizing people’s actions and stereotypes cannot be used anymore to predict others’ behavior. In personalized contact, individuals attend only to information relative to the self, unrelated to group identities. The two processes, differentiation and personalization, are independent and must be referred to both ingroup and outgroup (Miller & Harrington, 1990). Generalization is possible because frequent and personalized interactions limit the importance of category-based information and, thus, the usefulness of group identity as a basis for future interactions with outgroup members.

The decategorization model (Brewer & Miller, 1984, 1988) is supported by several experimental studies. The typical experiment (e. g., Bettencourt, Brewer, Croak, & Miller, 1992; Miller, Brewer, & Edwards, 1985) is composed by three parts: in the first part, minimal groups are created, based for example on the artificial distinction between “overestimator” and “underestimator.” In this phase, participants are asked to engage in group activities serving to bolster group identification. In the second part of the experiment, where the experimental manipulation is administered, the two groups meet and collaborate on some cooperative tasks. Finally, participants are asked to evaluate outgroup members. Bettencourt et al. (1992, Study 1) tested the impact of an interpersonal orientation vs. a task orientation on intergroup bias. According to the decategorization model, authors hypothesized that an interpersonal orientation, as compared to a task orientation, should facilitate the cognitive processes necessary to differentiate and personalize impressions of outgroup members and, thus, reduce ingroup bias. Participants were arbitrarily divided into two four-persons groups, overestimators and underestimators. The two groups worked separately on a task, in order to give significance to the artificial group just created. The two groups then met and worked together on a task. The manipulated variables were the orientation toward the task (i.e., task orientation) vs. the other participants (i.e., interpersonal orientation) and the type of interdependence. In the interpersonal orientation condition, participants were invited to focus on the other participants; in the task orientation condition, participants had to focus on the task; in the control condition, no indications were given. The manipulation of the type of interdependence was based on the final reward: in the cooperative interdependence condition, both groups (i.e., overestimators and underestimators) were told that they would receive a reward if

attending to specific standards; in the competitive interdependence condition, only the best performing group would receive the reward. Participants were then asked to allocate points to ingroup and outgroup members and complete a bias measure. In the last part of the experiment, participants were asked to watch a short videotape where two unknown underestimators and two unknown overestimators worked together on a task. Participants were then asked to allocate rewards to people present in the videotape and to rate group variability. Results were generally supportive of hypotheses. Relative to outgroup members actually encountered, results revealed a main effect for the orientation variable: ingroup bias was stronger in the task orientation condition, as compared to the interpersonal and control conditions; bias was significantly lower in the interpersonal condition than in the control condition. A main effect for interdependence also emerged: bias was higher in the competitive interdependence condition, as compared to the cooperative interdependence condition. Shifting to the generalization measure, a main effect for the two independent variables was revealed: ingroup bias was lower in the cooperative condition, as compared to the competitive condition; bias was higher in the task orientation condition than in the interpersonal and control conditions. Finally, the outgroup was seen as more heterogeneous in the interpersonal condition than in the task and control conditions. These results support the decategorization model, by showing that an interpersonal orientation is useful not only to reduce bias toward known outgroup members, but its effects can generalize to the outgroup members not yet encountered.

There is some suggestions, however, that the benefits of an interpersonal orientation could be restricted only to numerical majorities. Bettencourt, Charlton, and Kernahan (1997, Study 1) studied the effects of numerosity and type of orientation on intergroup attitudes. Participants were undergraduate students who were selected to take part in the study on the basis of their political affiliation. Two members of a political party (minority group) and four members of another political party (majority group) worked separately on a task and then met to work cooperatively on a common task. In this phase, social orientation was manipulated, by asking participants to adopt either a task-focus orientation, an interpersonal-focus orientation or they were given no instructions (control condition). Finally, team members were asked to evaluate the other participants. Results revealed that, for numerical majorities, the task-focus orientation produced higher ingroup bias, as compared to the interpersonal orientation. Results were in the opposite direction for numerical minorities, who were more biased in the interpersonal-focus than in the task-focus condition. This study replicated preliminary results obtained by Bettencourt and Charlton (1996) and seemed to contradict the decategorization model (Brewer & Miller, 1984), when we consider numerical minorities. Authors argue that, probably, minorities are more salient than majorities in the intergroup setting. Being in a minority can be more threatening than being in a majority, because it

implies negative comparisons with the majority group (see Islam & Hewstone, 1993). An explicit focus on the task, in this case, may shift the attention from the fact of being in a minority to the group task and, thus, reduce ingroup bias. Supportive of this explanation, comparison with the control condition indicated that bias was reduced for the minority group in the task-focus condition; bias in the interpersonal orientation condition did not differ from bias obtained in the control condition. Bettencourt et al. (1997, Study 2) conducted a second study to test the hypothesis that a task-focus orientation might impact on the intragroup processes associated with the fact of being in a minority. In particular, authors hypothesized that focusing on the task might reduce attention given by minorities to their numerical disadvantage, ingroup identification and cohesiveness and, consequently, feelings of intergroup threat. Conversely, focusing on the task might increase the attention of majority group members to their numerical advantage. The procedure was similar to that one used in the previous study. Results replicated those obtained previously: numerical majorities were more biased in the task-focus condition than in the remaining conditions, whereas the opposite was found for numerical minorities. Supportive of hypotheses, the focus on the task affected intragroup processes: group identification and cohesiveness increased in numerical majorities and decreased in numerical minorities. Moreover, there were some indications that variations in identification and cohesion mediated the relationship between numerical representation and bias. Findings from the two studies reported above partially support the decategorization model, but restrict its effects to numerical majorities.

Findings obtained by Scarberry, Ratcliff, Lord, Lanicek, and Desforjes (1997) question the possibility of generalizing the positive effects of interpersonal interactions. Participants worked on a cooperative task with a homosexual confederate on one of two conditions. In the first condition, the confederate used a personalized tone of communication; in the second condition, the language used by the confederate was impersonal. Results revealed that the confederate was evaluated positively in both conditions. More interestingly, attitudes toward the category of homosexuals were more positive in the impersonal condition, as compared to the interpersonal condition. Thus, findings obtained in this study suggest that positive effects of personalized interactions can be limited to outgroup members actually encountered.

The decategorization model (Brewer & Miller, 1984, 1988) is also supported by studies on personal friendships in contact settings (Pettigrew, 1997, 1998; Pettigrew & Tropp, 2006) and on extended contact (Wright et al., 1997). Personalized interactions proved to be successful in reducing prejudice, even when the relationship with outgroup members is indirect, through ingroup friends. This topic will be addressed more extensively in the paragraph dedicated to Pettigrew's model and to extended contact (see this Chapter, paragraphs 6 and 8).

Although Brewer and Miller's model (1984, 1988) is supported by a number of studies, some limitations should be considered. First, if decategorization is completely successful, known outgroup members cannot be connected to the rest of the group, because the individuation of specific outgroup members stresses their differences from the general category and severs the link between the exemplar of the outgroup encountered and the general outgroup (Hewstone & Brown, 1986; Rothbart & John, 1985; see also Brewer & Miller, 1988; Scarberry et al., 1997). Miller (2002) acknowledged that personalized contact promotes generalization only under moderate or high levels of category salience. A connected argument is that, if personalization is successful, people might consider the individuated person as an exception to the rule. Thus, the generalization process can be impeded because the known outgroup member is not seen as representative of the whole category (Allport, 1954; Weber & Crocker, 1983). Second, it is not clear if, in studies supportive of the model, contact is truly decategorized. In the experimental paradigm created by Bettencourt et al. (1992), participants interacted under conditions of personal or task focus. During contact, participants wore badges denoting their group membership. On the generalization measure, participants viewed a videotape with ingroup and outgroup members working on a task wearing the same badges used by participants. This procedure does not allow to exclude that some category salience was maintained by participants. It is possible that participants were in some way aware of their membership and that group salience facilitated the generalization of positive attitudes to the general outgroup (see also Ensari & Miller, 2001). The same argument can be applied to studies focusing on cross-group friendship reviewed by Pettigrew and Tropp (2006). It is possible, in fact, that generalization of interpersonal friendships' positive effects are facilitated by the retention of some category salience during contact. Another serious problem of the model is that it is not always possible to relinquish original group identities. Support for the model has been found especially in experimental studies with laboratory groups. When real life groups are concerned, people may be unable or unwilling to abandon a social identity important to them (Hewstone, 1996), especially if minority groups are taken into account (Simon, Aufderheide, & Kampmeier, 2001). Moreover, encouraging suppression of important memberships, such as race or ethnicity, may increase category salience (Schofield, 1986) and reduce positive group distinctiveness, thus potentially increasing ingroup bias (Tajfel, 1981).

Notwithstanding the several limitations, the decategorization model (Brewer & Miller, 1984) demonstrated that personalized interactions can be an important way to reduce prejudice, especially with respect to the outgroup members actually encountered. The focus on the person might impede the generalization process but, as we will see in the next section, a decategorized

approach can be integrated with other models so as to create a more effective way to improve intergroup relations.

3. The intergroup contact theory

Hewstone and Brown (1986; Brown & Hewstone, 2005; see also Vivian, Hewstone, & Brown, 1997), in opposition to the decategorization model (Brewer & Miller, 1984), argue that intergroup salience should be maintained during positive contact in order to promote attitude generalization.

The intergroup contact theory focused on two main ideas in its earliest exposition: first, if contact takes place on an interpersonal (as opposed to an intergroup) basis, conflictual intergroup relations will remain unchanged. If group memberships are salient and outgroup members are perceived as sufficiently typical of their category, positive outcomes can generalize to the outgroup as a whole, because the link between known outgroup members and members of the outgroup in general is maintained (Hewstone & Brown, 1986; Rothbart & John, 1985). The generalization process should be stronger when outgroup members in contact are highly typical of their group and the whole outgroup is perceived as internally homogenous (Brown, Vivian, & Hewstone, 1999). The second central idea of the intergroup contact model – previously defined “mutual intergroup differentiation model” – is that contact situation should be structured so as to emphasize the expertise that different groups bring to the situation. To the extent that reducing the salience of group boundaries might threaten intergroup distinctiveness (Tajfel, 1981), maintaining group distinctiveness on dimensions that seem equally important to group members can reduce prejudice without threatening respective group identities (Vivian et al., 1997). Contact can reduce prejudice when group members pay attention to mutual superiorities and inferiorities and assign equal values to respective group dimensions (Hewstone, 1996). Support for this hypothesis is provided by Brown and Wade (1987). In this study, students were arbitrarily divided into two groups to produce a two-page magazine article. Results revealed that contact produced more positive intergroup attitudes when the two groups were assigned separate roles on the joint task (one group worked on text, the other group focused on figures and layout) than when the two groups were assigned similar roles (both groups had to produce layout and text for a single page) or were given no roles. Subsequently, Hewstone and Brown focused mainly on the first idea – namely, that group identities should be salient during contact in order to favor generalization of positive attitudes – and labeled their model “intergroup contact theory” (Brown & Hewstone, 2005).

The intergroup contact model (Brown & Hewstone, 2005; Hewstone & Brown, 1986) has received support in several experimental and correlational studies. Wilder (1984; Experiment 1)

was one of the first authors to highlight the importance of the typicality of outgroup exemplars. He varied the typicality of an outgroup member met in the contact situation and the pleasantness of the interaction. The hypothesis was that generalization would be favored when contact was perceived as cooperative and outgroup members were seen as typical exemplars of their group. As predicted, ratings of the outgroup as a whole were more favorable when the interaction was pleasant and the outgroup member was perceived as typical of his category.

Brown et al. (1999, Study 1) extended Wilder's results by manipulating typicality of the target outgroup member and perceived homogeneity of the outgroup as a whole. In their study, British students interacted with a German confederate on two cooperative tasks. Depending on the experimental condition, the German confederate was presented as typical or atypical of the German outgroup by varying the typicality of the German name and the stereotypicality of his attributes. The homogeneity of the German outgroup was manipulated by presenting fictitious data indicating that German people had homogeneous or heterogeneous personality characteristics and social attitudes. According to social identity theory (Tajfel, 1981), the authors predicted that the situation would be perceived as more "intergroup" than "interpersonal" when homogeneity of the outgroup and typicality of the outgroup member were high and hence that generalization would be more pronounced in these conditions. As predicted, perceptions of the German outgroup were more favorable in the typicality conditions: when the German partner was perceived as more typical of his category, participants assigned more stereotypical and non-stereotypical positive traits to the German group. Furthermore, on a positive stereotype index, the main effect of typicality was qualified by the predicted interaction between typicality and homogeneity: Germans were rated more favorably when the German partner was perceived as typical of his category and the outgroup as a whole was presented as internally homogeneous. This experiment thus showed that typicality of outgroup members encountered is an important factor in order to achieve generalization of contact effects and that the combination of target typicality with perceptions of the outgroup as a homogeneous category maximizes attitude generalization.

Van Oudenhoven, Groenewoud, and Hewstone (1996) examined the effects of introducing the salience of group memberships in different phases of contact. Dutch students worked on two cooperative tasks with a Turkish confederate on one of three experimental conditions. There were two salience conditions: in the first, the ethnicity of the confederate was made salient by the experimenter twice, during an introductory conversation and during a conversation break between the two tasks; in the second salience condition, the experimenter made explicit reference to the ethnicity of the confederate only during the conversation break. In the last condition (control condition), no reference was made to the nationality of the Turkish confederate. The dependent

measures were the evaluation of the Turkish confederate and of Turks in general. Results revealed that the evaluation of the Turkish partner did not differ between conditions, probably because of the cooperative nature of the interaction. However, on the generalization measure, results showed that evaluation of Turks in general was higher in the two salience conditions than in the control condition. No differential effects were detected between the two salience conditions. Thus, this experiment supports the basic idea of the intergroup contact model (Brown & Hewstone, 2005; Hewstone & Brown, 1986), namely that group membership must be salient in order to achieve generalization of contact effects. However, making references to respective group identities in one or two phases of contact proved to have limited importance in explaining contact effects, probably because of the short time of the intergroup interaction in the experimental setting.

The moderating effect of membership salience was tested also in more naturalistic settings in several correlational studies. These studies were run to test the “moderation hypothesis” of intergroup contact, which states that the relation between qualitative contact and dependent variables will be significant only when group salience is high (strong form) or, alternatively, that the relation will be stronger when salience is high, as compared to conditions where salience is low (weak form; see Brown & Hewstone, 2005).

The first correlational study that we present was run by Brown et al. (1999, Study 2) in a European setting. Students from six European universities were asked to indicate a specific European country that they often compared with their own country. Participants then reported the amount of contact with a specific person and the number of people that they knew in the country previously indicated (the two items were used to create a single index of quantity of contact), the intimacy of contact with outgroup members, the cooperativeness vs. competitiveness of the interaction, the perceived salience of respective memberships during contact and the typicality of the specific outgroup member previously indicated (the latter two items formed a single index of membership salience). The dependent variable was the desire to live in the country previously indicated. Results showed that intimacy of contact was the only significant predictor of the desire to live in another country. Concerning the moderating effect of group salience, results indicated, as expected, that the relationship between intimacy of contact and the outcome variable was significant when group salience was high; it was not significant when salience was low.

A different study conducted by Brown, Maras, Masser, Vivian, and Hewstone (2001) examined the moderating effect of group salience in the historically competitive relation between English and French people. Participants were British passengers of a cross-channel ferry traveling between England and France. They were asked to complete measures concerning quantity and quality of contact they had with a specific known French person, the salience of nationality in the

contact relationship and several outcome variables. As predicted, and paralleling the results obtained by Brown et al. (1999, Study 2), the association between amount of contact and positive orientation toward French people was significant only among participants that reported a high degree of nationality salience during contact; the same association was not significant for participants reporting a low degree of group salience.

In a more recent study, Harwood, Hewstone, Paolini, and Voci (2005, Study 1) tested the moderating effect of membership salience in the context of grandparent-grandchild relationship. Respondents were American undergraduate students who answered questions concerning their relationship with biological grandparents and adults other than their grandparents older than 65. Measures were quantity and quality of contact with grandparents, age-group salience during interactions with grandparents (all these measures were assessed separately for each grandparent). The outcome variable was represented by attitudes toward older adults other than participants' grandparents. A significant relationship between quality of contact and attitudes toward elderly was found only among participants that had frequent contact with their grandparents. Similarly, a significant interaction between contact quality and salience on outgroup attitudes emerged only for those with frequent contact with grandparents: the decomposition of the effect revealed, as predicted, that the association between contact and attitudes toward elderly was significant only when age-group salience was high.

Results from the correlational studies reported above thus support the strong form of the moderation hypothesis of intergroup contact model outlined above, namely that contact effects generalize to distal outgroup members only when respective group identities are salient in the contact situation (Brown & Hewstone, 2005).

Evidence for the moderational role of group salience comes also from a longitudinal study conducted by Brown, Eller, Leeds, and Stace (2004). English students from a state school (low status) were asked questions about students from a nearby private school (high status). Data were collected over a four month period. The outcome variables were desired closeness to outgroup members, negative stereotypes of the outgroup and outgroup inhumanization. Results revealed that frequency of contact at time 1 was a reliable predictor of the three dependent variables at Time 2 (the reverse relation was not significant, thus implying that the causal relationship was from contact to prejudice, rather than the other way around; see also Pettigrew, 1997). Authors also found a marginal longitudinal interaction between quality of contact and salience, indicating that contact quality at Time 1 was negatively associated to negative stereotyping at time 2 for high salience participants, whereas the relationship between contact quality at Time 1 and stereotyping at Time 2

was positive for low salience participants. Once again, positive effects of contact were obtained when respective group identities were salient.

In recent years, Brown and Hewstone (2005; see also Hewstone, 1996; Vivian et al., 1997) extended the intergroup contact model, acknowledging the importance of mediating variables. Moderator variables as group salience are more concerned with “when” contact effects take place, whereas mediation variables are more about “why” contact has positive effects on outcome variables. Several mediators have been proposed (see also Paolini et al., 2006; Pettigrew, 1998). The potential mediators can be classified as cognitive or affective. A first cognitive mediator, highlighted by Allport (1954), is relative to improving knowledge about the outgroup. Its effects, however, seem very weak (see Stephan & Stephan, 1984). A second cognitive mediator that has been investigated is the extent to which contact permits the individuation of outgroup exemplars (see Brewer & Miller, 1984). The interest of scholars then shifted to more affective variables, after the recognition that contact cannot be considered exclusively in terms of cognitive processes (Johnston & Hewstone, 1992; Pettigrew, 1998). We will address the role of affective processes extensively later in this Chapter, paragraph 7.

Notwithstanding the positive aspects, the intergroup contact model (Brown & Hewstone, 2005; Hewstone & Brown, 1986) has some limitations. First, it is possible that membership salience allows the generalization of both positive and negative effects of contact; negative contact, in this case, can strengthen negative outgroup attitudes and stereotypes (see Wilder, 1984). The second important limitation is that group salience may be associated with increased intergroup anxiety (Stephan & Stephan, 1985), as demonstrated by a study conducted by Islam and Hewstone (1993). Greenland and Brown’s results (1999, Study 1) showed that intergroup categorization was positively associated with anxiety, whereas the association between interpersonal categorization and anxiety was negative. An exception comes from a study conducted by Harwood et al. (2005, Study 2): in this case, the relationship between salience and anxiety was negative. It is worth nothing that group salience *per se* has negative effects: it is negatively correlated to quality of contact (Greenland & Brown, Study 1; Harwood et al., 2005, Study 2) and has negative effects toward proximal outgroup members (i.e., Voci & Hewstone, 2004). Scholars, however, pointed out the moderational role of group salience: contact reduces anxiety more when group salience is high, as compared to situations where group salience is low. This effect was confirmed in a study conducted by Voci and Hewstone (2002) in an Italian context. Italian workers were asked to rate quantity and quality of contact with immigrant co-workers, attitudes toward immigrants in general and degree of anxiety felt toward immigrants. Results showed that contact improved intergroup relations via reduced anxiety. Furthermore, the relationship between contact and reduced anxiety was significant

only when group salience was high; contact had no effects on anxiety when salience was low. Voci and Hewstone (2003b) replicated this effects with Italian students (Study 1) and Italian workers in a hospital (Study 2), who expressed their attitudes toward immigrants. In both studies, as predicted, the negative relation between contact and anxiety was stronger when membership salience was high, as compared to the case where salience was low. Moreover, positive attitude toward co-workers generalized to distal outgroup members more when group salience was high than when it was low. Again, Harwood et al. (2005, Study 2) found that contact improved attitudes toward elderly via reduced anxiety only when age-group salience was high.

3.1. Toward an integration between interpersonal and intergroup dimensions of contact

To overcome limitations, Brown and Hewstone (2005) proposed an integration between their theory and the decategorization model (Brewer & Miller, 1984). Research has consistently shown that contact with outgroup friends leads to improved attitudes toward the outgroup as a whole (see Pettigrew, 1997). The authors argue that the personalization of the interaction is compatible with maintaining some category salience during contact. Interpersonal and intergroup contact, in fact, can be seen as orthogonal dimensions (Stephenson, 1981). The optimal conditions occur when the two dimensions (i.e., interpersonal and intergroup) are simultaneously salient: the personalization of contact should reduce anxiety that stems from the interaction with an outgroup member (Stephan & Stephan, 1985); membership salience should facilitate attitude generalization to the outgroup as a whole (Rothbart & John, 1985). The other combinations of the two dimensions should be less effective: a contact characterized by low levels of salience and high levels of intimacy would be unlikely to allow generalization. On the other hand, a situation where salience is high and intimacy is low could heighten anxiety and produce negative effects on outcome variables. Finally, if both dimensions are low, the positive effects of contact are unlikely.

Preliminary experimental evidence for this integrative model was provided by Ensari and Miller (2002). In their first study, they examined the effect of self-disclosure and typicality of the outgroup member on attitudes toward the outgroup as a whole. Participants were Turkish non-religious undergraduate students, who participated in an interview task where they had to interview an Islamic student (a female confederate). To vary typicality, the confederate presented herself as a typical Islamic (she described a typical Islamic behavior; for instance, she stated that she liked reading religious newspapers) or as an atypical Islamic person (she described unrepresentative Islamic behaviors; for instance, she revealed that she watched atypical Islamic TV programs). To manipulate self-disclosure, during the interview, the confederate revealed personal and unique information concerning herself (disclosure condition) or gave participants very impersonal answers

with no individuating information (no-disclosure condition). Results showed that evaluations of the whole outgroup were more favorable when both disclosure and typicality were high; neither typicality nor disclosure alone improved intergroup relations. In the second study, the authors manipulated disclosure, typicality and group salience. The procedure was similar to the one used in the first study; in this case, participants were American undergraduate students and the intergroup relationship considered was the one between liberals and conservatives. Confirming and extending findings obtained in the first study, results revealed that self-disclosure improved outgroup attitudes when it was associated with salience or with typicality.

A correlational evidence for the integrative model comes from a study by Hewstone, Cairns, Judd, Voci, and McLernon (2000). Results showed that contact with outgroup friends was more effective if participants were aware of their membership. The same conclusion can be drawn from the studies conducted by Voci and Hewstone (2002, 2003b), which indicated that the combination of positive contact and category salience favored the reduction of intergroup anxiety and, in turn, more positive attitudes toward the distal outgroup.

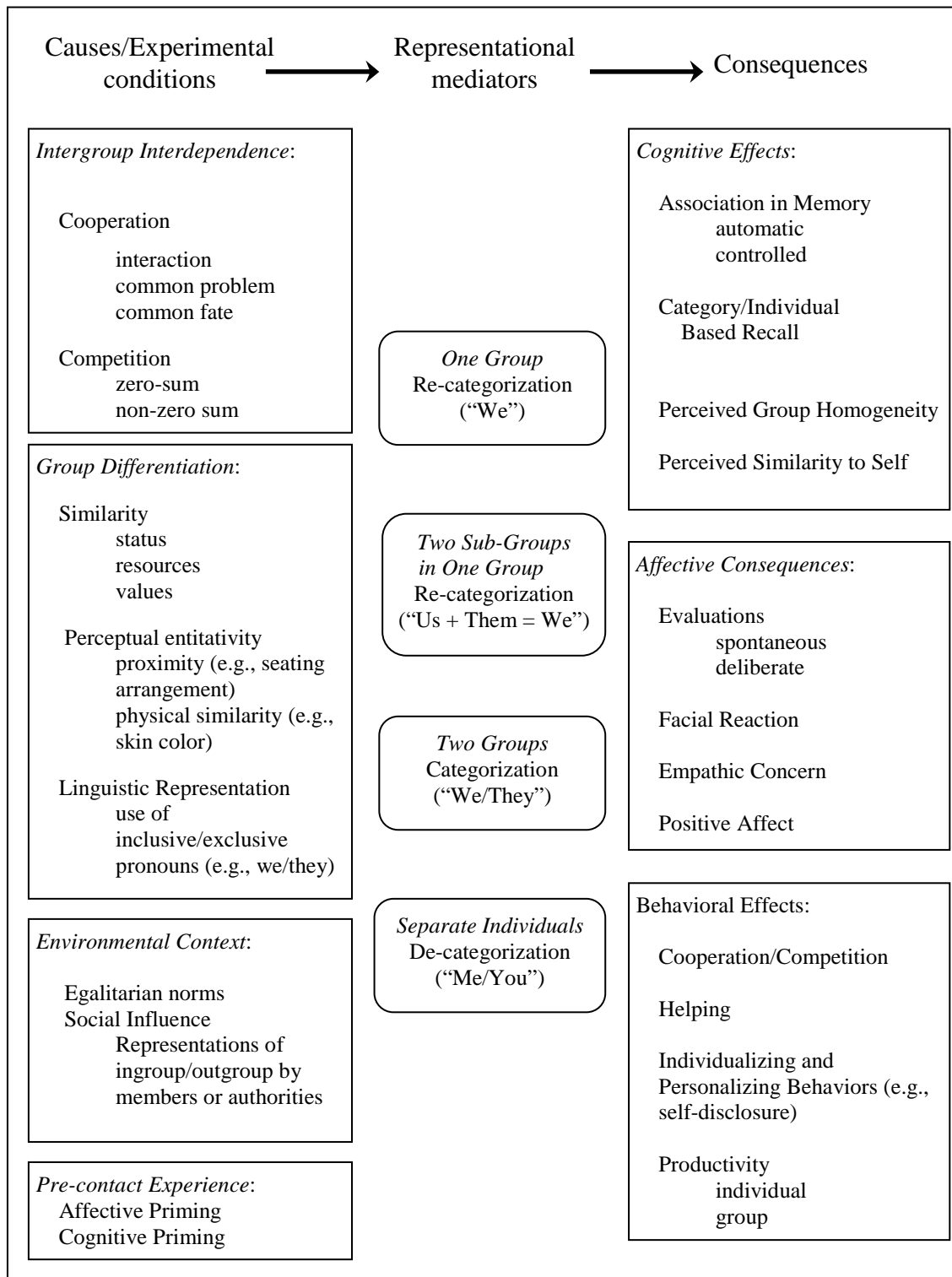
Preliminary results concerning the integrative model proposed by Brown and Hewstone (2005) are encouraging. Notwithstanding the potential of this model to improve intergroup relations, further empirical evidence is needed.

4. The common ingroup identity model

The common ingroup identity model (Gaertner & Dovidio, 2000) suggests that, as categorization fosters discrimination (Tajfel et al., 1971), it is useful – in contact settings – to reduce category salience. This proposal is different, however, from Brewer and Miller's (1984) suggestion to eliminate category boundaries. If bias is linked to a fundamental psychological process (i.e., categorization), then “attempts to ameliorate bias should be directed not at eliminating the process but rather at redirecting the forces to produce more harmonious intergroup relations” (Gaertner & Dovidio, 2000, p. 5). Gaertner and Dovidio argue that contact situations could be transformed so that ingroup and outgroup can be recategorized in a larger superordinate ingroup. In this way, the bias linked to the original categories should be reduced or eliminated. The process by which a superordinate identity can reduce bias is based partially on two conclusions by Brewer (1979) and by social identity (Tajfel & Turner, 1979) and self-categorization theory (Turner et al., 1987). First, ingroup bias is frequently due more to ingroup enhancement, rather than outgroup discrimination. Second, the creation of a group brings former outgroup members closer to the self, whereas the distance with previous ingroup members remains unchanged. In this way, the creation of a more inclusive social identity redirects cognitive and motivational processes that usually

produce positive outcomes toward ingroup members to former outgroup members. With the recategorization process, former outgroup members are accorded with the status and the privileges of ingroup members. Thus, recategorization reduces ingroup bias primarily by a more favorable evaluation of former outgroup members (Dovidio, Gaertner, Isen, & Lowrance, 1995). In contrast,

Figure 1. The Common Ingroup Identity Model. From Gaertner & Dovidio (2000).



the decategorization process should reduce the bias because the dissolution of group boundaries implies that the distance between the self and ingroup members increases and, hence, their attractiveness is reduced. It is proposed that differentiated and personalized impressions of outgroup members can readily develop within the context of a superordinate identity. Personalization can then lead to a second route to ameliorate intergroup relations. This view implies that the common ingroup identity model and the decategorization model are not mutually exclusive, but rather they represent complementary approaches to the reduction of prejudice (Brewer & Gaertner, 2001).

The common ingroup identity model (Gaertner & Dovidio, 2000) accords an important value to group perceptions in the contact setting. Gaertner and Dovidio propose that cognitive representations act as mediators between antecedents (different types of intergroup interdependence, cognitive, perceptual, linguistic, affective and environmental factors) and consequences (cognitive, affective, behavioral) of contact (see Figure 1). The optimal contact conditions proposed by Allport (1954) – equal status, supportive norms, cooperative and close interaction – improve intergroup relations in part because they transform the cognitive representation of the groups from “us” and “them” to a superordinate “we”. The causality of the process is assumed to be from antecedents to consequences of contact, even if it is acknowledged that, once started, the process can become bi-directional (Gaertner et al., 2000).

The cognitive representations hypothesized as mediators are: separate individuals, separate groups, common ingroup identity. Contact conditions should reduce the extent to which the groups perceive themselves as separate groups and increase the perception of being separate individuals and, especially, of belonging to a common group. In turn, a two group representation is supposed to increase bias, a one group and separate individual representations to reduce bias. A one group representation should reduce bias primarily by a more positive evaluation of former outgroup members; a separate individual representation should reduce bias by a less positive evaluation of ingroup members (e.g., Gaertner, Mann, Murrell, & Dovidio, 1989). Recently, an additional cognitive representation has been proposed (Gaertner & Dovidio, 2000): contact is supposed to increase the perception of a dual identity representation (two-groups within a more inclusive identity) which, in turn, should have positive effects on intergroup relations. The dual identity perspective will be discussed more extensively in the next paragraph.

The common ingroup identity model (Gaertner & Dovidio, 2000) is supported by several experimental and field studies. One of the first experimental evidences was provided by Gaertner et al. (1989). In the first part of the experiment, two three-person laboratory groups (initially unaware of the other group’s existence) were created and asked to work separately on the winter survival

task (Johnson & Johnson, 1975). This problem requires participants to imagine that their airplane has crash-landed in the woods and 10 items useful for surviving have been salvaged. Participants must rank-order the items in terms of their importance for survival. In the second part of the experiment, the two laboratory groups met and were asked to conceive themselves as one group, two groups or separate individuals, by varying factors within the contact situation. Authors manipulated the spatial arrangement of group members, the nature of interdependence and the assignment of names. In the one group condition, members of the two former groups were seated alternatively (i.e., ABABAB), wore a same color t-shirt, assigned a name to the whole group and had to arrive to a common solution to the winter survival task. In the two groups condition, subgroup members were seated segregated (i.e., AAABBB), wore different color t-shirts, assigned different names to each subgroup and discussed their previous solution to the problem. Finally, in the separate individuals condition, participants were seated at six separate tables, wore six different color t-shirts, assigned a different nickname to each person and had to discuss their personal solution to the winter survival task. The nature of interdependence was also varied: participants could win 10\$ in a lottery depending on the effectiveness of their six-person group (one group condition), three-person group (two-groups condition), or individual solution (separate individuals condition). The dependent measure was the evaluative ratings of ingroup and outgroup members. The hypothesis was that the perception of belonging to a superordinate identity or acting as distinct individuals would lower bias. In the first case, bias should be lower because of enhanced evaluations of former outgroup members; in the second case, reduced bias should be attributable to decreased evaluations of ingroup members. As intended, the manipulation proved to be effective in changing the cognitive representations of groups. In line with predictions, ingroup bias was lower in the one group and separate individuals conditions, as compared to the two groups condition. Moreover, in the one group condition, bias was reduced primarily because the attractiveness of former outgroup members increased; in the separate individuals condition, bias was lower because the evaluation of former ingroup members became less positive.

The study reported above supports the basic idea of the common ingroup identity model, namely that the perception of belonging to a superordinate group reduces ingroup bias. A possible limitation of the study, however, was that the nature of interdependence was varied and hence the contact between groups was more cooperative in the one group condition, as compared to the two groups and separate-individuals conditions. Gaertner, Mann, Dovidio, Murrell, and Pomare (1990) explored the effects of intergroup cooperation and, in particular, if cooperation – one of the four necessary conditions for optimal contact hypothesized by Allport (1954) – reduces bias because it, in part, transforms the members' cognitive representation of groups from two separate groups to

one more inclusive social identity. As in the previous study, two three-person laboratory groups were created and asked to work separately on the winter survival task. Next, the two subgroups met and were induced to conceive themselves as one group or two groups, by varying contextual features such as seating arrangements. Intergroup cooperation was manipulated by varying three aspects simultaneously: interaction, common fate, a problem requiring a consensual solution. Specifically, in the cooperation condition, the two groups discussed the winter survival problem in order to reach a common solution that, if effective, would let participants participate in a lottery where they could win 10\$ per person. In the no-cooperation condition, none of these three aspects was present. Results indicated, as predicted, that factors unrelated to cooperation aspects that induced group members to feel like one group (e.g., seating arrangements) increased the perception of belonging to a common group which, in turn, decreased bias. In the two groups condition, supportive of hypotheses, the introduction of cooperation induced members to feel as one group and decreased bias. Supporting results obtained by Gaertner et al. (1989), reduced bias was obtained primarily because favorable attitudes toward former outgroup members increased. Moreover, regression analyses indicated that only one-group perceptions independently mediated the effects of intergroup cooperation on former outgroup members evaluation.

In another experimental study, Dovidio et al. (1995) explored the effects of perceptual cues (i.e., appearance) and affect as potential antecedents of the common ingroup identity. Subjects participated in groups of two, three or four people and were informed that the experiment would be videotaped. After assignment to groups, similarity was manipulated. In the dissimilarity condition, participants were asked to wear laboratory coats (in order to create a visual distinction with the outgroup) with color-coded buttons; in the similarity condition, participants were asked to wear only color-coded buttons. They then reached a solution on the moon survival task (a variant of the winter survival task). At this point, incidental affect was manipulated by asking participants to take candy bars left from a previous experimental session (positive affect condition). In the control condition, no candy bars were offered to subjects. Participants then watched a five-minute videotape of a three-person laboratory group, not wearing laboratory coats, working on a task. Finally, they answered a questionnaire containing items concerning cognitive perceptions of the group (one group, two groups, separate individuals) and evaluative ratings of ingroup and outgroup members. As expected, perceptual cues (similar clothes) and positive affect influenced cognitive representations, by increasing the perception of belonging to a common group. Moreover, the one group perception mediated the reduction of bias. Once again, the bias decreased because evaluations of former outgroup members became more positive.

The importance of one group representation for improving intergroup relations has been tested also with respect to corporate mergers. Mottola, Bachman, Gaertner, and Dovidio (1997) conducted a laboratory experiment that varied the merger integration pattern. Undergraduates were asked to role-play employees of a fictitious merging organization. Culture norms of the merged organization varied across conditions, reflecting just one of the pre-merger organization's culture (absorbed pattern), a combination of cultures from both companies (blended pattern), a completely new culture (combined pattern). Results indicated, as expected, that participants' perceptions of conditions of contact, organizational support and organizational unity (i.e., one-group representation) were more favorable in the combined pattern, followed by the blended and then by the absorbed patterns. Furthermore, the relationships between antecedents (contact conditions, organizational support perceptions) and consequences of contact (organizational commitment) were positively mediated by perceptions of organizational unity. The positive relationship between perceptions of belonging to a common identity and commitment to one's own organization or institution has also been found in naturalistic settings: Black students with stronger feelings of being part of their community were more willing to recommend their university (Snider & Dovidio, 1996); perceptions to be part of one's own department was related to higher job satisfaction among White, Black and Latino psychologists employed in academic roles (Niemann & Dovidio, 1998).

The experimental studies presented above provide strong support for the direction of causality from contact to improved attitudes toward outgroup members via perception of common identity. Gaertner and colleagues noticed, however, that the relationship between intergroup attitudes and behaviors is generally weak (see Dovidio, Brigham, Johnson, & Gaertner, 1996). Dovidio et al. (1997) conducted a study to test the effectiveness of the common ingroup identity model for increasing helping behavior and self-disclosure. Two three-person groups ("overestimators" and "underestimators") worked separately on a group decision task and then met under conditions aimed at creating the perception of one or two distinct groups, in a way similar to that used in the experiments reported above. After completing measures regarding group representations and evaluations of other group members, participants were introduced to the next phase of the experiment. Within each six-person group, two members from the same initial subgroup and two members from the two original subgroups were selected to discuss a moderately intimate topic. The two remaining participants listened to an audiotape of a student (presented as overestimator for one participant and as underestimator for the other participant) describing how an illness impeded her from completing an important project. The two participants were then provided with the opportunity to help the student of the audiotape in the completion of the project. Thus, authors assessed, for each six-person group, intergroup and intragroup self-disclosure and

intergroup and intragroup helping. It was hypothesized that one group perceptions would increase outgroup evaluations, self-disclosure and helping toward outgroup members, whereas two groups perceptions would facilitate positive evaluations, self-disclosure and helping only toward ingroup members. Results revealed that bias in the one group condition was lower than bias in the two groups condition; one group perceptions mediated the bias reduction. More relevant to this experiment, stronger one-group impressions reduced bias in self-disclosure and helping. These findings extend the potential of common ingroup identity model to improve intergroup relations, by showing that beneficial effects of a more inclusive identity are not restricted to attitudes, instead they extend to intergroup behaviors such as self-disclosure and helping. These behaviors are especially important, because they typically produce reciprocity (e.g., Archer & Berg, 1978; Schroeder, Penner, Dovidio, & Piliavin, 1995) and favor the development of more harmonious intergroup relations (Pettigrew, 1997).

The common ingroup identity model (Gaertner & Dovidio, 2000) has also been tested with respect to real groups and, in particular, to interracial interactions. Nier et al. (2001, Study 1) examined the effects of a common group perception on relations between Blacks and Whites. Two white participants interacted with a Black or a White confederate as separate individuals or as a common group. They then evaluated other participants and rated the extent to which they perceived them as one group or separate individuals. Supportive of the model, results revealed that the Black confederate was perceived more positively in the one group condition than in the separate individuals condition, and one group perceptions mediated this relationship. The evaluations of White group members did not differ between conditions.

The model has received support also from several field studies. Nier et al. (2001, Study 2) examined the effects of a common identity in a naturalistic setting on the relation between Blacks and Whites in absence of cooperative interdependence. Participants were White spectators, approached at the University of Delaware football stadium prior to a game with a rival university. Experimenters were Black and White, male and female students who approached same sex fans from both universities prior to the game, asking them to participate in a five-minute interview about food preferences. Same or different group affiliation was varied by wearing a University of Delaware or a rival university hat. Authors expected that White fans would categorize White experimenters as ingroup members, irrespective of university affiliation, whereas they would categorize Black experimenters as ingroup members only if they wore same university clothes. As hypothesized, White participants complied to be interviewed by Black confederates more if they shared the same university affiliation. There were no significant effects of university affiliation for participants interviewed by White confederates. This study extends prior work and confirms the

usefulness of a common ingroup identity strategy in a naturalistic setting to ameliorate interracial interactions.

Gaertner and colleagues tested the model in natural settings in very different domains of intergroup life. The benefits of retaining a common ingroup identity have been proved for students attending a multi-ethnic high school (Gaertner, Rust, Dovidio, Bachman, & Anastasio, 1994), banking executives after a corporate merger in various banks in United States (Bachman, 1993; see Gaertner, Dovidio, & Bachman, 1996), college students coming from separate families and trying to unit into one (Banker & Gaertner, 1998). Banker (2002) conducted a longitudinal study on stepfamilies and found evidence for the proposed direction of causality from contact antecedents to the development of a superordinate identity to the improvement of intergroup attitudes. Some of these studies also examined the impact of the dual identity on intergroup discrimination and will be discussed more extensively in the next paragraph.

Gaertner and colleagues have collected an impressive body of evidence supporting the common ingroup identity model across very different domains of group life. In all the studies reviewed above, the creation of a superordinate identity that replaced previous subgroup identities was associated with more harmonious intergroup relationships. The model highlights the process by which intergroup contact reduces prejudice. The optimal conditions proposed by Allport (1954) reduce intergroup bias through influencing the development of a common identity. Experimental studies, that support the hypothesized direction of causality from a one group representation to less prejudice, can be generalized to more naturalistic settings for a wide variety of groups.

Despite the large number of studies supporting its basic idea, the common ingroup identity model has some limitations. First, although there is converging evidence that a common identity reduces bias in the contact setting, only few studies have investigated the problem of generalization of positive outcomes to outgroup members not directly involved in contact. It is unlikely that recategorization, if completely successful, would allow the generalization of positive contact effects. Full recategorization implies that former outgroup members belong now to the ingroup, thus they are not linked anymore to their original outgroup (Rothbart & John, 1985). In this case, there are no reasons to expect that positive outcomes developed in the contact setting would be associated to outgroup members not present during contact. Some studies addressed this issue (e.g., Dovidio et al., 1997; Gaertner et al., 1994; Gonzalez & Brown, 2003, 2006, Study 1), and found a positive relationship between common identity and reduced bias (Gaertner & Dovidio, 2000). Some authors, however, obtained more mixed evidence (Eller & Abrams, 2003, 2004; Gonzalez & Brown, 2006, Study 2). Additional empirical evidence is needed to affirm that the effects of a common ingroup identity can be extended from known to unknown outgroup members. A second important

limitation is that a common ingroup identity may sometimes be difficult to achieve. Recategorization requires group members to relinquish their previous identities. In some intergroup settings, however, this process cannot be politically or psychologically feasible, because it may involve the abandonment of important social identities (Ensari & Miller, 2002; Hewstone, 1996; Huo, Smith, Tyler, & Lind, 1996; Van Oudenhoven, Prins, & Buunk, 1998). With respect to this point, Gaertner and Dovidio argue that long term benefits of the perception of belonging to a common group are not necessarily expected. Instead, recategorization may, even temporarily, initiate positive relations and interpersonal processes that contribute to bias reduction (see also Pettigrew, 1997, 1998). A third problem, connected with the previous limitation, is that the recategorization process might threaten group distinctiveness. Intergroup distinctiveness is a central aspect of social identity perspective (Tajfel & Turner, 1979; see also Brewer, 1991, 1996). Positive distinctiveness helps to differentiate one's own group from relevant outgroups and contributes to ameliorate a person's social identity. A superordinate identity composed of former subgroups might, in some cases, threaten distinct and valuable identities. People may respond to threat caused by recategorization with increased ingroup bias (Crisp, Stone, & Hall, 2006; Hornsey & Hogg, 2000, 2002). A dual identity strategy, which may overcome these limitations, is the focus of the next paragraph.

5. The benefits of adopting a dual identity strategy

Gaertner and Dovidio (2000; see also Gaertner et al., 2000) notice that the development of a common ingroup identity does not necessarily require groups involved in contact to forsake their subgroup identities. As it was noted above, in some cases it may be undesirable or impossible to relinquish important group identities (Hewstone, 1996). Moreover, the abandonment of ingroup-outgroup distinctions might motivate group members to increase competition and ingroup bias in order to restore group distinctiveness (Brewer, 1991; Tajfel & Turner, 1979). In some cases, simultaneously maintaining both subgroup identities and a superordinate identity during qualitative contact could be an effective strategy to improve intergroup relations (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). Dual identity may be particularly effective when people are strongly tied to their social identities, and therefore could be especially useful in interethnic contexts. As suggested by Turner and colleagues (1987), ingroup-outgroup differences are conceivable because the two categories share a more inclusive identity. This hierarchical relation is not captured by the classic ingroup-outgroup distinction (Vescio, Hewstone, Crisp, & Rubin, 1999). The superordinate identity should not be seen in opposition to subgroup identities. Respective group identities can minimize the threat to distinctiveness and be conceived as the prerequisite for

harmonious intergroup relations, if nested within a more inclusive identity. Dual identity perception extends benefits accorded to ingroup members to former outgroup members and, at the same time, protects ingroup distinctiveness (Hornsey & Hogg, 2000).

Gaertner and Dovidio (2000) suggest that, if members of different groups regard themselves as belonging to separate groups, but, at the same time, playing in the same team, group relations should become more positive. Dual identity, moreover, could facilitate the generalization of positive attitudes from outgroup members actually encountered to outgroup members not present during contact. The salience of subgroup identities, in fact, allows to maintain the associative link between proximal and distal outgroup members (Gaertner et al., 2000; Hewstone & Brown, 1986). Gaertner and Dovidio hypothesize that a common identity should be especially beneficial for outgroup members met in the contact setting. When dual identity is salient, subgroup identities should slightly reduce the beneficial effects of superordinate identity for known outgroup members, but, at the same time, they should facilitate the generalization of positive contact effects (trade-off hypothesis).

The dual identity proposal represents an integration between the common ingroup identity model (Gaertner & Dovidio, 2000) and the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986). Dual identity resembles Brown and Hewstone's suggestion to maintain mutual differentiation during cooperative contact. Marilynn Brewer (2000; see also Marcus-Newhall, Miller, Holtz, & Brewer 1993) also acknowledged the benefit of a dual categorization, where members of different group are assigned complementary roles within the context of a superordinate identity. Dual identity is coherent also with the multiculturalism approach, which assumes that ethnic identities are a fundamental part of one's own identity. Thus, group identities should be preserved in a context of harmonious interactions between groups. People can feel positively toward others only if they have secure identities (e.g., Taylor, 1992). Research has supported this position (e. g., Berry, Kalin, & Taylor, 1977; Lambert, Mermigis, & Taylor, 1986; Taylor & Lambert, 1996), by showing that both majorities and minorities can benefit from a multiculturalist approach. Multiculturalism can be seen in opposition to an assimilation perspective, which encourages distinct groups to assimilate at a superordinate level. Assimilation can take different forms (Moghaddam & Solliday, 1991) and, in general, is more coherent with the common ingroup identity model (Gaertner & Dovidio, 2000).

The dual identity hypothesis has received support from a number of experimental and correlational studies. Dovidio, Gaertner, and Validzic (1998) examined how group status on same or different dimensions influences ingroup bias and if this effect is mediated by cognitive representations of groups. Six participants were randomly divided into overestimators and

underestimators and asked to work in two three-person groups on the winter survival task. The groups were asked to find the best solution, assuming that they would stay on the airplane waiting to be rescued, or they would walk through the forest to get salvation. In the same dimension condition, the groups were asked to work on the same perspective (e.g., both assuming to stay near the airplane); in the different dimensions condition, one group was asked to imagine waiting near the plane, the other group was told to imagine walking through the forest. After the two groups worked separately on the task, status was manipulated by providing participants with false feedback: in the equal status condition, participants were informed that the groups performed equally well; in the unequal status condition, participants were told that one group performed better than the other. Then the groups were brought together and the six participants were told that they would work again on the winter survival task. In the same dimension condition, participants worked on the solution under the same assumption (stay or hike) on which they had worked previously. In the different dimensions condition, they had to determine the best solution regardless survivors could decide to stay or hike. The dependent variables were outgroup evaluation and ingroup bias. Hypotheses were that equal status would be more effective at reducing bias when groups worked on different areas of expertise and that the perception of belonging to a common group would mediate this effect. As expected, bias was reduced when equal status groups worked on different dimensions of experience. Moreover, reduced bias was due to improved outgroup evaluations and the effect was mediated by one-group representation. This result is consistent with Hewstone and Brown's (1986) mutual differentiation model, which suggests that contact between equal status groups can reduce intergroup bias when group memberships are salient and are not threatened by contact, as when groups work on different areas of expertise during cooperative contact. Findings also provide support for the integration between Hewstone and Brown's theory and common ingroup identity model (Gaertner & Dovidio, 2000): the former highlights the importance of group differentiation and of moderating conditions, the latter focuses more on commonalities and on mediating processes.

The idea that simultaneous recognition of both commonalities and differences may be especially beneficial in some intergroup contexts has received further support in two studies. In the first, Huo et al., (1996) found that, even when ethnic identity is particularly strong for minority group members, the perception of common identity within an organization may facilitate outgroup trust and acceptance of authority. In the second study, Smith and Tyler (1996, Study 1) showed that those who endorsed a stronger American identity, independently of their level of identification with Whites, were more supportive of fair policies, regardless whether these policies were likely to increase or decrease personal well-being.

Evidence pertaining to the importance of the dual identity strategy can be found in a series of experiments conducted by Gonzalez and Brown (2003, 2006). These studies are particularly interesting because they compare the effectiveness of contact strategies both during and beyond the contact situation. In the first study (Gonzalez & Brown, 2003), eight participants were arbitrarily divided into two four-person groups that worked separately on the winter survival task, so as to increase ingroup identification. The two groups then met to work on a cooperative task under different categorization conditions: one group, two groups, separate individuals, two groups within one group. The procedure was similar to that used by Gaertner and collaborators (e.g., Gaertner et al., 1989): manipulations involved situational aspects (e.g., seating positions around a table, wearing similar or different t-shirts) as well as structural aspects (the nature of the group task). Participants then rated ingroup and outgroup members and allocated symbolic rewards to them. Finally, they watched a videotape in which unknown ingroup and outgroup members from an earlier session worked on a task, and were asked to allocate symbolic rewards and evaluate them (generalization measures). Results showed no differences on the measures pertaining to the contact situation: all strategies were equally effective in reducing bias. This result is not surprising and it can be explained with the cooperative atmosphere created during the interaction. However, on the generalization measures, bias was lower in the “one group” and “two groups within one group” conditions, as compared to the “separate individuals” and “two groups” conditions. Thus, the retention of a dual identity representation seems effective in promoting generalization outside the contact situation.

In two subsequent studies, Gonzalez and Brown (2006) reasoned that minority group members might be more concerned than majority group members about their social identity. Thus, they may be more motivated to restore group distinctiveness by showing heightened ingroup bias. In addition, high status group members should be more concerned about identity protection and discriminate more than low status group members. In these cases, a dual identity strategy should be more beneficial, because it protects distinctiveness and allows the generalization of positive contact effects. In the first study, Gonzalez and Brown used a paradigm similar to that used in their previous study (they dropped the “two groups” condition) and varied group size experimentally. Participants first worked in two artificial groups on the winter survival task and then met under different categorization conditions. Group size was varied by assigning a different number of participants to the artificial groups: the minority group was composed by two members, the majority group by four members. The two groups worked together, then participants distributed rewards to the other participants. Finally, they viewed a videotape showing unknown ingroup and outgroup members working together and allocated rewards to them. Replicating results by Gonzalez

and Brown (2003), all categorization strategies proved to be equally effective in reducing bias in the situation itself. On the generalization measures, bias was lower in the “one group” and “dual identity” conditions than in the “separate individuals” condition. However, bias was eliminated only in the “dual identity” condition. In a related study (Gonzalez & Brown, 2006, Study 2), the authors varied both group status and size. The procedure was the same used in the previous experiment. To manipulate group status, participants were told that one group tended to perform better than the other group on some tasks. Measures pertaining to the contact situation revealed that group size and status affected the levels of bias, and, once again, all the categorization strategies limited bias equally well. Results on the generalization measures were less clear: only the dual identity strategy limited bias among minority group members. However, none of the strategies reduced bias among majority group members and status was the determining factor: high status group members discriminated more than low status group members. These three experiments offer general support for the effectiveness of the dual identity strategy both during and beyond the contact situation, even if there are indications that its beneficial effects may be limited to minority group members.

The dual identity strategy has been tested also in natural settings. Gaertner et al. (1994) conducted a survey in a multi-ethnic high school in the United States. A questionnaire was administered to 1,357 Black, Chinese, Japanese, Korean, Vietnamese and Caucasian students. Participants were asked to indicate their perceptions of intergroup climate (i.e., optimal contact conditions), their feelings and evaluations toward one’s own ethnic group and toward other ethnic groups. Ratings of feelings and attitudes toward other ethnic groups were averaged and subtracted from those concerning the ingroup, so as to obtain an index of affective bias and an index of overall attitudinal favorability. Items were included that measured cognitive perceptions of groups (one group, two groups, separate individuals and different groups on the same team) and identification with United States and with one’s own ethnic group. Authors hypothesized that positive contact effects would be mediated by cognitive representations. The effects of dual identity were examined in two ways: by using a single representation item and by comparing students who identified simultaneously with United States and with their own ethnic group. Consistent with predictions, results revealed that one group and dual identity representations mediated contact effects on affective bias. Surprisingly, two groups representation was the only significant mediator of the relationship between contact and overall attitudinal favorability: contact decreased two groups perceptions, which, in turn, decreased attitudinal favorability toward other ethnic groups. A further analysis was performed in which overall attitudinal favorability bias was regressed on affective bias together with mediators and contact conditions. The result of this analysis revealed that one group and dual identity representations partially mediated the effects of contact on affective bias which, in

turn, was a strong predictor of bias in attitudinal favorability. Moreover, the two groups representation partially mediated the relationship between contact and overall attitudinal favorability bias. Analyses performed on identification items further supported the model by showing that bias was lower among students who identified simultaneously with their subgroup and with the American superordinate identity.

Gaertner et al. (1999) examined the independent contributions on intergroup relations of interaction and common fate, which constitute two elements of intergroup cooperation, and the processes by which they operate. Two three-person groups, composed respectively of Democratic and Republican students, met under conditions that varied independently the degree of intergroup interaction and common fate. Common fate was manipulated by giving groups the opportunity to share a monetary prize or receive it independently. To manipulate intergroup interaction, groups were asked to work together or separately on the same task. An additional condition was introduced, in which cooperation between groups was minimal. Participants then evaluated ingroup and outgroup members and their perceptions of group representations during contact. An additional dependent measure concerned participant's facial expressions during contact, assessed by independent observers. Results revealed that common fate and interaction are two separable components of intergroup cooperation: both reduce bias independently, and even a limited intergroup interaction, without the presence of common fate, can reduce bias. Moreover, cognitive representations mediated the effects of cooperation on bias and stronger effects were obtained for the dual identity representation.

Additional support for the role of dual identity in reducing intergroup discrimination is provided by Eller and Abrams (2006), who tested Gaertner and Dovidio's (2000) model in an English-French context. English undergraduate students were asked to complete a questionnaire, which assessed quantitative and qualitative contact with French people at university, perceptions of group representations during contact, anxiety felt toward French, social distance and general evaluation of French. In addition, all participants completed an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), to assess implicit evaluations of French. Results showed that contact affected outcome variables and cognitive representations mediated some of these effects: intergroup, interpersonal and superordinate levels of categorization mediated effects of contact on general outgroup evaluations and on perceived social distance; the dual identity representation mediated the effect of contact on intergroup anxiety. Moreover, implicit attitudes had three moderating effects: contact, superordinate and dual identity (marginal effect) decreased anxiety when implicit bias was high. This field study offers some additional support for the effectiveness of the dual identity strategy, and suggests that implicit attitudes can moderate the

relation between cognitive group representations and outcome variables (see this Chapter, paragraph 9).

The evidence reviewed indicates that a “dual identity” strategy may be more profitable in some intergroup contexts. The beneficial effects of dual identity are not limited to laboratory studies, but can be extended to several different natural settings. Notwithstanding supportive studies, there are indications that dual identity can have negative effects in some intergroup contexts. Bachman (1993; see Gaertner et al., 1996) examined banker executives who had been involved in a merger. Participants were asked to complete a questionnaire with measures pertaining to: contact conditions; mental representations of the merged organizations (two groups, separate individuals, one group, two subgroups within one group); affective reactions toward outgroup members, and ingroup and outgroup evaluations, which were used to create a sociability bias and a work-related bias on the basis of a factor analysis. Results closely mirrored those obtained in the multi-ethnic high school (Gaertner et al., 1994): cognitive representations (one group, separate individuals) mediated the effect of contact on anxiety, which, in turn, was negatively related to sociability and work-related bias. However, contrary to predictions, the “two subgroups within one group” representation was related to increased work-related bias. Thus, it seems that a dual identity representation may have negative effects in some contexts.

The same conclusion can be drawn from a study conducted by Banker and Gaertner (1998) on stepfamilies. A questionnaire was distributed to undergraduate students who identified themselves as stepfamily members. A similar questionnaire was administered to a biological family sample, so as to compare the two groups. Measures concerned presence of optimal contact conditions (Allport, 1954), the stepparent-stepchild relationship (or the parent-child relationship), the cognitive representation of the (merged) family, the (step) family harmony. Results indicated that an intergroup relations perspective may be profitable for the study of stepfamily harmony. Contact conditions seemed to be less favorable in stepfamilies than in biological families. Stepfamilies were perceived as being more like two separate groups or two groups within one group and less as one group than first-married families. Stepfamily members perceived their stepfamily more as one group than two groups or two groups within one group. As predicted by the common ingroup identity model, the one group representation partially mediated the effects of contact on outcome variables. Thus, perceptions of belonging to a common group proved to be useful for improving stepfamily harmony. However, contrary to expectations, contact conditions negatively predicted the “two subgroups within one group” representation, which, in turn, was negatively correlated (albeit non-significantly) with stepfamily harmony. This finding suggests that a dual

identity strategy can, in some cases, have detrimental and not desirable effects on intergroup relations.

An additional undesirable effect of dual identity perceptions was showed in a series of studies by Mummendey and colleagues. They found that the simultaneous salience of both superordinate identity and subgroup identities (e.g., among bikers, teachers, and Germans) increased discrimination toward the other subgroup (e.g., Waldzus, Mummendey, Wenzel, & Boettcher, 2004).

The correlational evidence reviewed above pertaining to dual identity is mixed: dual identity was related to positive intergroup attitudes, for example, in a multi-ethnic high school and in an Anglo-French context involving university students; it had detrimental effects in bank mergers and stepfamilies contexts.

5.1 Potential moderators and mediators of dual identity

With the aim to examine processes by which dual identity operates, Gaertner, Riek, Mania, and Dovidio (2007) argue that a dual identity can influence bias in at least three ways: first, dual identity can improve attitudes by reducing identity threat. Second, it may cause social comparisons that increase prejudice. Mummendey and Wenzel (1999) hypothesized that ingroup members may consider their characteristics as more typical of the superordinate category that includes both ingroup and outgroup (projection). Hence, the attribution of ingroup peculiarities to the common category may activate social comparisons which enhance the idea that outgroup members are inferior exemplars and deviants of the more inclusive category to which both ingroup and outgroup belong. Finally, the relative salience of the components of dual identity (subgroup identities and superordinate category) can operate as a signal of inclusion and exclusion and have negative effects on intergroup relations. Three potential mediators can be inferred from these three processes, which can operate simultaneously or independently. The first hypothesized mediator is identity threat: dual identity should reduce bias because it protects group distinctiveness and reduces identity threat. The second mediator is intergroup projection: discrimination can be reduced as long as dual identity inhibits projection of ingroup characteristics to the superordinate identity. The final potential mediator concerns inclusion vs. exclusion: dual identity should be associated to decreased bias when it reinforces the sense of inclusion in the superordinate identity; it should have negative effects when it relates to exclusion from the more inclusive category.

Gaertner et al. (2007) also proposed some potential moderators which may determine the effectiveness of the dual identity representation. First, it is important to consider if the subgroups are nested within the common group or extend beyond it. When subgroups are fully nested within

the more inclusive category, group identity is defined by intergroup differences; consequently, need for positive distinctiveness may increase. In contrast, when subgroup identities extend beyond the superordinate category boundaries, the salience of the common category should be heightened and intergroup differences reduced. In this case, dual identity would be related to positive effects on intergroup relations. Coherently with this explanation, in the studies on bank mergers and stepfamilies, subgroups were fully nested in the superordinate category and dual identity was associated to less favorable intergroup attitudes. In contrast, subgroups in the multi-ethnic high school and in the Anglo-French context extended beyond school boundaries. In this case, dual identity was associated with more positive intergroup relations. A second potential moderator is relative to domains of group life encompassed by the recategorization. If the subgroups are in the same domain as the superordinate category (as was the case for bank mergers and stepfamilies), they can be perceived as competitive and heighten identity threat. In contrast, if subgroups and common identity are in different domains (for example, in the multi-ethnic high school and in the Anglo-French context), group distinctiveness is preserved and bias should be reduced. An other moderator pertains to the aim of the recategorization process: if the goal of the superordinate identity is to replace previous group identities (for instance, bank mergers and stepfamilies), identification with subgroups may contrast recategorization and increase ingroup bias. In contrast, if superordinate identity is not expected to replace previous group identities (for instance, racial groups in a school), then the goal of recategorization is not incompatible with subgroup identification and intergroup relations should be improved. An additional moderator is relative to cooperation expectations: if relations between subgroups are expected to be harmonious and cooperative (as is likely for merged organizations and stepfamilies), then the salience of subgroup identities may “bring to mind” group differences and have negative effects on intergroup relations. In contrast, if relations between subgroups are not necessarily expected to be cooperative and may even be perceived as competitive (as could be true for racial groups in a school context), disconfirmation of expectancies may increase dual identity perceptions and decrease bias. Finally, dual identity can have opposite effects for majority and minority group members. The perspective of majorities and minorities are different (Dovidio, Gaertner, Kawakami, & Hodson, 2002): minority group members are more concerned with their identity and prefer multicultural integration; majority group members are generally more assimilationist, so as to reinforce ingroup values. Thus, dual identity should be preferred by minorities; simple recategorization may be preferred by majorities. If this is true, dual identity should have positive effects for minorities and negative effects for majorities (Dovidio, Kawakami, & Gaertner, 2000). Supporting the idea of the differential effect of the dual identity representation for majorities and minorities, Kafati (1999)

found that, whereas the relationship of White students with academic commitment was mediated by perceptions of the university community as one group, the relationship between Black students and commitment was mediated by the perception of being different groups playing in the same team.

The studies reviewed suggest that a dual identity strategy can be an effective way to reduce prejudice. The dual identity hypothesis represents an integration between the common ingroup identity model (Gaertner & Dovidio, 2000) and the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986) and permits to overcome some of the problems associated with these approaches. First, group members are not required to relinquish their previous group identities. Second, the simultaneous salience of both subgroups and superordinate identity should facilitate generalization of positive attitudes to outgroup members not present during contact. Finally, maintaining previous identities should protect group distinctiveness, especially for minority groups, and allow the development of positive relations with outgroup members. Notwithstanding the increasing research supporting the model, some studies seem to indicate that a dual identity strategy can have negative effects on intergroup harmony. However, the study of moderators and mediators concerning dual identity recently proposed by Gaertner and colleagues (2007) is promising: additional research is needed for a full understanding of the effects of dual identity representation.

6. Pettigrew's model and the importance of mediators of intergroup contact

Pettigrew (1998) reformulated the contact hypothesis (Allport, 1954) on the basis of criticisms that he moved to its original formulation (see this Chapter, paragraph 1.1). He proposed four processes, which are interrelated and may mediate the contact-prejudice relationship. The first process concerns learning about the outgroup. The initial formulation of the contact hypothesis proposed this process as the most important way for contact to improve intergroup relations: contact that provides new and disconfirming stereotype information about the outgroup has the potential to reduce prejudice. However, different mechanisms which limit the importance of stereotype disconfirmation have been proposed by cognitive research. For instance, Rothbart and John (1985) suggested that disconfirming information can change stereotypes only if the inconsistent behavior occurs often and in repeated situations and if outgroup members encountered are typical of their category. Recent research has focused more on knowing about intergroup differences, rather than on outgroup information per se (Wolsko, Park, Judd, & Wittenbrink, 2000). The second hypothesized process is relative to the change of behavior. New expectations are often associated with new situations. If norms in the contact situation facilitate acceptance and positive behavior toward outgroup members, then it is possible that attitudes toward the outgroup change as well. The

attitude change is likely because people resolve the dissonance between their new accommodating behavior and previous intergroup attitudes (Aronson & Patnoe, 1997; Festinger, 1957). Repeated and positive contact experiences might reinforce this process. The third process hypothesized by Pettigrew concerns the role of emotions. Initial contact might increase anxiety (Islam & Hewstone, 1993; Stephan & Stephan, 1985). However, repeated positive contact with outgroup members can reduce anxiety and, in turn, ameliorate intergroup relations. Furthermore, contact has the potential to improve positive emotions, like empathy (see Batson et al., 1997); positive emotions, in turn, may mediate the effects of contact on intergroup attitudes. Intergroup friendship, in particular, is pivotal in the arousal of positive emotions (Pettigrew, 1997). The last process proposed by Pettigrew which can mediate contact effects is ingroup reappraisal. Encounters with members of other groups help to reconsider not only the view of outgroups, but also the ideas about the ingroup. Ingroup norms and customs appear to be not the only ones in the world, but just possible ways to manage social life. This sort of “deprovincialization” reshapes ingroup view and may result in more outgroup acceptance and solidarity. These four processes are supposed to be interdependent and reinforce one another in producing more positive intergroup relations. Intergroup friendship is particularly important, because all the mediating processes relate to it. This idea is consistent with the decategorization model proposed by Brewer and Miller (1984), who hypothesize that prejudice can be reduced if outgroup members are seen as heterogeneous and the relationship with them is personalized. Thus, intergroup friendship has the potential to reduce prejudice and generalize to other groups, but requires time to develop. Hence, Pettigrew suggests a fifth optimal condition, in addition to the four proposed by Allport (1954): ingroup and outgroup members must have the possibility to become friends during the contact experience. Contact must be characterized by close interactions; the opportunity for self-disclosure and the development of positive emotions then make friendship possible. This additional condition was meant by Allport (1954), who wrote about the positive effects of intimate contact, and by Cook (1962), who called it “acquaintance potential.” The “friendship potential” proposed by Pettigrew is an essential condition for contact to obtain positive effects and generalize beyond the contact situation. Moreover, Allport’s contact conditions are essential because they allow the development of intergroup friendship. Cook (1984) demonstrated the importance of intergroup friendship in a laboratory setting. After interracial friendship was established, White participants were more likely to choose race-relations policies that would benefit Black Americans. Moreover, Herek and Capitanio (1996) showed that close friendship with homosexuals produced generalization of positive attitudes to gay people in general.

Pettigrew (1998) also proposed an integration between the contact models described in the previous paragraphs: the decategorization model (Brewer & Miller, 1984), the intergroup contact

theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986), the common ingroup identity model (Gaertner & Dovidio, 2000). He suggested that they are not necessarily contradictory. Instead, they can be integrated in a longitudinal sequence. First, contact situation must provide participants with the four optimal conditions (i.e., equal status, common goals, intergroup cooperation, supportive norms) indicated by Allport (1954). Additionally, it is important to consider prior attitudes and experiences of people involved in contact. People's characteristics shape contact effects and can determine, for instance, if people seek or avoid contact, or their intergroup anxiety and perceived threat levels. Contact conditions and prior attitudes influence initial contact. In this phase, it is important that contact is decategorized, so as to reduce intergroup anxiety. However, personalized contact is unlikely to produce generalization. Group categorization should be introduced when contact is already established. Membership salience might facilitate generalization beyond the contact situation without increasing anxiety levels, which were lowered during decategorized contact. Finally, contact may be more beneficial if members from different groups perceive the belonging to a common, superordinate identity. Recategorization at this stage should favor the maximum reduction in prejudice. The three phases may overlap, and different outcomes can be predicted at different stages.

Pettigrew (1997) tested the revised contact hypothesis with a special focus on the role of intergroup friendship and on the generalization to outgroups not involved in contact. Intergroup friendship involves a long-term contact and meets all Allport's (1954) optimal conditions. Moreover, the author noticed that only a few studies have addressed the problem of generalization of contact effects to uninvolved outgroups. Three interrelated mechanisms were proposed that could promote generalization: cross-group empathy, cross-group identification (favored by intergroup friendship), deprovincialization (discovering that ingroup norms and customs are only a possible way to manage the social world). Pettigrew's expectations were that intergroup friendship would reduce prejudice (especially affective prejudice) and its effects would generalize to policy preferences about immigration and to many types of outgroups. Finally, the path from intergroup friendship to reduced prejudice was expected to be stronger than the reversal path. A survey was administered to 3,806 respondents from seven probability samples of four Western countries (France, the Netherlands, Great Britain, West-Germany). Target outgroups were different for each country. The primary independent variable was contact with outgroup friends. The dependent variables were: blatant and subtle prejudice (Pettigrew & Meertens, 1995), policy preferences concerning immigration, feelings toward a wide range of groups. Results revealed that, as predicted, intergroup friendship was negatively related to all prejudice measures and the strongest negative relation was between intergroup friendship and affective prejudice. Concerning generalization,

people with intergroup friends accepted more readily immigration policies. Moreover, there was a strong negative relation between cross-group friendship and negative feelings toward outgroups not involved in contact. Finally, the path from intergroup friendship to prejudice was stronger than the reverse path from prejudice to cross-group friendship. These data highlight the importance of intergroup friendship for contact to generalize, especially for the affective component of prejudice. Results also support the role of four processes in improving intergroup relations: creating affective ties, learning about the outgroup, ingroup deprovincialization, identifying with the outgroup.

Tropp and Pettigrew (2005) conducted two studies to examine the relationship between intergroup contact and different dimensions of prejudice. Specifically, they hypothesized that the link between contact and reduced prejudice is stronger for affective dimensions of prejudice, rather than for cognitive dimensions. The first study was part of a larger meta-analysis (see Pettigrew & Tropp, 2006) and examined the relationship between contact and prejudice; cognitive and affective indicators of prejudice were examined separately. Different levels of generalization were considered. For each study, the authors coded whether the prejudice measure belonged to one of four types of prejudice indicators. Two indicators (emotions, favorability) represented affective dimensions of prejudice; the remaining two indicators (stereotypes, beliefs) represented cognitive dimensions. As predicted, intergroup contact was associated with reduced prejudice. Moreover, the relationship between contact and prejudice toward outgroup members involved in the contact setting was as strong as that between contact and prejudice toward the general outgroup, thus indicating the presence of generalization. Furthermore, affective indicators of prejudice were more strongly associated with intergroup contact than their cognitive counterparts. In addition, the same pattern of findings was found when only tests involving generalization were considered. In the second study, White participants completed a questionnaire that contained measures concerning quantity and quality of contact with Blacks, closeness to outgroup friends, emotions (positive and negative), liking and favorability toward Blacks, stereotypes and beliefs related to Blacks. Results revealed that affective indicators of prejudice were more strongly associated with contact than cognitive indicators of prejudice. As in the previous study, close intergroup relations enhanced positive feelings felt for outgroup members and these effects generalized to the outgroup as a whole.

In their recent meta-analysis, Pettigrew and Tropp (2006) tested the hypothesis that intergroup contact is associated with less prejudice and examined if this relationship is still significant even in absence of Allport's (1954) optimal conditions. They found, as predicted, that contact reduces prejudice. Moreover, contact effects typically generalize across situations, from proximal to distal outgroup members and also to outgroups not directly involved in the contact

experience. The relation is not limited to specific groups, but remains significant across target groups, age groups, geographical areas and different contact settings. Results revealed that optimal conditions are important for contact to reduce prejudice, but they are not essential. In fact, the relationship contact- prejudice is stronger if the contact situation meets optimal condition, but is significant even if these conditions are not present. Thus, Allport's conditions may be better considered as facilitating factors for improving intergroup relations. Given that contact typically reduces prejudice, the authors conclude that the focus of scholars may be now directed to negative factors which can inhibit positive effects of intergroup contact (e.g., anxiety; see Stephan & Stephan, 1985) and to factors that facilitate generalization (e.g., membership salience; see Brown & Hewstone, 2005).

The studies reported above support Pettigrew's (1998) revised intergroup contact hypothesis, by showing the importance of intergroup friendship and of mediators in facilitating or inhibiting the effects of contact.

Pettigrew's (1998) model was tested longitudinally and cross sectionally in three studies conducted by Eller and Abrams (2003, 2004). In the first study (2003), the intergroup relation Mexicans-Americans was considered. Questionnaires were distributed to American students studying Spanish in Mexico. Participants were analyzed one week after their arrival in Mexico (T1) and one week after (T2). The independent variables were quantity of contact and its quality, assessed by asking the quantity of contact as close friends experienced with Mexicans. This item refers to friendship potential, which Pettigrew considers as the most essential factor to facilitate positive intergroup relations. The mediating variables assessed were the four proposed by Pettigrew: learning about the outgroup, creating affective ties, ingroup reappraisal and changing behavior. These variables were supposed to mediate the effects of contact on outcome variables. Authors also assessed the level of categorization perceived by participants during contact, so as to test the longitudinal sequence proposed by Pettigrew. Items referred to decategorization (Brewer & Miller, 1984), categorization (Brown & Hewstone, 2005; Hewstone & Brown, 1986), recategorization (Gaertner & Dovidio, 2000) and dual identity (Gaertner et al., 2000). Outcome variables were prejudice, perceived social distance, general outgroup evaluation, intergroup anxiety. This research should provide insights on how and why contact produces effects on prejudice and on processes related to generalization to outgroup members not present during contact. Results concerning categorization levels showed that interpersonal and dual identity representations at T1 characterized contact more than the remaining representations. The interpersonal level was higher and dual identity was lower at T2, the superordinate level was slightly higher at T2, the intergroup level did not change. These results seem to contradict the longitudinal sequence hypothesized by

Pettigrew, but it is possible that the interpersonal level increased, instead of decreasing, because contact was still at an initial stage. Cross-sectional analyses tested the mediating effects of Pettigrew's mediators and showed only one significant indirect effect: contact as friend reduced anxiety because it affected changing behavior. No significant mediating effects were obtained in the longitudinal analysis, probably because of the small sample. The second study (Eller & Abrams, 2004, Study 1) examined contact between English and French students. Participants were English undergraduates at the University of Kent. They were asked to answer a questionnaire about their relations with French students at two time points, separated by six months. The variables assessed were the same used in the previous study, with the exception of the prejudice scale, which was replaced by items assessing generalization of contact effects to outgroups not involved in contact. As in the first study, participants perceived the contact more at an interpersonal level, followed by dual identity, superordinate and intergroup levels. The intergroup level decreased, the other three levels increased at T2. This result does not support the longitudinal sequence hypothesized by Pettigrew. Cross-sectional analyses indicated only one significant mediating effect: contact as friends increased learning about the outgroup which, in turn, decreased social distance. Social distance was also the only outcome variable significantly predicted by the mediators as a block. Longitudinal analyses did not reveal statistically significant mediating effects, indicating that the effects of contact and mediating variables may be cumulative. In the third study, Eller and Abrams (2004, Study 2) considered the relation between Mexicans and Americans. Participants were Mexicans who worked for a multinational corporation in Mexico. The interval between two time-point measurements was approximately two years. The measures were the same used in the previous study. Concerning categorization levels, dual identity and interpersonal levels were more prominent than the two remaining levels, but there were no effects of Time. Cross-sectional analyses revealed that pro-outgroup behavior mediated the effects of contact as friends on social distance. There were other mediating effects, probably because the study assessed an advanced stage of contact, but they did not reach statistical significance. The mediating effects obtained in the longitudinal analyses were not significant.

Summarizing, the results of the three studies conducted by Eller and Abrams contradict the time sequence proposed by Pettigrew, indicating that the salience of categorization levels during time is not fixed, but may depend on a number of contextual variables. In contrast, the analyses concerning Pettigrew's mediators, even if often not statistically significant, suggest that the processes proposed by Pettigrew might be important in explaining contact effects and, in general, that a specific attention to the mediators of the contact-prejudice relationship is necessary for a full

understanding of the prejudice reduction process. The role of mediators in the study of intergroup contact will be the focus of the next paragraph.

Further evidence for the role of intergroup friendship is provided by three longitudinal studies. The first was conducted by Levin, van Laar, and Sidanius (2003) in the college campus of UCLA University between 1996 and 2000. Participants were White, Asian American, Latino, African American and other ethnicity undergraduate students. Data were collected along five time-points: the first before college entry, the subsequent during each spring quarter of the following academic years. Authors examined the effects of affective ingroup bias and intergroup anxiety at the end of participants' first academic year on friendships formed during the second and third year, and the influence of these friendships on ingroup bias and anxiety showed at the end of the fourth year, controlling for potentially influential variables, like pre-college ingroup and outgroup friendships. Hypotheses were that students with higher levels of bias and anxiety at the end of their first year at college would develop more ingroup and less outgroup friendships during the second and third college years. Furthermore, authors hypothesized that more outgroup friendships during the second and third year at college would predict less ingroup bias at the end of the fourth academic year, whereas an opposite relationship was expected for ingroup friendships (i.e., the more the ingroup friends, the higher the ingroup bias and the intergroup anxiety). Results were supportive of predictions. First, participants with higher levels of ingroup bias and intergroup anxiety toward other ethnic groups at the end of the first year of college developed more ingroup and less outgroup friends during their second and third academic years. Second, students with more outgroup friendships during the second and third years exhibited more positive attitudes at the end of the fourth college year. The longitudinal nature of the study enabled the authors to establish the direction of causality: partially questioning results obtained in the correlational study by Pettigrew (1997), who found that the path from contact to prejudice was stronger than the opposite path, the path from contact to attitudes was as strong as the reverse path from attitudes to contact. Thus, the relationship between intergroup contact and improved relations is bi-directional and, once activated, will become stronger as it is going on.

In a separate study, Page-Gould, Mendoza-Denton, and Tropp (2007) examined the development of friendships between White and Latino undergraduates. Participants belonging to the two groups met three times over a period of three weeks with either an ingroup or an outgroup member. During the dyadic interactions, participants completed a series of tasks oriented to progressively develop friendships by providing intimate information. Dependent measures included a broad range of indicators, such as self-reports, physiological and behavioral measures. Salivary cortisol was used as a physiological index of anxiety during interactions. Explicit anxiety was also

assessed (Stephan & Stephan, 1985). Self-reports through a diary reported behavioral responses to intergroup contact. Apprehension of prejudice (i.e., anxious expectations of prejudice on the basis of race), prior interethnic contact and implicit prejudice as measured by IAT were included as predictor variables. Results were generally supportive of the importance of intergroup friendships to reduce prejudice. Among minority group participants who interacted with Whites, apprehension of prejudice was predictive of increased self-reported and physiological (i.e., salivary cortisol) anxiety during the first meeting, but both self-reported and physiological anxiety were reduced in subsequent meetings. In contrast, physiological anxiety of majority group participants decreased from the first meeting: high prejudiced participants showed decreased cortisol levels after three meetings with outgroup members; differences in cortisol levels were not significant among low prejudice majority group members. Self-reported anxiety did not differ as a function of interethnic meetings for majority group participants. Self-reports revealed that intergroup friendships led to reduced intergroup conflict among minority group members with high levels of apprehension prejudice and to increased initiation of intergroup contact among majority group members with high implicit prejudice. Thus, high-prejudiced majority participants benefited more from the formation of intergroup friendships. Results from the latter two studies provide further support for the role of intergroup friendship in developing more positive intergroup relations.

Finally, McClelland and Linnander (2006), by using both cross-sectional and longitudinal techniques, found that Whites' positive attitudes toward Blacks increased as a function of intergroup friendships and exposure to information about racial issues: exposure to information was relevant especially to reduce contemporary racism, whereas close cross-group friendships were the only significant predictor of positive change in feelings toward Blacks.

7. The role of emotions

Recently, scholars have devoted a growing attention to the possible mediators of intergroup contact. As shown by Pettigrew (1998), mediators are important because they are concerned about the *how* and *why* contact operates and tell us about the processes that shape contact effects. Several variables have been proposed, which can be classified in cognitive or affective mediators. A cognitive mediator that has received considerable attention concerns improving knowledge about the outgroup (see Allport, 1954). However, its effects proved to be very weak (Stephan & Stephan, 1984). As a result of the poor results obtained with cognitive mediators, the attention of researchers has shifted to the role that affective processes play in explaining contact effects (see Paolini et al., 2006). As argued by Pettigrew, contact processes can be better understood by focusing on emotions rather than on cognitive factors.

The first affective mediator that we consider is intergroup anxiety. Intergroup anxiety is a negative emotion that is common in contact situations and indicates the feeling of uneasiness experienced by a person when expecting negative consequences for himself/herself during the contact experience. Mendes, Blascovich, Lickel, and Hunter (2002) argued that anxiety can take different forms: physiological (e.g., heightened cardiovascular responses), behavioral (e.g., avoidance of contact), subjective (e.g., self-reported anxiety). The most important antecedents of anxiety are the lack of contact with the outgroup, negative stereotypes about the outgroup, a large status difference, pronounced disparity between the number of majority and minority group members, conflictual intergroup relations. Encounters with outgroup members can produce apprehension, perhaps because the lack of social norms increases the uncertainty of the situation (Stephan & Stephan, 1985). Feelings of anxiety may then reduce the cognitive and perceptual focus of attention and result in increased reliance on stereotypes and expectancy confirmation (Bodenhausen, 1993; Mackie et al., 1989; Stroessner, Hamilton, & Mackie, 1992), hostility toward outgroup members and contact avoidance (Esses & Dovidio, 2002; Plant & Devine, 2003).

Islam and Hewstone (1993) investigated the role of intergroup anxiety as a mediator between contact and prejudice. The study was carried out in Bangladesh. The intergroup relation considered was that between Muslims (majority group) and Hindus (minority group). In this situation, Muslims are accorded a higher political, social and economical power over Hindus. However, the relationship between these groups is less characterized by conflict than in the nearby State of India, and it allows for everyday contact. Muslim and Hindus students answered a questionnaire that contained measures of quantity and quality of contact, membership salience during contact, intergroup anxiety, perceived outgroup variability, attitudes toward the outgroup. Hypotheses were that contact would have positive effects on intergroup relations and that these effects would be mediated by intergroup anxiety. As expected, contact had positive effects on outcome variables: quantity and, especially, quality of contact improved attitudes toward the outgroup and increased its perceived variability. Quantity and quality of contact also reduced anxiety; in contrast, the salience of group membership during contact increased intergroup anxiety. In turn, anxiety predicted reduced outgroup variability and positive attitudes toward the outgroup. Importantly, anxiety partially mediated the relationship between both quantity and quality of contact and outcome variables and totally mediated the relationship between category salience and outgroup variability and attitudes. Thus, this study shows that contact has positive effects on intergroup relations in part because it reduces the anxiety experienced during encounters with outgroup members.

Greenland and Brown (1999) conducted two studies to investigate the relationship between contact and attitudes via reduced anxiety in the Anglo-Japanese context. In the first study, British and Japanese participants were contacted in their own nations and asked to complete a questionnaire. The measures concerned quality of contact, categorization during contact (intergroup, interpersonal, superordinate), ingroup identification, intergroup anxiety, intergroup bias and negative affect toward outgroup members. The results were somewhat surprising: in the final model, none of the categorization variables was associated with intergroup bias or negative attitudes. Intergroup categorization had only negative effects: it increased anxiety and reduced contact quality. In contrast, interpersonal categorization reduced anxiety and improved quality of contact. Identification was associated with heightened anxiety. Superordinate categorization did not reveal any significant effects. Consistent with Hewstone and Brown's model (1986), quality of contact reduced negative affect only when membership salience was high. As expected, anxiety was associated with more negative intergroup bias and affect. In a follow up research, Japanese students in the United Kingdom were recruited to participate in a longitudinal study. Participants completed a questionnaire two weeks after their arrival in the United Kingdom (T1), eight months (T2) and 12 months (T3) later. Measures were similar to those used in the first study. Results substantially replicated the findings obtained in the first study. Interestingly, anxiety seemed to predict intergroup categorization, rather than vice versa. These two studies confirm the centrality of intergroup anxiety in understanding contact effects. They also show that longitudinal designs are useful to address more precisely the direction of causality between contact and attitudes.

Voci and Hewstone (2002, 2003b) conducted three studies in the Italian context (see this Chapter, paragraph 3) to test the mediational role of anxiety. In all cases, intergroup anxiety mediated the relationship between contact and outcome variables. Moreover, and consistent with the intergroup contact model (Hewstone & Brown, 1986), the relationship between contact and reduced anxiety was stronger when group salience was high than when it was low. Finally, support for the role of anxiety as a mediating mechanism between contact and intergroup attitudes has been obtained in several studies conducted in Northern Ireland testing the relationship between Catholics and Protestants (see Brown & Hewstone, 2005). This mediating effect was found for Catholic and Protestant students at the mixed University of Ulster and for a representative sample of adults. These results are particularly important, because they show the importance of considering intergroup anxiety in a context characterized by a long history of conflict and violence.

More recently, Vonofakou, Hewstone, and Voci (2007) investigated the impact of cross-group friendships with gay men on attitudes toward gays, meta-attitudinal strength and attitude accessibility. The authors acknowledged the importance of investigating the effect of contact not

only of attitude valence, but also on a meta-attitudinal index of attitude strength and on a operative index of attitude strength (i.e., attitude accessibility). In fact, research has previously demonstrated that the experience with an attitude object has effects on attitude strength, which, in turn, can affect cognition and behavior (Fazio, 1990). Participants were students at a British university. Hypotheses were that cross-group friendship would positively predict all three outcome variables (i.e., attitude, meta-attitudinal strength, attitude accessibility) and that intergroup anxiety would mediate these relationships. As predicted, anxiety mediated the effects of contact with friends on all the dependent variables (only partially for meta-attitudinal strength and attitude accessibility). In a follow-up study with British students as participants, authors added closeness of friendship as a mediator between cross-group friendship and anxiety, and explored the moderational effect of perceived group typicality. Results substantially replicated the findings obtained in the first study. In addition, closeness of friendship mediated the relationship between cross-group friendship and anxiety; moreover, closeness of friendship reduced anxiety only when group typicality of the outgroup members was high, it did not have any effects when group typicality was low. This study is important because it shows that the effects of anxiety are not limited to the valence of the attitude, but they extend to the strength of attitude endorsement and, consequently, to the cognition and behavioral outcomes.

Intergroup anxiety has received considerable attention as a mediator of the relationship between contact and prejudice. However, other negative mediators have been considered. Stephan and Stephan (2000) suggested that a major role can be attributed to perceived threat, distinguished in realistic threat (i.e, threats to the power of the ingroup, both political and economical) and symbolic threat (i.e., threat to the status of the ingroup, to its value and belief system). Tausch, Hewstone, Singh, Ghosh, and Biswas (2004) investigated the role of realistic and symbolic threat in the relationship between Hindus (minority group) and Muslims (majority group) in India. Data for both religious groups were collected in two cities: the intergroup relation was relatively peaceful in one city, more conflictual in the second city. Predictors were quantity and quality of contact, conflict experience. The hypothesized mediators were realistic and symbolic threat, intergroup anxiety, outgroup knowledge. The variable of interest was outgroup attitude. As predicted, contact was generally negatively related to threat and anxiety, which, in turn, negatively predicted outgroup attitude. Anxiety and symbolic threat mediated the contact-outgroup attitude relationship only for Hindus; knowledge and realistic threat were mediators for Muslims, but only in the peaceful city.

Perceptions of threat were considered also in a recent study by Tausch, Hewstone, Kenworthy, Cairns, and Christ (2007), who examined the relationship between Protestants and Catholics in Northern Ireland. Respondents were Catholic and Protestant students at three

universities. Predictors were quantity and quality of contact, relative status of the ingroup; mediators were symbolic and realistic threat and intergroup anxiety. The only dependent variable was outgroup attitude. Results revealed that both contact and status related to threats to the ingroup and anxiety, which were significant mediators between the predictors and outgroup attitude. Interestingly, anxiety was a mediator for low identifiers, but not for high identifiers. In contrast, symbolic threat was a stronger mediator for high than for low identifiers. These findings support the idea that contact research must take into account different negative mediators, and that threat (both symbolic and realistic) can be a determining factor in explaining contact effects, especially for people highly committed to their ingroup.

The studies reported above support the idea that negative emotions, and especially intergroup anxiety, play a crucial role in explaining contact effects. However, positive emotions too can have an important role in the process of prejudice reduction. Empathy, in particular, has the potential to improve intergroup relations (see Brown & Hewstone, 2005; Pettigrew, 1998). Batson et al. (1997; see also Batson, 1991) define empathy as “an other-oriented emotional response congruent with another’s perceived welfare.” Researchers have distinguished two basic types of empathy: cognitive and emotional (Davis, 1994; Duan & Hill, 1996). Cognitive empathy refers to assuming the perspective of another person (i.e., perspective-taking); emotional empathy can be defined as the emotional responses to another person’s emotions. Stephan and Finlay (1999) further distinguished two types of emotional empathy: parallel empathy is experienced when the emotional responses of a person are similar to those expressed by another person; reactive empathy is an emotional reaction to the emotions experienced by another person.

Cognitive empathy is useful because it may provide information about the outgroup, its values, norms and cultural practices, the worldviews of its members. It can be hypothesized that cognitive empathy is more effective in changing stereotypes than either types of emotional empathy. Reactive empathy can produce two categories of emotional responses: the first involves compassion emotions, which are related to the negative situation of the other person and are generally positive. In contrast, the suffering situation of the other person can elicit negative emotions which result in feelings of distress and, in turn, heightened threat and anxiety, whose effects on intergroup relations are mainly negative, as argued above. Thus, reactive empathy can produce both positive and negative consequences. Finally, also parallel empathy may elicit positive or negative emotional responses, depending on feelings expressed by the outgroup member. Parallel and reactive empathy can elicit emotions that have the same valence (either positive or negative) or that differ in valence. In the latter case, mixed emotions can have negative effects on intergroup relations (Stephan & Finlay, 1999).

Batson and colleagues (1997) proposed a three-step model that explains how empathy reduces discrimination toward the outgroup: (a) taking the perspective of an outgroup member arouses empathy toward this person; (b) the value of the individual welfare increases because of empathic feelings; (c) group salience of the person belonging to the stigmatized outgroup leads to the generalization of positive feelings to the outgroup as a whole. However, several factors may limit the generalization: the individual's group membership may not be salient; the outgroup members can be "sub-typed"; in some cases, empathizing can be threatening, and thus produce detrimental effects on intergroup relations. Batson et al. conducted three studies to test for the generalization of the positive effects of empathy felt for a member of a stigmatized group. The results indicated that feelings of empathy improved attitudes toward people with AIDS (Study 1), homeless (Study 2), convicted murderers (Study 3). Moreover, these effects did not differ between men and women and were independent of the fact that the people participants empathized with were or not responsible for their situation (in this case, empathy should be induced before the information about victim responsibility).

Several other studies showed that empathy has beneficial effects on intergroup attitudes and behaviors (see Galinsky & Moskowitz, 2000, for a review). Finlay and Stephan (2000), for example, found that reading vignettes about discrimination toward African Americans, and empathizing with the victims of discrimination, eliminated the differences between evaluations of Blacks and Whites, as compared to a control condition. Some studies focused on the negative effects of a lack of empathy, which was associated, for instance, with aggression (Lisak & Ivan, 1995; Miller & Eisenberg, 1988) or antisocial behaviors (Eysenck, 1981). Other studies found a positive association between empathy and prosocial behavior (e.g., Litvack-Miller, McDougall, & Romney, 1997; Oswald, 1996).

In recent years, empathy has been tested as a mediator of the contact-prejudice relationship. Voci, Hewstone, Cairns, and McLernon (2001), using a sample of adults in Northern Ireland, measured the opportunity for contact and contact as independent variables; intergroup anxiety and perspective-taking as mediators; prejudice, outgroup trust and forgiveness as outcomes. Results indicated that opportunities for contact predicted contact with friends, which, in turn, had positive effects on all three dependent variables. Moreover, anxiety and empathy mediated the effects of contact on all the three outcomes.

Tam and colleagues (2003, Study 1) tested the effects of positive and negative mediators on action tendencies in a sample of students in Northern Ireland. The authors included measures of positive and negative emotions, empathy and perspective-taking. Results revealed that cross-group friendship negatively predicted negative emotions and positively predicted positive emotions and

empathy. Moreover, negative emotions predicted negative action tendencies; positive emotions predicted positive action tendencies; empathy predicted both types of action tendencies (negatively and positively, respectively). Thus, emotions not only affect attitudes, but they can also predict action tendencies. Moreover, empathy plays a crucial role in predicting both positive and negative action tendencies. The importance of studying both positive and negative mediators was demonstrated also in a study conducted by Miller, Smith, and Mackie (2004), who found that both positive and negative emotions were stronger mediators of contact effects than were either stereotype knowledge or stereotype endorsement.

Empathy was a central mediator of three studies conducted by Voci and Hewstone (2003a) on the relationship between Italians and immigrants. Participants were Italian adults. In the first study, contact affected outgroup attitudes and subtle prejudice via reduced anxiety and increased empathy. Moreover, consistent with Hewstone and Brown's (1986) model, the relationship between contact and reduced anxiety and between contact and heightened empathy was significant only when group salience was high. In the second study, the authors measured both "social" and "intimate contact." Once again, empathy positively mediated the effects of both types of contact on outgroup attitude and subtle prejudice. Furthermore, the relationship between intimate contact and empathy was significant only when membership salience was high. The third study extended the results to a work context. Contact at work and generic contact affected outgroup attitude (positively) and a measure of perceived crimes committed by immigrants (negatively) via heightened empathy. Confirming previous findings, the relationship between contact at work and empathy was significant only under high group salience.

In two recent studies, Voci and Hewstone (2007) examined the simultaneous mediation of intergroup anxiety and empathy, distinguishing the impact of different types of empathy. The authors considered the intergroup relationship between Italians and immigrants. In the first study, anxiety and empathy (calculated as a single index, including reactive, parallel and cognitive empathy; see Stephan & Finlay, 1999) mediated the relationship between frequent and positive contact and four indexes of prejudice. In the second study, three indexes of empathy were considered: parallel empathy, reactive empathy, cognitive empathy (i.e., perspective-taking). Replicating and extending the results of the first study, both anxiety and empathy were significant mediators of the contact-reduced prejudice relationship. With respect to empathy, stronger effects were obtained for parallel empathy, which improved intergroup attitudes and reduced subtle prejudice and an indirect measure of prejudice. Reactive empathy had only one mediating effect, concerning intergroup attitudes. Finally, cognitive empathy did not reveal any significant effects; it

is possible that, to the extent that assuming the perspective of another can improve outgroup knowledge, its effects may mainly concern stereotype reduction.

Thus far, studies reported in this paragraph have focused on mediators at a group level. However, also mediators tapped at an individual level can be important in explaining contact effects. Interpersonal factors can contribute to the creation of affective ties, which are important for the process of attitude change (Pettigrew, 1997). Harwood et al. (2005, Study 2; see this Chapter, paragraph 3) tested the contact hypothesis in the context of grandparent-grandchild relationship. In this study, mediators concerned the specific relations with an outgroup member. Three types of mediators were considered: perspective-taking and anxiety (affective mediator), individuation of the outgroup member (cognitive mediator), self-disclosure (communicative mediator). Participants were students who responded about their most active grandparent relationship. The criterion variables were attitude toward older adults and variability of elderly people. In addition, quality of contact and group salience were assessed as predictors. The results showed that, when all the mediators were entered simultaneously, only perspective-taking positively mediated the contact-attitudes relationship and only individuation mediated the effects of contact on perceived variability. Moreover, perspective-taking was a significant mediator of contact on attitudes only for high levels of group salience. These findings suggest that several variables can mediate contact effects, depending on the outcome variable of interest.

Another study investigating the effect of mediators at an interpersonal level was conducted by Tam, Hewstone, Harwood, Voci, and Kenworthy (2006). As before, the authors considered the grandparent-grandchild relationship. In addition to anxiety and empathy, this study considered the role of self-disclosure in mediating contact effects. Self-disclosure can be defined as the act of providing intimate information to another person (Omarzo, 2000). Presenting personal aspects of the self to another is supposed to express a high quality of contact and represents a pivotal factor to establish cross-group friendship (Pettigrew, 1998; see also Brewer & Miller, 1984). The authors hypothesized that self-disclosure would be a proximal predictor of empathy and anxiety: quantity and quality of contact should enhance the level of self-disclosure toward the target grandparent. In turn, personalizing the relationship with grandparents should reduce anxiety and increase empathy toward this person. Finally, empathy and anxiety should predict (positively and negatively, respectively) attitudes toward the elderly in general. Results confirmed the predictions: self disclosure mediated the effects of contact on anxiety (negatively) and empathy (positively). In turn, empathy and anxiety mediated the effects of self-disclosure on attitudes toward elderly people.

It is worth noting a recent study by Aberson and Haag (2007). The authors proposed a three-step model of how contact impacts on intergroup relations. Participants were White students,

questioned about their attitudes toward African Americans. Authors hypothesized that perspective-taking and anxiety would mediate the relationship between contact quantity, quality and their interaction on outgroup attitudes and stereotype endorsement. However, in contrast to previous studies, they hypothesized that perspective-taking and anxiety do not occur simultaneously; instead, perspective-taking was expected to mediate the contact-anxiety relationship. Results were generally supportive of predictions: perspective-taking partially mediated the relationship between contact quantity and quality (but not their interaction) and intergroup anxiety. Moreover, anxiety mediated the relationship between perspective-taking and both outcomes. This study shows that, albeit both anxiety and empathy are mediators of contact effects on outcome variables, their relationship is not fixed, but it can vary depending on the context: the two types of intergroup emotions can occur simultaneously, empathy may come before anxiety or, theoretically, anxiety might decrease empathy.

Finally, we mention two studies by Turner, Hewstone, and Voci (2007), who examined the mediators of cross-group friendship in the context of relationships between South Asians and Whites in United Kingdom. In the first study (Turner et al., 2007, Study 1), self-disclosure and intergroup anxiety were considered as two potential processes underlying the effects of cross-group friendship among elementary school students. As predicted, cross-group friendship with Asian peers improved attitudes toward the general outgroup and this effect was mediated by self-disclosure (positively) and anxiety (negatively). In the second study (Turner et al., 2007, Study 4), conducted with White British undergraduate students, the authors examined more in detail how self-disclosure affects outgroup attitudes. In particular, self-disclosure was expected to mediate cross-group friendship effects; empathy, trust and perceived importance of contact (see Van Dick et al., 2004) were included as mediators of the relationship between self-disclosure and outgroup attitudes. Results were fully supportive of predictions: cross-group friendship improved attitudes toward Asians through self-disclosure. In turn, the effects of self-disclosure on attitudes were mediated by empathy, perceived importance of contact and intergroup trust. These two studies not only provide additional evidence for the role of mediators in explaining contact effects, but they also confirm the importance of intergroup friendship in improving intergroup relations.

The studies by Aberson and Haag (2007), Harwood et al. (2005, Study 2), Turner et al. (2007, Study 1), presented above, also contained a measure of implicit attitudes, which will be discussed later in this Chapter, paragraph 9.

The studies reviewed in this paragraph largely support the importance of mediators, especially affective ones, in explaining the contact-reduced prejudice relationship. Both negative and affective processes (especially anxiety and the different types of empathy), considered at

interpersonal and intergroup levels, have been shown to be important and a full understanding of the processes that lead contact to improving intergroup relations requires their simultaneous consideration.

8. The extended contact effect

The extended contact hypothesis (Wright et al., 2007) suggests that, for intergroup contact to reduce prejudice, a direct contact with outgroup members is not necessary. Instead, knowledge that an ingroup member has a close relationship with one or more outgroup members can ameliorate intergroup relations. The basic idea of extended contact builds on recent advancements of the contact hypothesis reviewed thus far, and, specifically, on: the importance accorded to cross-group friendships (Pettigrew, 1997); the little potential offered by interpersonal interactions and, conversely, the role of group membership salience in permitting generalization of contact effects (Hewstone & Brown, 1986); the importance of reducing negative emotions (e.g., anxiety) and creating strong affective ties (e.g., empathy) to create more harmonious intergroup relations (Brown & Hewstone, 2005). It appears that positive contact effects are more likely when the intergroup relations are characterized by strong affective ties and group membership is salient. With respect to this consideration, three premises are important when we consider extended contact. First, group membership in a cross-group friendship is more likely to be salient to an observer than to people directly involved. Second, anxiety and other negative emotions are less likely to arise in an observer of an intergroup friendship than in interacting people. Third, extended contact is more easily feasible than direct contact: for extended contact to have positive effects, a direct knowledge of outgroup members is not necessary.

Three mechanisms are proposed which underlie the extended contact effect (Wright et al., 2007). The first mechanism is based on the importance of an ingroup exemplar: observing an ingroup member that has a positive relationship with an outgroup member can provide information about how to behave and respond during an intergroup interaction (Turner et al., 1987), thus sustaining norms of cooperation and acceptance, and creating the premises for institutional support, which is fundamental for ameliorating intergroup relations (Allport, 1954). Moreover, direct communication between the ingroup member and the observer can add information about the outgroup. Finally, observing the ingroup member's behavior may reduce the anxiety associated with the intergroup situation. The second hypothesized mechanism is based on the idea that also positive outgroup exemplars serve an important function: their friendly behavior might reduce negative stereotypes associated with the outgroup, especially when the outgroup category is salient and perceived as internally homogeneous (Brown et al., 1999). The third proposed mechanism is based

on Aron and colleagues' work about the inclusion of the other in the self (see Aron & Aron, 1996, for a review). As group membership is an important part of the social self (Tajfel, 1981), ingroup members too are spontaneously included in the self (Aron, Aron, Tudor, & Nelson, 1991). To the extent that partners in close interactions are treated as a single cognitive unit (Sedikides, Olsen, & Reis, 1993), it is possible to hypothesize that outgroup members with close interactions with ingroup members are considered as a part of the self and are consequently accorded the privileges given to ingroup members (Turner, 1987). A possible limitation of the three mechanisms is that ingroup or outgroup members can be subtyped and hence positive intergroup relationships are more difficult to develop.

Wright et al. (1997) conducted four studies with distinct research methods to test the extended contact hypothesis. The first two studies were cross-sectional and examined the relationship between White British people and ethnic minorities. Three main predictions were tested: (a) participants with an ingroup friend that had close relationships with outgroup members would express less prejudice toward the outgroup; (b) higher numbers of ingroup friends with cross-group friendships would be related with less ingroup bias; (c) the degree of overlap between the selves of ingroup members and their outgroup friends would be predictive of lower prejudice. The results were supportive of predictions and were obtained for both the majority (Study 1 and 2) and the minority samples (Study 2). The remaining two studies addressed the issue of causality. Study 3 used a laboratory constructed group conflict study to examine the predicted causal relationship between knowledge of an ingroup member having an outgroup friend and reduced prejudice. Over a 1-day period, strong intergroup conflict between two ad-hoc groups was created. In the same day, two participants (one from each of the conflicting groups) were asked to participate in an ostensibly unrelated study, where strong interpersonal closeness was created experimentally (Aron, Melinat, Aron, Vallone, & Bator, 1997). Groups then participated in an ingroup session and in an intergroup competitive session. The hypothesis was that knowledge of an ingroup member having established friendship with an outgroup member would reduce ingroup bias. As expected, ingroup favoritism in resource allocation and outgroup evaluation following the creation of interpersonal closeness between an ingroup and an outgroup member was reduced and perceptions of the intergroup relationship was improved. In the final study, minimal groups were used (Tajfel et al., 1971). Participants were first divided into two groups on the basis of a series of estimation tasks, then observed an interaction between an ingroup and an outgroup member (both of them were confederates). The interaction was manipulated by using verbal and nonverbal cues. Three experimental conditions were created: close friendship, neutral strangers, disliked acquaintances. The authors predicted more positive intergroup attitudes in the close friendship condition. As

hypothesized, observing an ingroup member having a close friendship with an outgroup member eliminated the bias found in the other two conditions by improving outgroup evaluation. These last two studies provide experimental evidence for the predicted causal relationship from knowing of an ingroup member having outgroup friends to reduced prejudice. The four studies presented support the extended contact hypothesis and the three underlying proposed mechanisms and show that extended contact can be successful for generalization: positive evaluations of an outgroup exemplar generalize to the whole outgroup.

Increasing attention is devoted to the extended contact hypothesis (Wright et al., 1997) and to its potential to complement intergroup contact for the reduction of prejudice. Paolini, Hewstone, Cairns, and Voci (2004) explored the effect of direct and extended cross-group friendships on outgroup variability and prejudice and the mediating role of intergroup anxiety in the context of Catholic-Protestant relations in Northern Ireland. In the first study, undergraduates belonging to both communities reported the number of direct and indirect cross-group friendships with the rival religious group, intergroup anxiety, prejudice toward the outgroup and its perceived variability. Results revealed that direct cross-group friendship had a direct negative effect on prejudice, whereas indirect cross-group friendship had a direct positive effect on perceived variability. Moreover, direct and indirect cross-group friendships affected perceived outgroup variability and outgroup prejudice, respectively, via reduced anxiety. Study 2 substantially replicated results obtained in the first study by using a representative sample drawn from the adult general population. This study supports the extended contact hypothesis and provides preliminary evidence of intergroup anxiety as a potential mediator of indirect contact. Moreover, it is in line with previous results on the role that reduced anxiety plays in improving intergroup relations (see Greenland & Brown, 2000).

Tam and colleagues (2003, Study 2) further examined the mediators of extended contact and its effects on action tendencies and outgroup attitudes in Northern Ireland. A measure of importance of contact (see Van Dick et al., 2004) was added, along with empathy, perspective-taking, positive and negative emotions entered as mediators. Results showed that cross-group friendship (predicted by opportunities for contact) and extended contact predicted importance of contact, which, in turn, influenced the four affective mediators. Perspective-taking predicted positive outgroup attitude and positive and negative (negatively) action tendencies; empathy predicted positive action tendencies and outgroup attitudes; negative emotions predicted outgroup attitudes (negatively) and negative action tendencies. The present study highlights the importance of cross-group friendships, both direct and indirect, and underscores the role of emotions (and especially of empathy, both affective and cognitive) in predicting behavioral outcomes, such as action tendencies.

Finally, we mention two recent studies by Turner et al. (2007, Studies 2 and 3). The authors examined the effects of direct and indirect cross-group friendship in England. In the first study, Asian and White school students completed measures of opportunity for contact, direct and indirect cross-group friendship, intergroup anxiety and self-disclosure, outgroup attitudes. Anxiety and self-disclosure were expected to mediate the effects of both direct and extended contact on outgroup attitudes. Replicating Tam et al.'s (2003, Study 2) results, opportunity for contact predicted cross-group friendship, but not extended contact, supporting the hypothesis that direct and indirect contact are conceptually distinct constructs. Partially supportive of predictions, cross-group friendship affected outgroup attitudes via heightened self-disclosure (anxiety did not mediate the relationship), whereas self-disclosure and intergroup anxiety marginally mediated the extended contact-outgroup attitude relationship. Results did not differ between groups. The authors conducted a follow-up study (2007, Study 3) using only White high school students as participants. Results were a replication of those obtained in the first study. Thus, extended contact not only affects attitudes via reduced intergroup anxiety (Paolini et al., 2004), but also through increased outgroup self-disclosure. The last two studies also contained a measure of implicit attitudes, which will be considered in the next paragraph.

The studies reviewed provide converging evidence for the importance of extended contact in promoting more positive intergroup relations and for its complementing role to direct contact. The extended contact effect has been replicated in various intergroup contexts, also with respect to children (see Cameron, Rutland, Brown, & Douch, 2006; Liebkind & McAlister, 1999). The studies reported in this paragraph also represent additional evidence for the role of emotions as mediators of contact effects (Brown & Hewstone, 2005) and for the potential for cross-group friendship to reduce prejudice (Pettigrew, 1997).

9. Contact and implicit attitudes

Traditionally, self-reports have been used by social scientist to measure explicit attitudes toward a variety of social objects. During the last few decades, overt expressions of prejudice toward a wide number of social groups have declined, giving rise to more subtle forms of discrimination. A possible explanation is that, on the one hand, people often adopt ideologies that maintain and justify group inequalities (Sidanius & Pratto, 1999; see also Jost & Banaji, 1994; Jost, Banaji, & Nosek, 2004), whereas, on the other hand, current actual values promote fairness and justice. As a result, respondents may sometimes be unable or unwilling to report on unbiased attitudes. With respect to this point, Pettigrew and Meertens (1995), for instance, distinguished between blatant and subtle forms of prejudice: blatant prejudice is the traditional form and refers to

direct expressions of intolerance, whereas subtle prejudice is the modern form and assumes more indirect types of discrimination. A similar distinction is made by Gaertner and Dovidio (1986), who distinguished old-fashioned racism from aversive racism: old-fashioned racists overtly express discrimination toward outgroups, whereas aversive racists, who apparently endorse fair values but unconsciously maintain group distinctions, discriminate only when presented with situations in which the appropriate social norm is unclear. As a consequence of the emerging distinction between direct and indirect forms of discrimination, over the last two decades, the attention of scholars has focused on the promises of implicit measures to reveal hidden aspects of attitudes that explicit measures can not detect. Implicit attitudes are important also because they are associated with spontaneous nonverbal behaviors (e.g., McConnell & Leibold, 2001) and may influence how others perceive us (Dovidio, Kawakami, & Gaertner, 2002). Explicit attitudes are conscious, controllable and deliberative and can be tapped by explicit measures, whereas implicit attitudes are activated by the mere presence of an attitude object and thus are less influenced by social desirability concerns or self-presentation bias (Brauer, Wasel, & Niedenthal, 2000). Implicit attitude measures tap attitudes that people are unable or unwilling to express overtly (Greenwald & Banaji, 1995). They “are designed to assess attitudinal responses, without the person being aware or of necessarily intending the attitude to affect his or her response” (Wittenbrink, 2007). Implicit attitude measures are designed to assess automatic responses to an attitude object and result from unintentional and outside conscious awareness and control processes. The majority of implicit measures of attitudes currently used are based on response time measurement. Two observations are relevant here: first, mere exposure to a stimulus facilitates responses to subsequent stimuli; second, responses to a stimulus are slower when it is composed by multiple features, each implying a different response (Wittenbrink & Schwarz, 2007). Several types of implicit attitude measures have recently been developed, including the affective priming task (Fazio, Jackson, Dunton, & Williams, 1995; Fazio, Sanbonmatsu, Powell, & Kardes, 1986), semantic priming (see Neely, 1991; Wittenbrink, Judd, & Park, 1997), the affective Simon task (De Houwer, 2003; De Houwer & Eelen, 1998), the IAT (Greenwald et al., 1998; Greenwald, Nosek, & Banaji, 2003), the Go/No-go Association Task (Nosek & Banaji, 2001).

Some authors (e.g., Bargh, 1999; Fazio et al., 1995; Wilson, Lindsey, & Schooler, 2000) proposed that implicit attitudes are more resistant to change than explicit attitudes. The development of implicit attitude measures followed the observation that explicit measures are highly context dependent (see, e.g., Fazio, 1987; Olson, 1990). In contrast, by assuming that implicit measures tap evaluations outside people’s awareness, automatic attitudes were initially assumed to be contextually independent (e.g., Devine, 1989; Wilson & Hodges, 1992). However,

the idea that implicit attitudes reflect stable people's true evaluations of social objects has dramatically changed over the last seven years. There is now extensive evidence that implicit attitudes are malleable and highly context-dependent (see Blair, 2002, for a review). For instance, Kawakami, Dovidio, Moll, Hermsen, and Russin (2000) conducted three studies where participants in the experimental condition were asked to say "no" to stereotypical combinations of photographs and traits concerning Blacks and Whites or skinheads, whereas those in the control condition received no instructions. Results showed that participants belonging to the experimental group exhibited weaker implicit bias than those in the control group and this effect lasted for a 24-hour period. Blair, Ma, and Lenton (2001) showed that participants asked to engage in counterstereotypic mental imagery revealed weaker automatic bias than those engaged in stereotypic, neutral, or no mental imagery. For instance, participants who imagined a strong woman exhibited less implicit gender bias, as compared to participants asked to imagine what a vacation in the Caribbean would be like. Dasgupta and Greenwald (2001) asked participants to look at pictures of liked White and disliked Black people (pro-White condition) or, alternatively, of disliked White and liked Black people (pro-Black condition), prior to completion of a race-based IAT. Results revealed that implicit bias toward Blacks was significantly lower in the pro-Black than in the pro-White condition after photo-presentation and this effect also remained 24 hours later. Thus, memories activated during attitude measurement can influence the direction and the intensity of implicit attitudes. Wittenbrink, Judd, and Park (2001) demonstrated the importance of contextual features for the malleability of implicit prejudice by showing that participants who saw photos of a Black person in an inner-city scenario or standing by a wall with graffiti revealed more negative implicit attitudes toward Blacks than those who saw photos of the same Black person in a picnic setting. Lowery, Hardin, and Sinclair (2001) varied the race of the experimenter and found that implicit attitudes toward Blacks were worse in the presence of a Black than of a White experimenter. Authors speculated that also automatic attitudes can be sensitive to social pressures, such that, for example, interacting with an outgroup member prior to the completion of an implicit attitude measure may alter people's automatic evaluations of that group. Dasgupta and Asgari (2004) applied the notion of malleability of automatic bias to the category of women by showing that implicit gender bias was lower for respondents exposed to pictures and biographies of famous women leaders. Also the specific features of the target person may influence automatic bias. For instance, Livingston and Brewer (2002) found that negative implicit attitudes toward Blacks were stronger when White participants were presented with prototypical Black faces than when facial features were less prototypical of Blacks. Thus, specific category features are more associated with negative evaluations and their salience may increase automatic bias.

Other research demonstrated that implicit attitudes can vary depending on the actors' type of motivation or goal. For instance, Mitchell, Nosek, and Banaji (2003) showed that implicit bias depends on the way outgroup members are categorized. Participants were asked to classify photos of White disliked politicians or Black admired athletes in terms of either career or race. As expected, participants exhibited more negative implicit attitudes when asked to classify stimuli in terms of race than in terms of career. In this case, the automatic evaluation depended on the types of memories activated by the categorization task. An interesting study was conducted by Maddux, Barden, Brewer, and Petty (2005), who examined the impact of the motivation to avoid being prejudiced on automatic evaluations. In their experiment, participants were presented with photos of Blacks in either positive or negative contexts and then asked to complete a race-based IAT. Results revealed that those who were low in motivation to avoid prejudice showed lower implicit bias in positive than in negative contexts; in contrast, those with a high motivation to avoid prejudice exhibited more automatic bias in positive than in negative contexts. Thus, people who hold egalitarian values may regulate more their responses – explicit, as well as implicit – when presented with situations normally associated with negative evaluations of outgroup members (see Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). Rudman, Ashmore, and Gary (2001) demonstrated that also diversity education can change implicit attitudes. In two experiments, they showed that White students participating in a semester-long prejudice and conflict seminar reduced their implicit (together with explicit) prejudice toward Blacks, as compared with attitudes of students enrolled in a research method course.

Notwithstanding the recognition of the malleability of prejudice, little research has examined the impact of intergroup contact on the reduction of implicit bias. Two general perspectives on implicit attitudes are relevant here to make predictions regarding contact. The first is that automatic attitudes constitute just one of the multiple components of attitude (Greenwald & Banaji, 1995). Following this perspective, explicit and implicit evaluations are different aspects of the same attitude, even if it must be acknowledged that they may differ on the basis of several factors. The second perspective suggests that implicit attitudes simply reflect associations a person has been exposed to in the environment. Generally, simple exposure to stimuli leads people to establish favorable associations with them (Bornstein, 1989; Zajonc, 1968). The importance of environmental associations for implicit attitudes was demonstrated by Karpinski and Hilton (2001), who experimentally increased the accessibility of pro-elderly or pro-youth information through the repetition of word pairings and found that automatic bias toward elderly was lower for those who were exposed to pro-elderly than to pro-youth associations. This result is consistent with research on implicit stereotypes showing that automatic stereotypes depend on the nature of activated

stereotype-relevant information (see also Blair et al., 2001; Kawakami et al., 2000). According to the environmental association perspective, implicit attitudes reflect the associations to which an individual has been exposed, rather than his/her evaluation of the target. Thus, repeated exposure to a social stimulus should improve positive implicit attitudes toward it.

The research on the relationship between intergroup contact and implicit attitudes is still at initial stages. Some studies found no evidence that intergroup contact reduces implicit prejudice. For instance, Teachman and Brownell (2001) measured implicit attitudes toward overweight persons held by health care professionals who treated obesity and found that quantity of contact did not predict implicit prejudice reduction. However, when implicit attitudes toward overweight persons held by health care professionals were compared with those found in the general population, results revealed that implicit anti-fat bias was stronger in the general population, that had probably less contact with obese people. Jelenec and Steffens (2002) assessed students' implicit and explicit bias toward elderly people and found that quantity of contact decreased age bias on the explicit, but not on the implicit, attitude measure. Similarly, Dijksterhuis, Aarts, Bargh, and van Knippenberg (2000) demonstrated that contact with elderly had detrimental effects for university students. In two experiments, authors showed that students' past quantity of contact with older people was predictive of a stronger association between the category "elderly" and the attribute "forgetfulness," which, in turn, predicted the degree of memory impairment after the elderly category was activated.

These experiments seem to contradict an environmental association model (Karpinski & Hilton, 2001). Other studies, however, support the idea that the degree of contact with outgroup members reduces implicit bias. As we reported before, Lowery et al. (2001) found that contact with a Black experimenter reduced bias of White students toward Blacks, as compared with a condition in which Whites interacted with a White experimenter. Tam et al. (2006) investigated the role that students' quantity and quality of contact with grandparents had on explicit and implicit attitudes toward elderly. As we have reported earlier in this chapter (see paragraph 7), quantity and quality of contact improved explicit attitudes toward elderly through the mediation of self-disclosure, anxiety and empathy. Concerning implicit attitudes as measured by an age-based IAT, however, the only significant relationship was between quantity of contact and implicit bias: quantity of contact predicted improved automatic attitudes toward elderly. Quality of contact had no effects, and all other correlations between explicit and implicit attitude measures did not attain statistical significance. Thus, more positive implicit associations concerning elderly were displayed by people who were more familiar with older people. This result is consistent with an environmental

association model and mere exposure effect (Bornstein, 1989; Zajonc, 1968), suggesting that repeated exposure to a stimulus object elicits more positive implicit associations toward it.

Further support for an explanation of contact effects on implicit attitudes based on the environmental association model is provided by two studies conducted by Turner et al. (2007, Studies 2 and 3) and reported previously in this chapter (see paragraph 8). The authors examined the relationship between South Asians and Whites in the United Kingdom. Hypotheses were that opportunity for contact would be associated directly with cross-group friendship and indirectly, through self-disclosure and anxiety, to explicit outgroup attitudes. In contrast, authors predicted an unmediated relationship between opportunity for contact and implicit outgroup attitudes. In fact, to the extent that opportunities for contact can be considered an index of exposure to the outgroup, in accord with an environmental association model (Karpinski & Hilton, 2001), they should predict reduced implicit prejudice. Results were consistent with predictions. In both studies, opportunities for contact predicted cross-group friendship, which, in turn, affected outgroup attitude through the hypothesized mediating mechanisms. Concerning automatic bias, opportunities for contact predicted more positive implicit attitudes. No other significant correlations emerged between implicit and explicit attitude measures.

The studies by Turner et al. (2007, Studies 2 and 3) and Tam et al. (2006) reviewed above support the idea that simple exposure to outgroup members is responsible for the observed reduction of automatic bias. Other studies, however, seem to contradict a model based on the environmental associations and mere exposure effect (Bornstein, 1989; Karpinski & Hilton, 2001; Zajonc, 1968); instead, they highlight the importance of qualitative contact. Aberson, Shoemaker, and Tomolillo (2004) reasoned that, to the extent that the wide society reflects a long history of interracial discrimination and contributes to the negative evaluation of Blacks, friendship with African Americans should instead produce positive implicit associations concerning the outgroup. The importance of cross-group friendship in promoting more positive intergroup attitudes is widely recognized in contact research (see Pettigrew, 1997; Pettigrew & Tropp, 2006). Thus, authors examined the impact of cross-group friendship on implicit and explicit prejudice toward stigmatized groups. In two studies, they showed that cross-group friendship predicted less implicit prejudice toward Blacks (Study 1) and Latinos (Study 2), whereas the effects of intergroup friendship on explicit attitudes were much weaker (probably because of ceiling effects: participants scored very low on explicit bias measures).

Another study supporting the role of intergroup friendship in reducing implicit prejudice was conducted by Turner et al. (2007, Study 1), reviewed before in this Chapter (see paragraph 7). Authors' predictions were that cross-group friendship among elementary White and South Asian

children would predict more positive explicit (through mediating mechanisms) and implicit attitudes. As expected, the effect of cross-group friendship concerning explicit outgroup attitudes was mediated by self-disclosure and anxiety; the effect of intergroup friendship on implicit attitudes was unmediated.

Aberson and Haag (2007; see this Chapter, paragraph 7) tested a model considering the impact of quantity and quality of contact on explicit and implicit attitudes held by White American students toward African Americans. Hypotheses were that contact quantity, quality and their interaction would influence explicit outgroup attitudes and stereotype endorsement through the mediation of perspective-taking and anxiety, whereas implicit attitudes were expected to be predicted by the interaction of contact quantity and quality without mediation. Results revealed that, as expected and consistent with previous studies, effects of contact on explicit attitudes were mediated by the two hypothesized mediators. In contrast, reduced implicit bias was predicted by the interaction between quantity and quality of contact; this relationship was unmediated. Thus, simple quantity was ineffective in producing more positive implicit outgroup evaluations, suggesting that mere exposure to a stimulus object may not be sufficient to improve automatic attitudes.

Henry and Hardin (2006) provided further evidence for the idea that cross-group friendship reduces implicit prejudice and investigated the moderating role of group status on the intergroup friendship-reduced implicit bias relationship. Authors hypothesized that, given that higher status groups are generally favored in the wide society (e.g., Jost & Banaji, 1994; Jost et al., 2004; Sidanius & Pratto, 1999) and that lower status group members sometimes reveal implicit preference for higher status groups (Ashburn-Nardo, Knowles, & Monteith, 2003; Rudman, Feinberg, & Fairchild, 2002), friendly contact would be more likely to improve implicit outgroup attitudes among lower status group members than among higher status group members. Cross-group friendship, in fact, should be more unlikely to reduce implicit prejudice toward groups characterized by negative associations broadly represented in the society (i.e., lower status groups). In two parallel studies, results showed that friendly contact reduced implicit prejudice of Blacks (lower status group) toward Whites (higher status group) in the United States (Study 1) and of Muslims (lower status group) toward Christians (higher status group) in Lebanon (Study 2), whereas the implicit prejudice of Whites toward Blacks and of Christians toward Muslims was not influenced by intergroup contact. In contrast, consistently with the contact literature (see Pettigrew & Tropp, 2006), results generally replicated the effects of intergroup contact on reduced explicit prejudice among both higher and lower status groups. These results call for caution in affirming that intergroup contact has positive effects on implicit prejudice and highlight the importance of

improving the status of lower status group members to increase contact situations that provide positive associations.

A study conducted by Lemm (2006) further supports the importance of both frequency of contact and intimate relationships with outgroup members to reduce implicit prejudice. The author examined the influence of intergroup contact and motivation to respond without prejudice on explicit and implicit prejudice expressed by heterosexuals toward gay men. Expectation were that both contact and motivation to avoid prejudice would predict reduced explicit and implicit bias. Consistent with predictions, results revealed that participants who reported more frequent contact and closer relationships with homosexuals and who were more motivated to avoid prejudice expressed more positive explicit and implicit attitudes toward gay men. These results highlight once again the importance of qualitative intergroup relationships and underscore the importance of considering individuals' motivations for reducing automatic bias (see also, e.g., Ferguson & Bargh, 2004; Maddux et al., 2005; Mitchell et al., 2003; Sherman, Rose, Koch, Presson, & Chassin, 2003).

Finally, it is worth noting a study by Eller and Abrams (2006), who examined the role that implicit bias plays within the common ingroup identity model (Gaertner & Dovidio, 2000). The authors explored the possibility that implicit attitudes moderate the effects of intergroup contact and levels of categorization on explicit prejudice. As reported before (see this Chapter, paragraph 5), automatic attitudes moderated the effects of qualitative contact, common ingroup identity and dual identity (marginal effect) on anxiety: the three variables reduced anxiety only for participants who exhibited high levels of implicit bias. Thus, the relationship between contact and implicit attitudes can be more complicated than initially assumed, and more systematic research is needed to investigate the relationship between automatic prejudice, intergroup contact and levels of categorization.

As argued before, the studies reviewed above which underscore the importance of qualitative contact and cross-group friendship can be seen in opposition to an environmental association model supporting the idea that simple exposure to a stimulus is sufficient to improve implicit attitudes toward this object (Bornstein, 1989; Karpinski & Hilton, 2001; Zajonc, 1968). However, they can be interpreted also in light of an environmental association model: to the extent that implicit attitudes tap associations a person is exposed to in his/her environment, people who have outgroup friends are more likely to develop positive implicit associations toward those groups. For instance, there is evidence that negative evaluations of Blacks expressed by Whites in the United States result from a society reflecting a long history of interracial discrimination (Gehring, Karpinski, & Hilton, 2003). However, if people's environment can provide frequent and positive

associations with outgroup members that replace previous negative associations, implicit attitudes are more likely to improve.

The studies reviewed thus far suggest that quantitative and/or qualitative intergroup contact have the potential to reduce implicit prejudice. This finding is consistent with results concerning explicit attitudes, which show that simple contact with outgroup members is sufficient to reduce prejudice, even if this effect is stronger when cross-group friendship is involved (Pettigrew & Tropp, 2006). However, more research is needed to improve our understanding of the contact-improved implicit attitudes relationship.

10. A negative effect of intergroup contact: cognitive impairment

The contact hypothesis (Allport, 1954) has received converging support from an impressive amount of studies, which were realized in several contexts using very different methodologies. Pettigrew and Tropp's (2006) review confirmed the usefulness of intergroup contact as a way to reduce prejudice toward outgroup members met in the contact situation, outgroup members not yet encountered and also to uninvolved outgroups. Contact effects are present even if Allport's optimal conditions (i.e., equal status, cooperation, common goals, support of authorities) are not met; however, the effects of optimal contact are stronger when the four conditions are present.

Despite the large empirical support, there is also evidence that contact, in some cases, can produce negative effects. For instance, intergroup contact may be threatening and create a state of uncertainty and anxiety (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Stephan & Stephan, 2000). In many situations, however, contact reduces anxiety and impacts positively on intergroup relations (e.g., Brown & Hewstone, 2005). In this regard, it is useful to distinguish chronic affect from integral affect. Chronic affect refers to enduring and stable emotional responses to outgroup members; episodic affect concerns affective reactions that are limited to a specific contact situation. Generally, experimental studies which used physiological and behavioral measures of anxiety showed negative effects of contact, whereas cross-sectional studies using self-reported measures reported positive effects of contact. It is possible that experimental studies detected mainly affect in its episodic form, whereas cross-sectional studies explored the chronic form of affect. It is conceivable that repeated experiences of chronic affect develop into chronic (and positive) affect (Paolini et al., 2006).

It is also possible that negative contact experiences, which increase the levels of anxiety, have detrimental effects on cognitive functioning and behaviors of people. It has been demonstrated that coping with stress can result in poorer self-control performance (Glass, Singer, & Friedman, 1969). People that face a stressful situation need to monitor threatening stimuli (Cohen, 1978, 1980;

Lazarus & Folkman, 1984), especially if the threat is not under the person's control (Matthews, Scheier, Bunson, & Carducci, 1989). Thus, stressful and anxious interracial interactions may produce negative effects on people's self-control and cognitive and behavioral performances. This hypothesis is consistent with a resource model of executive attention (Baumeister, Muraven, & Tice, 2000; Engle, Conway, Tuholski, & Shisler, 1995; Muraven & Baumeister, 2000). This model proposes that self-regulation, defined as the attempt to control or change one's own responses, consumes a limited resource. The self uses this resource for a broad range of activities, such as controlling thoughts, affect, impulses and performances. Self-control operates like a muscle or strength. This form of strength is necessary for the executive functions of the self; however, it is limited and so it can be readily depleted. The success or failure in self-regulating activities depend on the level of self-control strength, which is expended in the process of self-regulation. To the extent that many forms of self-control draw on the same limited resource, activities that require self-regulation may be impaired if the resource has not already been replenished after a first act of self-control. Muraven, Tice, and Baumeister (1998) showed in three experiments that, when a situation requires two consecutive acts of self-regulation, performance in the second task is impaired. A large body of research is consistent with the basic idea of a strength model: activities of self-control are impaired if they come after situations that require self-regulation, such as exposure to stressors, noise (Glass et al., 1969), mood and emotional responses regulation (Thayer, 1996), dieting (Polivy, 1990), delaying gratification (Fry, 1975), suppressing thoughts (Muraven et al., 1998). Several studies also showed that acts of choice and active initiative draw on the same general resource (e.g., Baumeister, Bratslavsky, Muraven, and Tice (1998). That is, performance in a self-regulatory task is impaired for people that were previously asked to make some kind of choice. The relation is symmetrical: acts of self-control can impair subsequent acts of volition (see Baumeister et al., 2000). Thus, the entire executive function of the self draws on the same limited resource that is depleted after its use (Baumeister et al., 2000). Muraven (1998) suggests that the act of regulating one's own responses does not severely deplete people's resources; instead, people keep the remaining energy, which is limited, when it is possible and not costly, while they use all the limited energy when the outcomes of the situation require extra efforts. There are indications that the capacity for self-control can be improved with exercise (Breslau, Peterson, Schultz, Andreski, & Chilcoat, 1996; Zimmerman, Warheit, Ulbrich, & Auth, 1990). A longitudinal study conducted by Muraven, Baumeister, and Tice (1999) revealed that participants who performed self-control exercises for two-week periods were less affected by a depletion manipulation than participants who did not engage in self-regulation exercises. Moreover, it seems that the improved ability in self-control showed by participants who engaged in self-regulation for two weeks resulted from

reduced vulnerability to depletion, rather than from improved self-regulatory capacity. Thus, this study suggests an optimistic implication: in the short term, self-regulation impairs regulatory capacity; in the long run, people who engage more in self-regulation can improve their ability and suffer less from reduced performance after depletion.

It is possible to extend the resource model of executive attention (Muraven & Baumeister, 2000) to more complex cognitive processes, such as prejudice. To the extent that prejudice can operate automatically (Devine, 1989), depletion should increase prejudice concerns, at least for people that normally spend energy in controlling their prejudice responses (Dunton & Fazio, 1997; Plant & Devine, 1998). Consistent with this reasoning, Muraven, Baumeister, Dhavale, and Holland (1999) found that depletion increased prejudice toward African Americans expressed by Caucasian participants with a high motivation to avoid prejudice, but not that showed by those with a low motivation to control prejudice.

As we have seen, executive attention can be depleted and have negative effects on subsequent tasks requiring self-regulation. An important question now is how the self can replenish the resources expended. Rest and sleep are important ways to restore energy (see Baumeister, Heatherton, & Tice, 1994). Relevant to our work, there are indications that also positive affect can replenish the self-regulation resource (Baumeister, Dale, & Tice, 1998). Thus, repeated and positive contact experiences not only can improve people's ability in self-regulating their responses, but they can also increase positive affect that, in turn, restores the resources used for self-control during the interaction.

Richeson and Shelton (2003) tested the idea that, to the extent that interracial interactions are stressful and require self-regulation, interacting with an outgroup member should temporarily impair executive resources. This reasoning should be true especially for high-prejudice participants, who can find the intergroup interaction more stressful than low-prejudice participants. Participants were White undergraduate students. First, they met a White experimenter and were asked to complete the affective prejudice scale toward Blacks (Pettigrew & Meertens, 1995) and an IAT (Greenwald et al., 1998), which assessed automatic prejudice toward Blacks. Then, they moved to a different room, where they interacted with a second experimenter. In the experimental condition, the second experimenter was Black; in the control condition, he was White. In both conditions, the task was to help the experimenter with the creation of stimulus material for an ostensibly unrelated study. Participants spent one minute introducing themselves and four minutes commenting two issues (two minutes for each): racial profiling after 9/11 (race sensitive topic); college fraternity system (race neutral topic). The interaction was videotaped. Finally, participants were led to the first room and completed a Stroop color-naming task in the presence of the first experimenter. The

Stroop task was used because it requires the inhibition of incongruent responses and thus executive attentional capacity (Engle, 2002). In the Stroop task, participants are asked to report the color in which a word or a string of letter is written, and to ignore the semantic meaning of the word. Hypotheses were that interactions with a Black person would impair subsequent performance on the Stroop task only for participants with high levels of prejudice, as compared to participants with low levels of prejudice and to participants who engaged in same-race interactions. The results were consistent with predictions: Stroop performance was worse after interacting with an outgroup member than when the interaction was with an ingroup member; implicit attitudes predicted impairment in the Stroop task after interaction with the Black experimenter, not after interaction with the White experimenter. Furthermore, implicit prejudice predicted impairment in the Stroop task after interaction with a Black person only for participants with IAT bias scores above the mean, whereas participants with IAT bias scores below the mean did not show differential Stroop interference depending on the race of the second experimenter. Analyses using explicit bias as predictor yielded similar findings; however, the effect of explicit bias was no longer reliable after implicit bias scores were entered in the regression equation.

Richeson and Shelton (2003) investigated the possibility that results obtained were attributable to the effects of the interaction during the discussion of the racially sensitive topic. To test for this possibility, two independent observers coded the videotapes of participants' responses to each of the two topics. Two indexes were created: response modulation (the extent to which participants attempt to regulate their responses) and behavioral control (the extent to which participants attempt to regulate their movements). The more the intergroup interaction is stressful, the more participants should regulate their behavior and their responses. In turn, heightened control should predict the extent of cognitive impairment. Results revealed that response modulation was predicted by the race of the second experimenter for both questions (only marginally, for the race sensitive topic); however, it did not have any effects on Stroop interference. In contrast, both the race of the second experimenter and IAT bias predicted the extent of behavioral control during the fraternity question. In turn, behavioral control after the racial profiling question predicted Stroop interference after the interaction with the Black experimenter and not after same-race interactions. Thus, this study demonstrates that interracial interactions can have temporary detrimental effects on the cognitive system of people, especially for those high-prejudiced. It is possible that especially high-prejudice individuals find the intergroup interactions more stressful and tend to regulate their behavior during racial encounters more than low-prejudice people. High-prejudice individuals may rely strongly on self-regulatory resources in order to manage negative stereotypes, emotions and thoughts concerning outgroup members. Engaging in a act of self-regulation (i.e., intergroup

interaction) temporarily depletes participants' capacity to perform in a second task which requires self-regulation. These findings are consistent with a resource model of executive attention (Muraven & Baumeister, 2000).

Richeson and collaborators (2003) conducted two studies to investigate the neural correlates of resource depletion after interracial contact. Research on cognitive neuroscience has identified brain structures, which include dorsolateral prefrontal cortex (DLPFC) and anterior cingulate cortex (ACC) (Carter et al., 1998; Milham, Banich, Claus, & Cohen, 2003), implicated in executive control. Specifically, DLPFC is supposed to regulate activity within posterior processing systems so as to select task-relevant processes in order to maintain an attentional set (Banich et al., 2000; Kimberg & Farah, 1993; MacDonald, Cohen, Stenger, & Carter, 2000); the function of the ACC is to monitor conditions that require control, as when intentional and pre-potent responses are in conflict (Carter et al., 1998; Cohen, Botvinick, & Carter, 2000; Gehring & Knight, 2000). Moreover, research suggests that executive function seems to involve both ventral and dorsolateral PFC regions located in the two hemispheres (Chee, Sriram, Soon, & Lee, 1999; Konishi, Nakajima, Uchida, Sekihara, & Miyashita, 1998). The two studies employed a procedure similar to that used by Richeson and Shelton (2003): White undergraduate students completed an IAT assessing automatic prejudice toward Blacks, then they were led to a second room with a second experimenter (he was Black in Study 1; White in Study 2) to participate in an apparently unrelated study. Finally, they returned to the first room to complete the Stroop task. In addition, participants participated in a separate session for an ostensibly different study, where fMRI was used to assess neural activity in response to Black and White faces. The results generally supported a resource model of executive attention (Muraven & Baumeister, 2000): individual differences in neural activity in the right DLPFC and ACC in response to Black faces (but not after viewing White faces) predicted Stroop impairment after interracial contact, but not after same-dyads interactions. Furthermore, right DLPFC activity mediated the relationship between racial bias and Stroop impairment after contact with a Black person, not after interacting with a White person. These findings shed further light on the hypothesized mechanism that lead to cognitive impairment after intergroup interactions, by showing heightened neural activity (specifically, DLPFC activity) after presentations of photographs of outgroup members. Specifically, engaging in cognitive control after encounters with outgroup members (which is supposed to be the function of DLPFC) may explain cognitive impairment in a subsequent task requiring self-regulation.

It is possible that the findings obtained by Richeson and Shelton (2003) are limited to members of dominant groups, who should be more concerned about the regulation of their (presumably) prejudice responses during interracial interactions than members of subordinate

groups. However, it is possible that threat induced by interracial interactions impairs performance also for subordinate group members. Richeson, Trawalter, and Shelton (2005) tested the hypothesis that interracial interactions would deplete executive resources of Black people engaged in interactions with White individuals. The procedure was the same used by Richeson and Shelton. The only difference was that, in this case, participants were Black undergraduate students and that only implicit racial bias was assessed (in the previous study, participants also completed a measure of explicit racial attitudes). Results paralleled those obtained with White participants: Blacks with more pro-White implicit attitudes showed less Stroop interference after interacting with a White person, as compared with participants with less positive implicit attitudes toward Whites. Moreover, as hypothesized, implicit bias did not predict Stroop impairment after same-race interactions. This study extends previous work by Richeson and Shelton by showing that depletion after intergroup interaction is not limited to members of dominant racial groups, but it is present also in members of stigmatized groups.

Richeson and collaborators' proposed mechanism for the depletion effects after intergroup interaction is self-regulation: people need to regulate their responses during intergroup encounters, and this act of self-control temporarily depletes people's executive functioning. This reasoning is true especially for high-prejudice people, who are more concerned about the regulation of their negative thoughts in contact situations. The studies reported above, however, did not directly examine the role of self-regulation in temporarily reducing executive attention. Richeson and Trawalter (2005) specifically addressed the idea that self-regulatory demands were responsible for the depletion effects obtained in the previous studies. In three studies, they manipulated the self-regulatory demands of the contact situation and examined the subsequent impairment on an inhibitory response task. The hypothesis was that increasing the self-regulatory demands of the contact situation would increase the extent of cognitive impairment in a subsequent regulatory task after interracial interactions, but not after same-race interactions. In contrast, reducing self-regulation during intergroup contact would reduce the impairment in a second task requiring control resources; it would not affect performance after an encounter with an ingroup member. In the first study, self-regulatory demands during contact were increased. White participants were brought into a lab and asked to complete an IAT that assessed automatic prejudice toward Blacks. Then, participants were given false feedback about their performance: half of the participants was told that they might be more prejudiced than they thought they could be, whereas the other half of the participants was provided with negative feedback about their performance without mentioning prejudice (control group). Afterwards, as in the previous studies, participants met a White or a Black confederate as part of an apparently unrelated study and, finally, they completed the Stroop

task. Replicating previous findings, participants who engaged in interracial interactions revealed greater Stroop impairment after interracial interactions, as compared to those in same-race interactions, and this was true especially for high-prejudice participants. Furthermore, and consistent with predictions, the extent of cognitive impairment after interracial interactions was greater in the prejudice feedback condition than in the control condition. In the second study, the procedure was similar, except for the fact that self-regulatory demands of the contact situation were decreased. During the interaction, participants were asked to comment on racial profiling: in the experimental condition, participants were given a scripted opinion to read, in order to “standardize responses.” The script was expected to reduce the self-regulatory demands during contact, because participants’ comments would be attributed to the script. In the control condition, no mention to the script was made. Thus, the experimental condition should reduce the uncertainty of the contact situation and the anxiety associated to encounters with outgroup members (Stephan & Stephan, 1985). In turn, reduced self-regulatory demands should lead to diminished cognitive impairment on the following inhibitory response task after interactions with an outgroup member, but not after meeting an ingroup member. Specifically, results of the no-script condition were expected to replicate previous findings (i.e., greater Stroop impairment after intergroup contact), whereas participants in the script condition were expected to reveal the same degree of cognitive impairment after engaging in interracial or same-dyad interactions. Moreover, participants in the script condition were expected to reveal less Stroop impairment after intergroup contact, as compared with participants in the no-script condition who engaged in interracial contact. Results were consistent with predictions: the script reduced self-regulatory demands during intergroup contact and, consequently, the extent of cognitive impairment, as compared with the no-script condition. Moreover, in the script condition, Stroop impairment did not differ depending on the race of the second experimenter. In the no-script condition, as expected, Stroop impairment was stronger after meeting a Black than a White experimenter. In the third study, self-regulatory demands were decreased by misattributing the anxiety and uncertainty of the interaction to external causes: specifically, participants in the experimental condition were told that previous subjects felt anxious because of the mirror placed in the room, whereas participants in the control condition were given no information about previous participants. Misattributing anxiety and uncertainty to an external and benign source was expected to reduce self-regulation during contact. Except for the experimental manipulation, the procedure was the same used in the second study. As expected, reducing self-regulatory demands reduced the extent of the impairment on the following Stroop task. Taken together, these three studies support the idea the self-regulation is critical in reducing executive attention during intergroup contact and that varying the need to engage in self-regulation

affects the extent of cognitive impairment. Thus, intergroup interactions should be structured so as to reduce the anxiety and uncertainty produced by the situation, which have detrimental effects on cognitive functioning.

Richeson and collaborators reasoned that, if self-regulation produces negative effects during intergroup encounters, then the motivation goals that regulate control efforts during contact become crucial. Individuals with a promotion-focus are concerned more about the presence or absence of positive outcomes, whereas those with a prevention-focus are more concerned with the presence or absence of negative outcomes (Higgins, 1997). People engaging in prevention-focus strategies are more likely to regulate more their responses (Higgins, Roney, Crowe, & Hymes, 1994) and thus are potentially more subject to depletion than those using promotion-focus strategies. The attempt to avoid prejudice can be considered a prevention-focus strategy, and thus it is likely to readily deplete attentional resources, whereas a promotion-focus strategy should be a more flexible cognitive process that consumes less executive attention. Trawalter and Richeson (2006) compared the effects of adopting a promotion-focus or a prevention-focus during interracial interaction on a subsequent inhibitory task. The hypothesis was that individuals using a promotion-focus strategy would show less impairment in a Stroop task, as compared to those who adopted a prevention-focus strategy or to participants not explicitly provided with a regulatory-focus strategy. Findings supported predictions: participants who were told to approach contact with a Black experimenter as an opportunity to enjoy a stimulating conversation (promotion-focus condition) performed better on a subsequent Stroop task, as compared to participants who were asked to try to avoid appearing prejudiced (prevention focus) or to participants who did not receive specific instructions about regulatory focus (control condition). This study shows that, despite the negative effects of trying to suppress prejudiced thoughts and behaviors during contact, a promotion-focus can have beneficial effects on cognitive functioning and may permit people to maintain high levels of executive attention.

The evidence reviewed thus far consistently shows that interracial contact can have detrimental effects on cognitive functioning of people, because it depletes executive attentional resources that are important for self-regulation (Richeson & Shelton, 2003). Depletion occurs mainly because of the anxiety and uncertainty created by the contact situation (Richeson & Trawalter, 2005). However, reducing cognitive demands of the situation or adopting a promotion-focus strategy can reduce the extent of cognitive impairment (Trawalter & Richeson, 2006). Furthermore, there are indications that repeated self-regulation exercises or, in our case, prolonged contact experiences, might improve self-control ability (Muraven, Baumeister, & Tice, 1999) and

thus reduce or eliminate the negative effects of intergroup contact on the cognitive functioning of people.

Chapter 2

Reducing prejudice toward disabled

Dalla parte dei più deboli, per essere più forti

Vittorio Bacchetti

1. Introduction

The aim of this study was to examine the effects of intergroup contact in a naturalistic context on attitudes toward disabled co-workers and its potential for generalization to disabled not yet encountered. Moreover, we aimed at comparing the effectiveness of different contact modes in producing more positive relations. In particular, we considered the moderational role of salience of interpersonal differences (Brewer & Miller, 1984, 1988), group membership (Brown & Hewstone, 2005; Hewstone & Brown, 1986), common ingroup identity (Gaertner & Dovidio, 2000), dual identity (Gaertner et al., 2000). We explored the effects of the dual identity representation (i.e., salience of two subgroups within a shared identity) with two different strategies. First, by using regression analyses, we tested the effects of contact when both group salience and common identity salience were high. This method allow us to distinguish the effects of common group perceptions from those produced by membership salience within the context of dual identity (for an applicative use of this procedure, see Vezzali, Capozza, Mari, & Hichy, 2007). Second, we included in the questionnaire two items designed to tap the dual identity representation. Furthermore, we tested for the first time Brown and Hewstone's hypothesis (2005) that interpersonal and intergroup dimensions can be viewed as orthogonal (Stephenson, 1981) and not necessarily as opposite poles of a continuum (Tajfel, 1981).¹ In this view, contact should reduce prejudice more when both components – interpersonal, intergroup – are salient: the salience of interpersonal differences should particularly improve attitudes toward known disabled, whereas group salience should allow generalization of positive contact effects to unknown outgroup members.

It is the first time, to our knowledge, that the five contact modes are tested with correlational techniques in a naturalistic context, with respect to both known and unknown outgroup members. A

¹ I thank my supervisor, Prof. Capozza, for suggesting this possibility.

large number of dependent variables will be used, including measures of attitudes and emotions toward outgroup members met during contact (proximal outgroup members) and toward outgroup members in general (distal outgroup members). Furthermore, a measure of implicit attitudes will be included. Previous studies have focused more on the effects of contact on emotions felt toward the general outgroup (for exceptions, see Harwood et al., 2005; Tam et al., 2006). However, we believe that it is necessary to examine the impact of contact also on proximal emotions and their relations with more general evaluations. Predictions are that positive contact would improve relationships with known disabled and attitudes toward the general category of disabled. Moreover, on the basis of the contact literature reviewed in the first chapter, we hypothesize that contact would improve relations toward known outgroup members more when common ingroup identity, dual identity or interpersonal differences are salient; generalization should occur more when dual identity or respective group memberships are salient.

The common ingroup identity model (Gaertner & Dovidio, 2000) has usually been tested with mediational analyses. Gaertner and colleagues, in fact, hypothesize that group representations act as mediators between antecedents and consequences of contact. There is an impressive amount of experimental and cross-sectional data supporting the idea that group representations mediate the relationship between contact and outgroup evaluations and emotions (see, e.g., Gaertner et al., 1990, 1994). Thus, in addition to testing their moderational functions, we consider the mediational role of group representations in the relationship between contact and attitudes toward known outgroup members. Simultaneously, we will test a theoretical model explaining how contact effects generalize to distal outgroup members. Several studies showed that outgroup attitudes (e.g., Voci & Hewstone, 2003b) and emotions (e.g., Islam & Hewstone, 1993; Tam et al., 2003, Study 2; Voci & Hewstone, 2003a, 2007) mediate the relationship between contact and outcomes concerning outgroup members not yet encountered. Moreover, recent studies (Harwood et al., 2005, Study 2; Tam et al., 2006) considered mediators tapped at an interpersonal level (i.e., mediators relative to known outgroup members; see Chapter 1, paragraph 7) and showed that they allow the generalization of contact effects to the distal outgroup. Given these evidences, we hypothesize that attitudes and emotions expressed for proximal outgroup members mediate the effects of contact on emotions and attitudes toward outgroup members not yet encountered. It is the first time, to our knowledge, that a double mediation pattern is tested, where contact modes explain the effects of contact on proximal evaluations and proximal evaluations explain generalization to explicit and implicit attitudes. An analogous model concerning explicit attitudes, however, has already been proposed and tested by Capozza, Vezzali, and Hichy (2007).

The methodology used in this study allows the achievement of both practical and theoretical goals: moderational analyses are used to test the effectiveness of the different contact modes; mediational analyses can provide important indications about the processes by which contact reduces prejudice.

An additional aim of this study was to explore the changes in group representations during the contact experience. As many authors suggest, in fact, contact strategies based on categorization processes are not necessarily mutually exclusive (e.g., Gaertner & Dovidio, 2000). Pettigrew (1998) argues that contact modes can be viewed over time, and that the relative salience and importance of them is not fixed, but may vary depending on the phase of contact, prior intergroup attitudes and contextual features (see Chapter 1, paragraph 6). His proposal is that contact should be more effective when it is characterized first by salience of interpersonal differences, so as to reduce anxiety stemming from contact, then by membership salience, to facilitate generalization, and, finally, by recategorization into a larger superordinate identity. However, even though we believe that Pettigrew's proposed longitudinal sequence may be ideal to improve intergroup relations, it is unlikely to spontaneously happen and it may be better implemented during structured programs aimed at reducing prejudice. We agree that relative salience of contact modes can vary over time, but we propose a more realistic sequence of changes. In fact, even if we acknowledge that, in some cases, interpersonal differences might characterize initial phases of contact, we believe it unlikely that group memberships become salient after personalized contact has been established. Instead, we think that salience of respective identities is more likely to characterize initial than late phases of intergroup contact. To test this hypothesis, we included items in the questionnaire designed to tap participants' group representations of the past and present contact experience. We expect that group membership and dual identity salience decrease over time, because group distinctions should be reduced by contact. In contrast, we predict that salience of interpersonal differences and common ingroup identity increase as long as contact experience is prolonged, because positive contact should favor the development of friendship relationships and the perception of being part of the same team.

1.1 Context of the study: disability in the Italian society

We decided to consider the intergroup relation between non-disabled and disabled, because of its relevance for the contemporary Italian society and because of the lack of studies that have investigated this relationship in the work context. Our participants were non-disabled workers of firms, corporations and cooperative societies of the city of Bologna – the capital of Emilia-Romagna, a Northern Italian region – who worked in contact with disabled co-workers with

psychiatric problems. The law n.104/1992 defines the disability as restriction or lack of the ability to do an activity in a manner commonly accepted as standard for a man or a woman. According to this definition, the number of disabled in Italy is 2.8 million, almost 4.8% of the Italian population. Disabled with psychiatric problems are almost 25% of the total number of disabled, even if it is often unrealistic to clearly distinguish between physical and mental or psychiatric disability. There is a consistent and growing level of integration of disabled within the larger Italian society. The level of scholastic integration is high: 64.1% of disabled with an age comprised between 15 and 64 years old has a primary school diploma, 22.8% has a high school diploma or a degree (the percentages in the non-disabled population are 51.1% and 46.2%, respectively). With respect to job integration, the employment of disabled is regulated by the law n.68/1999, which defines the rules for the employment and the integration at work of disabled. The unemployment rate of people with disabilities is 9.9%, whereas it is 8.7% for non-disabled. The employment rate is much higher for non-disabled (57.1%), than for disabled (19.1%) and is higher in Northern Italian regions than in Central or Southern regions. Almost 40-45% of disabled people who benefit from the law 68/1999, which regulates the compulsory employment of disabled, is employed (data from ISTAT, Italian Institute of Statistics, 2000-2005).

1.2 Studies on contact with disabled people

Research on the effects of intergroup contact on relationships between non-disabled and disabled people is wide and has a long history in social psychology. For instance, Altrocchi and Eisdorfer (1961) found that attitudes toward mental illness were more a function of contact with psychiatric patients than of information provision on the disability alone. Bell (1962) showed that hospital employees with close relationships with disabled displayed more positive attitudes toward people with disabilities than participants without personal ties. Holzberg and Gewirtz (1963) revealed improved attitudes and knowledge of mental illness among volunteers instructed to increase acceptance during contact with mental patients. Similarly, Kulik, Martin, and Scheibe (1969) reported positive effects of contact between college volunteers and patients of a mental hospital. Chinsky and Rappaport (1970) found that relationships between chronic mental patients and college students were more positive at the end of a companionship program, as compared with those of two control groups. Cook and Wollersheim (1976) demonstrated that quality of contact, rather than quantity per se, was responsible for more positive attitudes toward mentally retarded.

Experimental and correlational empirical evidence generally supported the idea that intergroup contact has the potential to improve relations between people with and without disabilities. Although some studies found no relationship between contact and improved attitudes

(e.g., Arkar & Eker, 1997; Hastings & Graham, 1995; Sandberg, 1982; Van Weerden Dijkstra, 1972; Weller & Grunes, 1988), others obtained mixed (e.g., Aronson & Page, 1980; Louvet & Rohmer, 2000; Roper, 1990; Tripp, French, & Sherrill, 1995) or even negative (e.g., Prather & Chovan, 1984) results concerning the effect of social contact on attitudes toward disabled, the vast majorities of evidences consistently showed that contact reduces prejudice toward disabled (e.g., Desforges et al., 1991; Leyser & Price, 1985; Maras & Brown, 1996; Slininger, Sherrill, & Jankowski, 2000; Stainback & Stainback, 1982; Strauch, Chester, & Rucker, 1970), even in its indirect form (i.e., extended contact; see, e.g., Cameron & Rutland, 2006). Contact with disabled proved to have beneficial effects on intergroup attitudes and negative stereotypes (e.g., Antonak, 1981; Gething, 1991; Kish & Hood, 1974; Krahe & Altwasser, 2006; Lyons, 1991), emotions (e.g., Diamond, 2001; Florian & Kehat, 1987; Johnson & Johnson, 1985; Nosse & Gavin, 1991) and behaviors (e.g., Fichten, Amsel, Bourdon, & Creti, 1988; Johnson & Johnson, 1981; Kalson, 1976; Trute & Loewen, 1978; Voeltz, 1982) toward disabilities. In addition, contact has proved to be beneficial also on attitudes, emotions and behaviors of disabled involved in interactions with non-disabled people (e.g., Johnson, Johnson, Scott, & Ramolae, 1985; Ladd, Munson, & Miller, 1984; Yager, Johnson, Johnson, & Snider, 1985). Furthermore, there are indications that affective more than cognitive factors facilitate relations between disabled and non-disabled people (see Fichten, Tagalakis, & Amsel, 1989).

Some studies suggest that people with disability related to mental or psychiatric factors are perceived differently, and somewhat more negatively, than those with physical disability (e.g., Anderson & Antonak, 1992; Furnham & Gibbs, 1984; Leyser & Abrams, 1982; Penny, Kasar, & Sinay, 2001). However, the effects of contact have proved to be positive for both types of disabilities. In fact, contact with mental or psychiatric disabled was associated with more positive attitudes toward mental or psychiatric illness (e.g., Ballard, Corman, Gottlieb, & Kaufman, 1977; Krajewski & Flaherty, 2000; McDonald, Birnbrauer, & Swerissen, 1987; Read & Law, 1999). Similarly, contact with physically disabled persons had positive effects on relations with physically impaired people (e.g., Gosse & Sheppard, 1979; Most, Weisel, & Tur, 1999; Palmerton & Frumkin, 1969). Moreover, there are indications that positive effects of contact with people with physical or mental disabilities generalize to the whole category of disabled (e.g., Fichten, Schipper, & Cutler, 2005; Newberry & Parish, 1987; Stewart, 1988). However, few studies have been conducted in this direction and more research is needed to understand if and how contact with people with different types of disabilities can improve relations toward disabled in general.

1.2.1 Contact with disabled in the work place

With respect to contact with disabled people in the work place, few studies have been conducted that examined attitudes of non-disabled toward their disabled co-workers (see Mangili, Ponteri, Buizza, & Rossi, 2004). A notable exception is the study by Hetu, Getty, and Waridel (1994), who found that frequency of contact with hearing-impaired co-workers improved attitudes and helping behaviors toward them. McNair (1990) notes that existing data show that contact with disabled co-workers favors the creation of friendship relationships with disabled, helping and defense behaviors and higher levels of professional integration. Farina, Felner, and Boudreau (1973) conducted an experimental study on attitudes held by department store workers toward a confederate presented either as a physically or mentally impaired candidate to work with them. Results indicated that males expressed more unfavorable attitudes toward the mentally disabled confederate, whereas females were equally favorable to both candidates. Shafer, Kregel, Banks, and Hill (1988) found that evaluations concerning employed retention held by co-workers with supervision functions of mentally disabled people were related to attendance, punctuality patterns and consistency in task performance and were not affected by level of functioning. Moreover, the same evaluations were more positive when referred to non-handicapped than to handicapped colleagues. Elmaleh (2000) examined attitudes of non-disabled toward co-workers with disabilities in competitive employment settings and found that evaluations were influenced by contact. However, these studies generally lack generalization measures toward the whole category of disabled, with some exceptions. For example, Paul (2006) showed that work relationships with disabled were an important predictor of generalized attitudes toward people with disabilities. Similarly, Tachibana and Watanabe (2004) found that Japanese respondents' attitudes toward mentally disabled improved as a function of job-related contact with a person with intellectual disability. Zaromatidis, Papadaki, and Gilde (1999) showed that a (small) portion of variance of attitudes displayed by a sample of Greeks and Greek Americans toward persons with disabilities was explained by opportunity to work with disabled. Werrbach and DePoy (1993) surveyed social work students' perceptions about working with people with mental problems and found that a major predictor was previous work experience in mental health. However, most studies concerning contact in the work place focused on attitudes held by employers toward the integration of disabled in the work setting. Results generally showed that one of the most important predictors of favorable attitudes toward the integration of disabled into the work place and of their evaluations is previous contact (e.g., Diksa & Rogers, 1996; Levy, Jessop, Rimmerman, & Levy, 1993; Rimmerman, 1998; Smith, Edwards, Heineman, & Geist, 1985). For instance, Nietupski, Nietupski-Hamre, Song Vanderhart, and Fishback (1996) found that employers of factories with previous experiences of

disabled employment were more favorable to supported employment projects for people with disability.

1.2.2 Contact and implicit attitudes toward disabled

We are aware of only one study that examined the impact of contact with disabled on implicit evaluations. In contrast with the abundance of research focusing on explicit attitudes toward disabled, there is a surprising lack of studies examining the implicit evaluations associated with this devalued category. There is some evidence that bias toward disabled is present at an implicit level. Park, Faulkner, and Schaller (2003), using two different IATs, showed that the concept “disabled,” compared with the concept “able-bodied,” was associated more with words referring to disease than with words relative to health and, similarly, was associated more with unpleasant than with pleasant words. Robey, Beckley, and Kirschner (2006) demonstrated, by using an IAT task, that staff members of a facility serving people affected by multiple disabilities associated words referring to disability with words related to childhood or child-like features more than with words concerning adulthood. Moreover, an evaluative IAT showed that disabled were more associated with negatively than positively connoted words. Pruett and Chan (2006) validated a paper and pencil version of the IAT by pairing disability/non-disability symbols and positive/negative words. Results revealed that participants implicitly favored non-disabled by making less errors when disability symbols were paired with negative than with positive words. Moreover, contact with disabled was one of the most relevant predictors of improved implicit attitudes, even if the portion of variance explained by psychosocial variables, including contact, was very low ($R^2 = .06$).

1.3 Changing implicit attitudes

In the first chapter, we reviewed consistent evidence supporting the idea that implicit attitudes are malleable and context-dependent (see Blair, 2002, for a review) and thus can be changed. Emerging literature on the contact-implicit attitude relationship shows that contact has the potential to reduce automatic prejudice. Results of some studies support an environmental association model and mere exposure effects (Bornstein, 1989; Karpinski & Hilton, 2001; Zajonc, 1968), by showing that the degree of contact with outgroup members is sufficient to reduce implicit prejudice (Tam et al., 2006; Turner et al., 2007, Studies 2 and 3). Other studies, however, found that qualitative contact and cross-group friendships are important to improve automatic attitudes (e.g., Aberson et al., 2004; Lemm, 2006; Turner et al., 2007, Study 1). Aberson and Haag (2007) demonstrated that both frequency and quality of contact are necessary: they found that only the

interaction between quantity and quality of contact with African Americans predicted improved implicit interracial attitudes held by White American students. Simple exposure to outgroup members, thus, is not always sufficient to reduce automatic bias. If implicit attitudes are considered as a component, even if context-dependent as explicit attitudes, of a more general attitude concept, then predictions concerning automatic attitudes should be similar to those relative to explicit attitudes.

First, it is important to note that the hypotheses presented below concerning implicit attitudes are exploratory, mainly because they are based especially on results obtained with explicit measures. Based on previous evidences, we hypothesize that implicit bias toward disabled would be reduced by the interaction between quantity and quality of contact. Moreover, on the basis of studies concerning generalization of contact effects, we hypothesize that contact would reduce implicit bias more when superordinate or dual identity are salient (Gaertner & Dovidio, 2000), when group membership is salient (Hewstone & Brown, 1986) and when interpersonal and intergroup dimensions are simultaneously salient (Brown & Hewstone, 2005). Expectations that implicit bias can be reduced more when common ingroup identity or dual identity are salient is consistent with studies showing that words referring to a common identity automatically activated positive concepts (e.g., Otten & Wentura, 1999; Perdue, Dovidio, Gurtman, & Tyler, 1990) and to evidences on the role of one-group and dual identity in the generalization of contact effects on explicit attitudes (e.g., Gonzalez & Brown, 2003). In our case, we expect that the activation of the concept “we” tested by Perdue and colleagues would be similar to salience of common identity during contact. People with high perceptions of belonging to a superordinate identity, thus, should associate positive concepts to disabled more than those with low levels of common identity salience. The prediction that implicit prejudice would be reduced by contact more when salience of respective group identities, alone or paired with salience of interpersonal differences, is high rather than low is based on evidences concerning the role of group membership to facilitate explicit attitudes generalization (see Brown & Hewstone, 2005).

Finally, we hypothesize that attitudes and emotions – in particular, empathy and positive emotions – would mediate the relationship between contact and implicit attitudes. Contact studies often failed to find a significant relation between implicit bias and explicit measures (e.g., Aberson & Haag, 2007; Tam et al., 2006; Turner et al., 2007). However, it has been demonstrated that implicit interracial attitudes exhibited by students participating in diversity education courses were more positive than those displayed by a control group (Rudman et al., 2001). To the extent that diversity education may promote positive emotions and feelings of empathy (e.g., Gurin, Nagda, & Lopez, 2004; Stephan & Finlay, 1999), it is conceivable that these emotions predict reduced

implicit prejudice. Partially supporting this idea, results of a study conducted by Teachman, Gapinski, Brownell, Rawlins, and Jeyaram (2003) showed that an empathy manipulation reduced implicit anti-fat bias only among overweight people.

As implicit attitude measure, the Go/No-go Association Task (GNAT; Nosek & Banaji, 2001) was used, which represents a development of the Implicit Association Test (IAT; Greenwald et al., 1998). Both of these techniques measure implicit attitudes by assessing automatic associations between target concepts (e.g., disabled vs. non-disabled) and evaluations (positive vs. negative). The benefit of using the GNAT is that it allows independent measures of the attitude toward each of the two concepts considered (in our case, disabled and non-disabled).

1.4 Hypotheses

In the introduction, we proposed several hypotheses, concerning the effects of contact on both explicit and implicit attitudes. For reason of clarity, we will summarize predictions, distinguishing hypotheses concerning explicit emotions and evaluations from those relative to implicit evaluations.

Explicit emotions and evaluations

Hypothesis 1a. Quantity and, especially, quality of contact would improve emotions and evaluations toward disabled co-workers.

Hypothesis 1b. Positive evaluations following contact should generalize to the whole category of disabled.

Hypothesis 2. Group representations (separate individuals, separate groups, common ingroup identity, dual identity) should change over time. In particular, we expect separate groups and dual identity perceptions to be lower during present contact than at initial phases of contact. In contrast, common identity and separate individuals perceptions should be higher during present contact than at initial phases of contact.

Hypothesis 3a. Contact should have more positive effects on attitudes toward disabled co-workers when common identity, dual identity or interpersonal representations are salient. In contrast, the salience of group membership is not expected to produce more positive evaluations of proximal outgroup members (but see Gonzalez & Brown, 2003; Van Oudenhoven et al., 1996).

Hypothesis 3b. The salience of group membership and of dual identity should favor the generalization of positive contact effects. In contrast, salience of common identity and of interpersonal differences should have minimal effects on generalization (but see Gonzalez & Brown, 2003).

Hypothesis 3c. The effects of the contact mode recently proposed by Brown and Hewstone (2005), which suggests that intergroup and interpersonal dimensions can be viewed as orthogonal (Stephenson, 1981) rather than as two poles of a continuum (Tajfel, 1981) and can be simultaneously salient, should be similar to those hypothesized for the dual identity representation: salience of separate individual representation is expected to improve relations toward disabled co-workers, whereas group salience should allow the generalization of contact effects. Thus, when the two components are simultaneously salient, we expect improved outcomes toward both proximal and distal outgroup members.

Two hypotheses concerning the mediational model proposed can be drawn.

Hypothesis 4a. Group representations would mediate the effects of contact on proximal dependent variables: contact should increase common identity, dual identity and separate individuals perceptions, it should decrease separate groups perceptions; in turn, separate individuals, common identity and dual identity representations should improve calmness, empathy, evaluation of disabled co-workers and reduce anxiety felt for them; separate group representation should have opposite effects.

Hypothesis 4b. Proximal dependent variables would allow the generalization of contact effects and, thus, they would mediate the effects of contact on outcomes relative to the whole category of disabled. In particular, contact should increase calmness, empathy, proximal outgroup evaluation and decrease anxiety; these variables, in turn, are expected to positively predict (negatively in the case of anxiety) attitudes and emotions concerning the distal outgroup.

Implicit evaluations

Predictions concerning implicit attitudes are only exploratory.

Hypothesis 5a. Frequent and positive contact would improve implicit attitudes. Thus, we expect that implicit attitudes can be predicted by the interaction between quantity and quality of contact. In particular, we hypothesize that high levels of both quantity and quality of contact improve implicit attitudes. We do not expect effects of contact quantity or quality alone on implicit attitudes (but see, e.g., Aberson et al., 2004; Turner et al., 2007, Studies 2 and 3).

Hypothesis 5b. We expect that generalization of contact effects involves not only explicit, but also implicit attitudes toward the whole category of disabled. Thus, we hypothesize that contact would reduce implicit bias more when common ingroup identity, dual identity or respective memberships are salient (but see Gonzalez & Brown, 2003, even though they used only explicit measures).

Hypothesis 5c. According to Brown and Hewstone's proposal (2005), we expect a moderator effect of interpersonal and intergroup dimensions: contact should improve implicit attitudes more when interpersonal differences and group membership during contact are highly salient.

Hypothesis 5d. As we hypothesized for explicit attitudes, we expect proximal outgroup evaluations and emotions to positively mediate the effects of contact on implicit attitudes.

2. Method

2.1 Participants

One hundred and twenty-seven non-disabled workers of firms, corporations and cooperative societies of the city of Bologna, working in contact with co-workers with psychiatric problems, participated in the study. All participants were Italians. Four participants were excluded from the analyses because they refused to complete the measure of implicit attitudes. The final sample consisted of 123 participants (37 males, 86 females). Mean age was 41.56 years ($SD = 11.99$). Concerning social characteristics, 46.3% of our sample was married, whereas 43.9% was single. The larger part of participants lived together with other familiars (66.7%), a smaller part lived alone (17.1%) or with people other than familiars (15.4%). The level of education was high: 24.4% had a degree, 57.7% had a high school diploma, 16.3% had a primary school diploma. Most part of participants worked in the third sector (61%) or in the sector of commerce (31.7%). Only a small part of the sample was employed in the industrial (4.9%) or in the manufactory (2.4%) sectors. Concerning the position at work, more than half of participants (53.7%) was an employer/had an intermediate position; few participants categorized themselves as entrepreneur/professional man or woman/self-employed worker (3.3%) or as manager/executive cadre (4.1%).

2.2 Procedure

Participants were recruited with the help of the Mental Health Department Employment Agency, section of the National Health Italian System (AUSL) of the city of Bologna. The aim of the Employment Agency is to arrange professional training and employment for people with psychiatric problems living in the area of Bologna, on the basis of the law n.68/1999, which regulates the norms for the employment of disabled. Participants were first contacted by the Employment Agency and asked for their availability to participate in the study. The research was introduced as a study on intergroup relations between non-disabled and disabled people. People who expressed the willingness to collaborate were then contacted by the experimenter for the

arrangement of individual appointments. Participants were asked to complete a questionnaire divided in two sections: the first part concerned the relations with disabled co-workers, the second part was relative to emotions and attitudes toward the whole category of disabled. The implicit attitude measure consisted in the Go/No-go Association Task (GNAT; Nosek & Banaji, 2001) and it was administered with a notebook between the first and the second part of the questionnaire. Participants were examined individually at their work place. The individual sessions were run in absence of disturbing stimuli and lasted about 45 minutes.

2.3 Instruments

2.3.1 Explicit measures: questionnaire

First part of the questionnaire (proximal outgroup)

➤ *Contact with disabled at work*

Quantity of contact. Two items measured the degree of self-reported contact: “How much contact do you have with disabled at work?”; “How often do you interact with disabled when you are working?” A five-step scale was used from *none* (1) to *very much* (5), for the first item, from *never* (1) to *always* (5) for the second item. All participants declared they had contact with disabled co-workers. The two items were averaged to obtain an index of quantity of contact (Cronbach’s alpha = .84).

Quality of contact. Quality of self-reported contact was measured by using eight seven-step bipolar scales (friendly/hostile, a deep/an episodic acquaintance, formal/informal, conflictual/in agreement, indifferent/reciprocal help, cooperative/competitive, detached/confidential, unfriendly/friendly). Scores were recoded so that, on the seven-step scale, 1 indicated the negative and 7 the positive pole. The eight items were aggregated to construct a single measure of quality of contact (alpha = .72).

Duration of contact. Two items measured duration of contact: “How long do you work with disabled co-workers?”; “Can you indicate approximately how long you work with disabled co-workers?” The first item had a five-step scale ranging from 1 (*short time*) to 5 (*long time*); on the second item, participants indicated the duration of contact with disabled co-workers in days, months or years.

Optimal contact conditions. One seven-step item measured participants’ perception of status at work: “Thinking about the working position of non-disabled, how do you evaluate the working position of disabled in this work place?” Scores from 1 to 3 indicated superior status of disabled; 4 indicated equal status; scores from 5 to 7 indicated superior status of non-disabled. Perceptions of cooperation, common goals and institutional support were measured by the following three items:

“My job requires cooperation with my disabled co-workers”; “I and my disabled co-workers are expected to achieve common goals”; “This firm/corporation/cooperative society fosters the integration between disabled and non-disabled.” All three items had a seven-step scale ranging from 1 (*I strongly disagree*) to 7 (*I strongly agree*).

➤ *Initial group representations*

Four items tapped group representations (separate individuals, separate groups, common ingroup identity, dual identity) at the initial stages of contact. Sentences started with “Thinking about the initial contact period with your disabled co-workers, to what extent did you perceive them:” “As individuals, not associated with the category of disabled” (separate individuals); “As members of a different category” (separate groups); “As members of your own group, the group of workers of this firm/corporation/cooperative society” (common ingroup identity); “As members of the category of disabled, at the same time belonging with the non-disabled to the common group of workers of this firm/corporation/cooperative society” (dual identity).

➤ *Group representations during present contact*

Separate individuals. Perception of disabled co-workers as separate individuals was measured by four items: “How often are you aware of sharing similar preferences, interests and goals with your disabled co-workers?”; “How often do you perceive your disabled co-workers more as individuals than as members of a different group?”; “How much do you think that your disabled co-workers are different between them?”; “To what extent do you forget to belong to the non-disabled group during contact with your disabled co-workers?” A seven-step scale was used from *never* (1) to *always* (7) for the first two items, from *not at all* (1) to *very strongly* (7) for the remaining two items. The four items were averaged to form an index of interpersonal contact ($\alpha = .56$).

Two-groups. Group salience during self-reported contact was measured by four items. Sentences started with “During contact at work with disabled co-workers:” “How aware are you personally that you belong to different groups?”; “Do you make reference often to your different memberships?”; “To what degree do you perceive them as typical members of the disabled category?”; “To what degree do you perceive them as representative members of the group of disabled?” On the seven-step scale, higher numbers reflect higher membership salience and higher perception of typicality of the outgroup exemplars. The four items were combined into a single measure of membership salience ($\alpha = .76$).

One-group. Three items were used to reveal the perception of belonging to a common group during contact: “Do you think that non-disabled and disabled workers of this firm/corporation/cooperative society constitute a common group?”; “In this

firm/corporation/cooperative society there are not disabled and non-disabled workers, but only the workers of this firm/corporation/cooperative society”; “It is possible to say that non-disabled and disabled workers of this firm/corporation/cooperative society are part of the same team.” On the seven-step scale, higher scores reflect higher agreement with the sentences and, thus, higher perception of belonging to a common group. The three items were averaged to form a reliable measure of one group perception ($\alpha = .81$).

Two-groups within one group. Two items measured the dual identity perception during contact: “To what extent do you perceive your disabled co-workers as members of a different group that, at the same time, share with you the membership to the group of workers of this firm/corporation/cooperative society?”; “It is possible to say that non-disabled and disabled workers of this firm/corporation/cooperative society, even if members of different categories, constitute a common team.” The two items were combined to form an index of dual identity perception during contact ($\alpha = .88$).

➤ *Proximal intergroup emotions*

Participants were asked to indicate the emotions they felt toward disabled co-workers. Nineteen items were used: seven expressed calmness (calm, tranquil, relaxed, quiet, unstrained, confident, secure), eight expressed anxiety (uneasy, suspicious, anxious, worried, distrustful, guilty, tense, threatened), four expressed parallel empathy (see Batson, 1998; Stephan & Finlay, 1999): “Concerning your disabled co-workers, to what degree do you feel you share their emotions?”; “To what degree do you feel in tune with them?”; “To what degree do you understand their feelings?”; “To what degree do you share their joys and sorrows?” The seven-step scale was anchored by *not at all* (1) and *very strongly* (7). For each emotion, items were aggregated to form a single reliable measure. Reliability was high: .94 for calmness, .71 for anxiety, .87 for empathy.

➤ *Evaluation of proximal outgroup members*

Participants rated disabled co-workers on five semantic differential scales, representing the Evaluation factor: undesirable/desirable, pleasant/unpleasant, positive/negative, disagreeable/agreeable, valuable/unvaluable. Items 2, 3, 5 were recoded so that, on the seven-step scale, 1 was given to the negative and 7 to the positive pole (4 = *neither/nor*). Ratings were averaged ($\alpha = .78$).

Second part of the questionnaire (distal outgroup)

➤ *Distal intergroup emotions*

Participants were asked to indicate the emotions they felt toward the whole category of disabled. The items were the same used to evaluate the emotions felt toward proximal outgroup

members. As for proximal emotions, items were combined to form an index of calmness ($\alpha = .95$), anxiety ($\alpha = .87$), empathy ($\alpha = .89$).

➤ *Evaluation of distal ingroup and outgroup members*

Participants rated the non-disabled and the disabled in general on the five semantic differential scales used to evaluate proximal outgroup members. Ratings were averaged for ingroup ($\alpha = .79$) and for outgroup ($\alpha = .85$). A measure of evaluative bias was obtained by subtracting the outgroup evaluation from the ingroup evaluation: the higher the score, the higher the bias favoring the ingroup.

➤ *Subtle prejudice*

Three items from Pettigrew and Meertens' (1995) scale were adapted for this intergroup context obtaining the following five measures: "How similar do you think the non-disabled and disabled are in the values they teach their children?"; "How similar do you think the non-disabled and disabled are in their religious affection?"; "How similar do you think the non-disabled and disabled are in their familiar affection?"; "How similar do you think the non-disabled and disabled are in the way they communicate?". The six-step scale was anchored by *very different* (1) and *very similar* (6). Items were recoded so that higher scores reflected higher perceptions of dissimilarity between non-disabled and disabled and, thus, more subtle prejudice. The four items were then aggregated to form a reliable measure of subtle prejudice ($\alpha = .74$).

➤ *Indirect measure of attitudes*

One item was used: "Considering the amount of money the Italian government allocates every year to socially disadvantaged categories, how much do you think is the percentage assigned exclusively to disabled?"

Social desirability

Eight items from the adaptation of the social desirability scale (Crowne & Marlowe, 1960) by Manganelli Rattazzi, Canova, and Marcorin (2000) were used to measure the tendency toward social desirability of participants. All items had a six-step scale that ranged from 1 (*totally false*) to 6 (*totally true*). The eight items were combined in a single measure of social desirability ($\alpha = .68$): the higher the score, the higher the tendency to express socially biased evaluations.

Finally, after providing personal information, participants answered two questions, which asked how much participants perceived the disabled with psychiatric problems (first item) and the physically disabled people (second item) as typical of the whole category of disabled. Both items had a seven-step scale, ranging from 1 (*not at all*) to 7 (*very strongly*).

2.3.2 Implicit measure

As anticipated before, the Go/No-go Association Task (Nosek & Banaji, 2001) was used. This measure represents a development of the IAT (Greenwald et al., 1998). Like the IAT, the GNAT assesses the strength of automatic associations between target concepts (e.g., non-disabled vs. disabled) and two poles of an attribute dimension (e.g., positive vs. negative). The benefit of using the GNAT is that it allows the independent test of attitudes toward single categories. The GNAT was run using the Inquisit software (Version 1.33; Draine, 2003).

Table 1. Stimulus words used in the GNAT (Italian translation is reported in parentheses).

Critical stimuli			
Non-disabled	Disabled	Positive words	Negative words
Normal (<i>Normale</i>)	Handicap (<i>Handicap</i>)	Health (<i>Salute</i>)	Accident (<i>Incidente</i>)
Normal (<i>Normale</i>)	Handicap (<i>Handicap</i>)	Friend (<i>Amico</i>)	Death (<i>Morte</i>)
Able (<i>Abile</i>)	Handicapped (<i>Handicappato</i>)	Pleasure (<i>Piacere</i>)	Disaster (<i>Calamità</i>)
Able (<i>Abile</i>)	Handicapped (<i>Handicappato</i>)	Luck (<i>Fortuna</i>)	Illness (<i>Malattia</i>)
Normally Intelligent (<i>Normodotato</i>)	Disabled (<i>Disabile</i>)	Peace (<i>Pace</i>)	Prison (<i>Prigione</i>)
Normally Intelligent (<i>Normodotato</i>)	Disabled (<i>Disabile</i>)	Happiness (<i>Felicità</i>)	Cancer (<i>Cancro</i>)
Healthy (<i>Sano</i>)	Unable (<i>Inabile</i>)	Amusement (<i>Divertimento</i>)	Murder (<i>Omicidio</i>)
Healthy (<i>Sano</i>)	Unable (<i>Inabile</i>)	Art (<i>Arte</i>)	Boredom (<i>Noia</i>)
Self-sufficient (<i>Autosufficiente</i>)	Invalid (<i>Invalido</i>)	Genius (<i>Genialità</i>)	Violence (<i>Violenza</i>)
Self-sufficient (<i>Autosufficiente</i>)	Invalid (<i>Invalido</i>)	Life (<i>Vita</i>)	Anguish (<i>Angoscia</i>)
Practical stimuli			
Non-disabled	Disabled	Positive words	Negative words
Efficient (<i>Efficiente</i>)	Down (<i>Down</i>)	Holiday (<i>Vacanza</i>)	Failure (<i>Fallimento</i>)
Efficacious (<i>Valido</i>)	Impaired (<i>Menomato</i>)	Family (<i>Famiglia</i>)	Agony (<i>Agonia</i>)
Suitable (<i>Idoneo</i>)	Paralytic (<i>Paralitico</i>)	Miracle (<i>Miracolo</i>)	Poison (<i>Veleno</i>)
Autonomous (<i>Autonomo</i>)	Paralyzed (<i>Paralizzato</i>)	Success (<i>Successo</i>)	Bomb (<i>Bomba</i>)

Four categories of stimuli were used: words referring to non-disabled; words referring to disabled; positive words; negative words (Table 1). Positive and negative words were adapted from stimuli used by Greenwald et al. (1998) and by Nosek and Banaji (2001). Words referring to non-disabled and disabled were selected by two independent raters. All stimuli were matched for valence and length. For each participant, four blocks of 40 trials (10 for each category of stimuli; five stimuli, repeated twice, were used for each of the two concepts, non-disabled and disabled) were presented in a randomized order. Each experimental block was preceded by 16 practical trials, which were followed by a reminder screen before participants completed the experimental trials. The 16 practical stimuli were different from those used in the critical trials (see Table 1). Responses to the practical trials were eliminated from the analyses. In each block, a target concept (non-disabled vs. disabled) was paired with an attribute dimension (positive vs. negative). Two blocks referred to attitudes toward disabled: in one block, the concept “disabled” was paired with positive words; in this case, “disabled” and positive words served as targets (signal), “non-disabled” and negative words were the distracters (noise). In the other block, “disabled” was associated with negative words. The remaining two blocks concerned attitudes toward non-disabled: the concept “non-disabled” was paired in one block with positive words and, in the second block, with negative words. Category labels appeared on the upper right and left of the screen as reminders of the target concept and attribute of the block. Trials started with the appearance of a single stimulus item belonging to one of the four categories of stimuli (non-disabled, disabled, positive words, negative words) in the center of the screen. Labels and stimuli referring to concepts (non-disabled, disabled) were presented in white type, whereas labels and stimuli concerning attributes were presented in blue type. The task of participants was to press the space bar (go) if the stimulus presented belonged to either of the labeled categories (signal), or ignore the trial (no go) if it belonged to the remaining two categories of stimuli (noise). The response deadline was 800 ms. The subsequent trial appeared 400 ms (ISI, *inter-stimulus interval*) after the participant hit the space bar or, if he/she was not fast enough, when response deadline was reached. Four types of response are possible: (a) participants incorrectly press the space bar after presentation of noise (false alarm); (b) participants do not press the bar responding to signal (miss); participants correctly press the bar when signal is presented (hit); participants do not press the bar in response to noise (correct rejection). Trials correctly responded to with correct rejections or hits were followed by a green “O” that appeared below the stimulus item during the interitem interval for 200 ms, in order to provide feedback about one’s own accuracy. Trials incorrectly responded to as false alarms or misses were followed by a red “X.”

Four practice blocks presented in randomized order preceded the presentation of the four experimental blocks, so as to familiarize participants with experimental stimuli. Each block

consisted of 20 trials. The response deadline was 1000 ms. The stimuli were the same used in the four experimental blocks. In two blocks, participants were asked to discriminate between the two concepts (disabled vs. non-disabled): the task was to press the space bar after presentation of one target concept (e.g., disabled) and to ignore presentations of the distracting concept (e.g., non-disabled). In the remaining two blocks, participants learned to discriminate between positive and negative attributes: in this case, they had to press the bar after presentation of a target attribute (e.g., holiday) and to ignore presentations of the distracting attribute (e.g., poison). Responses to the four blocks of practice trials were eliminated from the analyses.

3. Results

3.1 Introductory analyses

3.1.1 Explicit measures

Means, standard deviations and reliability of the measures contained in the questionnaire are presented in Table 2, 3 and 4.

Table 2. Reliability, means and standard deviations of contact quantity, quality, duration, and of Allport's optimal conditions (1954).

	Cronbach's Alpha	M	SD
Quantity of contact	.84	3.32*	.88
Quality of contact	.72	5.52*	.69
Duration of contact (item 1)	/	3.05	1.12
Duration of contact in days (item 2)	/	1650.65	1656.15
Status at work	/	4.85*	.98
Cooperation at work	/	5.84*	1.30
Common goals at work	/	5.90*	1.42
Institutional support at work	/	5.72*	1.36

Note. Asterisks indicate that the means differ from the central point of the scale, which is 3 for quantity and duration of contact (item 1) and is 4 for quality, status, cooperation, common goals, institutional support. There is not a central point of the scale for duration of contact expressed in days.

* $p < .001$.

As can be noted in Table 2, quantity of contact was quite high ($M = 3.32$) and it differed significantly from the central point of the scale, $t(122) = 4.11, p < .001$. Regarding quality, the mean, higher than the neutral score ($M = 5.52$), $t(122) = 24.37, p < .001$, indicates that encounters with disabled co-workers were experienced as friendly and cooperative. The duration of contact was experienced as moderate ($M = 3.05$), and it did not differ significantly from the central point of the scale, $t(122) = .48, ns$. In contrast, on the more objective measure of duration of contact, it emerged that the average duration of contact was quite high, 4.52 years. However, variability on this item was high: scores ranged from 20 days to 20 years. Regarding Allport's (1954) optimal conditions (see Table 2), the status at work of non-disabled was perceived as superior than the status of disabled ($M = 4.85$). The difference from the neutral point, however, was not very pronounced, even if it was reliable, $t(122) = 9.53, p < .001$. Perceptions of cooperation ($M = 5.84$), presence of common goals ($M = 5.90$), and institutional support ($M = 5.72$), were high and differed from the central point of the scale: cooperation, $t(122) = 15.73, p < .001$; common goals, $t(122) = 14.89, p < .001$; institutional support, $t(122) = 13.95, p < .001$. Thus, it appears that contact is frequent, positive and lasting. Moreover, the conditions for optimal contact are present in the context considered in the present research.

We measured group representations during initial contact with disabled co-workers (as remembered by participants) and during present contact. Regarding group representations at the initial stage of contact, two-groups (i.e., separate group) representation was low ($M = 2.83$), separate individuals ($M = 4.27$) and two-groups within one group (i.e., dual identity) ($M = 4.22$) representations were moderate, one-group (i.e., common ingroup identity) representation was high ($M = 4.73$). As predicted by Hypothesis 2, perceptions of group representations changed from initial contact with disabled co-workers to the present intergroup contact: two-groups ($M = 2.29$) and two-groups within one group ($M = 3.65$) decreased significantly: for two-groups, $t(122) = 4.15, p < .001$; for two-groups within one group, $t(122) = 3.01, p < .01$. In contrast, one-group perceptions ($M = 5.44$) increased significantly, $t(122) = 4.07, p < .001$. Moreover, there was a non-significant trend toward higher perceptions of separate individuals ($M = 4.42$), $t(122) = .90, ns$. It is noteworthy that separate individuals representation differed from the central point of the scale during present contact, $t(122) = 4.39, p < .001$, but not during initial contact, $t(122) = 1.57, ns$. Hypothesis 2 is confirmed: perceptions of group representations change over time. In particular, perceptions of separate groups and dual identity representations decreased, whereas perceptions of belonging to a common group increased. Moreover, there was a trend toward the increase of separate individuals representation over time. Means, standard deviations and reliability of group representations are

presented in Table 3. Differences between perceptions of group representations during initial and present contact are presented in Figure 1.

Table 3. Reliability, means and standard deviations of perceptions of group representations during initial and present contact.

	Cronbach's Alpha	M	DS
Initial two-groups representation	/	2.83**	1.63
Initial separate individuals representation	/	4.27	1.90
Initial one-group representation	/	4.73**	1.70
Initial two-groups within one group representation	/	4.22	1.80
Present two-groups representation	.76	2.29**	.99
Present separate individuals representation	.56	4.42**	1.06
Present one-group representation	.81	5.44**	1.45
Present two-groups within one group representation	.88	3.65*	1.73

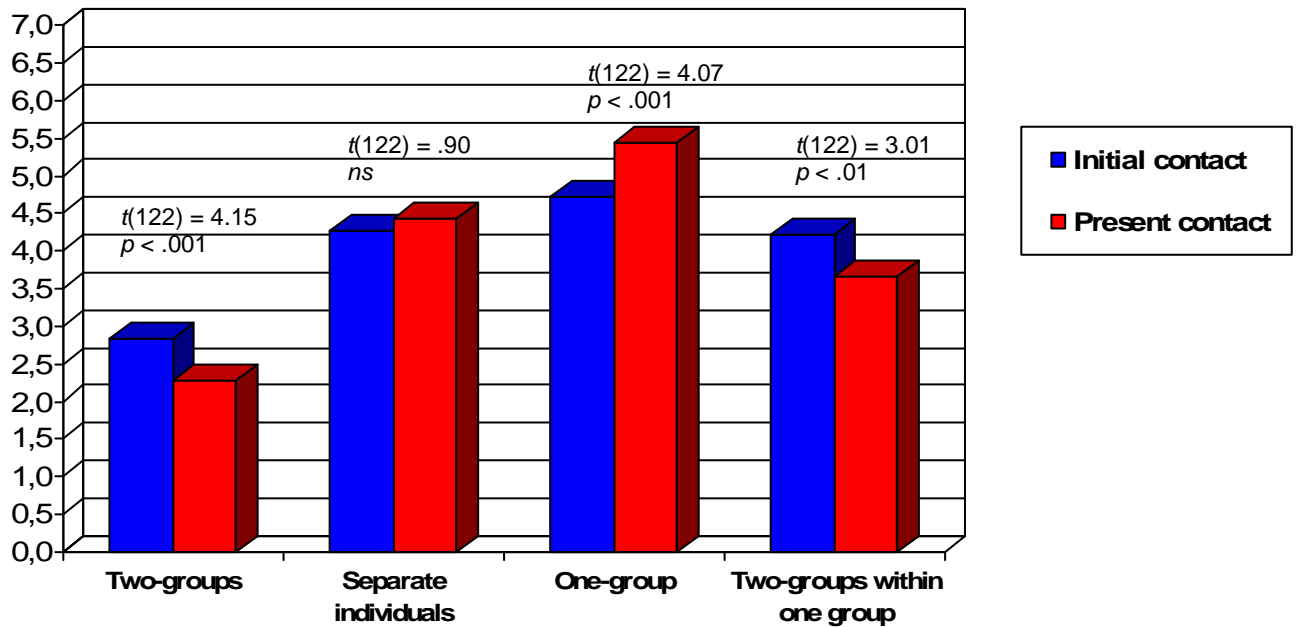
Note. Asterisks indicate that the means differ from the central point of the scale, which is 4.

* $p < .05$. ** $p < .001$.

Descriptive statistics indicate that relations with both known and unknown outgroup members were positive (Table 4). Concerning the emotions felt toward the disabled co-workers, anxiety was very low ($M = 1.34$), calmness was high ($M = 4.81$), and empathy was moderate ($M = 4.04$). Disabled co-workers were evaluated very positively ($M = 5.48$). With respect to emotions and evaluations of disabled in general (see Table 4), calmness was moderate ($M = 4.18$), empathy was not so high ($M = 3.21$), anxiety was low ($M = 1.57$). Both the evaluation of non-disabled ($M = 4.66$) and of disabled ($M = 5.15$) were positive, but the outgroup, unexpectedly, was evaluated more positively than the ingroup, $t(122) = 5.20$, $p < .001$. Thus, participants showed outgroup favoritism on the measure of evaluative bias. A possibility is that explicit ingroup and outgroup evaluations have been affected by social desirability concerns. These data suggest that perceptions of the whole category of disabled appeared to be very positive, even if somewhat less positive than correspondent evaluations of proximal outgroup members (see Figure 2); for calmness, $t(122) =$

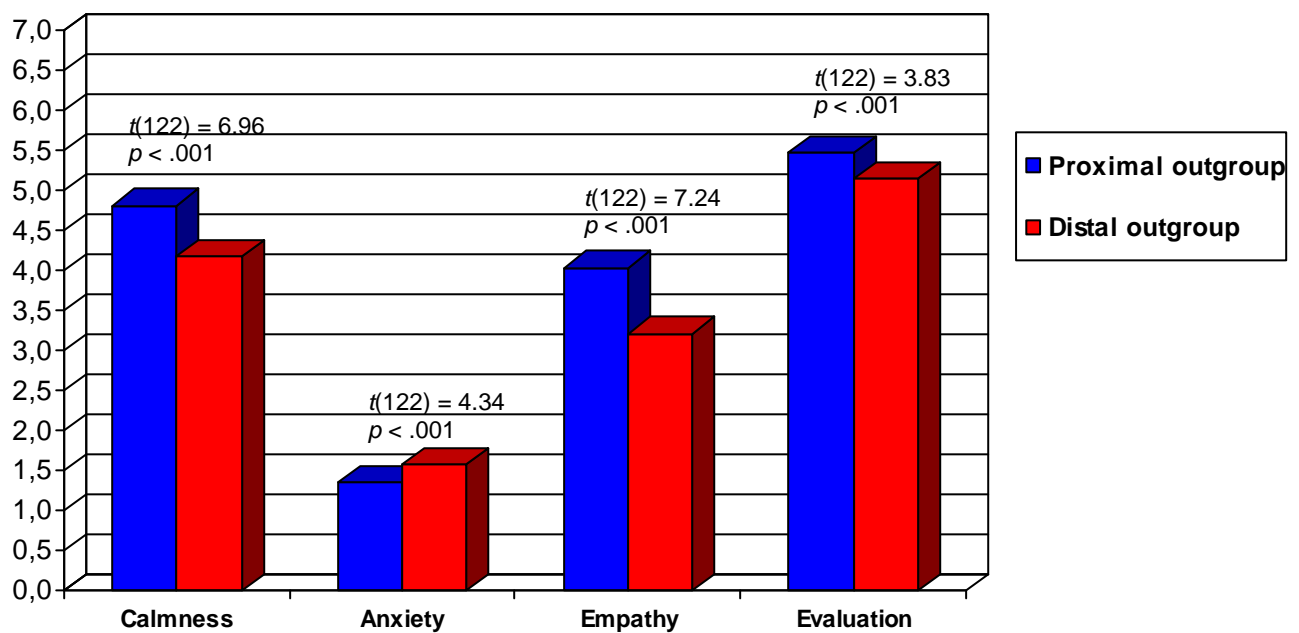
6.96, $p < .001$; for anxiety, $t(122) = 4.34$, $p < .001$; for empathy, $t(122) = 7.24$, $p < .001$; for evaluation, $t(122) = 3.83$, $p < .001$. The indirect measure of attitudes was 19.20. The mean relative

Figure 1. Changes in group representations from initial contact to present contact.



Note. On the seven-step scale, higher scores reflect higher perceptions during initial or present contact to interact as: two-groups, separate individuals, one-group, two-groups within one group.

Figure 2. Emotions felt for proximal and distal outgroup members and their evaluation.



Note. On the seven-step scale, higher scores reflect higher calmness, empathy, evaluation.

to subtle prejudice ($M = 2.65$) showed that disabled and non-disabled were perceived as quite similar. Social desirability was quite high ($M = 4.24$). Finally, participants perceived both disabled with psychiatric problems ($M = 4.92$) and physically disabled people ($M = 5.76$) as representative of the whole category of disabled. The difference from the neutral point was significant for both items: for disabled with psychiatric problems, $t(122) = 5.83, p < .001$; for physically disabled people, $t(122) = 16.28, p < .001$. Means, standards deviations and reliability of measures concerning relations with the proximal and the distal outgroup are showed in Table 4. Differences between emotions and evaluations expressed for disabled co-workers and disabled in general are presented in Figure 2.

Table 4. Reliability, means and standard deviations of measures concerning relations with proximal and distal outgroup members.

	Cronbach's alpha	M	DS
Proximal calmness	.94	4.81*	1.35
Proximal anxiety	.71	1.34*	.47
Proximal empathy	.87	4.04	1.38
Proximal outgroup evaluation	.78	5.48*	.92
Distal calmness	.95	4.18	1.32
Distal anxiety	.87	1.57*	.69
Distal empathy	.89	3.21*	1.24
Distal outgroup evaluation	.85	5.15*	.94
Evaluation of non-disabled	.79	4.66*	.88
Indirect measure of attitude	/	19.20	15.45
Subtle prejudice	.74	2.65*	.90
Social desirability	.68	4.24*	.82

Note. Asterisks indicate that the means differ from the central point of the scale, which is 4. The central point is 3.5 for subtle prejudice and social desirability. There is not a central point of the scale for the indirect measure of attitude.
* $p < .001$.

3.1.2 Implicit attitudes

For each block of trials, a sensitivity index (d') was calculated, which indicates the ability in discriminating targets (signal) from distracters (noise). The d' index is based on the assumption that participants should be more able to discriminate signal from noise when the two target concepts are positively associated, relative to when the association is weak. A stronger associations between concepts and attributes is indicated by greater sensitivity. In our case, we expected that the concept “non-disabled” would be more associated than the concept “disabled” to positive words, whereas the concept “disabled” would be more associated than the concept “non-disabled” to negative words. D -prime is obtained by subtracting the proportion of false alarms (participants pressing the space bar responding to noise) from the proportion of hits (participants pressing the space bar, within the 800 ms deadline, after presentation of signal). The two proportions are converted into z -scores. The higher d' is, the stronger the ability to discriminate the signal from the noise and, consequently, the greater the association between target concept and attribute.

Sensitivity scores were submitted to a 2 (Target concepts: non-disabled vs. disabled) \times 2 (Target attribute: positive words vs. negative words) ANOVA, with both factors serving as within-subjects variables.² A main effect of target concept emerged, $F(1, 122) = 5.82, p < .05$: sensitivity was greater for disabled ($M = 2.99$) than for non-disabled ($M = 2.71$). The main effect of target attribute was also significant, $F(1, 122) = 18.29, p < .001$: participants were more sensitive to positive ($M = 3.12$) than to negative words ($M = 2.58$).³ Finally, the two main effects were qualified by the expected two-way interaction Target concepts \times Target attributes, $F(1, 122) = 478.55, p < .001$. Consistent with predictions (Table 5 and Figure 3), disabled were more associated with negative words, whereas non-disabled were more associated with positive words. Thus, participants showed implicit ingroup bias: automatic attitudes toward non-disabled were positive, whereas automatic attitudes toward non-disabled were negative.

Three implicit indexes were then calculated, in order to test our hypotheses concerning implicit attitudes. To obtain an index of outgroup evaluation, we calculated the difference between

² Nosek and Banaji (2001) suggest that d' values of 0 or below indicate that participants did not perform correctly the task or, alternatively, that they were unable to discriminate signal from noise and, thus, they should be removed from the analyses. In our case, a large number of participants obtained d' scores of 0 or below in the block that paired non-disabled to negative words and in the block that associated disabled and positive words. None of the participants, however, obtained d' scores of 0 or below in the blocks that associated disabled with negative words and non-disabled with positive words. Thus, we can reasonably conclude that all participants performed the task as instructed and that d' values of 0 or below indicated a very weak association between concept and attributes, instead that inability to discriminate signal from noise items. For these reasons, we decided to retain also d' values of 0 or below.

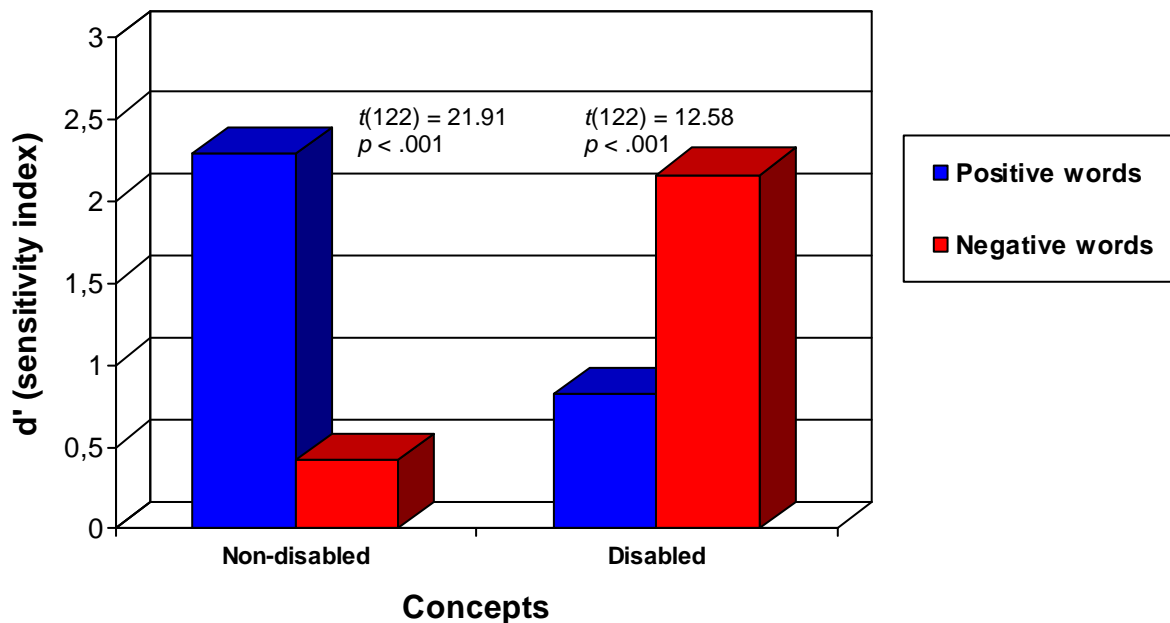
³ It is possible that main effects of Target concepts and Target attributes are due, in part, to the greater sensitivity showed by participants in the block that associated disabled and negative words than in the block that paired non-disabled and negative words.

Table 5. Sensitivity measures (d') for each of the four blocks of the GNAT.

Target concept	Target attribute	
	Positive words	Negative words
Non-disabled	2.29a (0.89)	.42b (0.67)
Disabled	.82b (0.83)	2.16a (0.91)

Note. The higher d' is, the stronger the association between target concept and target attribute. Different letters, on the same row or column, indicate that the two means are different, $p < .001$. Standard deviations are in parentheses.

Figure 3. Interaction Target concept \times Target attribute. Sensitivity measures (d') for each of the four blocks of the GNAT.



the d' of the block that paired disabled and negative words and the block that associated disabled and positive words. Similarly, the implicit ingroup evaluation was obtained by subtracting the d' of the block where non-disabled were paired with negative words from the block where non-disabled were associated with positive words. The higher the outgroup and ingroup implicit indexes, the greater, respectively, the negative implicit evaluation of disabled and the positive implicit evaluation of non-disabled. Finally, the ingroup and outgroup implicit indexes were added to obtain an index of implicit ingroup bias: the higher the score, the greater the implicit ingroup bias.

3.2 Moderational analyses

3.2.1 Effects of quantity and quality of contact

First, we tested the effects of quantity and quality of contact on explicit and implicit attitudes toward disabled. Predictions were that quantity and, especially, quality of contact would improve relations with disabled co-workers (Hypothesis 1a) and that effects would generalize to the outgroup as a whole (Hypothesis 1b). Furthermore, it was predicted that implicit attitudes would improve as a function of the interaction between contact quantity and quality (Hypothesis 5a). To test hypotheses, hierarchical regression was applied. In the first phase (Step 1), we assessed the main effects of the two independent variables (quantity, quality). In the second phase (Step 2), we added the two-way interaction. Dependent variables were: emotions felt toward proximal and distal outgroup members; evaluation of proximal and distal outgroup members; evaluative ingroup bias; indirect measure of attitudes; subtle prejudice. Dependent variables concerning implicit attitudes were: implicit outgroup evaluation, implicit ingroup bias. The two-way interaction explains the dependent variable if the portion of variance absorbed by Model 2 is higher than that absorbed by Model 1. Findings are presented in Table 6. In applying hierarchical regression, before multiplying the independent variables, these latter were centered, as a means to avoid multicollinearity. With this procedure, low correlations are obtained between the product term and the component parts of such term (see Cronbach, 1987; Jaccard, Wan, & Turrisi, 1990).

Proximal outgroup

As results from the first model (Step 1; Table 6), all the dependent variables were influenced by contact quality. Contact, in fact, increased the perception of calmness ($\beta = .37, p < .001$) and empathy ($\beta = .35, p < .001$) and reduced anxiety ($\beta = -.41, p < .001$) felt toward disabled co-workers. Furthermore, quality of contact improved the evaluations of outgroup members ($\beta = .46, p < .001$). Quantity of contact had only two effects, one negative and one positive: frequency of contact, in fact, increased anxiety ($\beta = .20, p < .05$) and improved empathy ($\beta = .23, p < .05$) felt toward disabled co-workers. As can be noted (Step 2; Table 6), the interactions between contact quantity and quality did not produce any reliable effect.

Distal outgroup

Findings are presented in Table 6. Quality of contact showed positive effects on all the explicit dependent variables: it improved calmness ($\beta = .34, p < .001$) and empathy ($\beta = .36, p < .001$) and reduced anxiety ($\beta = -.23, p < .05$) felt toward disabled in general. Moreover, it increased

Table 6. Hierarchical regression evaluating the main and interactive effects of quantity and quality of contact on dependent variables (standardized regression coefficients).

	Dependent variables												
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal
Step 1													
A Quantity	-.05	-.02	.20*	.16	.23**	.03	.16	.06	-.14	-.01	-.10	-.07	-.11
B Quality	.37***	.34***	-.41***	-.23*	.35***	.36***	.46***	.39***	-.26**	-.22*	-.21*	-.04	-.09
R^2	.13	.11	.15	.06	.23	.14	.28	.07	.05	.05	.07	.01	.03
F	8.79***	7.62***	10.96***	3.46*	17.60***	9.96***	23.62***	11.89***	7.20***	2.99	4.43*	.54	1.61
df	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)	(2, 120)
Step 2													
A Quantity	-.05	-.02	.20*	.16	.23**	.03	.16	.06	-.14	-.01	-.10	-.07	-.11
B Quality	.37***	.35***	-.42***	-.22*	.35***	.34***	.47***	.40***	-.24**	-.20*	-.25**	.02	-.04
A × B	.02	-.02	.04	-.05	-.02	.09	-.05	-.07	-.07	-.09	.16	-.25**	-.22*
R^2	.13	.11	.16	.06	.23	.15	.28	.11	.11	.06	.09	.07	.07
F	5.83***	5.06**	7.33***	2.38	11.66***	7.01***	15.80***	8.15***	4.98**	2.29	4.00**	2.89*	3.02*
df	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)
F_{change}	.04	.06	.21	.26	.05	1.10	.40	.73	.57	.89	2.99	7.55**	5.71*
df	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)	(1, 119)

Note. For the dependent variables, higher ratings mean: stronger emotions of calmness, anxiety, and empathy felt toward the outgroup; higher outgroup evaluation, evaluative ingroup bias, subtle prejudice, bias expressed on the indirect measure of attitudes, negative implicit outgroup evaluation, implicit ingroup bias.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

outgroup evaluation ($\beta = .39, p < .001$), reduced evaluative bias ($\beta = -.26, p < .01$), subtle prejudice ($\beta = -.22, p < .05$)⁴ and the value of the indirect measure of attitudes ($\beta = -.21, p < .05$).

Findings support our first hypothesis: contact is an important strategy for improving relations toward disabled co-workers (Hypothesis 1a). Moreover, positive contact effects generalize to the whole category of disabled (Hypothesis 1b). Quality of contact is more effective than contact quantity and it affects all the dependent variables.

Concerning implicit attitudes, neither the main effect of quantity nor the main effect of quality of contact were significant. Consistent with predictions, the two-way interaction, contact quantity \times contact quality, was significant for implicit outgroup evaluation and implicit ingroup bias (Step 2; Table 6): for implicit outgroup evaluation, $\beta = -.25, p < .01$; for implicit ingroup bias, $\beta = -.22, p < .05$. The two interactions significantly increased the portion of variance explained by Model 1: for implicit outgroup evaluation, $Fchange(1, 119) = 7.54, p < .01$; for implicit ingroup bias, $Fchange(1, 119) = 5.72, p < .05$. The analysis of simple effects for implicit outgroup evaluation (Table 7) and implicit ingroup bias (Table 8) showed that quantity of contact reduced the negative implicit evaluation of disabled and the implicit bias favoring non-disabled only when contact quality was high. Hypothesis 5a is confirmed: it is only the combination of quantity and quality of contact that leads to positive changes in implicit attitudes toward disabled.

Table 7. Simple effects for the interaction between quantity and quality of contact (implicit outgroup evaluation).

Levels of quality of contact	Implicit outgroup evaluation		
	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.41*	.17	2.42
Average	-.10	.12	.79
Low	.21	.17	1.25

Note. The mean score of quality of contact is 5.52; high score, low score of quality indicate a standard deviation above and a standard deviation below the mean. Higher scores of implicit outgroup evaluation correspond to a more negative implicit evaluation of disabled.

b = non standardized regression coefficients.

* $p < .05$.

⁴ In the case of subtle prejudice, it should be noted that the regression effect was only marginally significant, $F(2, 120) = 2.99, p < .06$.

Table 8. Simple effects for the interaction between quantity and quality of contact (implicit ingroup bias).

Levels of quality of contact	Implicit ingroup bias		
	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.57*	.23	2.46
Average	-.20	.17	1.15
Low	.18	.23	.75

Note. The mean score of quality of contact is 5.52; high score, low score of quality indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .05.

3.2.2 Testing the contact models

To test the effects of contact modes, hierarchical regression was applied.

First, we compared the moderating effects of separate groups and common ingroup identity representations. This procedure, used by Vezzali et al. (2007), allows to test effects of a group representation, while controlling the effects of the other representation. Moreover, the three-way interaction between contact, common ingroup identity and separate groups representations represents a test of the effects of dual identity.

Second, we compared the effects of separate groups and separate individuals representations. In this case, significant three-way interactions between contact, separate groups and separate individuals representations would allow us to test hypotheses derived from Brown and Hewstone's (2005) proposal that intergroup attitudes would be more beneficial when both contact modes are salient.

Finally, the effects of dual identity representation were tested by using a different strategy. Two items tapping dual identity perceptions were averaged (see Table 3). Dependent variables were regressed on the single index of dual identity, together with contact and the product between the two. To control for the independent effects of the two components of dual identity, separate groups and common ingroup identity perceptions were included as covariates.

Dependent variables utilized to test contact modes were the same used to analyze main and interactive effects of contact quantity and quality (see previous section).

3.2.2.1 Moderating effects of separate groups and common ingroup identity representations

The independent variables were contact, two-groups representation (membership salience during contact), one-group representation (common ingroup identity salience during contact). Concerning the variable contact, it corresponds to the product between quantity and quality. Prior to multiplying the two terms, quality scores were recoded so that -3 indicated negative contact and +3 positive contact. We used this measure since quality and quantity may not be sufficient to reduce ingroup bias and an optimal combination of the two components may be needed (see Brown et al., 2001; Voci & Hewstone, 2003b). In the first phase (Step 1), the main effect of the three independent variables (frequent and cooperative contact; two-groups representation; one-group representation) was estimated; in the second phase (Step 2), the two-way products were added to these terms; in the third (Step 3), also the effects of the three-way product were examined. The two-way interactions explain the dependent variable if the portion of variance absorbed by Model 2 is higher than that absorbed by Model 1. Salience of the common identity moderates the contact effects if the contact \times one group interaction is significant; concerning Hewstone and Brown's (1986) theory, in encounters with outgroup members, salience of memberships moderates the effects of contact, if the contact \times two groups term is significant. The awareness of a dual identity is indicated by a significant three-way interaction (namely, the portion of variance absorbed by Model 3 is higher than that absorbed by Model 2). This procedure presents the benefit of testing the effects of a contact mode, while controlling those of the other modes. This control is essential in a correlational research design. As before, independent variables were centered prior to multiplication. Findings are presented in Table 9.

Proximal outgroup

As results from the first model (Step 1; Table 9), all the dependent variables, apart from anxiety, were influenced by frequent and cooperative contact. Contact, in fact, increased the perception of calmness ($\beta = .21, p < .05$), empathy ($\beta = .42, p < .001$) and the evaluation of disabled co-workers ($\beta = .47, p < .001$). Group salience (two-groups) during contact had only a negative effect: it increased anxiety ($\beta = .19, p < .05$) felt for known outgroup members. In contrast, salience of a common belonging (one-group) had only positive effects: it increased calmness ($\beta = .22, p < .05$) and empathy ($\beta = .19, p < .05$) and reduced anxiety felt toward proximal outgroup members ($\beta = -.26, p < .01$).

With respect to the moderator effects of the categorical representations – two groups, one group – the two-way interactions were not significant for any of the dependent variables; the three-way interactions were not significant for calmness and outgroup evaluation (Steps 2 and 3; Table 9).

Table 9. Hierarchical regression evaluating the moderator effect of two-groups and one-group representations on the relation between contact and dependent variables (standardized regression coefficients).

	Dependent variables												
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal
Step 1													
A Contact	.21*	.21*	-.10	-.07	.42***	.32***	.47***	.35***	-.35***	-.19	-.22*	-.18	-.24**
B Two-groups	-.05	-.13	.19*	.16	.14	.09	-.10	.08	.02	.02	.10	-.28**	-.27**
C One-group	.22*	.14	-.26**	-.03	.19*	.17	.06	.09	.04	-.07	.02	-.00	.01
<i>R</i> ²	.14	.12	.17	.04	.25	.16	.25	.14	.11	.05	.06	.10	.11
<i>F</i>	6.66***	5.61***	7.94***	1.59	13.34***	7.60***	14.87***	6.75***	5.06**	2.12	2.55	4.20**	4.81**
<i>df</i>	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)
Step 2													
A Contact	.22*	.21*	-.19*	-.13	.42***	.35***	.42***	.35***	-.29**	-.12	-.22*	-.09	-.12
B Two-groups	-.01	-.11	.18*	.18	.13	.14	-.11	.07	.01	-.02	.08	-.36***	-.32***
C One-group	.24*	.17	-.15	.04	.21*	.16	.15	.10	-.02	-.15	-.03	-.13	-.14
A × B	.12	.11	-.02	.00	.07	.16	.07	.02	-.01	-.10	-.21*	-.19*	-.08
A × C	.09	.06	.20*	.18	-.02	.05	.11	-.01	-.15	-.23*	-.06	-.38***	-.39***
B × C	.09	-.02	-.10	.03	-.12	.13	-.18*	-.06	.02	-.03	.13	-.13	-.07
<i>R</i> ²	.17	.13	.22	.06	.27	.21	.27	.15	.13	.09	.10	.23	.22
<i>F</i>	3.96***	2.97***	5.32***	1.32	7.00***	5.12***	8.60***	3.36**	2.90*	1.91	2.10	5.64***	5.50***
<i>df</i>	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)
<i>Fchange</i>	1.23	.42	2.41	1.06	.75	2.37	1.96	.12	.77	1.67	1.60	6.50***	5.62***
<i>df</i>	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)

Table 9 cont. Hierarchical regression evaluating the moderator effect of two-groups and one-group representations on the relation between contact and dependent variables (standardized regression coefficients).

	Dependent variables												
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal
Step 3													
A Contact	.24*	.26*	-.13	-.10	.50***	.34***	.47***	.38***	-.33**	-.14	-.24*	-.13	-.19
B Two-groups	-.03	-.15	.14	.16	.07	.14	-.15	.05	.04	-.00	.10	-.33***	-.27**
C One-group	.24*	.16	-.16	.04	.20*	.16	.14	.09	-.02	-.15	-.03	-.12	-.13
A × B	.12	.09	-.03	-.00	.05	.16	.06	.01	-.00	-.09	-.20*	-.18	-.06
A × C	.07	.04	.17	.17	-.06	.05	.09	-.03	-.13	-.22*	-.05	-.37***	-.36***
B × C	.13	.05	-.01	.07	-.02	.11	-.10	-.01	-.04	-.05	.11	-.18	-.16
A × B × C	.09	.16	.20*	.08	.24*	-.04	.17	.10	-.13	-.05	-.06	-.12	-.22*
R ²	.18	.15	.24	.07	.30	.21	.28	.15	.14	.09	.10	.24	.25
F	3.49**	2.88***	5.23***	1.20	7.06***	4.38***	7.93***	3.00**	2.71*	1.66	1.82	5.06***	5.58***
df	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)
F _{change}	.70	2.14	3.93*	.52	5.69*	.18	3.06	.85	1.49	.22	.27	.44	4.92*
df	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)

Note. Contact = quantity × quality; two-groups = group salience during contact; one-group = salience of common identity during contact. For the dependent variables, higher ratings mean: stronger emotions of calmness, anxiety, and empathy towards the outgroup; higher outgroup evaluation, evaluative ingroup bias, subtle prejudice, bias expressed on the indirect measure of attitudes, negative implicit outgroup evaluation, implicit ingroup bias.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

The significant three-way interactions concerned anxiety and empathy: for anxiety, $\beta = .20$, $p = .05$; for empathy, $\beta = .24$, $p < .05$ (Step 3; Table 9). The two interactions significantly increased the portion of variance explained: for anxiety, $F_{change} (1, 115) = 3.93$, $p = .05$; for empathy, $F_{change} (1, 115) = 5.69$, $p < .05$. The analysis of the simple effects for the interaction concerning anxiety showed that contact reduced anxiety only when group membership was high and common identity was low (Table 10).

Table 10. Simple effects for the interaction between contact, two-groups and one-group representations (proximal anxiety).

		Proximal anxiety		
Two groups salience	Saliency of common identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	High	.03	.03	.99
	Low	-.08*	.03	2.91
Average	Average	-.02	.01	1.32
Low	High	-.02	.02	.72
	Low	-.01	.04	.35

Note. The mean score of common identity saliency is 5.44; the mean score of saliency of the two groups is 2.29; high score, low score of saliency indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

* $p < .01$.

This result is in contrast with predictions concerning the dual identity representation. However, this finding does not fully support the intergroup contact model (Brown & Hewstone, 2005) or contradict the common ingroup identity model: the two-way interactions concerning the two-groups and one-group representations, in fact, were not significant. Concerning empathy, analysis of the simple effects showed that contact increased empathy when both one-group and two-groups representations were salient, when the saliency of the two-groups representation was high and one-group representation was low, or when saliency of both one-group and two-groups representations was low (Table 11). The reduction of empathy, however, was stronger when both group saliency and saliency of common identity were high. This result is not clear. However, we can consider this finding as a weak confirmation for the dual identity model.

Table 11. Simple effects for the interaction between contact, two-groups and one-group representations (proximal empathy).

		Proximal empathy		
Two groups salience	Saliency of common identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	High	.30***	.09	3.33
	Low	.17*	.08	2.10
Average	Average	.21***	.04	5.22
Low	High	.07	.07	1.05
	Low	.31**	.11	2.75

Note. The mean score of common identity salience is 5.44; the mean score of salience of the two groups is 2.29; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

p* < .05. *p* < .01. ****p* < .001.

Distal outgroup

As can be noted in Table 9 (Step 1), frequent and cooperative contact had only positive effects. In fact, contact increased calmness ($\beta = .21, p < .05$), empathy ($\beta = .32, p = .001$), outgroup evaluation ($\beta = .35, p < .001$), and reduced evaluative bias ($\beta = .35, p < .001$) and prejudice tapped by the indirect measure of attitude ($\beta = -.22, p < .05$).⁵ Moreover, contact reduced implicit ingroup bias ($\beta = -.24, p = .01$) Salience of common identity and salience of group membership did not reveal any significant effects on the explicit measures. Partially consistent with predictions, membership salience facilitated generalization on the implicit measures: it reduced the negative implicit evaluation of disabled ($\beta = -.28, p < .01$) and implicit ingroup bias ($\beta = -.27, p < .01$). However, this finding is somewhat surprising: group salience was expected to moderate the effects of contact on implicit evaluations, instead of directly affecting them.

Concerning the moderator effects of the categorical representations – two groups, one group – neither the two-way interactions nor the three-way interaction were significant for any of the explicit dependent variables (Steps 2 and 3; Table 9). With respect to implicit attitudes, three two-way interactions were significant. The significant two-way interactions concerned both implicit outgroup evaluation and implicit ingroup bias: for implicit outgroup evaluation, contact \times two-groups, $\beta = -.19, p < .05$, and contact \times one-group, $\beta = -.38, p < .001$; for implicit ingroup bias, contact \times one-group, $\beta = -.39, p < .001$ (Step 2; Table 9). The three interactions significantly

⁵ The regression effect concerning the indirect measure of prejudice, however, was only marginally significant, $F(3, 119) = 2.55, p < .06$.

increased the portion of variance explained: for implicit outgroup evaluation, $Fchange(3, 116) = 6.50, p < .001$; for implicit ingroup bias, $Fchange(3, 116) = 5.62, p = .001$. Analyses of simple effects concerning the implicit outgroup evaluation showed that contact reduced the negative evaluation of disabled when salience of group membership (Table 12) or common identity (Table 13) were high; contact did not have significant effects on implicit evaluation of disabled at low levels of membership salience (Table 12) or common identity salience (Table 13).

Table 12. Simple effects for the interaction between contact and two-groups representation (implicit outgroup evaluation).

Implicit outgroup evaluation			
Two groups salience	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.11*	.06	2.01
Average	-.03	.04	.94
Low	.04	.05	.84

Note. The mean score of salience of the two groups is 2.29; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean. Higher scores of implicit outgroup evaluation correspond to a more negative implicit evaluation of disabled. *b* = non standardized regression coefficients. * $p < .05$.

Table 13. Simple effects for the interaction between contact and one-group representation (implicit outgroup evaluation).

Implicit outgroup evaluation			
Salience of common identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.18*	.05	3.84
Average	-.03	.04	.94
Low	.12	.06	1.85

Note. The mean score of common identity salience is 5.44; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean. Higher scores of implicit outgroup evaluation correspond to a more negative implicit evaluation of disabled. *b* = non standardized regression coefficients. * $p < .001$.

Similarly, contact reduced implicit ingroup bias when common identity was high, but not when common identity was low (Table 14). The two-way interaction concerning implicit ingroup

bias was qualified by the expected three-way interaction, contact \times two-groups \times one-group. The decomposition of the effect showed that contact reduced implicit bias toward disabled when both the salience of common identity and group membership were high or when common identity was high and group salience was low (Table 15). These findings concerning implicit measures partially confirm the intergroup contact model (Brown & Hewstone, 2005), and strongly support the common ingroup and dual identity models (Gaertner & Dovidio, 2000).

Table 14. Simple effects for the interaction between contact and one-group representation (implicit ingroup bias).

		Implicit ingroup bias		
Saliency of common identity		<i>b</i>	<i>SE</i>	<i>t</i>
High		-.27*	.03	7.89
Average		-.06	.05	1.28
Low		.15	.08	1.79

Note. The mean score of common identity salience is 5.44; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .001.

Table 15. Simple effects for the interaction between contact, two-groups and one-group representations (implicit ingroup bias).

		Implicit ingroup bias		
Two groups salience	Saliency of common identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	High	-.43*	.11	3.97
	Low	.16	.08	1.94
Average	Average	-.10	.05	1.95
Low	High	-.15*	.04	3.64
	Low	.03	.14	.21

Note. The mean score of common identity salience is 5.44; the mean score of salience of the two groups is 2.29; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .001.

3.2.2.2 Moderating effects of separate groups and separate individuals representations

The hierarchical regression procedure was the same used to test the effects of separate groups and common identity representations. In this case, however, common ingroup identity representation was replaced by separate individuals representation as moderator variable.⁶ Salience of the separate individuals representation moderates the contact effects if the contact \times separate individual term is significant; group salience moderates contact effects if the contact \times two groups product is significant. The three-way interaction allows to test Brown and Hewstone's (2005) hypothesis concerning intergroup and interpersonal dimensions, namely that the simultaneous salience of both dimensions should be an effective way to improve intergroup relations. Independent variables were centered prior to multiplication. Findings are presented in Table 16.

Proximal outgroup

As shown in Table 16 (Step 1), frequent and cooperative contact had significant effects on all the dependent variables: contact increased calmness ($\beta = .28, p < .01$), empathy ($\beta = .49, p < .001$) and outgroup evaluation ($\beta = .48, p < .001$), whereas it decreased anxiety felt toward disabled co-workers ($\beta = -.19, p < .05$). Salience of membership had a negative effect: it increased anxiety ($\beta = .25, p < .01$). The salience of interpersonal differences had only one positive effect: it increased empathy felt toward known outgroup members ($\beta = .17, p < .05$).

Concerning the moderator effect of group representations – two-groups, separate individuals – neither the two-way interactions nor the three-way interaction revealed significant effects for any of the dependent variables (Steps 2 and 3; Table 16).

Distal outgroup

All the dependent variables, apart from anxiety and implicit outgroup evaluation, were affected by contact (Step 1; Table 16). Contact with disabled co-workers increased calmness ($\beta = .26, p < .01$) and empathy ($\beta = .38, p < .001$) felt toward disabled in general. Furthermore, contact increased outgroup evaluation ($\beta = .38, p < .001$) and reduced evaluative bias ($\beta = -.33, p < .001$), the value of the indirect measure of attitude ($\beta = -.21, p < .05$), subtle prejudice ($\beta = -.21, p < .05$)⁷ and implicit ingroup bias ($\beta = -.23, p < .01$). Group representations (separate individuals, two-groups) did not reveal any significant effect with respect to the explicit measures. Concerning implicit attitudes, membership salience decreased negative evaluation of disabled ($\beta = -.28, p < .01$)

⁶ In the first phase (Step 1), the main effect of the three independent variables (frequent and cooperative contact; two-groups representation; separate-individuals representation) was estimated; in the second phase (Step 2), we added the two-way interactions; in the third (Step 3), we analyzed the effects of the three-way product.

⁷ The regression effect for subtle prejudice was marginally significant, $F(1, 119) = 1.98, p < .13$.

Table 16. Hierarchical regression evaluating the moderator effect of two-groups and separate individuals representations on the relation between contact and dependent variables (standardized regression coefficients).

	Dependent variables												
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal
Step 1													
A Contact	.28**	.26**	-.19*	-.08	.49***	.38***	.48***	.38***	-.33***	-.21*	-.21*	-.17	-.23**
B Two-groups	-.10	-.16	.25**	.16	.09	.05	-.12	.06	.01	.04	.10	-.28**	-.26**
C Separate individuals	-.03	-.00	-.02	-.07	.17*	.10	-.02	.02	-.00	-.02	.07	.19*	.20*
<i>R</i> ²	.10	.11	.11	.04	.25	.15	.27	.14	.11	.05	.06	.13	.15
<i>F</i>	4.56**	4.80**	5.12**	1.78	13.21***	6.78***	14.65***	6.40***	4.98**	1.98	2.78*	6.02***	6.87***
<i>df</i>	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)	(3, 119)
Step 2													
A Contact	.30***	.27**	-.22*	-.10	.50***	.41***	.47***	.37***	-.33***	-.21*	-.23*	-.18*	-.21*
B Two-groups	-.09	-.15	.22*	.14	.10	.08	-.13	.05	.02	.04	.08	-.28**	-.24**
C Separate individuals	-.00	.01	-.03	-.07	.18*	.12	-.01	.03	-.01	-.03	.06	.17*	.19*
A × B	.11	.08	-.13	-.07	.04	.18*	-.04	-.01	.04	-.03	-.14	-.07	.06
A × C	-.16	-.07	-.01	-.08	-.12	-.10	-.17*	-.13	.10	.14	.07	.20*	.18*
B × C	-.00	.00	-.08	-.15	.04	-.03	-.02	-.03	-.06	-.03	-.04	.04	.04
<i>R</i> ²	.14	.12	.13	.07	.27	.19	.30	.16	.13	.07	.09	.18	.18
<i>F</i>	3.19**	2.64*	2.95**	1.36	7.20***	4.56***	8.20***	3.55**	2.89*	1.50	1.97	4.16***	4.23***
<i>df</i>	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)	(6, 116)
<i>F</i> change	1.73	.52	.81	.94	1.13	2.16	1.56	.74	.82	1.02	1.15	2.12	1.50
<i>df</i>	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)	(3, 116)

Table 16 cont. Hierarchical regression evaluating the moderator effect of two-groups and separate individuals representations on the relation between contact and dependent variables (standardized regression coefficients).

	Dependent variables													
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias	
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal	
Step 3														
A Contact	.30***	.27**	-.20*	-.09	.49***	.40***	.48***	.38***	-.33***	-.19*	-.24**	-.17	-.21*	
B Two-groups	-.10	-.15	.24**	.16	.09	.06	-.13	.05	.02	.06	.07	-.27**	-.24**	
C Separate individuals	-.02	.01	.00	-.03	.17*	.09	-.00	.03	-.01	.03	.03	.20*	.20*	
A × B	.11	.08	-.14	-.09	.05	.20*	-.05	-.01	.04	-.05	-.13	-.08	.05	
A × C	-.16	-.07	-.01	-.07	-.12	-.10	-.17*	-.13	.10	.15	.07	.20*	.19*	
B × C	-.01	.00	-.04	-.11	.03	-.06	-.01	-.02	-.07	.02	-.06	.07	.05	
A × B × C	-.03	.00	.11	.13	-.04	-.10	.02	.02	-.01	.19	-.09	.10	.06	
R ²	.14	.12	.14	.08	.27	.20	.30	.16	.13	.10	.10	.18	.18	
F	2.73*	2.24*	2.71*	1.57	6.15***	4.07***	6.98***	3.02**	2.45*	1.82	1.79	3.70***	3.66***	
df	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	(7, 115)	
Fchange	.12	.00	1.23	1.39	.18	1.07	.05	.06	.00	3.59	.73	.98	.35	
df	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	(1, 115)	

Note. Contact = quantity × quality; two-groups = group salience during contact; separate-individuals = salience of interpersonal differences during contact. For the dependent variables, higher ratings mean: stronger emotions of calmness, anxiety, and empathy towards the outgroup; higher outgroup evaluation, evaluative ingroup bias, subtle prejudice, bias expressed on the indirect measure of attitudes, negative implicit outgroup evaluation, implicit ingroup bias.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

and implicit ingroup bias ($\beta = -.26, p < .01$). Unexpectedly, salience of interpersonal differences during contact had negative effects on implicit attitudes: it increased implicit negative evaluation of the general category of disabled ($\beta = .19, p < .05$) and implicit ingroup bias ($\beta = .20, p < .05$).

The two-way and the three-way interactions were not significant for any of the outcome measures (Steps 2 and 3; Table 16).

The findings obtained disconfirm Hypothesis 3c, which hypothesized beneficial effects of contact when both interpersonal differences and respective group memberships were salient during interactions with disabled. Our findings showed only one positive effect of the separate individual representation (on proximal empathy) and a negative effect of group salience (on proximal anxiety). No significant interactions emerged. Hypothesis 5c was also disconfirmed: on the basis of Brown and Hewstone's (2005) proposal of integration between the intergroup contact model and the decategorization approach (Brewer & Miller, 1984), we expected that the simultaneous salience of group identities and interpersonal differences would favor the reduction of negative implicit attitudes. However, none of the three-way interactions concerning implicit attitudes was significant, thus indicating that simultaneous salience of group membership and interpersonal differences did not help to reduce automatic bias. Instead, the two representations had opposite effects: implicit prejudice was increased by salience of interpersonal differences, it was attenuated by membership salience.

3.2.2.3 Moderating effects of dual identity representation

Previously, dual identity has been tested as the product of group membership and common ingroup identity salience, in order to analyze separately the effects of the two components of the dual identity representation. In this section, dual identity will be tested by using a different strategy. A dual identity index was obtained by averaging two items that tapped this representation (see Table 3). Hierarchical regression was applied. First, we assessed the main effects of the two independent variables (frequent and cooperative contact, two-groups within one group). In the second phase (Step 2), the two-way product was added. The moderating effect of the dual identity representation is significant if the portion of variance absorbed by Model 2 is higher than that absorbed by Model 1. Moreover, two-groups and one-group representations were added as covariates, in order to control for the independent effects of the two dimensions included in the dual identity representation. Independent variables were centered prior to multiplication. Findings are presented in Table 17.

Table 17. Hierarchical regression evaluating the moderator effect of two-groups within one group representation on the relation between contact and dependent variables (standardized regression coefficients).

	Dependent variables												
	Emotions: calmness		Emotions: anxiety		Emotions: empathy		Outgroup evaluation		Evaluative bias	Subtle prejudice	Indirect measure of attitude	Implicit outgroup evaluation	Implicit ingroup bias
	Proximal	Distal	Proximal	Distal	Proximal	Distal	Proximal	Distal	Distal	Distal	Distal	Distal	Distal
Step 1													
A Contact	.22*	.22*	-.11	-.07	.41***	.32***	.46***	.35***	-.35***	-.19	-.21*	-.18	-.24*
B Two-groups within one group	-.10	-.04	.04	-.03	.11	.07	.08	.07	-.02	-.05	-.07	-.20*	-.14
C Two-groups	-.03	-.12	.18*	.17	.12	.08	-.12	.06	.02	.03	.11	-.25**	-.24**
D One-group	.24*	.14	-.26**	-.02	.18*	.16	.05	.08	.05	-.06	.03	.02	.02
<i>R</i> ²	.15	.12	.17	.04	.26	.17	.28	.15	.11	.05	.06	.13	.13
<i>F</i>	5.35***	4.22**	5.97***	1.21	10.57***	5.86***	11.43***	5.23***	3.77**	1.67	2.06	4.57**	4.33**
<i>df</i>	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)	(4, 118)
Step 2													
A Contact	.20*	.19*	-.11	-.06	.41***	.29**	.45***	.34***	-.34***	-.15	-.20*	-.15	-.20*
B Two-groups within one group	-.11	-.05	.04	-.03	.11	.06	.08	.07	-.01	-.03	-.06	-.19*	-.12
C Two-groups	-.04	-.13	.18*	.17	.11	.06	-.12	.06	.02	.04	.12	-.24**	-.23*
D One-group	.25**	.16	-.26**	-.03	.18*	.18	.06	.09	.04	-.09	.02	.01	.00
E A × B	.14	.14	.00	-.06	.05	.18*	.07	.06	-.06	-.25**	.06	-.15	-.23**
<i>R</i> ²	.17	.14	.17	.04	.27	.20	.28	.15	.12	.11	.07	.16	.18
<i>F</i>	4.85***	3.91**	4.74***	1.06	8.48***	5.68***	9.26***	4.25***	3.10*	2.96*	1.82	4.31***	5.09***
<i>df</i>	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)	(5, 117)
<i>F</i> change	2.57	2.46	.00	.48	.37	4.30*	.69	.41	.50	7.76**	.89	2.94	7.21**
<i>df</i>	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)	(1, 117)

Note. Contact = quantity × quality; two-groups within one group = salience of dual identity during contact, two-groups = group salience during contact; one-group = salience of common identity during contact. For the dependent variables, higher ratings mean: stronger emotions of calmness, anxiety, and empathy towards the outgroup; higher outgroup evaluation, evaluative ingroup bias, subtle prejudice, bias expressed on the indirect measure of attitudes, negative implicit outgroup evaluation, implicit ingroup bias.

p* < .05. *p* ≤ .01. ****p* ≤ .001.

Proximal outgroup

As showed in Table 17 (Step 1), the positive effects of contact on calmness ($\beta = .22, p < .05$) and empathy ($\beta = .41, p < .001$) felt toward disabled co-workers and on their evaluation ($\beta = .46, p < .001$) were significant. Neither the main effects of the two-groups within one group representation nor the two-way interactions were significant (Steps 1 and 2; Table 17).

Distal outgroup

Almost all the dependent variables were positively influenced by contact. Frequent and positive contact increased calmness ($\beta = .22, p < .05$), empathy ($\beta = .32, p = .001$), evaluation of the whole category of disabled ($\beta = .35, p < .001$). Furthermore, contact reduced evaluative bias ($\beta = -.35, p < .001$), the value of the indirect measure of attitude ($\beta = -.21, p < .05$)⁸ and implicit ingroup bias ($\beta = -.24, p < .05$). Dual identity had only one positive effect: it reduced the negative implicit evaluation of disabled ($\beta = -.20, p < .05$).

Concerning the moderator effects of the dual identity representation, significant two-way interactions emerged for three dependent variables: empathy, subtle prejudice and implicit ingroup bias: for empathy, $\beta = .18, p < .05$; for subtle prejudice, $\beta = -.25, p < .01$; for implicit ingroup bias, $\beta = -.23, p < .01$ (Step 2; Table 17). The three interactions significantly increased the portion of variance explained: for empathy, $F_{change}(1, 117) = 4.30, p < .05$; for subtle prejudice, $F_{change}(1, 117) = 7.76, p < .01$; for implicit ingroup bias, $F_{change}(1, 117) = 7.21, p < .01$. The analysis of the simple effects for the interaction concerning empathy (Table 18) showed that contact increased empathy only when dual identity was high, whereas the effect was not significant at low levels of dual identity.

Table 18. Simple effects for the interaction between contact and two-groups within one group representation (distal empathy).

Salience of dual identity	Distal empathy		
	<i>b</i>	<i>SE</i>	<i>t</i>
High	.18**	.04	4.36
Average	.11*	.04	3.25
Low	.05	.05	1.02

Note. The mean score of dual identity salience is 3.65; high score, low score of salience indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

* $p < .01$. ** $p < .001$.

⁸ The regression effect for this measure, however, was only marginally significant, $F(4, 118) = 2.06, p < .10$.

The simple effects relative to the contact \times dual identity interaction relative to the measure of subtle prejudice (Table 19) indicated that contact reduced subtle prejudice when the salience of dual identity was high, it had no reliable effects when dual identity was low. Similarly, decomposition of the interaction effect concerning implicit ingroup bias (Table 20) revealed that contact reduced implicit bias only when dual identity was highly salient.

Table 19. Simple effects for the interaction between contact and two-groups within one group representation (subtle prejudice).

Subtle prejudice			
Saliency of dual identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.11*	.04	2.90
Average	-.04	.03	1.56
Low	.02	.04	.57

Note. The mean score of dual identity saliency is 3.65; high score, low score of saliency indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .01.

Table 20. Simple effects for the interaction between contact and two-groups within one group representation (implicit ingroup bias).

Implicit ingroup bias			
Saliency of dual identity	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.21**	.07	3.22
Average	-.10*	.05	2.25
Low	.01	.07	.09

Note. The mean score of dual identity saliency is 3.65; high score, low score of saliency indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

p* < .05. *p* < .01.

Findings presented concerning moderator effects of contact modes partially support Hypothesis 3a, namely that contact would improve relations with disabled co-workers more when common identity, dual identity or interpersonal differences are salient during contact than when these representations are not salient. In particular, the perception of belonging to a common group showed positive effects on emotions toward known outgroup members. This finding supports the common ingroup identity model (Gaertner & Dovidio, 2000). However, none of the expected two-way interactions between contact and one-group representation approached statistical significance. Results concerning the dual identity representation are mixed. When dual identity was tested considering both the common identity and separate groups components, contact showed positive effects on proximal empathy when one-group and two-groups representations were simultaneously salient. However, the finding that contact decreased anxiety only when salience of separate groups was high and salience of common identity was low is in contrast with predictions concerning the benefit of dual identity representation. Moreover, when the effects of dual identity were analyzed considering a single index, no significant effects emerged. Contrary to predictions, also the separate individual representations had only one beneficial effect: it increased the empathy felt for disabled co-workers.

With respect to Hypothesis 3b, which proposed that generalization should occur when dual identity of respective group memberships were salient during contact, results partially support only predictions concerning dual identity. When the dual identity was tested by adopting a single index, contact proved to be effective in increasing empathy and reducing subtle prejudice only for high levels of dual identity salience. No other significant effects emerged. Group membership salience did not have any moderating effects. As expected, salience of common identity and interpersonal differences did not favor generalization of contact effects.

Hypothesis 5b proposed that contact would improve implicit attitudes toward disabled when common identity, dual identity or group membership were salient. Our findings fully support hypotheses concerning dual identity (Gaertner et al., 2000): dual identity (measured as a single index) reduced negative outgroup evaluation and implicit ingroup bias. Moreover, contact reduced implicit ingroup bias only when dual identity was salient. The last result was obtained both when dual identity was measured as a single index and when it was calculated as the product of membership salience and common ingroup identity salience. Intergroup contact model (Brown & Hewstone, 2005) was partially confirmed: membership salience favored the reduction of negative implicit outgroup evaluation and implicit ingroup bias. However, the expected interaction between group salience and contact was obtained only on the measure of negative implicit evaluation of disabled, when group salience was tested together with common identity salience (see Tables 9 and

12): contact reduced negative implicit outgroup evaluation only when group salience was high. As expected, salience of common ingroup identity favored improved implicit evaluations: contact reduced negative implicit evaluation of disabled and implicit ingroup bias only when a common group representation was salient. As predicted, salience of interpersonal differences during contact did not favor reduction of implicit prejudice. However, unexpectedly, it worsened implicit attitudes toward disabled in general. It is possible that non-disabled find close relationships with disabled as threatening. This result is inconsistent with predictions derived from decategorization model (Brewer & Miller, 1984).

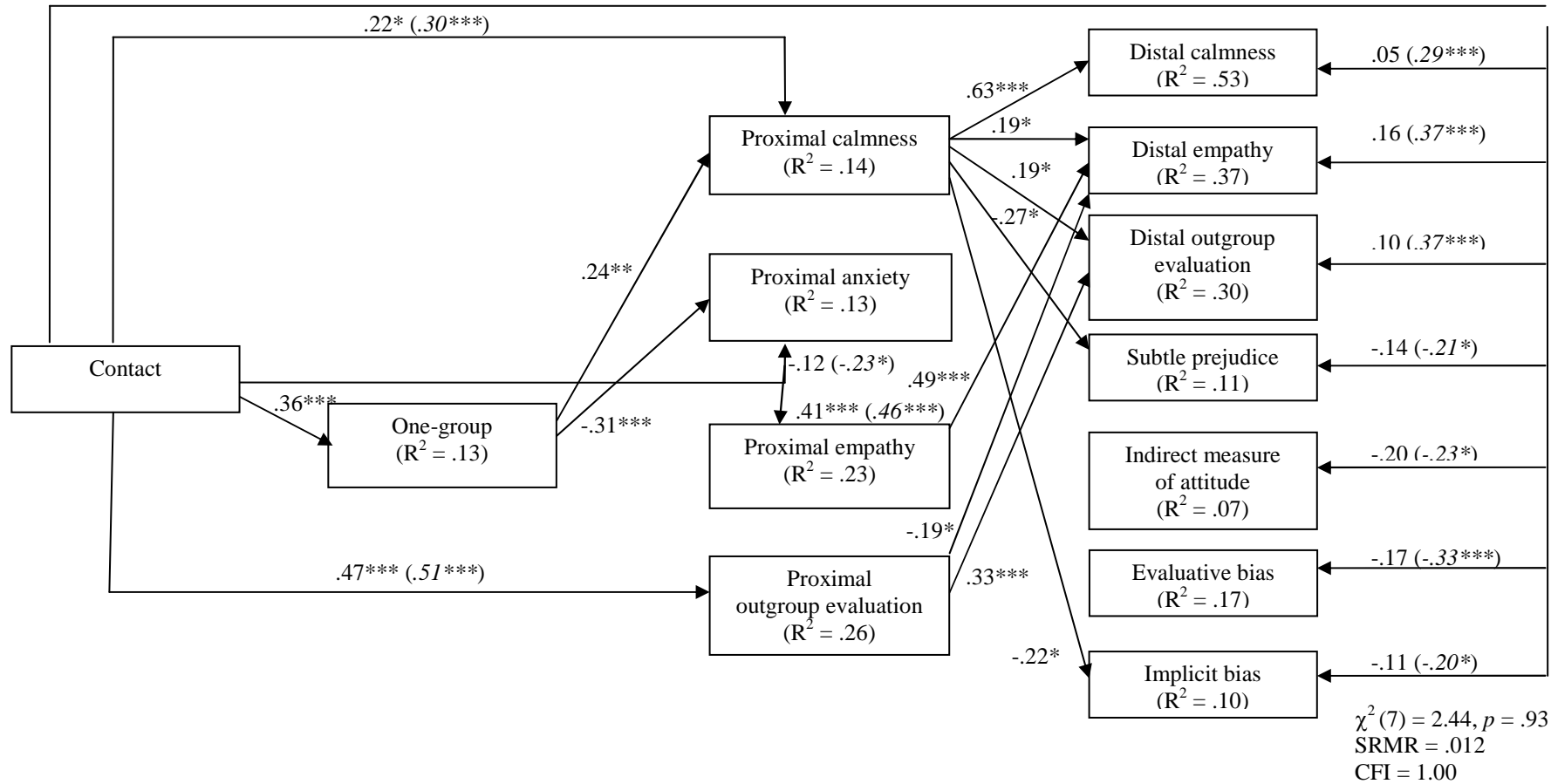
Finally, it should be noted that the portion of variance explained generally varies from acceptable to high, even considering implicit attitudes.

3.3 Mediation analyses

With the aim of analyzing the relations between constructs, a path analysis with observed variables was conducted (LISREL 8; Jöreskog & Sörbom, 1996-2001). The model tests relationships between four levels of variables: contact at work (obtained multiplying quantity and quality, see previous section) as predictor (Level 1); group representation significantly predicted by contact: one-group, $\beta = .36, p < .001$ (Level 2); outcome measures concerning proximal outgroup members significantly influenced by contact: calmness, $\beta = .30, p = .001$, anxiety, $\beta = -.23, p < .05$, empathy, $\beta = .46, p < .001$, outgroup evaluation, $\beta = .51, p < .001$ (Level 3); dependent measures relative to unknown outgroup members that contact significantly predicted: calmness, $\beta = .29, p = .001$, empathy, $\beta = .37, p < .001$, outgroup evaluation, $\beta = .37, p < .001$, subtle prejudice, $\beta = -.21, p < .05$, indirect measure of attitude, $\beta = -.23, p < .05$, evaluative bias, $\beta = -.33, p < .001$, implicit ingroup bias, $\beta = -.20, p < .05$ (Level 4).

The goodness-of-fit was assessed by using the chi-square, the standardized root mean square residual (SRMR; Bentler, 1995), the comparative fit index (CFI, Bentler, 1990). Non-significant chi-square test, values for CFI greater than or equal to .95, and for SRMR smaller than or equal to .08 indicate satisfactory fit (see Hu & Bentler, 1997, 1999). We tested predictions that one group representation would mediate the effect of contact on proximal dependent variables (Hypothesis 4a) and that the relationship between contact and distal dependent variables would be mediated by proximal outcome measures (Hypothesis 4b). The tested model fitted the data poorly: $\chi^2(34) = 136.49, p \cong .00$, SRMR = .10, CFI = .86. The model fit became satisfactory by allowing correlation between: (a) proximal dependent variables (calmness, anxiety, empathy, outgroup evaluation); (b) distal explicit dependent variables (calmness, empathy, outgroup evaluation, subtle prejudice,

Figure 4. Mediation model on the effects of contact on group categorization and variables concerning proximal and distal outgroup members.



Note. Contact = quantity \times quality; one-group = salience of common identity during contact. For the dependent variables concerning proximal and distal outgroup members, higher ratings mean: stronger emotions of calmness, anxiety, and empathy towards the outgroup; higher outgroup evaluation, evaluative ingroup bias, subtle prejudice, bias expressed on the indirect measure of attitudes, implicit ingroup bias. Only significant paths are displayed. Correlations were allowed between (a) the four dependent variables concerning the proximal outgroup; (b) the six explicit dependent variables concerning the distal outgroup.
 * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

indirect measure of attitude, evaluative bias): $\chi^2(7) = 2.44, p = .93, SRMR = .012, CFI = 1.00$. The final model is presented in Figure 4.

First, we tested the prediction that group representations would mediate the relationship between contact and variables concerning disabled co-workers (Hypothesis 4a). In our case, only common ingroup identity representation was used, as it was the only representation significantly affected by contact. As it can be noted in Figure 4, contact increased the perception of belonging to a common group which, in turn, increased calmness, $\beta = .24, p < .01$, and reduced anxiety, $\beta = -.31, p < .001$. According to Sobel test, common identity partially mediated the effects of contact on calmness, $z = 2.20, p < .05$, and on anxiety, $z = 2.51, p < .05$. The portion of variance explained was acceptable for the one-group representation ($R^2 = .13$), proximal calmness ($R^2 = .14$) and proximal anxiety ($R^2 = .13$); it was good for proximal empathy ($R^2 = .23$) and proximal outgroup evaluation ($R^2 = .26$).

Finally, we predicted that variables concerning proximal outgroup members would mediate the contact-distal outgroup relationship (Hypothesis 4b). Consistent with predictions, contact reduced anxiety, $\beta = -.23, p < .05$, and increased calmness, $\beta = .30, p = .001$, and empathy, $\beta = .46, p < .001$, felt for disabled co-workers and their evaluation, $\beta = .51, p < .001$. In turn, proximal calmness increased distal calmness, $\beta = .63, p < .001$, distal empathy, $\beta = .19, p < .05$, distal outgroup evaluation, $\beta = .19, p < .05$, and decreased subtle prejudice, $\beta = -.27, p < .05$, and implicit ingroup bias, $\beta = -.22, p < .05$. Although calmness fully mediated the effects of contact on these dependent variables, the amount of mediation was statistically significant only for distal calmness, $z = 3.20, p < .01$, and for subtle prejudice, $z = 2.01, p < .05$, whereas it was only marginally significant for distal empathy, $z = 1.83, p < .07$, distal outgroup evaluation, $z = 1.58, p < .12$, implicit ingroup bias, $z = 1.73, p < .09$. Proximal empathy had only one positive effect: it increased the empathy felt for the disabled in general, $\beta = .49, p < .001$; the total mediation effect was significant, $z = 3.92, p < .001$. Finally, evaluation of disabled co-workers had two effects: it increased the evaluation of disabled in general, $\beta = .33, p < .001$ and, contrary to expectations, reduced empathy felt for the whole category of disabled, $\beta = -.19, p < .05$. Both mediation effects of proximal outgroup evaluation were reliable: for empathy, $z = 2.04, p < .05$; for distal outgroup evaluation, $z = 3.02, p < .01$. Unexpectedly, the reduced anxiety felt for disabled at work did not favor generalization to distal outgroup members. The portion of variance explained was low for the indirect measure of attitude ($R^2 = .07$); it was acceptable for subtle prejudice ($R^2 = .11$), evaluative bias ($R^2 = .17$), implicit ingroup bias ($R^2 = .10$); it was high for distal calmness ($R^2 = .53$), distal empathy ($R^2 = .37$), distal outgroup evaluation ($R^2 = .30$).

Findings generally supported Hypothesis 4a and 4b: common ingroup identity mediated the relationship between contact and calmness felt for disabled met at work. Furthermore, evaluations of disabled co-workers, empathy and, especially, calmness felt for them, favored the generalization from contact to the whole category of disabled.

Partial support was obtained for Hypothesis 5d, which predicted that generalization to implicit attitudes would be facilitated by positive relations with known outgroup members: contact reduced implicit ingroup bias through mediation of calmness felt for disabled co-workers (marginal effect).

4. Discussion

The aim of this study was to test the contact hypothesis (Allport, 1954) and to compare contact models in the context of relationships between non-disabled and disabled. The decategorization model (Brewer & Miller, 1984), the intergroup contact theory (Brown & Hewstone, 2005), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000) were considered. In addition, we tested the effectiveness of a contact mode recently proposed by Brown and Hewstone (2005), who suggested that simultaneous salience of both interpersonal differences and respective memberships should ameliorate intergroup relations.

Disabled are a clearly devalued group in the present Italian society. Several studies showed that attitudes toward disabled can be improved through contact (e.g., Desforges et al., 1991; see also Pettigrew & Tropp, 2006). However, few studies have been conducted which examined contact effects in the work context, especially with respect to generalization to disabled not present in the contact setting (see Mangili et al., 2004). Our participants were non-disabled, working with co-workers with psychiatric problems. Several measures were used, concerning relations with disabled co-workers and with the wider category of disabled. We also included a measure of implicit attitudes (GNAT; Nosek & Banaji, 2001), to see if generalization was confined to explicit measures or could extend to automatic prejudice. Several hypotheses were drawn, concerning the effects of contact and its potential for generalization, the effectiveness of contact modes, the processes that favor the reduction of prejudice.

First of all, it is important to note that the contact situation was very positive, and had characteristics that could potentially facilitate integration. Quantity of contact was moderate; contact quality was high. The four optimal conditions proposed by Allport (1954) were present in the context considered: contact was perceived as cooperative, directed toward common goals and supported by social norms; status of non-disabled in the contact setting was perceived as only

slightly superior than that of disabled. Duration of contact was generally high, with an average contact period of more than four and a half years. Thus, the contact setting was ideal to promote positive intergroup relations.

Concerning categorization during contact, in general, participants perceived more the common belonging to the superordinate category of workers of the firm, corporation or cooperative society they worked for, rather than differences due to respective identities of non-disabled and disabled. Relations with disabled co-workers were very positive: emotions of calmness and empathy were high, as was their evaluation. In contrast, anxiety felt in the encounters with known disabled was very low. Corresponding emotions and evaluations, concerning disabled in general, were also positive, even if less than those experienced toward proximal outgroup members. Participants also exhibited outgroup favoritism (i.e., evaluation of disabled was higher than that of non-disabled) on our explicit measure of evaluative bias. This result is in contrast with the one found on the implicit measure, which revealed a strong bias favoring the ingroup. This result is not surprising: in modern society, overt expressions of prejudice are declining, whereas discrimination is expressed in more indirect forms (e.g., Pettigrew & Meertens, 1995).

Our first predictions concerned the effect of contact quantity and quality on explicit outcome measures: contact quantity and, especially, contact quality, were expected to improve relations with disabled co-workers (Hypothesis 1a) and with disabled in general (Hypothesis 1b). Results were fully supportive of predictions: quality of contact affected all dependent variables: it improved positive emotions (calmness, empathy) and evaluation of disabled and lowered anxiety felt for them, with respect to both known and unknown outgroup members. Moreover, it reduced evaluative bias, subtle prejudice (marginal effect) and the value of an indirect measure of prejudice. Contact quantity had smaller effects, one positive and one negative: it improved both anxiety and empathy felt for disabled co-workers. Thus, quality seems to be more important than quantity of contact: cooperative contact has powerful effects on both emotions and evaluations, which extend to unknown outgroup members. These results support the importance of qualitative contact in producing more positive intergroup relations (Pettigrew & Tropp, 2006). They are also coherent with findings indicating that effects of contact with mental or psychiatric disabled generalize to the whole category of disabled (e.g., Fichten et al., 2005; Newberry & Parish, 1987). However, it is the first time, to our knowledge, that generalization of positive attitudes is found from contact with disabled colleagues with psychiatric problems in the work place to outcomes concerning the wider category of disabled.

Second, we predicted (Hypothesis 2) that group representations (i.e., separate individuals, separate groups, common ingroup identity, dual identity) would change from initial to present

contact. Results supported predictions: salience of common identity and of separate individuals representations (the last effect was not reliable) increased from first contact experiences in the work place to the present contact; in contrast, salience of separate groups and of dual identity perceptions decreased. Thus, cooperative contact favors the creation of a more inclusive identity and of friendship relations, at the same time reducing the salience of respective identities (which are also a component of the dual identity representation, together with common identity). This result supports the contention that contact strategies are not necessarily exclusive (e.g., Hewstone, 1986), but rather they can be viewed over time (Pettigrew, 1998). It has practical implications as well: for instance, it suggests caution in increasing salience of group differences when contact is already established.

An additional aim was to compare the effectiveness of contact strategies in improving intergroup relations. We explored the moderational role of five contact modes: salience of individual differences (Brewer & Miller, 1984), group membership (Hewstone & Brown, 1986), common ingroup identity (Gaertner & Dovidio, 2000), dual identity (Gaertner et al., 2000). Furthermore, we tested for the first time the proposal that simultaneous salience of both interpersonal differences and respective identities (Brown & Hewstone, 2005) would be an effective way to reduce prejudice. It is the first time, to our knowledge, that the five strategies are tested with correlational techniques in a naturalistic context, considering relations with both proximal and distal outgroup members, by using both explicit and implicit measures. On the basis of the contact literature, we expected that: effects of contact on relations with disabled co-workers would be more positive when interpersonal differences, common identity or dual identity were salient (Hypothesis 3a); generalization would be more pronounced when group membership or dual identity were salient (Hypothesis 3b). Hypothesis 3a received only partial support. Salience of interpersonal differences had only one effect: it increased empathy toward disabled co-workers. More support was found for the common ingroup identity model (Gaertner & Dovidio, 2000): salience of a common belonging improved calmness and empathy and reduced anxiety. Common identity, thus, is an effective strategy to improve relations with known outgroup members; however, common identity, interpreted as a moderation model, was not supported: salience of superordinate identity did not moderate the effects of contact on dependent variables. Mixed support was found for the effectiveness of the dual identity representation: when dual identity was tested by considering simultaneously the separate groups and common identity components, we found that contact increased empathy more when two-groups and one-group representations were highly salient. However, results revealed that contact reduced anxiety when salience of two-groups was high and salience of common identity was low. This result is in contrast with predictions concerning dual identity (it could also be considered as a weak confirmation of the intergroup contact theory and a

disconfirmation of the common ingroup identity model). Finally, no reliable interactions were found when dual identity was measured by adopting a single index. As expected, group membership salience did not favor relationships with known disabled. Moreover, it increased anxiety felt for them. This result is not surprising: other studies found that salience of group identities has negative effects (e.g., Greenland & Brown, 1999, Study 1; Harwood et al., 2005, Study 2; Islam & Hewstone, 1993).

Hypothesis 3b received weak support: contact improved empathy toward disabled in general and reduced subtle prejudice when dual identity (measured as a single index) was salient. No other moderator effects were found when dual identity was measured by considering both the separate groups and common identity components. Moreover, intergroup contact theory was disconfirmed: none of the expected interactions between contact and two-groups representations was significant. As expected, also salience of interpersonal differences and of common identity did not moderate the effects of contact on evaluations of disabled in general.

Our results replicate only partially findings obtained by Gonzalez and Brown (2003). These authors, using minimal groups in a laboratory experiment, compared four strategies (separate individuals, separate groups, common identity, dual identity) and found that all of them were equally effective in reducing bias toward known outgroup members; however, only common and dual identity produced generalization. The fact that, in our case, only the dual identity representation had some effects, may be due to the cooperativeness of contact, which, as suggested by Pettigrew & Tropp (2006), is sufficient to obtain generalization.

Hypothesis 3c was relative to the recent orthogonal model proposed by Brown and Hewstone (2005): contact should improve relations with both known and unknown outgroup members more when both interpersonal and intergroup dimensions are simultaneously salient. In contrast with predictions, none of the three-way interactions between contact, separate individuals and separate groups representations approached statistical significance, with respect to both disabled co-workers and disabled in general.

Thus, results concerning moderation of contact modes reveal that perceptions of being part of the same team is an effective way to improve relations with proximal outgroup members; contact effects generalize more when dual identity is salient. These findings are consistent with the common ingroup identity model (Gaertner & Dovidio, 2000), and support the trade-off hypothesis, which suggests that common identity should be especially beneficial for outgroup members encountered, whereas dual identity should favor generalization to unknown outgroup members.

Moderation analyses provided evidence for the effectiveness of the one-group representation in ameliorating relations with disabled, but did not support the common ingroup identity model

(Gaertner & Dovidio, 2000) as a moderation model. However, the common ingroup identity model has usually been tested as a mediation model: group representations are expected to mediate the relationship between antecedents and consequences of contact. In the present research, we tested for the first time a double mediation model, where group representations are used as mediators of the relation between contact and outcome variables concerning known outgroup members (Hypothesis 4a); these variables, in turn, are tested as mediators of the relationship between contact and variables relative to unknown outgroup members (Hypothesis 4b). Findings supported the proposed model: one-group representation partially mediated the effects of contact on calmness and empathy. This result is consistent with previous studies that showed the mediational role of one-group perceptions (e.g., Gaertner et al., 1994). Moreover, calmness felt for disabled co-workers totally mediated the effects of contact on calmness, empathy, outgroup evaluation, subtle prejudice (statistical mediation was only marginally significant for the last three variables) relative to disabled in general. Empathy toward known outgroup members totally mediated contact effects on empathy toward distal outgroup members. Evaluation of disabled co-workers had two total mediation effects: it increased as a function of contact and, in turn, improved the evaluation of disabled in general and, contrary to predictions, reduced empathy felt for them. Except for the last result, which is the only incoherent with expectations and, we believe, hardly explicable, results are in line with a large part of the contact literature, showing the crucial role of positive emotions, such as calmness and empathy (Pettigrew, 1997, 1998), in mediating contact effects. A possible explanation of the finding that evaluation of known disabled negatively predict empathy toward disabled in general is that cooperative contact increases confidence in autonomy of disabled and their associated evaluation, thus reducing empathy toward disabled in general, who are generally expected to need assistance. However, this explanation is only speculative and restricted to our sample, and more research is needed to replicate this unattended finding. Unexpectedly, we found that anxiety felt for disabled co-workers did not mediate contact effects on general evaluations. A possible explanation is provided by the cooperative contact setting in which our participants were interacting: the positive atmosphere in which contact took place, together with the fact that the average duration of the contact experience was high, had reduced anxiety felt during contact. General low levels of anxiety experienced by respondents, thus, were not predictive of attitudes and emotions toward disabled in general.

Portion of explained variance ranged from acceptable to high for proximal dependent variables; it was high for emotions and evaluations of disabled in general, acceptable for the other measures relative to the distal outgroup, thus indicating that our measures were sufficiently sensitive.

The proposed mediation model explains how contact affects relations with known outgroup members (i.e., through improved perceptions of being part of the same team) and how effects generalize to unknown outgroup members (i.e., through improved relations with outgroup members actually encountered). Previous studies focused on these relationships separately: Gaertner and colleagues demonstrated the importance of group representations in mediating contact effects (e.g., Gaertner et al., 1990). Other authors focused more on the importance of emotions as mediating variables (see Paolini et al., 2006). Gaertner and colleagues (1994) made an attempt to explain the chain leading to generalization: they found that favorable contact conditions affected common ingroup and dual identity perceptions, which negatively affected bias in affective reactions; finally, emotional bias predicted bias in overall attitudinal favorability. However, the measure of emotional bias did not distinguish between different types of emotions; emotions were tapped at an intergroup level; bias in overall attitudinal favorability was the only dependent variable used. Traditionally, studies considered emotions tapped at an intergroup level (i.e., emotions felt for an outgroup category). There is some evidence, however, that also interpersonal emotions (in our case, emotions felt for known outgroup members) play an important role in the process of prejudice reduction (e.g., Harwood et al., 2005; Tam et al., 2006). Our mediation model demonstrated that the emotions developed in encounters with known outgroup members (predicted by the perceptions to act as a single group) are important predictors of generalization to emotions felt for the general outgroup category and to its evaluation. We recognize the importance of intergroup emotions in explaining intergroup processes, and we suggest that a proximal predictor can be emotions tapped at an interpersonal level. Our results are consistent with those obtained by Capozza, Vezzali, and Hichy (2007), who, examining in two studies the relationship between Italian and immigrants in the work place, proposed a similar double mediation model, where group representations (two-groups, one-group, dual identity) mediated the relationship between contact and criterion variables relative to known outgroup members; anxiety and, especially, empathy felt for proximal outgroup members mediated generalization of contact effects.

Our final hypotheses concerned implicit attitude change. We are aware of only one study that tested the effect of contact on implicit attitudes toward disabled: Prueett and Chan (2006) found that frequency of contact was, among other psychosocial variables, the major predictor of improved implicit attitudes, as measured by a paper and pencil version of a disabled vs. non-disabled IAT. In general, studies that examined effects of contact on automatic prejudice showed that quantity and quality of contact, together or separately, can predict reduced implicit bias. On the basis of contact literature, we predicted that the combination of quantity and quality of contact would improve automatic attitudes (Hypothesis 5a). As expected, frequent and positive contact improved automatic

evaluation of disabled and reduced implicit bias, whereas the effects of quantity or quality alone were non significant. Second, we hypothesized (Hypothesis 5b) that implicit attitudes would benefit more when common identity, dual identity or respective identities were salient. Results fully supported our prediction: contact improved implicit outgroup evaluation when respective memberships or common identity were salient (however, the moderator effect of the two-groups representation was not replicated when the intergroup contact model was tested in comparison to the decategorization model); it reduced implicit bias when common identity was salient, when common identity was salient and group membership salience was low, when both common identity and group membership salience were high (i.e., dual identity). Moreover, when dual identity was tested as a single index, we found that contact reduced implicit bias only for high levels of dual identity.

Three unexpected results on implicit attitudes were found, concerning salience of group membership, dual identity, interpersonal differences. Group membership salience had main effects on implicit attitudes: it improved disabled evaluation and reduced implicit bias. A main effect on automatic attitudes was found also for dual identity salience (as measured by a single index), which improved outgroup evaluation. Only moderator effects were expected with respect to salience of group membership and dual identity. It is possible that, in the context considered, the retention of respective identities (which are a component of dual identity, together with common identity) during contact, that is, non-disabled and disabled identities, represents, at an implicit level, recognition and valorization of differences. Moreover, to the extent that disabled represent a clearly devalued group in our society, recognition of differences can protect group distinctiveness and, consequently, avoid the risk of being assimilated to disabled. In fact, despite the positive evaluation expressed by respondents on explicit measures, disabled met in the work place had psychiatric problems, sometimes hard to recognize from the point of view of an observer, and might represent a category not to be confused with for our participants. Thus, recognition of respective group memberships, even if neglected on explicit measures, had a positive value and could have powerful effects at non-conscious levels, so that group identity reduced threat of assimilation to the devalued group and protected group distinctiveness, thus directly influencing implicit attitudes. It is possible that this particular finding is restricted to our sample: for instance, in the case of physically impaired disabled, the illness is clearly visible, and retention of group differences could exacerbate distinctions, thus (directly) negatively influencing automatic attitudes. Our reasoning is reinforced by the third unexpected finding: salience of interpersonal differences directly reduced implicit outgroup evaluation and increased implicit bias. In this case, close relationships can be implicitly

threatening for individuals, who react to the threat to distinctiveness by increasing automatic prejudice.

Hypothesis 5c was disconfirmed: replicating results found on explicit measures, simultaneous salience of both interpersonal and intergroup dimensions did not favor improved automatic attitudes.

Finally, partial support was found for Hypothesis 5d, which predicted a mediated relationship between contact and implicit attitudes, through proximal outcome measures. We found that calmness felt for known disabled fully mediated the effect of frequent and cooperative contact on implicit ingroup bias. The amount of statistical mediation, however, was only marginally significant. It is the first time, to our knowledge, that a mediation effect is found in contact studies with respect to implicit measures. Positive emotions, thus, are important mediators not only for explicit, but also for implicit attitudes.

Results found on our implicit measure do not support an environmental association model (Karpinski & Hilton, 2001): though analyses concerning effects of contact quantity and quality seem to support the idea that frequent and positive environmental associations reduce automatic bias, moderation and mediation analyses suggest a different explanation. Findings that contact reduced implicit prejudice more when group membership, common identity or dual identity were salient, indicate that categorization processes can influence attitudes also at non-conscious levels, and that processes that favor generalization on explicit attitudes can be applied also to implicit attitudes. Supporting the idea that considering group representations as moderators of implicit attitudes is important, portion of variance explained, which was acceptable when only contact quantity and quality were considered ($R^2 = .10$), was considerably higher when moderators were taken into account (ranging from $R^2 = .16$, when dual identity was calculated as a single index, to $R^2 = .25$, when it was tested as the product of one-group and two-groups perceptions). In addition, we found partial evidence of mediation: contact improved feelings of calmness toward known disabled, which, in turn, reduced implicit bias. Portion of variance was acceptable, though not very high ($R^2 = .10$). Previous studies found an unmediated relationship between contact and implicit attitudes (see, e.g., Aberson & Haag, 2007; Tam et al., 2006; Turner et al., 2007). In our case, mediation suggests that implicit attitudes can be considered as a component context-dependent of a more general attitude concept, and not just reflect associations a person has been exposed to in his/her environment. We will address this point later in the general discussion.

Our findings consistently demonstrate that contact with disabled co-workers with psychiatric problems can generalize to the general category of disabled. This result is not obvious, because mental or psychiatric disabled differ in many aspects from physically impaired disabled (even if, as

we argued above in the introduction, a clear distinction between the two types of disability is often unrealistic). A possible explanation for the generalization occurred concerns typicality: our respondents rated both disabled with psychiatric problems and physically disabled as representative of the whole category of disabled. Probably, generalization would be less pronounced for people who consider psychiatric disabled as an exception with respect to disabled in general (see Hewstone & Brown, 1986).

The finding that relations with disabled (both known and unknown) were rated as very positive, in contrast with results concerning automatic bias, can suggest that ratings were affected by social desirability concerns. To control for the effects of social desirability, moderation analyses were replicated by including an index of social desirability as covariate. In all cases, the impact of social desirability was minimal, and it did not affect our results. Thus, we can be reasonably confident in our results, even we acknowledge that findings cannot be completely unaffected by self-presentation strategies.

These findings, together with the observation that the portion of variance explained was much higher when main and interactive effects of contact modes were included in analyses than when only effects of contact quantity and quality were taken into consideration, have both theoretical and practical implications. We have discussed results in the light of hypotheses drawn from the contact literature; we will address practical implications in the general discussion.

The present research has some limitations. First, data are only correlational: it is possible that people with higher evaluations of disabled are more likely to engage in contact with disabled. However, we can be confident in the proposed causal sequence for different reasons: first, our participants had no possibility to avoid contact, because disabled were co-workers met in the work place. Thus, level of contact depended on the work place demands, rather than on participants' prior intergroup attitudes. Second, laboratory (e.g., Gaertner et al., 1990) and longitudinal studies (e.g., Levin et al., 2003) provided general evidence for the causal relationship between contact and improved intergroup relations. We acknowledge, however, that the relationship between contact and reduced prejudice might be bi-directional. The second limitation concerns our sample: participants belonged to different institutions, where contact setting characteristics were different. In future research, it would be useful to examine contact effects in a sample drawn from the same contact setting. Moreover, work places considered differed for number of disabled employed and for the extent of their psychiatric problems. These variables were not considered in the present research: future studies should address the possibility that type and gravity of the illness can influence people's attitudes and emotions. Furthermore, it would be interesting to see if contact is beneficial also from the point of view of disabled: contact might affect, in addition to intergroup attitudes,

perceptions of acceptance and, in turn, levels of functioning of disabled in the wider society. A final limitation concerns outcome variables used: contact, though beneficial for intergroup relations, might differently affect working performance: future research should address this issue.

Chapter 3

Contact strategies: Effects on cognitive impairment and on intergroup attitudes, emotions and stereotypes

1. Introduction

In the first study (see previous Chapter), we provided further support for the effectiveness of the contact hypothesis (Allport, 1954), by showing that contact improved attitudes toward outgroup members met during contact and that its effects generalized to the explicit and implicit evaluations of outgroup members not yet encountered. Moreover, evidence was found for the moderator and mediational role of group representations – especially, for the effectiveness of the common ingroup and dual identity perceptions (Gaertner & Dovidio, 2000) – and we proposed a model explaining how contact affects proximal outgroup evaluations and how its effects generalize to the distal outgroup (see also Capozza, Vezzali, & Hichy, 2007).

However, contact can produce negative effects. Intergroup contact may be physiologically threatening (Blascovich et al., 2001) and induce anxiety and uncertainty (Stephan & Stephan, 1985). Moreover, to the extent that prejudice can operate automatically (Devine, 1989), people may try to control their prejudice responses during contact, and this act of self-control may have detrimental effects on cognitive functioning (Muraven & Baumeister, 2000). The resource model of executive attention (Baumeister et al., 2000; Engle et al., 1995) proposes that executive function, which is used for a broad range of activities, including all types of self-regulation, is a limited resource, even if renewable. Engaging in an act of self-regulation consumes part of this resource leaving the self depleted and, consequently, impairs performance on a subsequent task tapping the same resource. Richeson and Shelton (2003; see also Richeson et al., 2005) showed that interracial interactions impaired performance on a subsequent task requiring response inhibition (i.e., the Stroop task), but only for people with high levels of implicit prejudice. In a series of studies, Richeson and collaborators demonstrated that people who showed more cognitive impairment after interracial interactions also exhibited more activity in cognitive control brain regions during the presentations of Black faces (Richeson et al., 2003) and that interracial interactions led to greater Stroop interference because they required more self-regulation; instead, reducing the self-regulatory

demands of the intergroup interaction reduced the extent of cognitive impairment (Richeson & Trawalter, 2005). Trawalter and Richeson (2006) proposed that regulatory focus might moderate the extent of cognitive impairment. Specifically, they showed that participants who attempted to have a positive interracial exchange (promotion-focus) exhibited less impairment than those who tried to avoid prejudice (prevention-focus) or who were given no instructions (control condition).

The aim of the present study was to extend Richeson and colleagues' results by showing that contact modes have positive effects on intergroup relations and that, at the same time, they can moderate the extent of cognitive impairment following intergroup interactions. In particular, we compared the effectiveness of separate groups and common ingroup identity representations and we hypothesized that both contact modes would improve intergroup relations, but only the perception of belonging to a common group would reduce the extent of cognitive impairment after intergroup contact. We reasoned that the salience of a separate groups representation might favor the generalization of contact effects (Hewstone & Brown, 1986), but at the same time increase the anxiety and the uncertainty felt during contact (Islam & Hewstone, 1993; Stephan & Stephan, 2005), which increase self-regulation and, consequently, the extent of cognitive impairment. In contrast, we predict that the perception of sharing a common identity with outgroup members during contact would improve intergroup attitudes (Gaertner & Dovidio, 2000), simultaneously reducing anxiety and uncertainty of the contact situation and, as a consequence, the need to regulate one's own responses and the extent of cognitive impairment. The reasoning that salience of two groups would increase cognitive impairment should be true especially for people with high levels of prejudice (Richeson & Shelton, 2003). In fact, prejudice – either explicit or implicit – should predict the extent of cognitive impairment only after a resources-consuming contact, such as that structured as an interaction between two different groups: people with high levels of prejudice should be more anxious and uncertain during intergroup contact, when group differences are maximized. In contrast, prejudice should have no effects after contact with an ingroup member or contact between people sharing the same belonging, which is supposed to reduce, instead of increase, the anxiety felt in the contact situation and, thus, the need for self-regulation.

Concerning explicit intergroup attitudes, they should be negatively affected by implicit and, especially, explicit prejudice. In contrast, we make the counterintuitive prediction that prejudice – explicit and/or implicit – would be predictive of more positive intergroup attitudes after intergroup contact (i.e., when separate groups and common ingroup identity representations are salient). Thus, we expect a moderator effect of experimental conditions. In fact, high prejudiced participants may benefit more from the interaction, as compared with those already positively oriented toward the outgroup. That is, people with high levels of explicit and/or implicit prejudice, after positive

contact, might change their presumably negative intergroup attitudes more than those less biased toward the outgroup; probably, this change should be more pronounced when the contact situation allows for the recognition of respective differences, as it is when group membership is salient. A weak form of this hypothesis is that negative effects of prejudice are neutralized after intergroup contact, especially when respective identities are salient.

The procedure adopted was similar to that used by Richeson and Shelton (2003): Italian participants came into the laboratory individually and completed an IAT (Greenwald et al., 1998), assessing implicit attitudes of Italians toward Albanians, and an explicit measure of prejudice toward Albanians. In the second phase of the study, participants had a brief interaction, apparently for a separate study, with either an Italian or an Albanian confederate, who served as a second experimenter. The experimental manipulation was effected at this point, by creating three different experimental conditions. When the confederate was Albanian, the interaction was structured so as to maximize the perceptions of belonging to separate groups (two-groups condition) or of sharing a common ingroup identity (one-group condition). Participants assigned to interact with the Italian confederate represented the control group. Following contact, participants came back to the first laboratory and, in the presence of the first experimenter, completed a Stroop color-naming task, which requires acts of self-regulation in order to inhibit pre-potent responses (Engle, 2002; Macleod, 1991), and a questionnaire assessing attitudes toward Albanians.

1.1 Hypotheses

On the basis of considerations reported above and of the research reviewed previously (see Chapter 1), we made the following predictions:

Hypothesis 1a. Participants in the two-groups condition would reveal more cognitive impairment on the Stroop task than participants in either the one-group or the control conditions. We do not expect differences between one-group and control conditions;

Hypothesis 1b. Implicit and explicit prejudice would predict the extent of cognitive impairment in the two-groups condition, but not in the one-group or in the control conditions.

Hypothesis 2a. Attitudes and emotions toward Albanians would be more positive in the one-group and two-groups conditions than in the control condition. No difference is expected between the two-groups and the one-group conditions. However, we acknowledge the possibility that generalization would be more pronounced when respective identities, rather than a superordinate identity, are salient (Brown & Hewstone, 2005).

Hypothesis 2b. Implicit and, especially, explicit prejudice should predict more negative evaluations of Albanians. However, we expect opposite effects in the two contact conditions. That

is, explicit and implicit prejudice should predict improved relations with Albanians in the two contact conditions (i.e., one-group, two-groups), but not in the control condition, or at least, their negative effects should be neutralized more in the former than in the latter condition. The moderator effect of experimental condition is expected especially in the two-groups condition, where membership salience should favor generalization of contact effects to unknown outgroup members.

2. Method

2.1 Participants

Sixty psychology students (12 males, 48 females) of the University of Padova were examined. Mean age was 23.47 ($SD = 3.00$). All participants were Italians. The experimental design was a between-subjects one-way with three levels: two-groups, one-group, control (no intergroup contact), with random allocation of participants to the three experimental conditions.

2.2 Procedure

Participants were met by an Italian experimenter who took them individually into the laboratory. The study was introduced as a test of the influence of one cognitive task on a second task after a delay between the two. The experiment consisted of three parts. Participants first completed an IAT (Greenwald et al., 1998), assessing automatic attitudes toward Albanian people, presented as a word categorization task. After completing the IAT, participants answered a questionnaire containing the Affective Prejudice Scale (Pettigrew & Meertens, 1995), which assessed explicit prejudice toward Albanians.

In the second part of the experiment, immediately after the completion of the IAT and of the Affective Prejudice Scale, participants were led to a second room, where they met a second experimenter. They were told that, during the delay between the two tasks, they would help the second experimenter with the creation of stimulus material for an unrelated study. Participants were asked to spend one minute introducing themselves, then to provide their opinion on two issues for two minutes each (in counterbalanced order): (a) the reform of the Italian university system; (b) the illegal arrival of immigrants on the Italian coasts. The two questions were supposed to represent controversial issues, one of which was directly relevant for the intergroup context of the experiment (i.e., the illegal arrival of immigrants in Italy), whereas the other was expected to represent a neutral issue (i.e., the reform of the Italian university system). All of the sessions were videotaped. The second experimenter did not converse with participants, except for asking the two questions and the agreement to videotape the interaction.

As mentioned before, the manipulation of the independent variable was effected by the second experimenter, who was an Albanian female confederate for two thirds of participants; an Italian female confederate for one third of participants. In the *two-groups condition*, the second experimenter was Albanian. After meeting the participants, she apologized for her mistakes speaking Italian, because she was from Albania. During the interaction, she emphasized the Albanian accent, she made grammatical mistakes and used, apparently unintentionally, Albanian words. While speaking, she addressed participants by using the third person singular – a form used in formal conversations – and explained that, in her country, it was normal to use formal conversation in university contexts, thus ascribing her behavior to (false) national differences between countries. In the *one-group condition*, the second experimenter was also Albanian. As in the two-groups condition, she apologized for her mistakes with the Italian language. In this case, however, she did not emphasize the Albanian accent, and she did not make grammatical mistakes or use Albanian words. In contrast, she had an informal behavior – she used the second person singular, which indicates that the tone of the conversation is informal. After apologizing for mistakes, and prior to explaining the task, she told participants: “you know, even though Albanian, I was able to enter the Psychology Faculty from my first academic year and now, finally, I am preparing my final dissertation. I am very happy of my choice, psychology students are very helpful, it is like a big family.” Finally, in the *control condition*, the second experimenter was an Italian female confederate, who explained the task by using an informal tone of conversation (i.e., by addressing participants with the second person singular).

Afterwards, in the third and final part of the experiment, participants were led to the first laboratory, where they met the first experimenter. They completed the Stroop task and a questionnaire containing the manipulation checks, measures assessing the endorsement of typical (negative) and atypical (positive) Albanian traits, the evaluation of Albanians and the negative emotions felt toward them. Finally, participants were thanked and debriefed.

2.3 Instruments

2.3.1 Implicit measure

The IAT (Greenwald et al., 1998) has often been used to tap the automatic evaluations of social groups by assessing the strength of automatic associations between target concepts (e.g., Italians vs. Albanians) and two poles of an attribute dimension (e.g., positive vs. negative). In the present study, we were interested in the implicit evaluation of Italians toward Albanians. The IAT was run using the Inquisit software (Version 1.33; Draine, 2003).

Four categories of stimuli were used: Italian names; Albanian names; positive words; negative words (Table 1). Positive and negative words were adapted from stimuli used in Greenwald and collaborators' studies and were matched for length and valence. Italian names were taken from previous studies that indicated their typicality for the Italian group (e.g., Capozza, Andrighetto, & Falvo, 2007); Albanian names were selected by an Albanian and an Italian rater on the basis of their typicality in Albania. Both Italian and Albanian names included five male names and five female names. Participants were required to categorize items belonging to the four categories of stimuli as quickly as possible by using one of two response keys. There were two experimental blocks of 40 trials, 10 for each category of stimuli. In one block, Italian names and positive words shared the same response key, whereas Albanian names and negative words shared the opposite response key. In the other block, the associations were reversed: Italian names and negative words shared a response key, Albanian names and positive words shared the opposite response key. Category labels appeared on the upper right and left of the screen as reminders. The first experimental block was preceded by a practice block containing 20 practical trials (five trials from each of the four categories of stimuli); the second experimental block was preceded by a practice block with 40 trials (10 trials from each of the four categories of stimuli). Trials used in the practice block were the same used in the experimental blocks (see Table 1). The order of the experimental block was counterbalanced across participants. Feedback was provided for trials incorrectly categorized: in this case, a red "X" appeared below the stimulus item and the subsequent trial appeared only after participants' correction of the wrong answer.

Table 1. Stimulus words used in the IAT
(Italian translation concerning positive and negative words is reported in parentheses).

Experimental stimuli			
Italian names	Albanian names	Positive words	Negative words
Silvia	Teuta	Health (<i>Salute</i>)	Poverty (<i>Povertà</i>)
Elena	Jeta	Freedom (<i>Libertà</i>)	Death (<i>Morte</i>)
Paola	Blerina	Pleasure (<i>Piacere</i>)	Tragedy (<i>Tragedia</i>)
Angela	Anila	Vacation (<i>Vacanza</i>)	Illness (<i>Malattia</i>)
Giulia	Shquipe	Peace (<i>Pace</i>)	Vomit (<i>Vomito</i>)
Federico	Besim	Happiness (<i>Felicità</i>)	Cancer (<i>Cancro</i>)
Simone	Illir	Gift (<i>Regalo</i>)	Murder (<i>Omicidio</i>)
Matteo	Petrit	Paradise (<i>Paradiso</i>)	Sorrow (<i>Dolore</i>)
Davide	Agim	Gentle (<i>Gentile</i>)	Hatred (<i>Odio</i>)
Luca	Saimir	Love (<i>Amore</i>)	Agony (<i>Agonia</i>)

The four experimental blocks and the corresponding four practice blocks were preceded by two additional practice blocks, each consisting of 20 trials, with the aim to familiarize participants with the four categories of stimuli. In the first practice block, participants categorized the Italian names and the Albanian names, each corresponding to a different response key. In the second practice block, participants categorized positive and negative words by pressing one of two appropriate response keys. Items used in the two blocks were the same used in the experimental blocks (Table 1). Responses to the two initial blocks of practice trials were eliminated from the analyses.

2.3.2 Stroop task

Participants were asked to report as quickly as possible the color in which a stimulus word or a string of Xs was presented by pressing one of four keys on the keyboard (each key had a different color). The words “red,” “yellow,” “blue,” “green,” or a string of Xs appeared in the center of the screen. On compatible trials, each stimulus word appeared in the corresponding color (e.g., “green” written in green type) or a string of Xs appeared in one of the four colors. On incompatible trials, each word appeared in a color different from its semantic meaning (e.g., “green” written in red type). Each word or string of Xs appeared for a maximum of 800 ms⁹ and was preceded by a fixation cross (+). The inter-stimulus interval item was 1500 ms. Participants were presented with 7 experimental blocks, each consisting of 12 trials: 4 incompatible trials (e.g., “red” written in blue type) and 8 compatible trials (e.g., “red” written in red type or a string of Xs written in red type). Experimental blocks were preceded by a practice block of 20 trials. Responses to the practice blocks were excluded from analyses.

2.3.3 Explicit measures: questionnaire

➤ *Explicit prejudice* (assessed prior to the manipulation)

The Affective Prejudice Scale (Pettigrew & Meertens, 1995) was used. Participants indicated the solidarity and the admiration felt for Italians and Albanians on a five-step scale ranging from 1 (*never*) to 5 (*always*): “How often do you feel solidarity toward Albanians living here?”; “How often do you feel admiration for Albanians living here?”; “How often do you feel solidarity toward Italians?”; “How often do you feel admiration for Italians?” The two items concerning affective prejudice for Albanians (Cronbach’s alpha = .73) and for Italians (alpha = .62) were averaged.

⁹ We decided to reduce the response window, which was 2000 ms in Richeson and Shelton’s (2003) study, in order to increase the difficulty of the task and to avoid ceiling effects.

➤ *Stereotype endorsement*

Participants rated the typicality of eight traits, four negative and four positive, with respect to the Albanian group, on a seven-step scale: scores from 1 to 3 indicated decreasing degrees of typicality; 4 indicated that the trait was neither typical nor atypical of Albanians; scores from 5 to 7 indicated increasing degrees of typicality. The four negative traits were typical of the Albanian group: aggressive, bully, misfit, violent. The four positive traits were atypical of Albanians: sincere, honest, hard-working, trustworthy.¹⁰

Two indexes were calculated by combining the three negative traits ($\alpha = .85$) and the three positive traits ($\alpha = .69$). The traits “misfit” and the trait “sincere” were excluded because they lowered reliability of the respective scales and were thus analyzed separately.

➤ *Evaluation of Albanians*

Participants rated the Albanians in general on five semantic differential scales, representing the Evaluation factor: pleasant/unpleasant, good/bad, disagreeable/agreeable, valuable/unvaluable, desirable/undesirable. Items 1, 2, 4, 5 were recoded so that, on the seven-step scale, 1 was given to the negative and 7 to the positive pole (4 = *neither/nor*). Ratings were combined to obtain a single index ($\alpha = .77$).

➤ *Negative emotions*

Participants were asked to rate negative emotions felt toward Albanians on a six-step scale ranging from 1 (*not at all*) to 6 (*very strongly*). Seven items were used: uneasy, suspicious, anxious, worried, guilty, tense, threatened. Items were combined to form an index of negative emotions ($\alpha = .92$).

➤ *Manipulation checks*

First, participants were asked to indicate the nationality of the second experimenter met during the delay between the two parts of the experiment: “The experimenter that you met between the first and the second part of the experiment was Italian?” The possible answers were “yes” or “no.” In case of negative answer, participants had to indicate the nationality of the experimenter. Second, participants were asked to indicate if the second experimenter was a researcher or a student on a 9-step scale: scores from 1 to 4 indicated decreasing agreement that she was a researcher; 5 indicated uncertainty; scores from 6 to 9 indicated increasing agreement that she was a student. Two items were relative to group representations during contact with the second experimenter: “During the interaction with the second experimenter, I perceived that we belonged to a common group”; “During the interaction with the second experimenter, I perceived that we belonged to separate groups.” The final item concerned diversity between Italian and Albanian psychology students:

¹⁰ The typical and atypical traits were selected on the basis of a study, where participants rated the typicality of a list of traits with respect to Italian, Albanian, Chinese, South-African and Indian people (Contin, 2005).

“Italian psychology students and Albanian psychology students are different.” All three items had a seven-step scale; participants were asked to indicate their agreement from 1 (*not at all*) to 7 (*very strongly*).

Finally, participants reported demographic information.

3. Results

3.1 Efficacy of the experimental manipulation

All participants correctly identified the nationality of the second experimenter (i.e., Albanian in the two-groups and one-group conditions, Italian in the control condition) they met during the delay between the first and the second part of the experiment.

Table 2. Means and *F*-values for the manipulation checks in the three experimental conditions (standard deviations are reported in parentheses).

Manipulation checks	Experimental conditions			<i>F</i>
	Two-groups	One-group	Control	
Researcher / student	3.55**a (2.19)	7.35***b (2.50)	5.80c (2.57)	12.44***
One-group	3.85a (1.39)	5.85***b (0.74)	5.35***b (1.39)	14.76***
Two-groups	4.85**a (1.09)	2.35***b (1.50)	1.65***b (1.09)	36.81***
Diversity	3.35 [†] a (1.50)	2.25***b (1.48)	3.30*a (1.46)	3.53*

Note. The “researcher/student” item had a 9-step scale and referred to perceptions of the second experimenter as a researcher (1) or as a student (9); 5 was the neutral point indicating uncertainty. The other three items had a 7-step scale ranging from 1 (*not at all*) to 7 (*very strongly*). The “one-group” and the “two-groups” items were relative to perceptions of a shared identity and of separate groups during contact with the second experimenter, respectively; the “diversity” item concerned perceptions of diversity between Italian and Albanian psychology students.

Different letters on the same row indicate that the means are significantly different, $p < .05$.

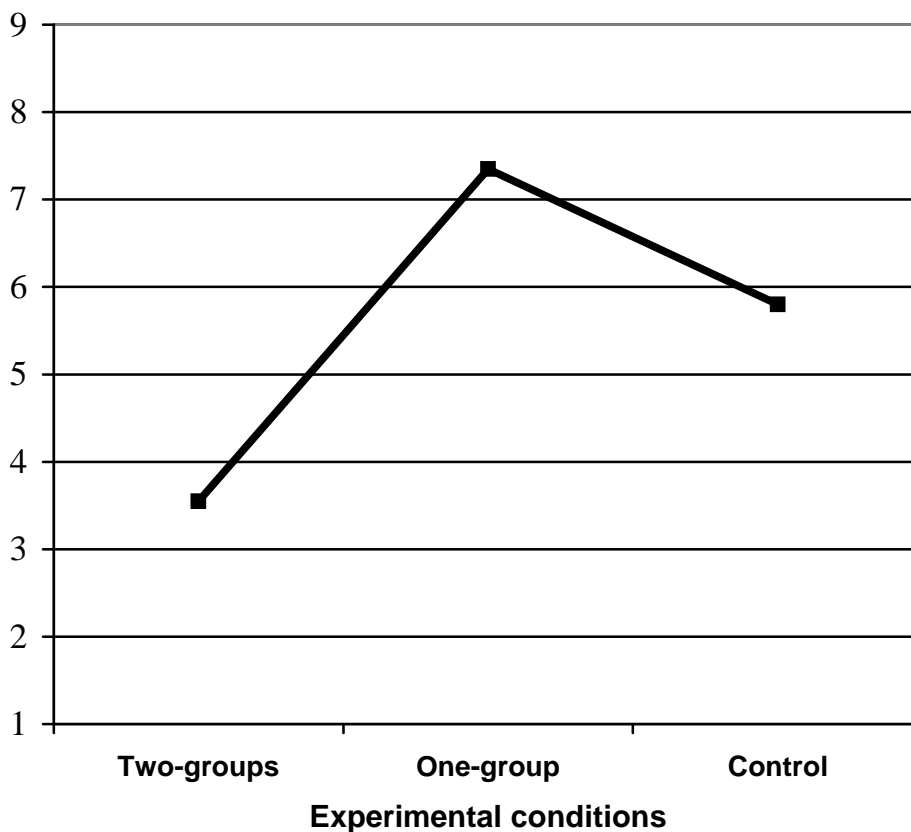
Asterisks relative to manipulation checks in the three experimental conditions indicate that the means differ from the central point of the scale, which is 5 for the first item, 4 for the other three items.

[†] $p < .07$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Results concerning manipulation checks are presented in Table 2. The second manipulation item asked if the second experimenter was a student or a researcher (Figure 1 and Table 2). A one-

way ANOVA with experimental condition as independent variable yielded a reliable effect, $F(2, 57) = 12.44, p < .001$. Post hoc analyses revealed that the three experimental conditions differed between them: one-group condition ($M = 7.35$) differed significantly from control ($M = 5.80, p < .05$) and two-groups conditions ($M = 3.55, p < .001$); two-groups condition differed significantly from control condition ($p < .01$). Moreover, the mean was significantly different from the neutral point of the scale (5) in the two-groups condition, $t(19) = 2.96, p < .01$, and in the one-group condition, $t(19) = 4.21, p < .001$; it did not differ from the neutral point in the control condition, $t(19) = 1.39, ns$ (Table 2).

Figure 1. Manipulation check: perception of the second experimenter as experimenter (1), student (9), uncertainty (5).



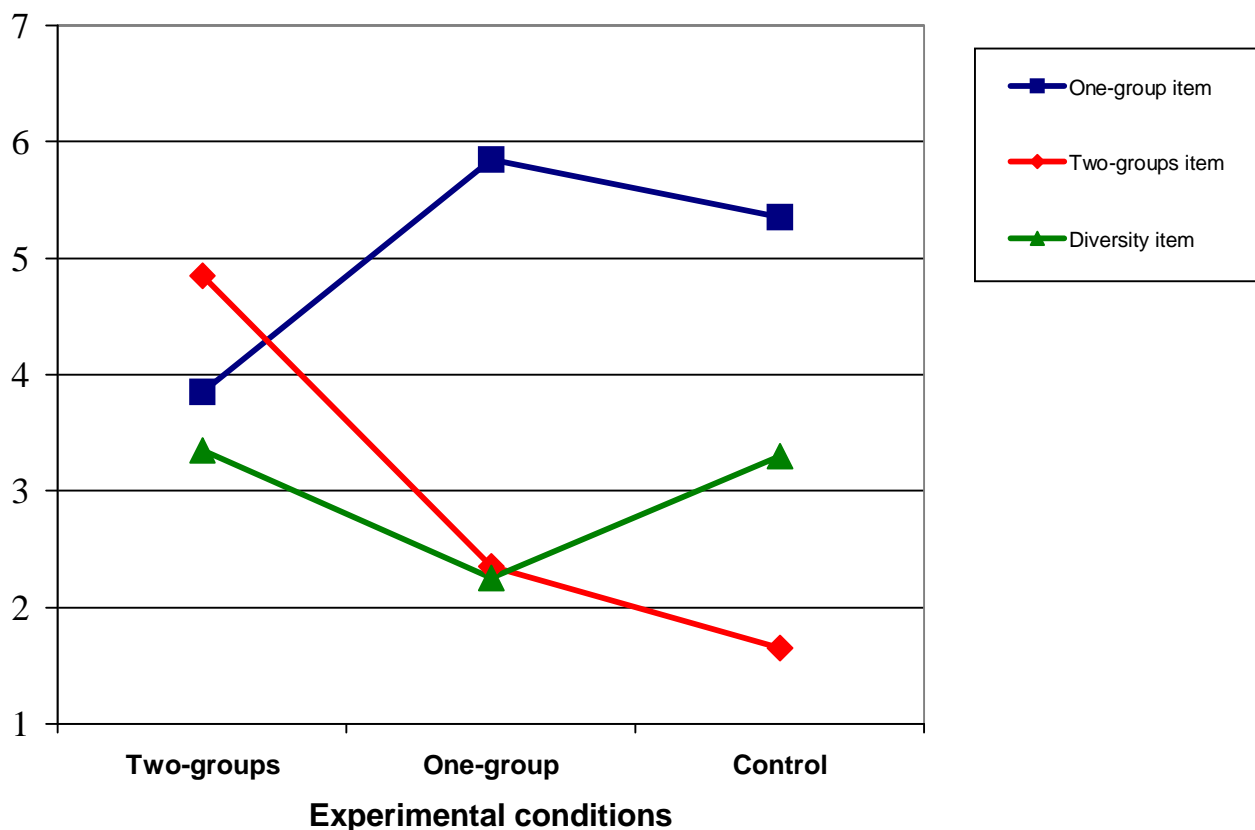
Note. All means are significantly different, $p < .05$.

These findings indicate that participants perceived to share the common identity of students more in the one-group condition than in the other two conditions. Moreover, they suggest that the interaction was seen as more formal in the two-groups condition, where participants thought to interact with a researcher, than in the control and, especially, in the one-group conditions, where perceptions were to interact with a student. The difference between one-group and control

conditions may indicate that the interaction was perceived as more informal and that participants felt closer to the second experimenter in the former than in the latter condition.

Other two manipulation check items were relative to the perception of group representations during contact with the second experimenter (Figure 2 and Table 2). The first item was relative to perceptions of common identity. The main effect of experimental condition was significant, $F(2, 57) = 14.76, p < .001$. Consistent with predictions, post hoc analyses indicated that the two-groups condition ($M = 3.85$) differed from the one-group ($M = 5.85, p < .001$) and the control conditions, ($M = 5.35, p < .001$). The difference between the latter two conditions was not reliable. Furthermore, scores in the one-group and control conditions were higher than the central point of the scale: for the one-group condition, $t(19) = 11.10, p < .001$; for the control condition, $t(19) = 4.35, p < .001$ (Table 2).

Figure 2. Manipulation checks: group representations during the delay task and perceived difference between Italian and Albanian psychology students.



Note. Higher ratings mean stronger perceptions of: common identity (one-group item), separate groups (two-groups item), diversity between Italian and Albanian psychology students (diversity item).

The second item asked the extent to which participants perceived to belong to separate groups during the interaction with the second experimenter. The effects of experimental condition

was again significant, $F(2, 57) = 36.81, p < .001$. As intended, post hoc analyses revealed that two-groups condition ($M = 4.85$) differed from one-group ($M = 2.35, p < .001$) and control conditions ($M = 1.65, p < .001$). The latter two conditions were not significantly different (see Figure 2 and Table 2). Moreover, the score in the two-groups condition was significantly higher than the central point of the scale, $t(19) = 3.49, p < .01$, whereas scores in the one-group, $t(19) = 4.93, p < .001$, and in the control conditions, $t(19) = 9.65, p < .001$, were significantly lower than the central point (Table 2). Finally, one item asked how much Italian psychology students differed from Albanian psychology students. Again, the one-way ANOVA showed a reliable effect of experimental condition, $F(2, 57) = 3.53, p < .05$. Consistent with the manipulation, post hoc analyses indicated that one-group condition ($M = 2.25, p < .001$) differed from two-groups ($M = 3.35, p < .05$) and control conditions ($M = 3.30, p < .05$), whereas the difference between the latter two conditions was not significant (see Figure 2 and Table 2). All the three means differed from the central point of the scale (the difference was marginal in the two-groups condition): for the two-groups condition, $t(19) = 1.94, p < .07$; for the one-group condition, $t(19) = 5.28, p < .001$; for the control condition, $t(19) = 2.15, p < .05$ (Table 2).

In summary, we can conclude that the manipulation worked as intended: participants, during the delay task, felt more as one group in the one-group and in the control conditions; they felt more as two separate groups in the two-groups condition than in the remaining two conditions. Moreover, participants felt more similarity between Italian and Albanian psychology students in the one-group condition than in the two-groups (where national differences were enhanced) and control (where contact was with an Italian experimenter) conditions. Finally, responses to the item concerning perceptions of the second experimenter as a student or as a researcher suggest that the interactions was perceived as more formal in the two-groups condition than in the remaining conditions. This finding will be considered more extensively in the discussion. The fact that responses to the latter two items differentiated the one-group from the control condition indicates that these conditions were perceived differently by participants, as intended.

3.2 Predictor variables: implicit and explicit prejudice

The IAT score, which represents our index of implicit prejudice, was calculated by following Greenwald and collaborators' (2003) improved scoring algorithm. The final measure (D measure) is obtained by calculating the averaged differences, divided by the individuals' standard deviations with the aim to provide a scale unit, between latencies in incompatible (Albanian names and positive words vs. Italian names and negative words) and compatible trials (Albanian names and negative words vs. Italian names and positive words). To calculate the D score with the new

algorithm, we used critical and practice trials, without log-transforming latencies. Higher scores reflect a more positive implicit evaluation of Italians than of Albanians. Not surprisingly, participants exhibited implicit bias favoring Italians, $M = .50$, $SD = .37$. The difference between latencies obtained in the block where Italian names were associated with positive words and Albanians were paired with negative words ($M = 733.71$ ms, $SD = 118.44$) and the block where Italian names were associated with negative words and Albanian names were paired with positive words ($M = 973.03$ ms, $SD = 240.54$) was significant, $t(59) = 8.55$, $p < .001$. However, variability was high. The D measure varied from $-.33$ (outgroup favoritism) to 1.33 ($Mdn = .58$).

To obtain an index of explicit prejudice, we calculated the difference between affective prejudice toward Italians ($M = 3.34$, $SD = .72$) and affective prejudice toward Albanians ($M = 2.94$, $SD = .71$): the higher the score, the greater the affective prejudice toward Albanians. The difference between the two was significant, $t(59) = 3.39$, $p = .001$. Thus, replicating results obtained for the implicit measure, participants exhibited significant ingroup bias.

3.3 Stroop task

To calculate the Stroop effect, we followed the procedure detailed in Richeson and Shelton (2003). All response latencies less than 200 ms were re-coded as 200 ms; response latencies greater than 2.5 standard deviations above the mean (latencies > 743.61 ms) were recoded as 743.61. The remaining response latencies were log-transformed, prior to combining congruent and incongruent trials. Stroop interference was calculated as the difference between mean transformed RTs for incongruent trials and those concerning congruent trials. Higher scores reflect greater Stroop interference. The interferences scores ranged from -46.22 ms to 113.72 ms ($Mdn = 28.91$). Higher scores reflect greater Stroop interference.

To test Hypothesis 1a, which predicted that Stroop interference would be higher in the two-groups condition than in the other two conditions, we performed a one-way ANOVA with experimental condition (two-groups, one-group, control) as independent variable and Stroop interference scores as dependent variable. Results indicated that Stroop interference was not different between conditions, $F < 1$, *ns*. A similar ANOVA considering latencies relative to incongruent and congruent trials separately did not yield significant effects, $F_s < 1$, *ns*. However, Stroop scores can be calculated also for correct answers to congruent and incongruent trials. The response window of our Stroop task was lower (i.e., 800 ms) than that adopted by Richeson and collaborators (i.e., 2000 ms). We reasoned that, in our case, it was possible to hypothesize that participants committed more errors in the Stroop task in the two-groups condition than in the one-group and control conditions. Thus, for each participant, we created three indexes based on the

correct answers to the Stroop task. The first index was calculated on the correct answers to congruent trials; the second index was calculated on the correct answers to incongruent trials; the final index was the sum of the previous two indexes, and it represented the total correct answers to the Stroop task.

Table 3. Correct answers to the Stroop test and corresponding *F*-values in the three experimental conditions (standard deviations are reported in parentheses).

Correct answers	Experimental conditions			<i>F</i>
	Two-groups	One-group	Control	
Congruent trials	43.80a (8.71)	48.45b (5.16)	47.00ab (7.52)	2.14 [†]
Incongruent trials	18.65a (5.72)	21.85b (2.94)	19.50ab (5.96)	2.14 [†]
Total (congruent + incongruent)	62.45a (13.33)	70.30b (7.24)	66.50ab (12.78)	2.35 ^{††}

Note. Different letters on the same row indicate that the means are significantly different, $p \leq .05$.
[†] $p < .13$. ^{††} $p < .11$.

Three one-way ANOVAs were performed, with experimental condition as independent variable and the three indexes based on correct answers to the Stroop task as criterion variables. The effect of experimental condition was marginal for correct answers to: incongruent trials, $F(2, 57) = 2.14$, $p < .13$; congruent trials, $F(2, 57) = 2.14$, $p < .13$; total correct answers, $F(2, 57) = 2.35$, $p < .11$. In all three cases, post hoc analyses revealed that the two-groups condition differed from the one-group condition, $ps \leq .05$. The difference between the one-group condition and the control condition and that between the two-groups condition and the control condition were not significant, $ps > .15$ (Table 3).

Thus, Hypothesis 1a received partial support: performance on the Stroop task was worse in the two-groups condition than in the one-group condition. Contrary to predictions, participants did not perform better in the control condition than in the two-groups condition. However, differences due to experimental conditions were only marginally significant.

In Hypothesis 1b, we predicted that implicit and explicit prejudice would be predictive of Stroop impairment only for participants in the two-groups condition. To test this hypothesis,

hierarchical regression was applied. First, we created two dummy variables to examine the effects of experimental conditions. For the first dummy variable (F1), 1 was given to the control condition and 0 to the two-groups and one-group conditions; for the second dummy variables, 1 was assigned to the two-groups condition and 0 to the remaining two conditions. In the first phase (Step 1), we entered the two dummy variables, implicit bias scores (i.e., IAT) and explicit prejudice scores. In the second phase (Step 2), we added the two-way interactions between explicit and implicit prejudice and the two dummy variables; in the third phase (Step 3), we examined the effects of the three-way products. The two-way interactions explain the dependent variable if the portion of variance absorbed by Model 2 is higher than that absorbed by Model 1. The three-way interactions are significant if the portion of variance absorbed by Model 3 is higher than that absorbed by Model 2. In applying hierarchical regression, implicit and explicit prejudice scores were centered prior to multiplication (Jaccard et al., 1990). The dependent variables were: Stroop interference, correct answers to congruent and incongruent trials to the Stroop task, total correct answers to the Stroop task. Neither the main effects nor the interactions were significant for the indexes of Stroop interference and correct answers to incongruent trials, $F_s < 1.25$. With respect to the indexes of correct answers to congruent trials and total correct answers to the Stroop task, the main effect of conditions was significant: in both cases, the number of correct answers was reduced in the two-groups conditions, as compared to the one-group and to the control conditions: for correct answers to congruent trials, $\beta = -.36, p < .05$; for the total correct answers, $\beta = -.36, p < .05$.¹¹ Furthermore, for both indexes, the main effect of experimental conditions was qualified by a three-way interaction between two-groups condition (as compared to one-group and control conditions), implicit bias scores and explicit prejudice scores: for correct answers to congruent trials, $\beta = -.40, p < .05$; for the total correct answers, $\beta = -.39, p < .05$. However, in both cases the interactions increased only marginally the portion of variance explained: for correct answers to congruent trials, $F_{change}(2, 48) = 2.40, p < .11$; for total correct answers, $F_{change}(2, 48) = 2.06, p < .14$.¹²

The analysis of the simple effects showed that implicit prejudice reduced the number of correct answers to congruent trials (Table 4) and the number of total correct answers (Table 5) to the Stroop task, respectively, for people with high explicit prejudice in the two-groups condition, whereas the effects of implicit prejudice were not reliable in the other case.

¹¹ The effects of regression for the two measures, however, were only marginally significant: for correct answers to congruent trials, $F(4, 55) = 1.73, p < .16$; for the total correct answers, $F(4, 55) = 1.60, p < .19$.

¹² The regression effects for the two indexes were only marginally significant: for correct answers to congruent trials, $F(11, 48) = 1.84, p < .08$; for the total correct answers, $F(11, 48) = 1.48, p < .18$.

Table 4. Simple effects for the interaction between implicit prejudice, experimental conditions and explicit prejudice (correct answers to congruent trials in the Stroop task).

		Correct answers to congruent trials (Stroop task)		
Experimental condition	Explicit prejudice	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups	High	-11.42*	5.03	2.27
	Low	5.14	3.31	1.55
Average	Average	-.28	3.13	-.09
One-group / Control	High	1.36	4.40	.30
	Low	-1.92	3.83	.50

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups condition and 0 indicates the one-group and the control conditions. The mean score of explicit prejudice is .40; high score, low score of explicit prejudice indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .05.

Table 5. Simple effects for the interaction between implicit prejudice, experimental conditions and explicit prejudice (total correct answers in the Stroop task).

		Total correct answers (Stroop task)		
Experimental condition	Explicit prejudice	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups	High	-32.66*	16.37	2.00
	Low	18.32	10.77	1.70
Average	Average	2.51	10.19	.25
One-group / Control	High	7.15	14.31	.50
	Low	-2.13	12.45	.17

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups condition and 0 indicates the one-group and the control conditions. The mean score of explicit prejudice is .40; high score, low score of explicit prejudice indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* = .05.

Thus, these findings suggest that implicit prejudice has detrimental effects on performance on the Stroop task only for people with high explicit prejudice when group memberships are salient. Hypothesis 2b received partial support: as expected, implicit and explicit prejudice were predictive of impaired performance on the Stroop task only in the two-groups condition. However, effects were marginal and they were found only on two of the four indexes considered.

3.4 Explicit measures

In Hypothesis 2a, we predicted that the two contact conditions (i.e., two-groups, one-group) would have more positive effects on criterion variables, as compared with the control condition. To test this prediction, we calculated a series of one-way ANOVAs with the experimental condition as independent variable. Outcome variables were: typical (negative) and atypical (positive) Albanian traits, the traits “sincere” and “misfit,” evaluation of Albanians, negative emotions toward Albanians. Results are presented in Table 6.

Table 6. Means and *F*-values for the dependent variables in the three experimental conditions (standard deviations are reported in parentheses).

Dependent variable	Experimental conditions			<i>F</i>
	Two-groups	One-group	Control	
Typical traits	4.27a (0.73)	4.12a (0.46)	4.65**b (0.58)	4.20*
Atypical traits	3.97 (0.68)	4.18 (0.54)	3.90 (0.73)	1.01
Trait “Misfit”	4.30 (1.26)	4.90* (0.79)	4.80 (1.82)	1.12
Trait “Sincere”	4.05ab (0.39)	4.25*a (0.44)	3.85b (0.49)	4.05*
Negative emotions toward Albanians	1.66**a (0.68)	1.77**a (0.63)	2.56**b (0.99)	7.81**
Outgroup evaluation	4.22a (0.61)	4.26 [†] a (0.60)	3.85b (0.44)	3.31*

Note. Different letters on the same row indicate that the means are significantly different, $p < .05$.

Asterisks relative to dependent variables in the three experimental conditions indicate that the means differ from the central point of the scale, which is 4; the central point of the scale is 3.5 for negative emotions.

[†] $p < .07$. * $p < .05$. ** $p \leq .001$.

The main effect of condition was significant for the typical Albanian traits, $F(2, 57) = 4.20$, $p < .05$. Post hoc analyses showed that participants endorsed more stereotypical traits of Albanians in the control condition ($M = 4.65$) than in the two-groups ($M = 4.27$, $p < .05$) or in the one-group ($M = 4.12$, $p < .01$) conditions. The difference between the latter two conditions was not reliable.

Moreover, endorsement of typical traits was different from the neutral point of the scale in the control condition, $t(19) = 5.04, p < .001$, but not in the two-groups condition, $t(19) = 1.64, ns$, and in the one-group condition, $t(19) = 1.13, ns$ (Table 6). This result suggests that contact provides information about the outgroup and reduces the endorsement of negative stereotypical traits. In contrast, the main effect of condition was not significant for atypical traits, $F(2, 57) = 1.01, ns$; the endorsement of atypical traits did not differ from the neutral point of the scale in either condition, $ts < 1.51, ns$. Concerning the trait “misfit,” the main effect of experimental condition was not significant, $F(2, 57) = 1.12, ns$. However, the difference from the neutral point of the scale was significant in the one-group condition, $M = 4.90, t(19) = 5.11, p < .001$, whereas it was only marginally significant in the control condition, $M = 4.80, t(19) = 1.96, p < .07$, and it was non significant in the two-groups condition, $M = 4.30, t(19) = 1.06, ns$ (see Table 6). Thus, it appears that only when participants share a common identity with the Albanian confederate, they are able to ascribe the trait “misfit” to Albanians and, consequently, to recognize the social difficulties that those people face in Italy.

With respect to the trait “sincere,” the main effect of condition was significant, $F(2, 57) = 4.05, p < .05$. Post hoc analyses revealed that participants in the one-group condition ($M = 4.25$) endorsed the trait more than participants in the control condition ($M = 3.85, p < .01$), whereas the two-groups condition did not differ from the other two conditions. Furthermore, it is in the one-group condition that scores on the trait “sincere” differ from the neutral point of the scale, $t(19) = 2.52, p < .05$; this difference is not reliable in the remaining two conditions, $ts < 1.38, ns$ (Table 6). Thus, it is only when a superordinate identity is salient that participants ascribe to Albanian a positive and non-stereotypical trait (i.e., “sincere”).

The main effect of condition was significant also for negative emotions felt toward Albanians, $F(2, 57) = 7.81, p = .001$. Post hoc analyses indicated that the control condition ($M = 2.56$) differed from the two-groups condition ($M = 1.66, p = .001$) and from the one-group condition ($M = 1.77, p < .001$). The difference between the two-groups and the one-group conditions was not reliable. In all the three conditions, the level of negative emotions felt toward Albanians was very low, and it differed from the central point of the scale: in the one-group condition, $t(19) = 12.32, p < .001$; in the two-groups condition, $t(19) = 12.13, p < .001$; in the control condition, $t(19) = 4.28, p < .001$ (Table 6). However, negative emotions were lower in the two contact conditions. Finally, the results concerning the evaluation of Albanians closely mirrored those relative to negative emotions: the main effect of experimental condition was significant, $F(2, 57) = 3.31, p < .05$. As for negative emotions, post hoc analyses revealed that the control condition ($M = 3.85$) differed from the two-groups ($M = 4.22, p < .05$) and one-group conditions ($M = 4.26, p < .05$), whereas the latter two

conditions did not differ from each other. The evaluation of Albanians did not differ from the neutral point of the scale for participants in the control condition, $t(19) = 1.53$, *ns*, and for those in the two-groups condition, $t(19) = 1.62$, *ns*. In contrast, participants in the one-group condition expressed an evaluation of Albanians marginally different from the neutral point of the scale, $t(19) = 1.93$, $p < .07$ (Table 6).

Hypothesis 2a received support: attitudes and emotions toward Albanians in general were better after contact (either when two-groups or one-group representations were salient); however, it was only when participants shared a common identity with the Albanian confederate that the evaluation of the outgroup was marginally positive or, in other words, differed positively from the neutral point of the scale.

Finally, we hypothesized (Hypothesis 2b) that implicit and explicit prejudice toward Albanians would predict negative attitudes toward the outgroup; however, a moderator effect of conditions was expected: implicit and explicit prejudice should predict positive attitudes (or, at least, their negative effects should be neutralized) in the one-group and, especially, in two-groups conditions (i.e., contact conditions), but not in the control condition (i.e., no-contact condition). To test this hypothesis, hierarchical regression was applied. The procedure was the same used to test Hypothesis 1b. The only difference was that two different dummy variables were created: for the first dummy variable (F1), 1 was given to the one-group condition and 0 to the two-groups and control conditions; for the second dummy variables, 1 was assigned to the two-groups condition and 0 to the remaining two conditions. The dependent variables were: typical (negative) and atypical (positive) Albanian traits, the trait “misfit” and the trait “sincere,” negative emotions toward Albanians in general and their evaluation. Results are presented in Table 7.

As can be noted in Table 7 (Step 1), the one-group and the two-groups conditions, replicating results obtained with ANOVA analyses, had positive effects on almost all the dependent variables, apart from endorsement of atypical Albanian traits and of the trait “misfit.” However, the one-group condition had stronger effects than the two-groups condition. Explicit prejudice, as expected, had only negative effects: it increased the endorsement of negative typical Albanian traits ($\beta = .30$, $p < .05$) and reduced the endorsement of positive atypical Albanian traits ($\beta = -.34$, $p < .05$)¹³. Moreover, it increased negative emotions toward Albanians ($\beta = .31$, $p < .01$) and reduced their evaluation ($\beta = -.36$, $p < .01$). The effects of the implicit prejudice were not reliable.

¹³ The effect of regression, however, was marginally significant, $F(4, 55) = 2.23$, $p < .08$.

Table 7. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between explicit and implicit prejudice and dependent variables (standardized regression coefficients).

	Dependent variables					
	Typical items	Atypical items	Item "Misfit"	Item "Sincere"	Negative emotions	Outgroup evaluation
Step 1						
A One-group	-.46**	.28	.05	.43**	-.50***	.41**
B Two-groups	-.31*	.05	-.19	.28	-.42**	.27 [†]
C Implicit prejudice	-.08	.03	-.04	.25	.22	-.09
D Explicit prejudice	.30*	-.34*	-.07	-.11	.31**	-.36**
<i>R</i> ²	.21	.14	.05	.18	.39	.25
<i>F</i>	3.58*	2.23	.67	2.94*	8.84***	4.67**
<i>df</i>	(4, 55)	(4, 55)	(4, 55)	(4, 55)	(4, 55)	(4, 55)
Step 2						
A One-group	-.44**	.28	-.02	.50***	-.49***	.41**
B Two-groups	-.33*	.08	-.21	.42*	-.48***	.26
C Implicit prejudice	.27	-.06	-.31	.36	.38	-.22
D Explicit prejudice	.09	-.30	-.07	-.23	.32	-.17
A × C	-.13	-.07	.19	-.21	-.08	.12
A × D	.18	.03	.08	.05	-.00	-.22
B × C	-.42 [†]	.17	.24	.03	-.21	.11
B × D	.13	-.07	-.05	.30*	-.10	-.16
C × D	-.13	.07	-.01	.09	-.10	.11
<i>R</i> ²	.29	.17	.09	.28	.42	.30
<i>F</i>	2.25*	1.14	.53	2.18*	4.10***	2.37*
<i>df</i>	(9, 50)	(9, 50)	(9, 50)	(9, 50)	(9, 50)	(9, 50)
<i>F</i> change	1.14	.38	.45	1.48	.58	.65
<i>df</i>	(5, 50)	(5, 50)	(5, 50)	(5, 50)	(5, 50)	(5, 50)

Table 7 cont. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between explicit and implicit prejudice and dependent variables (standardized regression coefficients).

	Dependent variables					
	Typical items	Atypical items	Item "Misfit"	Item "Sincere"	Negative emotions	Outgroup evaluation
Step 3						
A One-group	-.47**	.29	-.00	.56***	-.51***	.38*
B Two-groups	-.34*	.08	-.20	.45**	-.49**	.24
C Implicit prejudice	.26	-.08	-.31	.40	.37	-.27
D Explicit prejudice	.10	-.29	-.07	-.25	.33	-.15
A × C	-.12	-.07	.18	-.24	-.06	.14
A × D	.16	.07	.11	.10	-.03	-.20
B × C	-.41	.32	.30	.01	-.22	.32
B × D	.13	.03	-.00	.31*	-.12	-.03
C × D	-.18	.00	-.02	.19	-.12	-.04
A × C × D	.08	-.08	-.07	-.17	.07	-.01
B × C × D	.02	.33	.14	-.04	-.03	.44**
<i>R</i> ²	.29	.24	.10	.30	.43	.41
<i>F</i>	1.79	1.40	.50	1.84	3.27**	3.02**
<i>df</i>	(11, 48)	(11, 48)	(11, 48)	(11, 48)	(11, 48)	(11, 48)
<i>F</i> change	.11	2.26	.43	.49	.17	4.47*
<i>df</i>	(2, 48)	(2, 48)	(2, 48)	(2, 48)	(2, 48)	(2, 48)

Note. One-group = one-group condition vs. two groups and control conditions; two-groups = two-groups condition vs. one-group and control conditions. For the dependent variables, higher ratings mean: stronger endorsement of typical and atypical traits and of the traits "misfit" and "sincere," higher negative emotions towards the outgroup, higher outgroup evaluation.

† $p < .06$. * $p < .05$. ** $p < .01$. *** $p \leq .001$.

With respect to the moderator effects of experimental conditions, we obtained two significant two-way interactions concerning typical traits and the trait “sincere,” and one significant three-way interaction concerning outgroup evaluation. With respect to the significant two-way interactions: for the typical traits, two-groups condition vs. one group and control conditions \times implicit prejudice, $\beta = -.42$, $p < .06$ (marginal effect); for the trait “sincere,” two-groups condition vs. one group and control conditions \times explicit prejudice, $\beta = .30$, $p < .05$. However, the two interactions did not increase significantly the portion of variance explained: for typical traits, $F_{change}(5, 50) = 1.14$, ns ; for the trait “sincere,” $F_{change}(5, 50) = 1.48$, ns . The analysis of the simple effects concerning typical Albanian traits showed that implicit prejudice reduced the endorsement of negative stereotypical Albanian traits only in the two-groups condition, as compared with the remaining two conditions (Table 8).

Table 8. Simple effects for the interaction between implicit prejudice and experimental conditions (typical traits).

Experimental condition	Typical traits		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups	-.59*	.28	2.08
Average	.47	.44	1.08
One-group / Control	.47	.66	.72

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups condition and 0 indicates the one-group and the control conditions.

b = non standardized regression coefficients.

* $p < .05$.

Similarly, explicit prejudice increased the endorsement of the trait “sincere” with respect to Albanians only for participants in the two-groups condition, as compared with participants in the other two conditions (Table 9).

Results also revealed a significant three-way interaction concerning outgroup evaluation: two-groups condition vs. one-group and control conditions \times implicit prejudice \times explicit prejudice, $\beta = .44$, $p < .01$. The interaction significantly increased the portion of variance explained, $F_{change}(2, 48) = 4.47$, $p < .05$. Analyses of simple effects revealed that implicit prejudice increased outgroup evaluation in the two-groups condition only for participants with high levels of explicit prejudice, whereas it reduced outgroup evaluation in the two-groups condition when explicit prejudice was low (Table 10). This result, together with findings obtained in the two-way interactions, suggests that only participants with high levels of explicit and/or implicit prejudice

may benefit from contact situations structured so as to increase the salience of respective memberships. These results support Hypothesis 2b. It must be acknowledged, however, that the two-way interactions concerning typical traits and the trait “sincere” did not increase the portion of variance explained.

Table 9. Simple effects for the interaction between explicit prejudice and experimental conditions (trait sincere).

Experimental condition	Trait “sincere”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups	.36*	.11	3.27
Average	-.12	.10	1.18
One-group / Control	-.12	.18	.67

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups condition and 0 indicates the one-group and the control conditions.

b = non standardized regression coefficients.

**p* < .01.

Table 10. Simple effects for the interaction between implicit prejudice, experimental conditions and explicit prejudice (outgroup evaluation).

Experimental condition	Explicit prejudice	Outgroup evaluation		
		<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups	High	1.94*	.72	2.71
	Low	-1.34*	.47	2.84
Average	Average	-.43	.38	1.13
One-group / control	High	-.49	.52	.93
	Low	-.36	.41	.89

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups condition and 0 indicates the one-group and the control conditions. The mean score of explicit prejudice is .40; high score, low score of explicit prejudice indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .01.

3.5 Supplementary analyses

Following the procedure detailed in Richeson and Shelton (2003), we explored the possibility that the experimental manipulation and our predictor variables (i.e., implicit and explicit

prejudice) would have an impact on participants' behavior during the discussion of the two topics (i.e., reform of the Italian university system and illegal arrival of immigrants) during the encounter with the second experimenter. In turn, behavior during the discussion of the two topics was expected to affect performance on the Stroop task and answers to the explicit measures. Two independent observers, who were unaware of experimental conditions and hypotheses, coded the videotapes of participants' interaction with the second experimenter for each of the two questions on a seven-step scale ranging from 1 (*not at all*) to 7 (*very much*). Two indexes were created for each question. *Behavioral control* was assessed by rating the extent to which participants, while commenting the two issues, moved their body and hands, looked around the laboratory. Coders rated *response modulation* by indicating the degree to which participants apologized for their comments, had difficulties to answer, made pauses, asked for clarifications, needed incitement by the experimenter, seemed to hide their opinions. Variables were averaged for behavioral control and response modulation for each of the two topics, obtaining one index of behavioral control ($\alpha = .69$) and one of response modulation ($\alpha = .82$) for the question concerning the Italian university system and one index of behavioral control ($\alpha = .61$) and one of response modulation ($\alpha = .68$) for the question relative to the illegal arrival of immigrants on Italian coasts.

Given that previous research showed that people control their behavior and, consequently, move less during an intergroup interaction for fear of appearing prejudiced (Richeson & Shelton, 2003), we hypothesized that implicit and explicit prejudice would predict more behavioral control and response modulation in the two-groups condition than in the one-group and control conditions, especially when the question was relevant for the group categorization (i.e., illegal arrival of immigrants). To test this hypothesis, hierarchical regression was applied. The procedure was the same used to test the impact of experimental conditions and of implicit and explicit prejudice on performance on the Stroop task (see this Chapter, paragraph 3.3). Dependent variables were the indexes of behavioral control and of response modulation for both topics. Neither the main effects nor the interactions were significant for any of the dependent variables, $F < 1$.

Then, we predicted that behavioral control and response modulation would predict greater Stroop impairment in the two-groups condition, especially for the topic concerning the illegal arrival of immigrants. For each dependent variable concerning the Stroop task (Stroop interference, correct answers to congruent trials, correct answers to incongruent trials, total correct answers), four regressions were calculated. In the first, predictors were experimental conditions, represented by dummy variables used to test Hypothesis 1b (see this Chapter, paragraph 3.3), response modulation for the question concerning Italian university system and the two-way products; in the second, response modulation concerning university system was replaced by response modulation for the

question concerning illegal arrival of immigrants; in the third and in the fourth, the two indexes concerning behavioral control for the two topics replaced the response modulation index. No reliable effects emerged with respect to behavioral control, response modulation and their interactions with experimental conditions.

The same regressions were calculated with respect to explicit variables: typical and atypical traits, negative emotions, outgroup evaluation. In this case, however, dummy variables were those used to test Hypothesis 2b (see this Chapter, paragraph 3.4). Hypotheses were that behavioral control and response modulation, in particular during the race-relevant question (i.e., illegal arrival of immigrants), would predict more negative attitudes toward Albanians in the one-group and two-groups conditions, but not in the control condition. One reliable interaction was found between one-group vs. two-groups and control conditions \times response modulation on the question concerning university system, $\beta = -.99, p < .05$. However, the interaction increased only marginally the portion of variance explained, $Fchange(2, 54) = 2.59, p < .09$. Decomposition of the effect showed that, partially consistent with predictions, response modulation reduced outgroup evaluation in the one-group condition, as compared to the remaining two conditions (Table 11).

Table 11. Simple effects for the interaction between response modulation for the university question and experimental conditions (outgroup evaluation).

Experimental condition	Outgroup evaluation		
	<i>b</i>	<i>SE</i>	<i>t</i>
One-group	-.44*	.14	3.17
Average	.18	.21	.86
Two-groups / Control	.18	.32	.57

Note. Experimental condition is represented by a dummy variable where 1 indicates the one-group condition and 0 indicates the two-groups and the control conditions.

b = non standardized regression coefficients.

**p* < .01.

Prediction was partially supported: the level of response modulation (in the neutral, but not in the race-relevant topic) was predictive of reduced outgroup evaluation in the one-group condition, but not in the remaining conditions. No other effects emerged which concerned response modulation or behavioral control and their interactions with experimental conditions.

4. Discussion

The aim of the present study was to examine the effects of contact strategies on impaired cognitive performance and on intergroup attitudes. The intergroup contact theory (Brown & Hewstone, 2005) and the common ingroup identity model (Gaertner & Dovidio, 2000) were considered. Italian students were allocated to one of three experimental conditions: in the one-group and two-groups conditions, the shared group of students or the national identities, respectively, were made salient during contact with an Albanian confederate; in the control condition, contact was with an ingroup member (i.e., an Italian confederate).

First, we discuss results concerning the manipulation check. As intended, participants, during the interaction with the confederate, felt more as one-group and less as two groups in the one-group and control conditions than in the two-groups condition. Moreover, scores concerning the two-groups representation were higher than the central point of the scale only in the two-groups condition; scores relative to the one-group representation were higher than the central point only in the one-group and control conditions. The fact that one-group and control conditions did not differ with respect to these items is not surprising: in the control condition, contact was with an ingroup member; furthermore, the tone of conversation was informal in both conditions. It is conceivable that, in such a setting, for participants in the control condition, the one-group representation was preferred to the two-groups representation. Findings on the remaining manipulation checks, however, support the idea that the one-group and control conditions were perceived differently by our participants. First, respondents felt more diversity between Albanian and Italian psychology students in the two-groups and control conditions than in the one-group condition; in the one-group condition, in fact, identity of students, including both Italians and Albanians, was enhanced, whereas no mention to a shared identity was made in the control condition; in the two-groups condition, national differences were made salient. Second, perception of the second experimenter (i.e., the confederate implementing the manipulation) as a student or as a researcher differentiated between the one-group and the remaining conditions: the confederate was perceived as a student, in the one-group condition; as a researcher, in the two-groups condition; participants were uncertain in the control condition. The latter result reinforces the idea that the superordinate identity of students was activated more in the one-group than in the other two conditions; that group differences were higher in the two-groups than in the remaining conditions; that the control condition was in between the one-group and two-groups conditions. The finding concerning this latter item seems also to indicate that the tone of conversation, though informal in both one-group and control conditions, affected participants' perceptions, so that they perceived that the interaction was with a student –

and thus the interaction was more informal – more in the former than in the latter condition. This finding will be further considered when discussing results on cognitive performance.

With respect to hypotheses concerning cognitive impairment, we predicted that performance on the Stroop task would be worse in the two-groups condition, as compared to the other two conditions (Hypothesis 1a), and that explicit and/or implicit prejudice would be predictive of reduced cognitive performance only in the two-groups condition (Hypothesis 1b). Partially consistent with Hypothesis 1a, we found that, in three indexes measuring correct answers to the Stroop task, performance was worse in the two-groups than in the one-group condition. However, unexpectedly, the control condition did not differ from the other two conditions (differences due to conditions, however, were marginal). It is possible that participants felt uncertain in the experimental setting, and that perceptions of acting as a common group did reduce the anxiety and uncertainty of the experimental setting and, consequently, the need for self-regulation. Similar levels of uncertainty in the two-groups and control conditions may explain why the two conditions were not different. However, acting as distinct groups might be more threatening, and more resource consuming, than interacting with an ingroup member, thus explaining why only the two-groups, and not the control condition, differed from the one-group condition. This reasoning is supported by results on the manipulation check item concerning perceptions of the confederate as a student or as a researcher: it seems likely that the formal tone of conversation, used in the two-groups condition, produced a double categorization: Italian vs. Albanian and student vs. researcher. Probably, this double categorization depleted participants' cognitive resources more than in the one-group condition, where a superordinate categorization was made salient. This double categorization, together with the uncertainty of the experimental setting, could be responsible for the worse cognitive performance in the two-groups than in the one-group condition. On the other hand, in the control condition, anxiety and uncertainty felt by participants, and thus attentive resources consumed, were probably not much lower than those experienced in the one-group condition, where contact was with an outgroup member within a shared identity, and at the same time they were not much higher than those felt in the two-groups condition, where a double categorization pattern emerged. However, this hypothesis is only speculative, because we did not measure anxiety and uncertainty felt during the delay task.

Hypothesis 1b was partially supported. As expected, prior levels of prejudice influenced cognitive performance only in the two-groups condition. Findings revealed that, for two of the three indexes concerning correct answers to the Stroop task, implicit prejudice reduced performance only for those with high levels of explicit prejudice. Thus, it is only the combination of explicit and implicit prejudice that is predictive of the reduced cognitive performance after contact as two

different groups. Negative effects due to prejudice are neutralized when intergroup contact is structured so as to increase the salience of a superordinate identity. This finding is partially consistent to what found by Richeson and Shelton (2003), who showed negative effects of interracial contact only for highly implicitly prejudiced participants. In our case, rendering salient one-group perceptions offered a remedy for the detrimental effects of intergroup contact on cognitive functioning. Moreover, cooperative contact partially neutralized negative effects of intergroup contact also in the two-groups condition: it was only the combination of explicit and implicit prejudice that depleted performance. That is, only extremely prejudiced participants suffered detrimental effects of intergroup contact as two different groups. It should be noted, however, that regression effects were marginal and that interactions did not increase the portion of variance explained by predictor variables.

Results concerning cognitive performance are partially consistent with findings obtained by Trawalter and Richeson (2006), who found that performance on the Stroop task after an interracial interaction was better for participants with a promotion-focus (i.e., participants attempting to have a positive intergroup exchange), as compared with those with a prevention-focus (i.e., participants who tried to avoid prejudice) or who received no instructions. In our case, it is conceivable that the creation of a more inclusive identity, in the one-group condition, favored the adoption of a promotion-focus strategy. In contrast, in the two-groups condition, focusing on national identities when interacting with a member of a devalued group may have induced participants to focus on avoiding prejudice, thus adopting a prevention-focus strategy.

With respect to explicit measures, we expected that attitudes toward Albanians would be more positive in both contact conditions (i.e., one-group, two-groups) than in the control condition (Hypothesis 2a). Moreover, we hypothesized that implicit and/or explicit prejudice would predict more positive attitudes in the two contact conditions, and especially in the two-groups condition, than in the control condition (Hypothesis 2b). Results supported Hypothesis 2a. In fact, in the one-group and two-groups conditions, participants evaluated more positively the Albanian group, experienced less negative emotions toward Albanians, did not associate to them negative stereotypes. No differences were found with respect to atypical positive traits; however, results revealed that the trait “sincere,” was associated to Albanians more in the one-group than in the control condition. These findings are consistent with a large part of the literature showing that salience of a superordinate identity (Gaertner & Dovidio, 2000) and of group membership (Brown & Hewstone, 2005) favors the development of positive intergroup relations.

Also Hypothesis 2b was partially supported. As expected, explicit prejudice affected negatively outcome measures; not surprisingly, the effects of implicit prejudice were not reliable.

Consistent with predictions, contact strategies moderated the effects of prejudice on dependent variables. We obtained two reliable interactions, concerning the typical traits (marginal effect) and the trait “sincere,” indicating that prejudice (implicit for typical traits; explicit in the case of the trait “sincere”) reduced the endorsement of typical negative traits and increased the endorsement of the trait “sincere” only for participants in the two-groups condition (the two interactions did not increase the portion of variance explained). Finally, a three way interaction between the two types of prejudice (explicit and implicit) and experimental condition was observed, concerning Albanian evaluation. Consistent with predictions, implicit prejudice, in the two-groups condition, as compared with the remaining two conditions, increased outgroup evaluation when explicit prejudice was high; it reduced evaluation when explicit prejudice was low. Thus, prejudiced participants benefit more from intergroup contact. That is, prejudiced people might find that intergroup contact does not have negative consequences, disconfirming their presumably negative expectancies (which are an important predictor of anxiety; see Stephan & Stephan, 1985) and providing new information about the outgroup. Thus, probably, the more participants were prejudiced, the stronger resulted the disconfirmation of expectancies and the positive effects of intergroup contact. However, we found that, when group membership was salient, implicit prejudice affected negatively intergroup evaluations if conscious prejudice was low and, thus, people were not aware of holding prejudiced attitudes. We believe this finding is only apparently counterintuitive: contact is likely to produce smaller effects for people with low levels of prejudice, who are already well-disposed toward outgroup members prior to the intergroup interaction. In our case, this effect (i.e., highly prejudiced participants showing more positive intergroup attitudes after contact as two groups) was probably enhanced by the type of contact: in the two-groups condition, participants thought to interact with an experimenter, who hold a high status position, at the same time belonging to the outgroup. Thus, they experienced positive contact with a high status outgroup member, who disconfirmed negative stereotypes of Albanians, at the same increasing the value of this group.

We conducted supplementary analyses to examine if behavioral control and response modulation, during each topic discussed with the second experimenter (i.e., Albanian or Italian) mediated the effects of experimental conditions on outcome measures. However, we did not find any significant relationship between experimental condition and behavioral control or response modulation for either of the two topics. In turn, we did not find any result supporting the idea that behavioral control or response modulation influenced, alone or in interaction with experimental conditions, performance on the Stroop task. With respect to explicit measures, only one interaction emerged (the increase in portion of variance explained, however, was marginal): partially consistent with expectations, response modulation during the neutral topic (i.e., concerning Italian university

system) predicted decreased outgroup evaluation in the one-group condition, as compared to the other two conditions. Thus, attempts to control responses during intergroup contact, when a superordinate identity was salient – and thus expectations were that the interaction would be more positive – reduced outgroup evaluation. An explanation based on dissonance processes is possible: regulating responses when the interaction should instead be cooperative creates dissonance with positive intergroup attitudes: as a consequence, to reduce dissonance, the outgroup is evaluated less positively. However, this explanation is only speculative, because we found only a weak effect partially supporting our hypotheses. Results concerning the mediating role of behavioral control and response modulation do not support our hypotheses that more regulation during contact is responsible for observed results. Obviously, it is possible that our measures concerning behavioral control and response modulation were not sufficiently sensitive to detect differences in self-regulation; alternatively, other indexes concerning depletion of cognitive resources during contact should be considered. It should be noted that Richeson and Shelton (2003), who adopted a similar procedure to test the mediational role of self-regulation processes, found weak and mixed results supporting predictions that depletion was caused by self-regulation processes during contact.

Findings that intergroup contact structured so as to increase salience of group differences can, on the one hand, impair performance on the Stroop task, and, on the other hand, improve intergroup attitudes, are not necessarily contradictory. Contact, in fact, may differently affect cognitive functioning and attitudes. Intergroup contact may create a state of uncertainty and uneasiness and be threatening (e.g., Blascovich et al., 2001; Stephan & Stephan, 1985). However, positive and repeated contact experiences can reduce threat associated to intergroup interactions. There are several studies showing that contact improves intergroup relations, in part, because it reduces anxiety (see Paolini et al., 2006). It is possible that contact, in the short term, consumes cognitive resources, leaving the self depleted for a task requiring self-regulation. However, explicit intergroup attitudes refer to deliberative processes: at a conscious level, contact may constitute a positive, though cognitively costly, experience, which has positive effects on intergroup relations. The fact that highly prejudiced participants in the two-groups condition were those with the worse performance in the Stroop task and, at the same time, those benefiting more from the contact experience, reinforces our argument. It is possible that, the more a person finds the interaction costly, but at the same time pleasant and disconfirming negative expectancies, the more he/she can benefit, at a conscious level, from the effects of intergroup contact. An interesting question is if the same effects would be observed also for implicit attitudes. To the extent that explicit and implicit attitudes are often dissociated, it would be challenging to test the influence of prejudice on automatic bias after resource-consuming intergroup contact.

We conclude by presenting limitations of the present study. First of all, because our sample involved university students, we cannot generalize results obtained to the general population. Second, participants belonged only to the majority and higher status group (Italians). Other limitations concern the manipulation used. With regard to this point, it should be noted that the tone of conversation – informal in the one-group and control conditions, formal in the two-groups condition – created a disparity between conditions, so that a double categorization was induced in participants in the two-groups condition: Albanian vs. Italian and student vs. researcher (as demonstrated by manipulation check items). To the extent that our goal was to influence only categorization as Italians vs. Albanians in the two-groups condition, and as the group of students in the one-group condition, it is possible that the double categorization influenced our results, and that findings are partially due to perceived differences between students and researchers, more than to differences between Italians and Albanians. However, contrary to this possibility, participants, when asked to indicate, in the two-groups condition, group differences they thought about during the intergroup interaction, declared that the most salient categorization was that based on respective nationalities. Associated with this point is the contention that status during contact was unequal: the confederate in the second part of the study (Italian in the control condition; Albanian in the one-group and two-groups conditions) acted as a researcher, by asking questions for an apparently unrelated study. Unequal status could have produced some of our results, for instance when status difference was perceived as more salient (probably, in the two-groups condition). In this case, status disparity might have produced more uncertainty and more use of cognitive resources, thus reducing performance in the Stroop task. This hypothesis, however, is unlikely: intergroup attitudes were higher in the two-groups than in the control condition, suggesting that national differences were salient in the former condition; thus, membership salience probably influenced our results more than status differences. Another limitation is relative to the manipulation of common identity. Our manipulation checks did not measure the extent to which participants, during contact, felt as two-groups (Italians and Albanians) within the group of students (i.e., dual identity). It is possible, in fact, that national differences remained salient within the superordinate identity. Salience of national differences could have then produced generalization effects: generalization, in fact, was not different between the one-group and the two-groups condition. Indications for the idea that a dual identity, more than a common identity, was salient in the one-group condition, are provided by findings on the manipulation check item concerning diversity between Italian and Albanian psychology students: participants felt more similarity between Italian and Albanian psychology students in the one-group condition than in the remaining two conditions. Thus, a double categorization emerged: national identity and student identity. Another limitation concerns

perceived typicality of the Albanian confederate. It is possible that weak results, in particular those concerning performance in the Stroop task, are due to low perceived typicality of the Albanian confederate as a representative member of her national group. In both one-group and two-groups conditions, the Albanian confederate was a female. There are indications that national stereotypes are associated more to males than to females (Eagly & Kite, 1987). Moreover, discrimination concerning groups is usually directed toward males (Sidanius & Pratto, 1999). If participants perceived the Albanian confederate as not typical of her group, then they could feel the interaction as less threatening and anxiety provoking than in the case of a typical outgroup member; as a consequence, they could have used less cognitive resources for self-regulation and, in turn, have suffered less cognitive impairment. Though we did not include a measure of perceived typicality, however, we think that the Albanian confederate was in some way associated to the whole category of Albanians; otherwise, we would not be able to explain generalization found in the two contact conditions (i.e., one-group, two-groups).

The present work extends results obtained by Richeson and collaborators (e.g., Richeson & Shelton, 2003), by showing that intergroup contact can deplete, in some cases (i.e., when group differences are salient, and especially for high prejudiced participants), cognitive resources, at the same time improving intergroup relations, as shown by explicit measures. Several implications can be drawn, with respect to the most effective way to structure the contact setting. We will discuss these practical implications in the general discussion.

Chapter 4

Can contact modes reduce cognitive impairment and improve relations with proximal and distal outgroup members?

1. Introduction

In Study 2 (Chapter 3), we demonstrated that contact modes – in particular, salience of group membership (Brown & Hewstone, 2005) and of common ingroup identity (Gaertner & Dovidio, 2000) – moderate the extent of cognitive impairment after intergroup contact and, at the same time, favor generalization to the distal outgroup. Specifically, we found that performance in the Stroop task was generally lower when respective identities, rather than a superordinate identity representation, were salient during contact. Moreover, partially replicating results obtained by Richeson and Shelton (2003), we found that cognitive impairment was stronger for high than for low prejudiced people, but only when group membership was salient; at the same time, when respective identities were salient during contact, high levels of prior prejudice – explicit and/or implicit – predicted more positive intergroup attitudes.

The aim of this study was to replicate and extend results obtained in the previous study, by considering a different intergroup relationship, adding two predictors variables, changing experimental manipulation and examining the moderator effect of two additional contact modes: separate individuals and dual identity. Thus, four contact models were considered: the decategorization model (Brewer & Miller, 1984), the intergroup contact theory (Brown & Hewstone, 2005), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000). Moreover, in addition to cognitive impairment and measures concerning the general outgroup, we considered attitudes toward an outgroup member actually encountered.

Prior studies investigating the role of prejudice on cognitive impairment (e.g., Richeson & Shelton, 2003; Richeson et al., 2005) found that explicit and, especially, implicit prejudice, predict impaired performance in a Stroop task after intergroup contact. The proposed explanation draws on a resource model of executive attention (Muraven & Baumeister, 2000): engaging in one act of self-regulation (as can be having an interaction with an outgroup member) can consume cognitive

resources that, if not completely restored, are not available to perform in a subsequent cognitive task, thus reducing performance in it. People with high levels of prejudice should find interactions with outgroup members more threatening and require more self-regulation to control their biased responses to not appear prejudiced. We reasoned that another factor potentially influencing cognitive functioning and attitudes following contact is motivation to control prejudiced responses (Dunton & Fazio, 1997; Plant & Devine, 1998). Suppressing prejudiced thoughts might require cognitive resources, thus influencing subsequent acts of self-regulation. Consistent with this reasoning, Muraven, Baumeister, Dhavale, and Holland (1999) found that prejudice of depleted participants with a high motivation to avoid prejudice was stronger than that showed by people with a low motivation.

Our goal was to test moderator effects of contact modes on the relationship between prejudice or motivation to respond without prejudice on cognitive impairment and on intergroup attitudes, emotions and stereotypes. Plant and Devine (1998) noted that overt expression of prejudice have decreased over the last years (e.g., Gaertner & Dovidio, 1986), and there are pressures to attain to social norms promoting equality. The authors distinguished two forms of motivation affecting avoidance of prejudice concerns: internal and external. Internal motivation to respond without prejudice refers to people's desire to attain to personal standard of equality when evaluating outgroup members; when people are externally motivated, instead, they try to control prejudice responses for fear of social disapproval. Plant and Devine showed that internal and external motivation to respond without prejudice express different underlying motives and need to be kept separate. Negative correlations between the corresponding scales were low; in general, internal motivation was negatively correlated with explicit prejudice measures, and responses were independent from the fact that people responded in private or publicly; in contrast, external motivation was positively correlated with prejudiced attitudes, and responses varied depending if they were provided privately or in public.

The intergroup relationship considered in the present study was that between Northerners and Southerners. Research has showed that Northerners consensually hold a higher status and generally show consistent ingroup favoritism (see Capozza, Brown, Aharpour, & Falvo, 2006). To vary contact strategies, we used a different manipulation from that implemented in Study 2, to overcome some of its limitations (see Chapter 3, paragraph 4). First of all, Northern participants interacted with either a Southern (intergroup contact conditions) or a Northern male confederate. Males are generally more representative of their groups; contact with a male should be seen as more "intergroup" than contact with a female (Eagly & Kite, 1987; Sidanius & Pratto, 1999), thus potentially producing more powerful effects on our measures. Second, the confederate was

presented as an unaware participant, thus providing conditions for equal status contact (Allport, 1954). Procedure was similar to the one used in Study 2, except for the experimental manipulation, for which we adopted a strategy similar to that utilized in studies by Gaertner and collaborators (e.g., Gaertner et al., 1989) and by Gonzalez and Brown (2003). The experiment was in three phases. Northern psychology students first completed measures of explicit and implicit prejudice and of internal and external motivation to respond without prejudice. In the second part, they met a confederate to work on a cooperative task. Five experimental conditions were created. In four conditions, contact was with a Southern confederate (intergroup contact conditions): in the two-groups condition, identities of Northerners and Southerners were made salient; in the separate individuals condition, salience of interpersonal differences was enhanced; in the one-group condition, we increased the salience of the superordinate identity of psychology students; in the dual identity condition, the identities of Northerners psychologists and Southerners psychologists were made salient. Finally, in the control condition, contact was with a Northern confederate (i.e., an ingroup member); in this case, we increased salience of interpersonal differences. Finally, participants individually completed a Stroop task and a questionnaire containing manipulation checks, measures concerning the partner during the interaction and the general outgroup of Southerners.

On the basis of what found in Study 2 (Chapter 3) and on the contact literature, we predicted that performance in the Stroop task would be lower in the two-groups condition than in the remaining conditions. Contact with an outgroup member, in fact, should be more threatening and anxiety provoking when participants are aware of respective memberships (i.e., in the two-groups condition) than when interpersonal differences (separate individuals condition) or a superordinate identity (one-group and dual identity conditions) are salient. In the latter cases, importance (i.e., salience) attributed to interpersonal difference or to a common identity should make participants less aware of interacting with an outgroup member, thus reducing self-regulation processes active during intergroup encounters (e.g., Richeson & Trawalter, 2005) and, at the same time, the uncertainty and the potential threat experienced in the contact situation (Stephan & Stephan, 1985, 2000). We do not expect differences between the separate individuals, one-group, dual identity and control conditions. However, we acknowledge the possibility that, in the dual identity condition, salience of respective identities, though nested within a more inclusive identity, should deplete participants' executive attention and produce effects on cognitive functioning similar to those produced by two-groups salience.

With respect to effects of prior levels of prejudice on cognitive performance, according to Study 2 (Chapter 3) and to Richeson and collaborators' studies (e.g., Richeson & Shelton, 2003),

we expect that explicit and/or implicit prejudice would predict reduced cognitive performance in the two-groups and in the dual identity conditions, but not in the remaining conditions. The rationale for this hypothesis is that high prejudiced participants should find the intergroup interaction more threatening and, consequently, more resource-consuming when respective identities are salient (two-groups and dual identity conditions) than when Northern and Southern identities are less relevant (separate individuals and one-group conditions). Similarly, concerning motivation to respond without prejudice, we expect that performance in the Stroop task would be more impaired when motivation to avoid prejudice – either internal or external – is high rather than low, but only when group memberships are salient (two-groups and dual identity conditions). Motivation to control prejudice responses, in fact, can precede self-regulation (e.g., Devine, 1989; Fazio, 1990): people highly motivated to avoid prejudice should be more concerned than those with a low motivation with suppressing negative thoughts, thus depleting the self.

Concerning explicit attitudes, we do not expect differences in the evaluation of the Southern confederate in the four intergroup contact conditions. Cooperative and equal status contact, in fact, should foster positive evaluations of the outgroup members actually encountered (e.g., Gonzalez & Brown, 2003, 2006; Van Oudenhoven et al., 1996). In contrast, we expect generalization only when group memberships are salient (Brown & Hewstone, 2005; see also Brown et al., 1999). That is, perceptions of Southerners should be more positive in the two-groups and dual identity conditions than in the remaining conditions. Separate individuals and one-group conditions should not differ from the control condition. An alternative possibility is that generalization would occur more in the one-group and dual identity conditions (see Gonzalez & Brown, 2003).

Finally, we predict that prejudice – explicit, more than implicit – and motivation – internal and external – to avoid prejudice would affect intergroup attitudes. In particular, the relation between (a) prejudice – explicit and implicit – and external motivation to respond without prejudice and (b) positive intergroup relations, should be negative; in contrast, internal motivation should positively predict attitudes and emotions toward the whole outgroup. We do not expect moderator effects of contact modes with respect to the outgroup member encountered. The evaluation of the person encountered, in fact, should depend on positive perceptions due to positive contact, rather than on categorization during contact. In contrast, we hypothesize that predictor variables (prejudice, motivation to avoid prejudice) would predict perceptions of the distal outgroup in the intergroup contact conditions – and especially, in the two-groups and dual identity conditions – , but not in the control condition. As in Study 2, we make the counterintuitive hypothesis that negative effects of predictor variables would be neutralized when positive contact with an outgroup member is experienced. Specifically, we expect that prejudice – explicit and/or implicit – and motivation –

internal and/or external – to avoid prejudice would positively predict outcome measures in the separate individuals, one-group, two-groups and dual identity conditions. These effects should be stronger when group membership is salient, that is, in the two-groups and dual identity conditions. As we argued in Study 2, prejudiced participants should benefit more from cooperative contact, so that, the higher the prejudice, the stronger the positive change that follows disconfirmation of negative expectancies. People with high levels of external motivation to avoid prejudice are presumably more prejudiced than those with a low motivation; they are more likely to show reduced prejudice in public, in response to social pressures (Plant & Devine, 1998). Like those with high levels of prejudice, they should reduce bias more after intergroup contact, especially when respective identities are salient. People with high levels of internal motivation to control prejudice responses should be less prejudiced than their counterparts with low levels; in this case, it is plausible to predict a positive relationship with dependent variables after positive contact, in particular when group memberships are highly salient. A weak form of this hypothesis is that negative effects of independent variables would be present only in the control condition, but they would be neutralized in the intergroup contact conditions – especially, when group membership is salient. In other words, explicit and/or implicit prejudice and external motivation to respond without prejudice should predict more negative relations with Southerners in the control condition; in contrast, they might have null effects in the four intergroup contact conditions (separate individuals, two-groups, one-group, dual identity), and, in particular, in the two-groups and dual identity conditions.

1.1 Hypotheses

For reason of clarity, we summarize predictions discussed above:

Hypothesis 1a. Performance in the Stroop task should be worse in the two groups condition and, eventually, in the dual identity condition, than in the separate individuals, one-group and control conditions. No difference is expected between the latter conditions.

Hypothesis 1b. Prejudice – explicit and/or implicit – and motivation to avoid prejudice – internal and/or external – should predict cognitive impairment in the two-groups and dual identity conditions, but not in the one-group, separate individuals and control conditions.

Hypothesis 2a. Attitudes toward the Southern partner should not be different in the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity).

Hypothesis 2b. External motivation, explicit and, less strongly, implicit prejudice, should decrease the evaluation of the Southern partner; in contrast, internal motivation should have opposite effects. We do not expect that intergroup contact conditions moderate the effects of

prejudice – explicit and/or implicit – and motivation to respond without prejudice – external and/or internal – on attitudes toward the Southern partner.

Hypothesis 3a. Relations with Southerners should be more positive in the two-groups and dual identity conditions than in the remaining three conditions; another possibility is that generalization would occur more in the one-group and dual identity conditions (see Gonzalez & Brown, 2003).

Hypothesis 3b. Prejudice – explicit and, less strongly, implicit – and external motivation to avoid prejudice should negatively affect perceptions of the whole outgroup, whereas the effects should be positive for internal motivation. However, we predict a moderator role of contact conditions: motivation to respond without prejudice – either external and/or internal – and prejudice – explicit and/or implicit – should positively influence relations with Southerners in general in the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity), but not in the control condition; the effects should be stronger in the two conditions where we expect more generalization, that is, in the two-groups and dual identity conditions. A weak form of the hypothesis is that negative effects of external motivation to avoid prejudice and of explicit and implicit prejudice would be neutralized in the four intergroup contact conditions (and, especially, in the two-groups and dual identity conditions), but not in the control condition.

2. Method

2.1 Participants

One hundred psychology students (20 males, 80 females) took part individually in the study. All participants belonged to the Northern group (they lived and were born in the North and had at least one parent living and born in the North). Mean age was 23.41 ($SD = 2.79$). The experimental design employed a between-subjects one-way with five levels: separate individuals, two-groups, one-group, dual identity, control (no intergroup contact). Participants were randomly allocated to one of the five cells.

2.2 Procedure

A Northern experimenter took participants individually to the laboratory. The research was presented as a study on group processes, and was composed of three phases. In the first part, participants completed an IAT (Greenwald et al., 1998), presented as a word categorization task, then the Affective Prejudice Scale (Pettigrew & Meertens, 1995), to assess implicit and explicit attitudes toward Southerners, respectively.

Participants were then informed that another participant was now completing the first part of the experiment in a separate laboratory, and that they were going to meet this person to work on a cooperative task. The second participant was a Southern male confederate in the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity); he was a Northern male confederate in the control condition. The confederate joined participants in the laboratory they were in, and acted as an unaware respondent. The manipulation was effected at this point. In the *separate individuals* and in the *control* conditions, interpersonal differences were made salient. Participants were told that the session would be videotaped and, to facilitate coding, they were given to wear two different color T-shirts (one blue and one red) and a nameplate to write their name inside and pin on respective T-shirts. After wearing T-shirts and nameplate, before starting the cooperative task, they were asked to take one picture each, while showing a paper where they had previously written their name (the aim was to increase salience of individual differences). They then seated on two opposite sides of a table and were given the task. It consisted in a modified version of the winter survival task (Johnson & Johnson, 1975). Participants had to imagine that they crashed with their airplane on a desolate Nordic area in the middle of the winter and that some potential useful objects were salvaged. Survivors had walk through the forest to reach safety, but they could not take all the salvaged objects. The assignment was to indicate their own personal characteristics potentially useful in such a desperate situation and to link, if desired, these characteristics to the choice of some objects (for example, I'm an anxious and fearful person, so I would choose the gun to face eventual dangers). After reading the task, both participants (i.e., the real participant and the confederate) were given a form to complete: the form required them to answer demographic questions concerning the other participant and to indicate personal characteristics and salvaged objects selected by the other participants. That is, the form that participants had to complete referred to the other person doing the task: each participant took note of the other participant's responses. This was done to create the sense of cooperativeness and to make the real participant in each session aware of the geographical origin of the confederate. After explaining the task and informing participants they had two and a half minutes each to indicate, individually, their demographic information, personal characteristics and eventual objects to salvage (the confederate always took the initiative and spoke first), the experimenter left the room. Demographic information referred to age, name, place of birth and residence of respondents and of their parents. Information provided by the confederate were scripted. In the separate individual condition, the confederate was Southern: he declared that his name was Antonino (a Southern name), 22 years old, born and resident with his family in Reggio Calabria, and that his parents were born in Catanzaro and Messina (cities were all from Southern regions). In the control condition, he was

Northern: he declared that his name was Marcello (a Northern name), born and resident in Milan with his family, that his mother and father were from Turin and Como, respectively (in this case, cities were from the North). In both conditions, scripted information concerning personal characteristics and objects salvaged by the confederate were the same; the confederate declared that: he was an insecure person afraid of threats, and consequently he would choose weapons; he was an open person, attentive to others' problems, and would help to boost fellows' morale; he had leader characteristics, useful in such a situation, because it would probably be important to have a person able to take decisions for the group of survivors.

In the *two-groups* condition, procedure was similar. In this case, however, participants, after wearing two different color T-shirts, were given a plate indicating their provenance: Northern for the real participant, Southern for the confederate. The real participant in each session and the confederate made then one photo each, by showing a paper indicating their provenance (i.e., from the North and from the South, respectively). The task was identical, except for the fact that, in this case, after declaring personal information, participants had to indicate group characteristics potentially useful in such a situation. That is, they were asked to indicate characteristics of Northerners (Southerners, for the confederate) that would help in this situation and eventual objects Northerners (or Southerners, for the confederate) would choose. Requested demographic information were slightly different from those asked in the separate individuals and control conditions: in this case, participants explicitly indicated their group of belonging (Northern or Southern), to increase group salience, and did not indicate their own name, not to increase salience of interpersonal differences. Concerning characteristics and objects relative to the winter survival task, the confederate acted as a Southern group member and indicated characteristics associated with the Southern stereotype: he said that Southerners are warm and open to interpersonal relationships, characteristics useful to help people to not give up hope in this situation and, as a consequence, they would probably choose candy bars, which can help to sustain morale. He also asserted that creativity can be fundamental to face difficulties; Southerners are very creative, and they would save a rope, or a knife, which can have multiple uses. Finally, because Southerners have traditionally faced difficulties and situations of uneasiness, their adaptability can be very helpful and higher than that of group members less used to dealing with similar problems.

In the *one-group* condition, both the real participant and the confederate wore a red color T-shirt and a plate indicating the common belonging to the group of Psychologists. They then took a single photo of themselves showing a paper which indicated they belonged to the Psychology group. Demographic information to declare were the same as the two-groups condition. In this case, however, instead of declaring the group of belonging (Northern or Southern), they indicated their

Faculty (i.e., Psychology), so as to increase salience of the superordinate identity. Concerning the winter survival task, the participant and the confederate were asked to act as group members and to indicate the typical characteristics of psychologists which could be useful in this situation and the salvaged objects psychologists would choose. They were also informed that solutions would be compared with those produced by engineers; the introduction of a traditionally hostile outgroup was intended to increase salience of the common identity of psychologists (see Turner et al., 1987). Scripted information concerning the task referred to characteristics of psychologists: the confederate declared that psychologists are open to interpersonal relationships, important for morale, and aim at psychologically sustaining others during difficulties; for these reasons, they would probably choose candy bars. Furthermore, he said that psychologists are much more creative than “programmed” engineers, and it is important to have people able to act when a specific behavior is not exactly defined; as a consequence, they would choose a rope or a knife.

Finally, in the *dual identity* condition, participants wore two red color T-shirts, together with nameplates indicating their belonging to the groups of Northern psychologists (real participant) or of Southern psychologists (confederate). The participant and the confederate then took one photo each, to indicate they belonged to different groups (i.e., Northern and Southern, respectively) and one photo together, to show the common belonging to the group of psychologists (in both photos, they showed a paper indicating their group: Northern psychologists or Southern psychologists). After seating, they were explained the task. In this condition, they were asked to indicate the characteristics of their group (i.e., Northern psychologists or Southern psychologists) potentially useful in this situation and objects that would probably be chosen by respective group members. Demographic information provided by the confederate were a mix between those indicated in the one-group and in the two-groups conditions: in this case, the participant and the confederate had to indicate if they belonged to the Northern or Southern group, to increase group salience, and their faculty (i.e., Psychology), to increase common ingroup identity salience. Concerning the cooperative task, the group characteristics and the objects indicated by the confederate were the same used in the one-group condition; in addition, he said that, to the extent that many Southern psychologists live in precarious conditions, they can adapt more easily to difficulties than their Northern counterparts, less used to facing critical situations.

All sessions were videotaped with the written consensus of participants.

In the third phase, the confederate left the room to ostensibly finish the experiment in another laboratory, whereas each participant, in the presence of the experimenter, completed a Stroop task and a questionnaire containing the explicit measures: manipulation checks, evaluation of the interaction partner, positive and negative typical traits of Southerners, calmness and anxiety

felt for Southerners, evaluation of Northerners and Southerners. Participants were finally thanked and debriefed.

2.3 Instruments

2.3.1 Implicit measure

The IAT was the same used in Study 2 (see Chapter 3, paragraph 2.3.1) to assess implicit evaluations of Italians toward Albanians. In this case, however, Italian and Albanian names were replaced by typical Northern or Southern names, so as to assess automatic attitudes held by Northerners toward Southerners. Northern and Southern names (five male names and five female names for each category) were taken from Capozza, Andrighetto, Falvo, and Trifiletti (2006), who tested their typicality for the two groups. Stimuli used are presented in Table 1.

2.3.2 Stroop task

The Stroop task was identical to that used in Study 2 (see Chapter 3, paragraph 2.3.2). The only difference was that four blocks of experimental trials were used, instead of seven, to reduce the length of the experiment and fatigue for participants.

Table 1. Stimulus words used in the IAT
(Italian translation concerning positive and negative words is reported in parentheses).

Experimental stimuli			
Northern names	Southern names	Positive words	Negative words
Vanda	Filomena	Health (<i>Salute</i>)	Poverty (<i>Povertà</i>)
Vilma	Concetta	Freedom (<i>Libertà</i>)	Death (<i>Morte</i>)
Luciana	Rosalia	Pleasure (<i>Piacere</i>)	Tragedy (<i>Tragedia</i>)
Carlotta	Carmela	Vacation (<i>Vacanza</i>)	Illness (<i>Malattia</i>)
Eliana	Assunta	Peace (<i>Pace</i>)	Vomit (<i>Vomito</i>)
Walter	Rocco	Happiness (<i>Felicità</i>)	Cancer (<i>Cancro</i>)
Enio	Pasquale	Gift (<i>Regalo</i>)	Murder (<i>Omicidio</i>)
Piero	Gennaro	Paradise (<i>Paradiso</i>)	Sorrow (<i>Dolore</i>)
Flavio	Carminio	Gentle (<i>Gentile</i>)	Hatred (<i>Odio</i>)
Elio	Ciro	Love (<i>Amore</i>)	Agony (<i>Agonia</i>)

2.3.3 Explicit measures: questionnaire

➤ *Explicit prejudice* (assessed prior to the manipulation)

We used the Affective Prejudice Scale (Pettigrew & Meertens, 1995). Participants expressed their admiration and sympathy toward Southerners on a five-step scale from 1 (*never*) to 5 (*always*): “How often do you feel solidarity toward Southerners?”; “How often do you feel admiration toward Southerners?” Scores were recoded so that higher ratings corresponded to stronger negative affect toward Southerners. The two items were combined to obtain a single index of explicit prejudice (Cronbach’s alpha = .72).

➤ *Motivation to avoid prejudice* (assessed prior to the manipulation)

Eight items from the adaptation of Plant and Devine’s scale (1998) by Manganelli Rattazzi, Canova, and Bobbio (2004) were used. Participants were asked to express their agreement on a nine-step scale, ranging from 1 (*I totally disagree*) to 9 (*I totally agree*). Four items referred to explicit motivation to avoid prejudice: “I usually try to hide negative thoughts about Southerners in order to avoid negative reactions from others”; “If I acted prejudiced toward Southerners, I would be afraid of others’ judgments”; “I try to act nonprejudiced toward Southerners because of pressure from others”; “I attempt to appear nonprejudiced toward Southerners in order to avoid disapproval from others.” Four items concerned internal motivation: “According to my personal values, being prejudiced toward Southerners is ok sometimes” (reversed); “Because of my personal values, I believe that being prejudiced toward Southerners is wrong”; “I am personally motivated by my beliefs to be nonprejudiced toward Southerners”; “I attempt to act in nonprejudiced ways toward Southerners because it is personally important to me.” Items were averaged to obtain an index of external (alpha = .72) and an index of internal (alpha = .63) motivation to respond without prejudice.

➤ *Confederate partner evaluation*

The confederate partner was rated on five semantic differential scales, which represented the Evaluation factor: undesirable/desirable, pleasant/unpleasant, good/bad, disagreeable/agreeable, valuable/unvaluable. After recoding items 2, 3, 5, so that, on the seven-step scale, higher scores reflected positive evaluations of the interaction partner, items were combined to form a reliable index (alpha = .83).

➤ *Stereotype endorsement*

Four traits were rated with respect to their typicality for the Southern group on a seven-step scale: scores from 1 to 3 indicated decreasing degrees of typicality; scores from 5 to 7 indicated increasing degrees of typicality; 4 indicated that the item was neither typical nor atypical of Southerners. Two items represented positive typical traits of Southerners: hospitable, expansive.

The other two items concerned negative typical traits of Southerners: mafia member, intrusive.¹⁴ Because reliability of both positive and negative traits was low, we decided to analyze the four items separately.

➤ *Emotions toward distal outgroup members*

Participants rated endorsement of emotions felt toward Southerners on a seven-step scale, anchored by *not at all* (1) and *very strongly* (7). Eight items were used. Four items expressed calmness: calm, relaxed, tranquil, confident; four items denoted anxiety: uneasy, anxious, distrustful, tense. Items were combined to form an index of calmness ($\alpha = .95$) and an index of anxiety ($\alpha = .68$) felt toward Southerners.

➤ *Evaluation of distal ingroup and outgroup members*

Participants evaluated Northerners and Southerners on the same scales used to evaluate the confederate partner. Rating were averaged for ingroup ($\alpha = .85$) and outgroup ($\alpha = .84$). An index of evaluative ingroup bias was obtained by calculating the difference between ingroup and outgroup evaluations: higher scores reflected stronger ingroup bias.

➤ *Manipulation checks*

First, to check if participants were aware of the origin of the confederate partner, they indicated if the confederate they worked with on the winter survival task was a Northerner, Southerner, or if he had another origin. Second, respondents had to select the group representation perceived as the most salient during the winter survival task: separate individuals, two-groups, one-group, dual identity. Third, respondents answered four questions, each concerning salience of a different group representation: “Please indicate if, during the interaction with the other participant you worked with on the winter survival task, you perceived him/her as:” “a single individual”; “member of an outgroup”; “member of a group you belong too”; “member of an outgroup, at the same time sharing membership in a group you belong too.”

➤ *Additional control measures*

Evaluation of the interaction. Respondents evaluated the pleasantness of the interaction with the confederate on five semantic differential scales: friendly/hostile, indifference/reciprocal help, cooperative/competitive, gentle/rude, unpleasant/pleasant. Items 1, 3, 4 were recoded so that, on the seven-step scale, higher scores reflected a more positive evaluation of the interaction. Items were combined to obtain a single index of interaction evaluation ($\alpha = .76$).

Anxiety felt during the interaction. Participants rated emotions of anxiety felt during the cooperative task on a seven-step scale, from 1 (*not at all*) to 7 (*very strongly*). Four items were

¹⁴ Positive and negative typical traits were selected on the basis of a study in which participants were asked to rate typicality of several traits concerning Southerners (Trifiletti, 2007).

used: uneasy, anxious, distrustful, tense. The four items were averaged to obtain an index of anxiety felt during the interaction with the confederate partner ($\alpha = .60$).

Typicality of the confederate. One item measured group typicality of the confederate partner: “The person you worked with on the winter survival task was typical of his/her group (Northern or Southern group)?”

Degree of previous contact. Two items concerned participants’ degree of self-reported contact with Southerners: “How much contact do you have with Southerners?” “How many Southerners do you personally know?” Both items had a seven-step scale, from *no contact at all* (1) to *daily contact* (7) for the first item, from *none* (1) to *more than 10* (7) for the second one.¹⁵ The two items were multiplied to obtain a single index of previous contact (see Brown et al., 2001). Scores on the contact index ranged from 1 to 49: the higher the score, the higher the degree of previous contact with Southerners.

Finally, participants reported demographic information.

3. Results

3.1 Efficacy of the experimental manipulation

Manipulation checks

All participants correctly identified the origin of the confederate partner during the winter survival task: Southern in the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity), Northern in the control condition.

Concerning selection of the most salient group representation during contact with the confederate partner (Table 2), most participants individuated the representation congruent with their experimental condition in the separate individuals (65%), one-group (70%) and dual identity conditions (55%). In contrast, only 25% of participants selected the two-groups representation in the corresponding condition (see Table 2). Participants selected more the one-group (50%) than the separate individuals (40%) representation in the control condition. Though we expected a prevalence of the separate individuals representation in the control condition, the result is not surprising: interacting with an ingroup member on a cooperative task might easily activate the perception of acting as a common group. The overall Chi-Square was significant, indicating that responses to this question depended on the experimental condition, Chi-square (12) = 49.99, $p < .001$.

¹⁵ For the second item, the remaining five degrees indicated: *two* (2), *four* (3), *six* (4), *eight* (5), *ten* (6).

Table 2. Selection percentages of group representations during contact.

Item	Experimental conditions				
	Separate individuals	Two-groups	One-group	Dual identity	Control
Separate individuals	65%	20%	25%	5%	40%
Two-groups	5%	25%	/	5%	/
One-group	25%	35%	70%	35%	50%
Dual identity	5%	20%	5%	55%	10%

Participants then indicated how much each of the four group representations characterized the interaction with the confederate partner. To examine levels of endorsement of the representation appropriated to the experimental condition, we conducted an ANOVA 5×4 (experimental condition by group representations perceptions). The experimental condition \times group representation effect was significant, $F(12, 285) = 5.37, p < .001$. As intended, participants in the separate individuals ($M = 5.50$), one-group ($M = 5.20$), dual identity ($M = 5.15$) and control ($M = 4.95$) conditions yielded ratings corresponding to expectations (Table 3). Participants in the separate individuals and control conditions perceived more to act as single individuals in these two conditions than in the remaining three conditions, $t(98) = 3.34, p = .001$. Participants rated as more salient the dual identity representation in the dual identity condition than in the remaining conditions, $t(98) = 3.08, p < .01$. Rating of one-group perceptions were only marginally higher in the one-group condition than in the other conditions, probably because the cooperative task increased the salience of a common identity in all conditions: $t(98) = 1.50, p < .14$. Finally, participants felt to act as two distinct groups more in the two-groups than in the other conditions, $t(98) = 4.76, p < .001$. Furthermore, in all conditions, group perceptions corresponding to the appropriate experimental condition were higher than the central point: for the separate individuals representation, $t(19) = 4.26, p < .001$ and $t(19) = 2.76, p < .05$, in the separate individuals and control conditions, respectively; for the one-group representation, $t(19) = 3.94, p = .001$; for the dual identity representation, $t(19) = 4.35, p < .001$. Finally, the two-groups representation was

higher than the central point of the scale, though non significantly, only in the two-groups condition, $t(19) = .18$, *ns*.

Table 3. Means concerning group representations during contact (standard deviations are reported in parentheses).

Item	Experimental conditions				
	Separate individuals	Two-groups	One-group	Dual identity	Control
Separate individuals	5.50** (1.57)	4.05 (1.64)	4.30 (1.78)	4.05 (1.54)	4.95** (1.54)
Two-groups	1.90** (1.55)	4.05 (1.28)	1.45** (.60)	3.35 (1.56)	2.30** (1.69)
One-group	4.85 (1.95)	4.40 (1.79)	5.20** (1.36)	5.15** (1.31)	3.85 (1.81)
Dual identity	2.90* (1.89)	4.70 (1.78)	4.00 (1.75)	5.15** (1.18)	3.30 (2.10)

Note. Asterisks indicate that the means differ from the central point of the scale, which is 4.
* $p < .05$. ** $p \leq .001$.

We can conclude that the manipulation was effective. Participants, by considering both the most selected group representation and the salience of each of the four group representations in each condition, felt more like separate individuals in the separate individuals and control conditions (where interpersonal differences were enhanced); they felt more like one group and like two groups within one group in the one-group and dual identity conditions, respectively. The two-groups condition was the most problematic. Probably, the cooperative nature of the task impeded participants from regarding themselves as members of two distinct groups. Coherent with this explanation, the one-group representation was the most chosen by participants in this condition; furthermore, the dual identity representation (where two groups are nested within a superordinate identity) was the (marginally) most salient in this condition, $t(98) = 1.81$, $p < .08$. However, perceptions of acting as distinct groups were higher in this condition than in the other four conditions. The difficulty to activate a two-groups representation during a cooperative task is not new in the contact literature (e.g., Gonzalez & Brown, 2003).

Additional control measures

Evaluation of the interaction. To test if manipulation was effective in producing a cooperative atmosphere, participants rated the pleasantness of the interaction with the confederate partner during the winter survival task. As expected, an ANOVA with experimental condition as predictor variable did not yield reliable effects, indicating that all conditions were equally effective in producing pleasant contact (Table 4). It is noteworthy that, in all conditions, means were above the neutral point, indicating that the interaction was perceived as very positive (see Table 4).

Table 4. Means and *F*-values for anxiety felt during interaction with the confederate partner during the cooperative task, interaction evaluation, typicality of the confederate partner and degree of previous contact in the five experimental conditions (standard deviations are reported in parentheses).

Dependent variable	Experimental conditions					<i>F</i>
	Separate individuals	Two-groups	One-group	Dual identity	Control	
Evaluation of the interaction	5.53*** (0.79)	5.55*** (0.64)	5.00*** (0.58)	5.66*** (0.90)	5.53*** (0.83)	2.33
Anxiety felt during the interaction	1.40*** (0.64)	1.46*** (0.58)	1.49*** (0.50)	1.38*** (0.39)	1.50*** (0.46)	.22
Typicality of the confederate	3.65 (1.53)	3.80 (1.15)	3.30* (1.30)	4.10 (1.16)	4.00 (0.80)	1.35
Degree of previous contact	37.45*** (14.31)	34.00** (12.64)	27.00 (14.52)	28.90 (9.41)	25.20 (10.16)	3.37*

Note. Asterisks in the five experimental conditions indicate that the means differ from the central point of the scale, which is 4; the average point is 25 for the degree of previous contact.

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Anxiety felt during the interaction. An ANOVA with experimental condition as independent variable was calculated. Predictions were that anxiety would be higher when group memberships were salient, that is, in the two-groups and dual identity conditions, than in the remaining conditions. However, contrary to expectations, anxiety levels were uniformly low and did not differ between conditions (Table 4). It seems likely that the cooperative atmosphere influenced anxiety experienced, so that participants felt equally positively in all conditions.

Typicality of the confederate. One item was used which measured perceived typicality of the confederate implementing the experimental manipulation. Moderate to high levels of perceived

typicality would indicate that the confederate was perceived as typical of his group (i.e., Northern in the control condition; Southern in the other four conditions) and, thus, that our results can be attributed to contact with a representative member of the ingroup/outgroup, rather than to an interaction with an ingroup or outgroup exception exemplar. Main effect of experimental condition was not significant, thus indicating that the confederate was perceived as uniformly moderately typical in all conditions (Table 4). However, typicality levels were lower than the central point of the scale in three conditions (though the difference from the central point was significant only in the one-group condition).

Degree of previous contact. Since our participants were randomly allocated to the five cells of the experimental design, we did not expect differences due to conditions. However, contrary to what expected, a one-way ANOVA indicated that participants allocated to diverse experimental conditions experienced different degrees of previous contact with Southerners (Table 4). It is possible that responses were affected by our manipulation, since they were provided in the last part of the questionnaire. However, it is more likely that differences between conditions were due to chance. Potential effects of previous contact on criterion variables will be considered in a subsequent paragraph.

3.2 Predictor variables

Implicit and explicit prejudice

The procedure used to calculate the index of implicit prejudice was the same utilized in Study 2 (see Chapter 3, paragraph 3.2). As expected, participants exhibited implicit bias favoring Northerners, $M = .44$, $SD = .32$. That is, latencies in the block where Northern and Southern names were paired, respectively, with positive and negative words (compatible block; $M = 913.46$ ms, $SD = 178.06$) were significantly lower than those in the block where Northern and Southern names were associated with negative and positive words, respectively (incompatible block; $M = 1066.51$ ms, $SD = 267.48$), $t(99) = 9.98$, $p < .001$. Variability was high: D measures scores ranged from $-.34$ (outgroup favoritism) to $.98$ ($Mdn = .49$).

Affective prejudice toward Southerners ($M = 2.61$, $SD = .78$) was moderate: the difference from the central point of the scale (i.e., from 3) was not very pronounced, albeit significant, $t(99) = 5.02$, $p < .001$.

Internal and external motivation to avoid prejudice

We decided to analyze the effects of the internal and external motivation to respond without prejudice separately. The two motivations, in fact, may have different and sometimes opposite

effects on outcome measures (Plant & Devine, 1998). Internal motivation was quite high ($M = 6.88$, $SD = 1.54$), that is, participants were motivated by personal standards to suppress prejudiced thoughts. In contrast, external motivation was low ($M = 2.88$, $SD = 1.42$); thus, respondents exhibited a low tendency to display positive intergroup attitudes in response to social pressures. The difference from the central point of the scale (i.e., from 5) was reliable for both indexes: for internal motivation, $t(99) = 12.18$, $p < .001$; for external motivation, $t(99) = 14.86$, $p < .001$.

3.3 Stroop task

The Stroop effect was calculated with the same procedure used in Study 2 (see Chapter 3, paragraph 3.3). Interference scores ranged from -81.79 to 111.48 ($Mdn = 27.16$). Greater Stroop interference is reflected by higher scores.

In Hypothesis 1a, we predicted that Stroop interference would be worse in the two-groups condition and, eventually, in the dual identity condition, than in the remaining three conditions. A one-way ANOVA with experimental condition as independent variable did not yield significant effects, $F < 1$. Similarly, ANOVAs using latencies to congruent and incongruent trials separately did not reveal reliable effects due to conditions, $F_s < 1$. As in Study 2, we thought that, to the extent that our response window (i.e., 800 ms) was lower than that used by Richeson and Shelton (2003; i.e., 2000 ms), results could be found on correct answers to the Stroop task. Thus, as in Study 2 (Chapter 3), we calculated three additional indexes concerning the Stroop task: correct answers to congruent trials, correct answers to incongruent trials, total correct answers (which is the sum of the correct answers to congruent and incongruent trials). However, ANOVAs did not reveal any significant effect, $F_s < 1$. (Table 5). As can be noted in Table 5, however, the number of correct answers, for the three indexes, tended to be lower in the two-groups condition than in the other conditions. Thus, Hypothesis 1a did not receive support: the tendency to commit more errors in the two-groups condition than in the remaining conditions did not attain statistical significance.

In Hypothesis 1b, we hypothesized that implicit and/or explicit prejudice and internal and/or external motivation to avoid prejudice would predict worse performance in the Stroop task only in the two-groups and dual identity conditions (where group membership was salient). To test this hypothesis, hierarchical regression was applied. First, we created two dummy variables: for the first (F1), 1 was assigned to the two-groups and dual identity conditions, 0 to the remaining three conditions; for the second (F2), 1 was given to the separate individuals and one-group conditions, 0 to the other three conditions. For each dependent variable, two hierarchical regressions, each consisting of three phases, were calculated. The first regression was relative to the moderation of contact modes on the relationship between explicit and implicit prejudice and dependent variables:

Table 5. Correct answers to the Stroop test and corresponding *F*-values in the five experimental conditions (standard deviations are reported in parentheses).

Correct answers	Experimental conditions					<i>F</i>
	Separate individuals	Two-groups	One-group	Dual identity	Control	
Congruent trials	24.40 (7.10)	25.95 (5.16)	26.55 (3.82)	26.45 (3.59)	24.90 (5.58)	.68
Incongruent trials	10.00 (4.01)	11.10 (4.35)	10.50 (4.31)	11.30 (4.65)	11.20 (3.68)	.35
Total (congruent + incongruent)	34.40 (10.64)	37.05 (9.30)	37.05 (6.93)	37.75 (7.27)	36.10 (8.61)	.45

in the first phase, we examined the main effects of experimental conditions and of explicit and implicit prejudice; in the second phase, the two-way products were added; in the third phase, the effects of the three-way interactions were examined (implicit and explicit prejudice scores were centered prior to multiplication to avoid multicollinearity; see Jaccard et al., 1990). The two-way interactions are significant if the portion of variance absorbed by Model 2 is higher than that absorbed by Model 1; the three-way products are significant if the portion of variance absorbed by Model 3 is higher than that absorbed by Model 2. The second regression concerned moderation of the effects produced by internal and external motivation to avoid prejudice on outcome variables: procedure was the same used to calculate main and interactive effects of explicit and implicit prejudice; in this case, however, the indexes of explicit and implicit prejudice were replaced by the indexes of internal and external motivation to respond without prejudice (as for prejudice, scores were centered prior to the multiplication). Dependent variables were: Stroop interference, correct answers to congruent and to incongruent trials, total correct answers.¹⁶

When we assessed the effects of explicit and implicit prejudice, together with experimental conditions, neither the main effects nor the interactions were significant. When we tested the effects of the two motivations to avoid prejudice and experimental conditions, we obtained a reliable two-way interaction, internal motivation \times two-groups and dual identity conditions vs. separate individuals, one-group and control conditions, concerning correct answers to incongruent trials: $\beta =$

¹⁶ Separate regressions were conducted, in which, for each dependent variable, each of the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity) was tested against the control condition, with either (a) explicit and implicit prejudice or (b) internal and external motivation to avoid prejudice. Neither the main effects nor the two-way or the three-way products were significant for any of the outcome variables.

-.38, $p < .05$.¹⁷ This interaction increased only marginally the portion of variance explained, $F_{change}(5, 90) = 2.21, p = .06$. Consistent with predictions, internal motivation to respond without prejudice reduced the correct answers to incongruent trials in the two-groups and dual identity conditions, but not in the other three conditions (Table 6). This weak effect, however, is not sufficient to support Hypothesis 1b.

Table 6. Simple effects for the interaction between internal motivation to avoid prejudice and experimental conditions (correct answers to incongruent trials on the Stroop task).

Experimental condition	Correct answers to incongruent trials (Stroop task)		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups / Dual identity	-1.09*	.42	2.62
Average	.63	.69	.91
One-group / Separate individuals / Control	.63	1.06	.59

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups and dual identity conditions and 0 indicates the one-group, separate individuals and control conditions.

b = non standardized regression coefficients.

* $p < .05$.

3.4 Explicit measures

Proximal outgroup

Hypothesis 2a stated that the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity) would not produce differential effects on the evaluation of the Southern partner met during the winter survival task. Consistent with predictions, an ANOVA with the experimental condition as independent variable did not yield significant effects, $F(3, 76) = 2.04, ns$ (Table 7).¹⁸ Thus, as expected, the cooperative nature of the task produced equally favorable evaluations of the Southern partner, irrespective of categorization during contact.

¹⁷ The effect of regression was $F(9, 90) = 1.26, p < .28$.

¹⁸ An identical ANOVA, considering all the five levels of the experimental condition factor, did not produce significant effects, $F(4, 95) = 2.00, ns$.

Table 7. Means and *F*-values for the dependent variables in the five experimental conditions (standard deviations are reported in parentheses).

Dependent variable	Experimental conditions					<i>F</i>
	Separate individuals	Two-groups	One-group	Dual identity	Control	
Proximal outgroup evaluation	5.42*** (0.79)	5.48*** (0.90)	5.12*** (0.81)	5.75*** (0.73)	5.13*** (0.93)	2.04
Distal outgroup evaluation	5.15*** (0.89)	5.53*** (0.61)	4.88*** (0.75)	5.44*** (0.90)	4.86*** (0.68)	3.20*
Evaluative ingroup bias	.03 (0.72)	-.79*** (0.90)	-.07 (0.46)	-.35 (0.88)	-.26 (0.84)	3.35*
Calmness toward Southerners	4.52 (1.78)	4.72** (0.94)	4.35 (1.22)	4.78* (1.27)	4.71* (1.19)	.37
Anxiety toward Southerners	1.49*** (0.75)	1.48*** (0.72)	1.41*** (0.44)	1.48*** (0.53)	1.80*** (0.64)	1.20

Note. The *F*-value for proximal outgroup evaluation concerns differences between the four intergroup contact conditions, without considering the control condition.

Asterisks relative to dependent variables in the five experimental conditions indicate that the means differ from the central point of the scale, which is 4; the neutral point is 0 for evaluative ingroup bias.

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Then, we examined if predictor variables influenced proximal outgroup evaluation and if intergroup contact conditions moderated these effects. In Hypothesis 2b, we predicted that, to the extent that all contact conditions should produce equally favorable evaluations, they should not moderate the effects of prejudice – explicit and/or implicit – and of motivation to avoid prejudice – external and/or internal. To test this hypothesis, as for the Stroop task, hierarchical regression was applied. We created a variable (F1) where 1 was assigned to the separate individuals and one-groups conditions, 0 to the two-groups and dual identity conditions. Two regressions were performed: in the first, proximal outgroup evaluation was regressed on F1, explicit and implicit prejudice (Phase 1), the two-way products (Phase 2) and the three way interaction (Phase 3); the second regression was identical, except for the fact that internal and external motivation to respond without prejudice replaced implicit and explicit prejudice.¹⁹

¹⁹ For purpose of comparison, separate regressions were performed: each of the four intergroup contact conditions was tested against the control condition, with, as predictors, prejudice (explicit and implicit) or motivation to avoid prejudice (internal and external). Neither interaction indicating moderator effects of experimental conditions was significant. With the aim to provide a further test of our hypotheses, two regressions were calculated with the same procedure used to analyze effects of predictors on the Stroop task performance: two dummy variables were created; in the first (F1), 1

When predictors were experimental conditions, together with explicit and implicit prejudice (first regression), a main effect of explicit prejudice was found: as expected, explicit prejudice reduced outgroup evaluation, $\beta = -.26, p < .05$. Furthermore, a two-way interaction between experimental conditions and implicit prejudice emerged, $\beta = -.35, p < .05$. The interaction, however, increased only marginally the portion of variance explained, $F_{change}(3, 73) = 2.05, p < .12$. Analysis of simple effects did not reveal reliable effects of implicit prejudice depending on experimental conditions. However, there was a tendency for implicit prejudice to reduce outgroup evaluation in the separate individuals and one-group conditions, and to increase outgroup evaluation in the two-groups and dual identity conditions (Table 8). Thus, the more participants were implicitly prejudiced, the more they tended to benefit from the intergroup interaction and to positively evaluate the outgroup member encountered, but only if group membership was salient (that is, in the two-groups and dual identity conditions). These effects, however, did not attain statistical significance.

Table 8. Simple effects for the interaction between implicit prejudice and experimental conditions (proximal outgroup evaluation).

Experimental condition	Proximal outgroup evaluation		
	<i>b</i>	<i>SE</i>	<i>t</i>
One-group / Separate individuals	-.45 [†]	.28	1.59
Average	.81 ^{††}	.43	1.89
Two-groups / Dual identity	.74	.68	1.08

Note. Experimental condition is represented by a dummy variable where 1 indicates the one-group and separate individuals conditions, and 0 indicates the two-groups and dual identity conditions.

b = non standardized regression coefficients.

[†] $p < .12$. ^{††} $p < .07$.

When internal and external motivation to respond without prejudice replaced explicit and implicit prejudice in the regression equation (second regression), neither the main effects nor the interactions were significant.

was assigned to the two-groups and dual identity conditions, 0 to the remaining three conditions; in the second (F2), 1 was given to the separate individuals and one-groups conditions, 0 to the other three conditions. Then, main effects of dummy variables and (a) explicit and implicit prejudice or (b) internal and external motivation to respond without prejudice, the two-way and three-way products were calculated. However, analyses did not reveal any reliable effect.

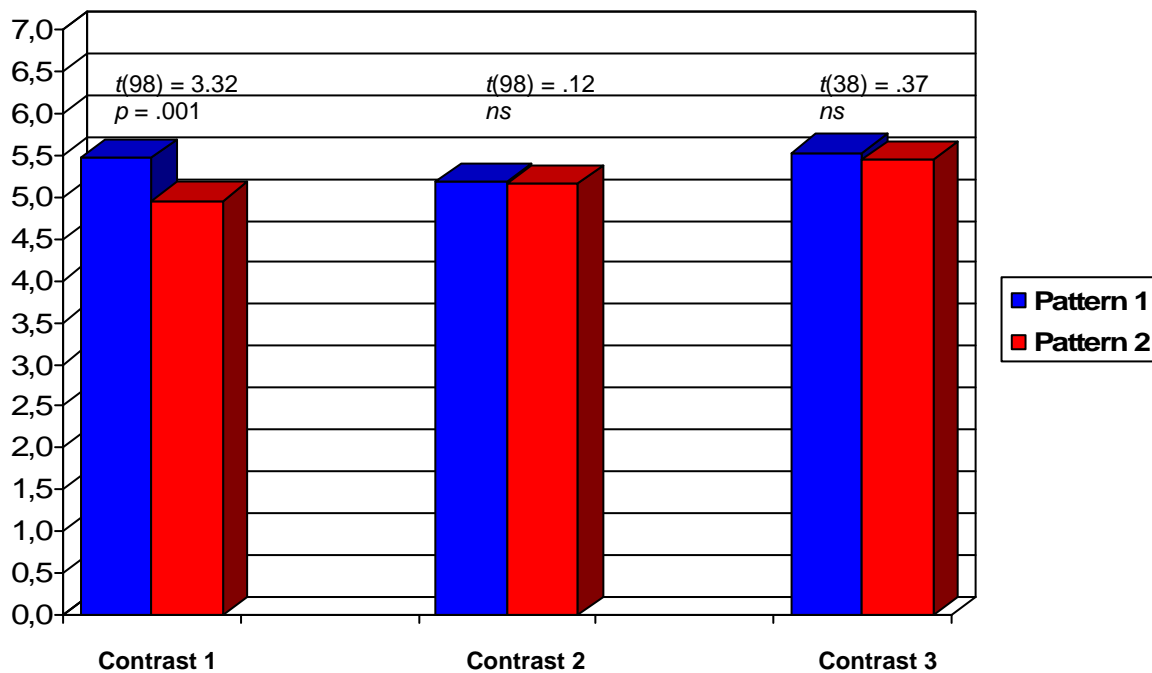
We can conclude that Hypothesis 2b received support: prior levels of explicit prejudice negatively affected outgroup evaluation; the effects of explicit and/or implicit prejudice and of internal and/or external motivation to avoid prejudice on proximal outgroup evaluation were not moderated by experimental conditions.

Distal outgroup

In Hypothesis 3a, we predicted that relations with Southerners would be more positive in the two-groups and dual identity conditions, where group membership is salient, than in the other three conditions. However, we acknowledged the possibility that one-group and dual identity strategies would be the two most favoring generalization (see Gonzalez & Brown, 2003). To test this hypothesis, we adopted two complementary strategies: first, a series of ANOVAs with experimental condition as independent variable were performed on our dependent variables (outgroup evaluation, evaluative ingroup bias, calmness and anxiety felt for Southerners, outgroup stereotypes). Three planned orthogonal contrasts were calculated when significant effects emerged: the first contrast (Contrast 1) compared the two-groups and dual identity conditions with the combination of the other three conditions (i.e., separate individuals, one-group, control); the second contrast (Contrast 2) compared the one-group and dual identity conditions with the other three conditions; the final contrast (Contrast 3) compared the two-groups with the dual identity condition.

As can be noted in Table 7, the main effect of condition was significant for outgroup evaluation, $F(4, 95) = 3.20, p < .05$. Thus, generalization on this measure varied among conditions. To test our hypotheses, the three planned contrasts were conducted. Results concerning analytic contrasts on outgroup evaluation are presented in Figure 1. Contrast 1, where two-groups and dual identity conditions were compared with the other three conditions, showed that, consistent with predictions, outgroup evaluation, though positive in all conditions, was higher in the two-groups and dual identity conditions ($M = 5.48$) than in the separate individuals, one-group and control conditions ($M = 4.96$), $t(98) = 3.32, p = .001$ (Figure 1). In Contrast 2, we compared the one-group and dual identity conditions with the remaining three conditions: the difference was not significant, indicating that the former conditions ($M = 5.18$) did not produce more generalization than the latter ($M = 5.16$), $t(98) = .12, ns$ (Figure 1). Finally, results from Contrast 3, comparing the two-groups with the dual identity condition, showed that outgroup evaluation was equally high in the two conditions ($M = 5.53$, for the two-groups condition; $M = 5.44$, for the dual identity condition), $t(38) = .37, ns$ (Figure 1). It is noteworthy that, in all conditions, scores concerning outgroup evaluation were very positive and higher than the neutral point of the scale (Table 7).

Figure 1. Analytic contrasts performed on the measure of outgroup evaluation.



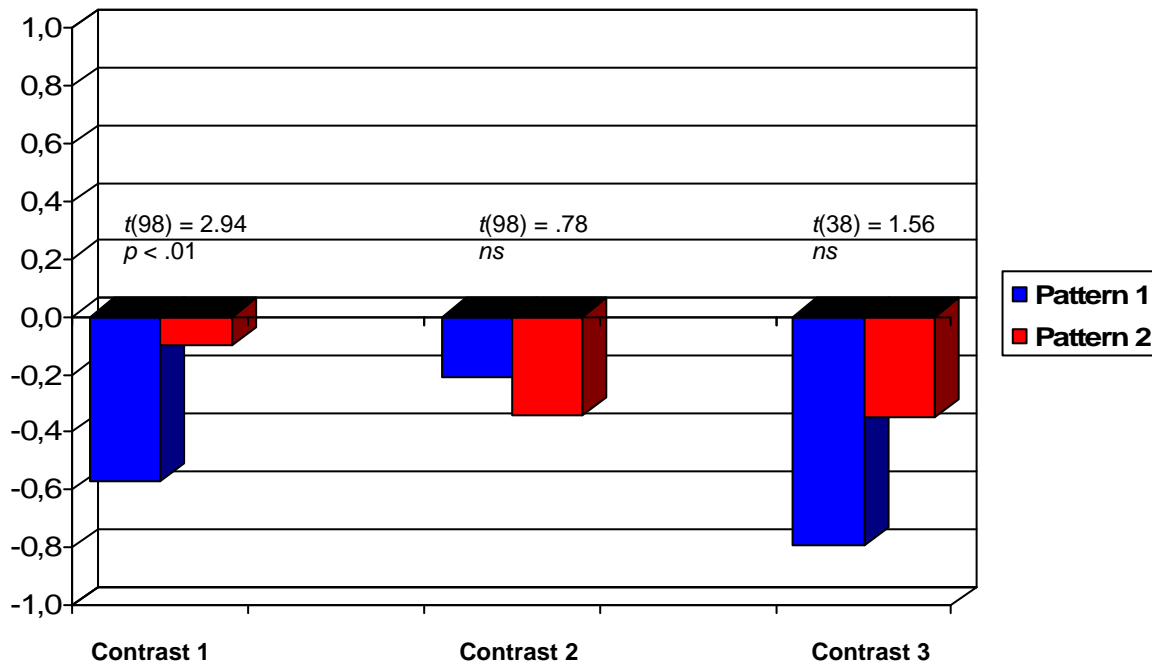
Note. For Contrast 1: Pattern 1 corresponds to the combination of two-groups and dual identity conditions; Pattern 2 refers to the combination of separate individuals, one-group and control conditions. For Contrast 2: Pattern 1 is relative to the combination of one-group and dual identity conditions; Pattern 2 corresponds to the combination of separate individuals, two-groups and control conditions. For Contrast 3: Pattern 1 and Pattern 2 corresponds to the two-groups and dual identity conditions, respectively.

On the seven-step scale, higher scores correspond to a more positive outgroup evaluation.

A significant effect of condition was obtained also for the index of evaluative ingroup bias, $F(4, 95) = 3.35, p < .05$. As for outgroup evaluation, the three planned contrasts were calculated. Results concerning analytic contrasts on evaluative ingroup bias are presented in Figure 2. As expected, Contrast 1 showed that bias was lower in the two-groups and dual identity conditions ($M = -.57$) than in the other three conditions ($M = -.10$), $t(98) = 2.94, p < .01$ (Figure 2). Furthermore, bias differed from 0 in the two-groups and dual identity conditions, $t(39) = 3.98, p < .001$, indicating outgroup favoritism, but not in the combination of the separate individuals, one-group and control conditions, $t(59) = 1.12, ns$. Contrast 2, replicating results obtained for outgroup evaluation, revealed that evaluative ingroup bias was not lower in the one-group and dual identity conditions ($M = -.21$) than in the other three conditions ($M = -.34$), $t(98) = .78, ns$ (Figure 2). Contrast 3 indicated that bias in the two-groups condition ($M = -.79$) did not differ from bias in the dual identity condition ($M = -.35$), $t(38) = 1.56, ns$ (Figure 2). It is noteworthy that the difference from 0 was significant in the two-groups condition, $t(19) = 3.94, p = .001$, but only marginal in the dual identity condition, $t(19) = 1.78, p < .10$ (Table 7). It is important to note also that, though

participants displayed outgroup favoritism only in the two-groups and dual identity conditions, bias was virtually eliminated in the other three conditions.

Figure 2. Analytic contrasts performed on the measure of evaluative ingroup bias.



Note. For Contrast 1: Pattern 1 corresponds to the combination of two-groups and dual identity conditions; Pattern 2 refers to the combination of separate individuals, one-group and control conditions. For Contrast 2: Pattern 1 is relative to the combination of one-group and dual identity conditions; Pattern 2 corresponds to the combination of separate individuals, two-groups and control conditions. For Contrast 3: Pattern 1 and Pattern 2 corresponds to the two-groups and dual identity conditions, respectively. Higher scores indicate stronger evaluative ingroup bias.

No significant effects of experimental condition emerged for calmness and anxiety felt for Southerners (Table 7) and for outgroup stereotypes (Table 9), $F_s < 1.94$. It should be noted that calmness was generally high and anxiety very low in all conditions (see Table 7). Moreover, participants strongly endorsed both positive and negative stereotypes of Southerners: scores were higher than the neutral point, albeit non-significantly in three cases (Table 9). It is interesting to note that the difference from the neutral point for the two negative traits (mafia member, intrusive) was not reliable only in the dual identity condition. In other words, when a dual identity representation was salient, negative stereotypical traits were not associated to Southerners.

Hypothesis 3a was partially supported: outgroup evaluation was higher and evaluative ingroup bias was lower when respective identities were salient, that is, in the two-groups and dual identity conditions, than when group membership was not salient (separate individuals and one-

group conditions) or when contact was with an ingroup member (control condition). However, no differences due to conditions were found with respect to intergroup emotions and outgroup stereotypes.

Table 9. Means and *F*-values for the outgroup stereotypes in the five experimental conditions (standard deviations are reported in parentheses).

Outgroup stereotype	Experimental conditions					<i>F</i>
	Separate individuals	Two-groups	One-group	Dual identity	Control	
Hospitable	6.60*** (0.75)	6.65*** (0.59)	6.45*** (0.69)	6.55*** (0.51)	6.30*** (0.86)	.80
Expansive	6.00*** (0.97)	6.10*** (0.72)	6.25*** (0.72)	6.35*** (0.74)	6.30*** (0.66)	.72
Mafia member	4.35 (1.09)	4.40* (0.68)	4.65* (1.09)	4.25 (1.16)	4.60** (0.94)	.57
Intrusive	4.95** (1.36)	4.50* (1.05)	5.30*** (1.08)	4.55 [†] (1.19)	5.10*** (0.85)	1.93

Note. Asterisks relative to outgroup stereotypes in the five experimental conditions indicate that the means differ from the neutral point of the scale, which is 4.

[†] $p < .06$. * $p < .05$. ** $p \leq .01$. *** $p < .001$.

Finally, in Hypothesis 3b, we predicted that prejudice – explicit and/or implicit – and external motivation to avoid prejudice would negatively affect intergroup relations; the opposite was expected for internal motivation. Contact modes, however, should moderate these effects: negative effect of external motivation to respond without prejudice and of prejudice – explicit and/or implicit – should be neutralized (weak form) or even reversed (strong form) in the four intergroup contact conditions (i.e., separate individuals, two-groups, one-group, dual identity), and, especially, in the two-groups and dual identity conditions; internal motivation should be predictive of more positive intergroup perceptions in the four contact conditions (especially, in the two-groups and dual identity conditions). To test this hypothesis, hierarchical regression was applied. The procedure was the same used to test Hypothesis 1b (see this Chapter, paragraph 3.3). Criterion variables were: calmness, anxiety, outgroup evaluation, evaluative ingroup bias, the four stereotypical traits (i.e., hospitable, expansive, lazy, mafia member).

As can be noted in Table 10 and Table 11 (Step 1), contact conditions, when not associated with the control condition, had positive effects. As expected, explicit prejudice had only negative

Table 10. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between explicit and implicit prejudice and dependent variables (standardized regression coefficients).

	Dependent variables							
	Distal calmness	Distal anxiety	Outgroup evaluation	Evaluative ingroup bias	Trait "Hospitable"	Trait "Expansive"	Trait "Mafia member"	Trait "Intrusive"
Step 1								
A Two-groups / Dual identity	-.01	-.25 ^{††}	.37***	-.21	.22	-.03	-.15	-.24
B Separate individuals / One-group	-.06	-.31*	.16	.14	.20	-.10	-.06	-.01
C Implicit prejudice	.21*	-.01	.04	.24*	-.02	-.17	.17	-.08
D Explicit prejudice	-.29**	.25*	-.48***	.12	-.29**	-.14	.14	.15
<i>R</i> ²	.11	.11	.33	.18	.11	.06	.07	.09
<i>F</i>	3.00*	2.81*	11.51***	5.09***	2.95*	1.64	1.72	2.29 [†]
<i>df</i>	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)
Step 2								
A Two-groups / Dual identity	.03	-.28*	.33**	-.19	.23	-.00	-.14	-.24
B Separate individuals / One-group	-.04	-.32*	.13	.16	.21	-.07	-.04	-.01
C Implicit prejudice	.09	-.03	.07	.25	.64*	.17	-.06	.00
D Explicit prejudice	-.23	.16	-.43	.12	-.78**	-.55	-.07	.09
A × C	-.06	-.02	.02	.10	-.38 ^{††}	-.18	.12	.02
A × D	-.10	.07	-.10	.06	.41 [†]	.41 [†]	.23	.11
B × C	.22	.03	-.09	-.06	-.54*	-.26	.26	-.12
B × D	.04	.04	.01	-.02	.26	.16	.09	-.03
C × D	.09	-.12	-.10	.13	.02	.02	-.05	-.01
<i>R</i> ²	.18	.12	.35	.20	.18	.11	.12	.11
<i>F</i>	2.15*	1.37	5.35***	2.58*	2.13*	1.29	1.29	1.24
<i>df</i>	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)
<i>F</i> _{change}	1.41	.29	.62	.65	1.43	1.00	.95	.44
<i>df</i>	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)

Table 10 cont. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between explicit and implicit prejudice and dependent variables (standardized regression coefficients).

	Dependent variables							
	Distal calmness	Distal anxiety	Outgroup evaluation	Evaluative ingroup bias	Trait "Hospitable"	Trait "Expansive"	Trait "Mafia member"	Trait "Intrusive"
Step 3								
A Two-groups / Dual identity	.11	-.37*	.31*	-.24	.35*	.05	-.07	-.22
B Separate individuals / One-group	.03	-.44**	.12	.10	.34*	-.05	-.01	-.00
C Implicit prejudice	.22	-.19	.04	.17	.83**	.25	.04	.03
D Explicit prejudice	-.24	.16	-.43	.12	-.78**	-.55 [†]	-.07	.09
A × C	-.16	.07	.04	.15	-.49*	-.26	.02	-.01
A × D	-.12	.07	-.10	.06	.41 ^{††}	.39	.21	.10
B × C	.13	.13	-.07	.00	-.67**	-.32	.18	-.15
B × D	.05	.05	.01	-.02	.25	.18	.11	-.02
C × D	.38	-.47	-.16	-.06	.44	.19	.17	.06
A × C × D	-.30	.21	.06	.16	-.30	-.26	-.32	-.10
B × C × D	-.12	.30	.02	.13	-.32	.02	.01	.01
<i>R</i> ²	.20	.14	.35	.21	.20	.15	.17	.12
<i>F</i>	1.99*	1.34	4.30***	2.13*	2.02*	1.42	1.59	1.05
<i>df</i>	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)
<i>F</i> change	1.24	1.20	.06	.28	1.42	1.91	2.69	.31
<i>df</i>	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)

Note. Two-groups / Dual identity = two-groups and dual identity conditions vs. separate individuals, one-group and control conditions; Separate individuals / One-group = separate individuals and one-group conditions vs. two-groups, dual identity and control conditions. For the dependent variables, higher ratings mean: stronger calmness and anxiety felt toward the outgroup; higher outgroup evaluation, evaluative ingroup bias; stronger endorsement of the traits "hospitable," "expansive," "mafia member," "intrusive."
[†]*p* ≤ .07; ^{††}*p* ≤ .06; **p* < .05; ***p* ≤ .01; ****p* ≤ .001.

Table 11. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between internal and external motivation to respond without prejudice and dependent variables (standardized regression coefficients).

	Dependent variables							
	Distal calmness	Distal anxiety	Outgroup evaluation	Evaluative ingroup bias	Trait "Hospitable"	Trait "Expansive"	Trait "Mafia member"	Trait "Intrusive"
Step 1								
A Two-groups / Dual identity	-.08	-.17	.34**	-.18	.16	-.05	-.14	-.21
B Separate individuals / One-group	-.17	-.22	.08	.14	.13	-.11	-.07	.03
C Internal motivation	.28**	-.33***	.37***	-.15	.20*	-.01	-.27**	-.18
D External motivation	-.28**	.20*	-.04	-.02	-.14	.00	-.11	.09
R^2	.20	.22	.25	.11	.10	.01	.08	.11
F	5.83***	6.88***	7.86***	3.05*	2.53*	.19	2.11	2.94*
df	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)	(4, 95)
Step 2								
A Two-groups / Dual identity	-.04	-.22	.33**	-.14	.06	-.10	-.18	-.17
B Separate individuals / One-group	-.14	-.25 ^{††}	.07	.17	.02	-.14	-.10	.09
C Internal motivation	.06	-.46 ^{††}	.31	-.24	.20	.13	-.41	.27
D External motivation	-.15	-.00	-.06	.16	-.71***	-.21	-.34	.43*
A × C	.10	.05	.11	.05	-.10	-.12	.10	-.40*
A × D	-.03	.05	-.06	-.10	.34*	.01	.08	-.36*
B × C	.22	.16	-.04	.07	.07	-.08	.15	-.30
B × D	-.16	.26	.04	-.20	.54***	.32	.28	-.20
C × D	-.00	-.00	-.11	-.06	-.19 ^{††}	.08	.06	.06
R^2	.22	.26	.29	.13	.26	.06	.11	.21
F	2.90**	3.45***	4.00***	1.52	3.56***	.66	1.22	2.61**
df	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)	(9, 90)
F_{change}	.65	.78	.93	.38	4.06**	1.03	.54	2.20 [†]
df	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)	(5, 90)

Table 11 cont. Hierarchical regression evaluating the moderator effect of experimental conditions on the relation between internal and external motivation to respond without prejudice and dependent variables (standardized regression coefficients).

	Dependent variables							
	Distal calmness	Distal anxiety	Outgroup evaluation	Evaluative ingroup bias	Trait "Hospitable"	Trait "Expansive"	Trait "Mafia member"	Trait "Intrusive"
Step 3								
A Two-groups / Dual identity	-.04	-.18	.31*	-.18	.07	-.09	-.20	-.15
B Separate individuals / One-group	-.17	-.30*	.00	.23	-.04	-.15	-.09	.15
C Internal motivation	-.01	-.47 ^{††}	.14	-.24	.13	.13	-.43	.44
D External motivation	-.16	-.00	-.08	.17	-.72***	-.21	-.34	.46*
A × C	.15	.08	.22	.01	-.04	-.11	.10	-.51**
A × D	-.04	-.01	-.06	-.04	.31*	-.00	.10	-.37*
B × C	.24	.09	.02	.16	.06	-.09	.18	-.37
B × D	-.18	.18	-.01	-.10	.48**	.30	.29	-.17
C × D	.13	.01	.22	-.06	-.06	.08	.10	-.28
A × C × D	-.04	.22	-.11	-.26	.06	.04	-.07	.15
B × C × D	-.17	-.21	-.41*	.23	-.26	-.04	-.00	.39 ^{††}
<i>R</i> ²	.23	.33	.33	.23	.30	.06	.11	.24
<i>F</i>	2.43*	3.91***	3.90***	2.34*	3.39***	.55	1.00	2.54**
<i>df</i>	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)	(11, 88)
<i>F</i> change	.45	4.69*	2.76 [†]	5.37**	2.22	.14	.15	1.98
<i>df</i>	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)	(2, 88)

Note. Two-groups / Dual identity = two-groups and dual identity conditions vs. separate individuals, one-group and control conditions; Separate individuals / One-group = separate individuals and one-group conditions vs. two-groups, dual identity and control conditions. For the dependent variables, higher ratings mean: stronger calmness and anxiety felt toward the outgroup; higher outgroup evaluation, evaluative ingroup bias; stronger endorsement of the traits "hospitable," "expansive," "mafia member," "intrusive."
[†]*p* < .07. ^{††}*p* < .06. **p* < .05. ***p* ≤ .01. ****p* ≤ .001.

effects (Table 10; Step 1): it reduced calmness felt toward Southerners ($\beta = -.29, p < .01$), outgroup evaluation ($\beta = -.48, p < .001$), the endorsement of the trait “hospitable” ($\beta = -.29, p < .01$), and it increased anxiety toward the outgroup ($\beta = .25, p < .05$). Implicit prejudice had two effects: it increased evaluative ingroup bias ($\beta = .24, p < .05$) and, unexpectedly, calmness toward Southerners ($\beta = .21, p < .05$) (see Table 10; Step 1). Consistent with predictions, internal and external motivation to avoid prejudice had opposite effects (Table 11; Step 1): external motivation reduced calmness ($\beta = -.28, p < .01$) and increased anxiety ($\beta = .20, p < .05$) toward Southerners. In contrast, internal motivation increased calmness ($\beta = .28, p < .01$) and reduced anxiety ($\beta = -.33, p = .001$) felt for the whole outgroup. Moreover, it increased outgroup evaluation ($\beta = .37, p < .001$) and the endorsement of the trait “hospitable” ($\beta = .20, p < .05$), and reduced the endorsement of the traits “mafia member” ($\beta = -.27, p = .01$)²⁰ and intrusive ($\beta = -.18, p < .09$; marginal effect).

With respect to the moderator effects of group representations when explicit and implicit prejudice were considered, we obtained significant two-way interactions only with respect to the trait “hospitable” (Table 10; Step 2): two-groups and dual identity conditions vs. separate individuals, one-group and control conditions \times implicit prejudice, $\beta = -.38, p < .06$ (marginal effect); two-groups and dual identity conditions vs. separate individuals, one-group and control conditions \times explicit prejudice, $\beta = .41, p < .07$ (marginal effect); separate individuals and one-group conditions vs. two-groups, dual identity and control conditions \times implicit prejudice, $\beta = -.54, p < .05$. The three interactions, however, did not increase the portion of variance explained, $F_{change}(5, 90) = 1.43, ns$. Decomposition of the effects of the two interactions concerning implicit prejudice did not yield any significant result.

Table 12. Simple effects for the interaction between explicit prejudice and experimental conditions (trait “hospitable”).

Experimental condition	Trait “hospitable”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups / Dual identity	-.15	.14	1.00
Average	-.69*	.26	2.69
One-group / Separate individuals / Control	-.69 [†]	.39	1.78

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups and dual identity conditions and 0 indicates the one-group, separate individuals and control conditions.

b = non standardized regression coefficients.

* $p < .01$. [†] $p < .08$.

²⁰ The effect of regression, however, was marginally significant, $F(4, 95) = 2.11, p < .09$.

As can be seen in Table 12, analysis of simple effects of the interaction concerning explicit prejudice showed, consistent with the weak form of Hypothesis 3b, the tendency of affective prejudice to reduce the endorsement of the trait hospitable only in the separate individuals, one-group and control conditions (the tendency was almost null in the two-groups and dual identity conditions).

The three-way interactions concerning explicit and implicit prejudice were not significant for any of the outcome variables (Table 10; Step 3).

Concerning moderation of contact modes on internal and external motivation to respond without prejudice, we obtained five significant two-way interactions concerning two of our dependent variables (see Table 11; Step 2). Three two-way interactions concerned the trait “hospitable”: two-groups and dual identity conditions vs. separate individuals, one-group and control conditions \times external motivation, $\beta = .34$, $p < .05$; separate individuals and one-group conditions vs. two-groups, dual identity and control conditions \times external motivation, $\beta = .54$, $p = .001$; internal motivation \times external motivation, $\beta = -.19$, $p < .06$ (marginal effect). The three interactions increased significantly the portion of variance explained, $Fchange(5, 90) = 4.06$, $p < .01$. Consistent with predictions, decomposition of the effects showed that external motivation to respond without prejudice reduced the endorsement of the trait “hospitable” when separate individuals and one-group (Table 13) or two-groups and dual identity conditions (Table 14) were associated with the control condition. Thus, negative effects of external motivation were neutralized in the four intergroup contact conditions. Analysis of simple effects concerning the last significant two-way interaction were not very informative: external motivation reduced the endorsement of the trait “hospitable” for all levels of internal motivation (Table 15).

Table 13. Simple effects for the interaction between external motivation to avoid prejudice and experimental conditions (trait “hospitable”).

Experimental condition	Trait “hospitable”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups / Dual identity	-.04	.06	.58
Average	-.34**	.09	3.75
One-group / Separate individuals / Control	-.34*	.14	2.44

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups and dual identity conditions and 0 indicates the one-group, separate individuals and control conditions.

b = non standardized regression coefficients.

* $p < .05$. ** $p < .001$.

Table 14. Simple effects for the interaction between external motivation to avoid prejudice and experimental conditions (trait “hospitable”).

Experimental condition	Trait “hospitable”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Common identity / Separate individuals	.05	.06	.81
Average	-.34**	.09	3.75
Two-groups/ Dual identity / Control	-.34*	.14	2.47

Note. Experimental condition is represented by a dummy variable where 1 indicates the one-group and separate individuals conditions and 0 indicates the two-groups, dual identity and control conditions.

b = non standardized regression coefficients.

p* < .05. *p* < .001.

Table 15. Simple effects for the interaction between external and internal motivation to avoid prejudice (trait “hospitable”).

Internal motivation to avoid prejudice	Trait “hospitable”		
	<i>b</i>	<i>SE</i>	<i>t</i>
High	-.38*	.09	4.17
Average	-.34*	.09	3.75
Low	-.31*	.09	3.40

Note. The mean score of internal motivation to avoid prejudice is 6.88; high score, low score of internal motivation indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .001.

The other two significant two-way interactions were relative to the trait “intrusive” (Table 11; Step 2): two-groups and dual identity conditions vs. separate individuals, one-group and control conditions × internal motivation, $\beta = -.40$, $p < .05$; two-groups and dual identity conditions vs. separate individuals, one-group and control conditions × external motivation, $\beta = -.36$, $p < .05$. The two interactions increased marginally the portion of variance explained, $F_{change}(5, 90) = 2.20$, $p < .07$. Analyses of simple effects showed that, as expected, internal (Table 16) and, more interestingly, external (Table 17, marginal effect) motivation to avoid prejudice, reduced the endorsement of the trait “intrusive” in the two-groups and dual identity conditions, but not in the

remaining three conditions, where the tendency was to increase the endorsement of this negative stereotype.

Table 16. Simple effects for the interaction between internal motivation to avoid prejudice and experimental conditions (trait “intrusive”).

Experimental condition	Trait “intrusive”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups / Dual identity	-.30*	.11	2.77
Average	.20	.18	1.11
One-group / Separate individuals / Control	.20	.27	.73

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups and dual identity conditions and 0 indicates the one-group, separate individuals and control conditions.

b = non standardized regression coefficients.

**p* < .01.

Table 17. Simple effects for the interaction between external motivation to avoid prejudice and experimental conditions (trait “intrusive”).

Experimental condition	Trait “intrusive”		
	<i>b</i>	<i>SE</i>	<i>t</i>
Two-groups / Dual identity	-.20 [†]	.11	1.79
Average	.34*	.16	2.20
One-group / Separate individuals / Control	.34	.24	1.41

Note. Experimental condition is represented by a dummy variable where 1 indicates the two-groups and dual identity conditions and 0 indicates the one-group, separate individuals and control conditions.

b = non standardized regression coefficients.

[†]*p* < .08.**p* < .05.

Finally, two significant three-way interactions emerged, with respect to the measure of outgroup evaluation and to the endorsement of the trait “intrusive” (Table 11; Step 3): for outgroup evaluation, separate individuals and one-group conditions vs. two-groups, dual identity and control conditions × internal motivation × external motivation, $\beta = -.41$, $p < .05$; for the trait “intrusive,” separate individuals and one-group conditions vs. two-groups, dual identity and control conditions × internal motivation × external motivation, $\beta = .39$, $p < .06$ (marginal effect). The first interaction

(outgroup evaluation) marginally increased the portion of variance explained, $F_{change}(2, 88) = 2.76, p < .07$; the second interaction (trait “intrusive”) did not increase the portion of variance explained, $F_{change}(2, 88) = 1.98, ns$. Analyses of simple effects revealed that internal motivation increased outgroup evaluation and reduced the endorsement of the trait “intrusive” only for low levels of external motivation in the separate individuals and one-group conditions, but not in the remaining conditions (Table 18 and Table 19). Thus, internal motivation was effective in improving the evaluation of Southerners and reducing the associated stereotype to be intrusive people only for those who were not concerned by social pressure motives to reduce prejudiced attitudes, when the one-group or separate individuals representations were salient.

Table 18. Simple effects for the interaction between internal and external motivation to avoid prejudice and experimental conditions (outgroup evaluation).

		Outgroup evaluation		
Experimental condition	External motivation to avoid prejudice	<i>b</i>	<i>SE</i>	<i>t</i>
Common identity / Separate individuals	High	-.10	.13	.79
	Low	.27*	.07	3.72
Average	Average	.07	.13	.58
Two-groups/ Dual identity / Control	High	.20	.13	1.53
	Low	-.05	.21	.24

Note. Experimental condition is represented by a dummy variable where 1 indicates the one-group and separate individuals conditions and 0 indicates the two-groups, dual identity and control conditions. The mean score of external motivation to avoid prejudice is 2.88; high score, low score of explicit prejudice indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

* $p < .001$.

Hypothesis 3b received only partial support: as expected, prejudice – especially, explicit prejudice – and external motivation to avoid prejudice negatively affected intergroup relations, whereas internal motivation had opposite effects. However, we found moderator effects of experimental conditions consistent with predictions²¹ only for three dependent variables: outgroup evaluation and outgroup stereotypical traits (hospitable, intrusive)²².

²¹ To test if one-group and dual identity conditions, considered together, moderated the effects of prejudice and motivation to avoid prejudice on dependent variables, we conducted separate analyses. The procedure was the same used to test Hypothesis 1b and Hypothesis 3b. In this case, however, two different dummy variables were created: in the first, 1 was assigned to the separate individuals and two-groups conditions, 0 to the one-group, dual identity and control conditions; in the second, 1 was given to the one-group and dual identity conditions, 0 to the remaining three conditions. We did not obtain any significant interaction indicating that moderation effects produced by the

Table 19. Simple effects for the interaction between internal and external motivation to avoid prejudice and experimental conditions (trait “intrusive”).

		Trait “intrusive”		
Experimental condition	External motivation to avoid prejudice	<i>b</i>	<i>SE</i>	<i>t</i>
Common identity / Separate individuals	High	.29	.20	1.49
	Low	-.64*	.12	5.10
Average	Average	.33	.19	1.70
Two-groups/ Dual identity / Control	High	.37	.20	1.92
	Low	.03	.32	.88

Note. Experimental condition is represented by a dummy variable where 1 indicates the one-group and separate individuals conditions and 0 indicates the two-groups, dual identity and control conditions. The mean score of external motivation to avoid prejudice is 2.88; high score, low score of explicit prejudice indicate a standard deviation above and a standard deviation below the mean.

b = non standardized regression coefficients.

**p* < .001.

3.5 Potential effects of previous contact with Southerners

It was conceivable that the degree of previous contact affected our outcome measures. More frequent contact, in fact, could be associated to less anxiety during the interaction (Paolini et al., 2006; Stephan & Stephan, 1985), thus potentially influencing results concerning performance in the Stroop task, and to more positive intergroup attitudes and emotions (Pettigrew & Tropp, 2006). Previous contact was generally high. Furthermore, it differed between conditions (Table 4).

To the extent that different degrees of previous contact in the five experimental conditions might influence our results, we decided to replicate regression analyses by including previous contact as a covariate. In general, contact affected responses on explicit measures, so that higher degrees of previous contact were associated with more positive intergroup perceptions. However, results obtained were basically the same as those presented above and were not weakened by the introduction of previous contact as a covariate.

combination of the one-group and dual identity conditions were more positive than those obtained by associating the separate individuals and two-groups conditions.

²² To provide a more analytic test of our hypotheses, we conducted separate regression analyses, where each intergroup contact condition (i.e., separate individuals, two-groups, one-group, dual identity) was compared to the control condition, together with (a) implicit and explicit prejudice, or (b) internal and external motivation to avoid prejudice. Results were consistent with those obtained by aggregating the separate individuals and two-groups conditions with the one-group and dual identity conditions, respectively. Thus, we decided to present the most parsimonious solution.

4. Discussion

The present study was designed to replicate and extend results obtained in Study 2 (see Chapter 3) by using a different experimental manipulation. We compared four contact models: the decategorization model (Brewer & Miller, 1984), the intergroup contact theory (Brown & Hewstone, 2005), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000). The intergroup relationship between Northerners and Southerners was considered. Northern psychology students were allocated to one of five experimental conditions. In four conditions, participants interacted with a Southern confederate to work on a cooperative task: in the separate individuals condition, salience of personal differences was enhanced; in the two-groups and one-group conditions, the group memberships of Northerners and Southerners or that of psychologists, respectively, were made salient; identities of Northern and Southern psychologists were salient in the dual identity condition. Finally, in the control condition, the interaction was with an ingroup member (i.e., a Northern confederate); in this case, attention was given to personal differences.

Additional variables not considered in Study 2 were introduced. First of all, internal and external motivation to respond without prejudice (Plant & Devine, 1998) were used as predictor variables, in addition to explicit and implicit prejudice. Both variables proved to be useful to predict intergroup attitudes. Moreover, to the extent that external and internal motivation to avoid prejudice require self-regulation to suppress discriminatory thoughts, they could affect cognitive performance, as measured by the Stroop task. Second, we considered the evaluation of the proximal outgroup, in addition to measures relative to the whole outgroup. Contact modes, in fact, may differently influence perceptions of known and unknown outgroup members and moderate the effects of our predictor variables.

First, it is necessary to discuss the manipulation checks. The cooperative task was perceived as equally cooperative and pleasant in the five experimental conditions and was structured, in each session, between one participant and one confederate sharing the same status. Moreover, typicality of the confederate partner was not different between conditions. Thus, our results can be attributed reasonably to salience of diverse group representations, rather than to different perceptions of the contact situation. Our manipulation checks converge indicating that group representations were activated in the different conditions as intended. The only exception was represented by the two-groups condition, where participants selected the one-group representation as the most salient during the interaction. However, ratings of the two-groups representation were above the central point of the scale (though not significantly) only in the two-groups condition and were significantly higher in this than in the other conditions. Moreover, the cooperativeness of the task may have

induced participants to feel like a single group (one-group perceptions were from moderate to high in all conditions), including subgroups. Coherently with this explanation, in the two-groups condition, participants rated dual identity perceptions (which include two subgroups within a superordinate identity) as stronger than the other representations. The difficulty to activate a two-groups representation during a cooperative task is well known in contact studies, as demonstrated, for instance, by Gonzalez and Brown (2003). However, we can be reasonably confident that our manipulation worked as intended.

Our first two hypotheses concerned cognitive impairment: we predicted that performance in the Stroop task would be lower in the two-groups condition than in the remaining conditions (Hypothesis 1a) and that prejudice – explicit and/or implicit – and motivation to avoid prejudice – internal and/or external – would predict decreased performance only in the two-groups and dual identity conditions, where group membership was salient (Hypothesis 1b). Our first hypothesis was not confirmed: performance in the Stroop task did not differ between conditions with respect to indexes based on response times or correct answers. However, means concerning correct answers were in the predicted direction: errors were more frequent in the two-groups than in the remaining conditions. It is possible that weak effects obtained were due to the cooperative atmosphere during the group task. Cooperation may have reduced perceptions of anxiety and uncertainty following intergroup contact; low levels of anxiety and uncertainty, in turn, did not produce heightened self-regulation concerns, thus not causing pronounced cognitive impairment. This explanation is supported by findings on perceptions of anxiety during the winter survival task: anxiety was low and, contrary to expectations, was not higher in the two-groups condition than in the other conditions. Moreover, cooperative contact might have improved positive emotions, which, as found by Tice and colleagues (2007), can replenish cognitive resources after depletion. However, though non significantly different, means indicated that the intergroup interaction, even in a cooperative setting with an equal status outgroup member, produced a slightly reduced cognitive performance when a two-groups representation was salient, whereas separate individuals, one-group and dual identity strategies limited impairment to levels of the control condition, where contact was with an ingroup member. It is noteworthy that performance was not reduced in the dual identity condition, where group membership was still salient: the superordinate component of the dual identity, thus, counterbalanced negative effects caused by salience of respective identities.

Also Hypothesis 1b was not supported: experimental conditions did not moderate the effects of explicit and implicit prejudice on cognitive performance. We found only a marginal interaction concerning internal motivation to avoid prejudice (regression, however, was not significant): as expected, internal motivation reduced the number of correct answers to incongruent trials only in

the two-groups and dual identity conditions. This weak effect supports our contention that people with high tendencies to suppress prejudiced thoughts, accordingly to their personal values, suffer from cognitive impairment when the interaction is seen as intergroup or, in other words, when group membership is salient. It should be noted that the interaction concerned responses to incongruent trials, where response inhibition must be activated (thus, incongruent trials should be more sensitive to depletion; see Richeson & Shelton 2003), rather than responses to congruent trials. As Plant and Devine (1998) argued, internally motivated people seek to reduce expression of prejudice during intergroup encounters, as long as their personal values encourage promotion of intergroup equality.

An additional explanation for the weak effects obtained in the Stroop task, complementary to the contention that the cooperative atmosphere may have weakened results, concerns previous contact experiences. As we have seen, intergroup contact may deplete the self, ostensibly because people regulate their prejudiced behaviors, thus producing cognitive impairment (e.g., Richeson & Shelton, 2003). However, self-control capacity can be improved through exercise (e.g., Breslau et al., 1996). For instance, Muraven, Baumeister, and Tice (1999) found that people who engaged in self-regulation exercises over a two-week period were less affected by a depletion manipulation than those assigned to a control group. In our case, we can hypothesize that our participants' frequent contact experiences with Southerners had the same function as self-regulation exercises had in the study by Muraven and colleagues: ability to regulate one's own responses and behaviors improved as a function of contact, thus lessening the need for self-regulation in the present experiment and, consequently, the cognitive impairment. Probably, depletion following intergroup interactions would be more pronounced if contact took place with members of an outgroup for which limited or no previous contact experiences are available, thus rendering the situation more threatening and uncertain (Stephan & Stephan, 1985) and, as a consequence, more prone to self-regulation.

With respect to explicit measures, we predicted that the evaluation of the Southern partner would not differ between conditions (Hypothesis 2a). In contrast, we predicted that generalization would be stronger in the two-groups and dual identity conditions, where group membership is salient, than in the other conditions (Hypothesis 3a). Findings supported both predictions: the evaluation of the Southern partner was equally favorable in the four intergroup contact conditions. In contrast, as expected, distal outgroup evaluation was higher and evaluative ingroup bias was lower in the two-groups and dual identity conditions than in the remaining conditions. Differences concerning generalization, however, were not found with respect to intergroup emotions (calmness, anxiety), which were very positive in all conditions, and positive and negative outgroup stereotypes.

These findings are consistent with a large part of the literature reviewed in the first chapter. First of all, all contact modes were equally effective in improving the evaluation of the outgroup partner. Thus, when we look at the proximal outgroup, support is provided for the four contact models considered: salience of group membership does not have detrimental effects on intergroup relations if contact is pleasant and cooperative and its effects do not differ from those produced by the other contact strategies. Other studies found no differences between contact modes in improving evaluations of known outgroup members when group members work cooperatively (e.g., Gonzalez & Brown, 2003, 2006; Van Oudenhoven et al., 1996). Second, group membership facilitated generalization, at least with respect to outgroup evaluation and ingroup bias. Intergroup contact theory is fully supported: salience of respective identities is not deleterious to intergroup relations if the contact atmosphere is positive, and facilitate the process of generalization to outgroup members not yet encountered (Brown & Hewstone, 2005). Our results also contribute to studies showing the effectiveness of a dual identity representations. Support is found for the trade-off hypothesis (Gaertner & Dovidio, 2000), suggesting that the superordinate identity helps to improve proximal outgroup evaluation, whereas simultaneous salience of subgroup identities allows for generalization (see also, e.g., Dovidio et al., 1998).

Gonzalez and Brown (2003) found that generalization was more pronounced when one-group or dual identity representations were salient. In our case, two-groups salience, instead of one-group salience, favored generalization. Our results are not necessarily contradictory. Gonzalez and Brown's participants displayed significant – albeit low – ingroup bias in the separate individuals and two-groups conditions, whereas bias was virtually eliminated in the one-group and dual identity conditions. In the present study, bias was eliminated in all conditions, including the control condition. Probably, our participants might have been affected by social desirability concerns, whereas participants of Gonzalez and Brown's study, who replicated the classic effect of ingroup bias found in minimal groups (Tajfel et al., 1971), were probably less affected by social motives to reduce prejudice. Furthermore, prejudice toward Southerners has decreased over the last decades. These two factors, however, are not sufficient to explain why bias was still lower in the two-groups and dual identity conditions, without calling into question the role of group membership in favoring generalization. In the latter two conditions, in fact, the tendency was toward displaying outgroup bias (outgroup bias was significant in the two-groups condition; marginally significant in the dual identity condition).

Finally, Hypothesis 2b and Hypothesis 3b concerned the effects of prejudice and motivation to avoid prejudice on explicit outcome measures. We expected that prejudice – explicit, more than implicit – and external motivation to respond without prejudice would predict more negative

intergroup relations; in contrast, we hypothesized that internal motivation would be associated with more positive intergroup attitudes and emotions. We did not expect moderation of experimental conditions when attitudes toward the proximal outgroup member were considered (Hypothesis 2b). In contrast, we predicted that contact modes would moderate the relationship between predictors and criterion variables concerning the distal outgroup: explicit and/or implicit prejudice and external motivation to avoid prejudice (who are supposed to negatively affect intergroup relations) were expected to have positive (strong form) or null (weak form) effects on outcome variables in the four intergroup contact conditions – in two-groups and dual identity conditions, more than in the separate individuals and one-group conditions. Similarly, internal motivation was expected to be related to positive attitudes, emotions and stereotypes more in the intergroup contact conditions, and, especially, in the two-groups and dual identity conditions (Hypothesis 3b).

Hypothesis 2b received consistent support: prior levels of explicit prejudice negatively influenced the evaluation of the Southern partner (no effects were found for implicit prejudice, internal and external motivation to avoid prejudice). Moreover, contact modes did not moderate the effects of predictor variables. Only one interaction emerged concerning implicit prejudice (the increase in portion of variance explained, however, was non reliable), indicating a non-significant tendency of automatic bias to (a) increase outgroup evaluation in the two-group and dual identity conditions and (b) reduce outgroup evaluation in the separate individuals and one-group conditions. This result is not surprising: prejudice tapped at a non-conscious level tended to have negative effects on perceptions of the outgroup member encountered when interpersonal differences or a superordinate identity were salient; however, when group membership was salient (that is, in the two-groups and dual identity conditions), high prejudiced participants benefited more from the interaction, and consequently they evaluated more positively the known outgroup member. It should be noted, however, that these tendencies were far from significance.

We obtained partial support for the weak form of Hypothesis 3b. moderator effects were not stronger in the two-groups and dual identity conditions than in the separate individuals and one-group conditions. As expected, prior levels of explicit prejudice had negative effects: they reduced calmness and anxiety felt for Southerners, their evaluation and the endorsement of the trait “hospitable,” which is a positive trait typically associated to the outgroup. Implicit prejudice increased evaluative bias but, contrary to expectations, improved calmness. The last result is difficult to explain, and might simply reflect the fact that, the more participants were non-consciously prejudiced, the more they were not threatened by Southerners never encountered, thus associating to them emotions of calmness. Consistent with predictions, internal and external motivation to avoid prejudice had opposite effects: internal motivation improved calmness and

reduced anxiety felt for outgroup members, increased their evaluation and the endorsement of the trait “hospitable,” at the same time reducing the endorsement of the negative typical trait “mafia member”; in contrast, external motivation reduced calmness and increased anxiety.

We did find only one interaction concerning prejudice (increase in portion of variance explained, however, was not significant), which was consistent with the weak form of our hypothesis: explicit prejudice tended to reduce the endorsement of the trait “hospitable” when the control condition was associated to the separate individuals and one-group conditions; this negative effect was virtually neutralized in the two-groups and dual identity conditions. However, the effect was marginally significant.

Results concerning moderation of motivation to avoid prejudice were consistent with predictions: the negative effect of external motivation on the endorsement of the trait hospitable were neutralized when the intergroup contact conditions were not associated with the control condition. In other words, consistent with the weak form of Hypothesis 3b, external motivation negatively affected the endorsement of the trait “hospitable” only in the control condition. Moreover, external (marginal effect) and internal motivation reduced the endorsement of the trait “intrusive” only in the two-groups and dual identity conditions, supporting the strong form of Hypothesis 3b (the increase in portion of variance explained was only marginal). Finally, partially consistent with predictions, internal motivation improved outgroup evaluation and reduced the endorsement of the trait “intrusive” (in the former case, the interaction increased marginally portion of variance explained; in the latter case, the interaction was marginal and the increase in portion of variance explained was not reliable) in the separate individuals and one-group conditions, but only when external motivation was low. Thus, internal motivation had positive effects on outgroup evaluation and on the endorsement of a negative typical trait (“intrusive”) only in two of the four intergroup contact conditions (separate individuals, one-group); this effect was restricted to those who were not motivated by social pressures to avoid prejudice, that is, to people with a high tendency to suppress negative thoughts because of personal values of equality. In general, however, contrary to expectations, moderator effects were not stronger in the two-groups and dual identity conditions than in the separate individuals and one-group conditions.

As for results concerning the Stroop task, findings relative to moderation of predictors on relations with the outgroup in general were in the predicted direction, but much weaker than expected. Though, as argued above, there are reasons to believe that an explanation based solely on social desirability cannot account fully for our results, it is possible that results were partially affected by social concerns. Expressing prejudice in overt forms, in fact, is against prevailing social norms of equality (see, e.g., Pettigrew & Meertens, 1995); it would be interesting to test our

hypotheses by using implicit measures as outcome variables. Another factor that has probably weakened results is relative to previous contact experiences. Contact has consistently proved to be effective in reducing prejudice (Pettigrew & Tropp, 2006). Introducing previous contact as a covariate in regression analyses did not vary or weakened findings. However, all our participants, including those in the control condition, were university students who had frequent and daily contact with outgroup members. It is possible that intergroup attitudes and emotions were already very positive for all respondents as a function of their previous contact with Southerners, so that findings concerning prior levels of prejudice or motivation to respond without prejudice were only partially influenced by our experimental manipulation. Furthermore, the Southern confederate was perceived as only moderately typical of his group. Probably, more robust findings would be obtained for people with little previous contact with outgroup members and who interact with a member highly representative of the outgroup.

As in the Study 2 (Chapter 3), we obtained a dissociation between results concerning Stroop task and explicit measures. On the one hand, contact as two-groups had negative effects on cognitive performance (though, in this case, very weak and far from significance); on the other hand, two-groups perceptions improved attitudes with the known outgroup member and facilitated generalization. As in the previous study, we suggest that processes that lead to reduced performance and improved explicit attitudes and emotions are different: contact may temporarily deplete the self, thus affecting cognitive performance; at the same, it can produce positive impressions of outgroup members, which disconfirm negative expectancies and facilitate prejudice reduction.

Our results are not consistent with those obtained by Muraven, Baumeister, Dhavale, and Holland (1999), who found that prejudice toward African Americans following depletion was enhanced, rather than reduced, for those with a high motivation to respond without prejudice. In contrast, we found that internal motivation had positive effects on prejudice reduction after intergroup contact, which is supposed to deplete the self (Richeson & Shelton, 2003). A possible explanation is that procedures leading to depletion can have different effects. In our case, depletion (though very weak) was provoked by contact, which, if on the one hand consumes cognitive resources, on the other hand provides information about the outgroup. Thus, effects on conscious evaluations are positive, rather than negative, because people consider the value of the contact experience. It is possible that non-deliberative processes would be more associated than deliberative processes to cognitive functioning, as measured by cognitive performance in the Stroop task, after intergroup contact. Thus, it is conceivable that reduced performance in the Stroop task, produced by contact as two-groups, may predict more negative implicit attitudes, rather than explicit ones. This possibility should be considered in future studies.

Our study presents some limitations. First of all, participants belonged to the higher status group. It is possible that effects would be stronger, especially with respect to cognitive performance, when we consider Southern participants. Second, all participants, during the winter survival task, felt moderately like one group. Probably, manipulating interdependence between groups would have strengthened our manipulation. Moreover, the Southern and the Northern confederate implementing the manipulation were not perceived as highly typical of respective groups; it is conceivable that higher degrees of perceived typicality would have increased robustness of findings. Finally, the introduction of implicit measures as outcome variables, as argued above, would have helped to disambiguate the dissociation of results found on cognitive performance and on explicit measures.

Conclusions

The aim of the present research was to test the contact hypothesis (Allport, 1954) and to compare contact models. In particular, we considered the decategorization model (Brewer & Miller, 1984, 1988), the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986), the common ingroup identity model (Gaertner & Dovidio, 2000), the dual identity model (Gaertner et al., 2000).

We conducted three studies. The first study was cross-sectional: the relationship between non-disabled and disabled in the work place was examined. In the second study and in the third study, which were experimental, we considered the relationship between Italians and Albanians or that between Northerners and Southerners, respectively.

First of all, our results across the three studies further support the idea that favorable contact has the potential to ameliorate intergroup relations (Pettigrew & Tropp, 2006). In the first study, frequent and cooperative contact improved relations with disabled co-workers with psychiatric problems and its effects generalized to the whole category of disabled. Though some studies indicate that the effects of contact with mental or physical illness generalize to the disabled in general (e.g., Newberry & Parish, 1987; Stewart, 1988), it is the first time, to our knowledge, that generalization from contact in the work place with disabled colleagues with psychiatric problems to the general category of disabled is found. Evidences concerning positive effects of contact is provided also by the other two studies conducted: in Study 2, perceptions of the Albanian group were more positive in the two contact conditions (two-groups, one-group) than in the control condition, in which contact was with an Italian (i.e., ingroup member); in Study 3, contact produced positive attitudes toward the proximal outgroup (equally favorable in all contact conditions), whereas generalization was more pronounced in two contact conditions (two-groups, dual identity) than in the other two contact conditions (separate individuals, one-group) or than in the control condition, in which participants interacted with an ingroup member.

With respect to comparison between contact models, effects across the three studies were generally consistent, with some difference. First, we discuss results concerning relations with the proximal outgroup. In Study 1, we found that perceptions of belonging to a superordinate identity (see Gaertner & Dovidio, 2000) were effective in improving emotions (calmness, anxiety, empathy) toward the known disabled. The common ingroup identity as a moderation model, however, was not confirmed. Support for the usefulness of a dual identity representation was mixed: contact improved

empathy more when both group membership and common identity were salient; it reduced anxiety when group membership was salient and common identity perceptions were low. The latter result can be considered as a weak confirmation of the intergroup contact theory (Brown & Hewstone, 2005) and a weak disconfirmation of the common ingroup identity model; however, two-way interactions, necessary for a full confirmation or disconfirmation of the two theories, were not significant. Finally, salience of interpersonal differences had only one positive effect (empathy). In Study 3, we found that all contact strategies produced equally positive attitudes toward the proximal outgroup member. This finding is consistent with those obtained in other experimental studies comparing contact strategies (e.g., Gonzalez & Brown, 2003, 2006). Probably, the lack of two-way interactions found in Study 1, supporting the usefulness of our models, was due to the cooperative atmosphere of the contact setting: cooperative contact was sufficient to improve relations with disabled co-workers (Pettigrew & Tropp, 2006), whatever group representation might be salient; results obtained in Study 3 support this reasoning. Thus, which categorization strategy is salient is not relevant, as long as contact is experienced as pleasant and cooperative. Results from mediation analyses in Study 1 suggest that contact improved relations with proximal outgroup members because it increased the perceptions of sharing a superordinate identity. Thus, as suggested by Gaertner & Dovidio, who traditionally tested the common ingroup identity model as a mediation model, perceptions of belonging to a common group are important in the sense that they explain *why* contact has positive effects. In other words, contact is effective to the extent that it increases the salience of a shared identity, which includes both ingroup and outgroup members. We can conclude that, when we consider relations with known outgroup members, all contact modes (with a small prevalence of the one-group strategy) are effective if contact is cooperative; theoretical support was found especially for the common ingroup identity model.

Findings obtained are more consistent when considering relations with the general outgroup. In Study 1, contact effects generalized more when a dual identity representation was salient; in Study 2, generalization did not differ when salience of a common identity or of separate groups was high; in Study 3, two-groups and dual identity representations were the most effective. As we argued in the discussion of Study 2 (see Chapter 3, paragraph 4), there are reasons to believe that membership salience was present in the one-group condition, thus creating the perception of acting as distinct groups within a shared identity (i.e., dual identity). If this is true, in all the three studies generalization was higher when respective memberships were salient, alone or nested within a superordinate identity. This result is fully consistent with a large part of the literature indicating that some degree of group membership salience must be present in order to generalize contact effects to the distal outgroup (see, e.g., Hewstone & Brown, 1986; Pettigrew & Tropp, 2006). Summarizing

results concerning generalization to the distal outgroup, across the three studies, the intergroup contact theory (Brown & Hewstone, 2005) and the dual identity model (Gaertner et al., 2000) were fully confirmed. Less support was found for the common ingroup identity model; that is, one-group perceptions generally (with the exception of Study 2, discussed above) did not favor generalization when salience of respective identities was low. Finally, no result was found supporting the decategorization model (Brewer & Miller, 1984, 1988).

Recently, Brown and Hewstone (2005) proposed an integration between the intergroup contact theory (Hewstone & Brown, 2005) and the decategorization model (Brewer & Miller, 1984, 1988), suggesting that simultaneous salience of both interpersonal differences and respective identities should improve relations with both proximal and distal outgroup members. For the first time, we tested this hypothesis with moderational techniques (Study 1), by examining the effects of contact when both dimensions were salient.²³ However, none of the expected interactions attained statistical significance. It is possible that findings are restricted to the sample used: salience of interpersonal differences, in fact, might heighten distinctiveness motives, as argued when we discussed results concerning implicit attitudes in Study 1 (see Chapter 2, paragraph 4).

In Study 1, we included a measure of implicit attitudes (GNAT; see Nosek & Banaji, 2001) to assess automatic evaluations of disabled. To our knowledge, the only study examining the effects of contact on implicit bias toward disabled was conducted by Pruett and Chan (2006), who found that frequency of contact was, among other psychosocial variables, the major predictor of reduced automatic prejudice toward disabled. Authors, however, assessed only quantity of prior contact; moreover, the effect of contact was weak and explained only a minimum amount of variance. Our results showed that only the combination of quantity and quality of contact improved implicit attitudes. Furthermore, portion of variance explained, low when only contact quantity and quality were taken into account, dramatically increased when we tested the moderator role of group representations. In particular, contact improved implicit attitudes when group membership and, especially, common or dual identity were salient. We also obtained partial evidence of mediation: emotion of calmness felt for disabled co-workers totally mediated the relationship between contact and reduced automatic bias (the mediation effect, however, was only marginal). Notwithstanding the impressive amount of evidences supporting the idea that emotions mediate contact effects (see, e.g., Paolini et al., 2006), it is the first time, to our knowledge, that mediation is found with respect to implicit attitudes. As we argued in the discussion of Study 1 (See Chapter 2, paragraph 4), this result, together with findings obtained with moderation analyses, do not support an explanation based on an environmental association model and mere exposure effect (Bornstein, 1989; Karpinski

²³ Testing the orthogonal model by using moderation analyses was suggested by my supervisor, Prof. Dora Capozza, who I warmly thank.

& Hilton, 2001; Zajonc, 1968). First, implicit attitudes were predicted on the interaction of quantity and quality of contact, rather than on quantity alone. Second, the relationship between contact and automatic prejudice depended on relative salience of group representations: when salience of group membership, and, especially, of common or dual identity were low, in fact, the effects of contact were not reliable. Third and more importantly, mediation implies that implicit attitudes were not independent from emotions tapped at a conscious level. Thus, our findings suggest that, rather than merely reflecting associations a person has been exposed to in his/her environment, implicit attitudes can be considered as a component context-dependent of a more general attitude concept.

Results concerning implicit attitudes have important practical implications. Implicit attitudes have been shown to predict a wide range of outcome measures, such as evaluations, physiological responses and social behaviors (see, e.g., Poehlman, Uhlmann, Greenwald, & Banaji, 2003). Explicit and implicit attitudes tend to predict different types of behaviors: explicit attitudes are more associated to controlled behaviors, whereas implicit attitudes are generally predictive of automatic and more spontaneous behaviors (e.g., McConnell & Leibold, 2001). The MODE model (Fazio & Olson, 2003) proposes that motivation and opportunity determine which behavior will be performed by the individual: if both motivation and opportunity are high, explicit attitudes will be the major predictors of behavior; in contrast, when motivation and opportunities are low, as it is likely in most everyday situations characterized by superficial evaluations, behavior will be best predicted by implicit attitudes. There are several evidences showing that automatic attitudes predict behaviors individuals are not motivated or do not have the opportunity to control (see Wittenbrink, 2007). For instance, it was found that implicit measures correlated with seating distance from overweight people (Spalding & Hardin, 1999), or that a decision was more likely to be affected by race under time pressures (Correll, Park, Judd, & Wittenbrink, 2002). A notable demonstration of the differential effects of explicit and implicit attitudes was provided by Dovidio, Kawakami, and Gaertner (2002), who found that explicit attitudes predicted verbal behaviors of Whites interacting with a Black partner, whereas implicit attitudes predicted nonverbal friendliness; importantly, implicit attitudes, but not explicit ones, were also predictive of bias in friendliness perceived by Black partners and observers of the interaction. Others studies found that nonverbal behaviors could cause negative reactions from outgroup members (e.g., Chen & Bargh, 1997; Shelton & Richeson, 2005). Thus, when people belonging to distinct groups interact, their perceptions of the contact situation may rely on different cues. Furthermore, there are indications that implicit attitudes influence interpretations of ambiguous information, which can be frequent in everyday situations when interacting with outgroup members. For instance, Gawronski, Geschke, and Banse (2003) found that German participants' impressions of ambiguous behaviors performed by Turkish or

German confederates depended on levels of automatic bias: target race influenced negative interpretations of ambiguous behaviors of the Turkish confederate, but not of the German confederate, only for those more implicitly prejudiced. Extrapolating results to the context of our study, when non-disabled consciously well-disposed, but implicitly biased, encounter disabled, they may perceive the interaction as positive, whereas disabled, who could be guided by automatic attitudes held by non-disabled, can perceive the contact experience as negative and might feel victims of discrimination. Furthermore, highly implicitly prejudiced persons might be unaware of interpreting ambiguous behaviors of outgroup members on the basis of prejudiced attitudes, thus attributing apparently negative behaviors to differences between ingroup and outgroup, rather than to biased evaluations. The fact that implicit attitudes are associated with such a wide variety of social behaviors and differently affect ingroup and outgroup members' perceptions of the contact experience underscores the importance of reducing automatic prejudice. As noted by Dovidio and colleagues (2000), to the extent that people are unaware of holding prejudiced attitudes, changing implicit unconscious attitudes is fundamental to change contemporary forms of discrimination. Our results suggest that an effective way to reduce implicit prejudice through contact consists in increasing the salience of a superordinate identity or of group memberships within a common group; the effects of contact on implicit attitudes are weaker if respective identities are salient without the simultaneous perception of being part of the same group. It would be interesting to examine, in future studies, how implicit attitudes shape perceptions of the contact experience of both disabled and non-disabled, behaviors best predicted by automatic bias in the work place and relations of these variables with work performance and intergroup relations external to the work setting.

One additional aim of Study 1 was to examine processes which lead to prejudice reduction. We tested a model where one-group perceptions mediated the relationship between contact and relations with known outgroup members, which, in turn, mediated the effects of contact on both explicit and implicit measures concerning unknown outgroup members. Previous studies focused on these relationships separately: Gaertner and colleagues tested the mediating role of group representations (e.g., Gaertner et al., 1990); other studies examined the importance of emotions as mediating variables (see Paolini et al., 2006). As we noted in the discussion of Study 1 (Chapter 2, paragraph 4), Gaertner and colleagues (1994) proposed a model where group representations mediated the effects of contact on emotional bias, which, in turn, predicted bias in attitudinal favorability. In our study, mediators between contact and attitudes concerning the distal outgroup were measures concerning known outgroup members, which proved to be predictive of corresponding emotions and evaluations tapped at an intergroup level. The attention on the

importance of interpersonal emotions as mediating variables in contact studies is recent (see, e.g., Harwood et al., 2005; Tam et al., 2006); in our study, we suggest that a proximal predictor of intergroup emotions can be emotions tapped at an interpersonal level. Our model proposes that contact improves relations with known outgroup members because it increases the perception of belonging to a superordinate group; positive relations with known outgroup members are necessary for contact effects to generalize to implicit and explicit perceptions of unknown outgroup members. Our findings are coherent with those obtained by Capozza, Vezzali, and Hichy (2007), who were the first to test a similar model with respect to explicit attitudes: in two studies, they showed that one-groups perceptions mediated the relationship between contact of Italian participants with immigrant colleagues in the work place; proximal anxiety and, especially, empathy, explained generalization to unknown outgroup members.

In Studies 2 and 3, we examined the effects of contact strategies on cognitive impairment (see Richeson & Shelton, 2003), as measured by a Stroop task. We predicted that cognitive impairment would be higher when a two-groups representation, rather than a one-group (Studies 2 and 3), separate individuals (Study 3) or dual identity (Study 3) representations, was salient during contact, or, alternatively, than when contact was with an ingroup member (control conditions, Studies 2 and 3). Results obtained were in the predicted direction, though much weaker than expected: in Study 1, performance in the Stroop test, on indexes concerning correct answers to the task, was lower in the two-groups than in the one-group condition, whereas the control condition (contrary to expectations) did not differ from the other two conditions; in Study 2, performance in the Stroop test, calculated as in Study 1 on correct answers to the task, tended to be lower in the two-groups than in the remaining conditions. Results, however, were marginal in Study 2 and far from significance in Study 3. Moreover, partially consistent with findings obtained by Richeson and collaborators (e.g., Richeson et al., 2005), we found that performance was lower for participants with high level of explicit and implicit prejudice (Study 2) or with high internal motivation to avoid prejudice (Study 3) in the two-groups (Study 2) or in the two-groups and dual identity (Study 3) conditions, but not in the remaining conditions. These effects, however, were marginally significant. Thus, though we can not say that our hypotheses were supported, we found indications that high prior levels of prejudice or motivation to respond without prejudice (see Plant & Devine, 1998) increased cognitive impairment, but only when group memberships were salient during contact.

Our findings, though non-significant, suggest that salience of a superordinate group representation (which include also dual-identity perceptions), or alternatively, a separate individuals representation, is an effective remedy to reduce the extent of cognitive impairment. These

representations are likely to reduce the need for self-regulation experienced by individuals in an intergroup setting (Richeson & Trawalter, 2005) and increase positive mood or emotions (which can easily be induced when a one-group representation is salient; see, e.g., Gaertner & Dovidio, 2000; Turner et al., 1987), which proved to be an effective tool to reduce the extent of depletion (Tice et al., 2007). These results are consistent with those obtained by Trawalter and Richeson (2006), who demonstrated that cognitive performance of participants, following interracial contact, was less pronounced for those adopting a promotion-focus strategy (i.e., people attempting at having a positive intergroup interaction) than for those using a prevention-focus (i.e., people who tried to avoid prejudice) or who received no instructions. In our case, it is likely that one-group, dual identity and separate individuals strategies favored the adoption of a promotion-focus strategy, whereas focusing on group distinctions (that is, when a two-groups representation was salient) was more consistent with using a prevention-focus strategy. Our results, together with those found by Richeson and collaborators, indicate that several routes can reduce depletion following contact. Thus, cognitive impairment is not an unavoidable consequence of intergroup contact; rather, different strategies, independently or in concert, may be used to avoid this undesirable effect.

As we argued in the discussion of Studies 2 and 3 (see Chapter 3, paragraph 4; Chapter 4, paragraph 4), different factors may have weakened results: for instance, weakness of our experimental manipulations (especially, in Study 2), cooperativeness of the contact setting, previous contact experiences (especially, in Study 3). In Chapter 1 (paragraph 10), we have presented evidence that prolonged exercise can improve self-capacity, thus reducing cognitive impairment (see Muraven, Baumeister, & Tice, 1999); in our case, frequent previous contact might have worked as a self-regulation exercise, so that our participants were less in need to regulate their behavior – and thus suffered less from cognitive impairment – during contact. Furthermore, cooperativeness of contact might have increased positive mood or emotions, which, as argued before, can reduce cognitive impairment (Tice et al., 2007). In future studies, it would be interesting to test our hypotheses in intergroup contexts characterized by less previous contact and for which a previous history of conflict is present, so as to examine if cooperative contact can reduce cognitive impairment when the situations is likely to be affected by high levels of anxiety and uncertainty and need for self-regulation.

Finally, we considered the influence of prior levels of explicit and implicit prejudice (Studies 2 and 3) and internal motivation to avoid prejudice (Study 3) on explicit outcome measures. We found that, as expected, high levels of prejudice – explicit, more than implicit – and external motivation to reduce prejudice affected negatively intergroup relations; in contrast, internal motivation had positive effects. However, as predicted, we found a moderator effect of

experimental conditions: in Study 2, effects of prejudice became positive when contact was structured as in interaction between two distinct groups; in Study 3, negative effects of predictor variables were neutralized in the intergroup contact conditions (effects, however, were weak and, in some case, did not attain statistical significance). Though results are much weaker than expected, especially in Study 3, nonetheless they do provide indications that high prejudiced participants and those who were externally motivated benefited more from the positive intergroup interaction. As argued above (see Chapter 3, paragraph 4), this finding, is only apparently counterintuitive: the contact experience should limit negative expectancies and uncertainty levels especially for high biased persons – for example, those more prejudiced or externally motivated – whereas contact is likely to produce smaller effects for those who are already well-disposed toward outgroup members.

Findings that a two-groups representation, on the one hand, tended to increase cognitive impairment, especially for those highly prejudiced (Study 2) or internally motivated (Study 3), and, on the other hand, facilitated generalization, especially for those highly prejudiced (Study 2) or motivated to avoid prejudice (Study 3), are not necessarily contradictory. Intergroup contact, in fact, has repeatedly been shown to create a state of anxiety and uncertainty (e.g., Blascovich et al., 2001; Stephan & Stephan, 1985, 2000) and impair cognitive performance (e.g., Richeson & Shelton, 2003), but, at the same time, when repeated and cooperative, to improve intergroup relations (see Pettigrew & Tropp, 2006). Contact can consume cognitive resources in the short term, thus affecting cognitive impairment; in the long term, however, it may reduce anxiety (see Paolini et al., 2006) and, consequently, self-regulation attempts. Furthermore, to the extent that explicit measures refer to deliberative processes, contact, though reducing cognitive resources, might provide new information about the outgroup and constitute a positive experience facilitating positive conscious evaluations of outgroup members.

Our results are not consistent with those obtained in other studies (e.g., Muraven, Baumeister, Dhavale, & Holland, 1999), which found that motivation to respond without prejudice increased, rather than decreased, prejudice following a depletion manipulation. Probably, contact constitutes a particular form of depletion, which can be cognitive costly, at the same time valuable to ameliorate intergroup relations. A possibility is that non conscious processes would be more associated to cognitive functioning than conscious processes. We can hypothesize that cognitive performance might be predictive of increased automatic bias and eventually mediate the relationship between contact and implicit attitudes. This possibility should be examined in future studies.

It is the first time, to our knowledge, that effects of contact are tested simultaneously with respect to cognitive functioning and intergroup attitudes, considering the role of predictors, such as

prejudice – implicit and explicit – and motivation to respond without prejudice – internal and external. We believe it is important to test these relationships separately, so as to assess differential effects provoked by the contact experience and examine the role of individual difference variables; as we have seen, in fact, findings may be different for people with different prior levels of prejudice or motivation to avoid prejudice. Studies suggesting the importance of considering the role of predictor variables, such as prejudice or motivation to avoid prejudice, are not numerous (for exceptions, see, e.g., Maddux et al., 2005; Lemm, 2006; Sherman et al., 2003). However, we believe that it is necessary to examine their effects for a better understanding of the processes guiding intergroup relations. Other individual difference variables might be important to predict cognitive functioning and intergroup attitudes and should be considered in future studies: for instance, it would be interesting to test the effects of prior levels of ingroup identification (see Tajfel, 1981) or SDO (Sidanius & Pratto, 1999).

Across three studies, the dual identity strategy seems to be the most promising to ameliorate intergroup relations. Structuring contact as an interaction between two groups sharing a superordinate identity, in fact, proved to be an effective way to improve relations with known outgroup members; moreover, dual identity facilitated generalization of positive contact effects to unknown outgroup members, with respect to both explicit and implicit measures. Furthermore, the value of the common identity, in which subgroups are included, permits to eliminate cognitive impairment that follows intergroup interactions. Structured programs aiming at improving relations between non-disabled and disabled in the work place should maintain positive distinctiveness between the two groups, without forcing people to abandon respective identities; moreover, they should encourage the adoption of a superordinate identity, which, by improving intergroup relations at different levels of analysis, is likely to create a harmonious climate, favorable to working performance as well as to the creation of positive attitudes, which can extend to situations not necessarily restricted to the work place. The adoption of a common identity, including subgroups, favors not only more positive intergroup relationships, but also prosocial behaviors, such as self-disclosure and helping (see Dovidio et al., 1997). Certainly, the benefits of adopting a dual identity strategy are not limited to relations between non-disabled and disabled, but concern intergroup contexts in general, especially those where relinquishing previous identities is not possible or desirable, as, for instance, when ethnic or national identities are implicated (Gaertner & Dovidio, 2000).

It is important to note that, though our results converge in suggesting the value of adopting a dual identity strategy, contact modes considered in the present research are not mutually exclusive. Pettigrew (1998) suggests that they can be viewed over time (see Chapter 1, paragraph 6). Support

for this hypothesis was obtained in our first study (Chapter 2), in which we found that categorization varied from initial to present contact. Gaertner and Dovidio (2000), for example, note that common identity perceptions can favor self-disclosure, which, in turn, can precede more personalized forms of contact. However, contact modes can also be simultaneously salient: Brown and Hewstone (2005), for instance, suggest that intergroup and interpersonal dimensions might be are not incompatible; the dual identity proposal represents an integration between the common ingroup identity model (Gaertner et al., 2000) and the intergroup contact theory (Hewstone & Brown, 1986). Rather than being different theories, contact models represent different routes to the process of prejudice reduction, which focus on different aspects of the contact situation. The recognition of specificities of the contact setting and the goals of the intervention can help to select the most appropriate mode to structure the interaction so as to create a more relaxed and stimulating intergroup climate.

Our research represents a valuable contribution to the study of the effects of intergroup contact and of the best way to structure intergroup relations. Contact strategies were compared in both a naturalistic context and laboratory studies. We tested the effectiveness of contact modes and the processes leading to prejudice reduction with respect to both proximal and distal outgroup members; several outcome variables were used, including explicit and implicit measures. Furthermore, we examined the effects of intergroup contact on cognitive impairment and possible ways to limit this undesirable effect. Finally, we analyzed the influence of prior levels of prejudice and motivation to respond without prejudice, rarely considered in contact studies, on intergroup relations and cognitive impairment, and the moderator effects of contact strategies.

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