

Reducing explicit and implicit prejudice toward disabled colleagues: effects of contact and membership salience in the workplace

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Abstract

In the present study, membership salience was tested as a moderator of the effects of contact on emotions and explicit and implicit attitudes toward the disabled. Participants were non-disabled employees of firms and cooperative societies; they worked in contact with colleagues with psychiatric problems. Results indicated that quantity and quality of contact improved outgroup evaluations, both within and outside the contact situation. Consistent with intergroup contact theory (Brown & Hewstone, 2005), the positive effects of contact on anxiety and empathy toward disabled colleagues generalized to the whole category of the disabled when group distinctions were salient within the contact setting. Notably, frequent and cooperative contact also reduced implicit prejudice toward the general disabled category. Theoretical and practical implications of findings are discussed.

Keywords: intergroup contact at work, membership salience, intergroup empathy and anxiety, implicit attitudes, contact with disabled colleagues

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1. Introduction

Research has consistently shown that the disabled are a strongly devalued group (Murphy, 1995; Whaley, 1997; Saetermoe, Scattone, & Kim, 2001). Prejudiced attitudes may have important practical consequences, and constitute a barrier to the integration and participation of the disabled in social life (Livneh & Antonak, 1997; Smart, 2002). According to social psychologists, one of the most effective strategies to improve attitudes toward stigmatized groups and limit prejudice is represented by intergroup contact. The contact hypothesis (Allport, 1954) suggests that encounters between members of different groups favor the development of more harmonious intergroup relations, when certain key-conditions are met: members with similar status within the contact situation should cooperate for common goals, and contact should be sustained by social norms (for an analysis of the relative importance of optimal contact conditions, see Koschate & van Dick, in press). The extensive meta-analysis by Pettigrew and Tropp (2006) consistently demonstrated that contact is a powerful tool to reduce prejudice, especially when optimal conditions are present. The contact hypothesis, however, does not specify *when* positive intergroup attitudes following contact will generalize beyond the immediate situation (see Pettigrew, 1998). To address this limitation, different models, grounded on social identity (Tajfel, 1981) and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), have been proposed with the aim of extending the basic principles of the contact hypothesis and explain which factors promote generalization. In the present study, we will focus on the intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986).

The aim of the current study is to test the intergroup contact theory (Brown & Hewstone, 2005), by examining the role of membership salience as a moderator of the contact effects. The relationship between non-disabled and disabled colleagues (psychiatric patients), in the workplace, will be considered, and the generalization of contact effects to the whole category of the disabled will be studied.³ We also measure emotions, given the increasing importance accorded to affect in contact research (Pettigrew & Tropp, 2008). Furthermore, to the extent that self-reports concerning the disabled might be biased by social desirability motives (Feinberg, 1967; Wong, Chan, Cardoso, Lam, & Miller, 2004), we included a measure of implicit attitude (evaluation). To our knowledge, this is the first time that the moderator role of membership salience in contact is evaluated considering the relationship between the non-disabled and disabled, and assessing both explicit and implicit attitudes.

This study has theoretical and practical goals. On one hand, it evaluates the intergroup contact theory (Brown & Hewstone, 2005), by considering

³ The category of people with psychiatric problems includes, for instance, schizophrenics, people with personality or mood disorders, psychotics.

explicit and implicit attitudes, and an intergroup relation generally underestimated in testing this model. On the other hand, by indicating when contact is more effective, our study represents an important contribution for practitioners, aiming to create harmonious relationships between the non-disabled and disabled, within and outside the work context.

2. The intergroup contact theory

According to Brown and Hewstone (2005; Hewstone & Brown, 1986), increasing membership salience within settings of cooperative contact should have positive effects on intergroup relations. If membership is salient generalization of positive contact effects is more likely, since outgroup members are associated to the outgroup as a whole (Rothbart & John, 1985).

There is now strong evidence concerning the importance of membership salience for the generalization of contact effects (e.g., Brown, Vivian, & Hewstone, 1999; Voci & Hewstone, 2003; Binder, Zagefka, Brown, Funke, Kessler, & Mummendey, 2009). Nevertheless, not much research has tested the moderator role of membership salience in the generalization process considering the relation between the non-disabled and disabled. In a study by Desforges and colleagues (1991), university students interacted with a confederate presented as a former mental patient. Results showed that cooperative contact produced more positive attitudes toward former mental patients for those who had prior negative attitudes toward this group and perceived the confederate as a typical exemplar of the category of former mental patients. Maras and Brown (2000) examined the attitudes toward the disabled, displayed by non-disabled children aged 5-11 years. The authors considered three types of disability: physical disabilities, learning disabilities, hearing impairment. Children were recruited either from schools where differences were emphasized (categorized contact), or from schools where a clear identification of the disabled as a distinct group was avoided (decategorized contact). Findings revealed that correlations between attitudes toward known and unknown outgroup members (ratings of how much participants would play with known and unknown disabled) were somewhat stronger in categorized than decategorized schools. However, as acknowledged by authors, since bias favoring the non-disabled was generally stronger in the categorized than decategorized schools, generalization could concern negative and not positive attitudes. It should be observed that contact in the categorized schools hardly met Allport's (1954) optimal conditions, thus limiting the possibility for positive attitude generalization.

The results of the two studies offer only weak support for the intergroup contact theory (Brown & Hewstone, 2005). In the study by Desforges and colleagues (1991), contact was with a confederate and not with a real for-

mer mental patient. The fact that optimal conditions were not fully met in the categorized schools (Maras & Brown, 2000) does not permit a proper test of the intergroup contact model: membership salience might have a moderator role in the generalization of contact effects only when settings, which meet Allport's conditions, are considered. Additional research is needed to test the intergroup contact theory in the context of relationships between the non-disabled and disabled.

3. Studies on contact with the disabled

There is strong evidence supporting the idea that intergroup contact improves the relations between the non-disabled and disabled (e.g., Maras & Brown, 1996; Slininger, Sherrill, & Jankowski, 2000). The meta-analysis by Pettigrew and Tropp (2006) showed that contact is related with lower levels of prejudice toward different types of disabilities.

Despite this wide literature, only a few studies have examined the effects of contact between non-disabled and disabled employees within the workplace (see Mangili, Ponteri, Buizza, & Rossi, 2004). For instance, Hetu and collaborators (Hetu, Getty, Beaudry, & Philibert, 1994) found that frequency of contact with hearing-impaired colleagues improved attitudes and increased helping behaviors toward them. These studies generally lack generalization measures, with some exceptions. For instance, Tachibana and Watanabe's results (2004) revealed that Japanese respondents' attitudes toward intellectual disabilities improved as a function of contact at work. However, most of the studies concerning contact in the workplace focused on attitudes held by employers toward the integration of the disabled in the work setting (e.g., Diksa & Rogers, 1996; Rimmerman, 1998).

On the basis of the reviewed literature, we expect that frequent and cooperative contact at work will lead the non-disabled to evaluate disabled colleagues more positively, and to feel more positive emotions toward them. Furthermore, according to the intergroup contact theory (Brown & Hewstone, 2005), the positive effects of contact should generalize outside the work situation, when group membership during contact is salient.

4. Contact and implicit prejudice reduction

Over the last two decades, scholars have devoted a growing attention to the assessment of implicit attitudes, with the aim of detecting automatic associations that are difficult to tap with self-report measures (Fazio, Jackson, Dunton, & Williams, 1995). Implicit attitudes are activated by the mere presence of an attitude object; they are largely unintentional, impervious to conscious control, and, as a consequence, less influenced by social desirability concerns or

self-presentation biases (e.g., Devine, Plant, & Blair, 2001; Nosek, 2007). Research in this field has demonstrated that implicit attitudes have some flexibility and can be modified by the social context (see Blair, 2002, for a review).

Surprisingly, only a few studies have investigated the relationship between contact and implicit attitudes. Taken together, they reveal that high levels of contact are generally associated with less implicit prejudice. However, there is not full consensus with respect to the type of contact that is more relevant for attitude change. Some studies, in fact, found that quantity of contact predicted lower endorsement of negative implicit intergroup attitudes (e.g., Tam, Hewstone, Harwood, Voci, & Kenworthy, 2006). Similarly, Pruett and Chan (2006) found that the amount of contact with people who had a disability was a significant predictor of improved implicit attitudes toward the disabled. In other studies, the quality of intergroup relationship was more relevant to the implicit prejudice reduction (e.g., Aberson, Shoemaker, & Tomolillo, 2004; Vezzali & Giovannini, 2011). There is also evidence that both quantity and quality of contact are necessary to improve implicit attitudes. For instance, Aberson and Haag (2007) found, in a sample of White-American students, that the interaction between quantity and quality of contact predicted reduced implicit prejudice toward African-Americans (for a demonstration of the role of frequent qualitative contact on the improvement of implicit interracial attitudes in a college environment, see Shook & Fazio, 2008).

Although the interest of investigators for the relationship between contact and implicit attitudes is growing, we are not aware of any study directly examining the joint effects of contact and membership salience on intergroup attitudes tapped at an implicit level. Our expectation is that both the quantity and the quality of the contact experience play a role in reducing implicit prejudice (Aberson & Haag, 2007). This hypothesis is consistent with dual-process models, such as the associative-propositional evaluation model (APE model; Gawronski & Bodenhausen, 2006; see also the reflective-impulsive model, Strack & Deutsch, 2004), which proposes that, whereas explicit attitudes stem from higher cognitive processes and are based on syllogistic inferences, implicit attitudes merely depend on associative processes. According to this model, associative links between elements stored in memory can be activated automatically at the presence of a stimulus, and are independent from the fact that the person perceives the resulting evaluation as true or false. Importantly, implicit attitude change may result from changes in the associative structure as a function of evaluative conditioning processes. There is evidence demonstrating that the repeated pairing of positive or negative stimuli with an attitude object can produce a change in implicit attitudes in a direction consistent with the valence of the processed stimuli (e.g., Karpinski & Hilton, 2001; Mitchell, Anderson, & Lovibond, 2003; Olson & Fazio, 2006). Our prediction is that the repeated association (quantity of contact) of the disabled with positive experiences

(cooperation: quality of contact) will enhance implicit evaluations of the disabled category, thus reducing implicit bias (see Gawronski & Bodenhausen, 2006; Rudman, 2004; Strack & Deutsch, 2004). However, similar to explicit attitudes, frequent and positive contact should improve implicit attitudes toward the disabled as a whole only when group membership is salient (that is, when the associative link between known and unknown out-group members is maintained; Rothbart & John, 1985).

5. Aims and hypotheses

The aim of this study was to examine the role of membership salience as a moderator of the effects of contact on attitudes and emotions toward disabled colleagues and the wider category of the disabled. Participants were non-disabled employees of firms and cooperatives in a Northern Italian city; they worked in contact with colleagues presenting psychiatric disorders. The disabled had been employed by taking advantage of a government law, defining the rules for the employment and integration at work of the disabled.

Participants were administered a questionnaire containing the following measures: Allport's (1954) optimal conditions (cooperation, common goals, equal status, institutional support), quantity and quality of contact, membership salience, evaluation (attitude)⁴ and emotions (anxiety, empathy) toward both known and unknown outgroup members. The Go/No-go Association Task (GNAT; Nosek & Banaji, 2001), which represents a development of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), was used to reveal implicit attitudes. Both of these techniques measure implicit attitudes by assessing automatic associations between target concepts (e.g., non-disabled vs. disabled) and attributes (positive vs. negative). The benefit of using GNAT is that it allows independent measures of the attitude toward each of the two target concepts.

To recap, we make the following predictions:

Hypothesis 1. Both quantity and quality of contact at work should improve explicit evaluations and emotions toward disabled colleagues.

Hypothesis 2. The effects of contact on explicit evaluations and emotions should generalize to the whole category of the disabled, when group distinctions during contact are salient.

Concerning implicit attitudes, we predict that:

Hypothesis 3. Cooperative contact at work should improve the implicit evaluation of the whole category of the disabled, and reduce implicit bias, when it is frequent and membership salience during contact is high.

⁴ In the context of this study, the terms "evaluation" and "attitude" will be used as synonyms.

6. Method

6.1 Sample

Participants were 74 non-disabled employees of firms and cooperatives (25 males, 49 females); they worked in contact with colleagues presenting psychiatric problems. Mean age was 39.78 years ($SD = 11.42$). Most of participants worked in the sectors of services (59.5%) and commerce (33.8%).

6.2 Procedure

The research was introduced as a study on the relations between the non-disabled and disabled. Disability, according to the Italian law n.104/1992, is defined as a restriction or lack of ability to perform an activity in a way commonly accepted as standard for a man or woman. Participants, examined individually at the workplace, were asked to complete a questionnaire divided in two sections: the first concerned relations with disabled colleagues, the second was relative to relations with the whole category of the disabled. Implicit attitudes were assessed by means of a notebook between the first and the second section of the questionnaire. Individual sessions were run in absence of disturbing stimuli, and lasted about 45 minutes.

6.3 Instruments

Questionnaire

Optimal contact conditions. One seven-step item measured participants' perception of status at work: "Thinking about the working position of the non-disabled, how do you evaluate the working position of the disabled in this workplace?" Scores from 1 to 3 indicated higher status of the disabled, compared to the non-disabled; 4 indicated equal status; scores from 5 to 7 indicated higher status of the non-disabled. Perceptions of cooperation, common goals and institutional support were measured by the following three items: "My job requires cooperation with my disabled colleagues"; "I and my disabled colleagues are expected to achieve common goals"; "This firm/cooperative favors integration between the disabled and non-disabled." All three items had a seven-step scale ranging from 1 (*not at all*) to 7 (*very much*).

Quantity of contact. Two items (see Vezzali, Capozza, & Falvo, 2009) were used: "How much contact do you have with disabled colleagues at work?"; "How often do you interact with disabled colleagues during work?" The five-step scale ranged from *none* (1) to *very much* (5), for the first item, from *never* (1) to *always* (5), for the second item. The two items were averaged to obtain an index of quantity of contact (Cronbach $\alpha = .86$).

Quality of contact. Quality of contact was measured by eight seven-step bipolar scales (e.g., competitive/cooperative, formal/informal, un-

friendly/friendly), in which 1 indicated the negative and 7 the positive pole; 4 was the neutral point (see Capozza, Vezzali, Trifiletti, Falvo, & Favara, 2010). The eight items were averaged to form a single measure of quality of contact ($\alpha = .71$).

Membership salience. The awareness of group distinctions during contact was assessed with four items, adapted by Vezzali, Capozza, Mari, and Hichy (2007), and Voci and Hewstone (2003). Examples are: "During contact at work with disabled colleagues, are you aware that you belong to different groups?"; "During contact at work with disabled colleagues, to what degree do you perceive them as typical members of the disabled category?". All items had a seven-step scale (1 = *not at all*; 7 = *very much*). Items were averaged to form a reliable measure of membership salience ($\alpha = .70$), with higher scores meaning stronger awareness of categorical distinction during contact.

Emotions toward known outgroup members. Participants were asked to indicate the emotions felt during contact with disabled colleagues on a scale ranging from 1 (*not at all*) to 7 (*very much*). Anxiety was measured by 15 items (e.g., anxious, worried). Four items (e.g., "During contact at work with your disabled colleagues, to what extent do you feel you share their emotions?"), adapted by Capozza and collaborators (2010), tapped empathy (Batson, 1998). For each emotion, items were averaged to form a single reliable index ($\alpha = .88$, for anxiety; $\alpha = .89$, for empathy). Higher scores reflect stronger feelings of anxiety and empathy, respectively.

Evaluation of known outgroup members. Participants rated disabled colleagues on five semantic differential scales, representing the evaluation factor (e.g., undesirable/desirable, unpleasant/pleasant). On the seven-step scale, 1 was given to the negative and 7 to the positive pole (4 = *neither/nor*). Ratings were averaged to form a single score ($\alpha = .77$).

Emotions toward unknown outgroup members and their evaluation. Participants rated the emotions felt toward the general category of the disabled and evaluated this category with the same items used for the known outgroup. Items were combined to form reliable measures ($\alpha = .91$, for anxiety; $\alpha = .91$, for empathy; $\alpha = .86$, for outgroup evaluation).

GNAT

The GNAT (Nosek & Banaji, 2001) was run using Inquisit software (Version 1.33; Draine, 2003). Four types of stimuli (words) were used: five words referred to the disabled (e.g., invalid, disabled); five words referred to the non-disabled (e.g., able, healthy); 10 stimuli were positive words; 10 were negative words. Words referring to the non-disabled and disabled were matched for length. Positive and negative words were matched for valence and length. We used four experimental blocks of 40 trials (10 for each category of stimuli; for the non-disabled and disabled, the five stimuli were repeated twice). Stimuli were shown randomly, one at a time, in the center

of the computer screen. Each experimental block was preceded by 16 practice trials, responses to these trials being eliminated from analyses.

In each block, a target category (e.g., non-disabled) was paired with a target attribute (e.g., positive words). Target labels appeared on the upper right and the upper left of the screen as reminders. The task of participants was to press the space bar (go), within the 800 ms deadline, if the stimulus presented belonged to the target category or the target attribute, and to ignore the trial (no go), if it belonged to the contrasting category or attribute (distracters). The subsequent trial appeared 400 ms (*inter-stimulus interval*) after participant hit the space bar, or the response deadline was reached. Correct responses were followed by a green "O," incorrect responses by a red "X," each lasting on the screen 200 ms. Two blocks measured the attitude toward the disabled (disabled + positive words; disabled + negative words), and two the attitude toward the non-disabled (non-disabled + positive words; non-disabled + negative words).

7. Data analyses

7.1 *Introductory analyses*

Measures included in the questionnaire. Means and standard deviations of measures are presented in Table 1. Correlations between variables are shown in the Appendix. As can be noted, Allport's (1954) optimal conditions were present in the context examined. Indeed, cooperation, common goals and institutional support within the contact setting were high, the respective mean being much higher than the mid-point of the scale. Status in the workplace was perceived as not very dissimilar, although slightly higher for the non-disabled than disabled. Thus, the setting analyzed was ideal for allowing contact to improve intergroup relations. Both quantity and quality of contact were high; membership salience was not particularly low. In general, relations with the disabled were positive, and, not surprisingly, emotions toward the known disabled and their evaluation were slightly more positive than the corresponding emotions and evaluation of the disabled in general.

Table 1 - Means and standard deviations of the measures included in the questionnaire

<i>Measure</i>	<i>M</i>	<i>SD</i>
Status at work	4.77*	0.94
Cooperation at work	5.84*	1.29
Institutional support at work	5.69*	1.26
Common goals at work	5.85*	1.48
Quantity of contact	3.41*	0.93
Quality of contact	5.48*	0.71
Membership salience	2.31*	0.91
Anxiety toward known outgroup members	2.10*	0.76
Empathy toward known outgroup members	4.20	1.38
Evaluation of known outgroup members	5.52*	0.91
Anxiety toward unknown outgroup members	2.54*	0.79
Empathy toward unknown outgroup members	3.33*	1.30
Evaluation of unknown outgroup members	5.19*	0.93

Note: The asterisk indicates that the mean differs from the central point of the scale, which is 4. The central point is 3 for quantity of contact.

* $p < .001$.

GNAT. For each block of trials, a sensitivity index (d'), based on signal detection theory (Green & Swets, 1966), was calculated; it measures the ability in discriminating targets (the signal) from distracters (the noise). The d' index is based on the assumption that participants should be more able to discriminate signals from noise when the two targets are associated, relative to when the association is weak. D-prime is obtained by subtracting the proportion of false alarms (participants incorrectly pressed the space bar, when responding to distracters) from the proportion of hits (participants correctly pressed the space bar after the presentation of targets). Both proportions are converted into z -scores: the higher d' , the stronger the ability to discriminate targets from distracters, namely, the stronger the association between the target category and the target attribute (Nosek & Banaji, 2001).

Sensitivity scores were submitted to a 2 (Target group: non-disabled vs. disabled) \times 2 (Attribute: positive vs. negative) ANOVA, with both factors serving as within-subjects variables. A main effect of attribute emerged, $F(1, 73) = 12.82, p = .001, \eta^2 = 0.15$, qualified by the expected two-way in-

teraction, Target group \times Attribute, $F(1, 73) = 214.91, p < .001, \eta^2 = 0.75$. Simple effects analysis revealed significant implicit ingroup bias: participants associated the disabled more with negative ($M = 2.30, SD = 0.90$) than with positive words ($M = 1.14, SD = 0.82$), $F(1, 73) = 62.11, p < .001, \eta^2 = 0.46$, whereas they associated the non-disabled more with positive ($M = 2.48, SD = 0.88$) than with negative words ($M = 0.73, SD = 0.63$), $F(1, 73) = 265.95, p < .001, \eta^2 = 0.78$.

Three indices were then calculated: implicit outgroup evaluation, implicit ingroup evaluation, and implicit ingroup bias. For the implicit outgroup evaluation, the difference was calculated between the d' relative to the block disabled + positive words and the d' relative to the block disabled + negative words; higher scores reflect a more positive implicit evaluation of the outgroup. For implicit ingroup evaluation (computed in order to calculate implicit ingroup bias), the blocks were: non-disabled + positive words and non-disabled + negative words. Implicit ingroup bias was calculated as the difference between implicit ingroup and implicit outgroup evaluation: the higher the score, the stronger implicit ingroup bias.

7.2 Moderation analyses

To test the hypotheses, hierarchical regression was applied. For each outcome measure, in the first phase (Step 1) we measured the main effect of the two predictors (quantity and quality of contact) and the hypothesized moderator (membership salience); in the second phase (Step 2), the two-way products were added; in Step 3, we entered the three-way interaction. Dependent variables were: anxiety and empathy felt toward known and unknown outgroup members, and their evaluation; implicit outgroup evaluation, implicit ingroup bias. The two predictors and the moderator were centered prior to multiplication as a means to avoid multicollinearity (Jaccard, Wan, & Turrisi, 1990). Results are presented in Table 2.

Known outgroup members. As can be noted in Table 2a (Step 1), in line with our first hypothesis, both quantity and quality of contact had positive effects on empathy and evaluation of disabled colleagues. The effects of membership salience never reached conventional levels of significance. Results also revealed that the main effect of contact quality on anxiety (Step 1; Table 2a) was qualified by a marginally significant two-way interaction (Step 2; Table 2a). Simple slopes analyses showed that quality of contact reduced anxiety toward the disabled at work when membership salience was high, $b = -.68, t = 3.81, p < .001$, but not when membership salience was low, $b = -.18, t = 1$. The three-way interactions were never significant (Step 3; Table 2b).

Unknown outgroup members, explicit measures. Quality of contact had positive effects on all the outcome variables, while the effects of quantity of contact and membership salience were nonsignificant (Step 1; Table 2a). However, the main effect of quality of contact was qualified by the three-way interaction for the measures of anxiety and empathy (marginal effect)

Table 2(a) - Hierarchical regression evaluating the moderating effect of membership salience on the relation between quantity and quality of contact and dependent variables (standardized regression coefficients)

	<i>Dependent variables</i>							
	<i>Anxiety</i>		<i>Empathy</i>		<i>Outgroup evaluation</i>		<i>Implicit outgroup evaluation</i>	<i>Implicit ingroup bias</i>
	<i>Known</i>	<i>Unknown</i>	<i>Known</i>	<i>Unknown</i>	<i>Known</i>	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>
<i>Step 1</i>								
A Quantity	.10	.10	.35**	.02	.25*	.12	.02	-.04
B Quality	-.44***	-.28*	.34**	.38**	.42***	.35**	.22	-.32**
C Membership salience	-.03	.17	.02	.04	-.08	.03	.22	-.27*
<i>R</i> ²	.17	.13	.31	.14	.31	.16	.08	.16
<i>F</i>	4.83**	3.42*	10.55***	3.90*	10.49***	4.40**	2.16	4.27**
<i>df</i>	(3, 70)	(3, 70)	(3, 70)	(3, 70)	(3, 70)	(3, 70)	(3, 70)	(3, 70)
<i>Step 2</i>								
A Quantity	.08	.10	.35**	.03	.23*	.11	.03	-.04
B Quality	-.40***	-.26*	.34**	.34**	.42***	.36**	.15	-.26*
C Membership salience	-.14	.18	.01	.11	-.14	-.00	.32**	-.31*
A × B	-.05	-.20	.07	.12	.01	-.01	.46***	-.37**
A × C	.15	-.12	.04	-.08	-.06	.05	.19	-.13
B × C	-.23 [†]	.05	-.04	.14	-.20	-.09	.16	-.02
<i>R</i> ²	.26	.16	.32	.20	.34	.17	.29	.27
<i>F</i>	3.90**	2.16 [†]	5.18***	2.76*	5.80***	2.26*	4.60***	4.04**
<i>df</i>	(6, 67)	(6, 67)	(6, 67)	(6, 67)	(6, 67)	(6, 67)	(6, 67)	(6, 67)
<i>Fch</i>	2.63 [†]	.91	.17	1.54	1.07	.27	6.53***	3.38*
<i>df</i>	(3, 67)	(3, 67)	(3, 67)	(3, 67)	(3, 67)	(3, 67)	(3, 67)	(3, 67)

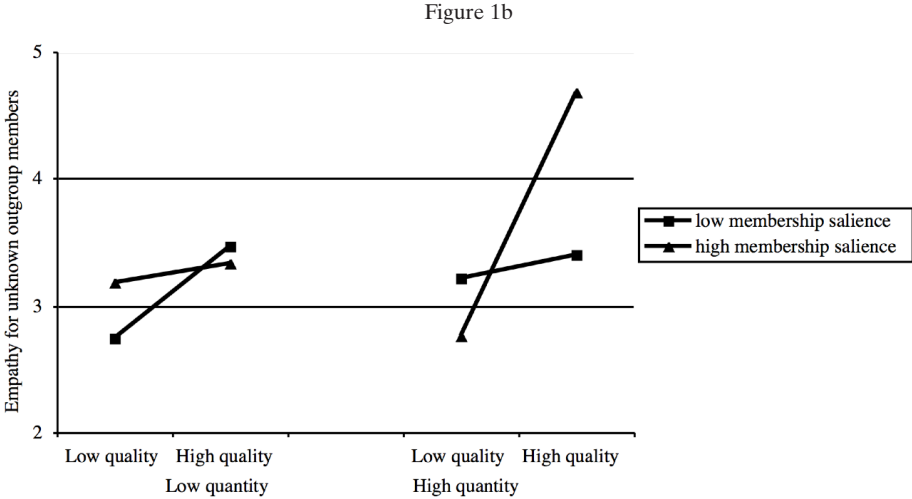
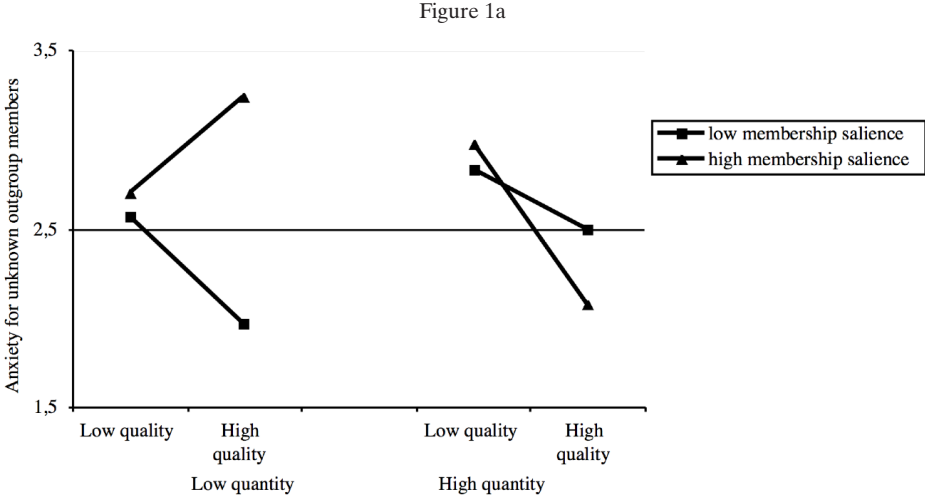
Table 2(b) - Hierarchical regression evaluating the moderating effect of membership salience on the relation between quantity and quality of contact and dependent variables (standardized regression coefficients)

	Dependent variables							
	Anxiety		Empathy		Outgroup evaluation		Implicit outgroup evaluation	Implicit ingroup bias
	Known	Unknown	Known	Unknown	Known	Unknown	Unknown	Unknown
<i>Step 3</i>								
A Quantity	-.00	-.01	.30*	.13	.24*	.10	.03	-.03
B Quality	-.36**	-.20	.36**	.29*	.42***	.36**	.15	-.27*
C Membership salience	-.14	.18	.01	.11	-.14	-.00	.32**	-.31*
A × B	-.05	-.19	.07	.12	.01	-.01	.46***	-.37**
A × C	.04	-.28*	-.03	.05	-.05	.03	.19	-.12
B × C	-.20	.09	-.03	.11	-.20	-.08	.15	-.02
A × B × C	-.23	-.33*	-.14	.27 [†]	.02	-.02	.00	.04
<i>R</i> ²	.29	.22	.33	.24	.34	.17	.29	.27
<i>F</i>	3.82**	2.72*	4.60***	2.99**	4.90***	1.92	3.89***	3.42**
<i>df</i>	(7, 66)	(7, 66)	(7, 66)	(7, 66)	(7, 66)	(7, 66)	(7, 66)	(7, 66)
<i>F</i> _{ch}	2.76	5.28*	1.12	3.67 [†]	.02	.03	.00	.06
<i>df</i>	(1, 66)	(1, 66)	(1, 66)	(1, 66)	(1, 66)	(1, 66)	(1, 66)	(1, 66)

Note: Quantity = quantity of contact; quality = quality of contact; membership salience = group salience during contact. For the dependent variables, higher ratings mean: stronger emotions of anxiety and empathy toward the outgroup, higher explicit and implicit outgroup evaluation, implicit ingroup bias.
[†] $p \leq .06$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

(Step 3; Table 2b). Analysis of simple slopes revealed that quality of contact reduced anxiety toward unknown outgroup members only when quantity of contact and membership salience were high, $b = -.64$, $t = 2.88$, $p < .01$, whereas it had no effects in the remaining cases, $ts < 1.61$ (Figure 1a). Similarly, the decomposition of the interaction concerning empathy showed that quality of contact increased the feelings of empathy toward the general category of the disabled only for high levels of quantity of contact and membership salience, $b = 1.35$, $t = 3.75$, $p < .001$; the effects of contact quality were unreliable in all the other cases, $ts < 1.21$ (Figure 1b).

Figure 1 - Interaction between quality of contact, quantity of contact, membership salience. Dependent variables: anxiety (Figure 1a) and empathy (Figure 1b) toward unknown outgroup members. High score, low score of quality of contact, quantity of contact and membership salience are intended at one standard deviation above and one standard deviation below the respective mean)



GNAT. As can be observed in Table 2a (Step 1), both quality of contact and membership salience reduced implicit ingroup bias. At Step 2, a significant Quantity \times Quality interaction was found for the measures of implicit outgroup evaluation and implicit ingroup bias. Concerning the implicit outgroup evaluation, the decomposition of the effect revealed that quality of contact improved the implicit evaluation of the disabled only when quantity of contact was high, $b = 1.05, t = 4.01, p < .001$; interestingly, contact quality tended to worsen outgroup evaluation when quantity of contact was low, $b = -.52, t = 1.71, p < .10$. Similarly, the analysis of simple slopes showed that favoritism for the ingroup was reduced by quality of contact only for high levels of contact quantity, $b = -1.47, t = 4.12, p < .001$; the effects of contact quality were nonsignificant when quantity of contact was low, $b = .22, t < 1$. Contrary to Hypothesis 3, the three-way interaction was never significant, $t_s < 1$ (Step 3). However, membership salience positively affected implicit outgroup evaluation and reduced implicit bias.

8. Discussion

We carried out a field study to test the intergroup contact theory (Brown & Hewstone, 2005), in the context of the relationship between the non-disabled and psychiatric disabled; we were also interested in the practical implications of results, which can be used for ameliorating intergroup relationships and improving employees' well-being. In line with our first hypothesis, frequent contact and cooperative contact positively influenced the relations with disabled colleagues, by increasing empathy toward them and enhancing their evaluation. These results are consistent with large part of contact research, indicating that contact under optimal conditions has positive effects on intergroup attitudes and emotions toward outgroup members actually encountered (Pettigrew & Tropp, 2006). The finding that cooperative contact reduced anxiety toward known outgroup members only when group salience was high replicates previous research (Harwood, Hewstone, Paolini, & Voci, 2005) and is consistent with the intergroup contact theory (Brown & Hewstone, 2005). The present results also add to the scarce literature on contact between non-disabled and disabled colleagues within the workplace (see Mangili *et al.*, 2004), by suggesting that positive contact experiences between employees may help create more positive relations at work.

In our second hypothesis, we predicted that contact effects would generalize to the outgroup as a whole only for high levels of membership salience. Consistently, we found that cooperative contact increased empathy and reduced anxiety for the disabled in general only when it was frequent and group distinctions during encounters were salient. These findings fully support the intergroup contact theory (Brown & Hewstone, 2005):

they provide strong evidence for the moderator role of membership salience with respect to intergroup emotions (Voci & Hewstone, 2003), and suggest that group salience is a crucial factor in the generalization of contact effects. The fact that quality of contact, independently from membership salience, was sufficient to improve the evaluation of the disabled in general, is in line with previous research, indicating that the positive effects of contact on intergroup attitudes are not limited to the type of disability defining known outgroup members and to the specific contact setting (Hetu *et al.*, 1994; Newberry & Parish, 1987; Pettigrew & Tropp, 2006). Moreover, probably, all participants were to some degree aware of group distinctions during contact for generalization to be achieved (Rothbart & John, 1985).

Concerning implicit attitudes, findings did not support Hypothesis 3. The three-way interaction between quality, quantity and membership salience, was never significant; instead, we found a significant interaction between quality and quantity, and a main effect of membership salience. Thus, cooperative contact improved implicit outgroup evaluation and reduced implicit bias, only when it was a repeated experience; for awareness of categorical distinction during contact, it was *per se* capable of improving the automatic evaluations.

Results relative to quality and quantity of contact are in line with research examining the relationship between contact and implicit prejudice: in fact, also Aberson and Haag (2007) found that reduction in implicit in-group bias is a function of the interaction between quality and quantity. This interaction is also consistent with an environmental interpretation (Bornstein, 1989; Zajonc, 1968), suggesting that repeated pairing of an attitude object with positive stimuli (frequent experiences of cooperation at work) reduces implicit prejudice. Furthermore, the multiplicative effect of quality and quantity is in line with dual-process theories. The APE model (Gawronski & Bodenhausen, 2006), for instance, suggests that implicit attitude change may stem from changes in the mental associative structure concerning a target object. In our study, frequent and cooperative contact with disabled colleagues was likely to reduce implicit prejudice by creating novel associations between the disabled category and positive attributes. But why the creation of these new associations was not qualified by membership salience? In other words, how is it possible that these new associations could be formed even when categorical belonging of exemplars was not salient? The answer, we suspect, may lie in category automatic activation, when category exemplars are encountered. This activation can vary in strength according to individual beliefs and temporary goals (see Macrae & Bodenhausen, 2001), and, importantly, may affect cognitive processes independently from conscious evaluations of membership salience. A challenge for future research, concerning implicit prejudice change, will be to test the intergroup contact theory (Brown & Hewstone, 2005), by using the degree

of spontaneous activation of category membership when category exemplars are met as a moderator of contact effects.

Also the main effect of the deliberate evaluations of membership salience can be explained making reference to the APE model (Gawronski & Bodenhausen, 2006). In fact, according to this model, implicit attitude change can also result from changes in pattern activation, that is, changes in the particular set of associations activated in memory, when category exemplars are met. In our case, it is possible that salience of disabled category in favorable settings activated the associations between the disabled and positive concepts and inhibited the activation of associations between the disabled and negative concepts. Other studies found that increased membership salience was sufficient to change implicit attitudes (e.g., Kühnen, Schiebl, Bauer, Paulig, Pöhlmann, & Schmidhals, 2001; Richeson & Ambady, 2003; Steele & Ambady, 2006), this change being in a positive direction if stimuli were presented in a positive rather than negative context (e.g., Wittenbrink, Judd, & Park, 2001).

Thus, for explicit evaluations our results strongly support the intergroup contact theory (Brown & Hewstone, 2005); they also point to the importance of considering implicit attitudes. In fact, although overt expressions of prejudice toward stigmatized groups have declined over the past decades, more subtle and indirect forms of rejection are still operating and, to the extent that often they cannot be easily detected, they constitute a strong barrier to the integration of these groups (Gaertner & Dovidio, 2005; Pettigrew & Meertens, 1995). This consideration is supported by our findings, which showed that, although participants expressed favorable evaluations of the disabled on self-reports, they also displayed a strong implicit bias. Thus, focusing only on explicit attitudes is not sufficient for a full understanding of the complex dynamics characterizing intergroup relations; instead, attention should be devoted also to implicit attitudes, especially when considering relationships with groups for which there are strong social pressures for a positive evaluation, such as the disabled (Feinberg, 1967; Devine *et al.*, 2001; Wong *et al.*, 2004).

The present research has important practical implications. Our findings demonstrate that cooperating at work, in a positive atmosphere, improves the relations with the disabled within the workplace and in wider society. In addition, making salient group distinctions during contact facilitates generalization of contact effects to the disabled as a whole. Contact and salience of group memberships have deep effects that are also useful for reducing implicit prejudice toward the general outgroup. Implicit attitudes are predictive of a wide range of outcomes measures, such as evaluations, physiological responses, social behaviors (Greenwald, Poehlman, Uhlmann, & Banaji, 2009), and are especially associated with less controlled forms of behaviors (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Gawronski & Bodenhausen, 2007).

The present research has, however, some limitations. First, data are correlational. However, we can be confident in the proposed causal sequence: our participants had no possibility to avoid contact, because the disabled were colleagues who met in the workplace, so it is more likely that contact reduced prejudice rather than the other way around. In addition, there is evidence that contact has longitudinal effects on intergroup attitudes and emotions (e.g., Vezzali, Giovannini, & Capozza, 2010). Second, our results are limited to the effects of contact with the disabled with psychiatric problems. It is possible that contact with other types of disabilities, such as physical disabilities, would produce different consequences, both within and outside the contact situation. In addition, although we tested generalization of contact effects to the whole disabled category, participants might have been thinking about their most accessible disabled category, that is, psychiatric patients. One more limitation is that we did not assess implicit attitudes toward disabled colleagues. Finally, it would be interesting to test whether contact is beneficial also from the point of view of the disabled. In conclusion, our results highlight the importance of considering contact, in some optimal conditions, so as to plan interventions, which can contribute to the integration of the disabled in the workplace and in the society as a whole.

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Appendix

Correlations between variables

	1	2	3	4	5	6	7	8	9	10	11
1. Quantity of contact	–										
2. Quality of contact	.29*	–									
3. Membership salience	.20	-.19	–								
4. Anxiety toward known outgroup members	-.03	-.40***	.07	–							
5. Empathy toward known outgroup members	.46***	.44***	.03	-.26*	–						
6. Evaluation of known outgroup members	.36**	.51***	-.11	-.32**	.51***	–					
7. Anxiety toward unknown outgroup members	.05	-.29*	.24*	.61***	-.12	-.20	–				
8. Empathy toward unknown outgroup members	.14	.38***	-.03	-.34**	.52***	.18	-.31**	–			
9. Evaluation of unknown outgroup members	.23†	.38***	-.01	-.27*	.35**	.51***	-.36**	.34**	–		
10. Implicit outgroup evaluation	.13	.18	.18	-.16	.16	.22	-.09	.24*	.30**	–	
11. Implicit ingroup bias	-.19	-.28*	-.22	.23†	-.24*	-.32**	.15	-.26*	-.35**	-.85***	–

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