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How contact shapes implicit and explicit preferences: attitudes toward Roma children in inclusive and non-inclusive environment

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Abstract

In two studies, the authors examined the effects of intergroup contact in inclusive and non-inclusive environments on children's explicit and implicit prejudices. In both studies, supervised contact with Roma peers, instructed by inclusive program, led to a more positive explicit evaluation of Roma and less social distance, while it had no significant impact on implicit attitudes. In contrast, implicit attitudes were related to mere exposure to Roma (Study 2). Intergroup anxiety and self-disclosure mediated the effect of inclusiveness level on explicit, but not on implicit attitudes. The results indicate that two types of attitudes might be formed via different routes, and that mere exposure and supervised contact influence them differently. This information could help tailor future prejudice reduction programs.

Attitudes toward out-group members do not have to be accessible nor intentional: A growing body of evidence demonstrates that implicit attitudes, typically assessed using response latency procedures, can be more predictive of certain types of behavior and can provide conceptual insights over and above traditional self-report measures (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Hugenberg & Bodenhausen, 2003; McConnell & Leibold, 2001; Rudman, Greenwald, Mellott, & Schwartz, 1999). It is widely accepted that implicit prejudices are rooted in early socialization experiences (Devine, 1989; Dovidio, Kawakami, Smoak, & Gaertner, 2009; Petty, Tormala, Briñol, & Jarvis, 2006; Wilson, Lindsey, & Schooler, 2000); these are activated repeatedly throughout an individual's life span and thus are more resistant to change. In contrast, self-reported group preferences are assumed to be more recently acquired and therefore more malleable. There is strong empirical support that reveals greater stability within implicit preferences. For example, in studies exploring the developmental course of prejudice, the authors Baron and Banaji (2006) found that at the age of 6, children are equally biased both at implicit and explicit levels. However, by the age of 10, asymmetry between the two types of measure becomes evident: While the level of implicit racial preferences remains constant, self-reported own-race preferences decrease substantially. A number of studies report a similarity between children and adult's patterns of implicit prejudice (Castelli, Zogmaister, & Tomelleri, 2009; Dunham, Baron, & Banaji, 2006; Sinclair, Dunn, & Lowery, 2005); this is usually interpreted as a preference acquired early on within the family, with a lesser chance of being affected by environmental changes. However, there are studies demonstrating substantial changes in implicit preferences due to psychological states, motives, or contextual influences (for a review, see Blair, 2002; Gawronski & Bodenhausen, 2006). For example, there is evidence that intergroup contact could affect both explicit and implicit prejudices toward the elderly (Tam, Hewstone, Harwood, Voci, & Kenworthy, 2006) or ethnic out-groups (Turner, Hewstone, & Voci, 2007). Fewer implicit prejudices have been found in children who are close friends with children from different ethnic groups, opposed to children with no such contact (Aberson, Shoemaker, & Tomolillo, 2004). Intergroup friendships, or opportunities to have contact with members of another group, positively related to implicit attitudes formed toward the other group for both children between the ages of 7 and 11 and high school students from 11 to 16 years of age. Dual process models of attitude change provide us with a suitable theoretical framework to integrate these seemingly conflicting findings (Devine, 1989; Gregg, Seibt, & Banaji, 2006): According to this theoretical framework, it can be expected that self-reported attitudes should be

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relatively more responsive to deliberate attitude change interventions and automatic attitudes to concrete learning (e.g., associative learning through mere exposure).

Reducing prejudice through encouraging contact between children of different ethnic groups is one of the fundamental aims behind inclusive education programs and initiatives. Inclusive education has been shown to foster intergroup friendships, reduce fear, and enhance acceptance of diversity (Rea, McLaughlin, & Walther-Thomas, 2002; Staub & Peck, 1995). The proliferation of implicit attitude studies has generated increasing interest in designing interventions aimed at implicit prejudice reduction (Blair, 2002; Rudman, Ashmore, & Gary, 2001). However, traditional educational interventions, such as inclusive education, continue to be evaluated through various self-report techniques (Erten & Savage, 2012). The application of an implicit paradigm, in the context of inclusive education, can expand upon existing studies by providing data on implicit and explicit ethnic preferences and the relationship between the two; it can also allow us to test the degree to which everyday interpersonal contact can influence both sets of measure. As children enrolled in inclusive classes are exposed to a value system that penalizes overt prejudice and promotes tolerance, it is important to explore whether it also affects implicit ethnic preferences and attitudes to the same extent and in the same manner.

The present research

One of the primary goals of inclusive practice in Serbia is to include socially vulnerable groups (children with physical or mental disabilities, and/or children from marginalized ethnic groups such as Roma) within the educational system and to address the educational outcome gap between students from vulnerable and non-vulnerable groups (Ministarstvo prosvete Republike Srbije, 2008). In 2009, the Serbian government introduced new legislation regarding the foundations of the educational system as well as a law prohibiting all forms of discrimination; together, these amendments provided a solid base for the institutionalization of Roma inclusion policies. These policies included changing the enrollment procedure, providing additional support during compulsory education (individual education plan), and appointing Roma teaching assistants. Additionally, preservice and in-service trainings were organized for teachers; extending their skill sets so as to meet the needs of Roma students in diverse classrooms. However, despite these positive developments, the actual implementation of these policies is facing financial and logistical obstacles, including a lack of qualified teaching assistants and trained teachers.

Therefore, in the present moment, there are schools in Serbia that implement an inclusive program, and are actively working on integrating Roma children and promoting positive Roma identity (this group we labeled as "inclusive"), and there are schools in which, due to nondiscriminatory enrollment policies, Roma and non-Roma children attend classes together but without any institutional support or guidance (this group we labeled as "mixed"). This provided a suitable context to evaluate the effects of mere exposure and of supervised contact on both implicit and explicit prejudices at a relatively early age.

In two studies, we explored the differences between implicit and explicit attitudes toward Roma children in school classes with differing degrees of inclusivity (Study 1), and we compared the effects of supervised contact and mere exposure, as well as the potential mediators of the registered effects (Study 2).

Schools chosen for comparison were all public, situated in similar neighborhoods, with children of similar socioeconomic backgrounds. There was no self-selection into groups, as children were enrolled in schools by area code. Even though it is possible that parents strategically relocated to have their children enrolled in preferred schools, it is in fact a fairly rare occurrence within the Serbian context since differences between schools are not as prominent as in other educational systems (e.g., United States). Bearing this in mind, and the fact that prejudices toward the Roma community are pervasive in Serbian society, even in children (Đurović, 2002; Franceško, Mihić, & Kajon, 2006; Mićević, 2005; Mihić & Mihić, 2003), we expected no initial differences in attitude between groups.

Study 1

In the first study, we compared three groups of students: the "non-inclusive" group, which did not have Roma students nor students with special educational needs; the "mixed" group, which consisted of both non-Roma and Roma children, as well as children with special educational needs, but did not implement any special actions to facilitate the inclusion of Roma children, nor were teaching assistants assigned to this task and the teacher had not received special training to work with Roma children. In contrast, in the "inclusive" group, individually planned and applied programs were in place to facilitate the inclusion of Roma children within the peer group, as well as children with special educational needs. For example, inclusion assistants were assigned to support its implementation, and the class teacher had been through four in-service trainings where she acquired the skills to both manage classes with pupils from different cultural and social backgrounds, as well as encourage and facilitate mutual cooperation and an acceptance of diversity in the classroom.

Because inclusion programs directly aim to create an atmosphere of mutual tolerance and acceptance, despite social and cultural differences within the class, we first wanted to explore the differences in explicit attitudes toward Roma children in different environments. As automatic attitudes

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are known to be less responsive to deliberate change, we also investigated if the differences in explicit preferences would be accompanied by differences in implicit preferences. Finally, we wanted to test the relationship and possible discrepancies between these two types of measure.

We hypothesized that the measures obtained by both implicit and explicit techniques would differ depending on the existence and quality of contact with Roma children. Specifically, children in classes without Roma peers were expected to express the highest level of both explicit and implicit prejudices toward Roma, and children in the "inclusive" class were expected to express the lowest level of both explicit and implicit prejudices. These differences, however, were expected to be more prominent in the self-report measures.

Method

Participants

A total of 72 children aged between 10 and 11 (average age 10.5) participated in the study. They were recruited from three public schools in Belgrade, Serbia. The respondents were all non-Roma children of the same age, admitted to school by the same selection criteria, studied the same general curriculum prescribed by the Ministry of Education for public elementary schools, and all had a female teacher. After obtaining the consent of parents, teachers, and principals, we tested 24 pupils from the "non-inclusive" class (school A), 19 from the "mixed" class (school B), and 29 from the "inclusive" class (school C). At the time of the study, the total percentage of Roma pupils in schools B and C was similar (3% and 5%, respectively); the "mixed" class had 3 out of 22, the "inclusive" class had 2 Roma children out of 31 enrolled pupils, and the "non-inclusive" had no Roma pupils at all.

Materials and procedure

Explicit measures

Attitude

Participants were asked to assess Roma children on 15 bipolar 7-point semantic differential scales, anchored with contrasting attributes. Attributes were chosen relying on existing instruments measuring racial prejudice (Bellezza, Greenwald, & Banaji, 1986) and were combined with attributes obtained in interviews with Serbian children in which they provided descriptions of Roma people (Franceško et al., 2006).

Social distance

We administered a social distance scale that consisted of six different social relations, ordered by descending distance (e.g., to live in the same street, to sit next to you, to be invited to your birthday party). Participants were instructed to accept or reject every relation, while imagining a typical Roma child. Rejection was scored with 1 point, thus the maximum distance was 6 and the minimum was 0.

Implicit measure

Child Implicit Association Test (AIT)

We employed a "child friendly" version of the IAT, adapted to comply with the recommendations by Baron and Banaji (2006). The test was presented as a video game in which the child moves from one level to another (from one block to another) depending on how fast and accurate his/her responses are to the categorization tasks. The test was designed using Super Lab Pro 4. The test consisted of seven blocks (Nosek, Greenwald, & Banaji, 2005). The first two blocks were simple categorization tasks used for training spatial location categorization (concepts—the target and attribute categories). In the first block, respondents were asked to categorize photographs of Roma and non-Roma children into two: Roma and Other. In the second block, they categorized verbal stimuli by positive or negative valence. The next two blocks were combined categorization tasks: Respondents were asked to press the left button when a stimulus in either the Roma category or "Good" category appeared and the right button when a stimulus in the "Other" or "Bad" category appeared. The third block was a practice block with 24 trials while the fourth block was "critical" and consisted of 48 trials. The fifth block consisted of another simple categorization task, however, with the reversed positioning of "good" and "bad" categories and twice the number of trials (48) relative to the second block. This was done to avoid the influence of previously learned spatial positions of category names (as suggested in Schnabel, Asendorpf, & Greenwald, 2007). Blocks 6 and 7 were analogous to blocks 3 and 4, with the opposite pairing of the target and attribute categories. Each stimulus was presented until a child provided a response, after which an inter-stimuli period of 400 ms followed. Incorrect answers were followed by a sad emoticon in the center of the screen and an instruction asking the participant to try to recategorize the same stimulus. The time from the stimuli presentation to the correct response was measured as the reaction time.

Two categories of stimuli were used:

1. The target stimuli for the category of concept consisted of six head shots of Roma and non-Roma children (similar to Cunningham, Preacher, & Banaji, 2001). Students from different elementary schools in Belgrade were photographed with the informed consent of parents, school directors, and teachers, who were explicitly told that the photographs would be used solely for the purposes of this

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research. The children were photographed against the same background in an identical posture and with a neutral facial expression. In a following pilot study, 20 elementary school pupils assessed the photographs' attractiveness on a 5-point Likert scale to ensure that the photographs of Roma and non-Roma children were of similar attractiveness. Both Roma and non-Roma photographs included an equal number of boys and girls (3). The photographed children were of the same age as the research participants.

2. Exemplars for the attribute category were selected from the Connotative dictionary for Serbian language (Janković, 2000a, 2000b).[1] We selected concepts of prominent positive or negative affective valence; each chosen concept had a matching opposite. Stimuli from the *good* attribute category included happiness, joy, peace, success, love, and laughter (with an average positivity of 2.52 on a scale from −3 to 3). Stimuli from the *bad* attribute category included accident, sorrow, war, hatred, failure, and tears (with an average negativity of −2.26). As suggested by Lane, Banaji, Nosek, and Greenwald (2007), in order to avoid facilitation in the categorization task, we ensured that stimuli did not share any other mutual characteristic (e.g., not to begin with the same letter).

All children followed given instructions. The registered number of errors and their mean latency times on the classification task were comparable to those of adult participants. However, standard deviations of latency times were significantly higher than those in older respondents: Where reported, standard deviations for adults are within a range from 170 to 450 ms (Cunningham et al., 2001; Fiedler & Bluemke, 2005; Yi & Kanetkar, 2010), while we registered more dispersion in the standard deviations for children (mean $SD = 972$ ms, ranging between 325 and 988 ms).

The order of administering implicit and explicit measures was counterbalanced. After taking the test, participants were individually debriefed and thanked.

Results

Preliminary analyses

Explicit attitudes

An exploratory principal component factor analysis was performed on responses to the semantic differential scale. The two factors with eigenvalues greater than 1 were extracted and subjected to varimax rotation. These factors accounted for 58% of the variance (Table 1).

Table 1 Factor Loadings for Exploratory Factor Analysis with Varimax Rotation of Attributes Scale Items

Attribute pair	Warmth/coldness	Competence
Attractive/repulsive	.89	—
Clean/dirty	.81	—
Liked/disliked	.80	—
Pleasant/unpleasant	.78	—
Close/distant	.75	—
Clear/unclear	.71	—
Safe/dangerous	.37	—
Known/unknown	.34	—
Smart/stupid	—	.82
Honest/dishonest	—	.79
Good/bad	—	.72
Hardworking/lazy	—	.67
Beautiful/ugly	.31	.52
Happy/sad	—	.50
Interesting/boring	—	.35

Attributes that had the highest loadings on the first factor were indicative of the affective evaluation of the group (attractive/repulsive, clean/dirty, liked/disliked), which we referred to as the warmth/coldness factor. The attributes with the highest loadings on the second factor were more indicative of the group's perceived ability (smart/stupid, hardworking/lazy), so we referred to it as the competence factor. Even though our aim was not to test the assumptions of the stereotype content model (Cuddy, Fiske, & Glick, 2008; Fiske, Cuddy, Glick, & Xu, 2002), the two dimensions that emerged fitted well in their stereotype map, revealing a typical paternalistic stereotype toward Roma (higher warmth and low competence). The two subscales had satisfactory internal reliabilities ($\alpha = .85$ and $\alpha = .76$, respectively), which allowed us to calculate two separate scores and perform subsequent analysis using these two scores as dependent variables. Higher total scores indicated more positive assessments on both subscales.

Child IAT

We calculated a D measure of implicit preference (DIAT) to one's own group, relative to Roma, following the algorithm proposed by Nosek et al. (2005): Responses with reaction times longer than 10,000 ms or shorter than 300 ms were excluded from the analysis, and participants who provided incorrect answers in more than 75% of trials were also excluded (one participant from the "mixed" class). Incorrect answers were penalized by adding reaction time until the correct answer was given.

[1]The Connotative dictionary is a large set of standardized and emotionally evocative words that includes contents across a wide range of semantic categories. It was developed to provide a set of normative lexical stimuli that can be used for further experimental investigations of affective meaning-related phenomena.

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Table 2 Means, Standard Deviations, and Correlations Between Variables in Study 1

Variable	*M*	*SD*	1	2	3	4
1. Warmth/coldness	29.11	11.31	—	—	—	—
2. Competence	26.70	8.42	.28*	—	—	—
3. Social distance toward Roma	3.27	1.87	–.33**	–.45**	—	—
4. *DIAT*	–0.22	0.29	.26*	.05	–.25*	—

Note. $N = 72$.
DIAT = D measure of implicit preference.
*$p = .05$. **$p = .01$.

Table 3 Explicit and Implicit Prejudice Toward Roma in Inclusive, Mixed, and Non-Inclusive Class

	Inclusive class ($N = 29$)		Mixed class ($N = 19$)		Non-inclusive class ($N = 24$)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
1. Warmth/coldness	37.21	7.94	27.67	11.31	20.41	7.42
2. Competence	27.86	8.59	30.00	6.49	22.83	8.30
3. Social distance toward Roma	2.52	1.76	3.44	1.61	4.09	1.88
4. *DIAT*	–0.16	0.28	–0.22	0.19	–0.31	0.33

DIAT = D measure of implicit preference.

The values of the *DIAT* measure ranged from .48 to –.77[2] ($M_{DIAT} = -.22$; $SD = .29$) and were normally distributed, as demonstrated by the Kolmogorov–Smirnov test ($Z = 0.85$, $p = .47$). The reliability of the child IAT ($\alpha = .73$) was within the adult IAT range of reliability as reported in Hofmann et al.'s meta-analysis (Hofmann, Gawronski, Gschwender, Le, & Schmitt, 2005). The mean error rate was 9.4%, with a range of 1.4%–20.7%.

Means, standard deviations, and correlations between measures are detailed in Table 2. All three measures of explicit out-group attitudes significantly correlated with one another. Correlational analyses also yielded moderate but significant correlations between implicit prejudice and the two measures of explicit prejudice: the DIAT measure correlated with the social distance and the warmth/coldness subscale, but not with the competence subscale.

Explicit and implicit prejudices toward Roma children in "inclusive," "mixed," and "non-inclusive" groups

Significant differences were found in explicit prejudice, but not in implicit, from our evaluation of Roma children in groups of differing levels of inclusivity (Table 3). Analysis of variance revealed a significant effect of class type on the warmth/coldness subscale scores, $F(2, 70) = 24.5$; $p < .001$, $f = .87$. Post hoc comparisons revealed significant differences between all three classes with children from the "inclusive" class scoring the highest, followed by children from the "mixed" class, while children from the "non-inclusive" class scored the lowest, indicating the most positive evaluation. A more modest effect of class type on the competence scale was also observed, $F(2, 70) = 4.62$; $p = .013$, $f = .35$, with significant differences only between ratings of pupils from the "inclusive" and "mixed" classes relative to the "non-inclusive" class. In general, children exhibited high social distance toward Roma. However, the measures were significantly different across classes, with differing degrees of inclusivity, $F(2, 69) = 5.170$, $p = .008$, $f = .40$. Post hoc tests revealed that this difference stemmed from the "inclusive" group in which the proposition of relations with Roma was rejected significantly less, compared to children from the "non-inclusive" ($p = .002$) and "mixed" classes ($p = .085$). There was no statistically significant difference between children from the "mixed" and "non-inclusive" classes ($p = .252$).

The differences in the *DIAT* measure did not reach statistical significance, $F(2, 70) = 1.571$, $p = .216$.

Discussion

We aimed to evaluate how supervised contact with the discriminated out-group member and a tolerance-supportive environment would affect both explicit and implicit ethnic prejudices. Explicit attitudes toward Roma (perceived warmth/coldness, competence, and social distance) were more positive in both "inclusive" and "mixed" classes, relative to classes with no Roma pupils. However, there were no significant differences between the three groups on the D measure, which indicates implicit preference for one's own group over an out-group, although this was most prominent in the "non-inclusive" class.

[2]Negative DIAT value indicated the preference of own ethnic group, compared to Roma.

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As for the relation between implicit and explicit attitudes, the reported pattern (correlation with the warmth/coldness subscale and social distance scale, and no correlation with the competence subscale) could be due to the fact that the competence subscale consisted of specific attributes, while the warmth/coldness subscale consisted of more abstract attributes and was more affectively saturated. From the perspective of stereotype content model, even though both warmth and competence are presented as core dimensions of social perception, warmth judgments are thought to be faster, more automatic, more global, and prior to the competence judgment (Cuddy et al., 2008). Implicit measures typically reflect global evaluations and hence tend to be more correlated with explicit measures that also assess general favorability of the attitude objects (Dovidio, Kawakami, & Beach, 2000). As automatic evaluations, they also tend to be more correlated with the affective rather then the cognitive components of attitudes (Castelli, Carraro, Gawronski, & Gava, 2010; Hofmann et al., 2005; Rudman, Phelan, & Heppen, 2007; Smith & Nosek, 2011).

In Study 1, we had focused on the effects of supervised contact, namely the effects of an inclusive school environment. We followed the logic of dissociation models (e.g., Devine, 1989) that view automatic attitudes as a product of early socialization, concrete learning, and are thus harder to shift then their self-reported counterparts. Therefore, we expected implicit preferences toward Roma to be more strongly related to mere exposure to Roma children and less responsive to inclusive interventions. This assumption is generally supported by meta-analysis demonstrating that exposure to the out-group leads to a more positive attitude, regardless of the quality of that contact (Pettigrew & Tropp, 2006); there is also direct evidence that mere exposure positively predicts implicit out-group attitudes (Turner et al., 2007). In contrast, we expected explicit attitudes to be more responsive to deliberate change through supervised contact. Furthermore, contact should not only directly influence explicit attitudes but should also cause a change of perspective that should in turn lead to attitude change.

Study 2

In this study, we again sought to compare implicit and explicit attitudes toward Roma in "inclusive" and "mixed" classes. We extended our investigation in two ways. This time, the effects of supervised contact and mere exposure on two types of attitude were registered by also measuring participants' exposure to Roma children outside of classroom, for example, in the neighborhood one is living. Previous research points to the need for further specification of the processes by which intergroup contact exerts effects on prejudice (Pettigrew, 2008). To examine the mechanism underlying the relationship between supervised contact in an inclusive classroom and the two types of attitude, we introduced a set of potential mediators whose importance is highlighted by previous research: self-disclosure (Harwood, Hewstone, Paolini, & Voci, 2005; Miller, 2002; Turner et al., 2007), intergroup anxiety (Stephan & Stephan, 1985; Turner et al., 2007; Voci & Hewstone, 2003), emotional empathy toward the out-group (Batson, Polycarpou, Harmon-Jones, & Imhoff, 1997; Stephan & Finlay, 1999), and perspective taking (Galinsky & Ku, 2004; Galinsky & Moskowitz, 2000; Vescio, Sechrist, & Paolucci, 2003). Operating either predominantly on the cognitive (perspective taking), affective (intergroup anxiety, empathy), or behavioral level (self-disclosure), these processes have been demonstrated to facilitate the influence of contact on prejudice (for meta-analysis, see Pettigrew & Tropp, 2008). As cognitive empathy is a skill that needs to be acquired and our sample consisted of children, we opted to assess perspective taking separately. We hypothesized that these processes would mediate influence of supervised contact on explicit prejudice, having in mind the deliberative nature of the intervention; in contrast, we expected implicit prejudice to be more directly influenced by exposure.

Method

Participants

Sixty non-Roma children (between 9 and 11 years, with a mean age of 10.4) were recruited from two public elementary schools in Belgrade, Serbia. Thirty-seven were drawn from two "inclusive" classes in school A and 23 from two "mixed" classes in school B. The total percentage of Roma students was 4% in school A and 7% in school B; the number of Roma students in each class varied from 1 to 4. As in Study 1, we obtained the consent of parents, teachers, and principals. Children from both groups were the same age, admitted to school through the same selection criteria, studied the same general curriculum, and all had a female teacher. Both teachers in the "inclusive" classes attended three in-service trainings.

Materials and procedure

Exposure

It was measured with one item, assessing the frequency of seeing Roma children in the participants' neighborhood (1 = *less than once a week*, 2 = *once a week*, 3 = *several times a week*, 4 = *every day*).

Mediators

Perspective taking

It was measured using a 2-item scale: "Sometimes I imagine how it must be hard for Roma students to fit in" and "It must

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be hard to be a Roma student because some do not speak Serbian well and many other students don't like them," anchored with 1 = s*trongly disagree* and 5 = *strongly agree*.

Emotional empathy

Empathy toward Roma children was assessed by adding the scores from the following three items: "I often imagine how Roma students feel," "I feel for Roma students when other students are not being nice to them," and "We should be nice to Roma students and help them settle in" (ranging from 1 = s*trongly disagree* to 5 = *strongly agree*).

Anxiety

To measure intergroup anxiety, participants were presented with this situation: "Imagine being moved to a new school where you are the only non-Roma student in your class and everyone else is Roma. How would you feel?" Participants responded on three 5-point semantic differential scales, *comfortable–tense, pleased–worried*, and *scared–not scared*, which were coded so that higher scores reflected greater anxiety.

Self-disclosure

To measure self-disclosure, participants were asked whether they would disclose a secret or something only they knew to Roma child (1 = *definitely not*, 5 = *definitely yes*).

Explicit measures

Attitude

We included the eight attributes that comprised the warmth/coldness subscale in Study 1. The subscale had acceptable internal reliability ($\alpha = .68$).

Social distance

It was measured with the same instrument as in Study 1.

Implicit measure

Child IAT

We employed the IAT, developed for the purposes of Study 1. The subsequent transformation of IAT data was identical to that used in Study 1. Internal reliability was high ($\alpha = .806$). The mean error rate was 9.4%, ranging from 0.4% to 29.6%.

The procedure was identical to that of Study 1. The order of collection of implicit versus self-report measures was counterbalanced across participants. After completion of the study, participants were debriefed and thanked.

Results

Preliminary analysis

Our participants demonstrated implicit preference toward their own group in comparison to Roma ($M_{DIAT} = -.24$, $SD = .31$), significantly different from zero, $t(62) = -6.28$, $p < .001$, expressing moderate warmth and relatively low social distance toward them. Table 4 shows descriptives and correlations between each pair of variables across the entire sample.

Explicit and implicit prejudices toward Roma in "inclusive" and "mixed" groups

To compare implicit and explicit attitudes in the "inclusive" and "mixed" environments, we first conducted a univariate analysis of variance, which yielded a significant effect on both the warmth/coldness scale, $F(1, 58) = 5.48$, $p = .023$, 95% CI (−1.284, 2.548), $d = 0.63$, and the social distance scale, $F(1, 58) = 6.28$, $p = .015$, 95% CI (−1.157, −0.196), $d = 0.67$. In contrast, and mirroring the results of the previous study, there was no significant difference in implicit measures between the groups (Table 4).

Next, we introduced exposure as a potential predictor of two types of attitudes. Missing values were replaced with a series mean; no variable had more than 5% of missing values. We conducted three hierarchical regression analyses in which we entered the level of inclusion as the first predictor, and exposure as the second predictor, with DIAT, warmth, and social distance as the criteria. Exposure explained 8% of the variance ($B = 0.74$, $SE = .03$, $p = .032$) in implicit Roma preference, and there was no incremental validity of the level of inclusion. The opposite pattern was found when explicit attitudes were the criteria: Only the level of inclusion was a significant predictor that explained 9% variance in warmth ($B = 0.74$, $SE = .03$, $p = .032$); although exposure explained

Table 4 Explicit and Implicit Prejudices, Exposure, Perspective Taking, Empathy, Anxiety, and Self-Disclosure in Inclusive and Mixed Group in Study 2

	Inclusive class ($N = 37$)		Mixed class ($N = 23$)	
Variable	*M*	*SD*	*M*	*SD*
1. Warmth/coldness	24.70	7.13	19.91	8.55
2. Social distance toward Roma	1.54	1.77	2.83	2.17
3. *DIAT*	–0.26	0.32	–0.27	0.26
4. Exposure	2.50	1.09	2.48	1.16
5. Perspective taking	8.37	1.77	7.48	3.03
6. Empathy	12.87	3.17	11.13	3.83
7. Anxiety	9.75	3.45	10.96	3.23
8. Self-disclosure	2.66	1.20	2.04	1.36

DIAT = D measure of implicit preference.

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Table 5 Means, Standard Deviations, and Correlations Between Variables in Study 2

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Warmth/coldness	22.86	7.99	—	—	—	—	—	—	—	—
2. Social distance toward Roma	2.03	2.02	–.44**	—	—	—	—	—	—	—
3. *DIAT*	–0.26	0.29	.10	–.11	—	—	—	—	—	—
4. Exposure	2.49	1.11	–.01	–.25*	.28*	—	—	—	—	—
5. Perspective taking	8.03	2.35	.29*	–.35**	.14	.18	—	—	—	—
6. Empathy	12.21	3.51	.35**	–.32**	.08	.11	.74**	—	—	—
7. Anxiety	10.21	3.39	–.51**	.39**	–.07	–.03	–.11	–.14	—	—
8. Self-disclosure	2.42	1.29	.38**	–.62**	.04	.14	.23	.27*	–.51**	—

Note. $N = 60$.
DIAT = D measure of implicit preference.
*$p = .05$. **$p = .01$.

an increment of 5% of variance in social distance ($B = -.45$, $SE = .22$, $p = .047$), the level of inclusion was still a stronger predictor (it explained 10% of variance, $B = 1.28$, $SE = .50$, $p = .013$).

Mediation analysis

Descriptive measures and correlations between all variables are presented in Table 5. In line with our previous results and hypothesis, implicit attitude was found to be positively correlated only with exposure and uncorrelated with the mediator variables, whereas both explicit attitude measures (warmth and social distance toward Roma) correlated in the expected manner with all mediator variables.

Finally, to test our multiple mediation model, we conducted a bootstrapping analysis using Hayes' (2013) Process macro. Following the recommendations of Preacher and Hayes (2004) for mediation analysis of small samples, we opted for bootstrapping. We used bias corrected and an accelerated confidence interval (95%) and resampled 5,000 times. The indirect effects were assumed to be significant if 95% CI did not include zero (Preacher & Hayes, 2008). We conducted three mediated regression analyses, with the level of inclusion as a predictor, and DIAT, warmth, and social distance as criteria, respectively, while exposure was entered as a control. We tested the indirect effects of all four mediating variables (empathy, anxiety, perspective taking, and self-disclosure). Total, direct, and indirect effects were all nonsignificant in the model predicting implicit attitudes. The total effect of the level of inclusion on the warmth/coldness scale was significant (CI = .082–1.12); after entering the mediators, the effect of the level of inclusion on warmth toward Roma became insignificant ($r = .29$, SE = .23 [CI = –.167 to .762]), and the only single significant, indirect effect was that of anxiety (CI = .037–.45). In the last analysis, the level of inclusion had a significant total effect on social distance toward Roma (CI = .275–2.277), but the direct effect was insignificant (CI = –.238 to 1.497), and self-disclosure was the only significant mediator (CI = .027–1.208).

Discussion

Our second study once again demonstrated that explicit attitudes are more responsive to deliberate change via supervised contact while implicit attitudes seem to be less prone to this type of change. We added another layer by relating implicit attitudes to mere exposure to the out-group. The finding that implicit attitudes were related to contact quantity/exposure but not to quality of contact, and that explicit attitudes showed the opposite pattern (i.e., were influenced more by approaches targeted at changing the quality of contact than contact quantity/exposure), mirrors the findings of previous research. For example, in a study by Prestwich, Kenworthy, Wilson, and Kwan-Tat (2008), White participants' explicit attitudes toward Asians were associated with contact quality, and their implicit attitudes with contact quantity. The authors employed postulates of the value account model of attitude formation (Betsch, Plessner, & Schallies, 2004) to address this differentiating impact of two types of contact. They argued that if implicit attitudes were formed through *accumulation* of value-charged experiences with an entity (i.e., summation) and explicit attitudes were formed through *averaging*, implicit attitudes should be sensitive to the *number* of experiences, while explicit should be more strongly related to the *quality* of those experiences. When assessing quantity of contact, people are not explicitly evaluating the attitude object (a certain group) but mere exposure to it, therefore this measure should be more related to implicit attitude which is also holistic and cannot be accessed on a meta-cognitive level. When assessing quality of contact, people are more likely to focus on peak experiences with group members that can be retrieved from memory—these are the same experiences that form explicit attitudes, therefore these two measures should be more closely related.

Furthermore, a set of mediators (perspective taking, empathy, anxiety, and self-disclosure) was introduced to test the assumption that they would facilitate the impact of contact on explicit, but not implicit attitudes. The results partially supported this: There was no significant mediation in

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the model with implicit attitudes as criterion, while anxiety and self-disclosure were significant mediators for warmth and social distance, respectively. This pattern might be due to the nature of the two explicit measures: The warmth/coldness scale contained affective laden attributes such as pleasant/unpleasant, close/distant, safe/dangerous, logically related to anxiety, whereas social distance and readiness to self-disclose both represented behavioral measures: More self-disclosure led to less distance. Emotional empathy and perspective taking did not mediate the effects of contact on prejudice. It may be that contact did not elicit empathic response from non-Roma children, but also that children lack the cognitive skills needed for perspective taking. Two- and 3-item measures of empathy that we employed might also have failed to capture the type of empathy that contact provoked.

Summary

Across two studies, we showed that supervised contact with Roma peers, instructed by an inclusive program, led to lesser social distance and a more positive perception of Roma, while it had no significant impact on implicit attitudes. In contrast, implicit attitudes were related to mere exposure to Roma. The results suggested that implicit attitudes might form via a more direct route, for example, through associative learning. Explicit attitudes, however, might form through more deliberate cognitive processes. The fact that intergroup anxiety and self-disclosure mediated the effect of the level on inclusion on the explicit, but not implicit attitudes further strengthened this view.

Our results support the idea that explicit attitudes are more malleable and that they tend to be the first to change in response to situational interventions. However, a longitudinal study that would repeatedly record both sets of measures could offer a more definite answer to the question of dynamics of change within both implicit and explicit attitudes. Future research would also benefit from the use of larger samples, which would be possible in the upcoming years when more schools have begun to implement the inclusive program.

Nevertheless, this study demonstrates that adding implicit measures to self-reports provides another layer of information that can help evaluate potential attitude change, particularly in social environments in which norms prohibit expression of explicit prejudice. By highlighting the mechanisms through which different types of contact shape implicit and explicit attitudes, this research also provides useful information to tailor future interventions aimed at improving intergroup relations within an educational setting.

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