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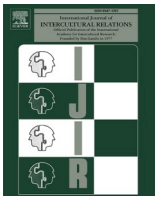

Intergroup contact buffers influence of objective and perceived peer norms on prejudice among adolescents

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ABSTRACT

While previous research has shown that intergroup contact can serve as a buffer moderating the effect of country-level social norms on intergroup attitudes, there is limited research on proximal norms in this dynamic. During adolescence, proximal norms, i.e. peer norms, become important sources of information and guide intergroup attitudes and behavior. It is an open question whether intergroup contact may also buffer the effect of peer norms. We conducted a two-wave panel study with adolescents testing the buffering effect of objective and perceived peer norms on prejudice. Results showed that the influence of both objective and perceived peer norms only affected prejudice significantly among adolescents who have not made new outgroup contacts, while it was non-significant among those whose contact numbers increased. Overall, findings suggest that intergroup contact might play a crucial role by shielding individuals from peer norms that support prejudice.

Introduction

Social norms, defined as expectations regarding appropriate conduct within any group or community, can influence people's behaviors in every aspect of life (McDonald & Crandall, 2015). As social norms form group identities and differentiate one's social group from others (Hogg & Reid, 2006), they are also influential in shaping attitudes and behaviors toward different social groups. Past studies have demonstrated the significant role of social norms in the expression of prejudice both among adults (Crandall et al., 2002; Sechrist & Stangor, 2005; Stangor et al., 2001a,b; Tankard & Paluck, 2016) and among adolescents (Aboud, 2005; Bar-Tal & Teichman, 2005; Thijs et al., 2016). Just as social norms can condemn or suppress expressions of prejudice, they can also allow or even encourage expressions of prejudice depending on the context.

When social norms are hostile toward certain groups, it is important to investigate factors that can buffer the impact of such norms on the expression and pervasiveness of prejudice, in other words, prevent norms from determining prejudicial attitudes and behaviors. Past studies have examined how factors such as lay theories about social groups (Pereira et al., 2016), motivation to control prejudiced reactions (Walker et al., 2015) or perception of intergroup similarity (Gabarrot et al., 2009) can moderate the impact of social norms on prejudice. Yet still understudied is the role that intergroup contact might play in buffering the impact of hostile social norms on

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prejudice toward targeted groups.

Since early theorizing by Allport (1954), decades of research show convincing evidence that intergroup contact, face-to-face interactions between people from different backgrounds, is effective in reducing prejudices towards various social groups (Pettigrew & Tropp, 2006; Pettigrew et al., 2011). We contend that intergroup contact may also serve an important role by buffering the influence of social norms on prejudice. In line with this view, research has shown that attitudes based on direct experiences tend to be more robust and resistant to change than attitudes based on indirect experiences (Howe & Krosnick, 2017). As compared to other prejudice reduction interventions like media campaigns and diversity trainings, contact provides first-hand information which could make it more resistant to social influence (Vonofakou et al., 2007; Ramasubramanian, 2013).

In a rare example, Visintin et al. (2020) directly tested contact's moderating role on social norms. Across five studies, the authors found that intergroup contact reduced the influence of intolerant norms on prejudice. However, they only tested the buffer effect on national norms instead of proximal norms of peers in all of their studies. However, individuals tend to conform more strongly to norms of people with whom they have direct experience, such as friends and peers, especially during adolescent years (Poslon et al., 2024; Singer, 2017; Váradi, 2014).

Visintin and colleagues tested the buffer effect both on perceived norms, individuals' own perception regarding the acceptability of prejudice in a given intergroup context, and on objective norms, aggregate measure of actual prejudice reported toward the outgroup. However, in their work, the authors examined objective and perceived norms in separate studies, rather than examining the moderating effects of intergroup contact in relation to objective and perceived norms simultaneously.

We believe the simultaneous examination of objective and subjective norms in relation to contact constitutes an important extension of this work, because these norms may not always be consistent (Prentice & Miller, 1996; Shamir & Shamir, 1997; Tankard & Paluck, 2016). Since social norms are often not formalized into written rules and information on what the majority thinks regarding acceptable behavior in a community may not be available to individuals, people usually rely on their perceptions of norms which are based on select sources. The inconsistency between perceived and objective norms might directly influence individuals' prejudicial attitudes in time as people adjust their attitudes to what they think is acceptable (Váradi et al., 2021). In this dynamic, perceived norms, may become objective norms over time, in case individuals internalize the attitudes they perceive as normative (Váradi et al., 2021). Durrheim et al. (2016) point to the dynamic relation between norms and prejudice, suggesting that norms should not only be understood to guide the expression or suppression of prejudice but also to acknowledge that prejudicial expressions contribute to the formation of norms. Therefore, it is important to capture this dynamic over time and also to distinguish the effects of objective and perceived norms when assessing contact's moderating effect.

The present study focuses on antigypsyism[1] among adolescents in Hungary where neither societal nor institutional norms condemn expressing prejudice against Roma people. Considering the importance of proximal reference groups during adolescence, we focus on changes of peer norms in a classroom context rather than country level norms when studying prejudice. The goals of the present research are (1) to investigate how objective and perceived peer norms may change over time, (2) examine the moderating role of contact in relation to both objective and perceived peer norms, and (3) to compare the moderating effect of contact on objective vs. perceived peer norms on antigypsyism in a dynamic way, looking at the change between the beginning and end of the first secondary school year.

Our study extends previous research on contact's buffering effect on norms in multiple ways; 1) we differentiate between objective and perceived norms, 2) we measure norms in proximal reference groups (classmates), 3) we test the phenomenon among adolescents rather than adults, 4) we look at change of perceptions and attitudes in a two-wave panel study, 5) we conduct the study in a new context with exclusive norms.

Influence of peer norms on prejudice

Past studies show convincing evidence for the significance of social norms in shaping expressions of prejudice both among adults (Crandall & Stangor, 2005; Tankard & Paluck, 2016) and among adolescents (Aboud, 2005; Thijs et al., 2016). Moreover, multiple experimental studies demonstrate that normative consensus among ingroup members can bolster beliefs about outgroup members and make these beliefs more resistant to change (Haslam et al., 1996; Stangor et al., 2001a,b; Sechrist & Stangor, 2007). A crucial issue to consider when testing effects of norms involves the level at which reference group norms are assessed (Sherif, 1953; McDonald & Crandall, 2015). Many studies rely on country averages as aggregate measures of norms (Schreier et al., 2010; Heinrichs et al., 2006; Stavrova et al., 2013; Visintin et al., 2020). However, this approach is limited, in that it does not allow for examining variation in norms within a given country (Weziak-Bialowolska, 2015), nor does it acknowledge the importance of proximal and highly local reference groups, such as peers and classmates during childhood and adolescence (Aboud, 2005), or coworkers in adulthood (Singer, 2017). Illustrating the importance of this distinction, Váradi (2014) compared associations between perceived norms and prejudice, finding that adolescents' anti-Roma prejudice was more closely associated with the perceived acceptance of prejudicial expressions among proximal groups, as family members, friends and classmates, and less so among average citizens. Recently, Poslon and colleagues (2024) found that classmate's norms predict majority group adolescents' preference for intergroup contact in Slovakia but national norms don't.

Regarding normative climates in school classes, a number of past studies found distinct norms regarding levels and acceptance of

[1] In this paper we use the term antigypsyism when discussing prejudice against Roma people, as suggested by End (2015). Thus, we acknowledge that the group "Gypsy" is a construct and includes all people and groups labelled as "Gypsy" by those harboring and expressing prejudice.

ethnic prejudice across adolescents' classrooms (Váradi, 2014; Özdemir & Özdemir, 2020; Albarello et al., 2022). Beyond classmate attitudes and norms, these classroom normative climates may also include institutional norms transmitted by teachers (Gniewosz & Noack, 2008; Eckstein & Noack, 2015). Considering the relation between peer norms and prejudice, many intervention studies target peer influence, such as by using peers as communicators of normative information or presenting summaries of peer norms in order to reduce prejudices (for review see: Paluck et al., 2021). For these reasons, in the present research we focus on peer norms in a classroom context rather than country level norms when studying prejudice.

The association between peer norms and prejudice has been studied in the context of intergroup contact as well. Social norms are important for predicting willingness for intergroup contact which is related to prejudicial attitudes. Children who think that their peers support contact with other ethnic groups are more likely to show interest in cross-group friendships, even after controlling for prior cross-group friendships (Tropp et al., 2014; Schachner et al., 2015). Beyond interest in intergroup friendships, peer norms influence greater comfort and higher quality in intergroup contact (Tropp et al., 2016). Moreover, extended contact, i. e. having ingroup contacts who have outgroup contact, reduces prejudices by creating perceptions about inclusive norms regarding contact (Wright et al., 1997; Turner et al., 2008). Voca and colleagues conducted correlational and experimental studies in the Hungarian context where egalitarian social norms are weak and antigypsyism is a socially accepted attitude. They found that presenting positive contact with Roma people as normative through positive extended contact has greater impact on reducing prejudice against Roma people than positive direct contact experiences (EASP Collaborative Research Grant Report, n.d.). These studies draw attention to the importance of extended contact and to the role of norms in the link between contact and prejudice reduction.

Buffering role of intergroup contact

Many studies have shown that intergroup contact can buffer the impact of factors that induce prejudice; that is, people who have greater contact with outgroup members are less influenced by contextual elements that normally foment prejudice (see, e.g., Laurence, 2014; Schmid et al., 2014). Social norms are also part of the broader context which greatly influences intergroup attitudes. Nevertheless, personal experience may be resistant to such social influence (Howe & Krosnick, 2017). Contact provides an opportunity to get first-hand knowledge about outgroup members through direct experience, whereas social norms are second-hand information as they signal what fellow ingroup members think about outgroup members. Therefore, intergroup contact may be more powerful than social norms in influencing intergroup attitudes. In a recent study focusing on inclusive norms in France, Valsecchi et al. (2024) found that inclusive norms are more effective in reducing prejudice in case there is opportunity for contact.

Through five studies, Visintin et al. (2020) actually tested whether intergroup contact could buffer the influence of intolerant national norms on prejudice. In their program of research, they used different samples, mainly of adults including Bulgarian ethnic majority, Swiss majority from French and Italian cantons and Europeans at large from the European Social Survey which includes citizens from 21 countries. They conducted both large scale survey studies and experiments, and operationalized intergroup contact and social norms in different ways, focusing on both perceived norms and objective norms in separate studies. The results consistently showed that the influence of hostile social norms on prejudice is decreased for individuals who have contact with members of the outgroup. Although these results show convincing evidence for the buffer effect of intergroup contact regarding national norms, it is important to study contact's effect on peer norms as well. Furthermore, studying the effect of contact on both perceived and objective norms jointly in the same context can bring further clarity to the buffer effect, since the two types of social norms might not be consistent and have differing impacts on prejudice.

Perceived norms vs. objective norms

Objective norms (i.e. prevailing norms) refer to how people in general are actually behaving or what people think about acceptable behavior. Objective norms can be inferred from formal structures such as legal frameworks and from empirical data such as scientific studies and surveys. Perceived norms, on the other hand, refer to individual's own idea of how people in general behave or what they believe is acceptable. Social norms may not always be codified into rules and laws, and data on social consensus about acceptable behavior may not be available to the average person (Tankard & Paluck, 2016). Therefore, people often rely on their perceptions of norms when making social judgments. Nevertheless, individuals tend to focus on the most visible or memorable examples, which may not reflect the actual norm (Tversky & Kahneman, 1973). Moreover, media and cultural narratives can distort perceived norms by amplifying extreme examples. Since they rely on select sources of information about norms and are prone to biases, individuals may not accurately estimate what others think (Prentice & Miller, 1996; Shamir & Shamir, 1997). Therefore, studies examining the influence of norms on attitudes and behaviors should address both perceived and objective norms. Shared illusions about acceptability of prejudice in society may lead to increase of hostile attitudes toward outgroups. When people who are not actually prejudiced falsely believe that the majority thinks it is acceptable to express prejudicial views, they will hesitate to voice their opinion in public and not question the norm of acceptance of prejudice. Moreover, since people who think that they hold the majority view are more vocal about their opinion, people who believe that they hold the view of a minority remain silent due to fear of exclusion from the group (see Noelle-Neumann, 1984). Therefore, this silence then spirals into increased acceptance of prejudice in time. Pluralistic ignorance and the spiral of silence phenomena highlight the importance of investigating the impact of perceived and objective norms over a period of time.

The rise of populist and right-wing movements may change people's perception of prevailing norms even in contexts with long-standing multicultural traditions and strong norms discouraging prejudice. Hostile discourse by political authorities and media attention to the surge of right-wing groups may lead people to overestimate the consensus on intolerant attitudes towards minority

groups which then results in increase in expressions of prejudice (Crandall et al., 2018; Kende & Krekó, 2020). This process can also occur in immediate environments such as schools. Using panel data from Hungarian ninth graders Váradi and colleagues (2021) found that at the beginning of their first school year in secondary school, students overestimate the acceptability of expressing prejudice against Roma people in their classes, and by the end of the year many of them adjusted their own attitudes to the falsely perceived class norm. These findings suggest that interventions to buffer the negative influence of norms about expression of prejudice should focus on both perceived and objective norms, and in a dynamic way.

Contact and prejudice in adolescence

As adolescence is a crucial time for identity formation (Durkin & Judge, 2001; Klimstra et al., 2010; Meeus, 2011), it is especially important to study and intervene on prejudice among adolescents. A meta-analysis by Raabe and Beelman (2011) suggests that social context is more important than social-cognitive development in influencing intergroup attitudes among adolescents, as compared to among children (Raabe & Beelmann, 2011). Other studies also confirm the importance of peer influence on adolescents' developing intergroup attitudes (Aboud, 2005; Bar-Tal & Teichman, 2005). In support of these models, in a five-wave panel study Hjerm et al. (2018) found that peers' levels of prejudice influence individual prejudice over time. Similarly, in a cross-sectional survey among 1038 Hungarian adolescents Váradi (2014) found significant similarity in the prejudicial attitudes of best friends.

Since adolescence is a crucial time for the development of prejudicial attitudes, it is important to investigate the effectiveness of prejudice reduction strategies like intergroup contact at this age. Wölfer et al. (2016) conducted a four-wave longitudinal study with Swedish adolescents and found that intergroup contact in the years of early adolescence significantly influence intergroup attitudes even at later ages. Depending on the context, schools can often provide youth with opportunities for close and collaborative intergroup contact, which have the potential to lead to lifelong friendships (Beelmann & Heinemann, 2014; Dessel, 2010). However, in contexts such as Hungary, where there are openly hostile prejudices toward Roma people, schools tend not to be ethnically diverse; instead, ethnic segregation in education is common, such that adolescents' opportunities for cross-ethnic contact are limited, and most opportunities for contact occur outside of school settings, such as in neighborhoods (Merrilees et al., 2018) or during extracurricular activities (Schaefer et al., 2018). As ethnic segregation in schools limits extensive intergroup contact opportunities in school settings, focusing on norms is particularly important in this context.

Antigypsyism in Hungary

Roma people are the largest ethnic minority in Europe with 10 to 12 million living across Europe and they continue to face systematic marginalization and discrimination, despite the discrimination ban across EU Member States (Directorate-General for Justice & Consumers, 2020). Social exclusion and discrimination of Roma people is particularly severe in Hungary, which is one of the EU Member States. Roma people constitute the largest ethnic minority in Hungary and have a history of over 500 years in the country (Mezey, 1998; Kemény, 2005; Dupcsik, 2009). Throughout the history, they have been depicted as "uncivilized" (Puskás & Végh, 1998) and prejudice against Roma people persists to this day in Hungary. According to a Pew survey in 2019, 61 % of Hungarians hold unfavorable views of Roma people.[2] Other nationally representative surveys show that 60 % of Hungarians think Roma people are less "evolved and civilized" than non-Roma Hungarians (Kteily et al. 2015) and are inherently inclined to be criminals (Bernát et al., 2013). Prejudice against Roma people in Hungary is also a severe problem because institutional and societal norms don't condemn expression of prejudice which makes it more difficult to eradicate it (Kende et al., 2017a,b). Anti-Roma discourse is prevalent in Hungarian mainstream media (Bernáth & Messing, 2013; Vidra & Fox, 2014) and politics (Oláh, 2015).

Although there have been fewer studies on antigypsyism among Hungarian youth, results of existing ones are consistent with the attitudes of adults in the country. Váradi (2014) explores the development of anti-Roma prejudice among Hungarian adolescents and concludes that prejudice among younger people will persist unless social norms on the acceptability of anti-Roma prejudice change. Schools in Hungary are mostly ethnically segregated mainly due to residential segregation which separates low class Roma people from the rest of the Hungarian population. Parents' liberty to choose schools for their children, which was introduced after the fall of communism, and the expansion of church school system more recently exacerbated educational segregation (Papp & Neumann, 2021; Mártonfi, 2015; Zemandl, 2018). Anti-Roma prejudice among Hungarian youth is aggravated by the educational segregation problem which immensely limits opportunities for intergroup contact, especially regarding the chances of becoming classmates (Messing, 2017; European Commission, 2018; Radó, 2019). Past research investigating contact between Roma and non-Roma Hungarian youth showed mixed results. Several survey studies found negative correlation between self-reported contact and anti-Roma prejudice, controlling for empathy and Social Dominance Orientation (Váradi, 2014; Váradi et al., 2021). A quasi-experiment by Kende et al. (2017) with a contact-based intervention showed significant positive change in attitudes between pre and post tests and this change was moderated by perceived institutional norms. On the other hand, a large field experiment covering 39 Hungarian schools found no effect of interethnic exposure on anti-Roma discrimination in classrooms (Elwert et al., 2023). These mixed results indicate the importance of considering the impact of normative context when studying the association between intergroup contact and prejudice, especially in contexts with exclusive societal and institutional norms (Tropp & Dehrone, 2023).

[2] https://www.pewresearch.org/global/2019/10/14/minority-groups/

Present study

Through a rigorous and inspiring program of research, Visintin et al. (2020) demonstrated that intergroup contact can buffer the influence of intolerant national norms on prejudice. Nevertheless, as they state in their paper, the interplay between contact and norms on prejudice is complex so "future research should aim at disentangling in which contexts and for which facets of norms one effect is more likely to occur than the other one" (p. 18). We believe that several questions related to contact's buffer effect on norms are worthy of further investigation. First, Visintin and colleagues used country averages to estimate objective norms, not capturing the variance in norms within a country, though individuals tend to conform more strongly to norms in reference groups, with whom they have direct experience (Singer, 2017; Polson et al., 2024). Classmates, for example, spend considerable amount of time together, thus, the effect of class norms may be stronger than that of national norms (Váradi, 2014; Poslon et al., 2024). Second, Visintin and colleagues examined contact's buffer effect only among adults. Considering the impact of peer influence on prejudicial attitudes during adolescence (Aboud, 2005; Hjerm et al., 2018; Tropp et al. 2022), more work is needed to test for replication among adolescents in a school context. Third, although Visintin and colleagues used varied operationalizations of norms across their studies, they have not tested intergroup contact's effect in relation to both objective and perceived norms within the same study; this step is necessary to determine whether contact is comparably effective in serving as a buffer against each type of norms. Fourth, the authors conducted cross-sectional survey studies and experiments to investigate the buffering effect of contact in relation to norms of intolerance; however, neither of these research approaches allows for examining how changes in objective and perceived norms shape prejudice over time, though the relation between norms and prejudice has a dynamic nature (Durrheim et al., 2016). Finally, based on an overview of the field of social norm research, most studies are predominantly from the USA and Western European countries with fairly inclusive norms (Shulman et al., 2017). Nevertheless, even within the European Union, there are countries where expressing explicit prejudice against certain minorities is acceptable (Kende et al., 2017a,b, 2021). Therefore, it is important to conduct research on the interplay of contact and prejudice in contexts in which norms enable expressions of prejudice and inhibit intergroup contact.

Addressing these issues, we use data from a large-scale panel survey of secondary school students in Budapest, Hungary where we measured both objective and perceived peer norms, intergroup contact levels and anti-Roma attitudes at the beginning and at the end of the first year of secondary school. We aimed to answer several research questions with this study. First, we examined if objective norms and perceived peer norms are consistent at the beginning of the school year and whether they diverge or converge by the end of the school year. We expect that objective and perceived norms will have a weak association especially at the beginning of the school year, when students in new school classes do not know each other yet. Then, we tested whether contact could buffer the influence of both objective and perceived peer norms in classrooms on antigypsyism and expected that contact would be effective on both types of norms. We also compared the strength of contact's buffering effect on objective vs. perceived norms but we did not a have a directional prediction. Considering the broader context of school segregation and of intolerant norms when it comes to attitudes toward Roma people, it would be especially important to see the buffer effect of contact in a place like Hungary.

Methods

Participants and procedure

The data for this study comes from a larger panel study titled "Class climate, attitude climate" which Váradi et al. (2021) used to examine social norms in classroom settings and intergroup attitudes among Hungarian secondary school students during their first school year. The larger dataset includes a proportionally stratified probability sample of secondary schools in Budapest, the capital city of Hungary. The sample represents the heterogeneity of school types in Hungary in terms of governing body (state or church) and academic track (vocational and grammar school). From 32 schools and 59 classes, a total of 1400 students completed the first survey at the beginning of the school year and 1100 students completed the second survey administered at the end of the school year. A total of 896 students completed both surveys.

To examine intergroup contact's buffering effect on objective and perceived social norms in the present study, we excluded classes with less than 10 students, to have a valid estimation of objective norms at the classroom level. In addition, 5 individual respondents were excluded due to not answering questions related to key variables relevant to this study. We also excluded 47 individuals whose number of Roma contacts was at maximum according to our scale in both waves since we examine change in contact across time.[3] These exclusions left us with responses from 813 adolescents for analysis. All respondents in this final sample identified as ethnically Hungarian.[4] The mean age of respondents in this final sample was 15 years ($SD = 0.55$) at the first wave of data collection and 53.9 % of the respondents identified as female.

The first wave of data collection took place in September and October of 2016, at the beginning of the school year; the second wave

[3] Due to the nature of the measurement scale, respondents with the maximum number of contacts at the first time point could not possibly indicate increase in their number of contacts. That was the reason those with maximum contact at both time points had to be excluded, not to falsely place them in the subsample with no change or decrease in the number of contacts. In order to check the robustness of our results, we repeated the analysis without deleting these 47 individuals and obtained comparable results: the same variables were significant in the regressions, with the same sign and effect size.

[4] Despite using a probability sample, this final analytic sample did not include any respondents of Roma origin which could be due to educational segregation of Roma students, discussed above.

of data collection occurred 8 months later, during the final weeks of the school year, in May 2017. Before administering the surveys, researchers informed the principals and teachers of participating schools about the study and sent consent forms to the parents regarding their child's participation. Students filled out questionnaires at their schools during class time in computer labs. Instead of responding to the questions through an interviewer, students completed the surveys on their personal computers to minimize social desirability bias. Moreover, at the time of data collection, a member of the research team was always present to make sure respondents did not communicate with each other and the teachers did not intervene.

Measures

Some of the items used in this study were taken from an earlier survey measuring Hungarian adolescents' intergroup attitudes (Váradi, 2014) and some items were newly developed and pretested through a series of cognitive interviews (Beatty & Willis, 2007).

Antigypsyism, i.e. prejudice against Roma people among Hungarian adolescents was measured with five items. Three items were adapted from Bogardus's (1924) social distance measure; *"How would you feel about having a Roma*[5] *student as your desk-mate?", "How would you feel about having Roma classmates?", "How would you feel about having Roma schoolmates?"* (0- would be unhappy and 10- would be happy). According to Bogardus (1925) social distance demonstrates antipathy and dislike toward certain social groups hence it used as a measure of prejudice in numerous past studies (e.g. Shi et al., 2024; Weaver, 2008) Other items included "*Would you accept a friend of Roma origin?"* (0- would not accept and 10- would accept and be happy) and *"How do you feel about Roma people in general?"* (0- I do not like them and 10- I like them). Cronbach's alpha indicated excellent reliability for these items at both time points ($\alpha_1 = 0.95$ and $\alpha_2 = 0.96$). Item scores were reverse-coded and averaged to create a composite measure where a low score (0) would indicate low prejudice and a high score (10) would indicate high prejudice.

Perceived peer norms in the classroom regarding the acceptability of expressions of antigypsyism were assessed by asking students what most of their classmates would think if a classmate made anti-Roma remarks. "*Imagine the following situation: one of your classmates says bad things about Roma people in front of everyone. What would most of your classmates think about this?,* (0- most of them would not agree at all and 10- most of them would fully agree). Higher scores on this measure means that students believe it is more acceptable to express prejudice against Roma people.

Objective peer norms in the classroom were estimated by taking the class average of the 5-item antigypsyism composite measure, while excluding the individual's own response to not violate independence of observations.

Intergroup contact with different religious and ethnic minority groups that also include Roma people was measured using three items. These items included *"How many friends do you have from these groups?", "How many acquaintances do you have from these groups?" which measure direct contact* and *"How many friends do you have who have one or more friends from any of these groups?" which measures extended contact.*[6] For the purposes of this study, we focused on respondents' answers pertaining to Roma people to examine in relation to their reported prejudice against Roma people. The response options included 0, 1, 2, 3 and more than 3. Cronbach's alpha indicated excellent reliability for these items at two time points ($\alpha_1 = 0.85$ and $\alpha_2 = 0.88$). Therefore, we created a composite measure of intergroup contact with Roma people by summing the scores for the questions regarding direct and extended contact with Roma people. Lower scores indicate low intergroup contact while higher scores indicate high intergroup contact.

Results

Descriptive statistics and correlations: comparing objective and perceived norms

First, we computed descriptive statistics characterizing the distribution of the main variables used in the analysis, as well as correlations characterizing the pairwise relationship between variables. Specifically, we observed the baselines and the change of perceived and objective norms in time, and their association at different time points. At the beginning of the school year, the mean level of anti-Roma prejudice was 5.84 on a 0–10 scale ($M_1 = 5.84$, $SD_1 = 2.87$) that slightly decreased by the end of the year ($M_2 = 5.53$, $SD_2 = 2.80$). Thus, both at the beginning and at the end of the school year, on average, anti-Roma prejudice of students was above the mid-point which demonstrates hostile objective norms against Roma people among adolescents in Hungary. Regarding subjective norms, measured by the perceived acceptability of anti-Roma remarks, at the beginning of the school year, respondents thought most of their classmates would have an acceptance slightly below the mid-point of the 0–10 scale ($M_1 = 4.14$, $SD_1 = 3.03$). By the end of the school year, respondents' perception of the classmate ($M_2 = 4.49$, $SD_2 = 2.96$) norms slightly increased, suggesting that on average, respondents thought, anti-Roma remarks became more acceptable among their classmates. See Table 1 for the descriptive statistics of objective norms, perceived classmate norms, contact with Roma people and prejudice levels at Time 1 and Time 2. Note that the magnitude of change is significant for all four variables ($p < 0.01$). Table S1 in the Supplement contains descriptive statistics for the change in these four variables between the two time points - these statistics are relevant for the effect size assessment of the regression results.

[5] As explained by Váradi (2014, p. 89–90.), and in line with the decision made by the Roma community at the First World Romani Congress in 1971 (Kenrick, 1971) to self-define as Roma, in the questionnaire the term "Roma" was used instead of the more offensive term "Gypsy". If this decision had any effect on the level of prejudice captured by this study, it had led to a more conservative estimate of antigypsyism.

[6] As indicated by earlier research, extended contact with Roma people is highly relevant for the Hungarian context, therefore, we decided to include this aspect in our contact measure. As suggested by the Cronbach's alpha's direct and extended contact are closely related in our sample.

Table 1
Descriptive statistics of predictor and outcome variables at Time 1 and Time 2.

	Time 1			Time 2		
	M	SD	Range	M	SD	Range
Predictors						
Perceived Classmate Norms	4.14	3.03	0–10	4.49	2.97	0–10
Objective Classmate Norms	5.67	0.85	3.65–8.58	5.38	0.98	2.76–7.93
Contact with Roma People	2.82	3.09	0–10	3.70	3.30	0–10
Outcome						
Antigypsyism	5.84	2.87	0–10	5.53	2.80	0–10

Both types of norms (perceived and objective classmate norm) are significantly correlated with antigypsyism at both time points. (See Table 2 for the correlation Matrix with all variables for Time 1 and Time 2). Importantly, comparing the strength of association, perceived classmate norms' (r_1 =.37, p_2 <.001; r_2 =.28, $p < .001$) association with prejudice became weaker by the second time point. On the contrary, the association between objective norms and prejudice became nearly twice as strong from the beginning to the end of the first school year (r_1 =.11, $p < .001$; r_2 =.20, p_2 <.001). Thus, by having spent one school year together, students became more susceptible to following the objective classmate norm and adjusting their prejudice to that. Still, perceived classmate norms have a stronger association with antigypsyism (r_1 =.37, p_1 <.001; r_2 =.28, p_2 <.001) than objective classmate norms (r_1 =.11, p_1 <.001; r_2 =.20, p_2 <.001) at both times.

We examined correlations among objective and perceived classmate norms over time to understand their association. The association between perceived norms and objective norms for the acceptability of antigypsyism among classmates at the beginning of the school year was significant but very weak ($r = .15$, $p < .001$). Similarly, the association between perceived and objective norms at the end of the school year was also significant but very weak ($r = .16$, $p < .001$). We also examined the association between the change of perceived norms and the change of objective norms during the school year. The change of perceived norms and objective norms for the acceptability of prejudice against Roma people among classmates from time 1 to time 2 was not significantly associated ($r = .04$, $p = .290$). Correlations indicate that intergroup contact with Roma people has a negative and moderate association with antigypsyism both at the beginning ($r = -.33$, $p < .001$) and at the end of the school year ($r = -.37$, $p < .001$).

Regressions: testing intergroup contact as moderator of norms on prejudice

Given that our data involve students nested in school classes, we planned to utilize multilevel linear regression models to test the buffer effect of contact on perceived and objective norms. However, as this model showed a non-significant class-level variance with a negligible intraclass correlation, we decided to turn to single-level linear regression. Regression assumptions and non-multicollinearity were tested and satisfied. We therefore proceeded to test hypotheses regarding contact's buffering effect on objective and perceived norms using linear regression. Specifically, we used regression models based on "gain score modeling" (see, e.g., Gelman & Hill, 2007, pp. 177–178), where the dependent variable (change in antigypsyism) was calculated by subtracting the score at the first time point from that at the second time point. Similarly, for objective and perceived peer norms, and intergroup contact, we defined their change between the two waves by subtraction. Thus, our independent variables are as follows: perceived peer norms (at Time 1 and its change between Time 1 and 2), objective peer norms (at Time 1 and its change between Time 1 and 2), intergroup contact (at Time 1 and its change between Time 1 and 2). We also include gender and perceived teacher norms[7] as control variables.[8]

We defined the units of measurement of all the predictors so that the effect sizes can be directly interpreted and compared: all variables are either measured on a 0–10 scale or are derived from such a variable in a straightforward way. Perceived norms and intergroup contact were transformed to a 0–10 scale. Variables measuring change are defined as the difference between two variables measured on a scale of 0–10, and finally, the variable measuring objective norms is defined as a class-level average of a 0–10 variable. Both standardized and unstandardized regression coefficients were calculated.

Since our aim was to test whether intergroup contact could buffer the influence of objective and perceived classroom norms on prejudice, we fitted a regression model including change in Roma contacts as an interaction term with all the predictors in the model. The change in contacts is coded as a binary variable defining two subsamples, with a value of 1 if the number of contacts has increased, and a value of 0 if the number of contacts has decreased or remained unchanged. This solution allows the effect of the predictors to differ across the two subsamples (see Table 3 and Table 4), and we can also test the extent of their difference (Table 5). The size and gender distribution of the two subsamples was balanced: out of 813, there were 409 students whose contacts have decreased or remained unchanged (45 % of them boys) and 404 students whose intergroup contacts have increased (48 % of them boys). We entered gender of respondents, and Time 1 and change of perceived norm among teachers as control variables, and Time 1 and change of perceived norms among classmates, Time 1 and change of objective norms among classmates and Time 1 and change of contact with

[7] As classroom normative climates may also include institutional norms transmitted by teachers (Gniewosz & Noack, 2008) and since in our earlier work we showed that perceived classmate norms and perceived teacher norms influence each other's effect on individual prejudice (Váradi et al., 2021), we control for perceived teacher norms (measured identically to perceived classmate norms) in our models.

[8] We also conducted regression analyses removing control variables. See the Appendix for the results.

Table 2
Correlation matrix with all variables for Time 1 and Time 2.

Time 2 Time 1	1	2	3	4
1. Antigypsyism	-	.28***	.20***	−.37***
2. Perceived Norms_Classmates	.37***	-	.16***	−.10**
3. Objective Norms_Classmates	.11**	.15***	-	−.10**
4. Contact with Roma	−.33***	−.04	−.13***	-

Note. *p < .05 **p < .01 ***p < .001; Below the diagonal are correlations of scores at Time 1, and above the diagonal are correlations of scores at Time 2.

Table 3
Types of norms and contact predicting change in antigypsyism among respondents whose Roma network has decreased or remained the same between Time 1 and Time 2.

Predictors	b	β	SE	t	p
Perceived_Classmate_1	−.08	−.10	.05	−1.43	.153
Perceived_Classmate_dif	.10	.14	.05	2.09	.037
Objective_Classmate_1	.28	.10	.14	2.03	.043
Objective_Classmate_dif	.47	.14	.17	2.82	.005
Contact_Roma_1	−.01	−.02	.04	−0.36	.718
Contact_Roma_dif	−.27	−.21	.08	−3.57	< .001
Control variables					
Gender	−.18	−.04	.23	−0.78	.434
Perceived_Teacher_1	−.03	−.03	.07	−0.46	.642
Perceived_Teacher_diff	−.08	−.11	.05	−1.64	.101

Table 4
Types of norms and contact predicting change in antigypsyism among respondents whose Roma network has increased between Time 1 and Time 2.

Predictors	b	β	SE	t	p
Perceived_Classmate_1	−.08	.03	.05	−1.54	.123
Perceived_Classmate_dif	.02	.02	.05	0.31	.754
Objective_Classmate_1	.09	.03	.14	0.60	.552
Objective_Classmate_dif	−.005	−.001	.18	−0.03	.979
Contact_Roma_1	−.001	−.001	.05	−0.02	.985
Contact_Roma_dif	−.11	−.10	.06	−1.97	.050
Control variables					
Gender	−.07	−.01	.23	−0.30	.766
Perceived_Teacher_1	−.04	−.04	.07	−0.53	.597
Perceived_Teacher_dif	.07	.08	.06	1.22	.224

Table 5
Difference between Table 4 and Table 3 results, i.e. the positive values of diff(b) indicate that the coefficient of the predictor was higher among respondents whose Roma network has increased between Time 1 and Time 2. SE, t and p are also associated with the difference.

Predictors	Diff(b)	Diff(β)	SE	t	p
Perceived_Classmate_1	−0.007	−0.008	0.08	−0.09	0.93
Perceived_Classmate_dif	−0.083	−0.079	0.07	−1.23	0.22
Objective_Classmate_1	−0.192	−0.233	0.20	−0.97	0.33
Objective_Classmate_dif	−0.473	−0.097	0.25	−1.93	0.05
Contact_Roma_1	0.014	0.013	0.06	0.23	0.82
Contact_Roma_dif	0.163	0.147	0.10	1.71	0.09
Control variables					
Gender	0.109	0.020	0.33	0.33	0.74
Perceived_Teacher_1	−0.006	−0.005	0.10	−0.06	0.95
Perceived_Teacher_dif	0.153	0.124	0.08	2.01	0.05

Roma as predictors of change in antigypsyism.

Levels of Contact with Roma Decreased or Remained Unchanged. In the first subsample of respondents with decreased or unchanged number of contact, both change in perceived norms among classmates (β =.14, p = .037) and change in objective norms among classmates (β =.14, p = .005) significantly predicted the change of antigypsyism, controlling for all other variables. As can be seen, the beta is equal and significant in both cases, and relatively strong in comparison to the betas of the other independent variables. In other words, changes in objective and perceived norms have an equally strong effect on antigypsyism among those whose contact

has decreased. Moreover, objective norms at the beginning of the school year also significantly predicted the change in antigypsyism (β =.10, p = .043). See Table 3 for the effect sizes and p-values for all variables predicting change in antigypsyism among students whose Roma network has decreased or remained unchanged during the school year.

Level of Contact with Roma Increased. Among respondents whose contact with Roma people increased over time, neither the change in perceived classmate norms (β =.02, p = .754) nor the change in objective classmate norms (β = −.001, p = .979) predicted change in antigypsyism. Moreover, objective norms at the beginning of the school year did not predict the change in antigypsyism (β =.03, p = .552). See Table 4 for the effect sizes and p-values for all variables predicting change in antigypsyism among students whose Roma network has increased during the school year.

Comparing the results for the two subsamples, it is evident that we see the buffering effect of contact. While both objective and subjective norms' change were found to be significant predictors of antigypsyism among students who did not make new contacts with Roma people between the two measurement times, we found no such significant relationship among students who did make new Roma contacts during their first year of secondary school. When the two subsamples are compared using a statistical test (Table 5), the effect of change in objective norms is significantly different, confirming the presence of the buffering effect of contact. However, the difference is not significant for subjective norms. That is, although the effect of the change in subjective norms is significant in one subsample and not in the other, suggesting the presence of the buffering effect, we have no statistical evidence of a difference between the two effects, presumably due to sample size limitations.

As the two variables, change in objective and perceived norms, have very different ranges and variances (see Table S1), the standardized regression coefficient is appropriate for their comparison, see Schielzeth (2010), Based on the standardized coefficient, the effect of the change in objective norms is of the same magnitude as the effect of the change in perceived norms among students whose Roma networks decreased or remained the same(β=0.14 for both variables). In this comparison, contact is understood to buffer the effect of both types of norms to a similar extent.

Discussion

This research aimed to not only replicate contact's buffering effect on proximal, peer norms, instead of distal, national norms, (see Visintin et al., 2020) in a different intergroup context and age group but also to examine this effect on objective and perceived norms jointly and dynamically relying on two-wave panel data. We investigated the change in Hungarian secondary school students' direct and extended Roma contacts, the change in objective and perceived peer norms around expressing prejudice against Roma people in classrooms and the change in students' own prejudice levels against Roma people across the school year. First, we examined if objective norms and perceived norms are consistent at the beginning of the school year and whether they diverge or converge by the end of the school year. We found a significant but weak association between objective and perceived norms of classmates at both times. The correlation only became slightly stronger by the end of the school year which suggests that time spent together in class did not change false perceptions about norms. This is proof of the importance of conceptually differentiating between objective and perceived norms and testing their buffering effect separately. If Hungarian students don't often talk about their attitudes towards Roma people among themselves, their misperception of norms for expression of anti-Roma bias would persist despite time spent together, as demonstrated by a previous study among Hungarian adolescents (Váradi, 2014). Moreover, although the association remained weak, perceived and objective norms slightly converged at the end of the school year.

Second, we tested whether contact could buffer the influence of both objective and perceived intolerant norms in classrooms on antigypsyism and whether the buffer effect is stronger on one type of norm vs. the other. The results showed that, when Hungarian students' contact with Roma people remains the same or decreases across the school year, both changes in objective and perceived norms significantly predict change in individual prejudice. Besides change, baseline objective norms could also predict change in prejudice. This means that when contact does not increase in time, norms are influential in shaping prejudice. On the other hand, among students whose contact with Roma people increased in time, neither objective nor perceived norms could significantly predict change in prejudice. These results indicate that intergroup contact has the power to buffer the influence of both objective and perceived hostile norms on prejudice, not only at one time point but also across time.

The results are in line with Visintin et al.'s (2020) findings showing that both perceived (Study 1) and objective (Study 2) intolerant norms have weaker associations with prejudice when individuals have frequent contact with minority group members. Moreover, although Poslon et al. (2024) did not directly test the buffering effect of contact, they examined the influence of perceived parental, classmates', and national level norms on adolescents' attitudes toward immigrants in a context of low intergroup contact with immigrants and found a significant association. By testing the norm-prejudice association among both students that have increasing intergroup contact and students that have decreasing or stagnant levels of contact over the school year, we demonstrated the buffering effect of contact. Considering the strong influence of reference groups such as classmates as opposed to the influence of the larger society during adolescence (Poslon et al., 2024; Singer, 2017; Váradi, 2014) replicating the buffer effect on proximal, peer norms in this context is especially promising.

This study contributes to intergroup contact and social norms literature in multiple ways. First of all, considering the impact of peer influence on prejudicial attitudes during adolescence (Aboud, 2005; Bar-Tal & Teichman, 2005; Raabe & Beelmann, 2011), we focused on the attitudes and perceptions of adolescents in a school context and tested the buffer effect of intergroup contact on proximal norms instead of distal norms. Second, we test the buffer effect of contact and show that it is important to examine objective and perceived norms jointly and across time. Due to difficulty in accessing information on how others in general behave, humans make estimates of norms according to their perceptions which are often biased (Tankard & Paluck, 2016). Moreover, objective and perceived norms may influence each other and prejudice levels dynamically over time (Durrheim et al., 2016). Inspired by Visintin et al. (2020), we went

beyond their work having studied how contact moderates the influence of both objective and perceived norms on prejudice, looking not only at baseline levels but also at the change across time. Finally, considering the need for more studies in contexts where institutional and societal norms don't support intergroup contact or integration of minority groups in society, we conducted our study in Hungary. Although Hungary is part of the European Union, it is now considered an illiberal democracy (Pap, 2017) where institutional and societal norms don't condemn prejudice or discrimination against Roma people (Kende et al., 2017a,b).

Limitations and future directions

Although this research moves the literature forward in multiple ways, it is not without limitations. One major limitation is related to the measurement of prejudice in this study. We only examine self-reported attitudes and perceptions which may not always translate to real life behavior. Since humans comply with norms to not be excluded from their communities, their private feelings and thoughts reflected in anonymous and confidential surveys may not fully represent their behaviors in public life. For example, even students with high levels of intergroup contact may express or at least not explicitly condemn prejudicial remarks in real life to conform to the norms of their classmates and to not be excluded in social life. Furthermore, the measure of antigypsyism in this study mostly relied on social distance measures (four items) and one item based on the feeling thermometer. Though these are close to the focus of our study regarding contact, we acknowledge that an attitude measure including more dimensions may lead to more nuanced findings. The same is true for our measure of perceived groups norms, measured by a single item. Our measure of intergroup contact also relies on self-reports and includes both direct and indirect types of contact, that is relevant for the case of Hungary, the context of our study. Replicating this study with observational or other types of objectively reliable data on direct contact could further strengthen the findings regarding the buffering effect of contact.

Another major limitation concerns the design of the study. We could only conduct correlational analysis in two-wave panel data when testing the buffer effect of contact. Visintin et al. (2020) experimentally manipulated intergroup (imagined) contact and perceived norms in several studies, but they did not examine long-term effects of contact on norms predicting prejudice. Future studies should look at experimentally manipulated contact's buffer effect on experimentally manipulated norms several months after the experiment as well to understand the durability of the effect.

Conclusion

This study highlights the crucial role that intergroup contact plays in mitigating prejudice among adolescents, particularly in contexts where negative peer norms and societal attitudes toward outgroups, such as Roma people in Hungary, are prevalent. By focusing on both objective and perceived peer norms, the research advances our understanding of how intergroup contact can buffer the impact of these prejudicial norms on adolescent attitudes.

The findings underscore that the influence of both objective and perceived peer norms on prejudice is insignificant for adolescents who have had more frequent intergroup contact. In contrast, for those who have not expanded their outgroup interactions, these norms continue to have a pronounced effect on their prejudicial attitudes. This suggests that the more adolescents engage with outgroup members, the less likely they are to internalize harmful norms, thereby resisting negative influences that might otherwise reinforce prejudice. This buffering effect may be particularly important in environments like Hungary, where societal norms around Roma people are overwhelmingly negative and institutional frameworks often fail to challenge these prejudices.

Overall, the study highlights the potential of intergroup contact as a protective mechanism, particularly during adolescence—a time when social influences are strong and attitudes toward outgroups are still forming. These findings suggest that fostering positive intergroup interactions could be an effective strategy in reducing prejudice and reshaping social norms, both in educational settings and beyond.

CRediT authorship contribution statement

Váradi Luca: Writing – review & editing, Writing – original draft, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **Németh Renáta:** Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Morhayim Liora:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Tropp Linda R.:** Writing – original draft, Conceptualization.

Ethics

The study was reviewed and approved by Central European University Ethics Review Board (ref number 2015–2015/6/EXT).

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Conflict of Interest

The Authors declares that there is no conflict of interest.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ijintrel.2025.102199.

Data Availability

data is available to the editor, reviewers and readers upon request. It cannot be made public according to the data management plan of the European Commission funded project that financed data collection.

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