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The Potential and Pitfalls of Intergroup Contact in Fighting Prejudice and Discrimination

Doctoral Thesis

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Brno 2018

I declare that I have written the thesis independently and all cited resources have been listed in the references.

Brno, July 20, 2018 Tibor Žingora

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Acknowledgment

I was lucky to encounter several inspiring people during my PhD studies. I believe that all of them left a certain impact on my professional development. First, I would like to thank Dr. Sylvie Graf for being an excellent supervisor who introduced me into the world of psychological science. I am very thankful for all the advice and help that you gave me during the years of our cooperation.

I would also like to thank Dr. Sylvie Graf and Dr. Martina Hřebíčková for involving me in their research team. This stimulating environment provided me with many opportunities to learn new things and pursue my own research.

Next, I would like to thank Dr. Tobias Stark for everything that he taught during our cooperation, foremost, for teaching me a longitudinal social network analysis. I am greatly thankful to Tobias for all advice and that he involved me into ERCOMER at the University of Utrecht during my research visit in the Netherlands. I also want to thank Dr. Andreas Flache who advanced our research much further.

I would like to thank Dr. Loris Vezzali for the great advice, a warm welcome during my research visit to the University of Modena and Reggio Emilia in Italy, and for many stimulating conversations.

My huge gratitude belongs to Zuzana Žilinčíková. During my PhD studies, Zuzana was an invaluable source of advice about my professional life. Even more importantly, Zuzana always supported me and I am very thankful for all the fun that we were having during past few years. Finally, Zuzana, thank you for your patience.

I would like to thank my family for raising me and for always being there for me. I always believed that nurture is more important than nature and my family has been a big part of my social world.

Finally, my thanks also belong to all the people that participated in my research. Your help made this research possible.

Chapter 1

Introduction

Fighting prejudice and discrimination is crucial for the harmonious coexistence of different groups. Prejudice has serious consequences for minorities; such as difficulties in finding a job, health issues, and segregation (A. Nelson, 2002; Parrott, 2009; Plug, Webbink, & Martin, 2014; Tilcsik, 2011). The majority population also suffers from the consequences of prejudice. Prejudice and discrimination represent enormous financial burdens for the whole of society – for example, costs related to health issues associated with exposure to discrimination (Elias, 2015). In some circumstances, prejudice and discrimination may even contribute to the rising of ethnic tensions and horrific events such as genocide (Kunovich & Hodson, 2002; Uvin, 1997).

Intergroup contact theory suggests that intergroup interactions between people coming from the majority and minorities promote social cohesion (Hewstone, 2015), help minorities to integrate into host societies (Pettigrew, 1975), and reduce prejudice and discrimination (Aboud & Levy, 2000; Pettigrew & Tropp, 2013). Interaction with members of a different social group should lead to a positive evaluation of the encountered people and, in turn, to the reduction of prejudice against the group they represent (Pettigrew & Tropp, 2006). This idea has been endorsed by many policy-makers and practitioners and used as an argument against the segregation of people from different social groups (Pettigrew, 1975, 2008).

Several questions regarding the applicability of intergroup contact in attempting to reduce prejudice and discrimination in the real world remain unanswered. For instance, doubts have been cast upon the positive impact of intergroup interactions on prejudice (Putnam, 2007) and upon the impact of prejudice reduction on discrimination and social inequality (Dixon, Durrheim, & Tredoux, 2007). Previous research has shown that

intergroup mixing does not necessarily lead to positive intergroup relations (Schlueter & Scheepers, 2010). In fact, Putnam suggested that intergroup contact may reduce social capital and solidarity among people, rather than facilitate intergroup harmony (Putnam, 2007). A closer inspection provides a more optimistic perspective showing that the nature of intergroup interactions matters. It is not sufficient that members of different groups live next to each other; rather, it is actual interpersonal interactions among members of diverse groups that reduce prejudice (Hewstone, 2015; Stolle, Soroka, & Johnston, 2008).

Another line of research suggested that intergroup contact may reduce prejudice but lacks the ability to challenge social inequality and discrimination (Dixon et al., 2007). Intergroup contact with majority members may reduce the willingness of minorities to fight social injustice (Dixon, Tropp, Durrheim, & Tredoux, 2010; Saguy, Tausch, Dovidio, & Pratto, 2009). However, social justice is difficult if not impossible to achieve in the face of opposition from the majority population (Pettigrew & Tropp, 2013). Previous research showed that members of the majority who experienced positive intergroup interactions were more willing to support affirmative policies regarding the encountered minorities (Dixon, Durrheim, et al., 2010). The most studied outcome was support for minorities on the level of attitudes or behavioral intentions rather than actual behavior, which is rarely studied in prejudice-reduction research (Al Ramiah & Hewstone, 2013; Baumeister, Vohs, & Funder, 2007). Thus, it remains unclear whether intergroup contact has an impact on discriminatory behavior against minorities.

In this dissertation, I aim to identify the pitfalls that could undermine the successful application of one of the most promising approaches to reducing prejudice and discrimination – intergroup contact. The first pitfall is the possibility that intergroup contact is not able to challenge discrimination, only negative attitudes. We tested the degree to which positive and negative contact with gay people were associated with voting

for the restriction of gay rights. The second pitfall relates to the theoretical assumption that positive intergroup contact reduces prejudice regardless of specific characteristics associated with a specific outgroup. We examined how positive and negative intergroup contact influences prejudice, taking into account different stereotypes associated with two different minorities. The third pitfall is that the implementation of direct contact aimed at reducing prejudice can be expensive and time-consuming. Consequently, governments and the public may oppose such interventions, thereby limiting the implementation of intergroup contact interventions in practice. To address the third pitfall, we tested whether some individuals exert a greater influence over the intergroup attitudes of their peers than others. If so, prejudice reducing interventions could be applied to those individuals who would spread the change to others, decisively sparing the costs of interventions no longer applied to a whole population.

1.1 Prejudice, Stereotypes and Discrimination

People tend to categorize others into “us” and “them”. Social categorization is a human tendency to perceive the self as a member of a certain social group (the ingroup) and sort other people into either the same group (i.e., the ingroup) or different groups (the outgroups; Gaertner, Dovidio, & Houlette, 2010; Tafjel & Turner, 1979). After a person is categorized into a group, people apply heuristics that simplify the perception of people belonging to the given group. The most studied heuristics in intergroup settings are prejudice and stereotypes. Prejudice represents a shortcut that facilitates the fast and often inaccurate formation of a negative attitude toward people solely based on their group membership (Gaertner et al., 2010). Group stereotypes represent heuristics that all members of one group share common traits (Katz & Braly, 1933; T. D. Nelson, 2015; Oakes, Haslam, & Turner, 1994).

Prejudice becomes a serious social problem mainly when it transforms into discrimination. Prejudice-reduction research mainly focuses on *behavioral intentions to discriminate* ranging from a dislike of engaging in intergroup interaction to aggressive tendencies toward other groups (e.g., Bastian, Lusher, & Ata, 2012). However, behavioral intentions do not always reliably predict behavior, and behavior itself is understudied in the context of prejudice-reduction research. In this dissertation thesis, we studied not only prejudice but also its behavioral manifestation – discrimination – in order to fill gaps in current intergroup contact research.

1.2 Intergroup Contact and Prejudice

The Intergroup Contact Theory proposes that a positively experienced intergroup interaction improves attitudes toward an encountered individual and, as a consequence, attitudes toward the outgroup that the encountered person represents (Voci & Hewstone, 2003). Multiple studies have repeatedly reported the positive impact of intergroup contact on prejudice employing cross-sectional (Aberson, 2015), experimental (Paluck, 2009), or longitudinal designs (Brown, Eller, Leeds, & Stace, 2007). Pettigrew and Tropp (2006) conducted a meta-analysis of more than 500 studies and concluded that intergroup contact is effective in challenging prejudice.

Modern society is multi-cultural and ethnic diversity is ever increasing. A big potential of intergroup contact lies in reducing prejudice against different social groups at the same time (Tausch et al., 2010; Vezzali & Giovannini, 2012). Some people lack intergroup experience for various reasons: Minorities can be segregated (Dixon & Durrheim, 2003), people can avoid intergroup contact with negatively stigmatized minorities (Bar-Tal, 1996; Cuddy, Fiske, & Glick, 2007), and certain areas can be ethnically more homogenous than others, which limits the opportunity for intergroup contact. Past research has suggested that positive experience with one outgroup can

generalize onto other groups that have not even been encountered (Pettigrew, 2009). Since prejudice against various groups may be entangled (Akrami, Ekehammar, & Bergh, 2011), a reduction in prejudice against one outgroup should also reduce prejudice against other outgroups. In other words, prejudice against various outgroups could be reduced without the necessity to engage in contact with all of them. In our work, we focused on the potential of intergroup contact to reduce prejudice not only against an encountered group in particular but also toward other groups that are less often encountered.

The valence of intergroup contact is not always positive; people sometimes experience its counterpart, negative contact. Several studies have reported that negative contact shaped prejudice to a greater extent than positive contact (Barlow et al., 2012; Paolini & McIntyre, 2018). If we assume that negative and positive contact occur simultaneously, a big danger of negative contact lies in its ability to cancel out the prejudice-improving effect of positive intergroup contact. Fortunately, positive contact is usually more frequent than negative contact and positive intergroup contact experienced in the past acts as a buffer against the disproportionately bigger impact of negative contact in the present (Graf, Paolini, & Rubin, 2014; Paolini et al., 2014). However, this is not always the case. In some settings, negative contact may be more common than positive contact. In such settings, overall intergroup contact that includes both positive and negative contact could increase prejudice. In line with previous research, both the effects of positive and negative contact should be estimated at the same time to obtain a more complex picture of how intergroup contact interacts with prejudice and discrimination. Intergroup contact should be implemented as a prejudice-reducing intervention only when intergroup interactions do not lead to an increase in prejudice and discrimination (Paolini & McIntyre, 2018).

When negative contact is more frequent than positive, positive contact does not necessarily outweigh the effects of negative contact on prejudice; thus, overall, intergroup contact could lead to an increase in prejudice.

1.3 Research Questions

The great potential and pitfall of intergroup contact lies in its relation to discrimination that may restrict minority rights. The majority population votes for political representatives that decide on the rights of minorities. Sometimes, citizens may even directly vote on the rights of minorities – for instance, in a referendum on gay rights. Previous research usually addressed only behavioral tendencies (Cakal, Hewstone, Schwär, & Heath, 2011; Dixon, Durrheim, et al., 2010; Selvanathan, Techakesari, Tropp, & Barlow, 2017); we, however, decided to examine the relation between intergroup contact and actual discriminatory behavior that people performed during a referendum on gay rights. Therefore, our first research question was the following:

RQ1: Is positive and negative contact associated with taking an opportunity to discriminate?

Intergroup contact encompasses both positive and negative intergroup interactions. Knowledge of when positive contact is more influential of prejudice than negative contact, and *vice-versa*, could reveal how to better employ intergroup contact in fighting prejudice and discrimination. Besides intergroup contact, other sources of information are likely to influence the extent of changes in prejudice after positive or negative intergroup contact. Such sources of information are stereotypes that people hold before an actual intergroup encounter with outgroup members takes place. It is likely that stereotypes interact with the valence of intergroup contact - positive or negative - and consequently influence prejudice against the whole outgroup. Stereotypes create expectations about outgroup members and

these expectations may determine whether prejudice will be more affected by an increase in positive or negative intergroup contact. We examined two types of intergroup contact; 1) stereotype-consistent contact, when the valence of contact matched the valence of the stereotype, and 2) stereotype inconsistent-contact, when the valence of contact mismatched the valence of the stereotype. We were interested in how intergroup experience that (mis)matched a stereotype influenced prejudice; therefore, we estimated changes in stereotype-consistent and stereotype-inconsistent contact. Hence, in the second research question we asked:

RQ2: With respect to positive and negative contact, which has a bigger impact on prejudice when respondents hold positive, negative, or ambivalent stereotypes about the outgroup?

With the third research question, we asked whether intergroup contact is able to influence prejudice and discrimination beyond the encountered outgroup, a phenomenon known as the secondary transfer effect of intergroup contact (Pettigrew, 1997; Tausch et al., 2010). Previous research has suggested that contact with one outgroup (the primary outgroup) challenges prejudice against other outgroups (secondary outgroups). However, evidence is missing with regard to whether contact with a primary outgroup can fight discrimination against secondary outgroups. We tested whether intergroup contact with an ethnic minority was associated with discrimination against the sexual minority in Study 1. In Study 2, we tested temporal relations between positive or negative contact with the primary outgroup and prejudice against the secondary outgroup. The longitudinal design and estimation of the change in positive and negative intergroup contact allowed us to

observe how an increase (or decrease) in contact with the primary outgroup affects prejudice against secondary outgroups.

RQ3: Is positive and negative contact with a primary outgroup associated with prejudice and discrimination against a secondary outgroup?

Adolescence is considered to be a crucial age in which prejudice is formed (Poteat, 2007). Therefore, strategies aimed at prejudice reduction, such as intergroup contact, may be most effectively applied among young people. From a practical perspective, prejudice can be reduced in schools through policies (e.g. desegregation) or through interventions. However, prejudice reduction may be expensive and time-consuming. Therefore, research should aim to find a way of effectively countering prejudice in a more time-efficient and cost-effective manner. Knowledge of how prejudice changes could provide guidance on how to fully realize the potential of the prejudice-reducing effect of intergroup contact among adolescents. Previous research showed that peers play a big role with respect to prejudice among adolescents (van Zalk et al., 2013), though it is not clear whether certain individuals are more influential of their friends' prejudice than others (Brechwald & Prinstein, 2011). Existing interventions typically target all members of a school class (Houlette et al., 2004; Stathi et al., 2014) and are accordingly complex and expensive to implement. Knowing who is particularly influential of prejudice among a group of adolescents could allow the development of cost-efficient interventions aimed at prejudice reduction. Thus, our third research question was:

RQ4: If some adolescents exert a bigger influence on their classmates' prejudices than other peers, how can they be identified?

The four research questions were addressed in three empirical studies. We answer the first research question in Study 1, which asks how, in Slovakia, contact with gay people and the Roma are associated with discrimination against gay people. We elaborate on the second research question in Study 2, focusing on prejudice against the Roma and Vietnamese in the Czech Republic. We deal with the third research question in Study 3 by studying adolescent social networks in the Netherlands. We address the fourth research question about the secondary transfer effect of intergroup contact in Studies 2 and 3. The next section provides more details about the contexts in which the studies were conducted.

1.4 Present Research

In Study 1, "Marry Who You Love: Intergroup Contact with Gay People and Another Stigmatized Group Is Related to Voting on the Restriction of Gay Rights through Perception of Threat", we examined whether positive and negative contact were associated with real-world discriminatory behavior. Specifically, we tested whether positive and negative contact with gay people and another stigmatized minority – the Roma – were associated with voting on the restriction of gay rights in the referendum held in Slovakia in 2015. We collected data from 232 Slovak respondents using an on-line questionnaire after the referendum took place. Study 1 was developed in cooperation with Sylvie Graf.

In Study 2, "Stereotypes in the Face of Reality: Intergroup Contact Inconsistent with Group Stereotypes Predicts Change in Prejudice Better than Stereotype-Consistent Contact", we investigated whether stereotype-consistent contact influenced changes in prejudice to a different extent than stereotype-inconsistent contact. We asked Czech respondents about their intergroup contact with, stereotypes about, and prejudices against two different minorities – the Roma and the Vietnamese. This allowed us to examine the secondary transfer effect. We collected on-line data in two waves, which enabled us to test temporal relations between variables (i.e., how a change in intergroup contact influences

prejudice). I collaborated on this study with Loris Vezzali and Sylvie Graf during my research stay at the University of University of Modena and Reggio Emilia in Italy.

In Study 3, "Who is most influential? Adolescents' intergroup attitudes and peer influence within a social network", we addressed the question of who the most influential adolescents are with respect to the spread of intergroup attitudes among peers within a classroom. We used data from the Arnhem School Study, a longitudinal school study in the Netherlands (Stark & Flache, 2012). This dataset maps social networks and intergroup attitudes among adolescents. We analyzed two waves of this dataset using longitudinal social network analysis. This analysis enabled us to disentangle two processes that could account for the effect of attitude change in social networks: social influence (i.e., the influence of adolescents on their friends' prejudices) and social homophily (i.e., the tendency of adolescents to make friends with similar levels of prejudice).This study was developed in collaboration with Tobias Stark and Andreas Flache during my research stay at the University of Utrecht in the Netherlands.

Chapter 2

Marry Who You Love: Intergroup Contact with Gay People and Another Stigmatized Group Is Related to Voting on the Restriction of Gay Rights through Perception of Threat

Tibor Zingora & Sylvie Graf

Abstract

The study examined factors associated with discrimination against gay people in a public referendum aimed at the restriction of gay rights. We tested whether positive and negative intergroup contact with gay people and intergroup contact with another stigmatized group, the Roma, were associated with how the heterosexual majority voted in the referendum. We tested two mechanisms underlying the link between intergroup contact and discrimination – the generalization of intergroup threats and the generalization of outgroup attitudes from Roma to gay people. We found that negative contact with Roma and gay people was associated with a higher probability of gay discrimination while positive contact was associated with a lower probability of gay discrimination through the generalization of threats from Roma to gay people but not via the generalization of outgroup attitudes. Our research is a novel contribution to the literature in that we showed that contact with one minority can affect discrimination against another minority in both a positive and negative way.

2.1 Introduction

Discrimination against social minorities poses an obstacle to a more just society. Members of social minorities struggle with discrimination in housing, employment, and their private lives to name but a few important areas. Discriminatory practices can take on many forms ranging from subtle cues such as ignorance during social interactions to withdrawal of basic human rights. In our research, we focus on a severe form of unjust minority-treatment – the legal discrimination of gay people who are still prevented from establishing a partnership or family in many countries around the globe. Unlike the situation in housing or employment, where discrimination, if present, is performed by individuals, gay people's rights – or the lack of them – on the legislative level are established by elected representatives. It is not clear when a stance on minority rights plays a role in electing representatives among majority of voters and when minority rights are not a crucial issue in making a decision for whom to vote. However, there are times when citizens, not their representatives, directly decide about minority rights in referendums.

Such a referendum about gay rights took place in 2015 in Ireland, which became the first country to legalize same-sex marriage by popular vote. Another example with a markedly different outcome was a referendum on a constitutional ban on same-sex marriage in Croatia in 2013. In 2015, a referendum called "Referendum on the Family" was organized in Slovakia by the civil initiative "Alliance for Family", which claimed to be protecting the concept of family threatened by alternatives to heterosexual marriage. Slovak citizens were offered an opportunity to vote on the restriction of gay rights, specifically, gay marriage and gay adoption. In this study, the "Referendum on the Family" provided us with a unique opportunity to investigate the factors associated with majority discrimination against gay people – intergroup contact, perceived intergroup threat, and

outgroup attitudes – in a context in which gay people perceive a high level of discrimination (FRA, 2012).

2.2 Theory

2.2.1 Intergroup contact as intervention against discrimination

Intergroup Contact Theory says that frequent and positive encounters with outgroup members should reduce prejudice in general (Pettigrew & Tropp, 2006; Voci & Hewstone, 2003) and prejudice against sexual minorities in particular (Cunningham & Melton, 2013; Herek & Capitanio, 1996; Smith, Axelton, & Saucier, 2009). Furthermore, intergroup contact is associated with behavioral preferences regarding collective action in favor of marginalized groups (Selvanathan, Techakesari, Tropp, & Barlow, 2017) and with support for affirmative policies (Cakal, Hewstone, Schwär, & Heath, 2011; Dixon et al., 2010). In the context of gay minorities, positive contact with gay people can decrease intentions to vote for the restriction of gay rights (Barth, Overby, & Huffmon, 2009).

Past studies mostly focused on the effects of positive intergroup contact on behavior and behavioral intentions (Barth et al., 2009; Cakal et al., 2011). The effects of negative contact on discrimination are much less studied. To the best of our knowledge, only one study compared the effects of positive and negative contact on behavioral intentions in the context of LGBT minority. This study brought longitudinal evidence that *positive* but not negative contact facilitated behavioral intentions on the part of the majority aimed at improving the situation of the LGBT minority (Reimer et al., 2017). In our study, we considered both positive and negative experiences with minority members in order to supply the scarce evidence about the link between contact of different valence and discrimination.

Critiques of intergroup contact theory warn that the beneficial effect of intergroup contact on prejudice reduction can stop at the level of attitudes or intentions and not

translate into *actions* directed at outgroups (Al Ramiah & Hewstone, 2013; Durrheim & Dixon, 2004; Jackman & Crane, 1986). The principle-implementation gap suggests that majority members who hold reserved attitudes toward discrimination can still oppose the implementation of certain equality policies (Dixon, Durrheim, & Tredoux, 2007). Thus, in our research, we asked participants about their already-made voting choices in the Slovak referendum on gay rights in order to establish evidence about the link between intergroup contact and actual discriminatory practices.

2.2.2 The secondary transfer effect of intergroup contact

Advances in intergroup contact theory have shown that the effects of intergroup contact can be generalized beyond a specific encountered outgroup, reducing also prejudice against other outgroups as a result of contact with the primary outgroup, the so-called *secondary transfer effect of intergroup contact* (Pettigrew, 2009). A perceived similarity between outgroups facilitates the secondary transfer effect (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011); however, the generalization of intergroup contact effects occurs also in the case of dissimilar outgroups (18,19).

The secondary transfer effect may be an especially useful intervention in a context in which contact with certain outgroups is rare. Intergroup contact can be rare because of a lack of opportunities for contact or because majority members are not aware of the intergroup nature of contact with minority members. In the context in which the stigma attached to an outgroup is high, members of such stigmatized groups can disguise their group membership to avoid discrimination – the case of gay people in Slovakia (FRA, 2012). Thus, in our study focusing on the Slovak referendum on gay rights, we asked participants not only about their contact with gay people but also about their contact with another stigmatized minority that cannot disguise their group membership – the Roma. The

Roma are the largest outgroup with group membership discernible at first sight in an otherwise highly homogenous Slovakia (Slovak Census Bureau, 2011).

The secondary transfer effect of intergroup contact is a promising intervention to reduce prejudice provided the contact with a primary outgroup is positive. The secondary transfer effect of negative intergroup contact has not been given due attention (Brylka, Jasinskaja-Lahti, & Mähönen, 2016) although it represents a potentially serious risk with respect to spreading prejudice from one outgroup to another. In our research, we thus considered not only positive contact with the Roma but also negative experiences with the Roma in order to test the secondary transfer effect of both positive and negative intergroup contact on gay discrimination.

Since the secondary transfer effect of intergroup contact has been investigated only recently, its underlying mechanisms are still not fully clarified (Lolliot et al., 2012). The first proposed explanatory mechanism was attitude generalization, whereby intergroup contact with the primary group improves attitudes toward the primary outgroup, which then generalizes to the attitudes toward the secondary outgroup (Pettigrew, 2009; Tausch et al., 2010). Another line of research suggested that the generalization of emotions, such as empathy, or the perception of threat are responsible for the secondary transfer effect (Lolliot et al., 2012; Vezzali & Giovannini, 2012). The notion that the generalization of threats can be a viable mechanism responsible for the secondary transfer effect is supported by evidence that perceived threats from social minorities are interconnected (Blalock, 1967; Quillian, 1995; Schmid, Ramiah, & Hewstone, 2014; Sides & Citrin, 2007). Thus, a change in the perceived threat from one outgroup can influence the perceived threat from other outgroups. Moreover, both threats and attitudes are associated with behavior (Green, Sarrasin, Baur, & Fasel, 2016; McConnell & Leibold, 2001); thus, they possibly mediate the link between intergroup contact and discriminatory practices. In

the present paper, we contrast both mechanisms underlying the link between contact with the Roma and gay discrimination – the generalization of attitudes from Roma to gay people and the generalization of threats from Roma to gay people.

2.2.3 Intergroup threat from gay people and the Roma

Prejudice and discrimination are shaped by a number of mechanisms, one of them being fear elicited by outgroups and their members (J. T. Pickett, Baker, Metcalfe, Gertz, & Bellandi, 2014; Schmid et al., 2014; Stephan & Mealy, 2011). Previous research showed that feelings of threat could be reduced by positive intergroup contact, whereas negative contact with outgroup members enhanced the perception of intergroup threat (Aberson, 2015). With respect to political outcomes, positive intergroup contact with immigrants from stigmatized groups decreased radical right voting in Switzerland through a decrease in the perception of intergroup threat (Green et al., 2016). However, evidence is missing with respect to whether intergroup threats from primary and secondary outgroups mediate the relationship between positive and negative intergroup contact with both primary and secondary outgroups and discrimination.

Intergroup threat theory distinguishes between realistic and symbolic threat on the individual and group level (Stephan & Mealy, 2011). *Realistic threat* represents the fear that outgroup members are threatening the safety and well-being of a person (individual level) or the whole ingroup (group level). In contrast, *symbolic threat* stands for the fear that outgroup members are threatening an individual's honor or self-esteem (individual level), or the values, beliefs or way of life of the ingroup (group level) (Stephan, Ybarra, & Morrison, 2009). Perceived differences between the ingroup and outgroup constitute another aspect of symbolic threat (Aberson, 2015; Durrheim et al., 2011; Stephan et al., 2002; Stephan, Diaz-Loving, & Duran, 2000). Although feelings of threat are universally associated with intergroup relations, the situation of a particular group and the social

settings in which intergroup threat occurs play a unique role. Thus, in line with the approach of Stephan et al. (Stephan, Ybarra, Martnez, Schwarzwald, & Tur-Kaspa, 1998), we measured the perceived level of intergroup threat from gay people and the Roma, with distinct characteristics constituting the threat from a given minority. This measurement approach decreases the shared method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) that can otherwise inflate the correlation between threats perceived from the Roma and homosexuals and in this way distort the interpretation of threat generalization.

Gay people are often presented as a *symbolic threat* to values such as the sanctity of marriage (Mohipp & Morry, 2004) or as *a threat to children's well-being* (Herek, 2002). To support arguments that gay people threaten the rest of the population, the alleged *differences* between gay people and heterosexuals are often emphasized. All these points were used in the campaign organized by supporters of the referendum calling for the restriction of gay rights in Slovakia. The perceived threat from the Roma is different to the perceived threat from gay people. In Slovakia, the Roma are associated with crime and abuse of the social system (Rowe & Goodman, 2014), corresponding to the perception of both the *individual* and *group* levels of *realistic threats*. On the basis of the widespread belief that the Roma are unable to adapt to mainstream society because of their different values, culture, and way of life (Richardson, 2006; Rowe & Goodman, 2014), the Slovak majority also perceives the Roma as a *symbolic threat*. Although the majority views the Roma and gay people in different ways, both stigmatized minorities evoke feelings of threat. Accordingly, we expected that the perceived threat from the Roma would be associated with the perceived threat from gay people, and that this association would be related to discrimination against the gay minority.

2.2.4 Overview of the present research

The first goal of our study was to examine the effect of positive and negative intergroup contact with gay people on discrimination against gay people on the part of the heterosexual majority. We hypothesized that positive contact with gay people would be associated with a lower probability of discrimination against gay people and that negative contact would be associated with a higher probability of discrimination against gay people.

Second, we investigated whether intergroup contact with another stigmatized minority, the Roma, relates to discrimination against gay people. In the case of a secondary transfer effect of intergroup contact with the Roma, we expected that positive contact with the Roma would be associated with a lower probability of discrimination against gay people and negative contact with the Roma would be associated with a higher probability of discrimination against gay people.

Our third goal was to compare two possible mechanisms underlying the secondary transfer effect of contact with the Roma on discrimination against gay people – attitude and threat generalization. We expected that positive contact with the Roma would be positively linked to attitudes toward the Roma and through them to attitudes toward gay people, which would be associated with a lower probability of discrimination against gay people. Conversely, negative contact with the Roma would be negatively linked to attitudes toward the Roma and through them to attitudes toward gay people, which would be associated with a higher probability of discrimination against gay people. The threat generalization hypothesis predicts that positive contact with the Roma would be negatively linked to a perceived threat from the Roma and through it to a perceived threat from gay people, which would be associated with a lower probability of discrimination against gay people. Negative contact with the Roma should have opposite effects to positive contact and be

associated with a higher probability of discrimination against gay people on account of the positive link to perceived threat from the Roma and gay people.

Our research aimed at filling gaps in the current literature in that we focused on actual *discriminatory behavior*; considered not only positive but also *negative* experiences with outgroup members; tested an alternative to lack of contact with gay people, i.e. the *secondary transfer effect of intergroup contact* with another stigmatized group; and contrasted distinct mechanisms underlying the link between different types of intergroup contact and the majority's discrimination against gay people, i.e. *attitude* and *threat* generalization. We thereby hoped to contribute to a more nuanced understanding of how intergroup contact is associated with discrimination in that we asked participants about their already-made voting choices (Barth et al., 2009); the referendum had been announced months ahead, thus, citizens had had time to make an informed decision (Çakal, Hewstone, Güler, & Heath, 2016); and discriminatory behavior was coordinated with other ingroup members through a large campaign and social media. In this way, we provide an ecologically valid test of factors associated with discrimination against gay people, taking advantage of a referendum aimed at the restriction of gay rights.

Slovak citizens faced a decision on how to vote on a constitutional ban on equal rights for gay people in the areas of marriage and adoption, answering the questions: "Do you agree that a union other than that between one man and one woman cannot be called marriage?" and "Do you agree that the adoption of children and their subsequent raising cannot be permitted to persons of the same sex?". The referendum on gay rights would fail if the majority of voters voted against a ban or if too few people took part (the minimum required level of participation was 50%). As the most effective strategy, therefore, opponents of the referendum called for a boycott to render the referendum invalid. Eventually, the referendum indeed failed because of low voter turn-out (21.41%). In our

research, we thus operationalized discrimination as the probability of voting against gay rights (vs. boycotting the referendum).

2.3 Method

2.3.1 Participants

The final sample comprised 232 Slovak respondents (mean age = 32.99, *SD* = 12.28) who filled out an online questionnaire after the "Referendum on the Family" (see Appendix A for recruitment materials and items). The majority of participants were women (70%), although Facebook groups, where the questionnaire was posted, were not female-oriented. Other demographic characteristics of participants may be found in Table 2. We excluded 75 from the original 352 (21% from the original sample) respondents due to their homosexual orientation. The high number of gay people among respondents could be caused by recruitment method. Gay people could be more involved in a Facebook group that was against the referendum and in which we posted our questionnaire. 44 respondents were excluded because parameters associated with their voting behavior were unreliable due to the low frequency of their occurrence. We excluded participants who participated in the referendum and voted against the restriction of gay rights (1%), those who did not participate but were for the restriction (6%), those that were undecided how to vote (3%), and those that did not participate in the referendum for a different reason to the boycott (6%). 1 Roma participant was also excluded.

2.3.2 Recruitment procedure

The call to participate in our study investigating social issues in Slovakia was posted on several Facebook groups – student groups, groups dedicated to news about a particular city, Christian groups, a group of volunteers supporting the referendum, and a group against the referendum. This way we were able to address possible participants who supported the referendum, those who were against the referendum, and those who were

undecided. If we were not able to publish our questionnaire in a Facebook group, we asked moderators. Moderators were asked to provide the same text as we used when we posted the questionnaire ourselves (see Appendix A for recruitment material). The data were collected from 11 of March till 29 of April. Before the survey, all respondents were informed that their participation was voluntary and that their answers will be used only for research purposes. Questionnaires were anonymized. Participants could enter an e-mail address at the end of the online survey, if they wanted to obtain results from the survey via email. E-mail addresses were kept in a separate file than the rest of the data and this file was protected by a password. IP addresses were not collected. The study was conducted in line with the Ethical Principles of the Institute of Psychology of the Academy of Science of the Czech Republic and the American Psychological Association. By the time of data collection it was not common to apply for an ethic approval for survey studies at the Academy of Sciences of the Czech Republic, the Institute of Psychology.

2.3.3 Measures

Intergroup contact was measured as positive and negative contact with two items each, and responses were coded using a 5-point scale (1 = never to 5 = very often). Besides the traditionally used questions ("How often have you had positive/negative experiences with gay people?"), we asked participants also about the pleasantness or unpleasantness of impressions received from intergroup contact ("How often have you had pleasant/unpleasant impressions from meeting gay people?"). The items were summed to obtain composite scores for positive and negative contact. Means, standard deviations, and correlations between all used composite variables are provided in Table 1.

Table 1

Correlations between Composite Variables for the Gay and Roma Minorities

	M	*SD*	1.	2.	3.	4.	5.	6.	7.
1. Positive contact with gay people	3.52	1.35							
2. Negative contact with gay people	1.95	1.05	-.55***						
3. Attitudes toward gay people	3.27	1.09	.82***	-.66***					
4. Threat from gay people	2.30	1.25	-.79***	.68***	-.84***				
5. Positive contact with the Roma	2.87	.84	.06	.01	.09	.01			
6. Negative contact with the Roma	3.32	.88	-.18**	.14*	-.27***	.19**	-.50***		
7. Attitudes toward the Roma	2.65	.81	.22**	-.15*	.37***	-.19*	.67***	-.59***	
8. Threat from the Roma	3.15	.92	-.41***	.26***	-.44***	.44***	-.53***	.59***	-.73***

Note. Responses about intergroup contact were given on 5-point scales (1= never, 5 = very often). Responses about threat were given on 5-point scales (1= totally disagree, 5 = totally agree). Responses about attitudes were given on 5-point scales (Social Distance Scale: 1 = I would not like it at all, 5 = I would like it very much; Feeling Thermometer: scale from 0 = cold feelings to 100 = warm feelings divided by 20 to obtain a scale ranging from 1 to 5, similarly to other measures).

$N = 232$

$^{***}p \geq .001$; $^{**}p \geq .01$; $^{*}p \geq .05$

Intergroup threat was indicated by composite scores of different types of intergroup threats with responses given on 5-point scales (1= totally disagree to 5 = totally agree). In the case of *gay people*, we measured three dimensions of intergroup threat – differences between gay people and the majority population (3 items; e.g., "Gay people think differently than the rest of the Slovak population."; $\alpha = 0.82$; $M = 2.26$; $SD = 1.13$), the perceived threat to children (3 items; "Growing up in an environment with gay people endangers children's mental/psychological development."; $\alpha = 0.88$; $M = 2.51$; $SD = 1.45$), and group symbolic threat (4 items; e.g., "Acceptance of gay people is incompatible with Slovak culture."; $\alpha = 0.95$; $M = 2.14$; $SD = 1.48$). Intergroup threat from the *Roma* was indicated using four types of threat – differences between Roma and the majority population (3 items; e.g., "The majority of the Roma has a different morality than the rest of the population in Slovakia."; $\alpha = 0.75$; $M = 3.54$; $SD = .91$), the perceived group realistic threat (2 items; e.g., "The Roma are trying to improve their economic situation at the expense of the rest of the Slovak population."; $r = .68$, $p \leq .001$; $M = 3.17$; $SD = 1.21$), the perceived individual realistic threat (2 items; e.g.: "I fear being attacked by the Roma."; $r = .62$, $p \leq .001$; $M = 3.43$; $SD = 1.10$), and group symbolic threat (3 items; e.g.: "Roma culture endangers Slovak culture."; $\alpha = 0.87$; $M = 2.43$; $SD = 1.13$). All types of threat relating to gay people or the Roma indicated a latent variable "threat" from the given outgroup.

Outgroup attitudes were measured with feeling thermometers ranging from 0 to 100, with higher values indicating better attitudes (toward gay people, $M = 67.74$; $SD = 29.74$, missing = 57; and the Roma, $M = 44.78$; $SD = 24.25$, missing = 41) and with social distance comprising 5 items with responses given on a 5-point scale (1 = I would not like it at all, 5 = I would like it very much; sample items: "How happy you would be if a gay person wanted to become your friend."), higher values indicating higher acceptance of

minority members and thus better attitudes toward them (toward gay people, $\alpha = 0.92$, $M = 3.11$, $SD = .78$; and Roma, $\alpha = 0.86$, $M = 2.96$, $SD = .59$). Both measures of outgroup attitudes toward gay people or the Roma indicated a latent variable "outgroup attitudes" toward the given outgroup.

Discrimination was indicated by two variables – participation in the referendum and voting choice. If respondents indicated that they participated in the referendum, we asked about their voting choices (1 = voted for the restriction of gay rights, 2 = voted against the restriction of gay rights, 3 = did not vote on the specific question). If respondents indicated that they did not participate in the referendum, we asked them how they would have voted (1 = would have voted against the restriction, 2 = would have voted for the restriction, 3 = did not know). In order to distinguish between those who boycotted the referendum (i.e., an anti-discriminatory practice) from those who were undecided, we asked participants about their reason for not attending the referendum. In line with expectation, virtually all respondents either participated in the referendum and then voted for the restriction of gay rights (32%), or did not participate in the referendum in order to support the boycott (52%). Discrimination was indicated by a binomial variable with two categories – (1) those who voted against gay rights ($n = 87$) and (2) those who boycotted the referendum ($n = 145$).

We must note that measure of voting behavior is not absolutely error-free. It is not possible to directly observe voting behavior, which is concealed. However, research showed that report of already-made voting choices represents voting behavior, although a portion of people may overreport their voting (Belli, Traugott, & Beckmann, 2001; Belli, Traugott, Young, & McGonagle, 1999). If voting is socially desirable, some people may falsely indicate that they voted. Prior research showed that administration mode which ensures response privacy and conducting the survey soon after the voting successfully

reduces overreporting (Stocké, 2007). Both conditions were met in our study. Online questionnaire ensured that participants did not feel under social pressure from an administrator and the lag between voting and data collection was short. Therefore, we described voting in the referendum as the measure of behavior, rather than the behavioral intention, which precedes the behavior.

Respondents who boycotted the referendum only indicated their behavioral intentions during the referendum. As a result, we compared behavior of participants who voted against the restriction of gay rights and behavioral intentions of participants who boycotted the referendum. Yet, we expect that vast majority of respondents who reported boycott as the reason for not attending the referendum, indeed, did not attend the referendum. Prior research showed that percentage of people who said that they did not vote but actually voted was minimal (B. A. Anderson & Silver, 1986).

We included different *demographic variables* that can influence voting on discrimination against stigmatized minorities. We measured gender, age, education, income (the estimated monthly income of the whole household), marital status (1 = single, 2 = in relationship, 3 = married, 4 = divorced or widowed), number of children, religious faith (1 = atheist, 2 = theist), and religiosity (i.e., the frequency of attendance at church services ranging from 1 = never to 5 = more times per week).

2.3.4 Data analysis

In order to examine whether intergroup contact with gay people and the Roma influenced discrimination against gay people through attitude and threat generalization, we employed structural equation modeling using Mplus version 8 (L. K. Muthén & Muthén, 1998). We tested links between four manifest exogenous variables (positive/negative contact with gay people and the Roma), four latent endogenous variables (intergroup threat from and attitudes toward gay people and the Roma; see Appendix A for a detailed

information about the construct validity) and one binomial dependent variable (discrimination), estimating indirect effects from exogenous variables on the binomial dependent variable in one model (all estimated paths except for the paths from the control variables are presented in Model 1). The ten items that were used for the estimation of intergroup threat were parceled into three parcels in the case of threat from gay people and into four parcels in the case of the Roma. Each parcel represented a dimension of intergroup threat. Five items that were used for the estimation of social distance scale were parceled into one parcel. Parcels were created using internal-consistency method. Advantages of internal-consistency method for creating parcels are for example that multidimensionality of construct is explicit and each unique component of construct is allowed to be related to other constructs in the model. Parceling method enhances model parsimony and reduces influence of measurement error associated with the items on the estimation of latent construct (Little, Cunningham, Shahar, & Widaman, 2002).

The paths between continuous endogenous variables (i.e., intergroup threat, intergroup attitudes) and the binomial dependent variable (i.e., discrimination against gay people) were estimated by logit regression using a Bayesian estimator with a 95% credibility interval that represents the level of confidence about the estimated parameter (i.e., there is a 95% probability that the true value falls within this interval). If the credibility interval does not contain zero, the effect is considered significant. The effect of an endogenous continuous variable on a dependent binomial variable represents the chance that a respondent would fall into one category of the dependent variable rather than the other (i.e., *reference*) category of the dependent variable. The application of a Bayesian estimator provided several advantages such as the effective analysis of small samples, the ability to draw on all available data, the avoidance of Heywood cases (B. O. Muthén,

Muthén, & Asparouhov, 2015), and the possibility to estimate models with many latent variables and categorical outcomes (B. O. Muthén & Asparouhov, 2012).

The dichotomous character of the dependent variable did not allow for estimates of means, variances, or covariance, or the interpretation of a posterior predictive check, which is unreliable for categorical dependent variables. Therefore, the fit statistics of the whole model were not available. Thus, we tested alternative models to rule out the possibility that threat and attitudes did not mediate the link between intergroup contact and the discrimination of gay people, or that the generalization of threat and attitudes from the Roma to gay people did not occur (see Appendix A for information about alternative models). As an additional check, we obtained fit statistics for models without the last step (i.e., the paths between the perceived threat from gay people, attitudes toward gay people, and the discrimination of gay people). In order to control for variables potentially influencing voting behavior beyond the chosen endogenous variables, we employed binomial logistic regression estimated with the nnet package in R (Venables & Ripley, 2013) to examine the effect of demographic variables on voting in the referendum.

2.4 Results

We estimated a model that represented a link between intergroup contact with gay people and the Roma and the discrimination against gay people (see Figure 1). Our results showed that models for both referendum questions were identical with respect to the significance of all structural paths and that answers to both referendum questions were associated with the same demographic variables. Therefore, we present detailed results only for the first referendum question, which represents how people voted in the both referendum questions (for the estimated model, see Figure 1; for the model that represents the second referendum question, see Figure A1 in Appendix A). We regressed demographic variables that were proven to be associated with the discrimination against

gay people on each variable in the model except on intergroup contact variables (i.e., age, belief in God, religiosity; see Table 2). However, regardless of the inclusion of demographic variables, the model with demographic variables resembled the model without demographic variables. We conducted an additional check to test whether our model fitted the data. The model without the binomial outcome variable – discrimination – estimated by MLR instead of Bayesian estimator to obtain fit indices yielded an acceptable model fit, $\chi^2(98) = 228.155$, $p < .001$, $\chi^2/df = 2.32$, $CFI = .94$, $RMSEA = .076$ [.063, .089], $SRMR = .066$.

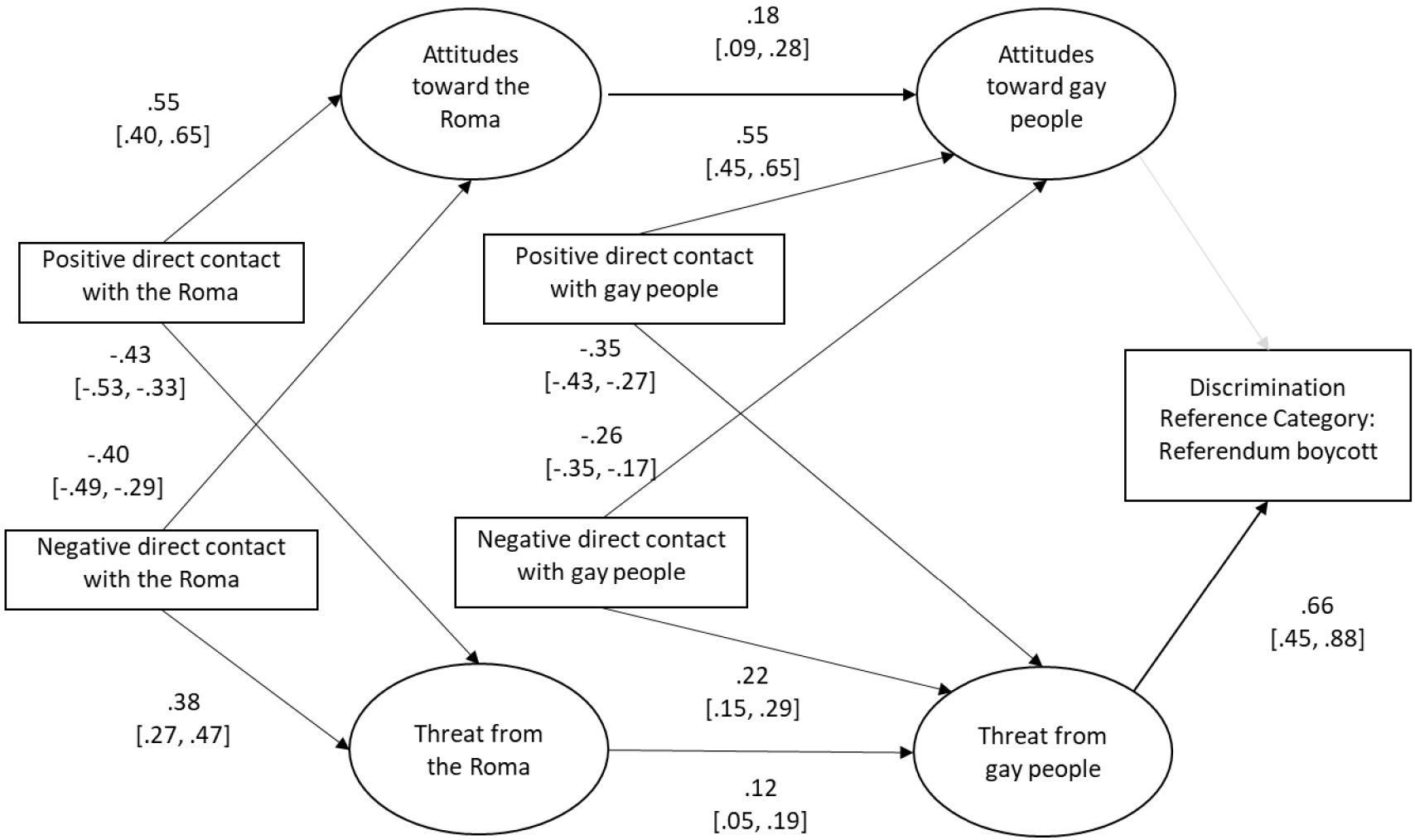

Figure 1. The effect of positive and negative contact with the Roma and gay people on discrimination against gay people mediated by intergroup threats from and attitudes toward gay people and the Roma. The insignificant but estimated path is grey. Standardized coefficients are provided only for significant paths.

Table 2

The Effect of Demographic Variables on Discrimination against Gay People

	Regression Coefficient	Standard Error
Sex [female] (N = 163)		
Male (N = 69)	1.21	.68
Age (M = 32.99, SD = 12.28)	.08*	.03
Belief in God [atheists] (N = 105)		
Theists (N = 127)	3.95***	1.08
Religiosity (M = 1.52, SD = 1.58)	1.46***	.25
Marital status [Married] (N = 71)		
Partner (N = 65)	-.62	.98
Single (N = 82)	-.91	.88
Ended partnership (N = 14)	-2.41	1.43
Number of children (M = .76, SD = 1.32)	.29	.49
Education (M = 4.84, SD = 1.53)	-.30	.23
Income (M = 1337.12, SD = 832.02)	-.0003	.0004

Note. The effect of demographic variables on discrimination, i.e., voting for the restriction of gay rights vs. boycott of the referendum was estimated by binomial logistic regression. The reference categories of independent demographic variables are given in square brackets. The reference category of the outcome variable – discrimination against gay people – represented people who boycotted the referendum compared to people who voted for the restriction of gay rights. Unstandardized coefficients are provided. Religiosity ranged from 0 (no attendance at church services) to 4 (attendance at church services more times per week). Education ranged from 0 (elementary school) to 7 (academic title, e.g., a professor).

$N = 232$

*** $p \geq .001$; ** $p \geq .01$; * $p \geq .05$

2.4.1 Effect of contact with gay people on discrimination against gay people

Positive and negative contact with gay people was associated with the perceived threat from, and attitudes toward gay people (see Figure 1). In line with our expectations, *positive contact* with gay people was negatively linked to threat, β = -.35, 95%, CI [-.43, -.27], and positively linked to attitudes toward gay people, β = .55, [.45, .65]. *Negative contact* with gay people was positively associated with the perceived threat from gay people, β = .22, [.15, .29], and negatively with attitudes toward gay people, β = -.26, [-.35, -.17].

Critically, *attitudes* toward gay people were not linked to discrimination, β = -17, [-.37, .07]. On the other hand, *threat* from gay people was significantly associated with discrimination, β = .66, [.45, .65]. Consequently, we found only an indirect effect of the perceived threat from gay people, *b* = -1.71, [-2.50, -.86], and not an indirect effect of attitudes toward gay people, *b* = -.70, [-1.69, .21] in the link between *positive contact* and discrimination (see Table 3 for indirect effects on the discrimination against gay people arising from contact with gay people). The perceived threat from the Roma mediated the link between *positive contact with the Roma* and the perceived threat from gay people, which was positively related to the discrimination against gay people, *b* = -.39, [-.78, -.13], not through attitudes toward gay people, *b* = .11, [-.03, .34]. Comparison of the effects on discrimination arising from positive contact with gay people with those arising from negative contact with gay people did not differ from zero, *b* = -.28, [-1.05, .37]; therefore, their effects on the dependent variable were similar.

Table 3

Indirect Effects from Intergroup Contact with Gay People and the Roma on the Discrimination against Gay People

Exogenous variable	Mediators	Credibility intervals	*b*	*SE*
Contact with gay people	Attitudes toward gay people			
positive		[-1.69, .21]	-.70	.50
negative		[-.12, 1.16]	.41	.32
	Threat from gay people			
positive		[-2.50, -.86]	-1.71	.44
negative		[.65, 2.31]	1.37	.42
Contact with the Roma	Attitudes toward the Roma -> Attitudes toward gay people			
positive		[-.03, .34]	.11	.10
negative		[-.28, .03]	-.09	.08
	Threat from the Roma -> Threat from gay people			
positive		[-.78, -.13]	-.39	.17
negative		[.11, .65]	.33	.14

Note. The reference category of the outcome variable – discrimination – represented people who boycotted the referendum compared to people who voted for the restriction of gay rights. Negative regression coefficients indicate a *decrease* in the probability of discrimination vs. boycott of the referendum (i.e., voting for the restriction of gay rights). Credibility intervals provided in the brackets are based on Bayesian estimator. $N = 232$

2.4.2 Secondary transfer effect of contact with Roma on discrimination against gay people

Examining the *threat generalization hypothesis*, we tested a serial mediation model from positive and negative intergroup contact with the Roma on the discrimination against gay people through the perceived threat from the Roma and gay people. As expected, perceived threats from gay people and the Roma were associated, $\beta = .12$, [.05, .19]. The perceived threat from the Roma mediated the link between *positive contact with the Roma* and the perceived threat from gay people, which was positively related to the discrimination against gay people, $b = -.39$, [-.78, -.13] (see Table 3 for indirect effects from contact with the Roma on the discrimination against gay people). The indirect effect from positive contact with the Roma on the discrimination of gay people through the perceived threat from the Roma and from gay people was smaller than the effect of positive contact with gay people on the discrimination of gay people through the perceived threat from gay people, $b = -1.27$, [-2.08, -.59], indicating that the link between positive contact with the secondary outgroup and the secondary outgroup outcome is stronger than the link between positive contact with the primary outgroup and the secondary outgroup outcome.

Negative contact with the Roma was associated with higher perceived threats from the Roma and gay people, which was positively associated with discrimination, $b = .33$, [.11, .65]. Negative contact with the Roma had a smaller effect on the discrimination of gay people than negative contact with gay people on the discrimination of gay people, $b = 1.03$, [.41, 1.90], indicating that also the link between negative contact with the secondary outgroup and the secondary outgroup outcome was stronger than the link between negative contact with the primary outgroup and the secondary outgroup outcome. Similarly to the

case of contact with gay people, the effects of positive and negative contact with the Roma on discrimination against gay people were not significantly different, b = -.06, [-.28, .09].

In order to examine the *attitude generalization hypothesis*, we tested a serial mediation model from positive and negative contact with the Roma on the discrimination of gay people through attitudes toward the Roma and attitudes toward gay people (see Table 3). Although attitudes toward the Roma were associated with attitudes toward gay people, β = .18, [.09, .28], the indirect effect representing attitude generalization was not significant in either the link between *positive contact with the Roma*, b = .11, [-.03, .34], or *negative contact with Roma*, b = -.09, [-.28, .03], and the discrimination against gay people.

Finally, we tested a reverse path from contact with gay people to the perceived threat from, and attitudes toward the Roma. The outcomes of the analysis of the reverse paths also supported the presence of the secondary transfer effect of contact with gay people on threat from and attitudes toward the Roma. Positive, b = -.16, [-.22, -.10], and negative contact with gay people, b = .10, [.06, .16], indirectly associated with the perceived threat from gay people through the perceived threat from the Roma. Similarly, the indirect path from positive, b = .18, [.12, .25], and negative contact with gay people, b = -.11, [-.18, -.06], through attitudes toward gay people, to attitudes toward the Roma was also significant, indicating the generalization of intergroup attitudes from gay people to the Roma. Using MLR estimator, the model yielded a good model fit, $\chi2(98) = 184.91$, $p < .001$, $\chi2/df = 1.89$, CFI = .96, RMSEA = .062 [.048, .075], SRMR = .05. Although, we found the secondary transfer effect from contact with gay people on threat and attitudes toward Roma, our decision to test the secondary transfer effect from the Roma to discrimination of gay people was determined by the specifics of the researched context – factors associated with discrimination against gay people.

2.5 Discussion

Our research aimed at filling gaps in the current understanding of how different forms of intergroup contact with distinct minorities shape the majority's discriminatory practices. We found that both positive and negative contact with gay people were associated with the discrimination against gay people via the threat perceived from gay people but not via attitudes toward gay people. Positive and negative intergroup contact with another stigmatized minority, the Roma, was uniquely associated with the discrimination against gay people via the generalization of threats perceived from the Roma and gay people, but not via the generalization of attitudes toward the Roma and gay people.

2.5.1 The effect of intergroup contact with gay people on discrimination

The claim that intergroup contact is one of the most potent ways of reducing prejudice was supported by a number of studies (Al Ramiah & Hewstone, 2013; Pettigrew & Tropp, 2006). However, past research mostly focused on the effect of intergroup contact on behavioral proxies such as intergroup attitudes (Binder et al., 2009; Schmid, Tausch, Hewstone, Hughes, & Cairns, 2008), beliefs (Dhont, Cornelis, & Van Hiel, 2010; Dhont & Van Hiel, 2012), or behavioral tendencies (Bastian, Lusher, & Ata, 2012; Bekhuis, Ruiter, & Coenders, 2013; Swart, Hewstone, Christ, & Voci, 2011). Our study showed that intergroup contact was associated with real discriminatory behavior that was not spontaneous but planned. Similar forms of discrimination occur not only during plebiscites but also in other social contexts in which discriminatory intentions precede actual behavior – for example, in the case of systematic discrimination against stigmatized minorities during the selection of job applicants or tenants.

While intergroup contact theory contains detailed predictions about the role of positive intergroup contact, studies on the effects of negative contact are much less

common. In order to understand the impact of the full valence spectrum of intergroup exchanges with minority members, we asked participants about the frequency of both their past positive and negative contact. People who reported frequent positive encounters with gay people voted for the restriction of gay rights with a lower probability and, conversely, people who indicated frequent negative contact with gay people inclined to vote for the restriction of gay rights with a higher probability.

With respect to actual discriminatory practices, we did not find the asymmetry between the effects of negative and positive intergroup contact reported in studies focusing on outgroup attitudes (Barlow et al., 2012; Graf, Paolini, & Rubin, 2014; Hayward, Tropp, Hornsey, & Barlow, 2017). Our finding about the equally strong effect of positive and negative intergroup contact with gay people on the discrimination against gay people is also at odds with Reimer et al. (Reimer et al., 2017), who found that only positive contact between the majority and gay people led to support for LGBT activism. Although it is possible that the association between intergroup contact and discrimination differs from the link between intergroup contact and attitudes or LGBT activism, unequivocal conclusions need to be resolved in future research. Follow-up studies should examine when negative contact is able to disrupt the effect of positive contact, not only with respect to outgroup attitudes but also to discrimination against minorities.

Critiques of intergroup contact doubted its potential for improving the situation of minorities in society (Durrheim & Dixon, 2004; Jackman & Crane, 1986) and emphasized the need to address the political consequences of prejudice reduction (Dixon, Levine, Reicher, & Durrheim, 2012). In striving for social justice, it is important to consider the perspective of the majority, without which social change would be difficult to achieve (Pettigrew, Tropp, Wagner, & Christ, 2011). Recent studies brought evidence that positive intergroup contact enhanced the majority's willingness to engage in collective action for

racial justice (Selvanathan et al., 2017) and the probability of engagement in LGBT activism (Reimer et al., 2017). Similarly to these studies, we showed that majority participants who indicated a high level of positive intergroup contact with gay people were against the constitutional restriction of gay rights. These findings contradict the misgivings that intergroup contact does not erode social injustice and only influences outgroup attitudes (Dixon et al., 2007). Instead, our results support the optimistic conclusion that intergroup contact between the majority and minorities has a potential to alter opposition to social equality. At the same time, our findings draw attention to the darker side of intergroup contact – negative intergroup exchanges. Our study warns against the detrimental effect of negative contact with minority members that may not only worsen attitudes toward minorities but also pose obstacles to achieving social justice.

2.5.2 The secondary transfer effect of contact with the Roma on discrimination against gay people

In order to disrupt discriminatory practices against gay people, positive intergroup contact with another minority may be a promising alternative, especially given the fact that gay people can disguise their category membership. Despite the manifest differences between gay people and the Roma, we showed that majority members who reported frequent positive contact with the Roma voted for the restriction of gay rights with a lower probability than people who had less positive experiences with the Roma, even after controlling for contact with gay people.

Our research provides the first evidence of the risk of spreading detrimental effects of the majority's negative intergroup contact with one minority to outgroup outcomes regarding other minorities. Although negative contact with gay people was rare in the Slovak sample, the more frequent negative contact with the Roma was associated with the majority's tendency to vote for the restriction of gay rights. Intergroup contact with the

Roma was more often negative than positive, which contradicts the findings from other intergroup contexts, where positive experiences prevail (Barlow et al., 2012; Graf et al., 2014; Mazziotta, Rohmann, Wright, De Tezanos-Pinto, & Lutterbach, 2015; Pettigrew et al., 2011). In intergroup contexts where positive contacts with a frequently encountered outgroup outnumber negative experiences, the detrimental spread of negativity to other outgroups through the secondary transfer effect can be counteracted by typically more wide-spread positive intergroup contact. On the other hand, contexts in which negative experiences predominate are problematic since less frequent positive intergroup contact with a stigmatized outgroup can fail to bring about positive changes in attitudes and actions toward distinct minorities.

2.5.3 The roots of discrimination: How does intergroup contact shape behavior?

Past research has established a number of mediating mechanisms underlying the link between intergroup contact and outgroup outcomes (31,60). Our study went a step further in that it contrasted two explanatory mechanisms that potentially underlie the effect of intergroup contact on discriminatory behavior – intergroup threat and outgroup attitudes. The heterosexual majority's contact with gay people was associated with discrimination against gay people through perceived threat from gay people. This finding corroborates the outcomes of research on the role of threat in the link between contact with immigrants and radical right voting in Switzerland (Green et al., 2016). Importantly, our study showed that when including the mediating effect of threat, intergroup attitudes toward gay people were redundant in explaining the link between intergroup contact and discrimination.

Attitude generalization is a common explanation of the secondary transfer effect (Lolliot et al., 2012). Although attitudes toward the Roma were associated with attitudes toward gay people in our study, their link to discriminatory behavior was not significant. Our preliminary results call into question whether the change in the majority's evaluation

of one outgroup resulting from contact with another outgroup is enough to alter discriminatory behavior. However, the outcomes of our exploratory analysis based on cross-sectional data need to be confirmed with a longitudinal design that would enable causal interpretation.

Several factors may be responsible for the underlying role of intergroup threat as opposed to attitudes. According to the justification-suppression model (Crandall & Eshleman, 2003), "genuine" prejudice can be suppressed because of social norms. Specifically, heterosexuals can be reluctant to express negative attitudes toward gay people openly because of their concern about appearing homophobic. On the other hand, expressing their feelings of threat can take the form of justified "rational arguments" that do not endanger how people appear to others. For example, heterosexuals can claim that gay people should not adopt children because children need both a mother and father. This belief does not necessarily come across as a person's rejection of gay rights based on prejudice but merely as an expression of concern for children's well-being.

Second, intergroup threat can be a stronger drive for behavior than outgroup attitudes. Although people can hold negative attitudes toward a minority, an incentive to behave negatively toward them can be missing (Ajzen & Fishbein, 2005). People can hold negative outgroup attitudes and be tolerant at the same time (63,64). In contrast, when people believe that an outgroup poses a threat, the need to protect themselves and their ingroup can represent a strong drive to eliminate the threat, possibly through available discriminatory practices. Thus, when aiming at behavioral change, the underlying reason why people engage in discriminatory practices – being subject to feelings of threat, for example – should be targeted. Put differently, intergroup contact should be aimed at disrupting the drive toward a specific discriminatory behavior, otherwise social injustice will pertain.

2.5.4 Limitations and future directions

The major limitation of our research is the employed cross-sectional design. We cannot make causal inferences about whether past contact with social minorities actually shaped subsequent discriminatory practices against them. We decided to examine discrimination against gay people only shortly before the referendum took place; after we had witnessed the public debate it stirred up, this indicating the social relevance of the event. Thus, we were not prepared to measure relevant variables long enough before the referendum. However, our results and the comparison between the final model with alternative models are in line with past research which showed that intergroup contact precedes discriminatory intentions directed at the given outgroup (Reimer et al., 2017). Still, future research should employ a longitudinal design in order to more reliably track the causal effects of intergroup contact, intergroup perception, and intergroup evaluation on discriminatory practices over time.

Another limitation of our research is that our data were not necessarily representative of Slovak population. Our sampling methods preferred people who use Facebook over the rest of the population. Moreover, some persons may be more willing to participate on psychological research and complete an online questionnaire.

2.5.5 Conclusion

The outcomes of our study enrich current literature on discrimination and intergroup contact in several ways. We showed that positive and negative intergroup contact formed different associations with discrimination in the context of voting on the restriction of gay rights. Not only contact with gay people but also contact with a distinct stigmatized minority, the Roma, was linked to discrimination against gay people. Importantly, discrimination was related to feelings of threat from, and not to attitudes toward the given minorities. Our findings suggest that negative contact with distinct

minorities can have adverse effects on majority members, which further complicates the achievement of social justice, as, in referendums, it is the majority that decides about minority rights. On the other hand, positive contact between the majority and stigmatized minorities can be implemented as a step towards achieving greater support for social justice on the part of the majority.

Chapter 3

Stereotypes in the Face of Reality: Intergroup Contact Inconsistent with Group Stereotypes Predicts Change in Prejudice Better than Stereotype-Consistent Contact

Tibor Zingora, Loris Vezzali, & Sylvie Graf

Abstract

In the present study, we examined the effect of positive and negative intergroup contact on prejudice among respondents endorsing positive, negative, or ambivalent stereotypes. We focused on *stereotype-consistent contact*, when the valence of contact matched the valence of the stereotype, and on *stereotype-inconsistent contact*, when the valence of contact contradicted the valence of the stereotype. We tested how contact with a primary outgroup influences prejudice against a secondary outgroup taking into account stereotype of the primary outgroup. In a two-wave longitudinal study with Czech respondents (N = 2,407), stereotype-inconsistent contact predicted the change in prejudice against both primary and secondary outgroups better than stereotype-consistent contact. Respondents holding ambivalent stereotypes were mostly not influenced by intergroup contact. Our study suggests that positive intergroup contact is useful in reducing prejudice against negatively stereotyped groups. In positively stereotyped groups, negative contact may worsen prejudice while positive contact does not have any prejudice-improving effect.

3.1 Introduction

Prejudice represents an obstacle to the harmonious coexistence of different groups in society. One of the most prominent interventions for prejudice reduction is intergroup contact, especially if contact is positive (for a meta-analysis, see Pettigrew & Tropp, 2006). However, contact between members of different groups is not always pleasant. Problematically, the effect of negative contact on exacerbating prejudice has been shown to be stronger than the effect of positive contact on prejudice reduction (Barlow et al., 2012; Graf et al., 2014; Hayward et al., 2017). In past research, the valence of intergroup contact was studied without considering the characteristics of outgroups that evoke prejudice. Stereotypes specifying characteristics typical of the given outgroup represent such a source of information. We suppose that the valence of stereotypes and the valence of intergroup contact interact when shaping prejudice toward a certain group. The resulting (mis)match between the valence of the outgroup stereotype and the valence of the contact experience may influence whether prejudice against a certain outgroup is likely to change as a result of positive or negative intergroup contact. The aim of our research was to examine the differences between the effects of two kinds of intergroup contact on the change in prejudice: 1) *stereotype-consistent contact*, when the valence of contact experience matches the valence of the outgroup stereotype (e.g., a negative encounter with a member of a negatively stereotyped group), and 2) *stereotype-inconsistent contact*, when the valence of contact experience contradicts the valence of the outgroup stereotype (e.g., a positive encounter with a member of a negatively stereotyped group). We employed a longitudinal design in order to address the causal effect of contact on prejudice change. The important implication of our research was to illuminate whether intergroup contact is a suitable intervention for challenging prejudice against an outgroup regardless of the valence of the outgroup stereotype.

Intergroup contact with one outgroup does not occur in a vacuum; rather, in a complex social context that usually consists of multiple distinct outgroups. Recent research has found that intergroup contact with one (primary) outgroup can alter prejudice towards outgroups uninvolved in the contact situation (secondary outgroups), the so-called *secondary transfer effect* (e.g., Pettigrew, 2009). Another goal of our study was to test whether the effects of stereotype-consistent and stereotype-inconsistent contact on change in prejudice can be extended beyond the primary outgroup to a secondary outgroup.

3.2. Theory

3.2.1 Forming prejudice in the context of outgroup stereotype

Although stereotype is a complex construct, it is often described only in terms of its negativity (e.g., Stephan et al., 2002). Yet, the content of outgroup stereotypes varies and can also be positive or ambivalent (Fiske, Cuddy, Glick, & Xu, 2002). The Stereotype Content Model (SCM, Cuddy, Fiske, & Glick, 2008) offers a nuanced theory that includes different valences of stereotypes – negative, positive and ambivalent. According to SCM, stereotypes can be classified into one of four categories that are defined by two dimensions: 1) *warmth*, which refers to intentions of an outgroup toward the ingroup, and 2) *competence*, associated with the capacity to fulfil these intentions.

Each of the four categories elicits different emotional responses and behavioral tendencies (Cuddy et al., 2008). The positive stereotype associated with a group perceived as warm and competent is labeled as an *admired* stereotype. Prior research showed that admiration is linked to positive emotions and approach tendencies, which create positive expectations about encounters with the positively stereotyped groups (Cuddy et al., 2008; Neuberg & Cottrell, 2002). In contrast, cold and incompetent groups were associated with a negative – *contemptuous* – stereotype that elicits negative emotions and distancing or rejecting

tendencies. Groups perceived as warm but incompetent are represented by a *paternalistic stereotype*. Such groups are targets of both positive and negative emotions and behavioral tendencies. The second type of ambivalent stereotype that elicits both positive and negative emotions and behaviors is the *envious stereotype* describing cold and competent groups (Fiske et al., 2002).

Stereotypes provide easily-accessible information about what to expect from outgroup members that operates at different stages of intergroup contact. They elicit expectations about positive/negative intergroup interaction *before* contact actually occurs (Fiske, Lin, & Neuberg, 1999; Hamilton, Sherman, & Ruvolo, 1990). This way, stereotypes create an initial frame in which contact with outgroup members takes place. *During* contact, stereotypes influence the course of intergroup interactions – for example, by facilitating certain types of behaviors (Bargh, Chen, & Burrows, 1996; Seibt & Förster, 2004). Stereotypes are at work also *after* contact, when a person interprets the intergroup encounter on the basis of whether the initial stereotypes have or have not been disconfirmed (Fiske et al., 1999). Consequently, one should consider such an influential source of information about outgroups when investigating the effects of intergroup contact on prejudice.

3.2.2 Intergroup contact in face of stereotypes

Previous research argued that both intergroup contact and stereotypes influence prejudice (Aberson & Gaffney, 2009; Pettigrew, 1997). However, no study has previously examined the interplay between the valence of intergroup contact and group stereotypes. Group stereotypes provide information about a person based on his/her group membership, but these expectations can either support or conflict with actual experiences. The (mis)match between the valence of the group stereotype and the valence of the contact experience can impact whether prejudice is likely to change following positive or negative intergroup contact.

Intergroup contact may have a stronger impact on prejudice when the valences of the stereotype and of the contact *match*. Outgroup members who behave consistently with their outgroup stereotype are perceived as more typical of the outgroup (Brown, Vivian, & Hewstone, 1999). Group member typicality is a marker of category salience that enhances the generalization of contact experiences with outgroup members on the outgroup as a whole (Brown et al., 2007; Brown & Hewstone, 2005). Thus, the match between the valences of intergroup contact and of group stereotypes can enhance the effect of intergroup contact on prejudice. Another reason why stereotype-consistent contact can have a stronger influence on prejudice relates to the fact that stereotype-consistent information is considered more when forming impressions about a group (Munro & Ditto, 1997). A group member who does not fulfill expectations based on group stereotypes can be subtyped and excluded from prejudice formation (Fiske & Neuberg, 1990; Richards & Hewstone, 2001). For example, a member of a negatively stereotyped outgroup can be relocated into a subgroup of "white crows" not representative of the outgroup after positive contact that contradicted the initial negative stereotype. These considerations lead us to formulate *stereotype-confirmation hypotheses* on the effect of contact on prejudice when the valence of contact *matches* the valence of the stereotype:

H1a: *Negative contact* will have a greater effect with respect to increasing prejudice than positive contact with respect to reducing prejudice when individuals hold a *negative* (i.e. contemptuous) *outgroup stereotype*.

H1b: *Positive contact* will have a greater effect with respect to reducing prejudice than negative contact with respect to increasing prejudice when individuals hold a *positive* (i.e. admired) *outgroup stereotype*.

However, there is contrasting evidence that *stereotype-inconsistent* contact may be more influential in shaping prejudice than stereotype-consistent contact. Perceivers direct their attention and give importance to cues that are most informative (Fiske, 1980). All available cues about a person are weighted, i.e. they are given differential importance, and the more useful information seems to be, the more weight it attains (N. H. Anderson, 1971). In this light, stereotype-inconsistent contact provides novel and thus more useful information about an outgroup in comparison to stereotype-consistent contact, which fulfills expectations based on the outgroup stereotype (Fiske, 1980). For example, negatively stereotyped groups are expected to behave negatively; thus, negative contact does not contribute any additional information about these groups. In contrast, positive contact is stereotype-inconsistent and thus possibly attracts more attention and is weighted more. According to this contrasting evidence, we formulated *stereotype-refutation hypotheses* on the effect of contact on prejudice when the valence of contact *mismatches* the valence of the stereotype:

H1c: *Positive contact* will have a greater effect with respect to reducing prejudice than negative contact with respect to increasing prejudice when individuals hold a *negative* (i.e., contemptuous) *outgroup stereotype*.

H1d: *Negative contact* will have a greater effect with respect to increasing prejudice than positive contact with respect to reducing prejudice when individuals hold a *positive* (i.e., admired) *outgroup stereotype*.

Since we are testing the effects of the (mis)match between the valences of group stereotype and of positive or negative contact, we have no specific hypotheses for ambivalent stereotypes (i.e., paternalistic or envious). Nevertheless, we will also examine ambivalent stereotypes for exploratory purposes.

3.2.3 The secondary transfer effect of contact and group stereotypes

In increasingly ethnically diverse societies, the generalization of contact effects across various social groups, the so-called secondary transfer effect (Pettigrew, 2009), provides the opportunity to harmonize intergroup relations within a larger social context. The secondary transfer effect describes a situation in which intergroup contact with an outgroup alters prejudice towards other outgroups that are not or less often encountered (Pettigrew, 2009). Specifically, according to previous research, positive contact with a primary outgroup was able to challenge prejudice against a secondary outgroup, whereas negative contact with a primary outgroup was linked to prejudice against a secondary outgroup (Brylka et al., 2016).

Although the secondary transfer effect is a promising avenue by which to reduce prejudice on a bigger scale, stereotypes linked to the primary and secondary outgroups may pose an obstacle to the generalization of contact effects from one outgroup to another (Pettigrew, 2009). In the context of the secondary transfer effect, prior research focused on the influence of stereotypes on the likelihood of prejudice generalization between two outgroups. If outgroups bear dissimilar stereotypes, it is less likely that changes in prejudice after contact will generalize from the primary outgroup to the secondary outgroup (Harwood et al., 2011). However, the secondary transfer effect was found to overcome certain dissimilarities between outgroups (Vezzali & Giovannini, 2012).

Stereotypes in the secondary transfer effect may play a similar role to that in the primary transfer effect: the (mis)match between the valence of contact with a primary outgroup and the valence of the stereotype of a primary outgroup cannot only influence change in prejudice against the primary outgroup but also extend to change in prejudice against secondary outgroups. The occurrence of the secondary transfer effect requires two steps: the generalization from encountered outgroup members to the outgroup they belong to

(the primary outgroup) and, in turn, to secondary outgroups (Pettigrew, 2009; Schmid, Hewstone, Küpper, Zick, & Wagner, 2012; Tausch et al., 2010; Vezzali & Giovannini, 2012). Outgroup members who violate the expectation based on group stereotype may not be categorized under the group they belong to or may be perceived as unrepresentative of their group. Consequently, generalization from an individual encounter to the outgroup as a whole may not occur (Brown et al., 2007; Brown & Hewstone, 2005; Fiske & Neuberg, 1990; Richards & Hewstone, 2001). The lack of such primary transfer hinders the occurrence of secondary transfer. In line with hypotheses on the effect of contact with a primary outgroup on prejudice against the primary outgroup when the valence of contact *matches* the valence of primary group stereotype, we expect that:

H2a: *Positive contact* with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than *negative contact* with a primary outgroup on increasing prejudice against the secondary group when individuals hold a *positive* (i.e., admired) *stereotype* of the primary group.

H2b: *Negative contact* with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than *positive contact* with a primary outgroup on increasing prejudice against the secondary group when individuals hold a *negative* (i.e., contemptuous) *stereotype* of the primary group.

Similarly to the case of the primary transfer effect, the literature provides support also for the hypotheses that stereotype-inconsistent contact with a primary outgroup can shape prejudice against a secondary outgroup more effectively than stereotype-consistent contact. Specifically, when the valence of contact with a primary outgroup *mismatches* the valence of primary group stereotype, we expect that:

H2c: *Positive contact* with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than *negative contact* with a primary outgroup on increasing prejudice against the secondary group when individuals hold a *negative* (i.e., contemptuous) *stereotype* of the primary group.

H2d: *Negative contact* with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than *positive contact* with a primary outgroup on increasing prejudice against the secondary group when individuals hold a *positive* (i.e., admired) *stereotype* of the primary group.

The most prevalent explanation of why the secondary transfer effect occurs is *attitude generalization* (Lolliot et al., 2012; Tausch et al., 2010). Specifically, contact with a primary outgroup should decrease prejudice against the primary outgroup and this change should generalize to prejudice against secondary outgroups. The attitude generalization hypothesis is supported by research on cognitive processes whereby attitudes generalize onto attitudes toward similar objects (Fazio, Richard, & Shook, 2004). In our research, we tested whether prejudice against the primary outgroup functions as a mediator in the link between intergroup contact with the primary outgroup and change in prejudice against the secondary outgroup.

3.2.4 The present study

The first goal of our study was to test the effects of positive and negative intergroup contact on prejudice according to the outgroup stereotype that the respective individuals endorse. Specifically, we were interested in the effect of intergroup contact that was (in)consistent with the given outgroup stereotypes. The second goal was to test the effects of positive and negative contact with a primary outgroup on prejudice against a secondary outgroup. We examined how intergroup contact that was (in)consistent with the primary outgroup stereotype influenced prejudice against the secondary outgroup. To test the above-

outlined hypotheses, which contrast the effects of stereotype-consistent and stereotype-inconsistent contact on prejudice against the primary and the secondary outgroup, we adopted a longitudinal approach. The theoretical model we tested is presented in Figure 1.

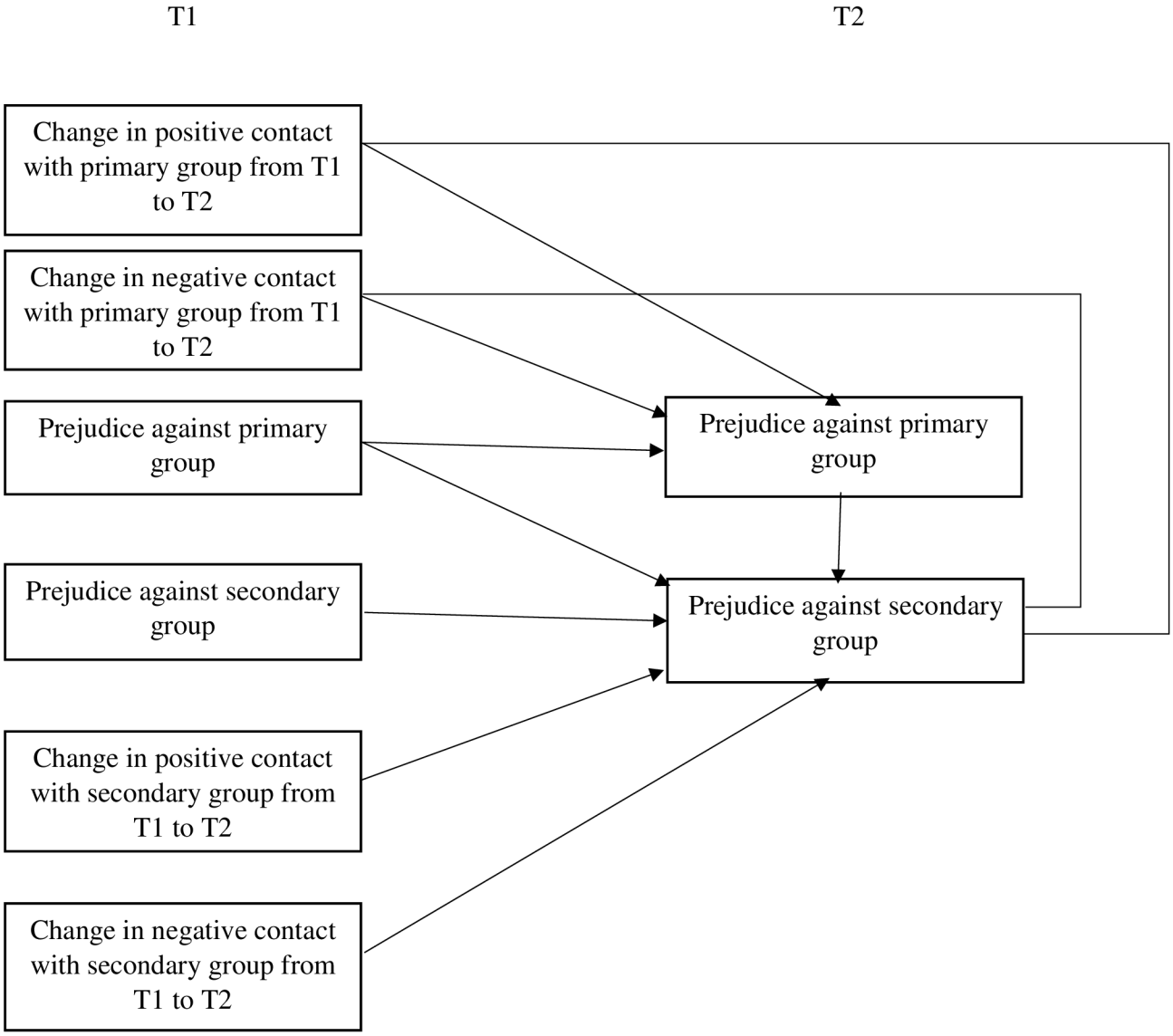

Figure 1. The model estimated across eight participant groups differing with respect to the endorsed stereotype.

In our study, we examined how the *change* in overall positive and negative contact from Wave 1 to Wave 2 influenced prejudice at Wave 2. Testing the effect of a change in one variable between Wave 1 and Wave 2 on a second variable in Wave 2 is considered to be a direct test of a causal effect (Finkel, 1995). We applied *the conditional change-score model* (Berrington, Smith, & Sturgis, 2006; Finkel, 1995) and subtracted the positive intergroup contact assessed in Wave 1 from the positive intergroup contact assessed in Wave 2, and the negative contact in Wave 1 from the negative contact in Wave 2. Afterwards, we regressed prejudice at Wave 2 on the determined change in intergroup contact (W2 – W1), simultaneously controlling for the effect of prejudice at Wave 1. The traditional design of longitudinal studies examining contact effects over time usually employs auto-regressive cross-lagged models, testing the effects of contact assessed at Wave 1 on prejudice assessed at Wave 2 (e.g., Swart et al., 2011). The approach we used in our research has the advantage of providing information about the effects of *dynamic changes* in contact experiences on prejudice.

We conducted the study in the Czech Republic, examining the relationship of the majority with two minorities – the Roma and the Vietnamese. The Roma are one of the groups liked least by the Czech majority. Only 15% of Czechs would not have a problem with having the Roma as their neighbors (Stem, 2016). The Roma are associated with crime and abuse of the social system (Rowe & Goodman, 2014), traits that correspond with low competence and low warmth and thus negative stereotypes in the SCM (Fiske et al., 2002). The Vietnamese are perceived more positively than the Roma, being associated with a strong work ethic, intelligence, and goal-orientation (Hnilica & Radová, 2013). The differences between the two minorities enabled us to examine the complex picture of how prejudice change after intergroup contact according to different group stereotypes.

3.3. Method

3.3.1 Participants

Data were collected in two waves. 2,407 Czech participants responded in the first wave between February 2015 and June 2016. 1,116 participants responded in the second wave, between 6 and 12 months after the first wave. Since data appeared to be missing at random (see Results), we retained the whole sample. The final sample consisted of 720 men (29.9%) and 1,683 women (69.9%, 4 respondents did not indicate gender) with an average age of 24.44 years (*SD* = 5.84).

3.3.2 Procedure

Respondents were asked to complete online questionnaires that were disseminated via departments at universities in the Czech Republic. We used financial incentives to motivate respondents to participate. The questionnaire existed in two versions in which we counterbalanced the order of presentation of the two target groups: the Roma and the Vietnamese.

3.3.3 Measures

Stereotype. Outgroup stereotype was measured by considering two stereotype dimensions – warmth and competence. The stereotype items, assessed on a scale ranging from 1 ("not at all") to 5 ("very"), were adapted from Cuddy et al. (2007). The warmth of the Roma and the Vietnamese were captured by four items, where respondents were asked how friendly and good-hearted the Roma ($r = .74$, $p < .001$) and the Vietnamese ($r = .65$, $p < .001$) were according to most people. The ratings were combined into two composite variables – warmth of the Roma and the Vietnamese – and each was divided by two resulting in variance from 1 to 5. Competence was assessed using two items that asked how capable the Roma and the Vietnamese were according to most people. Subsequently, we combined the warmth and

competence measures in order to divide respondents into four groups according to their stereotype of the Roma and also into four groups according to their stereotype of the Vietnamese. High warmth and competence were transformed into an admired stereotype, low warmth and competence into a contemptuous stereotype, low warmth and high competence into an envious stereotype, and high warmth and low competence into a paternalistic stereotype.

The most frequent stereotype associated with the Roma was contemptuous (1,541 participants, 64%), followed by paternalistic (384, 15.95%), admired (254, 10.55%), and envious (218, 9.06%). The most prevalent stereotype of the Vietnamese was admired (1,210, 50.27%), followed by envious (819, 34.02 %), negative (241, 10.01%), and paternalistic (127, 5.28%). Ten respondents did not indicate their stereotype of the Roma and were excluded from the analysis regarding the Roma minority. Ten respondents had missing values on their stereotype of the Vietnamese and were excluded from the analyses considering Vietnamese stereotypes.

Positive and negative intergroup contact. At both time points, respondents were asked how often they had had positive/negative contact with the [outgroup]. Responses were measured on 5-point Likert scales (1 = never; 5 = very often). Since we were interested in the *change* in the frequency of intergroup contact between Time 1 and Time 2, we subtracted intergroup contact at Time 1 from intergroup contact at Time 2, separately for positive and for negative contact. Positive scores indicate that contact had increased over time, whereas negative scores indicate a decrease in contact; 0 indicates that the amount of contact did not change from Time 1 to Time 2.

*Prejudice***.** Prejudice was measured using feeling thermometers. Respondents were asked to indicate their feelings toward the Roma and the Vietnamese on a scale from 0 (cold) to 100 (warm).

3.3.4 Analysis

To examine whether the stereotype that participants endorsed determined how intergroup contact shaped their prejudice, we ran eight models – four for distinct stereotypes of the Roma (see Figures 2 – 5) and four for distinct stereotypes of the Vietnamese (see Figures 6 – 9) – using Mplus version 8 (Muthén & Muthén, 1998-2017). Each model contained results for both primary and secondary transfer effects of intergroup contact. In the first set of models, we tested how contact with the Roma influenced prejudice against the Roma (primary transfer) and the Vietnamese (secondary transfer) among 4 groups of respondents that endorsed different stereotypes of the Roma. In the second set of models, we tested how contact with the Vietnamese influenced prejudice against the Vietnamese (primary transfer) and the Roma (secondary transfer) among 4 groups of respondents that differed in stereotypes of the Vietnamese. The indirect effect (mediation through prejudice against the primary outgroup) was estimated by applying a bootstrapping procedure with a 95% confidence interval. [1, 2]

Following our hypotheses, we analyzed longitudinal paths from a change in positive and negative contact with the primary outgroup at Time 1 to prejudice against the primary and secondary outgroup at Time 2. In order to provide a more conservative analysis, we included

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[1] Cases were excluded if there were missing data in stereotype indicators. All other data were used in the analysis, including missing data for intergroup contact in the first wave. All types of intergroup contact in the first wave were used as auxiliary variables in order to use all available information about intergroup contact.

[2] When we included control variables in the model – age, ethnicity, gender, or order of minorities presented in the questionnaire – the model fits did not change.

in each model paths from a change in positive and negative contact with the secondary group to prejudice against the secondary group at Time 2; and paths from prejudice against the primary and secondary group at Time 1 to prejudice against the secondary group at Time 2. Afterwards, to test the first set of hypotheses (H1), we compared the paths between the change in *positive* and *negative* contact with the primary group to *prejudice against the primary outgroup*, following the recommendations of Paternoster and colleagues (1998). To examine the secondary transfer effect hypotheses (the second set of hypotheses, H2), we contrasted the two indirect effects from change in *positive* and *negative* contact to *prejudice against the secondary group* at Time *2* via *prejudice against the primary group* at Time 2, and also the two direct effects from change in *positive* and *negative* contact to *prejudice against the secondary group* at Time 2.

3.4 Results

3.4.1 Preliminary data analyses

First, we tested for the eventual occurrence of attrition effects. The results from multivariate analyses of variance showed significant differences between people who dropped out after the first wave and people who continued with the data collection, $F(13, 2382) = 1.80$, $p < .05$, partial $\eta^2 = .01$. Respondents who dropped out after the first wave were more prejudiced against the Roma, $F(1, 2395) = 4.85$, $p = .028$, $\eta^2 = .002$ ($M_{T1} = 32.74$, $M_{T2} = 34.72$), had more negative contact with Vietnamese, $F(1, 2404) = 6.42$, $p = .011$, $\eta^2 = .003$ ($M_{T1} = 1.89$ $M_{T2} = 1.81$), and were older than the respondents who took part in the second wave, $F(1, 2405) = 9.71$, $p < .01$, $\eta^2 = .004$ ($M_{T1} = 24.10$, $M_{T2} = 24.84$). However, we must note that the effect size for univariate effects was small (Cohen, 1988). These analyses suggested that data were missing completely at random and thus all participants were included in the analysis using the full information maximum likelihood method (Swart et al., 2011).

The full information maximum likelihood method is better at handling missing values over other common methods such as pairwise deletion or regression imputation because it provides more reliable estimates (Newman, 2003). Taking into account different stereotypes among respondents, means and standard deviations of all variables are presented in Table 1. Means, standard deviations, and correlations for the whole sample are presented in Table 2.

Table 1

Means and Standard Deviations of All Variables Provided on the Basis of Participants' Stereotypes

	Change in Positive Contact with the Roma	Change in Negative Contact with the Roma	Change in Positive Contact with the Vietnamese	Change in Negative Contact with the Vietnamese	Prejudice against the Roma at Time 1	Prejudice against the Roma at Time 2	Prejudice against the Vietnamese at Time 1	Prejudice against the Vietnamese at Time 2
Admired stereotype of the Roma	.16 (.93)	.04 (1.07)	.09 (.92)	.07 (.80)	46.52 (19.55)	46.80 (18.02)	63.58 (17.84)	63.86 (13.92)
Contemptuous stereotype of the Roma	.09 (.75)	-.12 (1.03)	.04 (.95)	-.02 (.84)	30.02 (21.99)	31.95 (21.26)	60.00 (17.66)	59.70 (17.22)
Envious stereotype of the Roma	.28 (.53)	-.12 (1.06)	.08 (.91)	.09 (.72)	33.16 (19.65)	33.26 (18.72)	59.76 (15.49)	60.44 (15.98)
Paternalistic stereotype of the Roma	.15 (.81)	-.19 (.96)	-.05 (.91)	.07 (.73)	40.14 (19.72)	40.99 (20.28)	62.15 (16.50)	62.19 (17.10)
Admired stereotype of the Vietnamese	.13 (.77)	-.09 (1.00)	-.001 (.90)	.05 (.73)	33.37 (21.78)	34.64 (21.29)	65.67 (16.03)	64.90 (16.03)
Contemptuous stereotype of the Vietnamese	.16 (.75)	-.26 (1.17)	-.03 (.96)	-.11 (1.09)	34.00 (22.17)	37.29 (22.20)	52.86 (18.35)	55.26 (18.17)

[Table 1 continued]

Envious stereotype of the Vietnamese	.11 (.82)	-.10 (1.03)	.09 (.99)	-.02 (.86)	33.93 (22.22)	35.34 (21.02)	55.46 (16.96)	56.23 (16.19)
Paternalistic stereotype of the Vietnamese	-.03 (.82)	-.07 (.98)	.07 (1.01)	.10 (.79)	33.53 (20.95)	33.60 (22.58)	61.54 (13.71)	59.60 (14.72)

Note. Standard deviations of means are presented in brackets. The change in contact ranged from -5 (from maximum level of positive/negative contact to no positive/negative contact) to 5 (from no positive/negative contact to maximum level of positive/negative contact). Prejudice ranged from 0 (the most negative prejudice) to 100 (the most positive prejudice).

Table 2

Means and Correlations Among Variables for All Groups of Respondents Regardless of the Endorsed Stereotype

	1.	2.	3.	4.	5.	6.	7.	Mean	SD
1. Change in Positive Contact with the Roma								0.11	0.79
2. Change in Negative Contact with the Roma	-.24***							-0.1	1.02
3. Change in Positive Contact with the Vietnamese	.30***	.04						0.02	0.94
4. Change in Negative Contact with the Vietnamese	-.01	.32***	-.16					0.03	0.8
5. Prejudice against the Roma at Time 1	-.06	.11**	-.04	.06				33.63	21.94
6. Prejudice against the Roma at Time 2	.07*	-.02	-.07*	.02	.68***			36.09	21.29
7. Prejudice against the Vietnamese at Time 1	-.01	-.01	-.13***	.13***	.30***	.23***		60.69	17.31
8. Prejudice against the Vietnamese at Time 2	.04	-.03	.01	-.02	.17***	.29***	.58***	60.94	16.69

Note. The items referring to intergroup contact ranged from -4 (maximum decrease in a specific intergroup contact) to 4 (maximum increase in a specific intergroup contact). Prejudice ranged from 0 (cold feelings toward outgroup) to 100 (warm feelings toward outgroup).

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

3.4.2 Effects of intergroup contact on prejudice in individuals with different stereotypes

We estimated one model across four groups of participants that differed in their stereotypes of the Roma and a second model across four groups of participants that differed in their stereotypes of the Vietnamese. Both sets of models were estimated using the maximum likelihood approach. The models relating to stereotypes of the Roma yielded good fits: In participants who endorsed a contemptuous stereotype of the Roma, $\chi^2(3) = 13.836$, $p = .003$, CFI = .99, RMSEA = .048 [.025, .076], SRMR = .021; in participants who endorsed an admired stereotype of the Roma, $\chi^2(3) = 5.480$, $p = .140$, CFI = .96, RMSEA = .057 [.000, .132], SRMR = .034; in participants who endorsed a paternalistic stereotype of the Roma, $\chi^2(3) = 1.676$, $p = .642$, CFI = 1.00, RMSEA = .000 [.000, .069], SRMR = .017; and in participants who endorsed an envious stereotype of the Roma, $\chi^2(3) = 1.884$, $p = .597$, CFI = 1.00, RMSEA = .000 [.000, .096], SRMR = .022. Similarly, the models relating to the Vietnamese stereotype yielded good fits: In participants who endorsed contemptuous stereotype of Vietnamese, $\chi^2(3) = 5.737$, $p = .125$, CFI = .97, RMSEA = .062 [.000, .138], SRMR = .039; in participants who endorsed an admired stereotype of the Vietnamese, $\chi^2(3) = 1.687$, $p = .640$, CFI = 1.00, RMSEA = .000 [.000, .039], SRMR = .009; in participants who endorsed a paternalistic stereotype of the Vietnamese, $\chi^2(3) = 3.399$, $p = .334$, CFI = .99, RMSEA = .032 [.000, .157], SRMR = .044; and in participants who endorsed an envious stereotype of the Vietnamese, $\chi^2(3) = 5.066$, $p = .167$, CFI = 1.00, RMSEA = .029 [.000, .071], SRMR = .020. Statistical power for the most important effects is presented in Table 3.

Table 3

Post-Hoc Power Analysis for Selected Effects

	Effect of change in positive contact on prejudice against the primary outgroup	Effect of change in negative contact on prejudice against the primary outgroup	Direct effect of change in positive contact with primary outgroup on prejudice against secondary outgroup	Direct effect of change in negative contact with primary outgroup on prejudice against secondary outgroup	Indirect effect of change in positive contact with primary outgroup on prejudice against secondary outgroup	Indirect effect of change in negative contact with primary outgroup on prejudice against secondary outgroup
Admired stereotype of the Roma	.231	.289	.147	.145	.215	.278
Contemptuous stereotype of the Roma	**.988**	.836	.056	.187	**.986**	**.827**
Envious stereotype of the Roma	.630	.665	.158	.107	.486	.544
Paternalistic stereotype of the Roma	.375	**.944**	.279	**.994**	.348	**.938**
Admired stereotype of the Vietnamese	.493	**1.000**	**.997**	.276	.474	**1.000**
Contemptuous stereotype of the Vietnamese	**.987**	.078	**.980**	.276	.960	.048
Envious stereotype of the Vietnamese	0.833	0.148	0.384	0.282	0.294	0.030
Paternalistic stereotype of the Vietnamese	.410	.139	.714	.224	.373	.122

Note. Effects that were significant in original models are bold.

3.4.2.1 Roma stereotypes

Contemptuous stereotype. In participants endorsing the contemptuous stereotype of the Roma, prejudice against the Roma at Time 2 was influenced only by a change in positive contact with the Roma, not by a change in negative contact with the Roma (see Figure 2). The comparison of regression coefficients between effects of changes in positive contact and negative contact on prejudice toward the Roma was significant, $z = 3.19$, $p < .01$, supporting the stereotype-refutation hypotheses about stereotype-inconsistent contact (i.e., H1c, positive contact will have a greater effect with respect to reducing prejudice than negative contact with respect to increasing prejudice when individuals hold a negative outgroup stereotype) and contradicting the stereotype-confirmation hypotheses about stereotype-consistent contact (i.e., H1a, negative contact will have a greater effect with respect to increasing prejudice than positive contact with respect to reducing prejudice when individuals hold a negative outgroup stereotype).

With respect to the secondary transfer effect, prejudice against the Roma at Time 2 was associated with prejudice against the Vietnamese at Time 2. We estimated the indirect effect of change in contact with the Roma on prejudice against the Vietnamese at Time 2 through prejudice against the Roma at Time 2. We found evidence only for the indirect effect of change in positive contact with the Roma, $\beta = .018$, $SE = .008$, $p = .019$, CI[.003, .033], not of change in negative contact with the Roma, $\beta = -.013$, $SE = .007$, $p = .085$, CI[-.027, .002]. The comparison of the two indirect effects was significant, i.e. $z = 2.91$, $p < .01$, supporting the stereotype-refutation hypothesis about stereotype-inconsistent contact (i.e., H2c, positive contact with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than negative contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a negative stereotype of the primary group)

and refuting the stereotype-confirmation hypothesis about stereotype-consistent contact (i.e., H2b, negative contact with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than positive contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a negative stereotype of the primary group)

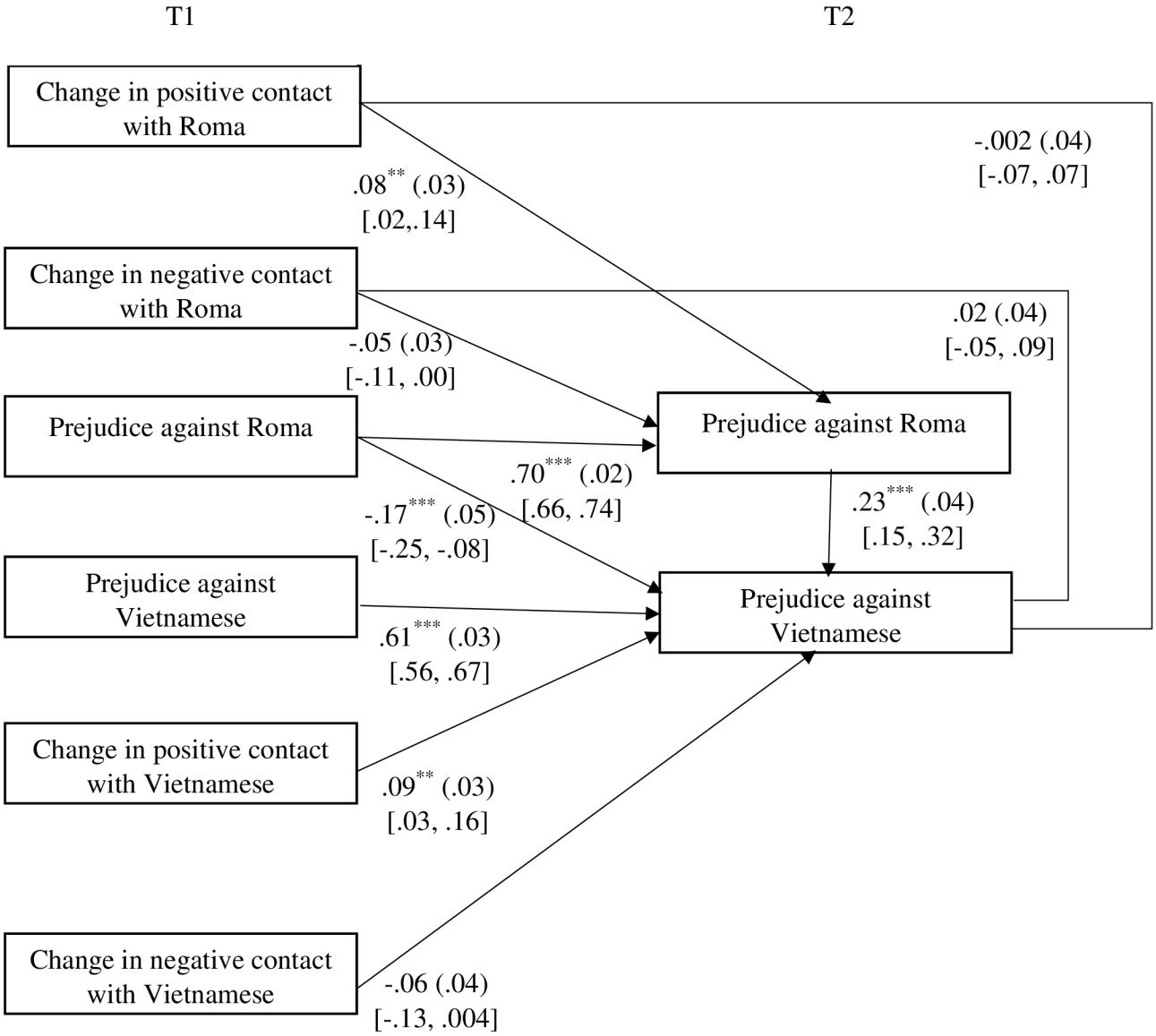

Figure 2. The Effect of Change in Intergroup Contact with the Roma on Prejudice against the Roma and the Vietnamese in Participants Endorsing Contemptuous (Negative) Stereotype of the Roma (N = 1,541).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

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

Admired stereotype. Prejudice against the Roma was not affected by contact among participants endorsing the admired stereotype (see Figure 3). Prejudice against the Vietnamese at Time 2 (the secondary group) was also not associated with change in intergroup contact. In this group, we found only one significant path between prejudices against the Roma and prejudices against the Vietnamese (except for auto-regressive paths). Prejudice against the Roma at Time 1 was negatively associated with prejudice against the Vietnamese at Time 2. In contrast, prejudice against the Roma at Time 2 was positively associated with prejudice against the Vietnamese at Time 2. None of the hypotheses were supported in the case of the admired stereotype.

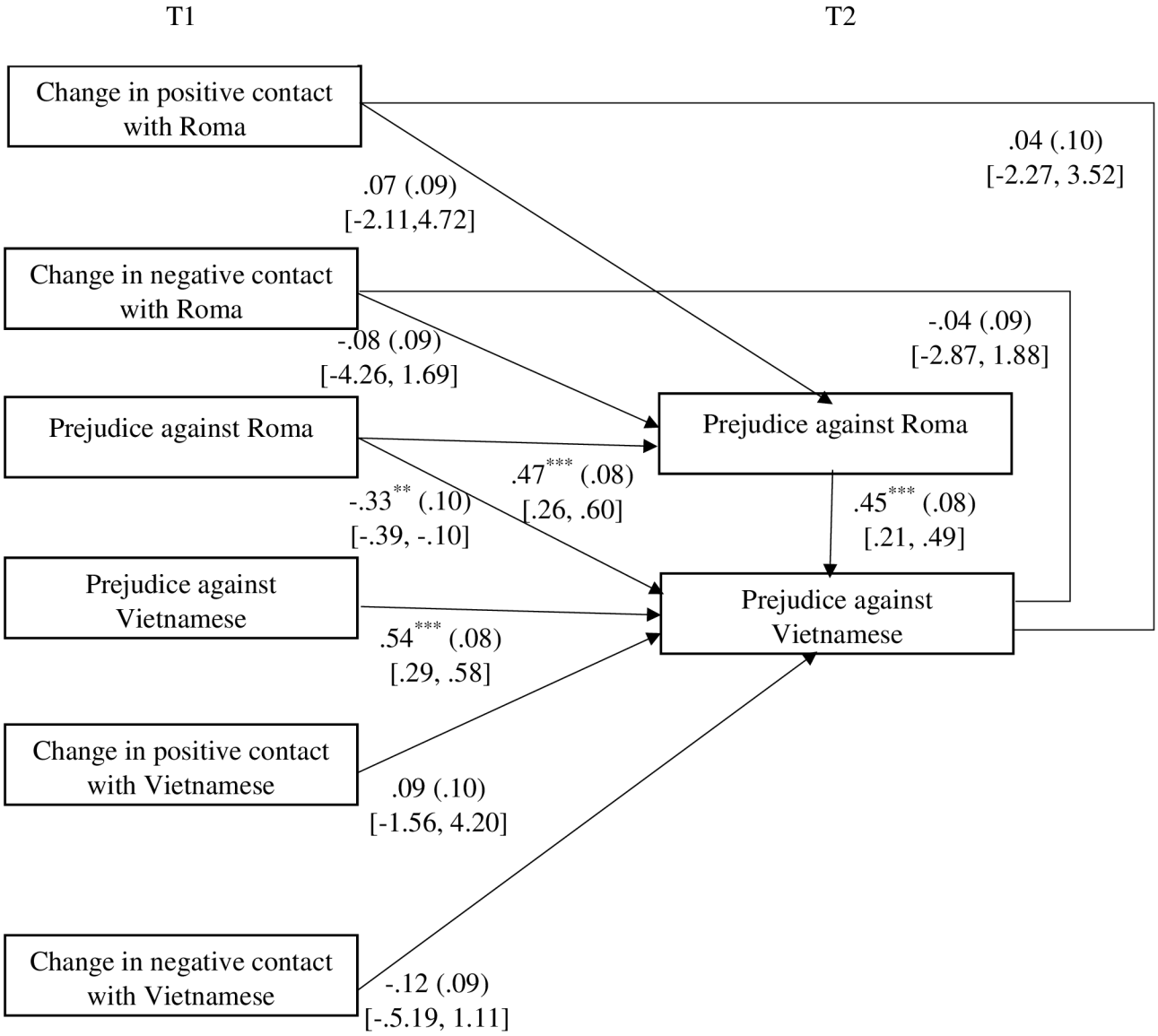

Figure 3. The Effect of Change in Intergroup Contact with the Roma on Prejudice against the Roma and the Vietnamese in Participants Endorsing Admired (Positive) Stereotype of the Roma (N = 254).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

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

Paternalistic stereotype. Prejudice against the Roma at Time 2 among respondents with a paternalistic stereotype of the Roma was affected only by a change in negative contact with the Roma, not by a change in positive contact (see Figure 4). The comparison of regression coefficients between the effects of change in positive contact and change in negative contact on prejudice toward the Roma was significant, $z = 2.10$, $p < .05$. Prejudice against the secondary group, the Vietnamese, at Time 2 was associated with prejudice against the Roma at Time 1 and also at Time 2. Moreover, change in negative contact with the Roma, and not change in positive contact, had direct but also indirect effects on prejudice against the Vietnamese at Time 2 through prejudice against the Roma at Time 2; indirect effect of negative contact: $\beta = -.062$, $SE = .032$, $p = .048$, CI[-.124, -.001]; indirect effect of positive contact: $\beta = .028$, $SE = .029$, $p = .350$, CI[-.030, .085]. The indirect effect of a change in negative vs. a change in positive contact with the Roma on prejudice against the Vietnamese at Time 2 was stronger, $z = -2.02$, $p < .05$, and the difference between direct effects was not significant, $z = -.99$, $p > .05$.

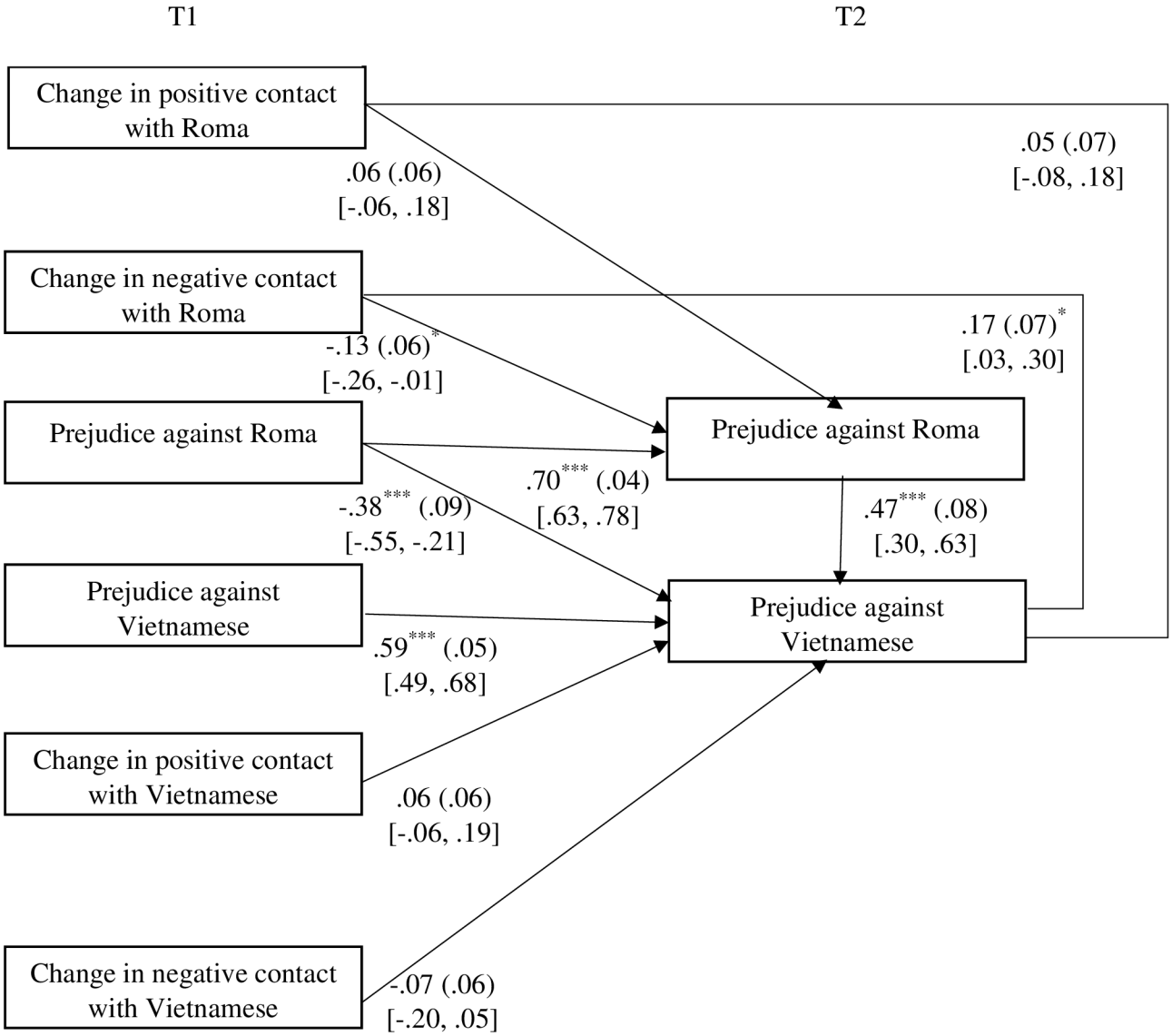

Figure 4. The Effect of Change in Intergroup Contact with the Roma on Prejudice against the Roma and the Vietnamese in Participants Endorsing Paternalistic Stereotype of the Roma (*N* = 383).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$

Envious stereotype. Prejudice against the Roma at Time 2 among respondents with an envious stereotype of the Roma was not influenced by a change in either positive or negative contact (see Figure 5). In this group, prejudice against the Vietnamese at Time 2 (the secondary group) was affected only by prejudice against the Roma at Time 1 and Time 2.

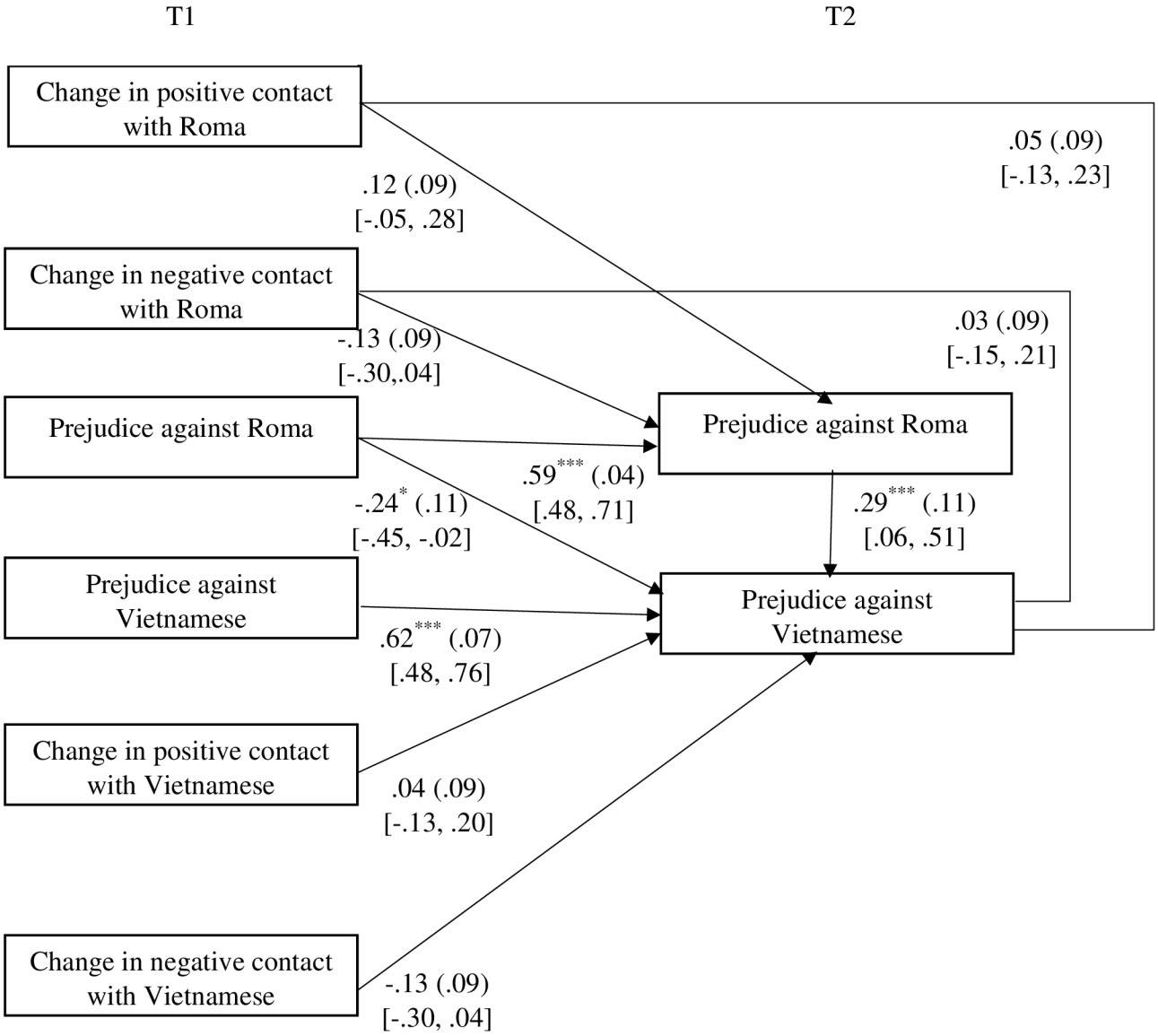

Figure 5. The Effect of Change in Intergroup Contact with the Roma on Prejudice against the Roma and the Vietnamese in Participants Endorsing Envious Stereotype of the Roma (N = 218).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

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

3.4.2.2 Vietnamese stereotypes

Contemptuous stereotype. Prejudice against the Vietnamese at Time 2 was influenced by a change in positive contact with the Vietnamese, not by a change in negative contact with the Vietnamese (see Figure 6). The difference between the effect of a change in positive vs. a change in negative contact was marginally significant, $z = 1.92$, $p = .055$. However, the difference between the cut-off value (1.96), which determines when the Z-score is considered to be significant, and the calculated Z-score was negligible; thus, we conclude that this finding supports the stereotype-refutation hypothesis (i.e., H1c, positive contact will have a greater effect with respect to reducing prejudice than negative contact with respect to increasing prejudice when individuals hold a negative outgroup stereotype) and contradicts the stereotype-confirmation hypothesis (i.e., H1a, negative contact will have a greater effect with respect to increasing prejudice than positive contact with respect to reducing prejudice when individuals hold a negative outgroup stereotype).

Prejudice against the Vietnamese at Time 2 (the primary group) was associated with prejudice against the Roma at Time 2 (the secondary group). Moreover, prejudice against the Roma at Time 2 was influenced directly by a change in positive contact with the Vietnamese, not by a change in negative contact or by indirect effects of a change in contact with the Vietnamese. Comparison of the direct effects of a change in positive contact and a change in negative contact with the Vietnamese on prejudice against the Roma at Time 2 was significant, $z = 2.21$, $p < .05$., contradicting the stereotype-confirmation hypothesis (i.e., H2b, negative contact with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than positive contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a negative stereotype of the primary group) and supporting the stereotype-refutation hypothesis (i.e., H2c, negative contact

with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than positive contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a negative stereotype of the primary group).

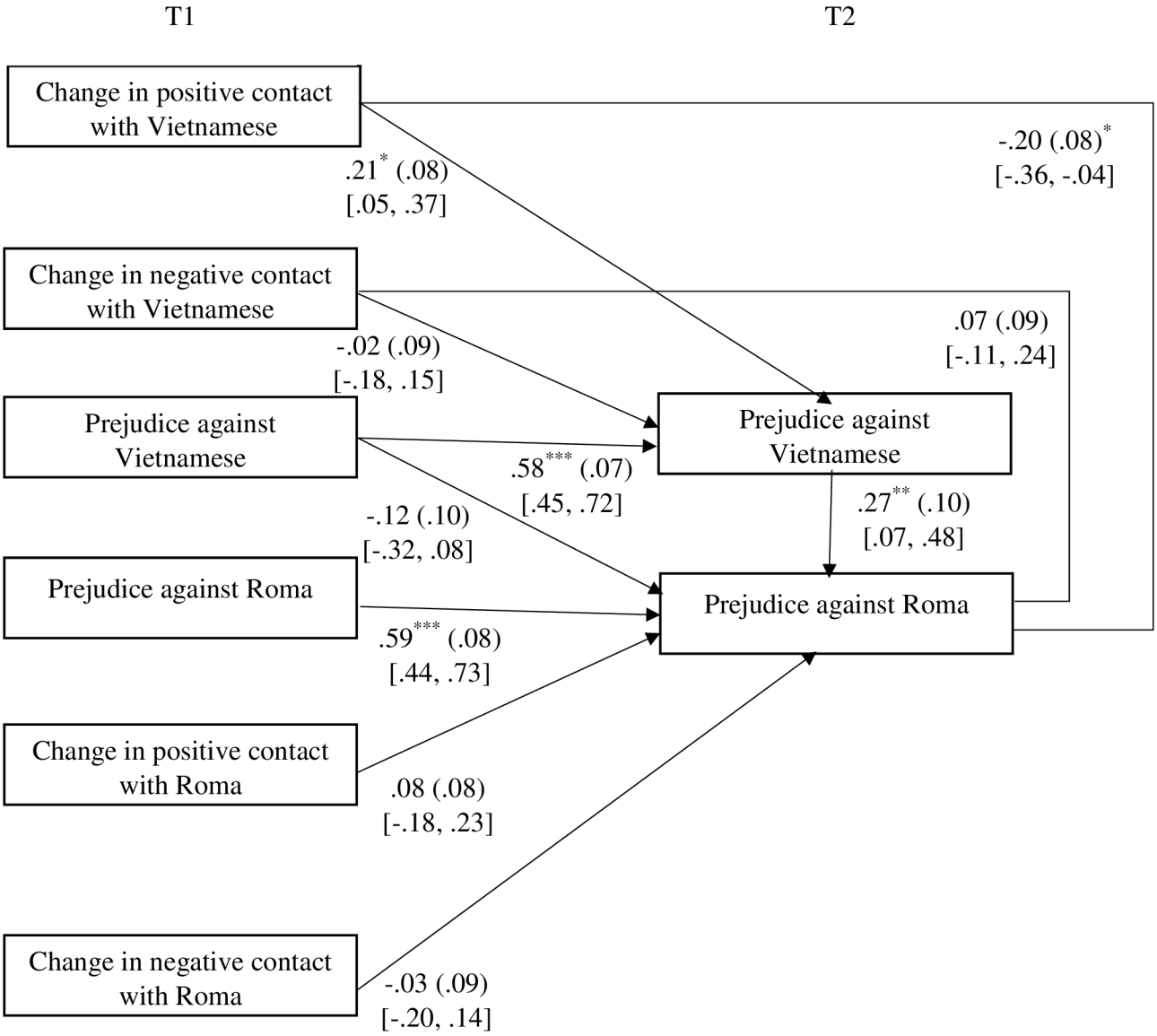

Figure 6. The Effect of Change in Intergroup Contact with the Vietnamese on Prejudice against the Vietnamese and the Roma in Participants Endorsing Contemptuous (Negative) Stereotype of the Vietnamese (N = 241).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

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

Admired stereotype. Prejudice against the Vietnamese at Time 2 was influenced only by a change in negative contact with the Vietnamese, not by a change in positive contact with the Vietnamese (contact consistent with the stereotype; see Figure 7). This finding is in line with the stereotype-refutation hypothesis (i.e., H1d, negative contact will have a greater effect with respect to increasing prejudice than positive contact with respect to reducing prejudice when individuals hold a positive outgroup stereotype) and in contrast to the stereotype-confirmation hypothesis (i.e., H1b, positive contact will have a greater effect with respect to reducing prejudice than negative contact with respect to increasing prejudice when individuals hold a positive outgroup stereotype). The comparison of regression coefficients showed that this difference was significant, $z = -3.64$, $p < .01$.

Prejudice against the Roma at Time 2 (the secondary group) was affected by prejudice against the Vietnamese at Time 1 and associated with prejudice against the Vietnamese at Time 2. Following hypotheses on the secondary transfer effect, a change in positive contact was directly associated with prejudice against the Roma at Time 2 and indirectly with a change in negative contact. The effects of a change in positive contact with the Vietnamese and a change in negative contact with the Vietnamese on prejudice against the Roma at Time 2 were not different, $z = 1.18$, $p = .238$. On the other hand, the indirect effect of a change in negative contact, $\beta = .012$, $SE = .011$, $p = .249$, CI[-.063, -.015], was stronger than the indirect effect of a change in positive contact, $\beta = -.039$, $SE = .012$, $p = .001$, CI[-.009, .033], $z = -3.29$, $p < .01$. These findings contradict the stereotype-confirmation hypothesis (i.e., H2a, positive contact with a primary outgroup will have a greater effect on decreasing prejudice against the secondary group than negative contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a positive stereotype of the primary group) and support the stereotype-refutation hypothesis (i.e., H2d, negative contact with a primary

outgroup will have a greater effect on decreasing prejudice against the secondary group than positive contact with a primary outgroup on increasing prejudice against the secondary group when individuals hold a positive stereotype of the primary group).

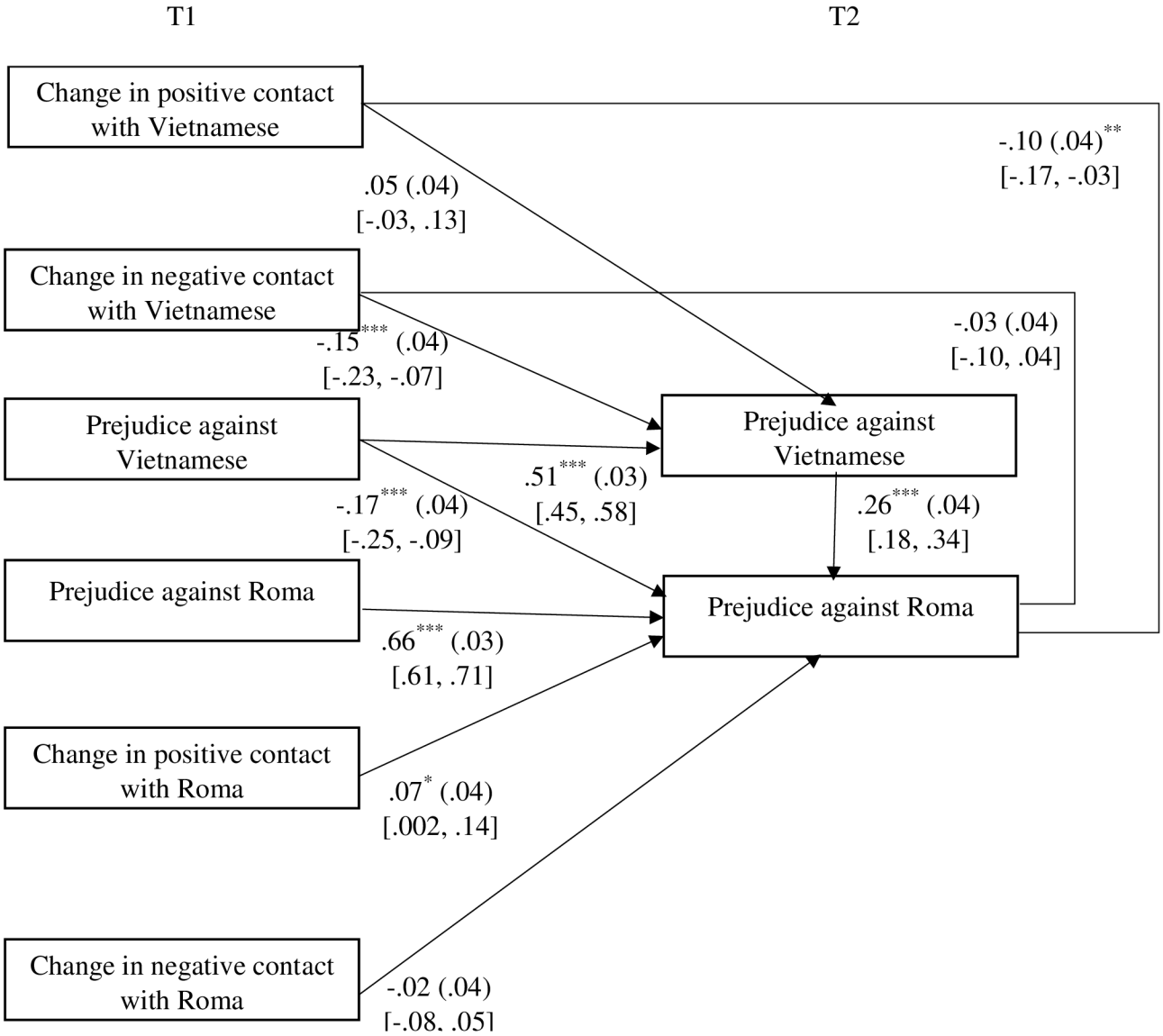

Figure 7. The Effect of Change in Intergroup Contact with the Vietnamese on Prejudice against the Vietnamese and the Roma in Participants Endorsing Admired (Positive) Stereotype of the Vietnamese (N = 1208).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$

Paternalistic stereotype. Change in positive or negative contact did not have an effect on prejudice against the Vietnamese at Time 2 (see Figure 8). Prejudice against the Roma at Time 2 (the secondary group) was not influenced by any predictor.

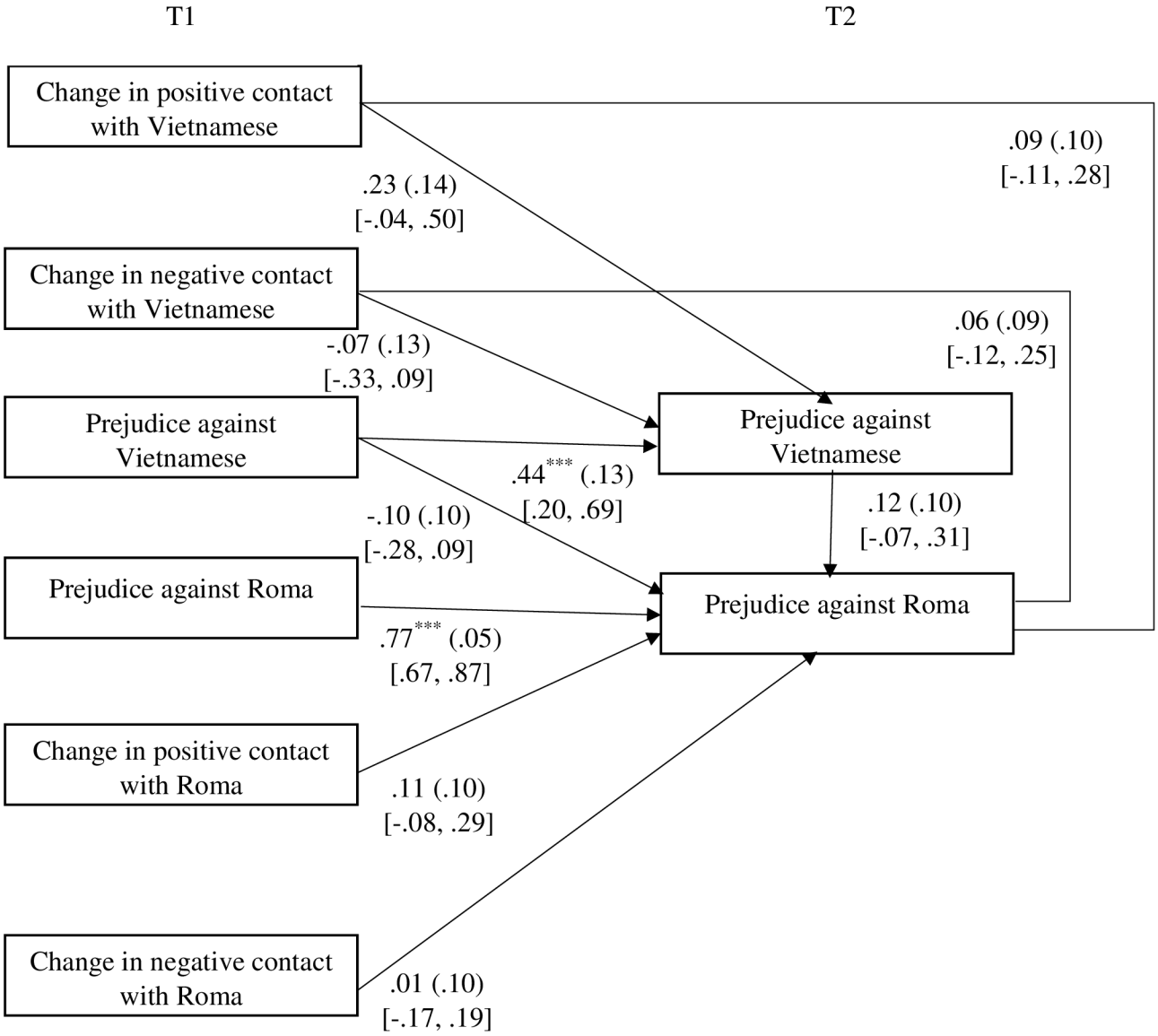

Figure 8. The Effect of Change in Intergroup Contact with the Vietnamese on Prejudice against the Vietnamese and the Roma in Participants Endorsing Paternalistic Stereotype of the Vietnamese (N = 127).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

$^{***}p \leq .001$; $^{**}p \leq .01$; $^{*}p \leq .05$

Envious stereotype. Prejudice against the Vietnamese at Time 2 was not affected by a change in either positive or negative contact with the Vietnamese (see Figure 9). Prejudice against the Roma at Time 2 (the secondary group) was related to prejudice against the Vietnamese at Time 2 but the direct or indirect effects of a change in contact with the Vietnamese was nonsignificant.[3]

[3] After including control variables in all eight models, all effects were similar overall and all effects remained at the same level of significance except for two coefficients. First, the impact of change in positive contact with the Vietnamese on prejudice against the Roma at Time 2, β = -.15, *SE* = .08, *p* = .057, CI[-.311, .005] became marginally significant among respondents with a contemptuous stereotype of the Vietnamese. Among respondents with a contemptuous stereotype of the Vietnamese, the effect of change in positive contact with the Vietnamese on prejudice against the Vietnamese at Time 2 increased, β = .22, *SE* = .08, *p* = .006, CI[.062, .374].

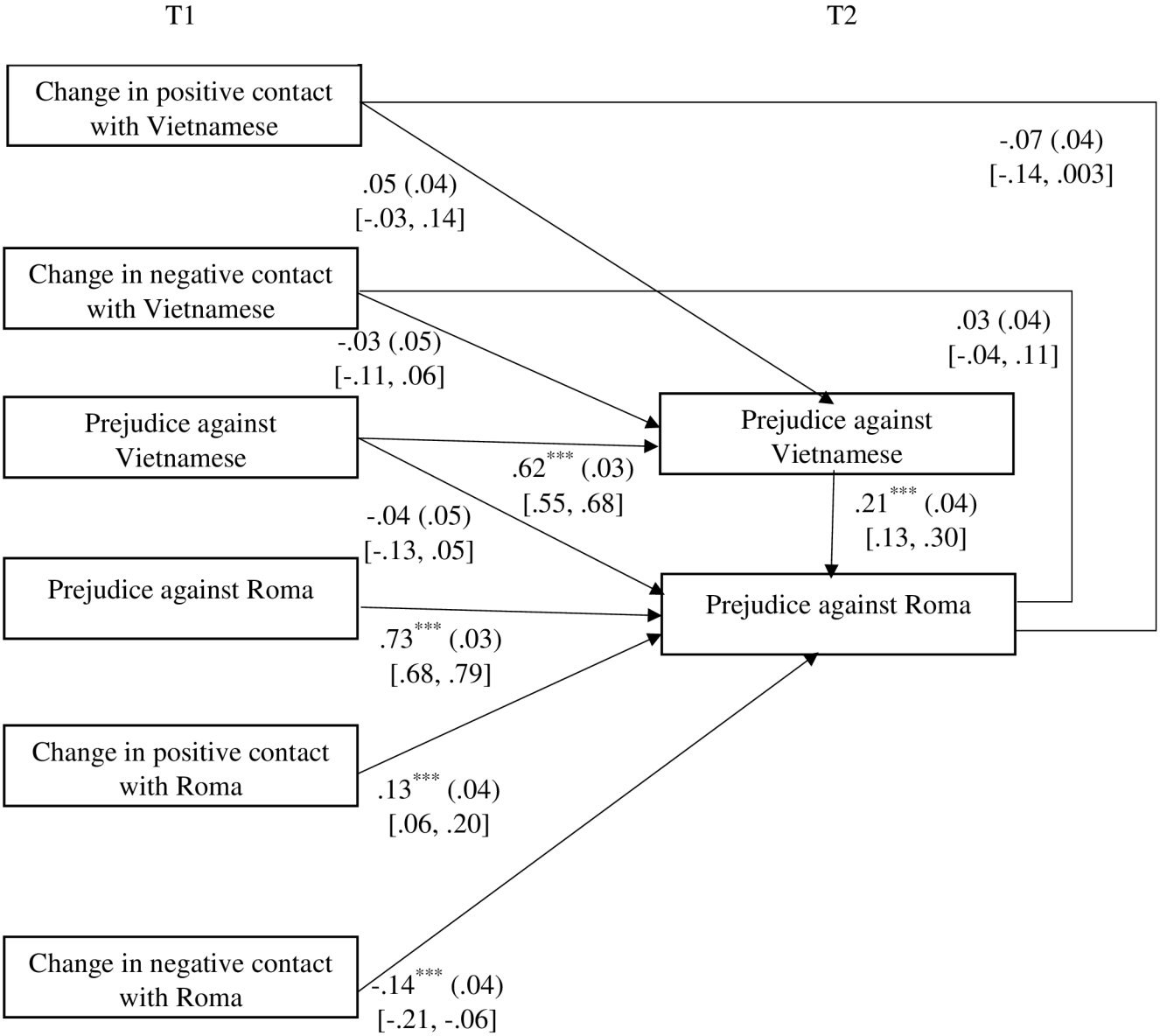

Figure 9. The Effect of Change in Intergroup Contact with the Vietnamese on Prejudice against the Vietnamese and the Roma in Participants Endorsing Envious Stereotype of the Vietnamese (N = 819).

Note. Numbers in the model are standardized path coefficients. Numbers in the parentheses are standard deviations. Numbers in the brackets are 95% confidence intervals.

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

3.5 Discussion

The present study tested how change in intergroup contact with members of a certain group influenced prejudice against this group in the face of its stereotypes.

Although intergroup contact is one of the most prominent ways of reducing prejudice, previous research omitted the possibility that its effect on prejudice does not only depend on the characteristics of the intergroup encounter (e.g., minority-majority status, Tropp & Pettigrew, 2005; the valence of intergroup contact, Barlow et al., 2012) but also on characteristics of the outgroup captured by the outgroup stereotype. Our data showed that a change in intergroup contact that contradicts the valence of the group stereotype, i.e. a change in stereotype-inconsistent contact, played a greater role in shaping prejudice over a change in stereotype-consistent contact. We confirmed stereotype-refutation hypotheses over stereotype-confirmation hypotheses in three cases out of four: specifically, in the case of a contemptuous (i.e., negative) stereotype of the Roma and both an admired (i.e., positive) and a contemptuous stereotype of the Vietnamese. In the case of ambivalent stereotypes, we found that a change in intergroup contact did not lead to any change in prejudice. The outcomes of our study uniquely contribute to the understanding of the effects of intergroup contact on prejudice considering not only the quality of the intergroup encounter but also the perception of the encountered outgroup.

The second goal of our research was to examine the secondary transfer effect in light of the stereotype of the primary outgroup. In line with our findings about the primary transfer effect, we found evidence that change in stereotype-inconsistent contact had a stronger impact on prejudice than change in stereotype-consistent contact also in the case of the secondary transfer effect. The stereotype-refutation hypotheses were confirmed for both admired and contemptuous stereotypes. The secondary transfer effect did not occur in individuals holding ambivalent stereotypes, except in one case: a change in negative contact with the Roma influenced prejudice against the Vietnamese in respondents who endorsed a paternalistic stereotype of the Roma.

3.5.1 Group stereotype determines how intergroup contact affects prejudice

In this study, a change in stereotype-inconsistent contact influenced prejudice more than a change in stereotype-consistent contact. There are several theoretical explanations for these results. In line with Information Integration Theory (N. H. Anderson, 1974), cues that do not contain novel information are weighted less than information enriching knowledge about the target of attitudinal formation (Fiske, 1980). Stereotype-inconsistent contact provides additional information about an outgroup, whereas stereotype-consistent contact only confirms something that is already known. In line with Fiske's findings (1980), unexpected information – carried by a mismatch of the valences of group stereotypes and intergroup contact – has a significant effect on change in prejudice. Although Fiske emphasized the impact of negative and extreme behavior, the group presented as the stimulus in Fiske's research was white males, the group usually associated with a positive stereotype (Cuddy et al., 2009). Consequently, it was the negative information that had a greater impact on attitude formation. However, in the context of negative stereotypes, positive interactions should be perceived as more novel and thus more informative in comparison to negative interactions. As a result, in negatively stereotyped groups, positive information should have a bigger impact on impression or prejudice formation than negative information – one of the findings of our study.

Our research contributes to the literature on stereotypes by showing that negative stereotype facilitates the effect of positive information with respect to reducing prejudice. However, at the same time, intergroup contact can backfire if the outgroup stereotype is positive, since negative contact plays a more prominent role in shaping prejudice against positively stereotyped groups than positive contact. Generally, intergroup contact has been promoted as an intervention for reducing prejudice against groups that need it most, i.e. groups that suffer from prejudice, discrimination, and negative stereotypes (Pettigrew &

Tropp, 2013). Our study indicates that intergroup contact is able to fulfil its purpose whereby positive intergroup contact can be the an effective tool for fighting prejudice against negatively perceived groups, as is the case of the Roma in Central and Eastern Europe (Csepeli & Simon, 2004), welfare recipients in the case of the USA, or homeless people and Arabs in the case of several European countries (Cuddy et al., 2009).

The hypotheses on the superior effect of stereotype-inconsistent contact with regard to reducing prejudice was supported for all forms of stereotypes except for the admired stereotype of the Roma. According to the literature about majority–Roma relations, the Roma are mostly associated with negative stereotypes (New, 2011; Petrova, 2003). This was also the case with our sample, in which positive stereotype of the Roma was uncommon. One may wonder why people holding a positive stereotype of the Roma were not affected by change in either positive or negative intergroup contact. The fact that some respondents reported that positive stereotype of the Roma is relatively widespread in Czech society points to a motivation not to perceive the Roma negatively, one that may inhibit stereotype activation (Kunda & Sinclair, 1999) and prejudice (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002). Future research should therefore explore the role of motivation in the relationship between intergroup contact, stereotypes, and prejudice.

We provided a unique probe into the prejudice of people holding ambivalent stereotypes (Cuddy et al., 2009). Our findings suggest that prejudice among people endorsing ambivalent stereotypes is not usually influenced by change in positive or negative intergroup contact. The only exception to this rule is the significant link between a change in intergroup contact and prejudice in people who endorsed a paternalistic stereotype of the Roma. Prejudice against ambivalently stereotyped groups may be unaffected by change in intergroup contact because expectations about intergroup interaction are unclear, based as they are on ambivalent emotions and beliefs connected

with these groups (Fiske et al., 2002). It is possible that intergroup contact affects prejudice only when positive and negative stereotypes create clear expectations about the valence of interactions with the given group. When expectations are mixed, the valence of intergroup contact has a less clear effect on prejudice. Future research should focus on the effects of intergroup contact on prejudice against groups associated with ambivalent stereotypes (e.g., disabled people, Jews), and identify conditions that allow for contact to be effective in challenging prejudice against these groups.

Our research shows that despite the existence of certain prevailing group stereotype in society, it may be worth differentiating between people endorsing also less frequent stereotypes about a given group. Our approach complements the approach of the Stereotype Content Model (Fiske et al., 2002), which treats groups as being unequivocally connected with a certain group stereotype (e.g., the Roma as a contemptuously stereotyped group). Our detailed results show that taking into consideration distinct groups of participants that endorse different stereotypes about the same group can bring more nuanced predictions about the dynamics of prejudice change.

3.5.2 The effects of intergroup contact on prejudice beyond the encountered outgroup

Attitudes toward an object are generalized onto attitudes toward similar objects (Fazio et al., 2004). In the case of minorities, if two outgroups are perceived similarly, the change in attitudes toward one outgroup should influence also attitudes toward the other outgroup. However, our data support the notion that similarity between minorities is not crucial for contact with one group to influence prejudice against another group. We found support for the secondary transfer effect between the Roma and the Vietnamese, although different stereotypes were mostly attached to these outgroups. Despite benefiting from positive stereotypes, social minorities such as the Vietnamese may still be targets of prejudice and suffer from social inequality. Our findings about the secondary transfer

effect suggest that it is possible to compensate for the shortcoming of the primary transfer effect, i.e. that positive contact with positively stereotyped groups fails to reduce prejudice against them. Specifically, while prejudice against the positively stereotyped Vietnamese was not influenced by a change in positive (stereotype-consistent) contact with the Vietnamese, a change in positive (stereotype-inconsistent) contact with the Roma, a negatively stereotyped minority, had an indirect positive effect on prejudice against the Vietnamese. In this way, positive contact can also qualify as a way of reducing prejudice against positively stereotyped groups.

The Roma, a more negatively stereotyped group, would benefit from a reduction in prejudice more than the Vietnamese. However, the negative side of our findings on the secondary transfer effect was that although prejudice against the negatively stereotyped Roma was resistant to change after negative (stereotype-consistent) contact with the Roma, change in negative (stereotype-inconsistent) contact with the Vietnamese led to an increase in prejudice against the Roma. This effect of negative intergroup contact can be dangerous for minorities that have to fight negative prejudice and discrimination in society. Our results indicate that the secondary transfer effect could be used as a way of reducing prejudice – yet, only when positive contact occurs with a negatively stereotyped primary outgroup.

3.5.3 Limitations and future directions

First of all, our findings were tested in the specific context of the Czech Republic and may be not entirely generalizable to other contexts. The second pitfall is that our sample consisted of majority group members. Since the effects of contact among the majority population and minorities may diverge (Tropp & Pettigrew, 2005), future research should also include minority samples. Third, according to some authors, a sample with under 200 respondents is considered small in the context of structural equation models.

This small power may be the reason why we did not find significant estimates within this subsample of respondents endorsing a paternalistic stereotype of the Vietnamese (N = 127) in comparison to the subsample represented by respondents with a paternalistic stereotype of the Roma (N = 383). We suggest that future research examines intergroup contact with ambivalently stereotyped outgroups more closely.

Fourth, although we examined respondents endorsing ambivalent stereotypes, we did not consider ambivalent contact. Ambivalent contact describes a situation in which participants have both positive and negative experiences with the outgroup or their particular experience with an outgroup member is positive and negative at the same time (Graf & Paolini, 2017). In the context of our study, ambivalent contact may also be stereotype-consistent if it corresponds to the specific content of a given ambivalent group stereotype (e.g., contact with a member of a group with envious stereotypes during which one receives competent advice in a cold, impersonal way) or stereotype-inconsistent if it diverges from expectations based on the given dimensions (e.g., contact during which an enviously stereotyped group member behaves in an incompetent but warm, hearty way). Consequently, we suppose that ambivalent contact would also follow our prediction about the greater effect of stereotype-inconsistent vs. stereotype-consistent contact. However, future research should further investigate change in prejudice after ambivalent contact in the case of ambivalently stereotyped outgroups.

With our novel approach to studying the effects of intergroup contact on prejudice in the light of different stereotypes, we enrich the current literature in several ways. We reintroduced the topic of group stereotypes into the area of intergroup contact and examined the consequences of contact and stereotype valence (mis)match for prejudice reduction. In contrast to most intergroup studies, we treated minority groups as being associated with a variety of distinct stereotypical perceptions. Consequently, we

documented how the effects of positive and negative contact on prejudice can differ depending on the endorsed stereotype – even with respect to the same group. Our design included two different groups and thus offers more ecologically valid and generalizable conclusions. We did not only focus on the effects of contact with an outgroup on prejudice against this very same group but also tested the generalization effect of contact with one group on prejudice against another group. We used longitudinal data, which enabled us to capture how dynamic changes in intergroup contact influence prejudice over time.

The present study points to the importance of considering the wider context in which contact occurs by taking into account specific outgroup stereotypes. The perceived characteristics of an outgroup are of a high relevance for a more nuanced understanding of the effects of intergroup contact on prejudice. At the same time, our and similar findings can assist in tailoring specific prejudice reducing interventions effective for different people and for outgroups associated with different stereotypes. It is crucial for practitioners and policy makers to know whether prejudice against a specific outgroup may be shaped by positive contact with this group and what danger negative contact poses to attitudes toward this and other groups associated with various stereotypes.

Chapter 4

Who is Most Influential? Adolescents' Intergroup Attitudes and Peer Influence within a Social Network

Tibor Zingora, Tobias Stark, & Andreas Flache

Abstract

Research has shown that adolescents' intergroup attitudes are subject to friends' influence, but it remained unknown if certain friends are more influential than others. Popular adolescents may be especially influential of their friends' intergroup attitudes because they can set peer norms. We examined several indicators of popularity in social networks as possible determinants of social influence: friendship popularity, prestige popularity, being a clique leader, and frequency of contact with friends. Longitudinal analysis of adolescents' friendship networks (12-13 years, N = 837) allowed estimating influence of friends on adolescents' intergroup attitudes, while controlling for the tendency of adolescents to befriend peers with similar intergroup attitudes. Results showed that adolescents' intergroup attitudes changed in the direction of friends' intergroup attitudes. Only friendship popular adolescents were especially influential of their friends' intergroup attitudes. These findings contribute to our understanding of the development of intergroup attitudes and can guide interventions aiming to reduce prejudice.

4.1 Introduction

How adolescents develop attitudes toward other ethnic groups is a crucial question in a multicultural society. Answering it may provide guidance on how to efficiently fight prejudice and improve interethnic relations among youth (Thijs & Verkuyten, 2014). During childhood, parents have a strong influence on their children's attitude internalization; however, as children become adolescents, peers become an increasingly more relevant socialization factor (Biddle, Bank, & Marlin, 1980; William M. Bukowski & Newcomb, 1984; Maguen & Armistead, 2006; Raabe & Beelmann, 2011; Steinberg & Monahan, 2007; Steinberg & Silverberg, 1986). Adolescents modify their opinions, attitudes, beliefs, or behavior towards resembling those of the peers they interact with. Social influence in general takes place because people are persuaded by convincing arguments (Myers, 1982), because they seek to be similar to others (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979), because they are uncertain about a decision and follow the lead of others (Bikhchandani, Hirshleifer, & Welch, 1992), or because they feel social pressure to conform to social norms in their peer group (Festinger, Schachter, & Back, 1950; Homans, 1950; Wood, 2000). Social influence especially of adolescents' friends, has been documented for the formation of attitudes (Kiesner, Maass, Cadinu, & Vallese, 2003; Poteat, 2007; Rambaran, Dijkstra, & Stark, 2013), stereotypes, (Sechrist & Stangor, 2001; Stangor, Sechrist, & Jost, 2001), and various forms of behavior, such as delinquent behavior (Weerman, 2011), drinking alcohol (Ary, Tildesley, Hops, & Andrews, 1993; Steglich, Snijders, & West, 2006), smoking (Beal, Ausiello, & Perrin, 2001), substance use (Graham, Marks, & Hansen, 1991), sexual behavior (Beal et al., 2001), or adopting music and fashion preferences (Steglich et al., 2006).

Social network analysis has played a key role in studying social influence among adolescents. In particular, the increasing availability of longitudinal social network data

and the development of statistical methods like stochastic actor-oriented models (Snijders, 2011; Snijders & Steglich, 2015; Steglich, Snijders, & Pearson, 2010) have helped to disentangle the selection of friends with similar attitudes from the process of influencing friends to adopt similar attitudes. For instance, such research has shown that friends influence each other's attitudes towards various risk behaviors such as smoking, skipping school, drinking alcohol (Rambaran et al., 2013) and their attitudes toward education (Shin & Ryan, 2014). There is, however, surprisingly little research that makes use of social network analysis to understand how adolescents develop intergroup attitudes and how social influence on intergroup attitudes is differed from social selection of friends based on similar intergroup attitudes (for exceptions, see Stark, 2015; van Zalk et al., 2013).

It remains unclear how exactly characteristics of adolescents affect their power to influence their friends' intergroup attitudes. Such knowledge could help design effective and cost-efficient social interventions that aim to improve intergroup relations. Existing prejudice reduction programs typically target large groups such as the whole classroom (Houlette et al., 2004; Stathi, Cameron, Hartley, & Bradford, 2014) and are accordingly complex and expensive to implement. New intervention programs could be tailored to involve only a few but very influential individuals who subsequently influence the attitudes of their classmates (Paluck, 2011; Paluck & Shepherd, 2012). Such "network interventions" (Valente, 2012) have recently been succesfully implemented to reduce social conflict in large schools (M = 432 students) by training only 20-32 students in an intervention program (Paluck, Shepherd, & Aronow, 2016).

The present research uses longitudinal data on both the evolution of friendships and of intergroup attitudes in adolescents' school classes to test whether social influence among friends extends to the formation of intergroup attitudes. In addition, we explore which students within a school classroom are especially influential of their friends' intergroup

attitudes. Based on previous research, we derive and test hypotheses about four potential determinants of social influence: friendship popularity, prestige popularity, being a clique leader, and spending free time with friends.

4.2 Theory

4.2.1 The influence of friends on intergroup attitudes

Various theoretical approaches have been offered to understand why adolescents' attitudes are influenced by their friends' attitudes. According to the Shared Reality Theory (Hardin & Conley, 2001), people establish and maintain their beliefs when they are socially shared. Peers represent a big part of adolescents' social world. Therefore, we can expect that adolescents' desire to establish and maintain social relationships with friends will result in internalization of attitudes prevalent in their friendship clique. Group-norm Theory adds to this perspective that individuals adopt attitudes of peers who belong to valued groups, because this allows achieving the basic human goals of affiliating with others and maintaining a positive self-concept (Cialdini & Goldstein, 2004; Crandall, Eshleman, & O'Brien, 2002; Sherif & Sherif, 1953). For adolescents, the valued group can be found in their group of friends (Dishion, Piehler, & Myers, 2008; Paluck, 2011; van Zalk et al., 2013) with whom they spend a lot of time and share relationships that are characterized by intimacy (Berndt, 1996; Flaspohler, Elfstrom, Vanderzee, Sink, & Birchmeier, 2009; Newcomb & Bagwell, 1995). While Shared Reality Theory and Group-norm Theory assume partially different processes underlying peer influence among adolescents, they both imply a link between friendship relations and attitude formation.

Neither Shared Reality Theory nor Group-norm Theory do specifically target intergroup attitudes. However, research on the formation of intergroup attitudes suggests that intergroup attitudes are similarly subject to peer influence as many other salient attitudes are. A large literature on the "extended contact hypothesis" has established that simply

knowing that an ingroup friend has positive intergroup contact improves intergroup attitudes (Munniksma, Stark, Verkuyten, Flache, & Veenstra, 2013; Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; Zhou, Page-Gould, Aron, Moyer, & Hewstone, 2018). Interacting with outgroup members first improves the attitudes of those adolescents who have direct contact (Pettigrew et al., 2011). They subsequently influence the attitudes of their ingroup friends by changing their perceived ingroup norms toward the outgroup (Turner, Hewstone, Voci, & Vonofakou, 2008; Wright et al., 1997). Importantly, such influence processes do not necessarily lead to positive attitudes; friends may also influence adolescents to adopt more negative attitudes (Van Zalk et al, 2013). Given this earlier evidence, we expect that social influence among friends is an important determinant of adolescents' intergroup attitudes also in our study.

H1: Adolescents intergroup attitudes become more similar to their friends' intergroup attitudes over time (social influence).

A key challenge for research on peer influence is that similar intergroup attitudes among friends can also be a consequence of friendship homophily and not necessarily a consequence of social influence (DeLay, Laursen, Kiuru, Salmela-Aro, & Nurmi, n.d.; Stark, 2015). According to the homophily principle, people are attracted to persons from similar backgrounds, with similar behavior, and also with similar attitudes (McPherson, Smith-Lovin, & Cook, 2001). Similar intergroup attitudes among friends might thus be a consequence of adolescents selecting friends who already have similar attitudes toward ethnic outgroups and not because they influence each other (van Zalk et al., 2013). Ignoring people's tendency to select friends who are similar may lead to an overestimation of social influence processes (Steglich et al., 2010; Wölfer, Faber, & Hewstone, 2015). It is thus important to consider both processes simultaneously if we want to test social influence in the formation of intergroup attitudes.

H2: Adolescents form friendships based on similar intergroup attitudes (social selection).

In order to provide the knowledge needed for designing network interventions (Valente, 2012) that aim at reducing prejudice among adolescents (Paluck, 2011), it is important to improve our knowledge about the characteristics of adolescents who are particularly influential when it comes to intergroup attitudes. Currently, there is no consensus that could guide the development of intervention programs on who are the most influential adolescents within a friendship network. In the following, we distinguish a number of alternative theoretical approaches and formulate corresponding hypotheses for empirical testing.

4.2.2 Identifying most influential adolescents by popularity

According to the Social Identity Theory (Hogg & Reid, 2006), the ability to influence others might depend on the extent to which an individual can determine what is normative in a social setting and what is not. Because a failure to adopt social norms that are valued in one's peer group can lead to social exclusion (Juvonen & Galván, 2008), adolescents may try to act according to norms represented by popular members of their network.

In fact, friendship popularity, i.e. having a lot of friends, was suggested as a factor enhancing the social influence adolescents can exert on friends' behavior and attitudes, such as drinking and smoking (Osgood et al., 2013; Schaefer, Adams, & Haas, 2013). There are several reasons why the same may be true for intergroup attitudes. First, friendship popular adolescents are often viewed as having prosocial skills, which may grant ability to persuasively communicate intergroup attitudes (Parkhurst & Hopmeyer, 1998). Second, to become more friendship popular themselves, adolescents may adopt intergroup attitudes that they view to be associated with friendship popularity. Third, many adolescents may desire to become friend of friendship popular peer. To be more likely viewed positively by friendship popular peers, adolescent may adopt their intergroup

attitudes. Fourth, from the perspective of social network research, friendship popular adolescents occupy central position within a classroom from which they may effectively spread their intergroup attitudes (Wasserman & Faust, 1994). Social influence within a classroom is not static, instead intergroup attitudes are constantly being influenced by friends. Friendship popular adolescents may be influencing many friends directly and through shared friends also many other classmates indirectly. Because friendship popular adolescent influences many members of the classroom, it is likely that a direct friend of friendship popular adolescent will be influenced twice by friendship popular friend – directly and indirectly via friends in common.

H3: Adolescents are more likely to adopt the intergroup attitudes of their friends, the more friendship nominations these friends receive in a classroom (friendship popularity).

According to other studies, however, the most popular people are not always more influential but actually are most strongly influenced by social norms (Lee, Cotte, & Noseworthy, 2010; Reynolds & Crea, 2015). According to the popularity-socialization hypothesis, popular adolescents are more exposed to the social influence of friends (Allen, Porter, McFarland, Marsh, & McElhaney, 2005). One possible explanation for this contradiction in the literature is that there is a multitude of definitions of which position in a social network characterizes popularity. While some previous studies defined popularity as the frequency of friendship nominations by classmates (Geven, Weesie, & van Tubergen, 2013), alternative definitions of popularity exist. To the best of our knowledge, these various forms of popularity have never been tested against each other to identify which adolescents exert most influence on friends' intergroup attitudes.

Some scholars distinguished between friendship popularity (sometimes called sociometric popularity), i.e. a person considered to be friend by many peers, and prestige popularity, i.e. a person perceived as popular by others (Sandstrom & Cillessen, 2006). An

adolescent who is often considered to be a friend does not have to necessarily be the most visible, prestigious, or dominant member of the social network (Cillessen & Rose, 2005). In fact, although friendship and prestige popularity are often intuitively referred to only as popularity, they do not overlap to a large extent. For example, Parkhurst and Hopmeyer (1998) found that only 36% of friendship popular students were also perceived to be popular and only 29% of perceived popular students were also friendship popular. While adolescents with high friendship popularity are well liked by others, prestige popular youth do not necessarily have only prosocial traits; rather to the contrary, prestige popular adolescents often act aggressively (Rubin, Bukowski, & Parker, 1998). Yet young people may often aspire to imitate peers with high prestige popularity (Adler & Adler, 1998). Hence, adolescents may adopt intergroup attitudes of friends with high prestige popularity in an attempt to become more prestige popular themselves.

H4: Adolescents are more likely to adopt the intergroup attitudes of their friends, the more popularity nominations these friends receive in a classroom (prestige popularity).

A key facilitating factor may be whether a friend's attitudes are considered to be relevant or representative for the friendship clique. Paluck and Shepherd (2012) introduced the concept of "social referents" to characterize adolescents that have many connections in a network and who are more likely to be paid attention to than other peers (Paluck et al., 2016). There are two types of social referents, *widely known* adolescents, and *clique leaders* (Paluck & Shepherd, 2012). Widely known adolescents are influential because they have a high status among peers and thus attract a lot of attention (this concept is similar to our hypothesis about prestige popularity). In contrast, clique leaders have many friends in an interconnected group of peers and can thus influence the members of such a clique. In fact, clique norms may have bigger impact on attitudes and behavior than perceived norms of the whole social network. Membership in a small clique should satisfy

adolescents' need for uniqueness and distinctiveness more than belonging to a big group (Blanton & Christie, 2003; C. L. Pickett, Silver, & Brewer, 2002). Consequently, clique membership may be valued more than belonging to a big group, which should motivate an adolescent to abide clique norms to avoid exclusion (Juvonen & Galván, 2008). Clique leaders may determine what is perceived to be normative behavior and attitudes within a clique because they are well connected with members of the clique, who, by the definition of a clique, are less connected with people outside the clique (Paluck & Shepherd, 2012).

H5: Adolescents are more likely to adopt the intergroup attitudes of their friends, the more well-connected in a dense clique these friends are (clique leaders).

However, the reason why some adolescents exert more influence on friends' intergroup attitudes might lie in the nature of their ties with others. Although friendship popular adolescents may be able to reach many peers because they are, by definition, frequently chosen as friends, their relationships with other members of the network can lack certain qualities. Popular adolescents cannot spend time with all peers that desire to be friends with them. This lack of relationship quality may eventually lower their ability to influence their friends. To address this issue, Paluck and Shepherd (2012) suggested taking the time adolescents spend together into account. Social learning theories (Bandura, 1977) suggest that peers can influence an adolescent through behavioral reinforcement (Rancourt & Prinstein, 2010; Salmivalli, Voeten, & Poskiparta, 2011)Consequently, adolescents who spend a lot of time with friends may spread social norms most effectively as they can be repeatedly observed and thus reinforce others' behavior and attitudes (Paluck et al., 2016). According to this reasoning, friends with whom an adolescent spends a lot of time should have particularly big influence on that adolescent's attitudes.

H6: Adolescents are more likely to adopt the intergroup attitudes of their friends, the more time they spend with these friends.

4.3 Method

4.3.1 Data

To test the hypotheses, we use data from the Arnhem School Study, a longitudinal school study in the Netherlands (Stark & Flache, 2012). This dataset mapped social networks and interethnic attitudes among adolescents in their first years of the secondary education (age 12-13). We used the second (December 2008) and third (June 2009) wave of this longitudinal dataset to test our hypotheses. The second wave took place 4 months after the transition to secondary school so that friendships had enough time to be formed. Questionnaires were completed online by all students of a class simultaneously on separate computers in their school's computer lab under a teacher's supervision. Sixty-one first-year classrooms in the secondary schools of Arnhem participated in data collection (88% of all first-year classrooms). Response rates were 93% in the second wave and 88% in the third wave. Because high numbers of missing values in the network could cause problems in the model estimation (Ripley, Snijders, Boda, Vörös, & Preciado, 2018), we excluded 13 classrooms in which more than 30% of students did not participate. Two other classrooms were not included because students answered the questionnaire unsupervised which led to high nonresponse. Four additional classrooms had to be excluded due to convergence problems in the analysis. Moreover, five classes were removed at a later stage because estimates for these classes violated assumptions of the statistical model (see Appendix B). The final analyses are based on the remaining 37 classrooms that included N = 837 students.

4.3.2 Measures

Intergroup attitudes. Respondents were asked to indicate their attitudes toward Moroccans and Turkish people, the largest immigrant groups in the Netherlands. Specifically, respondents were asked to indicate on a scale from 1 = totally disagree to 7 = totally agree

whether they believed that Moroccans/Turks are “honest,” “friendly,” “smart,” and “helpful.” Attitudes towards the Moroccan and Turkish groups were highly correlated and thus combined into an average composite score, which showed high internal consistencies (both waves, alpha = .97). A small minority of our respondents (about 9%) actually belong to these two groups. For them, the variable measured an ingroup attitude rather than an intergroup attitude. These students could not be left out of the analysis because longitudinal social network analysis requires data on complete networks (Ripley et al., 2018). Potential differences between these and other students were captured by controlling for ethnicity in our analyses.

Friendship network. All adolescents saw a list with the names of all classmates on the screen and were asked to indicate whom they consider to be a "best friend." The number of friends that could be indicated was not limited to obtain the whole friendship network of an adolescent within the school class (Stark, 2018). The average number of friends was 4.69 in the first wave, and 4.38 in the second wave.

Friendship popularity. To identify adolescents with high friendship popularity, we measured the number of incoming friendship nominations (indegree centrality) using the igrapgh package implemented in R (Csardi & Nepusz, 2006).

Prestige popularity. In another network question, adolescents answered “who do others want to associate with? (who is popular?)” Students could again nominate as many classmates as they wanted on a name list (Dijkstra, Cillessen, & Borch, 2013). Similarly, as in the case of students with high friendship popularity, we measured prestige popularity as the number of incoming popularity nominations (indegree centrality).

Clique leaders. Clique leaders were identified following the approach of Shepherd and Paluck (2012). Adolescents who received at least 3 friendship nominations and whose

friends were interconnected (local clustering coefficient higher than .35) were labeled as clique leaders. In total 245 adolescents satisfied the criteria to be labeled as a clique leader (29.27%; on average 6.6 clique leaders per classroom).[4] We used the term "clique leader" in line with Shepherd and Paluck (2012), although the term may be misleading. A clique leader in this measure is not defined as a person who is at top of the hierarchy in a clique. Rather, a clique leader has a central position within a clique, is considered to be friend by many clique members, and, therefore, may attract a lot of attention from clique members.

Adolescents that spent a lot of time with friends. To identify adolescents who are not only friends but also spend time with classmates, adolescents were asked in a third network question, "with whom do you spend time after school?". This way we obtained a dyadic covariate (Ripley et al., 2018), which captured whether each pair of respondents within a classroom spent time after school together. A "1" indicated that two adolescents spend time after school together, and "0" indicated that two adolescents did not spend time after school together.

Ethnicity. Adolescents were labeled as being Dutch, if both parents were born in the Netherlands. If at least one parent was born outside the Netherlands, this parent's ethnicity was ascribed to the student in line with the definition of ethnicity of Statistics Netherlands (2017). Finally, if both parents were born outside of the Netherlands and not in the same country, the mother's place of birth was used. Because adolescents' self-perception may differ from such an objective measure, we took self-identification into account. Students were asked: "Do you feel Dutch?" and "Do you feel [ethnicity of a parent born outside the Netherlands]?" The adolescents who identified more strongly as being Dutch than with the

[4] Paluck and Shepherd (2012) selected clique leaders with local clustering coefficient higher than .20, which identified 27.84% of adolescents as clique leaders. Due to the denser networks in our study, we chose a higher local clustering coefficient to identify a similar percentage of clique leaders (29.05%).

ethnicity of their parents were recoded to be Dutch. Adolescents indicated 46 different ethnicities.

Ethnicity Moroccan/Turk. Because the dependent variable was attitudes towards the biggest minority groups in the Netherlands, Moroccans and Turks, we controlled for differences between students who belonged to these immigrant groups and those who did not. After ethnicity was assigned to participants, a dummy variable for having a Moroccan or Turkish ethnic background was created (91 participants with Moroccan or Turkish ethnicity, 12 participants did not indicate their ethnicity).

Gender. A dummy variable representing 1 = male (52.93%), 0 = female (45.76%, 1.31% respondents did not indicate gender) was created.

4.3.3 Analytical approach

To test our hypotheses, we examined the co-evolution of social network dynamics and intergroup attitudes using stochastic actor-oriented models (SIENA; Ripley et al., 2018). SIENA enables simultaneously determining tendencies that influence network formation and impact intergroup attitudes (Stark, 2015). This way friends' influence of adolescents' attitudes can be examined while controlling for adolescents' tendency to befriend others with similar attitudes.

SIENA estimates the likelihood that ties between network members are created or dissolved, taking into account the initial relationships among network members and tendencies, i.e. simulated effects, that should represent network dynamics (Snijders, van de Bunt, & Steglich, 2010). Such tendencies are tested for their impact on change in network ties and in behavior/attitudes. An example of a tendency that can influence tie formation within a network may be a preference of an adolescent to choose friends with the same gender. SIENA estimates the network evolution in multiple steps. In each step, one

randomly selected network member can create a tie, dissolve a tie, do nothing, or move on the behavioral/attitudinal scale. It is assumed that the action of network member is driven by characteristics and positions of the selected network member and (potential) friends, and the current state of the network (Veenstra, Dijkstra, Steglich, & Van Zalk, 2013). For example, an adolescent may befriend a classmate more likely when there is a friend in common than when two adolescents have completely different friends. After a decision of one randomly selected network member is evaluated, the process continues with another randomly selected member of a network. In the end, the analysis evaluates how well the simulated effects fit the observed changes within a network. This process provides the parameters that represent what tendencies played a role in network evolution and what tendencies influenced change of attitudes of network members.

SIENA requires complete data, what means that all members of a classroom had to be present in the data. Therefore, data for students who were not part of the classroom during the first measurement were treated as structurally missing during the estimation process (Ripley et al., 2018). Values for students who did participate in the data collection were imputed and treated as non-informative during the estimation process (Huisman & Steglich, 2008).

A SIENA model can contain two parts – a network and a behavioral function. The *network function* contains effects that influence tie formation and dissolution. First, we accounted for structural effects to get unbiased estimates for other effects. Structural effects captured how the network itself can affect the formation of friendships (e.g., a friend of a friend is a friend). The specific structural effects that were included in our models are listed in Table 3 and their description and mathematical definitions are provided in Appendix B (Table B3).

Next to the structural effects, we added effects for adolescents' preference of friends with the *same gender* and the *same ethnicity*. A preference to select friends with similar intergroup attitudes was captured with *an attitude homophily effect*. Further, we added ego and alter effects for attitudes and gender to account for potential differences in the number of friendship nominations girls (vs. boys) and those with positive (vs. negative) attitudes sent and receive.

In the behavioral function, SIENA allows examining how attitudes or behavior change depended on the social network. We included *the linear shape effect* representing potential trends in the data toward lower or higher values on the dependent variable (intergroup attitudes) and *the quadratic shape effect*, which refers to the tendency of adolescents with very positive or very negative attitudes to develop even more extreme attitudes. To control for potential differences in attitude change in the group asked for in the attitude questions, we controlled the effect of *being a member of Moroccan and Turkish minority*. The measure of social influence among friends was the *average similarity* effect, which tests whether students adopt the intergroup attitudes of their friends. To test whether some adolescents were more influenced by certain friends compared to others, we added *interaction effects between average similarity and the friends' average value on the potential determinants of influence*: friendship popularity, prestige popularity, being a clique leader, spending a lot of time with peers (Geven et al., 2013). The main effects of these concepts were also added to the model. To avoid misspecification, we included the ego, alter, and similarity effect of the potential determinant of influence in the selection part of the model.

To estimate whether our model fitted the data with respect to network changes, we calculated five goodness-of-fit tests (Lospinoso, 2012). Specifically, we tested for five auxiliary statistics: outdegree distribution, indegree distribution, behavior distribution,

geodesic statistics, and triad census. The results showed that our model fitted the data well. For more information, see Appendix B.

We analyzed all 37 classrooms at once using SIENA's multi-group option (for an example, see Leszczensky, Stark, Flache, & Munniksma, 2016). This approach allows estimating interactions due to the bigger statistical power provided by a large sample. Alternatively, one could analyze all classrooms individually and combine the results in a meta-analysis. This would require fixing instead of estimating the main effect of average similarity in models that also include an interaction to avoid nonconvergence of the model with small classroom networks (see Geven et al., 2013). However, the average similarity effect and the interaction could mutually influence each other and fixing one could mask the size of the other.

The multi-group option makes the crucial assumption that all parameters are the same for all classes (Ripley et al., 2018). To inspect whether heterogeneity in the parameters affected the results, we conducted robustness checks in which we analyzed school classes that were similar in ethnic composition and academic track in smaller multi-group objects and combined the results using a meta-analysis. This procedure is described in Online Appendix B.

We provide estimates, which can be interpreted as log-odds, standard errors, and p-values. The estimates and standard errors were obtained using method of Iterated Weighted Least Square (Snijders & Baerveldt, 2003).

4.4 Results

4.4.1 Descriptives

Intergroup attitudes became significantly worse between Wave 1 (M = 4.18) and Wave 2 (M = 4.03; $t(710) = 2.6$, $p = .009$), and the average number of friends decreased slightly between Wave 1 (M = 4.69) and Wave 2 (M = 4.38; $t(840) = 2.10$, $p = .030$).

However, intergroup attitudes were still highly correlated between waves, and so were the number of friends (Table 1). The number of friends in both waves was positively correlated with both popularity measures. Being a clique leader significantly correlated with number of friends, but only in the first wave. As expected, intergroup attitudes were significantly associated with the dummy variable representing Moroccan/Turkish ethnic background showing that adolescents from the Moroccan and Turkish groups had more positive attitudes towards the Moroccan and Turkish minorities.

Table 1

Descriptive Statistics and Correlations Between All Variables (N = 837)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
M	4.69	4.38	4.18	4.03	.11	.54	4.69	3.00	2.87	.29
SD	3.97	3.74	1.37	1.27	.31	.50	2.46	3.51	1.96	.46
1. Friends	–									
2. Friends T2	.41***	–								
3. Attitudes	.02	.03	–							
4. Attitudes T2	.08*	.09**	.49***	–						
5. Ethnicity Moroccans/Turks	-.01	-.05	.23***	.19***	–					
6. Gender	.03	.07	-.09**	-.06	.01	–				
7. Friendship Popularity	.39***	.32***	.05	.07	-.06	-.03	–			
8. Prestige Popularity	.20***	.15***	.06	.01	-.01	.04	.48***	–		
9. Spending a lot of time with classmates	.31***	.25***	.03	.05	-.05	-.01**	.70***	.39***	–	
10. Being a clique leader	-.31***	-.07	-.03	-.05	.01	-.02	.00	-.03	-.03	–

*** p > .001; ** p > .01; * p > .05

4.4.2 Friendship influence and friendship homophily

The stochastic actor-oriented analysis showed significant effects of several network micro-dynamics on friendship formation and maintenance in the baseline model (Model 1 in Table 2). In line with previous research on adolescents' friendship networks, the density effect was negative showing that adolescents selected only few friends in the whole network (est = -3.04, *SE* = .21, $p < 0.001$; see Table 2). Moreover, the positive reciprocity effect (est = 2.12, *SE* = .20, $p < 0.001$) means that adolescent tended to reciprocate friendship nominations. Just like it is typically found in friendship networks (Block, 2015), the likelihood to have reciprocated ties to friends-of-friends was also found to be significant and negative (transitive reciprocated triplets; est = -.21, *SE* = .03, $p < 0.001$). A positive indegree popularity parameter indicated that the more incoming friendship nominations an adolescent received in the first wave, the more likely the adolescent received additional friendship nominations in the second wave (est = -.04, *SE* = .01, $p =$ 0.001). A negative indegree activity parameter showed that the more incoming friendship nominations an adolescent received in the first wave, the less likely this adolescent was to send friendship nominations in the second wave. A positive outdegree activity effect indicated that adolescents who nominated many friends sent even more friendship nominations in the second wave (est = -.20, *SE* = .01, $p < 0.001$).

Table 2

Multi-Group Analysis of Network and Attitudes Change presenting the Baseline Model and Models that Involve Interactions between Average Similarity and Friendship Popularity, Prestige Popularity, Being a Clique Leader, or Spending Time with Friends (N = 837)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Network Function										
(Density)	-3.04***	.21	-1.21	2.80	-3.15***	.21	-2.97***	.21	-2.36***	.37
Reciprocity	2.12***	.20	2.50**	.91	2.02***	.17	2.17***	.20	2.27***	.30
Jaccard similarity for outgoing ties effect	4.91***	.79	5.80*	2.28	5.05***	.80	5.38***	.88	5.80***	1.06
In-Structural Equivalence	.20***	.04	.21***	.05	.21***	.04	.17***	.04	.19***	.05
Transitive Reciprocity Triplets	-.42***	.06	-.46***	.12	-.40***	.05	-.44***	.06	-.43***	.07
Transitive Reciprocity Triplets 2	.49***	.14	.67^{+}	.36	.44***	.13	.54***	.16	.52***	.15
Indegree Popularity	.12**	.04	.10*	.05	.11**	.04	.09**	.01	.09^{+}	.05
Indegree Activity	-.35***	.10	-.93	1.07	-.36***	.10	-.32***	.08	.56*	.22
Outdegree Activity	.10***	.01	.12*	.05	.10***	.01	.09***	.01	.11***	.02
Gender homophily	.45***	.07	.60*	.26	.54***	.08	.47***	.08	.55***	.11

[Table 2 continued]

Ego gender	.21**	.08	.37	.32	.22**	.07	.20**	.08	.32**	.13
Alter gender	-.16*	.08	-.21	.19	-.12+	.07	-.14+	.08	-.17+	.09
Ethnic homophily	.12	.08	.24	.31	.10	.08	.15*	.08	.19***	.07
Attitude homophily	.65*	.30	.93	.76	.70*	.29	.63*	.30	.85*	.41
Ego attitude	.02	.03								
Alter attitude	-.02	.03								
Potential determinant of social influence homophily[a]			.87+	.52	1.32***	.22	-.05	.06	.92***	.27
Ego Potential determinant of social influence[a]			.51	.68	.06**	.02	.28**	.09	.25*	.12
Alter Potential determinant of social influence[a]					.06***	.01	.37***	.09	.08***	.02
Behavioral Function										
Attitude Linear Shape	-.09*	.04	-.10*	.04	-.09*	.04	-.09*	.04	-.07	.08
Attitude Quadratic Shape	-.004	.03	.003	.03	-.003	.03	-.002	.03	-.003	.03
Average Similarity	4.96***	.82	-.82	1.87	4.93***	.82	5.01***	.82	5.33***	1.62

[Table 2 continued]

Ethnicity Moroccan/Turk	.10	.12	.10	.13	.10	.12	.10	.12	.10	.12
Alters' Average Potential determinant of social influence[a]			-.01	.02	-.01	.02	.18	.16	-.06	.15
Average Similarity x Potential determinant of social influence[a]			1.10**	.37	.04	.21	.76	2.40	-.37	1.23

Note. Stochastic actor-oriented multi-group analysis. Ego and Alter attitude effects were removed after Model 1 when they were insignificant. [a]Potential determinant of social influence represents friendship popularity in Model 2, prestige popularity in Model 3, being a clique leader in Model 4, and spending time with friends in Model 5.

*** $p > .001$; ** $p > .01$; * $p > .05$, $^{+}$ $p < .10$

An insignificant coefficient for ethnic homophily indicated that friendship ties were not more likely between adolescents of the same ethnical background (est = .12, *SE* = .08, $p > .10$). In contrast, adolescents with the same gender (gender homophily; est = .45, *SE* = .07, $p < 0.001$), and with similar interethnic attitudes (attitude homophily; est = .65, *SE* = .30, $p < .05$) created friendship ties with higher probability than others. This last finding confirms Hypothesis 2 and suggests that adolescents selected friends with similar intergroup attitudes.

Results for the behavioral function indicated that – after controlling for simultaneous network dynamics and other attitude dynamics – adolescents' intergroup attitudes became slightly more negative over time (see Table 2, attitudes linear shape; est = -.09, *SE* = .04, $p < .05$). There was no indication that extreme attitudes changed differently between Wave 1 and Wave 2 as indicated by an insignificant attitudes quadratic shape effect (est = -.004, *SE* = .03, $p > .10$). Furthermore, the insignificant ethnicity Moroccan/Turk effect shows that attitudes of adolescents with a Moroccan or Turkish ethnic background did not change differently compared to other adolescents (est = .10, *SE* = .12, $p > .10$).

While controlling for adolescents' tendency to select friends with similar intergroup attitudes, we found that adolescents tended to adjust their intergroup attitudes to those of their friends (average similarity; est = 4.96, *SE* = .82, $p < 0.001$). This is in line with Hypothesis 1 and shows that adolescents were influenced by intergroup attitudes of their friends.

To get a better understanding of what the social influence effect meant, we calculated a "influence table" that shows how attractive it is for an adolescent to adjust his/her intergroup attitudes depending on average intergroup attitudes of the friends (Table

3). The values in each cell give the relative “attractiveness” of adjusting one’s attitudes towards a certain value, given the average attitudes of one’s friends (Ripley et al., 2018). Three trends can be observed. First, the highest values are on the diagonal, which means that adolescents preferred most strongly to adopt the exact same intergroup attitudes as their friends. Second, the attractiveness values in the upper left of the table are higher than those in the lower right corner. This means that social influence was strongest among adolescents with the most negative intergroup attitudes. Third, the highest values in upper right and bottom left corners suggest that social influence was decreasing with increasing gap between intergroup attitudes of an adolescent and friends.

Table 3

Attractiveness of Attitudes that Adolescents Could Adopt Depending on the Attitudes of their Friends (social influence)

	Intergroup attitudes that an adolescent could adopt						
Friends' intergroup attitudes	1	2	3	4	5	6	7
1	1.85	0.61	-0.63	-1.87	-3.11	-4.35	-5.59
2	0.54	1.78	0.54	-0.70	-1.94	-3.18	-4.42
3	-0.77	0.47	1.71	0.47	-0.77	-2.01	-3.25
4	-2.10	-0.86	0.38	1.62	0.38	-0.86	-2.1
5	-3.43	-2.19	-0.95	0.29	1.53	0.29	-0.95
6	-4.76	-3.52	-2.28	-1.04	0.20	1.43	0.20
7	-6.11	-4.87	-3.63	-2.39	-1.15	0.09	1.33

4.4.3 Influential individuals

To examine whether certain adolescents are more influential, we estimated interactions between average similarity (social influence) and the four popularity measures. To avoid multicollinearity, each interaction was investigated separately. As Model 2 in Table 2 shows, the interaction between average similarity and having friends with high friendship popularity was significant (est = 1.10, *SE* = .37, $p < .01$). Hence, in line with Hypothesis 3, students' intergroup attitudes were more influence by their friends' attitudes, the more friendship nominations these friends received. The direct effect of having friends with high friendship popularity was non-significant (est = -.01, *SE* = .02, $p > .10$), showing that adolescents with highly friendship popular friends did not change their intergroup attitudes differently than classmates with less friendship popular friends.

Model 3 shows that prestige popular individuals had not more influence on friends' intergroup attitudes than other peers. The insignificant parameter referring to an interaction between average similarity and average alters' prestige popularity (est = .04, *SE* = .21, $p > .10$, Model 3) shows that adolescents were not particularly influenced by prestige popular friends. This leads to a rejection of Hypothesis 4. Also the main effect of average alters' prestige popularity centrality was non-significant (est = -.01, *SE* = .02, $p > .10$).

Adolescents were not more influenced when they were friends with clique leaders. The interaction between average similarity and friends' clique leadership position was non-significant (est = .76, *SE* = 2.40, $p > .10$, Model 4), which leads to rejection of Hypothesis 5. Similarly, the direct effect of having friends who were clique leaders was non-significant (est = .18, *SE* = .16, $p > .10$).

Likewise, spending a lot of time with friends did also not facilitate social influence. The interaction between average similarity and spending a lot of time with classmates did

not significantly predict change in adolescents' intergroup attitudes (est = -.37, *SE* = 1.23, $p > .10$, Model 5). This rejects Hypothesis 6. The direct effect of average time that friends spend with their friends was insignificant also (est = -.06, *SE* = .15, $p > .10$)

4.4.4 Robustness check

We conducted additional analyses to test whether our results were robust against violations of the assumption of the multi-group analysis that all parameters were the same across classrooms. To this end, we analyzed separately groups of classrooms which were similar in that they were from the same school and were of the same academic level (see Appendix B for a detailed explanation). The robustness check confirmed the finding that students were more likely to adopt their friends' attitudes when these friends had high friendship popularity (est = .93, *SE* = .20, $p^{RS} < .001$, Model 2). Similar as in the prior analysis, interactions between prestige popularity (est = -.05, *SE* = .21, $p^{RS} = .566$, Model 3), being a clique leader (est = -1.19, *SE* = 3.36, $p^{LS} = .205$, Model 4), or spending a lot of time with classmates (est = -1.69, *SE* = .83, $p^{LS} = .054$, Model 5) were non-significant.

We conducted a second robustness check to test whether friends' social influence was different for adolescents of Turkish or Moroccan ethnicity because attitudes were measured toward these students' groups (see Appendix B). The interaction between attitude homophily and Turkish or Moroccans background showed that these adolescents' intergroup attitudes were less strongly influenced than those of the other respondents in our sample (est = -4.33, *SE* = 1.50, $p < .01$, Table B4, Model 1). This suggests that the earlier findings of moderation of social influence by friendship popularity was not due to including students with a Turkish or Moroccans background in the sample. We also found that adolescents with Turkish or Moroccans ethnicity selected friends with similar intergroup attitudes with higher probability than other students (est = 1.86, *SE* = .90, $p < .05$, Model 1).

Further, we examined whether having the Turkish and Moroccan students in the sample affected the findings of the potential determinants of influence (see Appendix B). For this purpose, we tested three-way interaction between average similarity, being Turkish or Moroccan, and the determinants of influence of friends. Insignificant coefficients for all four three-way interactions showed that Moroccans and Turks were not especially more or less influenced by friendship popular friends (est = 2.73, *SE* = 2.08, $p > .10$, Table B4, Model 2), prestige popular friends (est = .31, *SE* = .84, $p > .10$, Table B4, Model 3), clique leaders (est = -3.67, *SE* = 7.49, $p > .10$, Table B4, Model 4), or friends who spent a lot of time with peers (est = 12.99, *SE* = 11.05, $p > .10$, Table B4, Model 5).

In the third robustness check, we tested whether adolescents were more influenced by friends with the same ethnic background (see Appendix B). The interaction between average similarity and alters having friends with the same ethnic background was insignificant (est = 1.06, *SE* = 1.08, $p > .10$, Table B5, Model 1), showing that shared ethnic background between friends did not facilitate social influence. In addition, insignificant three-way interactions showed that a shared ethnic background between friends did not facilitate the influence of friendship popular adolescents (est = -2.06, *SE* = 1.59, $p > .10$, Table B5, Model 2), prestige popular adolescents (est = .54, *SE* = .74, $p > .10$, Table B5, Model 3), or adolescents who spent a lot of time with friends (est = -1.04, *SE* = 3.11, $p > .10$, Table B5, Model 5) of friends' intergroup attitudes. In contrast, our results showed that shared ethnic background between friends reduced the influence of clique leaders of friends' intergroup attitudes (est = -18.36, *SE* = 8.33, $p < .05$, Table B5, Model 4).

4.5 Discussion

The present study found that friendship influence played a significant role in the development of adolescents' intergroup attitudes. Specifically, adolescents adjusted their

intergroup attitudes to the average intergroup attitudes among their friends. This is in line with earlier research on social influence with regard to adolescents' xenophobic and tolerance attitudes (Van Zalk et al., 2013). The results also suggest that intergroup attitudes affect the formation of friendships. This effect was, however, mainly driven by the group of Turkish and Moroccan students who selected friends with similar (positive) attitudes toward their own ethnic group. Moreover, adolescents preferred friends with the same gender and of the same ethnicity (Geven et al., 2013; Leszczensky et al., 2016; Stark, 2015).

We examined four indicators of who is potentially more influential in the social network; however, only friendship popular individuals exerted more influence on their friends' attitudes than others. These findings have important theoretical implications for our understanding of how adolescents influence each other and also practical implications for interventions aiming to improve intergroup attitudes.

4.5.1 Influence of friendship popular adolescents

The results showed that friends play a critical role in the development of intergroup attitudes of adolescents even after controlling for alternative explanations. The finding that adolescents adopted the intergroup attitudes prevalent among their friends is in line with previous research that showed that peers are a crucial socialization factor for adolescents (Bukowski & Newcomb, 1984; Raabe & Beelmann, 2011). Adolescents internalize not only behavior of their friends such as bullying (Sijtsema, Rambaran, Caravita, & Gini, 2014) or smoking (Schaefer, Haas, & Bishop, 2012) but also attitudes such as tolerance and xenophobia (van Zalk et al., 2013) and, as our research showed, intergroup attitudes.

Although we tested for multiple possible indicators of social influence, only friendship popularity was associated with more influence on friends' intergroup attitudes. The other factors examined in our study, prestige popularity, spending time with friends, and being a

clique leader did not indicate adolescents that were more influential than others. This is in line with research stressing that various indicators of popularity often do not necessarily overlap (Parkhurst & Hopmeyer, 1998), and can have distinct consequences. It is thus advisable for future research to not only focus on one type of popularity (Geven et al., 2013; Dijkstra, Cillessen & Borch, 2013; Cillesen & Rose, 2005) but to include various indicators as their impact on social influence may be different for different attitudes and behaviors.

The possible reasons behind the exceptional social influence of adolescents with many friends may lie in three not mutually exclusive attributes associated with friendship popularity. First, friendship popularity often goes hand in hand with prosocial skills (Gest, Graham-Bermann, & Hartup, 2001), what may provide an efficient way to persuasively communicate own attitudes. Second, in line with Group-Norm Theory (Crandall et al., 2002; Kelman, 1958), adolescents may derive their own attitudes by adopting the group norm that may be defined particularly by popular peers. By observing adolescents with many friends, one may infer that attitudes and behavior of a friendship popular adolescent are desirable within a social network. This latter explanation, however, collides with prior research that showed that prestige popular adolescents define group norms to a bigger extent than friendship popular adolescents (Adler & Adler, 1998). Yet, prestige popularity did not grant especially big impact on peers' intergroup attitudes in our study.

Our results contrast with the earlier research that found that popular individuals who received many friendship nominations did not have bigger influence on their friends' problem behavior at school than less popular peers (Geven et al., 2013). These conflicting results may be a consequence of different statistical approaches. They may also be due the focus on different dependent variables. Who is the most influential may depend on the behavior or attitude that is being influenced (Valente, 2012). More research is needed

studying characteristics of influential individuals in various domains. Such research may benefit from the distinction of various indicators of popularity and of influential network positions that we have made in the present study.

4.5.2 The role of other popularity measures

Contrary to our expectation, high prestige popularity was not associated with more influence of peers' intergroup attitudes. This could be a consequence of the fact that intergroup attitudes are not a salient characteristic of prestige popular adolescents. Research has shown that adolescents imitate prestige popular peers to become prestige popular themselves (Adler & Adler, 1998; Benoit-Smullyan, 1944; Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010). Accordingly, they may adopt behavior and attitudes that are associated with prestige popularity, but not other non-salient attitudes (Rambaran et al., 2013). One way to capture the salience with respect to intergroup attitudes is by testing within-classroom correlation between popularity and intergroup attitudes (Veenstra, Dijkstra, & Kreager, 2017). Our data showed the average correlation across all classrooms between prestige popularity and intergroup attitudes at Time 1 was .074. This was significant in only two of the 37 classrooms ($p < .05$). These results suggest that intergroup attitudes were not viewed by adolescents as an indicator of prestige popularity, thus, intergroup attitudes may not be a desirable trait for imitation, if one wants to become more prestige popular. This may be different for other attitudes or behaviors.

Moreover, in contrast to the prior research (Paluck & Shepherd, 2012), we did not find evidence that clique leaders were exceptionally influential regarding intergroup attitudes. This finding may be due to the relatively small size of classroom social networks in the present research. Small classroom sizes enable all participants to interact without big restrictions. Thus, because of frequent social interaction among classmates, norms of a classroom and those of the cliques within the classroom may often mirror each other. An

alternative explanation is that clique leaders, as defined by Paluck & Shepherd (2012), may not be the actual leaders of a clique. A clique leader is not defined as a person who is at top of the hierarchy in a clique but merely as a person that is connected with many interconnected adolescents. In dense, non-hierarchically organized cliques, this could be true for all members of the cliques. It is thus possible that mere connections with many clique members do not measure the leadership status in our data. An alternative method is to directly select clique leaders by members of clique. However, this method should be less reliable because clique members can have different representations of how to define a clique leader. If members of various cliques select clique leaders based on different rules, clique leaders would not be comparable (Mardsen, 2005).

Our results also suggest that students are not more influential when they actually spent time with their friends. Instead, we found that friends influence each other's intergroup attitudes regardless of the time spent together. Group-Norm Theory (Crandall et al., 2002; Kelman, 1958) offers a potential explanation for this finding. During the course of a friendship, adolescents may learn about the intergroup attitudes held by friends through discussion or even derogatory remarks. These interactions may help adolescents to form beliefs about the norms that exist in their friendship clique. For this to happen, it may not matter how often friends interact.

4.5.3 Limitations

Social network analyses make rarely use of representative samples and our study is no exception in this matter (Wasserman & Faust, 1994). Our data represent early adolescents from one city in the Netherlands. Therefore, it is not obvious how our findings can be generalized to other contexts. Future research should examine who has the most influence on adolescents' intergroup attitudes among older adolescents for which intergroup attitudes may be more important. Moreover, the participants of our study did

not have very negative intergroup attitudes. Social influence may look differently when it concerns actual prejudice. The group pressure to adjust to such attitudes may be stronger than in our study. Furthermore, friendship selection may play much bigger role as the variation in intergroup attitudes among adolescents would be bigger and therefore the difference in intergroup attitudes could be more visible.

Future research could also extend our selection of indicators of popularity even more. Paluck (2016), for instance, investigated the role that time spend together played for social influence by only focusing on the top 10% of students that were nominated in a question about time spend together. Also the concept of widely known students offers an additional approach to detect particularly influential adolescents (Paluck & Shepherd, 2012).

A potential methodological limitation is the assumption underlying our statistical model that the parameters were the same in all classrooms. Robustness-checks in which we were able to adjust for this assumption revealed remarkably similar results, which increases our confidence in the results. Future research may improve even further by estimating random coefficient multilevel Siena models (Ripley et al, 2018), which have been developed recently but, to the best of our knowledge, not yet applied in published research.

4.5.4 Implications

This research adds to the new field of network interventions (Paluck, 2011; Steglich, Sinclair, Holliday, & Moore, 2012; Valente, 2012). Existing intervention programs to improve intergroup attitudes among adolescents typically target entire classrooms (Frederickson & Turner, 2003; Gortmaker et al., 1999; Valente et al., 2007) and are thus complex and costly. Recent research on peer conflict and harassment (Paluck et al., 2016;

Shepherd & Paluck, 2015) showed that interventions can successfully transform existing norms in schools if they only target a subset of students who subsequently influence their peers. The central question for practitioners is whom to select for such a network intervention in order to most effectively transform the existing norms. Valente (2012) already suggested that who is most influential depends on the particular behavior or attitude that is addressed in the intervention. For an anti-conflict and harassment intervention, social referents (Paluck et al., 2016) and boys seem to be most influential (Shepherd & Paluck, 2015). The current study suggests that intergroup attitudes are, in contrast, influenced by friendship popular adolescents.

Adolescents with many friends can change the attitudes of a larger number of peers because they are connected to many classmates. Thus, friendship popular adolescents represent especially promising seeds of attitudinal change since they can influence many contacts. We are looking forward to more studies on influential positions that support the development of network interventions in other domains and we are hoping that the present research can help to guide network interventions aiming to improve intergroup attitudes.

Chapter 5

General Discussion

5.1 Overview

Many western societies are becoming increasingly diverse (Castles, Miller, & Ammendola, 2005). Migration increases the size of ethnic minorities in society and other social minorities are also becoming more apparent, such as sexual minorities. As it is clear that minorities will coexist with majority populations in the future, society should develop joint efforts to make positive use of social diversity instead of making social diversity a problem. Therefore, social scientists across the globe are searching for ways to combat prejudice and discrimination, these having disruptive consequences for the whole of society and for peaceful coexistence between the majority and minorities.

The intergroup contact theory says that one of the ways to fight prejudice is to promote intergroup interactions (Allport, 1954; Pettigrew, 1997; Pettigrew & Tropp, 2006). Positive intergroup contact was repeatedly found to be negatively related to prejudice and has been applied during short-term interventions among young people or as a long-term policy, e.g. racial desegregation in schools (Pettigrew, 1975; Turner, Crisp, & Lambert, 2016). In this dissertation, we identify and examine several pitfalls that could restrict the application of intergroup contact in fighting prejudice and discrimination.

In general, our studies provide optimistic findings. In Study 1, we showed that positive intergroup contact was negatively related to discriminatory practice against gay people. In Study 2, an increase in positive contact influenced prejudice more than an increase in negative contact among respondents with a negative stereotype. In Study 1 and 2, intergroup contact with one outgroup was found to be associated with prejudice and discrimination against the second outgroup. In Study 3, adolescents that were popular in

terms of friendship were shown to exert a greater influence on their friends' prejudices than other adolescents. This implies that cost-efficient interventions aimed at prejudice reduction within schools should involve the most friendship popular adolescents, i.e. those that could bring about a reduction in prejudice amongst their friends more efficiently than other adolescents.

Our findings also call for caution in applying intergroup contact in the fight against prejudice and discrimination. We showed that in certain conditions intergroup contact may lead to an increase in prejudice and discrimination. In Study 1, more frequent negative contact was related to a higher probability of discrimination. In Study 2, negative contact increased prejudice more than positive contact decreased it, if the outgroup was positively stereotyped. Moreover, intergroup contact did not have any effect on prejudice, if the respondents held ambivalent stereotypes. In regards to the third research question, we found that negative contact with the primary outgroup was positively associated with discrimination (Study 1) and increased prejudice against the secondary outgroup (Study 2).

The next part of this dissertation will present a general discussion of the pitfalls and possibilities of using intergroup contact to combat prejudice and discrimination. We will also suggest directions for future research and discuss the limitations of this work.

5.2 Summary

5.2.1 Intergroup contact and discrimination

In Study 1, we examined whether intergroup contact was associated with behavior. We examined how intergroup contact was associated with the likelihood that participants restricted minority rights when an opportunity presented itself.

RQ1: Is positive and negative contact associated with taking an opportunity to discriminate?

The pivotal contribution of Study 1 is the examination of the link between intergroup contact and discrimination. We inquired about the behavior that Slovak citizens manifested during the referendum on the restriction of gay rights. Prior research put into question whether intergroup contact influences behavior and possibly reduces inequality between the majority and minorities (Dixon & Durrheim, 2003; Jackman & Crane, 1986). Attitudes and prejudices are affected by intergroup contact, but it was suggested that discrimination against minorities remains unaffected (Dixon, Durrheim, & Tredoux, 2007). We addressed these doubts and found that both positive and negative intergroup contact with gay people were associated with discrimination against gay people. Positive intergroup contact with gay people decreased the likelihood that respondents voted for the restriction of gay rights and instead boycotted the referendum.[5] Negative contact with gay people increased the likelihood of voting for the restriction of gay rights. Prior studies found that while positive intergroup contact reduced prejudice and positively influenced behavioral intentions, negative contact had the opposite effect (Reimer et al., 2017; Selvanathan, Techakesari, Tropp, & Barlow, 2017). Our study enriches the literature about intergroup contact and indicates that positive and negative intergroup contact is also related to discriminatory behavior that could even influence the legal rights of minorities.

Intergroup contact was not associated with voting on gay rights directly but through the notion of intergroup threat. Prior research found that intergroup threat mediated the influence of intergroup contact on prejudice (Pettigrew, Christ, Wagner, & Stellmacher, 2007; Tausch, Hewstone, Kenworthy, Cairns, & Christ, 2007); our study suggests that a similar mechanism is also behind the link between intergroup contact and discrimination. Intergroup threat, which represents the fear that outgroup members are endangering an

[5] Initiatives that were against the restriction of gay rights called for a boycott of the referendum. The results of the referendum could be legally valid only if 50% of all voters participated on the referendum. Boycott of the refendum was supposed to decrease the likelihood that 50% threshold would be reached.

individual and/or his whole outgroup, was found to be negatively associated with positive contact and positively with negative contact (Aberson, 2015). In turn, intergroup threat strengthens prejudice (Aberson & Gaffney, 2009), increases the probability of voting for parties that are against minorities (Green, Sarrasin, Baur, & Fasel, 2016) and, according to our study, also heightens the chances that participants will engage in discrimination – in our case, the chances that participants would vote for the restriction of gay rights.

Behavior was identified as the crucial factor that should be studied by socio-psychological research (Baumeister, Vohs, & Funder, 2007). Various forms of discrimination may manifest themselves in everyday life; for example, minority members may receive lower pay in comparison with other colleagues, or minority members may be exposed to animosity from strangers. However, discrimination is difficult to study in real life situations and people may conceal their socially undesirable practices in order to conform to what is socially expected (Fisher & Katz, 1999). In our research, we studied voting on gay rights in the referendum, which could have been influenced by the same factor. In fact, prior research has shown that a small proportion of people tend to report voting even when they did not do so, because they again wish to appear to conform to what is socially desirable (Belli et al., 2001, 1999). However, in the case of the referendum, social norms that may restrict the manifestation of prejudice and discrimination could be to a certain degree diminished. When a large proportion of the population approves of, and actually performs discriminatory behavior against gay people and another part of society is against the referendum and boycott the voting, social norms might be perceived ambiguously or not recognized at all. Thus, discrimination or boycott could be performed freely without fear that most people would condemn it. More importantly, previous research has shown that over-reporting is significantly reduced when surveys of voting

behavior are anonymous and conducted shortly after voting (Stocké, 2007). Both conditions were met in our study.

5.2.2 Intergroup contact in the context of stereotype

In Study 2, we tested the influence of positive and negative contact on prejudice according to the stereotype ascribed to an encountered outgroup.

RQ2: With respect to positive and negative contact, which has a bigger impact on prejudice when respondents hold positive, negative, or ambivalent stereotypes about the outgroup?

Intergroup contact provides only selective information about an encountered outgroup member. Besides the immediate impression arising from the intergroup contact itself, other sources of information may also be considered when prejudice is influenced by intergroup contact. Such sources of information are, for example, stereotypes spread in the social environment (Katz & Braly, 1933; Nelson, 2015). In some conditions, people may rely more on stereotypes that are prevalent in a society than on personal beliefs (Hardin & Conley, 2001). Yet, how the influence of intergroup contact varies among people with distinct outgroup stereotypes has, to the best of our knowledge, not yet been tested. Intergroup contact can be in two relations to the stereotype: 1) the valence of intergroup contact can match the valance of the stereotype, so-called stereotype-consistent contact; or 2) the valence of intergroup contact can fail to match the valance of the stereotype, so-called stereotype-inconsistent contact.

In Study 2, we found that stereotype-inconsistent contact was stronger in influencing prejudice than stereotype-consistent contact. Previous research suggested that experience that does not match expectations about an encountered person is more

informative than experience that corresponds with expectations. Informative experience is given more importance, and consequently it may have a bigger impact on attitude formation than experience that matches the expectations about an encountered person (Fiske, 1980). Stereotype-inconsistent contact may be an example of such informative experience, i.e. when expectations created by the valence of stereotypes contradict the valence of intergroup contact.

Stereotype-inconsistent contact influenced prejudice more than stereotype-consistent contact, except in one case. The prejudice of participants who perceived an admirable stereotype of the Roma was not influenced by intergroup contact at all. Negative stereotypes of the Roma are much more widespread than positive ones (New, 2011; Petrova, 2003). The motivation to perceive the prevalent stereotype of the Roma positively despite the existence of more widespread negative stereotypes may inhibit not only stereotype activation but also prejudice (Kunda & Sinclair, 1999). Future research may address the role of motivation in the link between intergroup contact and prejudice.

Several studies reported a stronger link between negative contact and prejudice than between positive contact and prejudice (Barlow et al., 2012; Graf, Paolini, & Rubin, 2014). However, the assumption that negative contact is stronger than positive contact in shaping prejudice regardless of the encountered outgroup was not tested. According to our results, prejudice was more susceptible to being influenced by negative contact only among participants who endorsed positive stereotypes. In the case of participants with negative stereotypes, positive contact was a stronger predictor of prejudice than negative contact. Our findings contrast with a previous research which claimed that negative contact was stronger than positive contact also in the case of an outgroup that was negatively perceived by society (Barlow et al., 2012). Our results show that stereotypes may vary. It is possible that not all people did fully endorse negative stereotypes despite the fact that negative

outgroup stereotypes are more common throughout society. To the best of our knowledge, there is not a previous study that tested the asymmetry between the effect of positive and negative contact on prejudice among respondents who reported different stereotypes.

Participants who held ambivalent stereotypes were hardly influenced by intergroup contact at all. This suggests that stereotypes may create conditions in which intergroup contact influences prejudice. When stereotypes were positive or negative, intergroup contact influenced prejudice; however, when stereotypes were not clearly positive or negative, the effect of intergroup contact on prejudice mostly disappeared. The only exception that we found was the paternalistic stereotype of the Roma outgroup, i.e., the Roma were perceived as warm but incompetent, when negative contact influenced prejudice. It is possible that a similar effect was not found among participants with a paternalistic stereotype of the Vietnamese due to the small sample size. A sample under 200 participants may be considered small for structural equation modeling. Future research should inspect how positive and negative intergroup contact influence prejudice among participants with paternalistic stereotypes.

5.2.3 The secondary transfer of intergroup contact

In Studies 1 and 2, we examined how intergroup contact with a primary outgroup relates to prejudice and discrimination against a secondary outgroup.

RQ3: Is positive and negative contact with a primary outgroup associated with prejudice and discrimination against a secondary outgroup?

Society often consists of multiple social groups that are victims of prejudice and discrimination. Attempting to combat prejudice and discrimination against multiple outgroups simultaneously would be more efficient than reducing prejudice and discrimination against one outgroup at a time. One possibility may be to employ intergroup

contact, which has been argued to change prejudice against multiple outgroups through contact with only one outgroup, the so-called secondary transfer effect (Pettigrew, 2009; Tausch et al., 2010).

In Study 1, we found that intergroup contact with a primary outgroup was associated with discrimination against a secondary outgroup via intergroup threat from the primary and secondary outgroup. While positive contact with the Roma reduced the probability that participants voted for the restriction of gay rights through lower intergroup threat from the Roma and, in turn, gay people, negative contact with the Roma had the opposite effect. Therefore, in order to combat discrimination against gay people, contact with another minority is a promising alternative, especially given the fact that gay people may conceal their group membership. That is, gay people may hide their sexual orientation from people who express anti-gay attitudes and are prone to discriminate against gay people (D'augelli & Grossman, 2001). At the same time, our research warns against the effects of negative contact with one outgroup on discrimination against other outgroups. Although positive contact is usually more frequent (Graf et al., 2014) and, thus, may counteract the effects of negative contact on prejudice (Paolini et al., 2014), this is not always true, as in the case of the Roma in our sample.

In Study 2, we showed that intergroup contact with a primary outgroup influenced prejudice against a secondary outgroup more when the valence of intergroup contact was not consistent with the stereotype of the primary outgroup. The explanation is provided by the attitude generalization that is usually considered to be responsible for the secondary transfer effect (Lolliot et al., 2012). The attitude generalization hypothesis says that intergroup contact with a primary outgroup influences prejudice against the primary outgroup, which, in turn, has an impact on prejudice against a secondary outgroup (Tausch et al., 2010). Thus, the greater is the change in prejudice against the primary outgroup

caused by intergroup contact, the greater should be the change observed in prejudice against a secondary outgroup. Because stereotype-inconsistent contact has a stronger impact on prejudice against the primary outgroup, it is not surprising that it also has a bigger influence on prejudice against the secondary outgroup in comparison to stereotype-consistent contact. However, we must note that the effect of stereotype-inconsistent contact with the primary outgroup on prejudice against the secondary outgroup was not always mediated via prejudice against the primary outgroup. Therefore, an alternative mechanism to attitude generalization may further contribute to the occurrence of the secondary transfer effect (Lolliot et al., 2012).

5.2.4 Most influential adolescents with respect to friends' prejudice

In Study 3, we examined characteristics that could identify adolescents who would be most influential in spreading their prejudice among peers.

RQ4: If some adolescents exert a bigger influence on their classmates' prejudices than other peers, how can they be identified?

Prior research has shown that peers have a crucial impact on adolescents' attitudes and behavior (Kiesner et al., 2003; Rambaran et al., 2013; Steglich et al., 2006; Weerman, 2011). In terms of prejudice, friends were shown to influence adolescents' xenophobia and tolerance toward minorities (van Zalk, Kerr, Kerr, van Zalk, & Stattin, 2013). Our goal was to test whether the prejudice of adolescents is influenced by friends and whether some adolescents influence their friends' prejudices more than others. Such knowledge should provide guidance on how to select the most influential adolescents, those who could reduce levels of prejudice among their friends most effectively. Interventions that targeted only a few of the most influential adolescents would be more cost-efficient than interventions in which the whole classroom had to participate.

In Study 3, we found that only friendship popular adolescents, i.e. adolescents frequently nominated as friends by peers, possessed more influence on friends' prejudice than other peers. Such adolescents not only exerted more influence in a dyadic relationship between friends, but also had an opportunity to directly influence more classmates than other peers. Popularity in terms of prestige, spending a lot of time with friends, and being a clique leader did not grant greater influence on friends' prejudice. Thus, our results suggest that adolescents popular in terms of friendship are the most promising individuals with respect to reducing prejudice among other members of the peer group.

Friendship popular adolescents may be more influential for three non-mutually exclusive reasons. First, it is possible that the prejudices of these friendship-popular adolescents are viewed as factors enhancing friendship popularity. Prior research and theory say that to have friends and belong to a group of people is a strong motivating factor for adolescents (Baumeister & Leary, 1995; Olthof & Goossens, 2007). To become more friendship popular, i.e. to have many friends, adolescents may copy the prejudices of friendship popular friends. Second, previous research has shown that prestige popular adolescents often possess aggressive rather than prosocial traits. In contrast, friendship popular adolescents are often viewed as having prosocial traits, such as kindness, cooperation, and sociability (Cillessen & Rose, 2005). The prosocial traits of friendship popular adolescents may result in the communication of their prejudice in a more persuasive way. Third, friendship popular adolescents occupy central positions inside a classroom (Wasserman & Faust, 1994). From this position, friendship popular adolescents may directly influence many friends, who, in turn, influence their friends. In this way, friendship popular adolescents directly and indirectly influence more peers than others. Thus, it is more likely that a friend of a friendship popular adolescent will be influenced

twice – directly and indirectly via other already influenced classmates – in comparison to friends of less friendship popular adolescents.

5.3 Limitations and Future Directions

The first limitation of all studies is the social setting. The fact that intergroup contact and threat from gay people were associated with discrimination against them could be specific to the voting on gay rights in Slovakia in 2015 (Study 1). Study 2 showed that the association between positive or negative intergroup contact and prejudice varies between participants with different stereotypes. Our results are unique and in contradiction to the present belief about what is the stronger predictor of prejudice – positive or negative contact (Paolini & McIntyre, 2018). Therefore, the implications of our study should not be taken for granted but tested again in different conditions. Study 3 showed that adolescent prejudice was influenced by friends. Friendship-popular adolescents were found to be even more influential than other peers. However, these results may be unique for the specific context – the Netherlands. Future research should test our findings in different social settings.

Another important aspect that was not satisfactorily addressed in Study 1 is the question of causality. It is very difficult to examine events such as a referendum on gay rights longitudinally, since such discrimination does not repeat itself and it is not possible to observe a change in one-time voting. Therefore, we suggest that one of the most important tasks of future research is to develop interventions that apply positive intergroup contact and to test whether they reduce discrimination.

Study 3 showed that friendship-popular adolescents were more influential of friends' prejudice in comparison to other peers. Future research should test our recommendations in practice, i.e. that friendship-popular adolescents are the best

candidates for enrollment in intervention programs aimed at prejudice reduction because they can reduce prejudice among classmates more effectively than other peers. The effectiveness of interventions that use a small number of friendship-popular adolescents should be contrasted with interventions aimed at the whole class. It is possible that interventions targeting only a subset of a peer group will be less effective than interventions targeting all members. The important question is how big this difference would be. In addition, it is not clear how adolescents would react to changes in the prejudices of friendship-popular friends.

Limitations are discussed in each study in more detail.

5.4 Practical Recommendations

In this section, we would like to suggest recommendations arising from our research for practitioners whose aim is to reduce prejudice and discrimination. Our research suggests that intergroup contact may be used as a tool to combat prejudice and discrimination. People who experienced positive contact with a minority became less prejudiced and were less likely to discriminate against a minority. In contrast, negative contact increased prejudice and the likelihood of discriminatory behavior. Thus, if an intervention applies intergroup contact to reduce prejudice and discrimination, the target population should be provided with an opportunity to interact positively with outgroup members.

The outgroup encountered during intergroup contact intervention should be negatively stereotyped. Otherwise, our results suggest that intergroup contact intervention may not only be useless but can even make prejudice against the outgroup worse. [6] Positive

[6] Our results do not imply that positive intergroup contact is stronger predictor of prejudice than negative contact among respondents with negative prejudice. For example, average prejudice of the Vietnamese was slightly positive among respondents that perceived negative stereotype of the Vietnamese in the first (M = 53) and in the second wave (M = 55).

intergroup contact with a positively stereotyped outgroup may have no influence on prejudice, while negative contact may increase it. Although our research suggests that stereotypes of the outgroup vary, usually there is a predominant stereotype spread within a population. For example, 64% of the sample reported a negative stereotype of the Roma. Therefore, we suggest that an intervention should involve an outgroup which is usually negatively stereotyped, such as the Roma. We recommend that practitioners should, if possible, survey a target population to estimate the predominant stereotype.

The influence of intergroup contact on prejudice and discrimination may also spread to different outgroups. If intergroup contact with an outgroup is for some reason impossible or difficult, intergroup contact with a different outgroup may have an impact on prejudice and discrimination toward the unapproachable outgroup. For example, it may be difficult to establish positive intergroup contact between majority adolescents and Vietnamese adolescents in a region where the Vietnamese population is scarce. If the aim is to reduce prejudice against the Vietnamese among adolescents in regions with a small Vietnamese population, intergroup contact with an alternative minority, such as the Roma, may be used. However, the encountered outgroup should be associated with a negative stereotype. Positive contact with a negatively stereotyped outgroup is a stronger predictor of prejudice against a secondary outgroup than negative contact, whereas the opposite is true in the case of positively stereotyped outgroups. Contact with an ambivalently stereotyped outgroup has no impact at all on prejudice against a secondary outgroup.

Finally, if the intervention is applied in schools, practitioners may consider targeting only the most influential adolescents, i.e. those who could bring about a reduction in prejudice in other classmates. Intervention targeted only at the most influential adolescents should be cheaper and less time-consuming than intervention involving the whole class. We found that friendship-popular adolescents, i.e. adolescents with many

friends, were more influential of friends' prejudice than others. Friendship-popular adolescents may be especially effective in spreading a reduction in prejudice in a class for two reasons. First, friendship-popular adolescents may have a bigger impact on their friends' prejudice than other peers. Thus, a reduction in the prejudice of friendship-popular adolescents should be more likely to influence friends' prejudice than a reduction in the prejudice of other classmates. Second, because friendship-popular adolescents have many friends, they may directly influence more classmates than others.

Practitioners should keep in mind that our research was conducted in specific social contexts. Therefore, our recommendations should be applied cautiously. We suggest that our recommendations should be taken into account in planning interventions aimed at reducing prejudice and discrimination, but also that the effect of the intervention should be evaluated. In short, after initializing an intervention program, it is crucial to find out "what works" (Paluck, 2006).

To sum up, if the goal is to develop interventions aimed at reducing prejudice and discrimination, we recommend the following: 1) A situation in which positive intergroup contact may occur should be created; 2) Intergroup contact should take place with an outgroup which is associated with a negative stereotype; 3) If the goal is to reduce prejudice and discrimination against an outgroup but the members of the outgroup are unavailable, contact with a different negatively stereotyped outgroup may be used; 4) If the goal is to develop cost-efficient intervention, friendship-popular adolescents may be targeted because they are more likely to spread a reduction in prejudice to other classmates.

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Appendices

Appendix A

A.1 Measurement validity

Confirmatory factor analysis showed that all four latent variables acquired with the parceling method – intergroup threat from gay people and the Roma and attitudes toward gay people and the Roma – were distinct constructs. We compared alternative models to show that the four factor model fitted the data well. In the first alternative model, indicators loaded on two factors, one factor representing the relationship toward gay people and the second factor representing relationship toward the Roma (DIC = 8007.536). In the second alternative model, all indicators loaded on a single factor representing the general liking for minorities (DIC = 8530.246). The model comprising four latent variables fitted the data best (DIC = 7968.356). Note that the difference in DIC is bigger than 7, suggesting that the model with four latent variables attained considerably more support (Spiegelhalter, Best, Carlin, & Van Der Linde, 2002). Every item significantly loaded on a specific factor (the smallest loading; $\beta = .74$, [.66, .80]). The model estimated using ML estimator, in which indicators of threat loaded on two factors – threat from gay people and threat from the Roma – showed a good model fit, $\chi2(13) = 11.179$, $p = .596$, CFI = 1.00, RMSEA = .00 [.000, .057], SRMR = .03, similarly to the model in which indicators of attitudes loaded on two factors – attitudes toward gay people and attitudes toward the Roma, $\chi2(2) = 15.682$, $p = .0004$, CFI = .95, RMSEA = .171 [.099, .255], SRMR = .036. Additionally, in order to detect multicollinearity between attitudes toward gay people and threat from gay people, we calculated the variance inflation factor (VIF). For this purpose, we regressed composite scores of attitudes toward gay people and threat from gay people on the discrimination of gay people. This additional step supported the assumption that

both variables were distinct constructs, since the threshold of 10 was not crossed (VIF = 2.66; Cohen, Cohen, West, & Aiken, 2013).

As an additional check of measurement validity, we employed exploratory factor analysis. First, we investigated construct factor validity independently for intergroup threat from gay people and from the Roma, in line with the approach of Swart and colleagues (2011). Both factors were proven to be unidimensional. Second, we performed exploratory factor analysis on intergroup threat and attitude toward gay people and the Roma at the same time. Two eigenvalues were higher than one what suggested that parcels loaded on two factors. One factor represented threat and attitudes toward gay people and the second factor represented threat and attitudes toward the Roma. Afterwards, we performed confirmatory factor analysis using a maximum likelihood estimator, which showed that two-factor solution represented data acceptably, $\chi^2(43) = 125.087$, $p < .001$, $\chi^2/df = 2.91$, $CFI = .95$, $RMSEA = .091$ [.072, .109], $SRMR = .057$. Because the prior theory favored four-factor solution, we compared two-factor and four-factor models. The four-factor model represented data significantly better than two-factor model, $\chi^2(38) = 76.26$, $p < .001$, $\chi^2/df = 2.00$, $CFI = .98$, $RMSEA = .066$ [.044, .087], $SRMR = .050$, $\Delta\chi^2(5) = 48.82$, $p < .001$. When conducting factor analysis, researchers should be guided by theory (Kline, 2015). Therefore, we chose four-factor solution instead of two-factor solution since the past research and theory claimed that intergroup threat and intergroup attitudes are distinct constructs (Stephan, Ybarra, & Morrison, 2009).

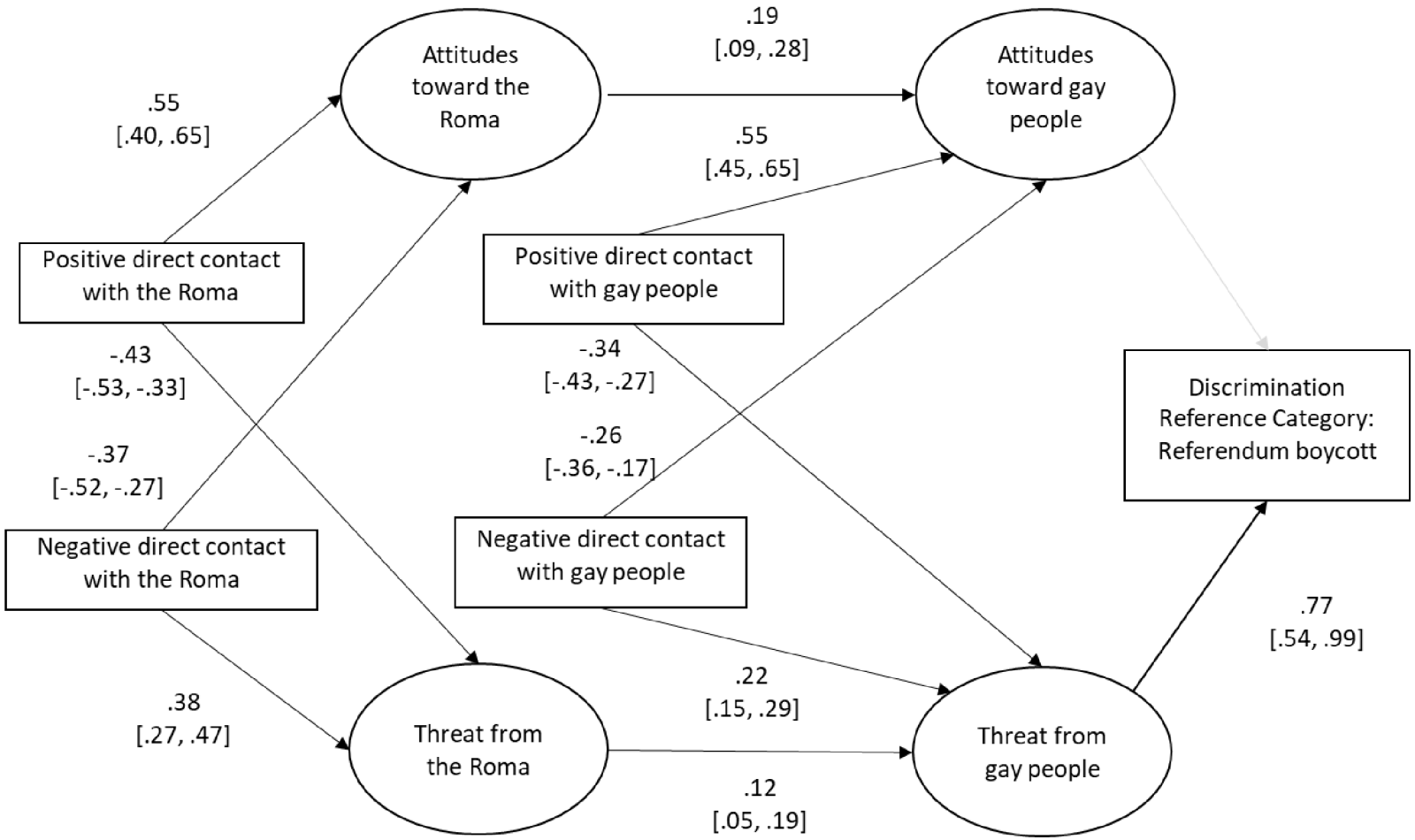
A.2 Alternative models

The cross-sectional nature of our data required the estimation of alternative models. Bayesian estimator did not allow us to test for a posterior predictive check since it is unreliable for categorical dependent variables. Thus, we compared the significance of paths between the original and alternative models. The model that excellently fits the data

included all significant paths and excluded all insignificant paths, i.e. it reliably represents the data. The first alternative model addressed the possibility that intergroup threat from, and attitudes toward gay people did not mediate the link between intergroup contact with gay people and discrimination. Rather, an unobserved factor may have affected all three variables and, through them, influenced the discrimination against gay people. Therefore, all paths between intergroup contact threat and attitudes were restricted. Paths between contact with the Roma and gay people and consequently with the discrimination of gay people were estimated. The original model represented data better since the paths from intergroup contact with gay people to threat from, and attitudes toward gay people were significant, whereas the path in the alternative model from intergroup contact with gay people to the discrimination against gay people was significant only in the case of positive contact (positive contact, b = -1.34, [-2.41, -.43]; negative contact, b = .29, [-1.29, 2.31]).

The second model represented a situation in which the generalization of threats and attitudes from Roma to gay people would not occur. This more restrictive model represented the data worse because the direct paths between threats from both minorities and attitudes toward both gay people and the Roma were significant.

Third, we explored the paths from threat and attitudes to intergroup contact, regressing intergroup contact on attitudes and threat. In this model, discrimination was not included in order to obtain model fit indices. The reversed model yielded a worse model fit (DIC = 10010.490) than the original model (DIC = 7438.870).



A1 Figure. The effect of positive and negative contact with the Roma and gay people on discrimination against gay people mediated by intergroup threats from and attitudes toward gay people and the Roma. The discrimination represents voting on the gay adoption in the second referendum question. The insignificant but estimated path is grey. Standardized coefficients are provided only for significant paths.

A.3 The requirement materials

Message that was used to contact potential respondents was as following:

Dear respondent,

We would like to ask you for a participation at a research focused on attitudes toward social issues in Slovakia. With your help you would help to clarify social situation in Slovakia. The form of cooperation consists of filling in an online questionnaire, address of which is provided below.

Conducting research that is trying to clarify situation in Slovakia would not be possible without your help. Thank you!

If you have any questions regarding the questionnaire or our research, please do not hesitate to contact us.

We are looking forward to our cooperation!

A.4 Items used in the questionnaire

Intergroup contact was measured with eight items. Four items were used to estimate intergroup contact with each outgroup – gay people and the Roma. Two items indicated positive contact and two items negative contact. All items ranged from 1 (never) to 5 (very often). Items that inquired about positive/negative contact were adopted from (Study 2, Barlow et al., 2012). Items that inquired about pleasant/unpleasant contact were adopted from (Voci & Hewstone, 2003).

1. How often have you had positive experiences with [outgroup]?
2. How often have you had negative experiences with [outgroup]?
3. How often have you had pleasant impressions from meeting [outgroup]?
4. How often have you had unpleasant impressions from meeting [outgroup]?

Intergroup threat was measured with twenty items. Ten items were used to indicate dimensions of intergroup threat from each outgroup – gay people and the Roma. Based on the previous research, we estimated three dimensions of intergroup threat from gay people. Perceived differences between gay people and the majority population were indicated using three items (variation of items used in Stephan et al., 2002), perceived threat to children from gay people was indicated using three items, and group symbolic threat from gay people was indicated using four items (variation of items used in Stephan, Ybarra, Martnez, Schwarzwald, & Tur-Kaspa, 1998). Intergroup threat from the Roma was estimated with ten items similarly as in the case of gay people. Perceived differences between the Roma and the majority population were indicated using three items (variation of items used in Stephan et al., 2002), perceived group realistic threat from the Roma was indicated using two items (variation of items used in Stephan et al., 2002), perceived individual realistic threat from the Roma was indicated using two items, and the group symbolic threat was indicated using three items (variation of items used in Stephan et al., 1998). All items ranged from 1 (totally agree) to 5 (totally disagree). We rescaled non-reversed items to obtain items in which higher number indicates higher level of perceived threat.

Perceived differences between gay people and the majority population:

1. Most of the gay people have the same values as the rest of the population in Slovakia. (REVERSED)
2. Most of the gay people have different morals as the rest of the population in Slovakia.
3. Gay people think differently than the rest of the Slovak population.

Perceived threat to children from gay people:

1. Growing up in an environment with gay people endangers children's mental/psychological development.
2. If children perceive in their environment gay people, it can have negative impact on children's attitude toward marriage and family.
3. If children perceive in their environment gay people, it can have positive impact on the development of children's values. (REVERSED)

Group symbolic threat from gay people:

1. The way of life of gay people endangers the way of life of Slovak people.
2. Values of gay people endanger traditional Slovak values.
3. Acceptance of gay people is incompatible with the Slovak culture.
4. If we accept gay marriages in Slovakia, it would endanger moral values of Slovak people.

Perceived differences between the Roma and the majority population:

1. Most of the Roma have the same values as the rest of the population in Slovakia. (REVERSE)
2. Most of the Roma have different morals as the rest of the population in Slovakia.
3. The Roma think differently than the rest of the Slovak population.

Group realistic threat from the Roma:

1. The Roma people are trying to improve their economic situations at the expense of the rest of the population in Slovakia.
2. If the Roma gain more influence in Slovakia, it would mean more problematic situation for the rest of the population in Slovakia.

Individual realistic threat from the Roma:

1. I fear being attacked by the Roma.
2. I am more careful of my personal belongings when I am in the vicinity of the Roma.

Group symbolic threat from the Roma:

1. The way of life of the Roma endangers the way of life of Slovak people.
2. Values of the Roma endanger traditional Slovak values.
3. Roma culture endangers Slovak culture.

Outgroup attitudes consisted of twelve items - six items per outgroup. We used feeling thermometer as the first question (e.g., Herek, 2002). Variation of Bogardus (1933) social distance scale consisted of five items. Feeling thermometer ranged from 0 to 100 and items used for creating social distance scale ranged from 1 (I would be very pleased) to 5 (I would mind very much). We rescaled social distance scale items so higher number indicates lower level of desire for social distance.

1. Below is provided a scale from 0 to 100, which corresponds to the scale of thermometer. Please, indicate your personal attitude toward the gay people on this thermometer when 0 indicates a cold attitude, 100 a warm attitude, and 50 a neutral attitude.

Please, indicate how would you react if a gay person would:

2. live in your neighbourhood.
3. be your classmate or coworker.
4. like to befriend you.
5. be a member of your family.
6. Would you mind if your child would be gay?

Discrimination was assessed by two or three items depending on their voting behavior. If respondents attended the referendum, they were asked how they voted (1 = yes; 2 = no; 3 = did not vote on a specific question). If respondents did not attend the referendum, they were asked: 1) how would they vote, if they attended the referendum (1 = yes; 2 = no; 3 = I do not know) and why they did not attend the referendum (multiple choice: 1 = I wanted to boycot the referendum; 2 = I was undecided; 3 = the referendum was not an important issue to me; 4 = I did not care about the results of the referendum; 5 = other reasons why I did not want or could not attend the referendum. If participants selected the option 5, they could state reasons for not attending the referendum).

1. Did you attend the referendum?

A) Respondent attended:

   2. How did you vote? (we asked about all three referendum questions separately)

B) Respondent did no attend:

   2. If you attend the referendum, how would you vote on the following questions? (we asked about all three referendum questions separately)

   3. Why did you not attend the referendum?

Demographic indicators were assesed with eight items.

1. Sex (1 = male; 2 = female)
2. Age
3. What is your current highest level of education? (1 = elementary; 2 = high school without graduation; 3 = high school with graduation; 4 = I am studying at the university, currently without a degree; 5 = bachelors degree; 6 = master/ingeneer degree; 7 = higher)

4. What is the approximate monthly income of the household in which you live? (from 0 to 3000 euro and more)
5. What is your marital status? (1 = single; 2 = married; 3 = divorced; 4 = widowed. If participant indicated to be single, we inquired about having a partner. Due to a low number of divorced and widowed participants, we merged into one single category called *ended partnership*.)
6. If you have children, please, indicate their number.
7. Do you belief in God? (yes/no)
8. How often do attend church services? (1 = never to 4 = more time a week)

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Appendix B

B.1 Meta-analysis of similar classrooms

In the robustness check, we tested whether violating the assumption of the multi-group option, that all parameters are the same for all classes (Ripley et al., 2018), affected the results. We applied a combined approach in which we first analyzed a small set of similar classrooms (with respect to ethnic composition and academic track) using multi-group analysis and then we combined the results in a meta-analysis. We generated the multi-group objects by grouping classes of the same school together. One school consisted of enough classrooms to split them further up according to the educational track of each class, resulting in 12 multi-group objects in total, each consisting of three to five similar classrooms. One small school consisted of only 2 classrooms. Keeping this school as a separate group may have led to disproportional influence of these classrooms on the results in the meta-analysis. Therefore, we merged the two classrooms of this school with classrooms from schools with similar ethnic composition, which resulted in the final 11 groups of classrooms.

We used score-type test for time-heterogeneity to check whether the parameters were the same for all classrooms in a group (Lospinoso, Schweinberger, Snijders, & Ripley, 2011). Results suggested that the estimates of five classrooms were not compatible with the other classes in the same group and also not with any other group. These five classes we thus excluded and they were also excluded from the main analysis. Furthermore, results showed that parameters of some effects for six classrooms in two other schools were incompatible. It was possible to keep these classes in the sample by re-grouping them based on the compatibility of the parameters instead of their belonging to the same school, resulting in 11 multiple group objects based on 41 classrooms. Because we excluded five classrooms, multi-group analysis was repeated. This analysis showed that

four classrooms were also incompatible with other classrooms and were, thus, excluded. Additional score-type analysis showed that five classrooms were not possible to include into the final meta-analysis due to incompatibility with other classrooms. These classrooms were excluded only in the final meta-analysis, not in the main multi-group analysis. Schools that contained less than two classrooms after exclusion of classrooms were merged with schools with the similar educational level and with the similar ethnic composition.

This way, we created 8 multiple group objects based on 32 classrooms (see Table B1), in which we first estimated the models separately and then combined the results in a meta-analysis (see Table B2). To account for significant differences between the parameters of some effects within each multiple group object, we added dummy variables for the respective classroom and the interaction between the classroom and the parameter (Ripley et al., 2018).

As mentioned in the main text, the high complexity of our analyses makes it impossible to include a main effect of social influence and an interaction with social influence in the same model when using small samples. Therefore, we fixed first the main influence effect, i.e. the average similarity effect, according to the results from the multi-group analysis (for a similar approach, see Geven et al., 2013).

P-values of the meta-analysis were estimated by Fisher combination of one-sided tests (Ripley et al., 2018) since this approach does not require that estimated and standard errors are uncorrelated. Right-sided tests refer to the effect being positive, while left-sided tests estimate whether there is a negative parameter. Following the recommendation of Ripley and colleagues (2018), we used an alpha level of .025 since we test the same effect twice.

Table B1

Description of 8 Multi-Group Objects Included in the Meta-Analysis

Multi-group object	Number of classes	Educational level	Number of schools	Percentage of adolescents without immigrant background in the school/schools
1.	4	VMBO or VMBO/HAVO	1	58.42%
2.	3	HAVO	1	86.29%
3.	5	VWO/Gymnasium	1	86.29%
4.	4	VMBO/HAVO	1	55.32%
5.	4	VMBO	2	78.26% and 73.33%
6.	4	HAVO/VWO	1	88.60%
7.	5	VMBO	2	47.92% and 78.26%
8.	3	VMBO or HAVO	2	72.97% and 79.31%

Note. Academic level increasingly: vmbo, vmbo/havo, havo, havo/vwo, vwo (from lowest to highest)

Table B2

Meta-Analysis of 11 Multi-Group Analyses Estimating Interactions Between Average Similarity and Friendship Popularity, Prestige Popularity, Being a Clique Leader, and Spending Time with Friends (N = 726)

	Model 1			Model 2			Model 3			Model 4			Model 5		
	Estimate	SE	N	Estimate	SE	N	Estimate	SE	N	Estimate	SE	N	Estimate	SE	N
Network Function															
(Density)	-2.70^{LS***}	.54	8	-3.18^{LS***}	.62	6	-2.69^{LS***}	.51	8	-2.94^{LS***}	.54	7	-2.85^{LS***}	.60	6
Reciprocity	1.14^{RS***}	.12	8	1.17^{RS***}	.17	7	1.16^{RS***}	.12	8	1.17^{RS***}	.16	8	1.13^{RS***}	.12	7
Jaccard similarity for outgoing ties effect	4.53^{RS***}	.82	3	4.39^{RS***}	.79	3	4.59^{RS***}	.89	4	4.42***	.77	2	4.52^{RS***}	.78	3
In-Structural Equivalence	.49^{RS***}	.06	3	.47^{RS***}	.06	3	.49^{RS***}	.06	3	.45^{RS***}	.06	3	.59^{RS***}	.14	3
Transitive Reciprocity Triplets	-1.77^{LS**}	.43	2	-1.18^{LS**}	.39	2	-1.01^{LS*}	.43	2	-1.14^{LS**}	.38	2	-.82^{LS***}	.26	2
Transitive Reciprocity Triplets 2	1.27^{RS***}	-	1	1.27^{RS***}	-	1	.91^{RS***}	-	1	1.18^{RS***}	-	1	.76^{RS**}	.	1
Indegree Activity	-.01	.33	3	.01	.32	2	-.11	.19	3	.11	.26	3	-.27	.19	2
Outdegree Activity	.10^{RS***}	.02	3	.10^{RS***}	.01	3	.11^{RS***}	.01	3	.09^{RS***}	.01	3	.12^{RS***}	.02	3
Gender homophily	.64^{RS***}	.16	6	.68^{RS***}	.24	5	.75^{RS***}	.25	6	.58^{RS***}	.25	6	.56^{RS***}	.14	5
Ego gender	.31	.29	6	.43^{RS*}	.29	5	.33^{RS*}	.25	6	.38	.27	6	.38^{RS*}	.31	5

[Table B2 continued]

Alter gender	-.40^{LS**}	.17	5	-.29^{LS*}	.15	5	-.21	.14	5	-.31^{LS*}	.16	6	-.20	.14	5
Ethnic homophily	.01	.18	7	-.05	.19	7	-.03	.17	7	-.04	.18	6	-.02	.18	6
Attitude homophily	.12	.57	7	.36	.41	6	.04	.52	7	-.00	.38	7	.15	.17	3
Ego attitude	-.05	.06	7												
Alter attitude	.03	.05	7												
Potential determinant of social influence homophily[a]				.23	.32	7	.93^{RS***}	.30	8	.09	.08	8	.64**	.50	7
Ego Potential determinant of social influence[a]				-.02	.04	7	.03	.03	8	.25	.11	8	-.01	.04	7
Alter Potential determinant of social influence[a]							.09^{RS***}	.03	8	.37***	.10	8	.23^{RS***}	.06	8
Behavioral Function															
Attitude Linear Shape	-.08^{LS*}	.04	8	-.06	.05	8	-.08^{LS*}	.05	8	-.06	.05	7	.01	.12	8
Attitude Quadratic Shape	.01	.03	8	-.01	.04	8	.00	.03	8	.02	.03	7	-.02	.03	8
Average Similarity	4.96		F	-.82		F	4.93		F	5.33		F	5.33		F

[Table B2 continued]

Ethnicity Moroccan/Turk	.10	.16	3	.06	.20	3	.11	.18	3	.20	.19	2	.10	.12	3
Alters' Average Potential determinant of social influence[a]				-.01	.02	8	-.01	.02	8	.04	.12	7	-.13	.27	8
Average Similarity x Potential determinant of social influence[a]				.93 RS***	.20	8	-.05	.21	8	-1.19	3.36	5	-1.69	.83	7

Note. Meta-analyses of 8 stochastic actor-oriented multi-group analyses. Ego and Alter attitude effects were removed after Model 1 because they were insignificant.

[a]Potential determinant of social influence represents friendship popularity in Model 2, prestige popularity in Model 3, being a clique leader in Model 4, and spending time with friends in Model 5.

Average similarity was fixed to the value from multi-group analysis.

*** $p > .001$; ** $p > .010$; * $p > .025$

Table B3

Description and mathematical representation of effects included in models

	Mathematical formula	Description
Network Function		
Baseline Model		
Outdegree (density)	$\sum_j x_{ij}$	Overall tendency to create friendship ties
Reciprocity	$\sum_j x_{ij}\, x_{ji}$	Tendency to reciprocate friendship ties
Transitive reciprocated triplets effect	$\sum_{j,h} x_{ij}\, x_{ji} x_{ih} x_{hj}$	Tendency to have reciprocated friendship ties to friends' friends
Transitive reciprocated triplets effect type 2	$\sum_{j,h} x_{ij}\, x_{ih} x_{hj} x_{jh}$	Tendency to have reciprocated friendship ties to friends' friends in different order
Indegree popularity effect	$\sum_j x_{ij} \left(\sum_{\mathrm{h} \neq \mathrm{i}} x_{hj} + 1\right)$	Tendency of adolescents who have already many friendship nominations to receive even more nominations in the next wave
Indegree activity effect	$x_{i+}\, x_{+i}$	Tendency of adolescents who have many friendship nominations to create friendship ties in the next wave

[Table B3 continued]

Outdegree activity effect	x_{1+}^2	Tendency of adolescents who nominate a lot of friends to create even more friendship ties in the next wave
Structural equivalence effect with respect to incoming ties	$\sum x_{ij} d_{ij}$	Similarity between the friendship nominations that adolescents received and friendship nominations that adolescent's friends received
Jaccard similarity for outgoing ties effect	$\frac{\sum_h x_{ih} x_{jh}}{x_{i+} + x_{j+} - \sum_h x_{ih} x_{jh}}$	Jaccard similarity with respect to outgoing ties
Same gender effect	$\sum_j x_{ij}\, G\{v_i = x_j\}$	A preference for friends with the same gender
Same ethnicity effect	$\sum_j x_{ij}\, E\{v_i = x_j\}$	A preference for friends with the same ethnicity
Attitude homophily effect	$\sum_j x_{ij} \left(sim_{ij}^v - \widehat{sim^v}\right)$	A preference to select friends with similar intergroup attitudes
Ego gender effect	$v_i\, x_{i+}$	A tendency of girls to create more friendship ties than boys
Ego attitude effect	$v_i\, x_{i+}$	A tendency of adolescents with positive intergroup attitudes to create more friendship ties than adolescents with negative intergroup attitudes

[Table B3 continued]		
Alter gender effect	$\sum_j x_{ij} v_j$	A tendency of girls to receive more friendship ties than boys
Alter attitude effect	$\sum_j x_{ij} v_j$	A tendency of adolescents with positive intergroup attitudes to receive more friendship ties than adolescents with negative intergroup attitudes
Models that included potential determinant of influence		
Potential determinant of influence homophily effect	$\sum_j x_{ij} \left(sim_{ij}^{a} - \widehat{sim^{v}}\right)$	A preference to select friends with similar value of the potential determinant of influence
Ego potential determinant of influence effect	$v_i \, x_{i+}$	A tendency of adolescents with higher value of potential determinant of influence to create more friendship ties than adolescents with lower value of potential determinant of influence
Alter potential determinant of influence effect	$\sum_j x_{ij} v_j$	A tendency of adolescents with higher value of potential determinant of influence to receive more friendship ties than adolescents with lower value of potential determinant of influence

[Table B3 continued]

Behavioral Function		
Baseline Model		
Linear shape effect	z_i	Potential trends in the data toward lower or higher values on the dependent variable (intergroup attitudes)
Quadratic shape effect	z_i^2	The tendency of adolescents with very positive or very negative attitudes to develop even more extreme attitudes
Ethnicity Moroccan/Turk	$z_i v_i$	Differences in attitude change between Turks/Moroccans and other adolescents
Average similarity effect	$x_{i+}^{-1}\sum_j x_{ij}\left(sim_{ij}^z - \widehat{sim^z}\right)$	Tendency to adopt intergroup attitudes of friends
Models that included potential determinant of influence		
Potential determinant of influence alters' average	$z_i \breve{v}_i$	Effect of friends' average value on the potential determinant of influence on attitude change
Time spent with friends alters' average	$z_i \breve{w}_i$	Effect of friends' average value of spending time with friends on attitude change

[Table B3 continued]

Average similarity effect x Potential determinant of influence alters' average	Interaction between: 1) $x_{i+}^{-1}\sum_j x_{ij}\left(sim_{ij}^{z} - \widehat{sim^{z}}\right)$ 2) $z_i \breve{v}_i$	Manually created interaction between average similarity effect and alters' average of prestige popularity or being a clique leader
Average similarity effect x Friendship popularity alters' average	$x_{i+}^{-1}\sum_j x_{ij} x_{+j}\left(sim_{ij}^{z} - \widehat{sim^{z}}\right)$	Average similarity multiplied by friends' friendship popularity. This effect was predefined in RSiena (effect is called avSimPopAlt).
Average similarity effect x Spending time with friends alters' average	$\sum_j x_{ij} w_{ij}\left(sim_{ij}^{z} - \widehat{sim^{z}}\right)/\left(\sum_j x_{ij}\right)$	Average similarity weighted by dyadic covariate – time spent with friends.

B.4 Goodness of fit

We conducted goodness-of-fit tests to see whether our baseline model fitted the data with respect to network changes. For this purpose, we evaluated model fit with auxiliary statistics (Lospinoso, 2012): outdegree distribution (Figure B1), indegree distribution (Figure B2), behavior distribution (Figure B3), geodesic distribution (Figure B4), and the triad census (Figure B5). The goodness of fit statistics compared observed changes in the network and the simulated changes according to our model. Figures 1-5 suggest that our model captured network changes reasonably well. The insignificant p-values for most auxiliary statistics indicated that our model fit the data (outdegree distribution $p = .055$; indegree distribution $p = .056$; geodesic distribution $p = .139$; triad census $p = .057$). The p-value for the behavior distribution was below the .05 threshold ($p = .011$). We do not consider this a reason for concern given the large sample size and the fact that the divergence from the 95% confidence bands in Figure 2 was very minor.

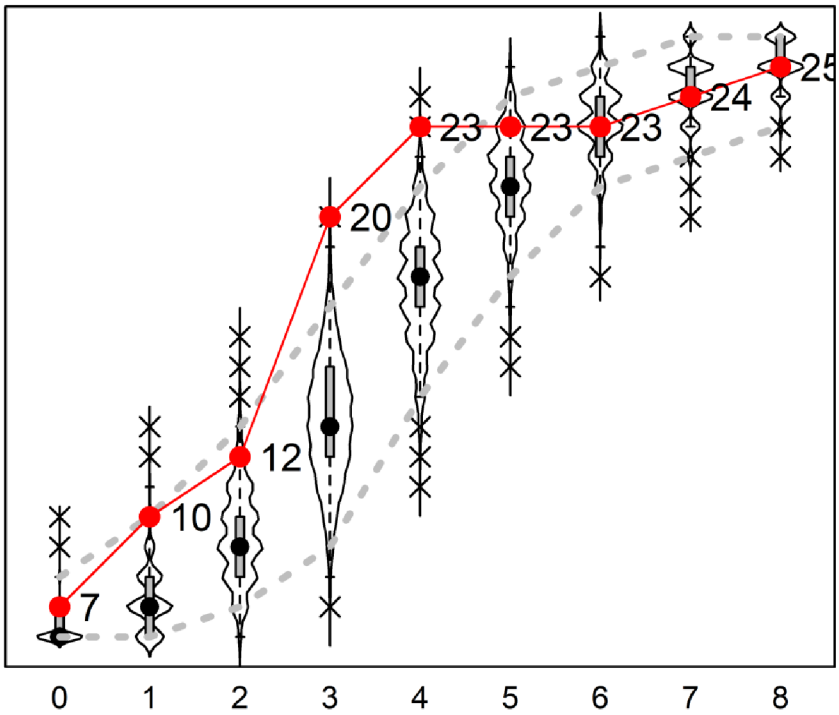

Figure B1. Auxiliary statistic: outdegree distribution.

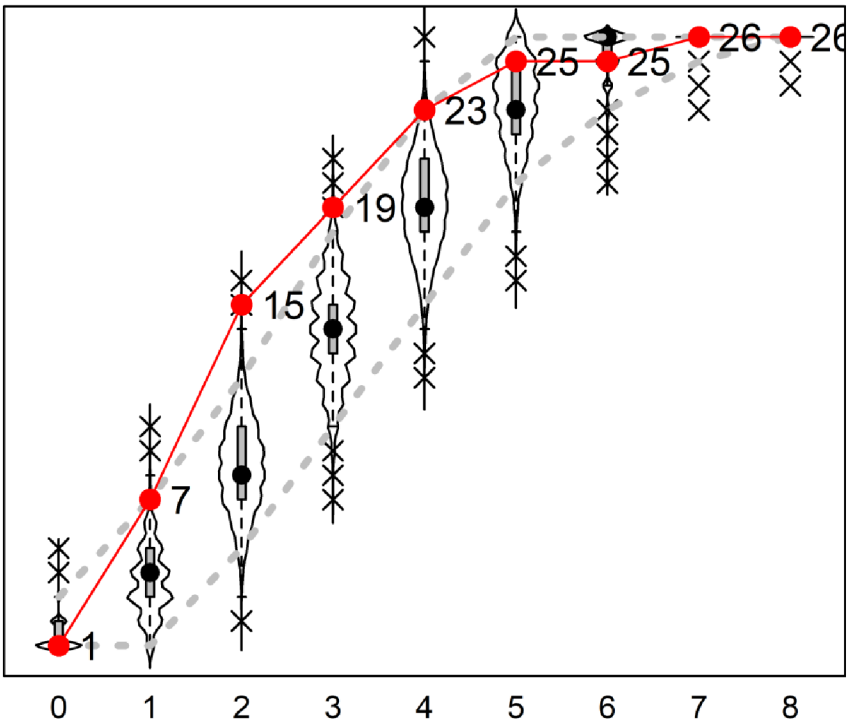

Figure B2. Auxiliary statistic: indegree distribution.

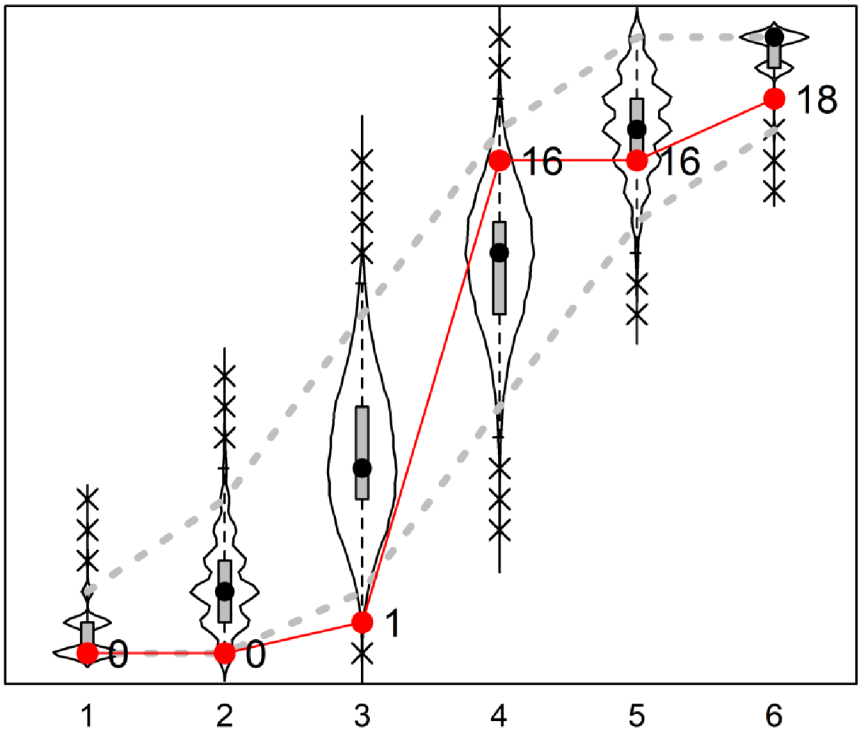

Figure B3. Auxiliary statistic: behavior distribution.

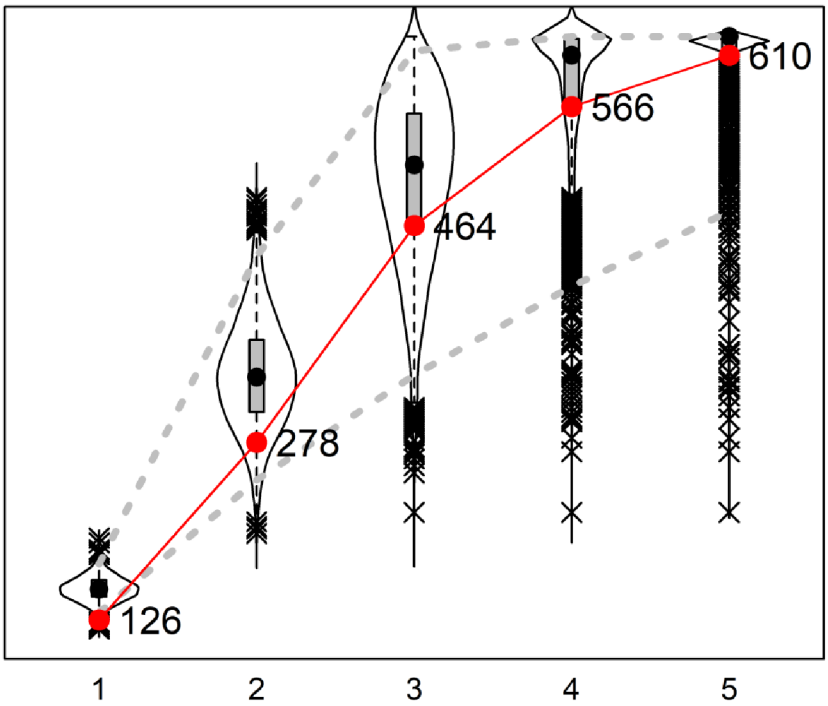

Figure B4. Auxiliary statistic: geodesic distribution.

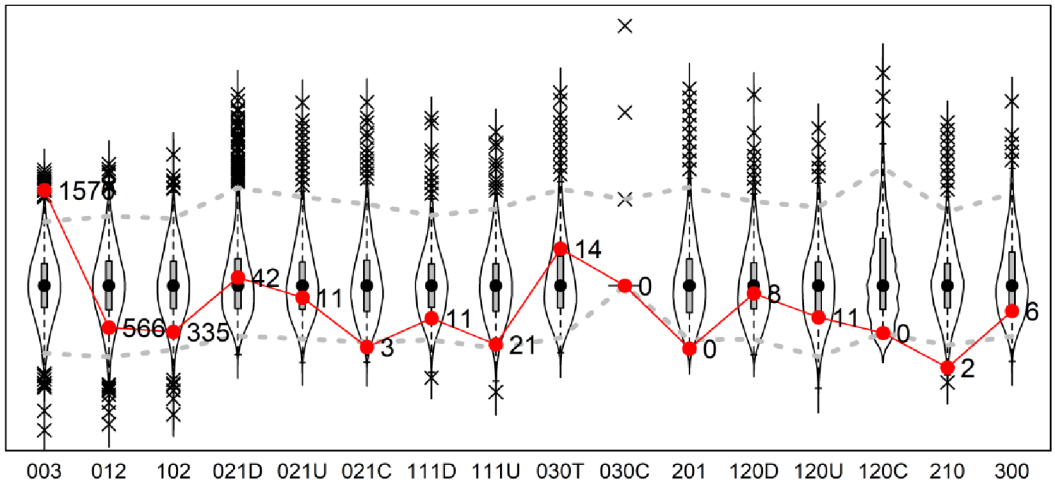

Figure B5. Auxiliary statistic: triad census.

B.5 Social influence and ethnic similarity

Social Identity Theory proposes that people are more likely to adopt attitudes from persons that are considered ingroup members than from outgroup members (Tajfel, 1982). If adolescents are in a context where the ingroup-outgroup distinction is salient, they should perceive themselves as members of a group and adopt normative attitudes provided by ingroup members. Ethnic identity was found to be related to ingroup/outgroup formation among adolescents (Masson & Verkuyten, 1993); therefore, shared ethnic membership may facilitate social influence between friends.

According to Turner (1982), people perceive ingroup members as similar to the self and expect concordance between their own attitudes and attitudes of other ingroup members. Agreement from other ingroup members should increase the confidence that shared attitudes reflect objective reality. In contrast, disagreement between subjective attitudes and attitudes of other ingroup members should result in uncertainty about the validity of subjective attitudes (Wood, 2000). Thus, attitudes of ingroup members create a social norm, which motivates an individual to adjust his/her own attitudes to the normative attitudes within ingroup (Abrams & Hogg, 2011). Furthermore, Self-Categorization Theory suggests that group membership is accentuated at the cost of individuality (i.e., depersonalization) when the self and others are sorted into ingroup and outgroup (Hogg & Terry, 2000). If a person thinks about the self in terms of group membership, group phenomena occur, such as a person adopts normative behavior or attitudes.

We thus tested whether social influence was stronger among friends of the same ethnic group than among friends of different ethnic groups.

Measure

Same ethnicity. For every classroom, we created a matrix that represented for each pair of adolescents within a classroom whether they shared the same ethnic background (coded 1) or not (coded 0). On average, adolescents had 13.94 classmates with the same ethnic background.

Analytical approach

To evaluate whether same-ethnic friends had more influence on adolescents' intergroup attitudes than ethnic-dissimilar friends, we added two interactions. First, we weighted the average similarity effect by same ethnicity to see whether having the same ethnic background facilitated adoption of intergroup attitudes from these friends. Second, we tested whether same ethnicity facilitated the impact of potential determinants of social influence on adoption of intergroup attitudes from friends by adding an interaction between: *average similarity, the friends' average value on the potential determinant of* influence, and *the friends' average value on same ethnicity*. To control for the direct effect of lower-level interactions, we included the interaction between *the friends' average value on the potential determinant of* influence, *the friends' average value on same ethnicity.*

Results

The results showed that having the same ethnicity did not facilitate influence of friends on adolescent's intergroup attitudes (see Table B4). We did not find any significant interaction, which could have indicated that ingroup friends had more impact on intergroup attitudes than outgroup friends. Contrary to our expectations, the interactions between being a clique leader, same ethnicity, and average similarity was significant but negative. This suggests that clique leaders who were also ingroup members had less influence on adolescent's intergroup attitudes.

Table B4

Multi-Group Analysis of Models that Involve Interactions between Average Similarity and Friendship Popularity, Prestige Popularity, Being a Clique Leader, or Spending Time with Friends, Including the Role of Being Turk or Moroccan

(N = 837)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Network Function										
(Density)	-3.30***	.22	-.55	16.62	-3.40***	.21	-3.24***	.22	-2.69***	.38
Reciprocity	2.12***	.20	2.74	4.55	2.01***	.21	2.17***	.20	2.25***	.29
Jaccard similarity for outgoing ties effect	5.18***	.95	6.42	13.61	5.01***	.83	5.36***	.90	5.84***	1.09
In-Structural Equivalence	.21***	.04	.23	.17	.21***	.04	.17***	.04	.19***	.05
Transitive Reciprocity Triplets	-.42***	.06	-.49	.68	-.40***	.06	-.44***	.06	-.43***	.07
Transitive Reciprocity Triplets 2	.50***	.14	.75	1.40	.46***	.14	.55***	.15	.51**	.16
Indegree Popularity	.13***	.04	.12	.17	.11**	.04	.09**	.04	.09*	.04
Indegree Activity	-.36***	.09	-1.29	6.23	-.36***	.11	-.33***	.08	-.56**	.20
Outdegree Activity	.10***	.01	.14	.27	.10***	.01	.09***	.01	.11***	.02

[Table B4 continued]

Gender homophily	.47***	.08	.68	1.23	.56***	.09	.49***	.08	.56***	.10
Ego gender	.23***	.08	.50	1.87	.23**	.08	.22**	.08	.33**	.12
Alter gender	-.16*	.08	-.25	.78	-.13+	.08	-.14+	.08	-.16+	.09
Ethnic homophily	.00	.09								
Attitude homophily	.60+	.31	1.03	3.55	.65*	.30	.58+	.31	.80*	.40
Potential determinant of social influence homophily[a]			1.04	2.96	1.33***	.23	-.06	.07	.92***	.25
Ego Potential determinant of social influence[a]			.75	4.10	.06**	.02	.29**	.09	.25*	.11
Alter Potential determinant of social influence[a]					.06***	.01	.39***	.09	.08***	.02
Ego Ethnicity Moroccan/Turk	.21+	.12	.21	.43	.24*	.11	.22+	.11	.29*	.14
Alter Ethnicity Moroccan/Turk	.14	.11	.14	.48	.13	.10	.14	.11	.15	.12
Ethnicity Moroccan/Turk homophily	.41***	.12	.58	1.45	.38***	.10	.45***	.10	.43**	.13

[Table B4 continued]

Ego Ethnicity Moroccan/Turk x Attitude homophily	1.86*	.90	3.12	8.90	1.67+	.89	1.78*	.87	1.83+	1.07
Behavioral Function										
Attitude Linear Shape	-.09*	.04	-.10*	.05	-.10*	.04	-.09*	.04	-.08	.09
Attitude Quadratic Shape	-.01	.03	-.00	.03	-.01	.04	-.01	.03	-.02	.03
Average Similarity	4.94***	.83	-.98	2.52	4.98***	.85	5.09**	.87	5.37**	1.80
Ethnicity Moroccan/Turk	.07	.10	.08	.22	.05	.11	.07	.11	-.34	.29
Ethnicity Moroccan/Turk x Average Similarity	-4.33***	1.50	-5.19+	2.80	-4.42***	1.59	-4.24**	1.57	-9.86*	4.28
Alters' Average Potential determinant of social influence[a]			-.00	.03	-.00	.02	.19	.17	-.03	1.35
Average Similarity x Potential determinant of social influence[a]			1.12*	.47	.01	.21	1.62	2.87	-.33	1.35
Ethnicity Moroccan/Turk x Potential determinant of social influence[a]			-.02	.12	.04	.06	-.27	.49	1.01	.74

[Table B4 continued]

Average Similarity x Potential determinant of social influence x Being Moroccan/Turk[a]	2.73	2.08	.31	.84	-3.67	7.49	12.99	11.05

Note. Stochastic actor-oriented multi-group analysis. Ethnic homophily, Ego and Alter attitude effects were removed after Model 1 because they were insignificant.

[a]Potential determinant of social influence represents friendship popularity in Model 2, prestige popularity in Model 3, being a clique leader in Model 4, and spending time with friends in Model 5.

*** $p > .001$; ** $p > .01$; * $p > .05$, $^{+}$ $p < .10$

Table B5

Multi-Group Analysis of Models that Involve Interactions between Average Similarity and Friendship Popularity, Prestige Popularity, Being a Clique Leader, or Spending Time with Friends, Including the Role of Ethnic Similarity

(N = 837)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Network Function										
(Density)	-3.04***	.21	-1.30	4.51	-3.14***	.22	-2.96***	.20	-2.38***	.40
Reciprocity	2.12***	.18	2.49*	1.27	2.02***	.18	2.18***	.20	2.27***	.29
Jaccard similarity for outgoing ties effect	5.19***	.89	5.70*	2.60	5.04***	.80	5.40***	.86	5.78***	1.08
In-Structural Equivalence	.21***	.04	.21*	.06	.21***	.04	.17***	.04	.19***	.05
Transitive Reciprocity Triplets	-.42***	.06	-.46***	.13	-.40***	.06	-.44***	.06	-.43***	.07
Transitive Reciprocity Triplets 2	.49***	.14	.66	.56	.44***	.13	.55***	.16	.52**	.16
Indegree Popularity	.12***	.04	.10*	.05	.11**	.04	.09**	.04	.09+	.05
Indegree Activity	-.35***	.09	-.90	1.65	-.36***	.10	-.33***	.08	-.56**	.21
Outdegree Activity	.10***	.01	.12	.08	.10***	.01	.09***	.01	.11***	.02

[Table B5 continued]

Gender homophily	.45***	.07	.59+	.34	.54***	.08	.47***	.08	.55***	.10
Ego gender	.21**	.08	.36	.49	.22**	.07	.21**	.07	.32**	.10
Alter gender	-.16*	.08	-.21	.29	-.12	.08	-.14+	.07	-.17+	.09
Ethnic homophily	.12	.07	.23	.45	.09	.08	.15*	.07	.06	.09
Attitude homophily	.92	.76	.92	.76	.69*	.29	.64*	.30	.86*	.40
Potential determinant of social influence homophily[a]			.85	.84	1.32***	.22	-.05	.07	.93***	.26
Ego Potential determinant of social influence[a]			.49	1.04	.06**	.02	.28**	.09	.25*	.12
Alter Potential determinant of social influence[a]					.06***	.01	.37***	.09	.08***	.02
Behavioral Function										
Attitude Linear Shape	-.03	.07	-.08	.10	-.07	.08	-.01	.09	-.23	.16
Attitude Quadratic Shape	-.01	.03	.003	.03	-.01	.03	-.02	.03	-.01	.03
Average Similarity	4.02***	1.19	-7.93	5.97	4.15***	1.25	4.48**	1.38	4.50**	1.69
Ethnicity Moroccan/Turk	.04	.13	.08	.17	.05	.13	.06	.15	.06	.12

[Table B5 continued]

Alters' Average Ethnic Similarity with Friends	-.10	.12	-.05	.16	-.03	.13	-.14	.14	.07	.13
Average Similarity x Alters' Average Ethnic Similarity with Friends	1.06	1.08	.05	1.24	1.02	1.11	.88	1.22	1.40	1.50
Alters' Average Potential determinant of social influence[a]			.01	.06	.06^{+}	.04	-.17	.37	.43	.32
Average Similarity x Potential determinant of social influence[a]			2.61^{+}	1.35	-.23	.48	10.38^{+}	6.12	-.36	1.30
Alters' Average Ethnic Similarity with Friends x Potential determinant of social influence[a]			-.02	.08	-.10^{+}	.05	.62	.37	-.82^{+}	.49
Average Similarity x Potential determinant of social influence x Alters' Average Ethnic Similarity with Friends[a]			-2.01	1.59	.54	.74	-18.36*	8.33	-1.04	3.11

Note. Stochastic actor-oriented multi-group analysis. Ego and Alter attitude effects were removed after Model 1 because they were insignificant.
[a]Potential determinant of social influence represents friendship popularity in Model 2, prestige popularity in Model 3, being a clique leader in Model 4, and spending time with friends in Model 5.
*** $p > .001$; ** $p > .01$; * $p > .05$, $^{+}$ $p < .10$

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