The density of social networks moderates effects of intergroup contact

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A R T I C L E   I N F O

A B S T R A C T

This study tests how the density of the social network in which intergroup contact takes place might affect the extent to which contact improves intergroup attitudes. Having contact with more outgroup members in dense social networks, in which everybody knows each other, may reinforce contact's positive effect. In this case, outgroup contact is shared with ingroup members, which suggests positive ingroup norms toward the outgroup. Alternatively, more contact in denser networks may improve intergroup attitudes less because density may increase subtyping or reduce the salience of ethnic group memberships. These competing hypotheses are tested among white American adults in a nonprobability online sample ($N = 305$) and in a representative national sample ($N = 1270$). In both studies, contact is associated with more positive attitudes toward racial outgroups but the positive contact effect is weakened if that contact takes place in a denser social network.

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1. Introduction

Research on Allport's (1954) contact theory has repeatedly shown that having contact with members of other racial or ethnic groups (outgroups) reduces prejudice (Pettigrew & Tropp, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011; Swart, Hewstone, Christ, & Voci, 2011). Many of these previous studies determined the amount of intergroup contact a person had by counting up the number of outgroup members the person interacted with. However, social contacts are often not independent from each other but are connected within social networks (Merino, 2013; Pettigrew, Christ, Wagner, & Stellmacher, 2007). This is particularly true for intergroup friendships, the most prominent indicator of intergroup contact (Davies, Tropp, Aron, Pettigrew, & Wright, 2011). Very few studies have thus far considered inter-connectedness of intergroup contact in social networks (Munniksma, Stark, Verkuyten, Flache, & Veenstra, 2013; Stark, 2015; Wölfer, Faber, & Hewstone, 2015).

The present study argues that the effect of intergroup contact on intergroup attitudes might depend on the structure of the social network in which this contact takes place. Recent research has shown that contact effects are moderated by norms that are shared in a social network (Merino, 2013), but no research has looked at the structural features of the network. Particularly *network density*, the proportion of the members of a person's social network that are also related to each other (Wasserman & Faust, 1994), may affect the outcome of intergroup contact because network density has been found to affect people's behavior, perceptions, and attitudes. Educational performance and depression, for example, are related to the density of a person's friendship network (Falci & McNeely, 2009; Ryabov, 2009). People with denser networks are also more strongly influenced by the behavior of their friends (Haynie, 2001). Moreover, people with a more cohesive family network more strongly opposed the idea of interracial marriage than those with a less cohesive family network (Huijnk, Verkuyten, &

Coenders, 2013). The effect of having contact with outgroup members on intergroup attitudes might likewise be moderated by the density of the social network in which this contact takes place. In the next section, different forms of network density are introduced. Subsequently, two sets of competing hypotheses about the potential effect of network density are presented and tested in two independent studies.

1.1. Network density

A person's social network that includes both ingroup and outgroup members allows different conceptualization of its density. The *overall density* simply takes into account what proportion of the members of a person's social network are related to each other, no matter if they belong to the person's ingroup or to the outgroup. For instance, if a white individual had six friends and four of these friends were also friends with each other while the other two were not friends with anyone else, the person's network would have a density of 0.4. Six of the possible 15 friendship relationships (6/15 = 0.4) between the six network members exist (Wasserman & Faust, 1994).

If a person also has friends from another racial group, it is possible to calculate network density based only on relationships that include outgroup members. A measure that could be called *cross-group density* refers to the proportion of existing relationships between ingroup and outgroup members but excludes relationships between members of the same group. Thus, this measure captures how densely friends from the ingroup and outgroup are connected with each other. If in the given example, two of the white person's friends were black, there could be eight cross-group relationships in total because each of the two outgroup members could have a relationship with four ingroup members. If we assume that the two black friends are among the four friends that are also friends with each other, the cross-group density would be 4/8 = 0.5.[1]

A slight variation of the cross-group density could be called the *outgroup member density*. This is the density of the sub-network that includes all potential relationships in which outgroup members are involved. This measure includes relationships among outgroup members and thus reflects how well outgroup members are embedded in a social network. In the given example, the two black outgroup members could form nine friendships with other people in the network (eight with the white friends and one relationship with each other). Since the two black people are among the four friends that are also friends with each other, the outgroup member density of this person's network would be 5/9 = 0.56.

1.2. Positive reinforcement of contact

The density of a social network may reinforce positive contact effects. For instance, the friendship between a white and a black teenager might reduce racial prejudice more effectively if their friendship is embedded in a larger, closely-knit network of friends at football training than if the black and the white teenager do not share mutual friends. The positive experiences of the friendship between the two may be amplified and reinforced by the experiences they share as part of the network of the football team.

Hypothesis H1. *a*: The density of the social network in which contact takes place reinforces the positive effect of having more intergroup contact on more positive intergroup attitudes.

Such a reinforcing effect of network density is in line with the extended contact hypothesis, according to which the mere knowledge that ingroup friends have outgroup friends reduces prejudice (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). In a dense network, people have direct contact with their outgroup friends and also extended contact through their ingroup friends who are also connected with the outgroup friends.[2] More than 50 studies have convincingly shown that extended contact can have additional positive effects on intergroup attitudes in the presence of direct contact with outgroup members (Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014).

For extended contact to underlie the reinforcing effect of network density, the density needs to capture relationships between ingroup and outgroup members of a person's social network (cross-group density). Such cross-group friendships of ingroup friends signal the existence of positive ingroup norms regarding the outgroup (Dovidio, Eller, & Hewstone, 2011; Pettigrew et al., 2007), which have been identified as mediators of the extended contact effect (Cameron, Rutland, Hossain, & Petley, 2011; Turner, Hewstone, Voci, & Vonofakou, 2008; Visintin, Brylka, Green, Mähönen, & Jasinskaja-Lahti, 2016). Positive ingroup norms indicate that people will not be sanctioned by ingroup members for the same behavior (Cialdini, Kallgren, & Reno, 1991). Recent research found that (1) contact between people in a given social context led to positive ingroup norms toward the outgroup in that context and (2) that living in a social context with such positive ingroup norms had an additional positive effect on intergroup attitudes on top of the effect of direct contact with outgroup members (Christ et al., 2014).

Since positive ingroup norms develop through intergroup contact of ingroup members, network density can only signal the existence of such norms if it reflects relationships between ingroup and outgroup members.

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[1] A graphical illustration of the various density measures for the given example is shown in Online Appendix A.

[2] An indirect relationship with an outgroup member through a shared ingroup friend is also considered extended contact even if there is a direct relationship with the same outgroup member as long as the effect of direct contact is statistically controlled (Vezzali et al., 2014).