Ethnic Diversity and Value Sharing:

A Longitudinal Social Network Perspective on Interactive Group Processes

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ABSTRACT

People often collaborate in groups that are increasingly diverse. As research predominantly investigated effects of diversity, the processes behind these effects remain understudied. We follow recent research that shows creating shared values is important for group functioning but seems hindered in high diversity groups - and use longitudinal social network analyses to study two interpersonal processes behind value sharing: creating relations between members or 'social bonding' (network tie formation and homophily) and sharing values -potentially through these relationships- or 'social norming' (network convergence and influence). We investigate these processes in small interactive groups with low and high ethnic diversity as they collaborate over time. In both low and high diversity groups, members showed social bonding and this creation of relations between members was not organized along ethnic lines. Low diversity groups also showed social norming: members adjusted their relational values to others they liked and achievement values converged regardless of liking. In high diversity groups, however, there was no evidence for social norming. Thus, ethnic diversity seems to especially affect processes of social norming in groups, suggesting that targeted interventions should focus on facilitating social norming to stimulate value sharing in high diversity groups.

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People routinely work together in different kinds of groups, such as at work, at school, and in sports teams. Moreover, globalization as well as immigration trends make these groups increasingly ethnically diverse (Castles & Miller, 1993; Vertovec, 2007). Ethnic differences between group members provide high potential for innovation and creativity, but they may make cooperation and integration more difficult (Moreland, 2013; Stahl, Maznevski, Voigt, & Jonsen, 2009; van Knippenberg & Haslam, 2003). In spite of a solid body of research on possible benefits and costs of group diversity (Earley & Mosakowski, 2000; Joshi & Roh, 2009; Moreland, 2013; van Knippenberg & Schippers, 2007), the processes underlying mixed effects of diversity have largely remained a black box (Lawrence, 1997). In this article, we provide an overview of recent research that looks into this black box and contribute to this research by investigating how small real-life interactive groups low or high in ethnic diversity create shared values over time as they are working on a project important and meaningful to their members. We put forward longitudinal social network analyses (Snijders, 1996; 2001; Snijders, van de Bunt, & Steglich, 2010) as an innovative yet under-exploited means to unravel the interpersonal dynamics within diverse groups, which may inform targeted interventions to reach the full potential of diverse groups.

One reason why ethnically diverse group members may find it harder to collaborate are 'deeper' value differences (Luijters, Van der Zee & Otten, 2008; Schaafsma, 2008). A key predictor of optimal group functioning is value similarity or 'fit': the degree to which group members endorse shared values. Values are goal orientations that direct people's perceptions, attitudes, and behaviors towards desired actions and outcomes (Schwartz, 1992, 2006). Shared values define group identities (Ashforth, Harrison, & Corley, 2008; Haslam, 2004; Schein,

1990) and orient group members towards common goals (Edwards & Cable, 2009; Haslam, Eggins, & Reynolds, 2003; Turner, 1991). Accordingly, value fit in groups predicts less relationship conflict, more group commitment and trust between group members, higher job satisfaction, and better performance (Adkins, Ravlin, & Meglino, 1996; Edwards & Cable, 2009; Jehn, Chadwick, & Thatcher, 1997; Jehn, Northcraft, & Neale, 1999).

In view of the many benefits of value fit, recent research has looked into how shared values come about in a group. Arguing from bottom-up group processes that members can create a shared identity over time (Postmes, Baray, Haslam, Morton, & Swaab, 2006; Postmes, Haslam, & Swaab, 2005), a longitudinal study found evidence of the dynamic nature of value sharing in ethnically homogeneous groups working on a shared project (Meeussen, Delvaux, & Phalet, 2014). This study showed that the achievement values of group members became more similar over time. Moreover, value similarity over time – not value similarity at the start –predicted more group identification and better group performance. This suggests that value sharing is rooted in dynamic processes between group members through repeated social interactions.

What does this imply for ethnically diverse groups? Given that members with different ethnic backgrounds may start off with more (perceived or actual) different values than homogeneous groups (Schaafsma, 2008), the finding that shared values created over time are more important for group functioning than initial value similarity is hopeful. Yet, preliminary findings suggest that high ethnic diversity may stand in the way of the process of value sharing – with real consequences for group identification and success. Indeed, a follow-up study failed to replicate the process of value sharing over time in groups with high ethnic diversity (Meeussen, Schaafsma, & Phalet, 2014). Specifically, this study compared value sharing for achievement as well as relational values in small groups with low versus high diversity. While the earlier findings that group members' values become more similar over time were replicated

in low diversity groups, no such evidence of value sharing was found in the high diversity groups. Thus, high diversity groups failed to create shared values over time; and their performance was worse than that of low diversity groups, where value sharing did take place. Taken together, these findings beg the question which interactive processes between group members can account for failed value sharing in the high diversity groups. To address this question, we turn to longitudinal social network analysis as a more rigorous and fine-grained approach of small group dynamics as they unfold over time.

Why use social network analysis to study interactive groups?

Network theory views groups as sets of individual people (nodes) in a web of interpersonal relations (ties). By doing so, network analyses allow to not only look at person-level or team-level variables, but also at dyadic relations between group members and the structured patterns of interactions between group members (Borgatti, Everett, & Johnson, 2013; Wasserman & Faust, 1994). Social network analysis is increasingly used by social scientists to model complex social phenomena (Borgatti, Mehra, Brass, & Labianca, 2009). While research on diversity in groups has documented the effects of diversity on outcomes such as group cohesion, turnover or performance (Lawrence, 1997; Reagans, Zucherman, & McEvily, 2004), recent studies are turning to social network analyses to dig deeper into the processes behind such effects (van Knippenberg & Mell, 2017). For instance, Reagans and Zuckerman (2001) used network analyses to predict the productivity of work groups diverse in terms of organizational tenure (i.e., the number of years worked in an organization) and showed that more frequent communication among members (network density) as well as more extensive communication between members of different tenure (network heterogeneity) were related to higher productivity. Tröster, Mehra, and van Knippenberg (2014) showed that in ethnically diverse groups compared to homogeneous groups, a higher average flow of resources such as information and material (network density) predicted greater team confidence to

perform. Moreover, diverse groups needed a higher spread of resources (network centralization) to perform well.

Longitudinal social network analysis (LSNA) looks at social networks as they change over time. To this end, group members' characteristics (e.g., values) and the relations between members (e.g., how much does Peter like Laura?) are measured more than once. With LSNA, we can look at changes in relations and characteristics over time and predict changes in peoples' characteristics from social relations (e.g., does Peter adapt his values towards these of Laura because he likes her?) as well as changes in social relations from characteristics (e.g., does Laura start to like Peter more because he has similar values to hers?). Therefore, LSNA provides a very powerful tool to articulate evolving group processes or 'network dynamics' while taking into account the interdependency of data and the network structures (Snijders, 2001). Our research exemplifies this potential by using LSNA to (1) gain insight into generic processes of social bonding and social norming in interactive groups as explanations of value sharing over time; and (2) address the hitherto unanswered question of why high ethnic diversity is a boundary condition for interactive groups to create shared values over time.

Previous studies showed members of low diversity groups develop shared values over time by using multilevel cross-lagged models that reveal how over time, a group member's values are influenced by the aggregated values of the other group members, and vice versa, that the aggregated values of other group members influence the values of individual members (Meeussen, Delvaux et al., 2014; Meeussen, Schaafsma et al., 2014). While such analyses led to valuable insights into the phenomenon of value sharing, the inter-personal micro-processes behind the creation of shared values have yet to be revealed: who influences whose values and why? LSNA allows us to dig deeper in the process of value sharing within these small interactive groups.

Value sharing: social bonding and social norming

Group members do not all influence each other to the same extent or are not influenced to the same extent by all other members. Rather, social influence will depend on evolving social relations in the group, such that values may spread selectively as members relate to specific others within their group. Thus, two distinct but interrelated network processes are important: the creation of relationships between group members over time or 'social bonding' (network tie formation and homophily); and the spread of social values throughout the network or 'social norming' (network convergence and influence).

The first component is social bonding: members need to be able to establish and maintain pleasant relations and interactions with their fellow group members. An important factor in the development of relations is homophily: people tend to like others who are similar to them in terms of demographic characteristics, values, beliefs, and behaviors - and several studies have shown that friendship relations are more likely to form between people with the same ethnicity (e.g., Ennett & Bauman, 1996; Leszczensky & Pink, 2015; McPherson, Smith-Lovin, & Cook, 2001). With LSNA, we can investigate the creation of relations between group members and look into different predictors of changes in these relations over time: e.g., do group members come to like others more easily when they have similar ethnic backgrounds or values?

The second component is social norming: the influence group members have on each other's values. This influence can occur evenly across the network, but it can also depend on the strength of member's relationships: friends are often similar not only because people select similar people as friends, but also because friends influence each other (McPherson et al., 2001). Such social influence effects should be even stronger in small work groups, where cooperation between group members is important and friendship choices are more restricted than in other types of groups (de Klepper, Sleebos, van de Bunt, & Agneessens, 2009). For

instance, research has shown that individuals adapt their level of discipline to that of their friends within a work group (de Klepper et al, 2009), and new teaching values spread within a school mainly through friendship relations between teachers (Gibbons, 2004). With LSNA, we can examine social norming processes both in terms of general value sharing across the groups (do group members converge in their values over time regardless of who likes who?) and value sharing through positive relationships between group members (will members adapt their values most to the values of other members they like best?).

Ethnic diversity and failed value sharing

It is these processes of social bonding and social norming than can provide insight in the question of why high ethnic diversity is a boundary condition for interactive groups to create shared values over time (Meeussen, Schaafsma et al., 2014).

First, social bonding may be more difficult in high as compared to low diversity groups. Indeed, the social identity approach states that people favor groups they belong to over other groups and trust and like members of their own group more (Ashforth & Mael, 1989; Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Similarly, at an interpersonal level, (actual or perceived) differences between people may reduce interpersonal attraction and liking (Byrne, 1971). Thus, differences in ethnic backgrounds between group members may negatively affect interactions between group members (e.g., Spencer-Rodgers & McGovern, 2002) and members may avoid those who (they perceive to) differ from themselves (Pelled, Ledford, & Mohrman, 1999; Plant & Devine, 2003; Towles-Schwen, & Fazio, 2003). Applying these findings to the process of value sharing, it is possible that value sharing is hindered in high diversity groups when group members fail to develop positive interpersonal relationships necessary as carriers of shared values. With LSNA, we can investigate members' ethnic backgrounds as a potential driving factor behind evolving social relations: Do group members

come to like others with a similar ethnic background more? Are relations between group members formed more easily in groups with low as compared to high diversity?

Second, social norming may be more difficult in high diversity groups. For group members to influence each other's values, they need to form positive relations as well as express their personal values and accommodate other members' values. While it can generally be expected that people are influenced by others they like (cf. supra), current controversies over the benefits and limits of intergroup contact suggest this may not always be the case in groups with high ethnic diversity: Intergroup contact research has foregrounded positive relations between members with different ethnic backgrounds as a way to improve intergroup relations. While positive relations have been found to reduce prejudice and improve intergroup attitudes (Pettigrew & Tropp, 2006), they may fall short of enabling the active participation and accommodation of ethnic minorities (Dixon et al., 2005, 2007, 2010). Indeed, majority members who have positive relations with minority members do not show increased support for inclusive policies aimed at reducing inequalities between ethnic groups (Dixon et al., 2005; Jackman & Crane, 1986). Similarly, minority members who have positive relations with majority members are less aware of discrimination, and hence, less prone to take action for social change (Dixon et al., 2007, 2010; Ellison & Powers, 1994; Jost & Banaji, 1995). To the extent that we can draw a parallel between intergroup processes which reproduce inequality and similar processes in small interactive groups, this literature suggests that positive relationships between group members with different ethnic backgrounds may not necessarily imply the accommodation of others' values. Just like majority citizens predominantly define national identities at the country level (Fleischman & Phalet, 2017), majority group members may predominantly define the common group identity in smaller work groups (see also Jansen, Vos, Otten, Podsiadlowski, & van der Zee, 2015). Moreover, values have to be communicated to other members to enable social influence. As proposed by the categorization-elaboration

model, the elaboration of information (and thus potentially of values) may be hindered in more diverse groups due to social categorisation processes – especially when differences are readily detectable as in the case of ethnic diversity (van Knippenberg, De Dreu, & Homan, 2004). In sum, it is possible that value sharing is hindered in high diversity groups as value convergence requires that values are effectively communicated or voiced as well as accepted by others and appreciated as valuable contributions to the group (Kirchmeijer, 1993). Using LSNA, we are able to investigate whether social norming processes are constrained by ethnic diversity in a group: do members adapt their values -either evenly or selectively to the values of others they like- in groups with low but not with high ethnic diversity?

In sum, we use LSNA to gain insight to processes of social bonding and social norming in small interactive groups as explanations of value sharing over time; and to address why high ethnic diversity is a boundary condition for value sharing. As such, we aim to show how LSNA is a high-potential means to unravel the under-researched interpersonal dynamics within diverse groups, which may inform targeted interventions with a view to reach the full potential of diversity. To this end, we use a three-wave longitudinal survey study of small interactive groups low and high on ethnic diversity. Replicating Meeussen, Schaafsma and colleagues (2014), we focus on relational values (i.e., values concerned with the welfare of and relations between group members) and achievement values (i.e., values concerned with reaching the group's performance goals), because both the social climate in a group and reaching the group's goals are important aspects of group functioning (Lickel et al., 2000) and they both have been shown to be affected by ethnic diversity (Moreland, 2013). While we do not have a priori predictions about differences between these values, relational and achievement values need not converge in exactly the same ways since they focus on distinct aspects of group functioning.

METHOD

Procedure and Study Context

Our data are based on a longitudinal field study that followed newly composed groups of engineering students during a six-month joint project at a Belgian university (Meeussen, Schaafsma et al., 2014). During this project, the students had to design and build a device that could heat water, write a paper describing their work, and present to a jury. The project was an important part of the student's curriculum and working as a group was formally reinforced since students were graded as a group.

Participation to the study was voluntary and anonymous and did not affect course grades. Of all students, 97% agreed to participate. Participants filled out three questionnaires: The first questionnaire was administered after working together for seven weeks, because we wanted the newly formed groups to have worked together for some time to be able to answer questions about their values in the group context and relations with other members. The second questionnaire was administered after working together for 21 weeks; and the third questionnaire at the end of the project, after working together for 25 weeks. The time interval between the first and second questionnaire was longer than the interval between the second and third questionnaire because during the first interval, the project was on hold for seven weeks when students had exams and holidays. We distributed the second questionnaire four weeks after the break, so that group members got used to work together again.

Participants

We focus on groups for which sufficient data were available to perform longitudinal network analyses. Five groups were excluded from the analyses because the data of more than two members were (partially) missing. A comparison of participants with and participants without completed data using Little's (1988) Missing Completely at Random-test ($\chi^2(85) =$ 102.49, $p = .095$) showed that these participants did not systematically differ from each other

on the variables of interest (i.e., relational values, achievement values, and positive relations). In the analyses, 28 out of the 33 groups were included, which consisted of five to seven first-year students ($M = 6.23$, $SD = 0.71$) and one fourth-year student leader who was randomly assigned to one of the groups. Group members' ($n = 174$) mean age was 18.84 ($SD = 1.16$) and 79.8% were men. Group leaders' ($n = 28$) mean age was 22.58 ($SD = 2.00$) and 64.3% were men.

Measures

Ethnic diversity We measured participants' ethnic background by their own and their parents' country of origin. Defining ethnic minorities by national origin or ancestry is common in European societies, where ethnic differences are mainly perceived between national (rather than racial or European) ingroups and non-national outgroups (Duchesne & Frognier, 2008; Goldberg, 2006). Participants were defined as ethnic minority members if they themselves and at least one of their parents were born outside of Belgium. About one third of the participants were classified as ethnic minority members (27% of the group members and 32% of the group leaders). Their ethnic backgrounds were very diverse: countries of origin included various African, Asian, European, and Northern American countries. The number of ethnicities to be accommodated within a group varied from one (only majority members) to seven different ethnicities. By basing ethnic diversity on country of origin, we do not assume that group members with different backgrounds are necessarily culturally different from each other. Rather, based on intergroup research showing that the salience of any markers of differentiation can trigger us/them categorizations and intergroup dynamics (Tajfel & Turner, 1979; Turner et al., 1987; Wilder, 1986), we argue that this ethnic diversity, irrespective of whether or not this coincides with actual differences, can serve as a marker of differentiation triggering intergroup processes.

Students were externally assigned to groups by their tutors, randomly leading to more and less diverse groups. As in Meeussen, Schaafsma and colleagues (2014), we defined groups with no or one ethnic minority member as low diversity groups and groups with at least two ethnic minority members as high diversity groups. While there is no consensus on the precise definition of or cutoff criteria for ethnically diverse groups (e.g., Cox, Lobel & McLeod, 1991; Harrison, Price, & Bell, 1998; Van der Zee, Atsma, & Brodbeck, 2004; Watson, Kumar, & Michaelsen, 1993), this operationalization is based on the notion that 'any subgroup requires at least two members sharing salient traits' (Earley & Mosakowski, 2000, p. 28). Thus, when a group consists of two or more ethnic minority members, us/them categorisation and intergroup dynamics could come into play (Tajfel & Turner, 1979; Turner et al. 1987; Wilder, 1986). This resulted in a design with 13 low diversity groups and 15 high diversity groups.

Positive relations between group members Positive relations (unidirectional 'liking' ties) between group members were measured by asking every member to rate how well they got along with each other member in the group. As necessary for the longitudinal network analyses, we dichotomized ratings such that a positive relation was present when group members indicated they liked someone 'much' (4) or 'very much' (5). A positive relations was coded as not present when members indicated 'not at all' (1), 'not really' (2), or 'neutral' (3).

Values Measures of relational values and achievement values were derived from Schwartz' Value Survey (Schwartz, 1992), adapted to be measured in the group context within a specific timeframe. Five items measured achievement values (success, capable, efficiency, own input, and responsibility) and five items measured relational values (helpfulness, honesty, social justice, equality, and loyalty). The items 'helpfulness', 'honesty', and 'loyalty' are items for Schwartz' benevolence values (i.e., concerned with the welfare of close others). The items 'social justice' and 'equality' stem from Schwartz' universalism values (i.e., concerned with the welfare of all people). We measure both types of values specifically with regard to the work

group and as such, they both refer to the welfare of other group members (as also confirmed by the multilevel reliability scores). Therefore, we use all items in one scale that we labeled as 'relational values'. Participants rated how important each value had been to them as a guideline for their behavior within the group during the last weeks, on a scale from 1 (Not at all important) to 5 (Very important). A member's relational and achievement values were calculated as the sum of all five items, because longitudinal social network analyses use microstep changes in integers of values and positive relations to estimate network effects over time. Multilevel exploratory factor analyses (Muthén, 1991) yielded a two-factor solution confirming the distinction between relational and achievement values

Table 1 provides an overview of means, standard deviations, and multilevel reliabilities for both types of values at all three waves.

Analyses

We performed longitudinal network analyses using the Simulation Investigation for Empirical Network Analysis models (SIENA; Snijders, 1996; 2001; Snijders, van de Bunt, & Steglich, 2010). These SIENA models estimate the change in participants' relational or achievement values and the change in their positive relations with other members over time; and what mechanisms drive such changes while taking into account the interdependency of the data and structural effects of the network. We estimated four separate SIENA models: two models, focusing on relational values for low diversity groups, and high diversity groups respectively, and two focusing on achievement values for high and low diversity groups. Table 2 provides an overview of all network effects that were added in the model and a description of what they entail. Specifically, we took a systematic modelling approach, first including effects that are needed for our hypotheses (parameters 14-16 and 20-21), as well as structural effects commonly controlled for in social network analyses (parameters 1-6; 11-13 and 17-20 in Table 2). In addition, we used a forward model selection procedure (Ripley, Snijders, Boda,

Voros, & Preciado, 2017; Schweinberger, 2012) to test statistically whether other network effects could improve a model and hence should be included as a control parameter in that model (parameters 7-10 and 22 were included via this procedure).

In order to test whether ethnic diversity served as a boundary condition for *social bonding*, we compared low and high diversity groups in terms of structural network effects to investigate whether positive relations were more likely to be formed in low than high diversity groups. Moreover, we tested whether positive relations were organized along ethnic lines (parameters 14-16: Do ethnic majority members send out or receive more or less positive relations than ethnic minorities? Do members like each other more when they have a similar ethnic background?). In order to test whether ethnic diversity served as a boundary condition for *social norming*, we compared low and high diversity groups in value sharing effects, both general convergence in values regardless of positive relations (parameter 20) and value sharing through positive relations between members (parameter 21).

RESULTS

Descriptive network statistics

Table 3 summarizes the changes in values and positive relations for each time interval and network densities for low and high diversity groups and Table 4 provides the estimated effects for the four longitudinal social network models. In Table 3, the 'Down' column indicates the number of downward changes in values (i.e., members attributing less importance to relational or achievement values over time) and the 'Up' column indicates the number of upward changes in values (i.e., members attributing more importance to relational or achievement values over time). Overall, low and high diversity groups do not show strong differences in their changes in relational and achievement values. High diversity groups do seem to show a slightly stronger tendency to decrease in both achievement and relational values between wave 1 to wave 2. With respect to the network relation, the 'Distance' measure

indicates changes in positive relations as indicated by the sum of the amount of new positive relations that emerged (going from 0 to 1 or 0➔1) as well as the amount of "old" positive relations that disappeared (going from 1 to 0 or 1➔0). Overall, there are more network changes between wave 1 and wave 2 than between wave 2 and wave 3. Low and high diversity groups show similar changes in positive relations. Network density scores were similar for low and high diversity groups, ranging between 0.63 and 0.75, which indicates that 63 to 75% out of all the possible liking relations between group members were present. Also, there is sufficient network stability to examine the subsequent observations as a gradually changing network, as indicated by the Jaccard indices well above 0.30 (Snijders et al., 2010). As can be seen in Table 4, there was considerable change over time in positive relations (parameters 1 and 2) as well as in relational and achievement values (parameters 17 and 18) for both low diversity and high diversity groups, allowing for an investigation of what drives these changes. We thus turn to the examination of the processes of social bonding and social norming.

Social bonding

First looking at social bonding at the group level, network descriptives (Table 3) indicate that low and high diversity groups showed similarly high density scores, which indicates that group members tended to like each other in both the low and high diversity groups. Moreover, Jaccard indices were similar in low and high diversity groups, showing that such liking relations were equally stable in the low and high diversity groups.

Then looking at social bonding within groups, results showed that (controlled for structural network effects) liking relations were not organized along ethnic lines. Specifically, ethnic majority members were not liked more or less by others in their group than minority members (parameter 14), and majority members did not have a higher propensity to like other group members than minority members (parameter 15). Also, there was no indication that

members liked others with a similar ethnic background more than others with different ethnic backgrounds (parameter 16).

Together, these findings show that social bonding processes were at play both in groups with low and high diversity and that members tended to form positive relations regardless of ethnicity. Thus, a lack of social bonding does not seem to be the main cause of failed value sharing in groups with high ethnic diversity.

Social norming

Controlling for general network effects, results showed evidence of social norming within low diversity groups but not within high diversity groups: In low diversity groups, positive relations between group members served as carriers of relational values: over time, members adapted their relational values to the values of other members they liked more (parameter 21), controlling for the potential reverse effect of selection. There was also achievement value sharing within low diversity groups, since achievement showed significant convergence over time regardless of who liked who in the group (parameter 20). Together, these findings show that social norming processes were at play in groups with low diversity but not in groups with high diversity.

DISCUSSION

Shared values are an important aspect of a group's identity and they serve to coordinate action and achieve common goals (e.g., Ashforth et al., 2008; Edwards & Cable, 2009; Haslam, 2004; Schein, 1990). As such, they improve various aspects of group functioning (Adkins et al., 1996; Jehn et al., 1997; 1999). Previous research has shown that members of low diversity groups create shared values over time by influencing each other's values towards convergence (Meeussen, Delvaux et al., 2014). However, such a process of value sharing seems absent in ethnically diverse groups, which could harm their social functioning and performance (Luijters et al., 2008; Meeussen, Schaafsma et al., 2014).

In the current paper, we used LSNA to gain insight into network dynamics of social bonding (network tie formation and ethnic homophily) and social norming (network convergence and influence) in small interactive groups as processes behind value sharing over time; and to address why high ethnic diversity is a boundary condition for value sharing. As such, we wanted to show how LSNA is a high-potential means to unravel the under-researched interpersonal dynamics within diverse groups (Lawrence, 1997), which in turn can inform targeted interventions with a view to reach the full potential of diversity.

Low diversity groups: Value sharing through social bonding and social norming

We found that in small groups with low levels of ethnic diversity, group members aligned their relational and achievement values over time. This corroborates previous findings of emergent group identities (Postmes et al., 2005; 2006) and value convergence in low diversity groups (Meeussen, Delvaux et al., 2014; Meeussen, Schaafsma et al., 2014).

Extending this research, LSNA allowed us to reveal two important micro-processes behind value sharing: over time, group members created positive relations amongst each other (social bonding) and these relations served as carriers of relational values (social norming). This is in line with research showing that people are influenced by their friends, especially in contexts where cooperation is important and friendship choices are restricted to members within a group (de Klepper et al., 2009). Similarly, achievement values were also shared over time in low diversity groups (social norming), but contrary to the relational values, group members did not adapt their achievement values more to members they liked. This difference in the spread of relational and achievement values within low diversity groups suggests that different processes of social influence may be at play for different types of values.

There are a number of possible explanation for the lack of social influence through positive relations for achievement values. First, it is possible that all other members may have an equal influence on each other's achievement values. This could be the case because

members depend upon all other group members to successfully complete their project. Therefore, members may adjust their ambitions to the achievement values of all other members, rather than only to the values of liked others. Second, achievement values may spread within a group network through other types of relations than liking relations. For instance, members may adapt their achievement values more to others depending on how smart or hardworking they perceive them to be. Third, group members need to know others' values (communicated implicitly or explicitly) in order to be influenced by them. It is possible that within the context of work groups, achievement values are more easily recognized in other members than relational values. This would allow influence from all other members on one's achievement values, whereas members may need more interactions with other members to get to know their relational values; and generally, people seek more interactions with people they like more. Future research could look further into the differences in social norming for different types of values.

High diversity groups: Social bonding without social norming?

LSNA enabled us to test these two processes as explanations for failed value sharing in the high diversity groups (Meeussen, Schaafsma, et al., 2014): a lack of social bonding and/or a lack of social norming. Similar to low diversity groups, we found evidence of *social bonding* in high diversity groups: just like in low diversity groups, members created positive relations; and the creation of such relations was not affected by group members' ethnic backgrounds. Thus, our study did not support theoretical expectations derived from the social identity approach (Tajfel & Turner, 1979; Turner et al. 1987) and attraction research (Byrne, 1971), predicting that people from different ethnic backgrounds like each other less than people with similar ethnic backgrounds. Also, our findings differ from studies evidencing ethnic homophily in friendship relations (McPherson et al., 2001). A number of factors can underlie these differences: First, we studied small groups in which members were unable to choose what

group they would be in and they were unable to change groups, contextual characteristics that have been shown to reduce homophily effects (Hallinan & Smith, 1985; Leszczensky & Pink, 2015). Second, the fact that ethnic minority members were from so many different origins could have reduced ethnic homophily effects: since ethnic minority members within the high diversity groups had such different origins, they may not have felt a greater tendency to form positive relations with other minorities (of different origin) than with ethnic majority members. Third, participants in our sample were young and highly educated, and thus likely to be less prejudiced and more open to diversity than the general population (Wagner & Zick, 1995). Therefore, it is plausible that in less favorable intergroup contexts, social bonding may still constitute an additional barrier against sharing values in highly diverse groups. Further research is needed to examine how processes of social bonding and social norming differ across more or less privileged intergroup contexts.

While social bonding was similar in low and high diversity groups, *social norming* was not: In contrast to low diversity groups, we found no evidence of social norming in groups with higher levels of ethnic diversity. Thus, even though members created positive relations, they did not significantly share their relational or achievement values amongst each other. This finding is in line with the categorization-elaboration model which predicts that elaboration of information may be hindered in more diverse groups due to social categorization processes (van Knippenberg et al., 2004). Also, we can draw a parallel between this non-finding and critical contact studies exposing the limitations of positive contact in unequal intergroup contexts (Dixon et al., 2005; 2007; 2010). While positive relations among people from different ethnic backgrounds generally reduce prejudice (Pettigrew & Tropp, 2006), they do not increase majority support for inclusive policies; and they tend to reduce minorities' awareness of discrimination and their willingness to support collective action. Similarly, our findings suggest that within small, interactive groups, positive relations may not always come with real

social influence such that members from different ethnic backgrounds may contribute their values to the group and accommodate one another's values.

This latter finding also resonates with recent research about the inclusive accommodation of ethnic diversity (Jansen, Otten, Van der Zee, & Jans, 2014; Otten & Jansen, 2014) which distinguishes between two components of inclusiveness: belonging (i.e., strong relationships and pleasant interactions with other people) and authenticity (i.e., recognition and appreciation of one's personality, opinions, and skills). Our findings outline the importance of both these components and the potential difficulties in the authenticity component in the process of value sharing to create a shared identity in highly diverse groups.

There are a number of possible reasons for the lack of significant social norming in high diversity groups. First, social norming may not be present or it may be present but weaker than in low diversity groups and therefore not picked up by our analyses (which are relatively low in power). It would thus be interesting to investigate how interventions can enable or strengthen social norming in high diversity groups, for instance by increasing members' openness to different contributions and empowering members to express their values to the group (Plaut, 2010; Stevens, Plaut, & Sanchez-Burks, 2008). Such an inclusive group climate may be created by a multiculturalist diversity ideology that stresses the added value of ethnic differences (Meeussen, Otten, & Phalet, 2014; Plaut, 2010; Stevens et al., 2008). Second, there may be more variability in norming processes within high diversity groups as compared to low diversity groups. For instance, processes within the high diversity groups may be affected by the extent to which ethnic differences coincided with cultural differences between group members. Since ethnic minority members in our sample differed strongly in the number of years they lived in Belgium and in their country of origin, some ethnic minority members may be (perceived as) more similar to the majority culture or to each other than others. Also, the number of minorities within high diversity groups may play a role: On the one hand, it is

possible that our findings would be more pronounced in groups with very high diversity. On the other hand it is possible that us/them distinctions are made less when group members all have different ethnic background as compared to groups where there is a subgroup of ethnic majority members sharing the same background. This may also be an important factor in the influence of minority members: while a larger number of minority members would increase minority influence within a group, minority influence is reduced when minority members do not communicate one consistent point of view (Arbuthnot & Wayner, 1982). Since in our study, minority members within a group had different ethnic backgrounds, they may have had (or been perceived to have) different viewpoints, which would undermine their influence on the group. Future research should investigate further how 'super-diversity' – here in the sense of the internal differentiation of ethnic diversity - affects intergroup dynamics in diverse groups, as high diversity is a different reality in today's societies from the traditionally studied dual relationship between one minority and one majority group (Castles & Miller, 1993; Vertovec, 2007).

Conclusion

With this paper, we used the unique added value of social network analyses to contribute to our theoretical understanding of interactive group processes. In particular, LSNA allowed us to identify social bonding and social norming in enabling value sharing as a key feature of cohesive and successful groups. Moreover, by comparing these processes in groups with low and high diversity, we contribute to diversity research by unraveling the ill-understood processes that underlie potential costs of diversity (Lawrence, 1997; Moreland, 2013) and as such, inform targeted interventions to focus on facilitating social norming with a view to enable value sharing in groups with high ethnic diversity.

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TABLES

Table 1

Means, standard deviations, and multilevel reliability scores for relational and achievement values for each wave

	Wave 1		Wave 2		Wave 3	
	M (*SD*)	α[a]	*M* (*SD*)	α	*M* (*SD*)	α
Relational values	20.53 (2.98)	.67	19.67 (3.06)	.66	20.16 (3.30)	.76
Achievement values	20.87 (2.89)	.67	20.73 (2.99)	.75	21.02 (2.76)	.75

[a] We assessed multilevel reliability with items nested in people and people nested in groups (e.g., Nezlek, 2012)

Table 2

Longitudinal social network models: Descriptions of included effects

Nr.	Effect	Description
1	Constant liking rate (period 1)	Is there change in liking (positive relations) between wave 1 and wave 2?
2	Constant liking rate (period 2)	Is there change in liking between wave 2 and wave 3?
3	Outdegree (density)	Basic tendency to form positive relations (intercept)
4	Reciprocity	If person B likes person A, does person A also like person B?
5	Transitive triplets	If person A likes person B and B likes C, does A like C?
6	Three-cycles	If person A likes person B and B likes C, does C like A?
7	Balance	If person A and B like the same others, will they tend to like each other as well?
8	Number of actors at distance 2	Preference to like people via another person (Person A likes person B and person B likes others)
9	Outdegree activity (sqrt)	Do members who like many others have a tendency to like more over time?
10	Outdegree Trunc (1)	Is there a tendency not to like others?
11	Value alter	Are members with higher values liked more?
12	Value ego	Do members with higher values like more others?
13	Value similarity	Do members with similar values like each other more?
14	Ethnic alter	Are cultural majority members liked more?
15	Ethnic ego	Do cultural majority members like more others?
16	Ethnic similarity	Do members with the same cultural background like each other more?
17	Rate value (period 1)	Is there change in values between wave 1 and wave 2?
18	Rate value (period 2)	Is there change in values between wave 2 and wave 3?
19	Behavior value linear shape	General tendency of linear value change in the overall network
20	Behavior value quadratic shape	General tendency of value convergence/divergence in the overall network
21	Behavior value average similarity	Do members change their values to the values of members they like more?
22	Value effect from leader	Do leaders have a tendency to increase/decrease their values more than other members?

Table 3

Descriptive statistics: changes in values and positive relations and network densities

	Relational value change		Achievement value change		Tie change						Network density		
	Down	Up	Down	Up	0 → 0	0 → 1	1 → 0	1 → 1	Distance	Jaccard index	Wave 1	Wave 2	Wave 3
<u>Low diversity groups:</u>											0.64	0.67	0.75
wave 1 to wave 2	42	27	33	40	108	57	53	243	110	0.69			
wave 2 to wave 3	32	44	30	34	94	73	28	309	101	0.75			
<u>High diversity groups:</u>											0.68	0.63	0.71
wave 1 to wave 2	52	28	42	31	97	45	77	236	122	0.66			
wave 2 to wave 3	31	37	31	42	103	75	34	269	109	0.71			

Table 4

Longitudinal social network models: Estimated effects and standard errors

Nr.	Effect	Relational values		Achievement values	
		Low diversity groups	High diversity groups	Low diversity groups	High diversity groups
1	Constant liking rate (period 1)	3.53 (0.65)***	4.29 (0.70)***	4.28 (1.01)***	4.06 (0.72)***
2	Constant liking rate (period 2)	2.75 (0.40)***	3.01 (0.44)***	2.97 (0.45)***	2.97 (0.45)***
3	Outdegree (density)	1.19 (1.23)	-10.59 (3.05)**	1.10 (0.97)	-11.55 (4.43)**
4	Reciprocity	1.01 (0.37)**	0.97 (0.29)**	1.08 (0.33)**	1.03 (0.32)**
5	Transitive triplets	0.64 (0.16)***	-0.91 (0.39)*	0.59 (0.12)***	-1.04 (0.58)
6	Three-cycles	-0.57 (0.16)***	-0.06 (0.15)	-0.56 (0.12)***	-0.07 (0.18)
7	Balance		0.84 (0.23)***		0.93 (0.35)**
8	Number of actors at distance 2		0.82 (0.33)*		0.89 (0.43)*
9	Outdegree activity (sqrt)	-0.78 (0.47)	3.85 (1.22)**	-0.71 (0.36)*	4.24 (1.79)*
10	Outdegree Trunc (1)	-3.66 (1.32)**		-3.03 (0.93)**	
11	Value alter	-0.18 (0.09)	-0.002 (0.04)	-0.04 (0.09)	0.07 (0.06)
12	Value ego	-0.12 (0.08)	0.01 (0.04)	-0.03 (0.10)	0.05 (0.05)
13	Value similarity	6.84 (3.20)*	0.97 (0.98)	-1.84 (1.98)	-2.77 (1.84)
14	Ethnic alter	0.96 (5.54)	0.23 (0.15)	2.35 (4.32)	0.24 (0.17)
15	Ethnic ego	0.42 (5.58)	0.17 (0.15)	1.98 (4.37)	0.18 (0.16)
16	Ethnic similarity	-0.51 (5.62)	0.04 (0.15)	-1.96 (4.36)	0.04 (0.17)
17	Rate value (period 1)	27.91 (7.07)***	26.28 (9.37)**	37.96 (15.08)*	31.97 (9.61)**
18	Rate value (period 2)	21.48 (5.23)***	14.62 (2.86)***	8.44 (1.95)***	24.85 (9.20)**
19	Behavior value linear shape	0.04 (0.02)*	0.001 (0.03)	0.07 (0.03)*	0.05 (0.02)*
20	Behavior value quadratic shape	-0.004 (0.01)	-0.004 (0.01)	-0.06 (0.02)**	-0.01 (0.01)
21	Behavior value average similarity	3.86 (1.32)**	1.61 (1.10)	-1.57 (1.60)	-0.56 (1.31)
22	Value effect from leader		0.13 (0.07)*		

***p < 0.001 **p < 0.01 *p < 0.05
Empty cells indicate that effects were not included as they did not improve the model