Men, Women, and Leadership Centralization in Groups Over Time

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The authors propose a model for predicting the emergence of group norms from the demographic composition of groups. They use this model to study gender and leadership centralization in groups over time. Results from 2 longitudinal studies were consistent with their predictions: (a) Women, more than men, preferred equality norms in groups; (b) all-male and majority-male groups had relatively centralized leadership structures; (c) all-female groups had relatively decentralized leadership structures; and (d) balanced and majority-female groups were relatively centralized at the onset of group interaction but decreased in centralization over time.

Much research and theory has addressed how being male or female influences an individual's chance of emerging as a leader in a small group or team (cf. Carli & Eagly, 1999; Eagly & Karau, 1991). Little is known, however, about how the sex composition of a group influences its emergent leadership structure: that is, whether a group develops a more centralized structure, whereby leadership is concentrated in one or a few group members, or a more decentralized structure, whereby leadership is shared among members (e.g., Pearce & Sims, 2002). This is an important issue to understand, as centralized structures have been linked to lower levels of group cohesion (Widmeyer, Brawley, & Carron, 1990), satisfaction (Porter & Lawler, 1964), and performance (e.g., Bloom, 1999; Janis, 1989) and to higher levels of tardiness, absenteeism, and turnover (Durand, 1985; Spink & Carron, 1992). Moreover, conventional wisdom and some theories suggest that a group's leadership structure is shaped by its sex composition.

This article represents one of the first contributions to this endeavor. We propose a *dominant norms* model of how a group's sex composition determines its leadership centralization, both early in its development and over time. This model is based on the idea that individuals with different social characteristics and backgrounds prefer different interaction norms in groups. It considers these preferences, along with differences in status between the social groups in question, to predict which norms will initially and eventually dominate group interaction. We test the model with two longitudinal studies of groups with different sex compositions.

Predicting Leadership Centralization in Groups

We define leadership centralization as the degree to which control over group activities is concentrated in one group member. This conceptualizes leadership centralization as reflecting a pyramid-shaped distribution of power, such as those observed in organizations (e.g., the power between managers and subordinates). Centralization is higher the larger the distance in control between the lead member and the other members of the group. Accordingly, a four-person group with one leader and three followers is more centralized than a four-person group with three members who share the re-

sponsibility of leadership and one member who carries out their wishes, even though the distance between the highest and lowest levels of control held in the group may be the same.

How might a group's sex composition determine its leadership centralization? Current work on gender and leadership in groups focuses on how sex influences an individual's likelihood to emerge as a leader (cf. Carli & Eagly, 2001). It does not address the question of how the sex composition of a group influences its leadership *structure*. To best address this group-level question, we believe it is important to consider group members' preferences for leadership centralization, and how these preferences might combine and interact when group members work together over time. We outline a dominant norms model to study leadership centralization in groups that takes into account these preferences. Though the model can be used to address how group composition based on other characteristics (e.g., ethnic or cultural) determines a variety of norms and structures that define groups (e.g., individualism and collectivism, division of labor, information-sharing norms, and communication norms), we focus on its application to sex composition and leadership centralization.

It has been suggested that groups of men and groups of women have different norms and patterns of interaction: namely, that groups of men are marked by more centralized patterns of interaction and that groups of women have more egalitarian styles of communicating (e.g., Aries, 1976; Piliavin & Martin, 1978). Why might this be the case? Existing explanations focus on sex differences in personality or social roles (for a review, see Berdahl, 1996). For example, men are (or are expected to be) agentic—independent, competitive, aggressive, and dominant. Women are (or are expected to be) communal in orientation—dependent, caring, passive, and warm. It is not clear, however, how a group of agentic individuals would necessarily have more centralized patterns of interaction than a group of communal ones. Centralization requires that a majority of members (or all but one) yield to a leader, or act communally. Equality requires that all members take responsibility for the group and lead to some extent, or act both agentically and communally.

We suggest that a better explanation than individual differences is that men and women have different preferences for how power is distributed and shared within groups. Research suggests that men are more likely to prefer centralization and inequality than women. Studies of social dominance orientation, for example, report that men endorse social inequality more than women (Pratto et al., 2000; Sidanius, Pratto, & Bobo, 1994). Men tend to support policies that favor social hierarchy, whereas women favor social equality and communality (Pratto, Sidanius, Stallworth, & Malle, 1994). Further, men tend to favor equity norms, which reward individuals for their contributions to a group, and women tend to favor equality norms, which emphasize equal outcomes for group members regardless of their contributions (e.g., Watts, Messé, & Vallacher, 1982). Equity norms tolerate and often facilitate inequality and social hierarchy, whereas equality norms do not.

An explanation for emergent leadership structures based on members' preferences for these structures shifts the focus of causation from an explanation based on additive, independent individual behavior toward one based on collective group expectations. That is, rather than asking how individuals of Type A will behave, how individuals of Type B will behave, and how these individuals' behaviors "add up" to define group behavior, our approach requires an analysis of how individuals of Type A and Type B wish and expect the *group* to behave, and how these desires and expectations combine to shape group interaction.

Preferences for certain group structures should affect these structures through the development of group norms. In particular, sex differences in preferences for equality should produce centralized patterns of leadership in all-male groups and relatively decentralized patterns of leadership in all-female groups. If group members believe that men and women differ in their preferences for equality, they will base their expectations for leadership centralization in their group at least in part on the sex of their group members. This seems likely, as research shows that men are associated with hierarchies and women are associated with egalitarian structures (Schmid Mast, 2004). Groups of men should therefore prefer and expect more

centralized patterns of leadership than groups of women, and these preferences and expectations should, in turn, lead groups of men to have more centralized leadership than groups of women. Patterns of leadership that reflect these preferences are likely to emerge as members with similar backgrounds (i.e., sex) implicitly agree on norms for the group (Gersick & Hackman, 1990; Hackman & Morris, 1975). Centralized leadership in groups of men and decentralized leadership in groups of women are likely to go unchallenged if these structures reflect members' preferences (Bettenhausen & Murnighan, 1985; Gersick & Hackman, 1990). If a member does try to challenge them—such as being dominating in a group of women or challenging the leader in a group of men—the member is likely to be ignored, undermined, or openly criticized by the rest of the group, making the preferred social arrangement explicit and protecting it (Blau & Scott, 1962; Dittes & Kelley, 1956; Homans, 1950).

What do men's and women's different preferences for leadership centralization imply for mixed-sex groups? We suggest that women are more likely to adopt men's preferences than vice versa at the onset of group interaction, making leadership patterns in mixed-sex groups resemble those of all-male groups more than those of all-female groups. Women are more likely to adopt men's preferences than men are to adopt women's because women are more able and motivated to do so. They are more able because, to a greater degree than men, women must operate in both female-dominated and male-dominated (in power, numbers, or both) domains, the latter of which include most public realms (e.g., business, politics, entertainment, the media, church, and military). This is analogous to the way in which ethnic minorities are more likely than ethnic majority members to have to understand and operate in both ethnic minority and majority cultures (de Anda, 1984; Hondagneu-Sotelo, 2001). Women are likely to be more motivated than men to learn and engage in other-sex norms because of sex differences in power. Learning men's preferences and perspectives may grant women access to valuable resources that are primarily controlled by men (S. T. Fiske, 1993; Miller, 1986) and to higher levels of social status associated with male-dominated realms and identities (cf. Carli

& Eagly, 2001; Eagly, Wood, & Diekman, 2000; Earley, 1999; J. E. Williams & Best, 1990).

Supporting the notion that women more than men follow other-sex norms in mixed-sex groups, one study found that female newcomers to majority-male groups fit in with their groups better than male newcomers to majority-female groups (Arrow, 1998). In addition, women in mixed-sex groups engage in lower levels of socioemotional behavior than women in all-female groups (Eagly & Karau, 1991), suggesting that women adhere to more masculine norms in the presence of men than in the presence of other women. In an interesting study displaying the potential generalizability of this concept of biculturation in groups, Chatman and Barsade (1995) found that in the United States, collectivists, who tend to be outnumbered by individualists and lower in status, more readily adapted to individualistic norms in groups than individualists adapted to collectivistic norms in groups.

On the basis of this reasoning, we hypothesize that women are more likely than men to conform to other-sex preferences for leadership centralization in groups. We predict that in the early stages of group interaction, mixed-sex groups have levels of leadership centralization similar to those of all-male groups, because this is the easiest path for groups to follow.

> *Hypothesis 1:* In the early stages of group interaction, all-male and mixed-sex groups will be similarly centralized with respect to leadership and more centralized than all-female groups.

In mixed-sex groups, the dissonance between female members' preferences for decentralized leadership structures and the centralized patterns that initially emerge should cause leadership to become less centralized in mixed-sex groups over time. Consistent with Berry's (1980) concept of cultural integration, groups may integrate their members' preferences over time so that eventual group structures begin to reflect an average of member preferences. Members of the group may grow more comfortable voicing their preferences as they become familiar with each other (Eagly & Karau, 1991).

Furthermore, social cues in mixed-sex groups with a significant number of women in them are likely to reveal a preference for less centralized group activity. If mixed-sex groups are initially marked by centralized leadership consistent with men's preferences, we predict they become less centralized over time in proportion to the number of women in the group.

> *Hypothesis 2:* Over time, mixed-sex groups with fewer men in them will have less centralized leadership structures than mixed-sex groups with more men in them.

Figure 1 graphically illustrates the dominant norms model and its predictions for emergent group norms or structures, initially and over time, based on the proportions of members from different social categories in a group. If individuals from Social Category A, for example, prefer Norm or Structure X, whereas individuals from Social Category B prefer Norm or Structure Y, and Social Category A is higher in status or power than Social Category B, then groups with any members from Social Category A will initially adopt Norm/Structure X. Only groups composed entirely of individuals from Social

Category B will adopt Norm/Structure Y. Over time, however, groups will come to reflect an average or blend of preferences represented by members in the group.

Though a few studies have examined how sex composition influences the shape or stability of social hierarchies at the group level, most have compared only all-male and all-female groups or majority-male and majority-female groups (e.g., Anderson, John, Keltner, & Kring, 2001; Savin-Williams, 1979; Schmid Mast, 2002; Walker, Ilardi, McMahon, & Fennell, 1996). Same-sex and mixed-sex group leadership structures have therefore not been compared in the same study, which is necessary to test our predictions. In Study 1, we compared leadership centralization in all-male, all-female, and balanced groups over 3 weeks. In Study 2, we compared leadership centralization in majority-male, majority-female, and balanced groups over 10 weeks and also examined the effects of centralization on group performance. Owing to practical considerations, we could not compare groups of all five sex compositions (all male, majority male, balanced, majority female, and all female) with each other in the same study;
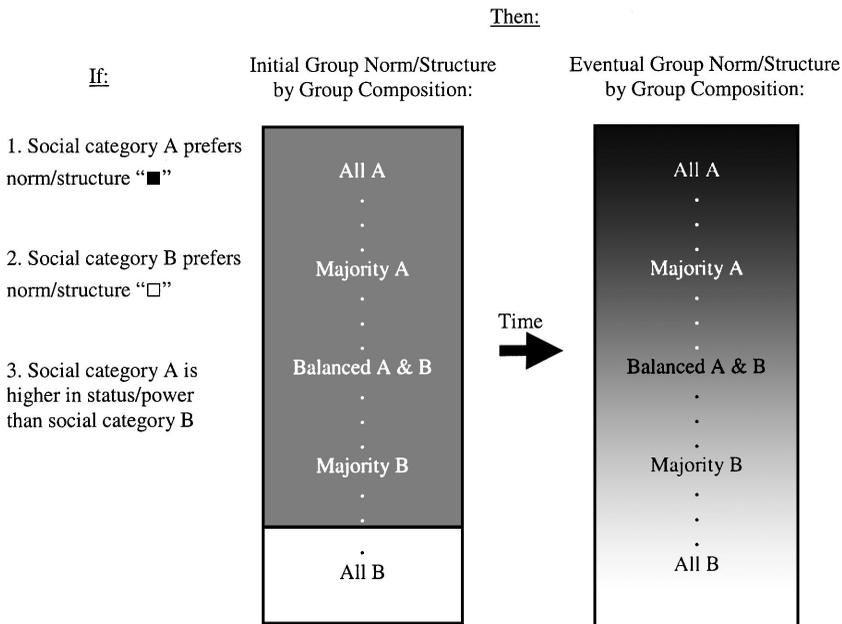

Figure 1. The dominant norms model.

however, our studies' designs still allowed us to test all of our hypotheses.

Study 1

Method

Participants

One hundred nine undergraduate students (59 men and 50 women) in an introductory psychology course at a large Midwestern university participated as part of their course requirements. Participants ranged in age from 17 to 25, with an average age of 18.5. Eighty percent of the students were Caucasian, 9% were Asian, and 6% were Latino. The remaining 5% included African Americans and students from India and the Philippines.

Procedure

Participants arrived in groups of approximately 12 and were given an overview of the experiment. They were told the study was designed to examine how groups working on creative projects carry out their activities and that they would be assigned to small groups that would meet over 3 weeks to invent and promote an environmental organization. In the 1st week's meeting, groups chose an environmental cause, outlined their main goals, and named their organization. In the 2nd week's meeting, groups designed T-shirts, bumper stickers, and buttons to promote their cause. In the 3rd week, groups planned an opening event to raise funds, draw members, and promote their organization. The project was designed to be gender neutral. As evidence for this, a separate sample of 95 judges agreed with the item "Men and women are equally likely to have the skills necessary to complete this task" ($M = 5.99$, $SD = 1.51$, on a 7-point scale from $1 = $ *disagree strongly* to $7 = $ *agree strongly*).

After completing a background questionnaire, participants were randomly assigned to groups to create 11 balanced groups, each with 2 women and 2 men, as well as 8 all-female and 10 all-male groups with 3 to 5 members each. Groups worked on their projects for approximately 25 min. After each session, members completed a posttask questionnaire about their group's interaction.

Measures

Preference for equality. The background questionnaire asked participants to rate how important four equality-related principles and practices were for their ideal company's culture (from $1 = $ *not at all important* to $7 = $ *very important*), such as "treating people in the company as equally as possible" and "special privileges for the most important people in the company—parking places, stock options, and so forth" ($\alpha = .61$, $M = 19.74$, $SD = 3.74$). Because participants engaged in an organizational simulation, their ideal company culture seemed the appropriate target.

Leadership centralization. The posttask questionnaire asked members to indicate how much each member led the group's activities that day (from $1 = $ *not at all* to $7 = $ *a great deal*). Within-group interrater agreement on leader behavior, r_{wg} (James, Demaree, & Wolf, 1993), ranged from .75 to .79 in the 3 weeks of the study, indicating that group members agreed about how much each member led the group's activities each week. There were no significant differences in r_{wg} by week or sex composition. A leadership score was calculated for members each week by averaging all ratings given to them on this item.

Leadership centralization is the degree to which control over group activities is concentrated in one group member. Leadership centralization was calculated by taking the sum of the differences between the highest member's leadership score and each of the other (nonhighest) members' scores and dividing this sum by its maximum possible value given the size of the group. This index therefore accounts for group size and ranges from 0 (completely decentralized: all members have the same scores) to 1 (completely centralized: one member has a score of 7 and all others have scores of 1). If two (or more) members of the group had the highest score (e.g., each scored 7), the same formula applied: One member's score was used as the high comparison, and the other members' scores (even those whose scores were identical to the high comparison) were subtracted from it; these differences were summed; and this sum was divided by its maximum possible value, for example: $[(7 - 7) + (7 - 5) + (7 - 4)] / [3 * (7 - 1)]$.

Results

Preference for Equality

There were highly significant sex differences in preference for equality in participants' "ideal" companies, $F(1, 107) = 13.62$, $p < .001$, Cohen's $d = 0.71$. Women preferred equality ($M = 4.70$, $SD = 0.69$) significantly more than men ($M = 4.14$, $SD = 0.87$), supporting our assumption that men and women differ in their preferences for equality norms in groups.

Leadership Centralization

We conducted repeated measures analyses of variance (ANOVAs) on leadership centralization with sex composition as the independent variable and week as the repeated measure. Owing to the small sample size imposed by group-level analyses (29 groups, with 8 to 11 groups in each condition) we used one-tailed tests for our directional group-level hypotheses. Week and sex composition did not interact, $F(2, 26) = 0.88$, *ns*. There was a main effect for week, $F(2, 26) = 4.47$, $p < .05$: Groups decreased in centralization over time (see Figure 2). There was also a main effect for sex composition, $F(2, 26) = 2.79$, $p < .05$. Consistent with Hypothesis 1, planned contrasts revealed that all-male ($M = .22$, $SD = .31$) and mixed-sex (balanced) groups ($M = .21$ $SD = .11$) were similarly centralized in Week 1 and were more centralized than all-female groups ($M = .13$, $SD = .08$), $t(1, 27) = 2.16$, $p < .05$, Cohen's $d = 0.81$. Hypothesis 2 predicted that over time, mixed-sex groups with fewer men in them have less centralized leadership structures than mixed-sex groups with more men in them. Consistent with this, balanced groups ($M = .07$, $SD = .10$) were significantly less centralized than all-male groups ($M = .18$, $SD = .10$) by Week 3, $t(2, 26) = 2.28$, $p < .05$, Cohen's $d = 1.08$, having begun similarly centralized and decreasing in centralization over the weeks.

Discussion

The results of this study are consistent with our dominant norms model, which makes predictions on the basis of sex differences in preferences for equality. Supporting the premise of these predictions, women more than men described their ideal companies as having egalitarian cultures. Consistent with these preferences, all-female groups developed less centralized patterns of leadership than all-male groups. Consistent with the idea that women's preferences for equality become integrated in mixed-sex groups over time, centralization decreased in balanced groups, which initially resembled
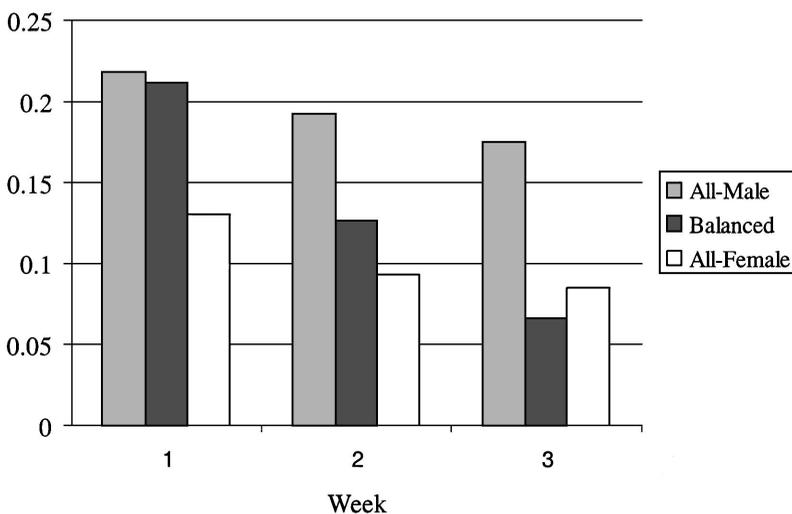

Figure 2. Leadership centralization by sex composition and time, Study 1.

all-male groups and then became less central-
ized than all-male groups by Week 3.

We conducted a second study to build on and
complement this first one. We had three main
goals for Study 2: (a) to examine majority-sex
groups, which we were unable to include for
practical reasons in Study 1; (b) to observe
groups that more closely resembled real work
groups; and (c) to replicate the finding that
centralization negatively relates to group perfor-
mance (e.g., Bloom, 1999; Janis, 1989). To
accomplish the second objective, we examined
groups that (a) worked on a project with more
meaningful consequences for group members;
(b) worked on a more demanding project whose
quality was likely to improve the harder each
member worked on it; (c) were more autono-
mous, deciding how often and how long to meet
and work on the project; and (d) worked to-
gether over a substantially longer period of
time.

Study 2

Method

Participants

Participants were 169 undergraduate students
(85 men and 84 women) enrolled in an intro-
ductory organizational behavior course at a
large West Coast university. Students ranged in
age from 18 to 40, with an average age of 21.72.
Forty-six percent of the students were Asian,
35% were Caucasian, 6% were East Indian, 4%
were Latino, 3% were African American, and
5% identified themselves as "other."

Procedure

Students were randomly assigned to 4-person
groups in the 5th week of class during a 15-
week semester. A few students dropped and
added the course after groups were assigned,
resulting in 16 majority-male (one with 3 mem-
bers and another with 5), 12 balanced, and 13
majority-female groups (one with 3 members).

As part of the regular course requirements,
groups were asked to study an organization of
their choice. Groups turned in project propos-
als 9 days after they were formed, presented
their projects to the class 7 and 8 weeks later,

and turned in their project papers 10 weeks after
formation (in the last week of the semester).

In the 1st week of the semester, students were
told their groups would be studied for research
purposes but that their participation was volun-
tary and would in no way affect their course
grade. Students agreeing to participate signed
informed-consent forms. No students declined
to participate. Participants completed a back-
ground questionnaire prior to group formation,
Group Questionnaire 1 nine days after groups
were formed, and Group Questionnaire 2 when
groups turned in their project papers.

Measures

Preference for equality. The background
questionnaire asked participants to rate their
preferences for various norms in work groups
(from 1 = *very undesirable* to 7 = *very desir-
able*). Four items measured the degree to which
they valued equality between group members
($\alpha = .79$, $M = 21.51$, $SD = 4.14$), for example,
"Group members all have equal status."

Leadership centralization. We calculated
leadership centralization the same way as in
Study 1, from members' ratings of how much
each member led the group's activities (from
1 = *not at all* to 5 = *completely*). Within-group
interrater agreement on leadership was very
high ($r_{wg} = .92$ and $.88$ at Times 1 and 2,
respectively), indicating consensus among
group members regarding the degree to which
each member led the group. As in Study 1, there
were no significant differences in r_{wg} by week
or sex composition.

Group performance. The course instructor
graded group project papers on a scale of 0 to
100 points ($M = 91.62$, $SD = 13.87$). These
grades were used to measure group
performance.

Results

Preference for Equality

There were significant sex differences in
preference for equality in work groups, $F(1,
136) = 7.75$, $p < .01$, Cohen's $d = 0.47$. As in
Study 1, women ($M = 5.62$, $SD = 0.95$) more
than men ($M = 5.14$, $SD = 1.07$) described

their ideal work groups as having equality between group members.

Leadership Centralization

As in Study 1, we ran repeated measures ANOVAs on leadership centralization with sex composition as the independent variable and week as the repeated measure. Again, because of the small sample size imposed by group-level analyses (41 groups, with 12 to 16 groups in each condition), we used one-tailed tests for our directional group-level hypotheses. There was a significant interaction between sex composition and time on leadership centralization, $F(2, 38) = 3.85$, $p < .05$ (see Figure 3), but there were no main effects: sex composition, $F(2, 38) = 2.07$, ns; time, $F(1, 38) = 0.72$, ns. Consistent with Hypothesis 1, there were no statistically significant differences between mixed-sex groups in centralization at Time 1. Consistent with Hypothesis 2, over time, mixed-sex groups with fewer men in them had less centralized leadership structures than mixed-sex groups with more men in them. Planned contrasts revealed that at Time 2, majority-male groups ($M = .35$, $SD = .10$) were more centralized than majority-female groups ($M = .23$, $SD = .13$), $t(2, 40) = 2.31$, $p < .05$, Cohen's $d = 0.99$. Majority-female groups decreased in centralization over time, though this

change was not significant. Balanced groups did not differ significantly from either majority-male or majority-female groups in sex composition at Time 2. The increase in centralization in balanced groups seen in Figure 3 was not significant.

Group Performance

Group performance was negatively correlated with leadership centralization ($r = -.41$, $p < .000$). To see whether sex composition had any direct effects on group performance, we conducted repeated measures ANOVAs with sex composition as the independent variable and time as the repeated measure. There was no effect for sex composition on performance.

Discussion

As in Study 1, these results are largely consistent with the dominant norms model, which makes predictions on the basis of sex differences in preferences for equality in groups. Supporting the premise of these predictions, women favored equality significantly more than men. There were no significant differences in leadership centralization between majority-male, balanced, and majority-female groups at Time 1, as predicted by Hypothesis 1. At Time 2, majority-male groups were more centralized than major-
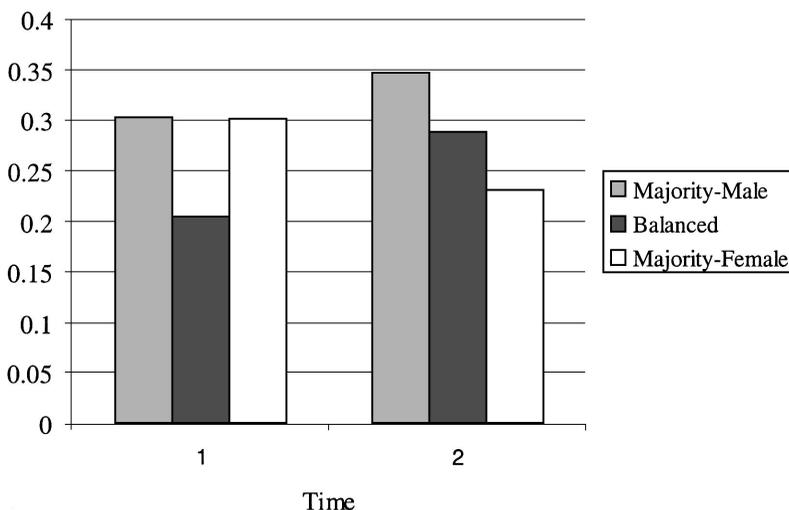

Figure 3. Leadership centralization by sex composition and time, Study 2.

ity-female groups, as predicted by Hypothesis 2. Hypothesis 2, based on the premise that women prefer equality more than men and the idea that these preferences become integrated in mixed-sex groups over time, predicted that balanced groups fall between majority-male and majority-female groups in centralization at Time 2. They did (see Figure 2) but did not significantly differ from either type of majority group.

This study showed that leadership centralization was negatively related to group performance. Groups worked on a demanding project whose quality was likely to improve the harder all members worked on it. The quality of performance on this project apparently suffered when leadership was highly centralized and a majority of group members did not actively engage in leading, or possibly contributing to, the group's efforts.

General Discussion

Despite the large amount of literature on sex and emergent leadership in groups, little is known about how sex composition shapes the *distribution* of leadership in a group. We presented a model that makes predictions for leadership centralization in groups over time and conducted two longitudinal studies of groups to test it. Study 1 included all-male, all-female, and balanced (half male, half female) groups that met for 3 weeks. Study 2 included majority-male, majority-female, and balanced groups that worked together over 10 weeks.

The results of these two studies are largely consistent with the ideas that women more than men prefer equality in groups, that women are more likely than men to adapt to other-sex preferences at the onset of group interaction, and that over time, group structures reflect an average of member preferences. Equality was preferred more by women than by men in both studies. In Study 1, all-male groups were more centralized than all-female groups across the 3 weeks of the study, and balanced groups resembled all-male groups in Week 1 and all-female groups in Week 3. In Study 2, majority-male, balanced, and majority-female groups were similarly centralized at Time 1, but majority-male groups were significantly more centralized

than majority-female groups at Time 2, with balanced groups falling in between.

Instead of treating the emergence of a group-level leadership structure as the additive combination of individual leadership behavior, the dominant norms model treats it as a function of individual preferences for leadership structures. We reasoned that initial leadership structures should reflect the preferences of the higher status social category represented in the group (men), because members of the lower status one (women) are more able and willing to adapt to these norms and preferences. However, we reasoned that over time, structures reflect an average of member preferences in the group. Our results are largely consistent with these predictions. Future research should examine whether an averaging phenomenon always takes place or whether it is more likely to occur in small (e.g., four-person) groups than in large groups, where awareness and integration of each member's preferences may be more difficult to obtain.

Consistent with prior research (e.g., Bloom, 1999; Janis, 1989), we found evidence in Study 2 that leadership centralization is negatively related to group performance. The groups in this study worked on additive tasks (Steiner, 1972) for which performance was likely to be better the more each member of the group contributed to the project. Centralized leadership was thus likely to hurt performance on these tasks if it meant few members actively contributed to, and led, the group's activities. Centralized leadership seems likely to hurt performance for groups engaged in other types of tasks, such as brainstorming (e.g., Stroebe & Diehl, 1994; Sutton & Hargadon, 1996), judgment (e.g., Laughlin & Ellis, 1986), and decision making (e.g., Janis, 1989). In some contexts, however, a high level of centralization might be an effective way to organize group activities and might improve performance in groups requiring a lot of coordination and planning (e.g., large groups or groups working on complex tasks). Studies are needed that more explicitly explore the effects, and consequences, of task types and group size on emergent leadership structures in groups.

Prior research also suggests that centralized leadership leads to higher levels of tardiness,

absenteeism, and turnover (Durand, 1985; Spink & Carron, 1992) and to lower levels of group cohesion (Widmeyer et al., 1990) and satisfaction (Porter & Lawler, 1964). Future research into the effects of leadership centralization should also examine its effects on these and other member support and group well-being outcomes (Hackman & Morris, 1975; McGrath & Gruenfeld, 1993).

Limitations

The two studies differed in several respects, making direct comparisons between them somewhat difficult. Study 1 consisted of laboratory groups of students participating for research credit that worked on a finite task each week for 3 weeks. Study 2 consisted of student groups working on a project over 10 weeks that substantially affected their course grades. Motivation is likely to have differed across the studies, and these differences may have yielded different meanings to leadership in the groups. For example, it may have been less meaningful to lead a group in Study 1 than in Study 2 and more stressful to lead a group in Study 2 than in Study 1.

The populations of students differed between the two studies. Most notably, students in Study 1 were primarily White, whereas there were more Asian American than White students in Study 2. We nonetheless expect these differences between the samples to play little role in our ability to test the predictions for groups with different sex compositions. Men and women differed in predicted ways in both samples with respect to their preferences for equality. In addition, consistent with research showing that sex is more readily used than race to categorize individuals (A. P. Fiske, Haslam, & Fiske, 1991; Stangor, Lynch, Duan, & Glass, 1992; van Knippenberg, van Twuyver, & Pepels, 1994), it is likely that sex was more salient to participants than race and thus played a larger role in defining social category status and expectations for individual preferences.

Our studies each compared groups of three different sex compositions, though it would have been ideal to include all five in one study. Future research needs to examine all five sex compositions in one study (all-male, all-female, majority-male, majority-female, and balanced

groups), though this is difficult to accomplish owing to the high number of research participants required for the appropriate group-level analyses.

Further, both studies could have been improved by using multiple measures of the dependent variable. Leadership was measured with a single item, but it was measured for each individual by an average of four different raters (each different group member) and there was high within-group interrater agreement on leadership. Future work, however, should try to include multiple measures of the construct.

The scales used to rate preference for equality and individual leadership in the group differed between the studies. In Study 1, participants rated preference for equality for their ideal company; in Study 2, they did so for their ideal team. Preference for equality was lower in Study 1 than in Study 2, perhaps because people are more likely to tolerate inequality at a large organizational level than at a small group level. With respect to leadership, group members in Study 1 rated each other on a scale of 1 to 7; in Study 2, they did so on a scale of 1 to 5. This inflated centralization values in Study 2 relative to Study 1 because steps between ratings in Study 2 were larger. For example, if the members of a four-person group in Study 1 received ratings of 7, 6, 5, and 4 and in Study 2 received ratings of 5, 4, 3, and 2, centralization would be .33 in Study 1 and .50 in Study 2. Therefore, the relative values of centralization between studies cannot be compared, though the relative values of centralization within studies can be.

Our model of leadership centralization assumes that groups are free to develop their own leadership structures and are working on tasks that allow this flexibility. This difference between groups with men in them and groups with only women in them may be tempered or overridden if situational demands compel a particular leadership structure, as when a leadership structure is imposed on the group or a group works on a task strongly associated with male skills and norms (e.g., a survival simulation), a task strongly associated with female skills and norms (e.g., discussing child care), or a task that clearly calls for a leader (e.g., war) or implies equality (e.g., friendship).

Conclusion

This research adds to the literature on diversity in groups by exploring the "black box" (Lawrence, 1997) of group processes that may account for why—and how—some demographic characteristics matter for some group processes and outcomes. Our studies revealed that men and women differed in their preferences for equality in groups. Many studies of diversity assume that demographics are related to underlying skills, personalities, and values, but few actually measure these deep-level characteristics to see whether these assumptions are correct (for discussions, see Harrison, Price, & Bell, 1998; McGrath, Berdahl, & Arrow, 1995). We found evidence that these sex differences influenced leadership centralization in groups. It is important to note that we found that sex composition influenced leadership centralization and that leadership centralization predicted performance. Sex composition had no direct effects on group performance. This further underlines the importance of studying how diversity in groups may influence group structures and processes, and how these, in turn, influence performance and other outcomes.

In addition to moving beyond direct effects toward process models of diversity, researchers are beginning to move beyond studying mere difference. Early research on diversity treated alternative differences equivalently (e.g., age, sex, and ethnicity), which inhibited the ability to explain different results for different social categories (cf. K. Y. Williams & O'Reilly, 1998). Researchers are now beginning to consider the histories and meanings of differences as they are reflected in the different status, stereotypes, and perspectives associated with different social groups. The dominant norms model could be useful in this endeavor. It can be used to study a variety of group compositions, norms, and outcomes. By considering how different demographic groups (e.g., cultures, generations, and socioeconomic classes) differ in their preferences for social norms and structures (e.g., formality, individualism and collectivism, or uncertainty avoidance) and by considering the relative status and power of these groups, one can anticipate which norms develop in groups over time from their demographic com-position. If these norms affect group outcomes, predictions can be made for those as well.

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