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There is a growing belief among managers that ethnic diversity, when well managed, can provide organizations with certain competitive advantages. But the belief in this value-in-diversity hypothesis rests largely on anecdotal rather than empirical evidence. Results are reported of a controlled experimental study that compares the performance on a brainstorming task between groups composed of all Anglo-Americans with groups composed of Anglo-, Asian, African, and Hispanic Americans. The particular brainstorming task used—The Tourist Problem—was chosen for its relevance for diversity along the dimension of ethnicity. The ideas produced by the ethnically diverse groups were judged to be of higher quality—more effective and feasible—than the ideas produced by the homogeneous groups. Members of homogeneous groups reported marginally more attraction to their groups than did members of diverse groups. Directions for future research with respect to the degree of diversity, the nature of the task, and group process are discussed.

ETHNIC DIVERSITY AND CREATIVITY IN SMALL GROUPS

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A prominent theme has emerged in recent writings on ethnic diversity that companies should learn to manage diversity not only because of the inevitable demographic trends (Johnston, 1991; Johnston & Packer, 1987) but also because of diversity's potential as a source of competitive advantage (Copeland, 1988; Cox &

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Blake, 1991; Thomas, 1990). This theme, called here "value-in-diversity," rests on a hypothesis that ethnic diversity, at least when properly managed, produces tangible, positive effects on organizational outcomes. Support for this hypothesis has been largely anecdotal and extrapolated from research on other dimensions of diversity (e.g., Walker & Hanson, 1992). However, very little empirical work testing this value-in-diversity hypothesis has been published (Cox, 1991; Cox & Blake, 1991). A recent exception is a study by Watson, Kumar, and Michaelsen (1993) showing that during early stages of group development, ethnically homogeneous groups perform better than heterogeneous groups. However, these between-group differences converged over time, with heterogeneous groups eventually scoring higher than homogeneous groups on some specific measures. The current study adds further to this literature by examining in a controlled laboratory setting the effects of ethnic diversity on idea generation in small groups.

Jackson (1992) and Cox and Blake (1991) suggest that ethnic diversity may be related to increased organizational creativity and flexibility. Cox and Blake argue further that the insights and sensitivities brought by people from varying ethnic backgrounds may help companies to reach a wider variety of markets. Following this argument, we might expect that groups heterogeneous with respect to ethnic background of the members would be especially effective at tasks, such as the penetration of certain markets, which expressly draw on the diversity of ethnic perspectives.

This line of reasoning is supported by previous research showing that cultural background and ethnic identification play a major role in consumer behavior (e.g., O'Guinn, Faber, Curias, & Schmitt, 1989; Tse, Lee, Vertinsky, & Wehrung, 1988). Because culture and ethnic identification are interrelated and both have been found to be relevant to consumption patterns, ethnically diverse groups might be better positioned than homogeneous groups to plan strategies to appeal to diverse markets. Therefore, in the current study, we employed an experimental task involving an appeal to diversity of ethnicity.

THEORETICAL BACKGROUND

One of the key arguments underlying the research on the effects of group member heterogeneity is that the variety of perspectives and experiences represented on heterogeneous teams contributes to the production of high-quality ideas. Moreover, the variety in perspectives can stimulate further idea production by group members. Kanter (1968) refers to this notion as "kaleidoscope thinking"—twisting reality into new patterns and rearranging the pieces to create a new reality (p. 11). Having contact with people from a variety of perspectives is one condition necessary for kaleidoscope thinking. The research showing the stimulation of creativity in groups resulting from the influence of minority opinion (e.g., Moscovici, 1985; Nemeth, 1992) is based on similar ideas. According to Nemeth, for example, "Minority dissent appears to stimulate exactly what theorists have recommended for improved performance and decision making, that is, a consideration of the issue from multiple perspectives" (p. 101).

There is consistent empirical support for this argument (for reviews, see Jackson, 1992; McGrath, 1984). Hoffman and Maier (1961), for example, found groups that were heterogeneous in personality and gender produced higher quality problem solutions on several problem types than did homogeneous groups. Triandis, Hall, and Ewan (1965) reported that, when dyad members were similar to each other in their ability to produce ideas, heterogeneity in social attitudes (e.g., religious conformity, criticism of social institutions) led dyads to produce solutions to various social problems that were judged higher in originality and practicality than the ideas produced by homogeneous dyads. Dissimilarity in this ideational ability led to lower quality idea production. Several studies have shown that groups whose membership changes over time, thus maintaining heterogeneity, are more creative and innovative than groups with fixed membership (King & Anderson, 1990; Pelz & Andrews, 1966; Ziller, Behringer, & Goodchilds, 1962).

Demographic heterogeneity within top management teams has been shown to be related to firm innovativeness. Murray (1989), in a field study that spanned several industries, found that firms with

heterogeneous top management teams (on the variables age, organizational tenure, functional area, and education) were more adaptive than were firms with homogeneous top management teams. In another field study, using similar measures of heterogeneity, Bantel and Jackson (1989) also found that heterogeneity of the top management teams in a sample of banks was positively associated with bank innovativeness.

Thus both laboratory and field studies have shown that heterogeneity among group members with respect to age, tenure, education, and functional area is related to group and organizational creativity, adaptability, and innovation. Zenger and Lawrence (1989) noted, however, that the influence exerted by various dimensions of demographic heterogeneity may not be equivalent. Thus the current study was motivated in part by an interest in testing whether heterogeneity of ethnicity would also enhance group creativity.

There is empirical evidence that variations in ethnic background are associated with variations in perspectives, attitudes, and behaviors. Using data collected in more than 40 nations, Hofstede (1980) has shown that people of different ethnic backgrounds hold distinctly different "world views," as measured by the dimensions of individualism-collectivism, masculinity-femininity, power distance, and uncertainty-avoidance. Although Hofstede's work focused on nationality, other research has shown that despite gradual assimilation to the prevailing dominant culture, many members of ethnic minority groups retain strong identification with the traditions of their root cultures. In a review of nine studies on assimilation in Hispanic Americans, Asian Americans, African Americans, and American Indians, Cox (1993) found that the percentage of persons in these groups who strongly identified with ethnic traditions of their ethnic group ranged from 40% to about 90%.

Other researchers have found that differences along Hofstede's (1980) dimensions, especially individualism-collectivism, are related to attitudes and behaviors. For example, Bontempo, Lobel, and Triandis (1990) found that subjects from collectivist cultural backgrounds expressed greater willingness to make personal sacrifices to help other people than did people from individualist cultural backgrounds. Cox, Lobel, and McLeod (1991) reported

that people from collectivist cultural backgrounds were more cooperative on a choice-dilemma task than were people from individualist cultural backgrounds.

Based on the above arguments, the theoretical basis for this study can be summarized as follows:

Heterogeneity of group member characteristics is associated with variety in perspectives.

Variety in perspectives is associated with high-quality idea production, especially when group members are heterogeneous along a dimension relevant to the task facing the group.

Therefore, the variety of perspectives associated with heterogeneity along the dimension of ethnicity should lead to the production of high-quality ideas on a task that is relevant to ethnicity.

The current study is an experimental investigation of the difference in performance on a brainstorming task between groups whose members are all Anglo-American and groups whose members are Anglo-, Asian, African, and Hispanic Americans. We concentrate on this particular comparison of group types because Anglos represent the majority group in most U.S. organizations, and the other ethnic groups are the most predominant subcultural groups in the U.S. workforce (Johnston & Packer, 1987). This study will therefore test the following specific hypothesis: Ethnically diverse groups will produce higher quality ideas than will all-Anglo groups.

METHOD

SUBJECTS

The subjects were 135 undergraduate and graduate students from several academic majors at a large midwestern university. All subjects were paid volunteers recruited through class announcements and letters placed in student mailboxes in the business, law, and engineering schools and campus organizations. The written and verbal announcements described the study as a research project on group dynamics.

There were 94 men and 41 women, and the mean age was 21 years. Seventy-six of the subjects were Anglo-Americans, 20 were Asian Americans (predominantly Chinese), 22 were African Americans, and 17 were Hispanic Americans (predominantly Mexican). One hundred twenty of the subjects were native-born Americans. We obtained no information on the number of generations their families had lived in the United States. Among the 15 subjects born outside the United States, the average length of time living here was 12 years. Three of these subjects were Anglos, assigned to all-Anglo groups, and the remaining 12 were ethnic minorities, assigned to heterogeneous groups. Thus approximately 22% of the ethnic minority subjects in this sample were born outside of the United States.

STUDY DESIGN

Two types of groups were formed—ethnically diverse and all Anglo. Anglo-American subjects were randomly assigned to either an all-Anglo or an ethnically diverse group. Subjects of other ethnicities were assigned randomly to an ethnically diverse group. There were 18 ethnically diverse groups with either 1 member each from the four ethnic groups represented in the sample, or with members from three of the ethnic groups represented in the sample. One ethnically diverse group had 3 members, whereas the rest had 4 members. There were 16 all-Anglo groups—one of these had 3 members, one had 5 members, and the rest had 4 members.

Preliminary analyses showed that the ideas produced by the groups with four ethnic groups represented were judged significantly more feasible than the ideas produced by the groups with three ethnic groups represented and by the all-Anglo groups, $F(1,31) = 98.49, p < .001$. Because this pattern is consistent with the study rationale that a wider variety of perspectives is associated with the production of higher quality ideas, we combined the three-ethnicity and four-ethnicity groups together for the remaining analyses. No other differences between these two types of groups were found in the preliminary analyses. We also examined the effects of having one 5-member and two 3-member groups in the sample and found no differences between these and the 4-member

groups. There were no significant differences in the proportion of males and females in the two types of groups ($\chi^2_{(1)} = 0.87$), in the academic majors represented ($\chi^2_{(6)} = 0.19$), or in the mean age of the subjects assigned to the two types of groups ($t_{(130)} = 1.49$).

TASK

A brainstorming task called "The Tourist Problem," used extensively in past literature on group brainstorming (e.g., Jablin, 1981; Lamm & Trommsdorff, 1973), was used. The subjects were asked to spend 15 minutes generating as many ideas as possible to get more tourists to visit the United States. They were given in written form the standard brainstorming rules to produce many ideas but to refrain from discussing or evaluating the ideas (Osborn, 1957). They recorded their ideas on 8.5" \times 11" paper. Each idea was then transferred to an index card with group identification coded on the reverse side. We chose to use a group brainstorming task, despite the evidence that group interaction can inhibit idea production (Diehl & Stroebe, 1987, 1991; Gallupe et al., 1992), because it is apparent that many organizationally based groups continue to use this process as a first step in problem solving (e.g., Kerwin, 1983; Nystrom, 1979; Schwartz, 1991).

Although we expected that ethnic heterogeneity would be relevant to the international focus of this task, the theoretical basis of this study argues that ethnic minority subjects' perspective would be no more relevant than the Anglo-American subjects' perspective. Although it could be argued that people who have lived outside the United States might have good ideas about what would attract foreigners to come to the United States, those ideas are limited by the degree of familiarity with what would be available for tourists. On the other hand, the lack of international perspective on the part of someone with experience only inside the United States could be compensated for by this person's greater familiarity with the United States itself.

Nevertheless, to rule out the possibility that differences in the idea quality produced by heterogeneous and homogeneous groups in the study could be attributed to the greater proportion of non-

native-born members in the heterogeneous groups, we examined the differences in idea quality as a function of the presence or absence of U.S.-born members among heterogeneous groups. We found no significant differences in idea quality between heterogeneous groups having all U.S.-born members ($n = 7$) and those with at least one non-native-born member ($n = 11$).

DEPENDENT MEASURES

Using guidelines suggested by Bouchard & Hare (1970), one of the authors and a research assistant eliminated redundant ideas within each group's set of ideas. The process was done through face-to-face discussion, thus no statistics on interrater agreement were computed for the elimination of redundant ideas.

Each idea was then judged for quality using two 5-point scales: effectiveness and feasibility. Following Lamm and Trommsdorff (1973), we defined effectiveness as "how much of a contribution the idea makes toward the objective of getting more tourists to visit the US" (p. 363). This scale ranged from 1 = *would attract hardly anyone* to 5 = *would attract almost anyone*. Feasibility was defined as "the extent to which the ideas could be carried out, given the constraints of reality," and the scale ranged from 1 = *definitely infeasible* to 5 = *definitely feasible*. Two judges, blind to the source of the ideas, rated the ideas. Both judges are experts in the travel industry—one was the research manager of a state travel bureau and the other was the director of a state tourism center. They were instructed as follows to use the two scales independently: "You might consider an idea to be highly effective, but also highly infeasible, and vice versa."

We defined the two judges as in agreement when their ratings of an idea fell within 1 point of each other on the 5-point scales (Diehl & Stroebe, 1987, 1991). The two judges were in agreement on 83% of the ideas on the effectiveness scale, and on 71% of the ideas on the feasibility scale. The two judges' ratings were averaged to produce a single rating for each idea. For each group, the mean score of the idea ratings was computed by adding up the score given

TABLE 1: Idea Quality and Perceptions of Group Process

	<i>Group Type</i>	
	<i>Diverse</i> (<i>n</i> = 18)	<i>All Anglo</i> (<i>n</i> = 16)
Feasibility ^a	3.85 (0.20)	3.61 (0.31)
Effectiveness ^a	3.17 (0.20)	2.98 (0.22)
Attraction to group ^b	15.75 (3.73)	16.93 (3.47)

NOTE: Standard deviations are in parentheses.

a. Group-level variables.

b. Individual-level variables.

to each idea that was produced by that group and dividing this sum by the total number of ideas produced by the group.

Because past research has suggested that diversity can also produce negative affective outcomes—such as lower personal attraction to group members, higher turnover, and poorer communication (e.g., Jackson, Brett, Sessa, & Cooper, 1991; Tsui & O'Reilly, 1989; Zenger & Lawrence, 1989)—we included in this study a 4-item scale that measured subjects' attraction to their groups. The items, such as "Group members seem to like each other," were measured on 5-point scales. Cronbach's alpha for this attraction scale was .87.

RESULTS

Table 1 presents the means and standard deviations of the quality measures and the group attraction scale scores. The feasibility and effectiveness measures were significantly correlated ($r = .59$, $p < .01$), thus MANOVA was used to test the hypothesis of difference in idea quality as a function of group composition. The analysis showed a significant main effect for group composition on idea quality (Hotelling's $T^2 = 0.47$, $F(1,32) = 7.29$, $p = .003$). The ideas produced by the heterogeneous groups were judged as significantly

more feasible, $F(1,32) = 7.91, p = .008, d = 0.99$, and more effective, $F(1,32) = 6.57, p = .015, d = 0.91$, than the ideas produced by the homogeneous groups. Thus the main hypothesis was strongly supported. The members of homogeneous groups reported marginally significantly higher levels of interpersonal attraction than did members of heterogeneous groups ($t_{(130)} = 1.86, p < .10$).

DISCUSSION

These results are consistent with previous research suggesting that diverse work teams have potential performance advantages over homogeneous teams (e.g., Hoffman & Maier, 1961; Pelz & Andrews, 1966; Triandis et al., 1965), at least with respect to creativity. Our research extends previous findings by explicitly addressing ethnic differences as the basis of heterogeneity. The findings support the theoretical basis of this study, namely that diverse groups will have a performance advantage over homogeneous groups on a creativity task requiring knowledge of different cultures. On the other hand, we also found evidence suggesting that members of heterogeneous groups may have had more negative affective reactions to their groups than did members of homogeneous groups.

The comparison of this study's findings to those of the study by Watson et al. (1993), which used a similar manipulation of group composition, is particularly notable. That study found that during early stages of group development, ethnically homogeneous groups produced higher quality solutions to a business case analysis and reported more favorable group process and superior performance than did heterogeneous groups. However, over time, the performance and process differences converged, with heterogeneous groups making more rapid process improvements than did homogeneous groups. Moreover, at the end of a 17-week period, Watson et al. reported that the heterogeneous groups scored higher than the homogeneous groups on two specific task performance measures, although overall performance did not differ significantly.

Based on these findings, we might have expected that because the groups in the current study were ad hoc, and thus at an early stage of development, the homogeneous groups here would have outperformed the heterogeneous groups. A plausible explanation for our contrary finding is that the task used in the Watson et al. (1993) study (analysis of a business case) required the subjects to negotiate and to reach consensus on a single solution, whereas the current study required the subjects simply to accept all the solutions offered by all group members. This difference in communication requirements of the two tasks could account for the difference in the effects on performance of the communication difficulties reported by the subjects. The results of these two studies, taken together, clearly suggest that there is an interaction between the nature of the task and the stage of group development in the effects of ethnic diversity on group outcomes. These specific results lead us to speculate that for simple tasks, with low communication requirements, groups may be able to realize the benefits of diversity sooner and with relatively little effort, whereas for complex tasks, direct process interventions and more time would be needed. The results of the current study cannot be generalized beyond idea-generating tasks. Thus future research that examines a variety of tasks that also vary in their relevance for ethnicity would be useful.

The fact that there was only one type of homogeneous group in the study is a limitation to our ability to determine whether diversity per se or the characteristics associated with the particular ethnic groups present best accounts for the results obtained. Ideally, there would be homogeneous groups composed of people from each of the ethnic groups to compare to the heterogeneous groups. This study's theoretical basis would lead to the prediction that heterogeneous groups would outperform all-Asian, all-African, or all-Hispanic groups. A major difficulty of conducting group studies with this kind of complete-cell design is obtaining enough subjects from ethnic minority groups.

This issue also raises the question, how much diversity is enough to achieve measurable differences in performance? Cox (1991, 1993) and Cox and Blake (1991) have argued that some critical mass of employees from ethnic subcultures is needed for organiza-

tions to experience the benefits of these employees' presence. The work on the influence of minority opinion (Moscovici, 1985; Nemeth, 1992) would suggest that even small numbers of people whose opinions are radically different from the majority's can stimulate creativity. On the other hand, the results of this and other studies have suggested that increased heterogeneity may also be related to negative affect, communication difficulties, and turnover. As diversity increases, what can be done to offset these potential difficulties? Important follow-up research would involve varying the degrees of heterogeneity while examining potential intervention strategies.

A further limitation is that we did not use any measures of individual-level variables that may mediate the relationship between ethnicity and creativity, such as divergent thinking ability, bilingualism, or biculturalism. Individual differences in ideational ability (e.g., Graham & Dillon, 1974), for example, may be related to ethnicity. Lambert (1977) reported bilingual people to have higher levels of divergent thinking than people who are monolingual, and bilingualism is especially prevalent among Asian and Hispanic Americans. Also, significant percentages of Asian Americans, Hispanic Americans and African Americans have been found to be bicultural (Bell, 1990; Bond & Yang, 1982; Garza, Romero, Cox, & Ramirez, 1982), defined as knowing and accepting the norms of the predominant culture as well as those of one's own subcultural group (Cox et al., 1991; Garza et al., 1982). Biculturalism may be related to divergent thinking in the same way as bilingualism. Although the theoretical basis for this study emphasized the variety of perspectives present in our diverse groups, it is possible that the results observed may reflect differences in ideational ability between Anglo-Americans and people from the other ethnic groups studied. The type of fully balanced experimental design, mentioned above, that also includes individual measures of ideational ability can separate the effects of group composition from individual differences.

A final limitation in this study is the unavailability of data on group process. To determine, for example, whether the heterogeneous groups produced higher quality ideas because of the ideational

ability of their members, it would be useful to know which members produced which ideas and to have an independent assessment of ideational ability. Audio and video recording of group interaction can provide information about bias or subtle conflict and communication difficulties and other group dynamics. This information can help to determine what kinds of process interventions might be used to help groups realize the benefits of diversity among their members (Cox & Blake, 1991).

In the Watson et al. (1993) study, for example, groups were given feedback on process and performance effectiveness throughout, which may actually have served as process and performance goals toward which the groups might strive (McLeod, Liker, & Lobel, 1992). Triandis et al. (1965) found that attitudinally diverse groups that were not trained to promote understanding of each others' attitudes performed more poorly than did diverse groups that did receive this training. In the present study, instructions to refrain from criticizing or evaluating the ideas of group members could be considered a form of process intervention. Informing them, instead, that the ideas produced would be judged on quality might have produced different responses. Thus, in addition to future in-depth research on group process differences in diverse versus homogeneous groups, we need further work on the most effective process interventions.

Although the results of this study offer empirical evidence that ethnic diversity in work teams may have measurable positive effects on idea and solution quality, we want to reemphasize that *proper management* of diversity, not simply increasing it, is key to gaining maximum team performance. Several studies have shown that there are potential negative effects of diversity, such as communication difficulties (e.g., Zenger & Lawrence, 1989), increased turnover (Jackson et al., 1991; Wagner, Pfeffer, & O'Reilly, 1984), and lower performance in early development stages (Watson et al., 1993). Adler (1986; see also Kovach, 1976) cites data from a field study showing that ethnically diverse groups were either more or less effective than homogeneous teams in problem solving, depending on how they managed the diversity in their teams. Diverse teams that actually utilized the variety of perspectives present outper-

formed the homogeneous teams, whereas diverse teams that did not utilize their diversity performed worse than the homogeneous teams.

Thus the major implication for managers from the current study is that whereas increasing diversity in work teams is inevitable due to demographic trends, there are also potential competitive advantages to be gained through tangible effects on team performance. The key to gaining this advantage is to make sure that teams know how to capitalize on the resources that all team members bring with them.

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