
Fostering Group Identification and Creativity in Diverse Groups: The Role of Individuation and Self-Verification

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A longitudinal study examined the interplay of identity negotiation processes and diversity in small groups of master's of business administration (MBA) students. When perceivers formed relatively positive impressions of other group members, higher diversity predicted more individuation of targets. When perceivers formed relatively neutral impressions of other group members, however, higher diversity predicted less individuation of targets. Individuation at the outset of the semester predicted self-verification effects several weeks later, and self-verification, in turn, predicted group identification and creative task performance. The authors conclude that contrary to self-categorization theory, fostering individuation and self-verification in diverse groups may maximize group identification and productivity.

Keywords: *groups; self-verification; diversity; self-categorization*

When people join groups, something magical can happen. Previously unaffiliated individuals may unite and act as one, all eyes riveted on a common set of goals. Working together, individual group members may accomplish objectives that would have been unimaginable if acting alone. Particularly magical, according to the “value in diversity” hypothesis, are groups in which members possess varied ideas, knowledge, and skills. Such diverse groups, the argument goes, are able to translate their unique perspectives into exceptionally creative solutions to the problems they encounter (e.g.,

Jehn, Northcraft, & Neale, 1999; Watson, Kumar, & Michaelsen, 1993).

The value in diversity hypothesis is enormously appealing from both a theoretical and practical perspective. Nevertheless, empirical tests of the hypothesis suggest that diversity is as likely to hamper, as it is to improve, performance (Guzzo & Dickson, 1996; Jehn et al., 1999; Milliken & Martins, 1996; Pelled, Eisenhardt, & Xin, 1999; for a review, see Williams & O'Reilly, 1998). Precisely why diversity sometimes undermines performance is unclear. One lead, however, is suggested by the fact that interpersonal relations within diverse groups tend to be conflicted (e.g., Jehn, et al., 1999; Pelled, et al., 1999). In this report, we argue that such conflicted relations stem from people's failed efforts to acquire confirmation of their self-views or “self-verification” from their fellow group members. The failure to acquire self-verifi-

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cation, in turn, undermines feelings of connection to the group as well as performance. We set the stage for our argument by presenting a critical analysis of self-categorization theory (e.g., Turner, 1985), the approach that most researchers have used to understand the relation between diversity and performance.

Self-Categorization Theory, Self-Verification, and Intragroup Relations

By definition, members of diverse groups are high in interindividual variability across one or more characteristics (Blau, 1977; Williams & O'Reilly, 1998). Such variability may grow out of demographic characteristics (e.g., Blacks vs. Whites) or functional characteristics (accountants vs. psychologists), or both. Whether the high degree of variability in diverse groups grows out of demographic or functional characteristics, it is apt to be linked to divergent perspectives (e.g., attitudes, values, and expectations; communication styles; and so on), which may foster misunderstanding and conflict (Ely & Thomas, 2001).

Self-categorization theory has suggested a seemingly straightforward strategy for warding off misunderstanding and conflict within diverse groups (e.g., Chatman & Flynn, 2001; Chatman, Polzer, Barsade, & Neale, 1998; Earley & Mosakowski, 2000; Flynn, Chatman, & Spataro, 2001). Specifically, if members of diverse groups can be persuaded to align themselves with the superordinate identity of the group, they will be willing to downplay or temporarily relinquish the qualities associated with their unique backgrounds; that is, through aligning themselves with groups, people may undergo a change

in the level of abstraction of self-categorization in the direction that represents a *depersonalization of self-perception* [italics added], a shift toward the perception of self as an interchangeable exemplar of some social category and away from the perception of self as a unique person defined by individual differences from others. (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987, pp. 50-51)

Yet, self-categorization theory's strategy for avoiding conflict within diverse groups clashes with the logic behind the value in diversity hypothesis. Specifically, self-categorization theory's principle of functional antagonism (Turner, 1985) states that in emphasizing the qualities they share with the group, people must deemphasize the qualities that make them unique individuals (i.e., depersonalization). By depersonalizing themselves, then, members of diverse groups must temporarily relinquish their unique qualities—the very qualities that the value in diversity hypothesis says should enrich and enhance group outcomes.

Self-verification theory (Swann, 1983, 1996) takes precisely the opposite position, arguing that group

members should actively externalize their self-views rather than deemphasize them. The core assumption of the theory is that people want others to see them as they see themselves (cf. Lecky, 1945). Presumably, two considerations motivate the desire for self-verification. First, from an epistemic perspective, self-verifying evaluations will bolster people's perceptions of psychological coherence by reassuring them that their perceptions of themselves and reality are supported. Second, from a pragmatic perspective, self-verifying evaluations will provide people with a signal that their interactions are likely to unfold smoothly. The research literature provides converging evidence suggesting that people are indeed motivated to obtain verification for their self-views and that obtaining verification is beneficial in various ways. For example, studies of married people and roommates have shown that people prefer self-verifying partners (even if they are negative) and that receiving self-verification promotes intimacy, satisfaction, and commitment to the relationship (for a recent review, see Swann, Rentfrow, & Guinn, 2002).

Of particular relevance here, self-verification theory suggests that groups will function best when individuals within the group enjoy verification of their self-views. There are at least three reasons why self-verification may improve group functioning. First, feeling known and understood by the group may make members feel more connected to the group and more motivated to immerse themselves in group activities. Second, insofar as group members are convinced that they are embedded in a self-verifying niche, they may conclude that it is safe to behave authentically. They may therefore be emboldened to advance a wide array of potential solutions that will, in turn, maximize creative combinations of ideas and fresh insights. Finally, because attempting to elicit self-verification from other group members presumably consumes cognitive resources (e.g., Swann, Hixon, Stein-Seroussi, & Gilbert, 1990), those who enjoy self-verifying evaluations from other group members will be able to focus their energies on improving group outcomes. For all of these reasons, self-verification processes may be conducive to group performance, especially on creative tasks.

Swann, Milton, and Polzer (2000) tested this reasoning. In a prospective study of four- to six-person study groups of MBA students, they assessed the relation between self-verification and creativity. The index of self-verification was the extent to which the self-views of group members measured at the outset of the semester predicted changes in the appraisals of their fellow group members 9 weeks later. They were interested in whether self-verification predicted how connected people felt toward their groups and also the grades that study groups received on a creative task (involving course work

that had no single “correct” answer, such as devising a plan to market a new product). Consistent with expectation, the extent to which targets were verified at 9 weeks predicted their feelings of connection to their groups as well as group performance on creative tasks at the end of the semester.

Polzer, Milton, and Swann (2002) extended this line of inquiry by asking if the diversity of study group members interacted with self-verification in determining performance. They reasoned that self-verification might offset the tendency for diversity to breed dissension and discord within groups. In addition, they thought that self-verification might encourage diverse group members to apply their differences in knowledge, experiences, perspectives, and networks associated with their cultural identities and categorical differences to the tasks at hand (Ely & Thomas, 2001), thereby facilitating performance. The results supported these ideas. Specifically, among groups that achieved high levels of self-verification, diversity facilitated creative task performance at the end of the semester. In contrast, among groups that failed to achieve substantial self-verification, diversity undermined creative task performance.

Polzer et al.'s (2002) evidence of links between self-verification, diversity, and creative task performance suggests that self-verification may be a key factor in determining when diversity helps or hinders performance. Nevertheless, Polzer et al. did not examine the issue with which we are concerned here: What factors led to self-verification in the first place? To answer this question, we propose a two-step model in which individuation plays a critical role. First, we argue that perceivers who form positive impressions of diverse targets will be more inclined to individuate those targets. Second, we propose that perceivers who individuate targets will be more apt to provide them with self-verification. We elaborate on these hypotheses next.

*Antecedents of Self-Verification in Small Groups:
Positivity Fosters Individuation,
Which Fosters Verification*

Self-verification occurs in groups when the characteristics perceivers impute to targets match the self-views of targets. For this to occur, perceivers should first recognize targets as distinct individuals or “individuate them.” At first blush, it would seem that a major determinant of individuation in groups should be the objective amount of variability or diversity in those groups. After all, objective diversity presumably offers perceivers more “raw materials” for individuation; hence, from a probabilistic standpoint, increments in actual diversity should foster increments in individuation. Nevertheless, the relation between actual diversity and individuation is complicated by the fact that perceivers differ dramatically in the

dimensions they attend to in categorizing targets. For example, imagine a group composed of four White men from several different functional backgrounds, including an accountant, a physician, an engineer, and a psychologist. Whereas a perceiver who attends only to race or only to sex would conclude that the group is homogeneous, a perceiver who attends to occupational background would conclude that the group is quite diverse. Given that different perceivers may attend to different dimensions, the relation between actual and perceived diversity may be weak or nonexistent. The research literature offers little insight here because the tendency for past researchers to measure *either* actual diversity or perceived diversity (i.e., individuation) means that little is known about the relation between actual diversity and individuation.

But if the relation between actual diversity and individuation is not as simple and direct as it might appear, what factors do influence this relation? One important factor may be the positivity of perceivers' impressions of targets. Perceivers who have positive impressions of targets may be interested in talking to them and learning more about them (e.g., Dabbs & Ruback, 1987). In their interactions, they may therefore be more apt to encounter, and pay attention to, information about the unique qualities of diverse targets—information that will provide a basis for individuation. As a result, among perceivers who are positively disposed toward targets, increments in target diversity should lead to increments in individuation.

In contrast, perceivers who are neutral or negative toward targets may have little interest in learning about them (e.g., Dabbs & Ruback, 1987). Rather than individuating targets, such perceivers may fail to attend to their idiosyncratic characteristics and instead simply lump them into an undifferentiated category such as “coworkers I put up with” (e.g., Allport, 1954; Brewer & Miller, 1988; Fiske & Neuberg, 1990). Neutral or negative perceivers may be even less inclined to individuate targets who are demographically or functionally different because such differences may cause perceivers to feel anxious or threatened (Stephan & Stephan, 1985, 2000). As a result, perceivers may suspend processing further information about them. Indirect support for this reasoning comes from research indicating that when perceivers dislike targets who belong to other social categories, they are less inclined to differentiate them than members of their own categories (e.g., Boldry & Kashy, 1999; Brauer, 2001; Judd & Park, 1988; Linville, Fischer, & Salovey, 1989; Park & Rothbart, 1982). When perceivers are relatively neutral or negative toward targets, then, more diversity may actually lead to less individuation.

The tendency for individuation to increase with diversity when perceivers' impressions are positive is important in the present context, of course, because individuating targets is a necessary condition for providing them with self-verification (although individuation will not ensure self-verification, because perceivers may develop individuated impressions that clash with targets' self-views). As a result, the more perceivers individuate targets, the more targets should succeed in bringing perceivers' appraisals of them into agreement with their own self-views. Simply put, more individuation will be associated with more self-verification.

Measuring Individuation and Homogenization in a Naturalistic Setting

We developed a relatively novel measure of in-group individuation versus homogenization in this investigation. To date, researchers interested in the nature and antecedents of individuation have focused on people's inferences about members of other groups (i.e., outgroup members). To this end, they have developed three distinct strategies. Linville and her colleagues (Linville et al., 1989) asked participants to construct a distribution representing the proportion of members of ingroups and outgroups who fell at various points on the distribution. The variance in the distribution or the probability that two members scored differently provided the estimate of outgroup homogeneity. Park and Judd (1990) had participants estimate either the percentage of group members who possessed a given quality or the characteristics of the most extreme group members as well as where the group members fell on particular traits (for a variation on this technique, see Guinote, Judd, & Brauer, 2002).

Both the Linville and Park/Judd strategies for assessing outgroup homogeneity required participants to possess some knowledge about the distributions of the ingroup and outgroup. Boldry and Kashy (1999) developed a more direct measure of outgroup homogeneity that we adapted for measuring ingroup homogeneity. A critical advantage of this measure is that it does not require participants to have knowledge of the distributions of scores in the ingroup. Instead, the researchers rather than the participants estimate the homogeneity inherent in their ratings. Kenny's (1994) Social Relations Model (SRM) provides the key to Boldry and Kashy's innovative index of outgroup homogeneity. Conceptually, SRM is analogous to a two-way ANOVA design that allows researchers to decompose the variance in a given rating into three components: perceiver, target, and relationship. The perceiver variance is the amount of variation in the ratings that can be explained by the characteristics of the perceivers—the tendency for perceivers to “paint all targets with the same brush,”

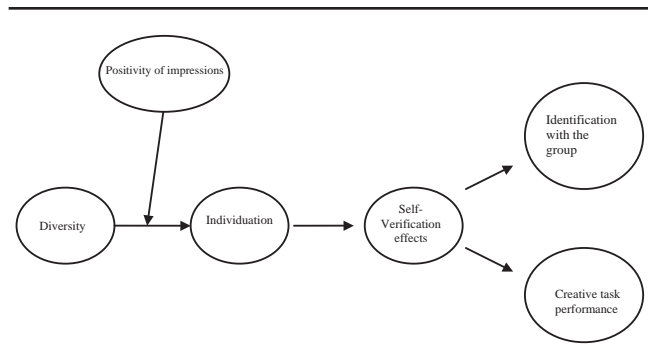


Figure 1 Antecedents of identification and performance in diverse groups.

or homogenize targets. In contrast, the target and relationship variance is the amount of variation in the ratings that can be explained by the characteristics of the targets, either alone (target variance) or in interaction with perceivers (relationship variance). From this vantage point, the target and relationship variance can both be viewed as measures of individuation because both reflect the impact of target characteristics on the impressions of perceivers.

Perceiver, target, and relationship variance are computed in ways that parallel the computation of main and interaction effects in a conventional ANOVA except that SRM corrects for the bias due to the total N (without this correction, increments in the number of perceivers produce spurious increments in target variance; for a detailed description and derivation of the formula for the perceiver, target, and relationship variance, see Appendix B of Kenny, 1994).

A Process Model Extending From Diversity to Performance

The foregoing reasoning led us to propose the model depicted in Figure 1. The model begins with actual diversity. The positivity of people's impressions of others moderates the relation of diversity to individuation; that is, when impressions of others are positive, more diversity is associated with more individuation; when impressions are negative, however, more diversity is associated with less individuation (more homogenization). Next, there is a mediated relationship: Individuation is associated with self-verification effects that are, in turn, associated with increments in identification with the group and performance on creative tasks.

METHOD

Participants

A total of 423 1st-year master's of business administration (MBA) students at the University of Texas at Austin

participated on a voluntary basis. Most participants were male (74%), Caucasian (67%), and U.S. citizens (82%). In addition, 17% were Latino, 5% were African American, and 11% were Asian. The mean age was 27 years. As noted above, the responses of these participants also provided the basis for articles by Swann et al. (2000) and Polzer et al. (2002).

Prior to the beginning of the semester, the administration of the Graduate School of Business randomly divided members of the incoming class into 83 study groups with four to six members per group. Once assigned, members of each group worked on all group projects within their academic program for the remainder of their first 15-week semester. We were confident that participants would take seriously their involvement in the study groups because their group projects were responsible for a substantial portion of each student's course grade.

Design

We used a round-robin design (Warner, Kenny, & Stoto, 1979) in which each participant served as both a perceiver and a target. Participants rated all other group members and all other group members also rated them at two different sessions. We also had participants rate themselves at these sessions. All the ratings were made privately and confidentiality was guaranteed.

Procedure

Theoretically, identity negotiation processes begin as soon as group members encounter one another. With this in mind, we conducted the first two (of three) data collection sessions during the orientation week for entering MBA students. Specifically, we measured self-views 1 or 2 days prior to the groups' initial meeting and impressions of other group members immediately following the groups' initial meeting. We introduced the first session (Time 1a [T1a]) by asking students to participate in an investigation of the characteristics of effective study groups. In addition, we told students that their participation would involve completing a series of questionnaires throughout the semester. Participants then completed the initial measure of self-views as well as several other measures that we will not discuss because they were irrelevant to our concerns here.

Throughout the next 2 days, participants returned to complete the initial measures of impressions of other group members (Time 1b [T1b]). The experimenter began by informing participants of their group assignments and then having them interact with the other group members for 10 min. After this interaction, all participants recorded their impression of each of the other members of the group. Because the T1a and T1b ses-

sions took place within 2 or 3 days of one another, we will henceforward refer to both as the "initial session."

We timed the next session (Time 2 [T2] or "later session") so that it occurred 9 weeks into the semester—presumably after students had ample opportunities to interact and sort out their mutual identities. Participants completed measures of their self-views and their impressions of the other group members. To index their identification with the group, participants indicated their agreement with six statements derived from Mael and Ashforth's (1992) organizational identification scale. Finally, at the end of the semester, we asked all 15 course instructors to supply us with group project grades (i.e., creative task performance); 10 instructors did so.

Measures

Initial impression of group members. Participants rated each of the other members on 11 dimensions at the initial session after interacting for 10 min. Four dimensions (intellectual/academic ability, competency or skill at sports, social skills/social competence, and creative and/or artistic ability) were from the Self-Attribute Questionnaire (SAQ) (Pelham & Swann, 1989). Six additional items were derived from a preliminary survey of 110 MBA students in which participants indicated that the following six characteristics were particularly important for MBA students: trustworthy, leadership ability, cooperative, a hard worker, fair, and competitive. We also included one final item to tap people's global positive versus negative impressions of the target of the rating: competent and likable in general. Participants made each of their ratings relative to other 1st-year MBA students in the university on graduated-interval scales ranging from 1 (bottom 5%) to 10 (top 5%).

To index the initial impressions that individuals formed of the other group members, we averaged the ratings participants within each group gave to their fellow group members on each of the 11 dimensions. We then averaged over the 11 items after establishing that there was substantial internal consistency across items ($\alpha = .94$). The higher the value on this index of initial impressions, the more positively members of the group viewed one another.

Individuation and homogenization. For the ease of comparison across items, results are reported in terms of the relative variance; that is, any one variance component is divided by the sum of the total variance, and thus, the sum of relative perceiver variance, relative target variance, and relative relationship variance is 1. The results of the variance decomposition are shown for all items in Table 1. The amount of both perceiver variance ($M = 43%$) and relationship variance ($M = 11%$) were significant for all 11 items, but the target variance ($M = 11%$) was not significant for 5 out of the 11 items. The minimal

amounts of target variance presumably reflected the fact that targets and perceivers had been acquainted for 10 min only, which did not give targets an opportunity to establish the widely shared consensual impression of themselves needed to produce substantial target variance. This explanation of the low target variance is supported by the fact that target variance was significant for all 11 items at T2. In any event, the nonsignificance of nearly half of the target variance items at T1 prompted us to exclude them from the measure of individuation because Kenny (1995) indicates that nonsignificant effects are uninterpretable (target effects were controlled for in the computation of perceiver and relationship variance, however).

The exclusion of target variance from our analyses left us with perceiver variance as the index of homogenization and relationship variance as the index of individuation. There was a strong negative correlation between these two indices ($r = -.92$). This correlation, together with the fact that we wanted to create an index that would be analogous to previous, single-index measures of individuation (e.g., Linville et al., 1989; Park & Judd, 1990), led us to compute the ratio of the perceiver variance to the relationship variance. This index of homogenization-individuation (hereafter simply “the individuation index”) was internally consistent across the 11 dimensions on which perceivers rated targets, $\alpha = .81$ (as were the alphas for the individual indices—.83 for the perceiver variance index and .77 for the relationship variance index), leading us to use the average of the 11 dimensions. The mean of the individuation index was 1.20 ($SD = 1.42$). Low values on the individuation index indicated substantial amounts of homogenization and high values on our individuation index indicated substantial amounts of individuation. Note that in virtually all instances, analyses of the component indices (i.e., perceiver and relationship variance) confirm the conclusions based on the individuation index.¹

To obtain the amount of the perceiver and relationship variance on each of the 11 dimensions, we used Kenny’s (1995) SOREMO software package. Because SOREMO requires that there be no missing data, we included only those groups that had either (a) complete data, (b) only a few missing data from a particular set of ratings, or (c) complete data except that one individual rated all but one or two group members. For this reason, the final sample size consisted of 57 groups (253 persons). Deleting these participants did not appear to be problematic; a series of independent t tests on the positivity of initial impression, self-verification, and diversity indicated that the excluded groups did not differ from the groups that were included. Occasionally, participants failed to complete a measure, which is why the ns vary slightly across analyses.

TABLE 1: Relative Variance Partitioning Across Items for Time 1

	Perceiver	Target	Relationship
Intellectual/academic ability	45	14	42
Social skills	24	28	49
Creative and artistic ability	35	11	53
Leadership	33	19	48
A hard worker	54	3	43
Competency at sport	23	33	44
Trustworthy	51	3	46
Cooperative	52	2	46
Fair	59	1	40
Competitive	44	10	47
Likable and competent in general	53	3	44
Mean	43	11	46

NOTE: All values are percentages. $N = 57$ groups.

Self-verification. The verification effect was the extent to which the appraisals of perceivers, assessed after 9 weeks, agreed with the self-views of targets, assessed at the beginning of the semester. To index self-verification, we computed the absolute value of the difference between a given target’s initial self-views at T1a and the average of perceivers’ later impressions of that target at T2. We then averaged these verification scores across the 11 dimensions to arrive at an overall verification score for each target. The verification score for each group was the average verification score of all members of that group.

Note that our index of verification is more comprehensive than the one used by Swann et al. (2000) because the current measure includes the verification that occurred from the moment targets met their group members up to 9 weeks later. In contrast, Swann et al.’s measure controlled for perceiver’s initial impressions and was thus limited to the verification that occurred between the first and second sessions only. The more comprehensive measure of self-verification was appropriate here because we wished to include the relatively immediate self-verification effects that occurred during the first 10 min of interaction.

Diversity of groups. We assumed that both functional and demographic differences could influence identity negotiation and performance (Ely & Thomas, 2001). We accordingly operationalized diversity as the heterogeneity of individual attributes within a group (Blau, 1977; Williams & O’Reilly, 1998) along seven dimensions. We used the coefficient of variation (standard deviation divided by the mean) to calculate age diversity, which was the only continuous diversity dimension. We used Blau’s (1977) heterogeneity index to compute group diversity scores for each of the six remaining categorical dimensions. This index is calculated with the formula

$$1 - \sum p_i^2,$$

TABLE 2: Means and Standard Deviations for the Seven Heterogeneity Indices That Comprised the Group Diversity Score

<i>Heterogeneity Index</i>	M	SD
Previous degree	.58	.13
Concentration in MBA	.64	.12
Job function in previous job	.63	.11
Age	.10	.05
National citizenship	.28	.13
Race	.45	.15
Sex	.37	.08
Overall diversity	.44	.05

NOTE: MBA = master's of business administration.

where p is the proportion of the group in the i^{th} category. The means and standard deviations for all seven heterogeneity indices are shown in Table 2. A higher index score indicates greater diversity among team members along the particular dimension. These categorical dimensions included U.S. citizenship, race, sex, previous degree, MBA concentration, and previous job function. Race categories included White, Black, Hispanic, Asian, and American Indian. We coded previous degree into five categories (business, engineering, liberal arts, science, and other) and previous job function into six categories (finance/accounting, marketing, engineering/research and development, general management/management consulting, military, and other). We borrowed the categories used by program administrators to classify participants' MBA concentration. Finally, we averaged all seven diversity indices to form an overall index of group diversity.

Group Identification

At the end of the semester, participants indicated their agreement with six statements derived from Mael and Ashforth's (1992) organizational identification scale on 7-point scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). We modified the original items to reflect identification with the group rather than the organization (e.g., "The study group's successes are my successes," "When someone criticizes the study group, it feels like a personal insult," "When I talk about the study group, I usually say 'we' rather than 'they'"). The internal consistency of this scale was substantial, $\alpha = .92$, leading us to average the scores of the six items.

Creative Task Performance

We collected grades for 14 group projects in several different required courses (all participants took managerial economics, financial accounting, and statistics; some participants also were enrolled in operations management and marketing management, others also took organizational behavior and financial management, and

still others also took financial management and an elective course). To strengthen the causal implications of our analyses, we only used grades from group projects that were handed in after the administration of the later session. We collected three or four group project grades for the teams (except for one subset of participants for whom we collected only two group project grades), computed z scores for the grades for each course within each cohort, and then averaged each group's scores across courses. All told, we were able to obtain approximately 70% of all group grades earned after the later session.

All but one of the projects (financial accounting) were considered creative projects because all of these projects benefited in some way from considering the divergent perspectives of group members. For example, one group project in the organizational behavior course required study groups to devise a plan for how a specific company should go about changing its organizational culture. Because there is no quantifiable criterion for such a task, groups benefited from considering a variety of perspectives on this problem. Similarly broad analyses of business problems were critical to performance on group projects in marketing, statistics, and operations management. We accordingly averaged z scores on group project grades from these courses to form a measure of group performance on creative tasks.

RESULTS

Table 3 presents the intercorrelations among all variables. To test our moderated-mediated model, we first considered using a structural equation model. The fact that group was the unit of analysis, however, meant that the sample size was too small to use a structural equation model. We accordingly performed a series of regressions.

Were the Effects of Diversity on Individuation Moderated by the Positivity of Perceivers' Initial Impressions of Targets?

We expected contrasting relations between group diversity and the individuation index in groups in which perceivers' initial impressions were positive as compared to groups in which perceivers' initial impressions were more neutral. To test this prediction, after centering the predictor variables (Aiken & West, 1991), we conducted a moderated multiple regression with diversity, positivity of initial impressions of group members, and the interaction term of diversity and positivity as predictors and the individuation index as the criterion.² The predicted interaction was significant, $\beta = .46$, R^2 change = .20, $p < .001$. To illuminate the nature of this interaction effect, we plotted separate regression lines for perceivers with positive as compared to neutral impression (Aiken & West, 1991). As can be seen in Figure 2, when the initial

TABLE 3: Zero-Order Correlation Matrix for All Variables

	Diversity	Impression	Positivity of Initial Individuation	Homogenization/Self-Verification	Identification With Group
Positivity of initial impression	-.42*				
Homogenization/individuation	-.10	-.21			
Self-verification	-.28*	.19	.47*		
Identification with group	-.22*	.17	.50*	.53*	
Creative task performance	-.13	.04	.20	.35*	.24*

NOTE: $N = 57$ groups.* $p < .05$.

impressions of perceivers were relatively positive, higher diversity was associated with more individuation, but when the initial impressions of perceivers were relatively neutral, higher diversity was associated with less individuation (i.e., more homogenization). There were no significant main effects of initial impression positivity, $\beta = .17, p > .20$, or diversity, $\beta = -.12, p > .38$. Finally, when we examined each of the seven individual diversity indices separately, the predicted interaction between impression positivity and diversity was significant for three indices and followed the same pattern for the remaining ones.

Were Individuation, Self-Verification, and Identification With the Group Associated?

As anticipated, the more individuation just after the groups were formed, the more likely the targets were to bring perceivers to see them as targets saw themselves 9 weeks later (i.e., self-verification), $r(56) = .47, p < .001$. In addition, individuation also was associated with the extent to which participants identified with the group, $r(56) = .50, p < .001$.³ Finally, self-verification effects predicted identification with the group, $r(56) = .53, p < .001$.

Did Self-Verification Mediate the Effects of Individuation on Identification With the Group?

Kenny and his colleagues (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998) have identified three steps for establishing mediation: (a) the predictor predicts the outcome variable, (b) the predictor significantly predicts the mediator, and (c) the mediator significantly predicts the outcome variable. Above, we showed that individuation significantly predicted identification with the group and verification effects and self-verification effects predicted identification with the group. Given that these steps were met, we conducted Baron and Kenny's (1986) modified Sobel test. This test revealed that the magnitude of the relation between the predictor and the outcome variable was significantly reduced when the mediator was included in the equation, $Z = 3.01, p < .05$. Thus, individuation fostered more self-verification, which in turn enhanced identification with

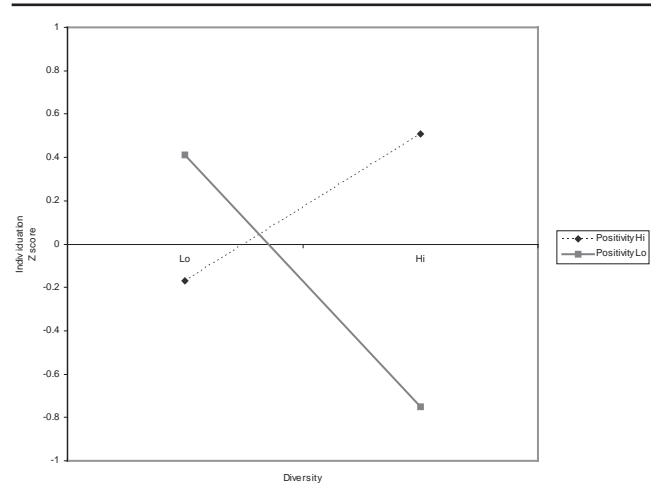


Figure 2 Individuation as a function of impression positivity and diversity.

the group. Note that when we regressed group identification on individuation and self-verification, individuation ($\beta = .32, p < .05$) and self-verification ($\beta = .38, p < .05$) predicted identification with the group independently. The fact that individuation continued to predict identification with the group when self-verification was partialled out means that self-verification partially mediated the relation between individuation and identification with the group.

Did Self-Verification Mediate the Effects of Individuation on Creative Task Performance?

Above, we showed that individuation significantly predicted verification effects. It also was true that the self-verification effect predicted creative task performance, $r(46) = .35$. A modified Sobel test revealed that the magnitude of the relation between the predictor and the outcome variable was significantly reduced when the mediator was included in the equation, $Z = -2.15, p < .05$. Thus, individuation fostered more self-verification, which in turn enhanced creative task performance. When we regressed creative task performance on individuation

and self-verification, individuation did not significantly predict creative task performance ($\beta = .13, p > .05$) but self-verification did ($\beta = .32, p < .05$).

Note that in this case the relation between the predictor (individuation) and outcome variable (creative task performance) merely approached significance, $r = -.20, p < .10$. This does not undermine our mediational argument, however, because Kenny et al. (1998) have advised that

Step 1 is not required, but a path from the initial variable to the outcome is implied if Step 2 [the path from the predictor to the mediator] and Step 3 [the path from the mediator to the outcome variable] are met. (p. 260)

We believe that the weakness of the relation between the predictor and criterion reflects a relative power deficit imposed by the fact that N was reduced from 57 to 47 groups due to missing data on the performance measure.

Shared method variance. Critics might ask if our effects could have been due to shared method variance. This is doubtful because the components of the individuation variable were based on variance, positivity was based on the sum of several items, the verification measures were based on differences between two measures taken at different times, and performance was based on objective grades. Furthermore, the components of the individuation measure (i.e., perceiver and relationship variance) were computed after controlling for target variance.

Alternative models. Although the foregoing data indicate that our model offers a relatively complete and compelling account of our findings, two rival models can be advanced to account for some subset of our findings. We briefly consider each below.

Some unknown variable fostered self-verification at the beginning of semester and the level of self-verification carried over to later in the semester. This model receives some support from the fact that initial self-verification (after the initial 10-min meeting) was correlated with the amount of self-verification that targets enjoyed 9 weeks later, $r(55) = .22, p < .05$. Nevertheless, this correlation was rather modest. Also, unlike our model, this explanation provides no insight into the causes of initial self-verification.

Initial impression positivity was associated with initial self-verification, which carried over into later self-verification. Support for this model comes from evidence that initial impression positivity was related to initial self-verification, $r = .45, p < .01$, which was, in turn, related to later self-verification. This explanation, however, implies that positive appraisals are always self-verifying, which they are not. In addition, previous evidence reported by Swann et al.

(2000) indicates that verification of negative self-views was every bit as conducive to creative task performance as was verification of positive self-views. Finally, this model cannot explain the interactive effects of initial impression positivity and diversity on individuation and subsequent self-verification.

DISCUSSION

What is the best strategy for capitalizing on the value in diversity? Self-categorization theorists have offered the most widely accepted answer to this question. They suggest that the key is encouraging group members to align themselves with the superordinate goals of the group. Presumably, as the goals of the group gain priority, a depersonalization process ensues that minimizes the salience of personal identities. Such diminutions in the salience of personal identities smooth the way to performance.

Our findings offer a very different understanding of the most effective way to find value in diversity. In particular, we discovered that the members of our study groups displayed the most creativity when the other group members individuated them and offered them verification for their self-views. The moderated-mediated model displayed in Figure 1 summarizes the relation between our variables. The first link in our model is among diversity, positivity of impressions, and individuation. Whereas perceivers who formed relatively positive impressions of targets translated information about the diverse characteristics of targets into individuated impressions, those who formed relatively neutral impressions tended to homogenize other members of their groups. Second, perceivers who individuated targets were more apt to develop impressions of targets that were self-verifying, presumably because only perceivers who discriminated between different targets (i.e., individuated them) were in an advantaged position to see targets as targets saw themselves. Furthermore, one of the key fruits of individuation—self-verification—fostered identification with the group and performance on creative tasks. Our findings therefore suggest that embracing people's unique identities rather than minimizing these identities is the most effective way to maximize the productivity of diverse groups (Swann, Polzer, Seyle, & Ko, in press).

In addition to challenging self-categorization theory's analysis of the most effective means of fostering productivity in diverse groups, our findings also offer a unique picture of the processes that underlie these phenomena; that is, whereas past research has focused on the relation between input variables (e.g., group composition) and output variables (e.g., performance), our investigation illuminates the events that intervene between these input and output variables (cf. Pelled et al., 1999). For

example, our findings show that people's self-views are critically important determinants of the nature and outcome of group interaction. In addition, the results of our investigation show that it is hazardous to assume that there exists a simple and direct relation between actual diversity and perceived diversity (i.e., individuation); that is, when perceivers were positive toward their other group members, actual diversity fostered perceived diversity. In contrast, when perceivers were neutral toward the other group members, actual diversity diminished perceived diversity. Clearly, it will be important for future researchers to study carefully the links between these two constructs.

Our findings also make a methodological contribution: We introduce a new measure of ingroup individuation. Similar to Boldry and Kashy's (1999) index of perceived outgroup homogeneity, our index of ingroup homogenization and individuation can be used in naturally occurring settings and does not require participants to be aware of the distribution of scores in their group. Relative to previous indices of ingroup homogeneity, then, ours may offer a relatively straightforward and nondemanding strategy for assessing the extent to which perceivers individuate members of their own group.

Before closing, let us add a caveat. Several authors (Jussim, 1991; Kenny & DePaulo, 1993) have discussed a tendency for perceivers to converge on the "true" or "actual" characteristics of targets. Although such a tendency could have masqueraded as self-verification effects in our research, there are three reasons why it is hazardous to claim that they did. First, because we have no way of knowing if our participants' self-views were accurate, assertions about the operation of accuracy processes are necessarily speculative. Second, using this same data set, Swann et al. (2000) tested the accuracy hypothesis on the one dimension for which accuracy information was available (i.e., intelligence). They discovered that self-verification effects persisted when the effects of accuracy (Graduate Management Admissions Test [GMAT] scores) were partialled out. Third, accuracy processes are unlikely to apply to the dimensions we are studying here (e.g., cooperative, fair, trustworthy, etc.) because there is simply no consensus regarding the markers of such qualities and there must be a shared conception of truth for people to converge on it. In light of these considerations, we believe it is more plausible and conservative to couch our findings in terms of self-verification.

CONCLUSIONS

By identifying the psychological processes that forge the links between diversity and performance, our findings offer a novel perspective on the value in diversity hypothesis. In particular, our results suggest that one

fruitful way of finding value in diversity may be to focus on the identity negotiation processes that mediate the links between the characteristics of group members and performance. From this vantage point, there is surely value in diversity, but reaping its full benefits will require developing a more complete understanding of the identity negotiation processes that regulate its expression.

NOTES

1. The only exception to this generalization was that neither the perceiver nor relationship variance were significantly related to creative task performance. The pattern, however, was similar.
2. After noting that diversity and impression positivity were negatively correlated, $r = -.42$, $p < .01$, we became concerned about the effects of multicollinearity. We accordingly computed the Variance Inflation Factor (VIF). The VIF was 1.27 for diversity, 1.23 for positivity, and 1.05 for the interaction term, indicating that multicollinearity was not a problem.
3. Individuation was unrelated to the other two components of Swann, Milton, and Polzner's (2000) measure of connectedness, social integration, and emotional conflict.

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