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**Capitalizing on
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Congruence in Small
Work-Groups**

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Abstract

We introduce interpersonal congruence—the degree to which group members see others in the group as others see themselves—as a moderator of the relationship between diversity and group effectiveness. A longitudinal study of 83 work groups revealed that functional and demographic diversity tended to undermine the functioning of groups with low interpersonal congruence, whereas these detrimental effects of diversity did not emerge in groups with high interpersonal congruence. This pattern produced interaction effects on measures of social integration, group identification, emotional conflict, and creative task performance. Members of some groups achieved enough interpersonal congruence during their first ten minutes of interaction to benefit their group outcomes four months later. In contrast to theories of social categorization, the interpersonal congruence approach suggests that group members can achieve harmonious and effective work processes by expressing rather than suppressing the individuating characteristics that make them unique.

Capitalizing on Diversity: Interpersonal Congruence in Small Work Groups

Diversity has recently captured the attention of those interested in group performance. Proponents of diversity hold that differences among group members give rise to varied ideas, perspectives, knowledge, and skills that can improve their ability to solve problems and accomplish their work. This “value in diversity” hypothesis has received some empirical support (e.g., Watson, Kumar, and Michaelsen, 1993; Jehn, Northcraft, and Neale, 1999). Skeptics, however, counter that members of different social categories tend to view each other through the biased lens of category stereotypes, and that these biases decrease the effectiveness of group interaction (for a review, see Williams and O’Reilly, 1998). Recently, several authors have attempted to reconcile these contrasting viewpoints by suggesting that diversity is a double-edged sword, improving group performance on some tasks, but all too often disrupting group processes (Guzzo and Dickson, 1996; Milliken and Martins, 1996; Pelled, Eisenhardt, and Xin, 1999; Jehn, Northcraft, and Neale, 1999).

In this paper we introduce interpersonal congruence as a moderator of the relationship between diversity and group effectiveness. Grounded in research and theorizing on self-verification processes (Lecky, 1945; Swann, 1983; 1987), we define interpersonal congruence as the degree to which group members see others in the group as others see themselves. We suggest that high levels of interpersonal congruence will attenuate the negative effects of diversity. Moreover, we propose that an understanding of the salutary effects of congruence will allow people to circumvent a limitation inherent in using social categorization processes to capitalize on diversity. To fully appreciate the potential benefits of interpersonal congruence, one needs to consider diversity research in historical context.

Viewing Diverse Groups Through a Social Categorization Lens

Efforts to capitalize on diversity over the last four decades have met with frustratingly equivocal results. In response, researchers have intensified their efforts to understand why diversity is so often disruptive. To this end, most studies rely upon social identity theory (Tajfel, 1982) or self-categorization theory (Turner et al., 1987) to predict and explain diversity's harmful effects. These theories suggest that greater diversity will cause workgroup members to employ social categorizations based on their demographic or functional distinctions rather than their shared workgroup (Lau and Murnighan, 1998). Categorizing other workgroup members into an ingroup (those who are like me) and an outgroup (those who are different) causes people to perceptually accentuate both their similarities with ingroup members and differences from outgroup members (Tajfel, 1978). Consistent with this accentuation, people tend to exhibit favorable biases toward members of their ingroup while derogating outgroup members (Brewer, 1979). Such intergroup categorizations among workgroup members increase dysfunctional conflict and turnover while undermining cohesion, social integration, informal communication, and, consequently, group performance (e.g., Smith et al., 1994; Tsui, Egan, and O'Reilly, 1992).

This reasoning has triggered a search for moderators of the harmful effects of diversity caused by social categorization processes. Harrison, Price, and Bell (1998) found that group longevity diminished the negative effect on group cohesion of surface-level diversity (e.g., sex diversity), but strengthened the negative effect on group cohesion of deep-level diversity (e.g., diversity in overall work satisfaction). Watson, Kumar, and Michaelsen (1993) similarly found that the effect of diversity on group dynamics and performance depended on group longevity. Diverse groups initially underperformed homogeneous groups but eventually equaled or exceeded the performance of homogeneous groups when all groups were provided with regular process and performance feedback. The mechanisms responsible for this improvement were not clear, however. Westphal and Milton

(2000) found that demographic minority members of corporate boards overcame detrimental social categorization processes and exerted more influence when they were either socially tied to others on the board or relatively experienced in the role of minority board member. Chatman, Polzer, Barsade, and Neale (1998) found that compared to an individualistic organizational culture, a collectivistic culture enhanced social interaction and creative performance to a greater degree in diverse groups than homogeneous groups. Consistent with self-categorization theory, a collectivistic culture made the organizational boundary more salient than demographic categories as the basis for social categorization, facilitating harmonious interaction among demographically different people. Such findings are bolstered by studies in which members of distinct subgroups cooperate more when a superordinate collective boundary is made more salient than subgroup boundaries (e.g., Kramer and Brewer, 1984; Polzer, Stewart, and Simmons, 1999).

Research inspired by self-categorization theory, then, suggests that inducing group members to replace cross-cutting demographic or functional categories with the inclusive workgroup boundary as the basis for social categorization will reduce the detrimental effects of intergroup biases (Gaertner, Mann, Murrell, and Dovidio, 1989). The logic underlying this prescription is that increases in the salience of a social category at one level of aggregation (e.g., a superordinate collective) will necessarily decrease the salience of categories at other levels (e.g., a subgroup) (Turner, 1985). Recent work in social cognition corroborates this assertion by suggesting that when perceivers are confronted with a multiply categorizable target, a cognitive competition among all relevant categories results in the activation of a single dominant category that guides subsequent perceptions and behavior (Macrae and Bodenhausen, 2000; Sinclair and Kunda, 1999). In diverse work groups, this implies that increasing the salience of the inclusive work group boundary should decrease the salience of intercategory

differences among group members. Such a recategorization should cause workgroup members to replace their personalized self-conception with a cognitive representation of themselves (and other group members) as embodiments of a workgroup “prototype” (Hogg and Terry, 2000). Such depersonalization heightens group members’ perceived similarities and attenuates their perceived differences (Turner, 1985), reducing the detrimental effects of categorical diversity.

For those interested in capitalizing on the value in diversity, however, self-categorization theory’s “solution” to problems associated with diversity may be costly. Specifically, although evoking a collective categorization may minimize the use of category-based biases and stereotypes (e.g., for organizational functions such as accountant, engineer, and salesperson and outward personal characteristics like sex, race, and age), it may also discourage individuals from thinking and acting in ways associated with their unique category memberships (Gaertner et al., 1989). Yet, it is precisely these unique ways of thinking and acting that constitute the potential positive contribution of a diverse workgroup! Therein lies the quandary: how can group members simultaneously avoid intergroup categorizations while fully utilizing the perspectives of their distinct category memberships?

To be sure, abundant anecdotal evidence suggests that diverse groups sometimes do emphasize their differences *and simultaneously* become socially integrated. How this happens, however, is unclear. Williams and O’Reilly (1998), for example, noted that: “While it is clear that there are potentially negative consequences from social categorization processes operating in groups, it remains unclear how successful groups overcome these obstacles. Some evidence suggests that the successful management of conflict is one such mechanism. Other evidence hints that increasing familiarity and collectivistic norms also help... But what is the theoretical basis of these effects?” (p. 118-119).

Unfortunately, theories of social categorization offer little insight into how some diverse groups interact effectively while remaining cognizant of their differences.

Identity Negotiation and Interpersonal Congruence

To answer this question, we apply the social psychological framework of identity negotiation (Goffman, 1959; Swann, 1987). The early writings of Cooley (1902) and Mead (1934) gave rise to the identity negotiation framework. They were interested in how people formed beliefs about themselves. They argued that individuals infer who they are based on how others treat them. For example, whereas those who are applauded for their intelligence will come to view themselves as bright, those who are admired for their imagination will develop positive conceptions of their creativity.

Clearly, however, people are not just milquetoasts who passively sit back and absorb any identity-relevant information that they encounter. Instead, part of the business of constructing who one is involves active efforts to influence what others think (Goffman, 1959). If, for instance, people view themselves as creative or intelligent or trustworthy, by "acting the part" they will try to bring their partners to see them congruently. Their actions will, in turn, increase the chances that their partners will indeed come to see them "congruently", that is, as they see themselves (Swann, 1983).

Recent research on identity negotiation processes suggests that when people interact with others who verify their self-views, they will feel more comfortable and satisfied with the interaction. Why? There are at least two reasons for this. One set of reasons is epistemic. When people sense that they see others congruently, they can rest assured that they know how their interaction partners are apt to behave. As a result, their feelings of coherence, predictability, and control will be bolstered (e.g., Swann, Stein-Seroussi, and Geisler, 1992). Other benefits of congruence are pragmatic. That is, insofar as people agree on their mutual identities, they will know how to behave and how their

interaction partners are apt to react to them. This knowledge will facilitate smooth social interaction and enhance the chances that people will be able to achieve the goals that brought them to the interaction. Thus, for both epistemic and pragmatic reasons, people should prefer and seek self-verifying evaluations. A growing body of research supports this proposition. In fact, so powerful is this desire for self-verifying feedback that even when people have negative self-views, they work to verify them by eschewing positive feedback in favor of negative, verifying feedback (Swann and Read, 1981; Swann, Pelham, and Krull, 1989; Swann, De La Ronde, and Hixon, 1994; for an overview, see Swann, 1996). This preference for self-verification means that increments in congruence should reap rich psychological dividends for the participants in the interaction.

Thus, whereas self-categorization theory suggests that people should *surrender* their personal identities to achieve group harmony, the identity negotiation framework in general, and the self-verification perspective in particular, suggests that people should *externalize* their self-views by bringing others to see them as they see themselves (i.e., congruently). The identity negotiation framework thus identifies processes associated with increments in congruence as those through which diverse group members can achieve harmonious and effective work processes, without requiring them to suppress the individuating characteristics that make them unique.

The Consequences of Congruence in Groups

Interpersonal congruence may have considerable impact on three especially potent indicators of group functioning: social integration, group identification, and intragroup conflict. Social integration refers to the degree to which group members are attracted to the group, feel satisfied with other members, interact socially with them, and feel psychologically linked to each other (Katz and Kahn, 1978; O'Reilly, Caldwell, and Barnett, 1989). Group identification is the perception of oneness with or

belongingness to the group (Mael and Ashforth, 1992), involving cognitive, affective, and evaluative dimensions (Tajfel, 1982). Social integration and group identification are distinct aspects of members' behavioral and psychological connection to their groups. We expect interpersonal congruence to heighten social integration and group identification. This predicted link is supported by evidence that roommates who were high in interpersonal congruence were more likely to choose to remain roommates (McNulty and Swann, 1994). In another series of studies, marital partners higher in interpersonal congruence were more committed and intimate (e.g., De La Ronde and Swann, 1998; Swann, De La Ronde, and Hixon, 1994).

To date, the only study of identity negotiation processes in a group context was conducted by Swann, Milton, and Polzer (2000). They found that self-verification—the extent to which targets brought other group members to see them congruently—increased feelings of connectedness among group members (e.g., social integration, group identification, and reduced emotional conflict) along with creative task performance. A second route to congruence—the extent to which group members' appraisals influenced targets' self-views—did not significantly influence feelings of connectedness or creative task performance. These findings suggest that identity negotiation processes might provide an antidote to the deleterious effects of diversity on group processes. Swann et al. (2000), however, did not examine the effects of diversity.¹

¹ Swann et al. (2000) found that groups benefited most from self-verification effects. Their index of self-verification effects consisted of the change in the average appraisal of other group members (toward participants' initial self-views) from just after the group members met to several weeks later. This measure is conservative because it does not capture identity negotiation processes that occur in the

While interpersonal congruence may have an unequivocally positive effect on social integration and group identification, its effect on intragroup conflict—another integral facet of group functioning—may depend on the type of conflict. Researchers have distinguished emotional conflict, defined as interpersonal incompatibility accompanied by tension, annoyance, and frustration, from task conflict, defined as disagreement about the tasks being performed, including such issues as priorities, goals, alternatives, and appropriate choices for action (Jehn, 1995; 1997; Pelled et al., 1999). We predict that interpersonal congruence should decrease emotional conflict among group members. Because people who verify each other's self-views understand how they differ and even come to expect differing behavior, they should find it easier to tolerate behaviors that might otherwise disrupt the relationship. For example, a group member who views himself as creative and, as a result, frequently expresses unusual ideas should fit in harmoniously with those who see him as a "creative type." In contrast, the same person may be deemed annoying and distracting by group members who do not share his view of himself. Interpersonal congruence should thus lessen the frustration and anger that often arises during intensive work interaction. This prediction is consistent with research showing that self-verification leads to positive emotional responses, while the *lack* of self-verification can lead to negative emotional responses (Burke and Stets, 1999).

critically important first few minutes of interaction (Kenny et al., 1992). Because we wanted our index of identity negotiation to capture processes that occurred immediately as participants met, we abandoned Swann et al.'s index of self-verification in favor of an index of congruence. Our focus was thus on how the aggregate level of congruence in the group interacts with diversity to affect group functioning.

Hypothesis 1: Higher interpersonal congruence among workgroup members will lead to greater social integration, greater group identification, and less emotional conflict.

The net effect of interpersonal congruence on task conflict is less clear. Because people's self-views are products of their backgrounds and experiences, having these self-views verified by other group members may make them feel more comfortable expressing their unique ideas and perspectives. If interpersonal congruence increases the number of divergent ideas people express about task issues, this could increase task conflict. On the other hand, emotional conflict and task conflict are typically highly correlated (Simons and Peterson, 1999). The reason may be related to the fact that conflict implies not just differing ideas but some degree of emotional friction caused by their expression. Assuming that people's ideas correspond with their self-views (e.g., people who view themselves as analytical tend to focus on the logic of various alternatives), interpersonal congruence should make others' contributions more predictable and defuse any sense of personal threat associated with a divergent opinion. Ideally, the net effect of interpersonal congruence may be that group members express their unique task-related ideas with little accompanying emotional friction or frustration. These ideas lead to the following hypothesis for task conflict:

Hypothesis 2: Higher interpersonal congruence among workgroup members will lead to more task conflict.

Interpersonal congruence should also directly improve group performance by promoting the expression of unique ideas while dispelling the conflict that so often erupts between people with discrepant ideas. The more unique ideas a group generates to solve its work problems, the more likely it is to find good solutions. This should provide some benefit to group performance independent of group processes (recognizing that effective group processes might further enhance performance by

facilitating the selection among ideas). This performance benefit should be most evident on creative group tasks, which have no clearly defined criterion and for which the group benefits by considering as many perspectives and alternatives as possible (Hambrick, Davison, Snell, and Snow, 1998). In contrast, we see less reason to expect such a performance benefit on computational tasks, which involve assembling and analyzing clear cut information to derive a solution that has an objective criterion (e.g., a math problem), and might best be left to an individual with expertise relevant to the task.

Hypothesis 3: Higher interpersonal congruence among workgroup members will lead directly to higher group performance on creative tasks.

How Interpersonal Congruence Moderates the Effect of Diversity

Because members of homogeneous groups are similar (by definition), social categorization processes and the tendency for similar people to be attracted to each other (Byrne, 1971) may work in concert with interpersonal congruence to smooth the social interactions among members of these groups. Because these forces align in homogeneous groups, an abundance of interpersonal congruence is likely to contribute only marginally to the already high levels of group functioning stemming from members' similarity.

In contrast, groups with greater diversity do not enjoy the advantages associated with similarity and its covariates and are more likely to suffer from dysfunctional intergroup biases that undermine group functioning. Yet, even categorically dissimilar group members with disparate self-views may achieve high interpersonal congruence so long as their appraisals are congruent with other members' self-views. Just as harmful intergroup categorization processes are more likely to occur as group diversity increases, so the benefits of interpersonal congruence are more likely to offset such harm in groups with greater diversity. Accordingly, we suggest that the effect of greater diversity on group

functioning will depend on the level of interpersonal congruence in the group. When interpersonal congruence is low, the negative effects of increased diversity on group functioning may go unchecked. The benefits of high levels of interpersonal congruence, however, may provide a buffer against the potentially disruptive effects of diversity by promoting mutual understanding and appreciation for one another's perspectives.

How might interpersonal congruence and diversity influence creative task performance?

Beyond simply nullifying the detrimental effects of diversity on social integration, group identification, and emotional conflict, high levels of interpersonal congruence may allow diversity to have a positive effect on creative task performance. That is, high interpersonal congruence should enable group members to express the information they can draw from their unique category memberships and work harmoniously to optimally integrate their disparate perspectives. As a result, diverse groups with high interpersonal congruence should exhibit the highest performance on creative tasks. This prediction is consistent with the "value in diversity" hypothesis that although diversity may sometimes hurt group processes, it also has the potential to improve task performance (Jehn et al., 1999). This implies that for creative task performance the level of interpersonal congruence will moderate not just the strength, but also the *direction* of the effect of diversity. Stated as interaction hypotheses:

Hypothesis 4: Under low levels of interpersonal congruence, increased diversity will have a negative effect on creative task performance, while under high levels of interpersonal congruence, increased diversity will have a positive effect on creative task performance.

Hypothesis 5: The lower the group's interpersonal congruence, the more negative the effect of increased diversity on social integration and group identification and the greater the likelihood that increased diversity will contribute to emotional conflict.

The Effect of Social Integration, Group Identification, and Conflict on Performance

Interpersonal congruence may also have an indirect effect on group performance through its effect on social integration, group identification, and conflict, which are each in turn likely to affect performance (Guzzo and Dickson, 1996). Groups whose members are more socially integrated should be able to coordinate their efforts more effectively and efficiently (Shaw, 1981). This idea has received support from studies finding an association between social integration and positive group outcomes (e.g., O'Reilly, Caldwell, and Barnett, 1989; Smith et al., 1994). Group identification should also enhance performance by increasing members' cooperation with group interests and the effort they exert on behalf of the group (Kramer, 1991; O'Reilly and Chatman, 1986).

Conflict is likely to have a more varied effect on performance. Emotional conflict has few redeeming qualities and tends to have a negative impact on performance (Jehn, 1997; Pelled, 1996). This type of conflict can create a hostile and uncomfortable interpersonal climate, with the anxiety that accompanies such a climate limiting the ability of members to cognitively process debate (Zajonc, 1965; Staw, Sandelands, and Dutton, 1996). Group members embroiled in emotional conflict may be unreceptive to others' ideas and unwilling to share their own (Pelled, 1996), and may eventually disengage psychologically or physically from the group (Peterson, 1983; Ross, 1989). Because creative tasks derive the most benefit from an integration of group members' perspectives, performance on such tasks is likely to be negatively affected by emotional conflict.

In contrast, moderate levels of task conflict may enhance group performance (Jehn, 1995; Shah and Jehn, 1993; Pelled, Eisenhardt, and Xen, 1999). Moderate task conflict is associated with an exchange of ideas and opinions, which leads to a more complete understanding of issues and alternative solutions and culminates in optimal decisions (Amason, 1996; Schweiger, Sandberg, and Rechner,

1989; Tjosvold, 1986). Like emotional conflict, the benefit of task conflict is likely to be most evident on creative task performance.

Hypothesis 6: Higher levels of social integration and group identification will lead to higher group performance on creative tasks.

Hypothesis 7: Lower levels of emotional conflict, but higher levels of task conflict, will lead to higher group performance on creative tasks.

The Emergence of Interpersonal Congruence Over Time

At first blush, it might seem that group members would require substantial interaction to achieve a sufficient level of interpersonal congruence to benefit group functioning. After all, multiple attempts at conveying self-relevant information might be necessary to shape the appraisals of other group members, especially since group settings divide each perceiver's attention among several targets. Moreover, despite targets' motivation to bring others' appraisals in line with their own self-views, it may take time to achieve enough psychological safety in a group to overcome risks associated with self-disclosure (Edmondson, 1999). This seems especially likely in work contexts that reward competence and favor people with positive reputations. Supporting this line of reasoning, Sanna and Shotland (1990) found that the tendency to express unusual information—e.g., idiosyncratic self-views—increased as group members became more familiar with one another. These considerations suggest that the predictive power of interpersonal congruence for subsequent group functioning will increase over time as group members adjust their self-views and appraisals as a function of their accumulated interactions.

Having said this, considerable evidence suggests that the identity negotiation process may sometimes unfold very rapidly, raising the possibility that congruence may develop very early in relationships. Even brief glimpses of expressive behavior can reveal a wealth of information about

targets through facial expressions, movements, gestures, and other nonverbal behavior (Albright, Kenny, and Malloy, 1988). And researchers have found that impressions based on observing a photo or meeting someone for a brief period are often surprisingly congruent with targets' self-views (Albright, Kenny, and Malloy, 1988; Ambady and Rosenthal, 1992; 1993; Kenny, Horner, Kashy, and Chu, 1992; Watson, 1989). Similarly, romantically involved couples were every bit as accurate in estimating their partner's self-views, activity preferences, and sexual histories after knowing them for two weeks as they were after knowing them for five years (Swann and Gill, 1997). Furthermore, college roommates displayed a similar pattern (Swann and Gill, 1997). These findings and related ones suggest that perceivers may be adept in translating modest amounts of information into highly accurate inferences and that targets, for their part, may take careful steps to convey their self-views during initial meetings with people on whose outcomes they are somehow dependent. Together, these data suggest that the congruence that interaction partners achieve early in their relationships may be substantial enough to predict later group functioning.

The Effect of Similarity on Interpersonal Congruence

For several reasons it may be easier for group members who are similar to achieve interpersonal congruence. Pragmatically, similar group members may share common verbal and nonverbal languages, schemas, and interpretations that help them to communicate with each other (Ethier and Deaux, 1994). When appraising a similar target, members may rely less on stereotypes and attune themselves instead to any individuating cues the target exhibits, increasing interpersonal congruence (Fox, Ben-Nahum, and Yinon, 1989; Hamilton, Sherman, and Ruvolo, 1990). Moreover, if similar people have similar self-views, and perceivers project their own self-views when appraising similar targets, then similarity should increase interpersonal congruence. These possibilities lead to the following prediction:

Hypothesis 8: Increased similarity among work group members will be positively associated with interpersonal congruence.

METHOD

Participants

Participants in this study were 423 first-semester MBA students at the University of Texas at Austin. Most participants were male (74%), U.S. citizens (82%), and Caucasian (67%). In addition, 17% were Hispanic, 5% were Black, and 11% were Asian. The mean age was 27 years.

Prior to the beginning of the semester, the administration of the Graduate School of Business assigned members of the incoming MBA class into 83 study groups with four to six members per group. To enhance pedagogical opportunities, team assignments were designed to maximize within-team diversity by using a sorting algorithm coupled with random assignment. The algorithm maximized team diversity along the dimensions of sex, ethnicity, country of origin, previous job experience (including function and industry), and proposed functional concentration in the MBA program. Once assigned, members of each group were required to complete group project assignments in the majority of their required courses during their first semester. Because these group projects accounted for a substantial portion of students' individual course grades, we were confident that participants would take seriously their involvement in the study groups.

Procedure

We measured participants' self-views and appraisals at the beginning and shortly after the midpoint of the semester. To capture initial interpersonal congruence, we measured self-views immediately prior to the groups' initial meeting and appraisals as soon after the groups' initial meeting as was possible. Specifically, we measured participants' self-views either one or two days (depending on

their session) before they learned of their study group assignment. To enable this early measurement and to guide the groups' initial interaction, we conducted our first two data collection sessions during the orientation week for entering MBA students sponsored by the Graduate School of Business. We introduced the first session by asking students to participate in an investigation of the characteristics of effective study groups. We told students that their participation would involve completing a series of four questionnaires over the fall semester and that only members of the research team would see their responses. Participants then completed the initial measure of self-views along with control measures of work style preferences and prior experience working in teams (T1a). Over the next two days participants returned in assigned cohorts of about 60 students each for the second session (T1b). After announcing the group assignments at the beginning of the session, we allowed groups to interact for 10 minutes. After this interaction, all participants returned to their seats and recorded their appraisals of each of the other members of the group. We controlled the order in which participants rated each other group member to ensure that ratings were not biased by order effects. We timed the next session (T2) so that it occurred nine weeks into the semester—presumably after students had time to interact and work together and, in so doing, sort out their mutual identities. Participants completed measures of their self-views and appraisals of other team members during this session. Finally, at the end of the semester (T3) we collected measures of group functioning. After the semester concluded, we were able to collect group project grades from 10 of 15 course instructors and archival demographic data from program administrators.

Independent Variables

Group heterogeneity. We measured group heterogeneity along seven dimensions. We used the coefficient of variation (standard deviation divided by the mean) to calculate age heterogeneity,

which was the only continuous heterogeneity dimension. We used Blau's (1977) heterogeneity index to compute group heterogeneity scores for each of the six remaining categorical dimensions. This index is calculated with the formula:

$$1 - \sum p_i^2$$

where p is the proportion of the group in the i^{th} category. A higher index score indicates greater heterogeneity 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. Like Jehn, Northcraft, and Neale (1999), we aggregated these seven dimensions into two composite heterogeneity measures: demographic heterogeneity—age, sex, race, and citizenship—and functional heterogeneity—previous degree, previous job function, and MBA concentration.

Interpersonal congruence. Students rated both themselves and each of the other members of their study group on 11 dimensions. We took four dimensions (intellectual/academic ability, creative and/or artistic ability, social skills/social competence, and competency or skill at sports) from the short-form of the Self-Attribute Questionnaire, which consists of self-views that are central to perceptions of self-worth (Pelham and Swann, 1989). We derived six additional items from a preliminary survey in a previous semester of 110 MBA students in which they indicated the importance to them of each of 37

characteristics and abilities that we deemed potentially relevant to teamwork. The results of the survey indicated that the following six characteristics were particularly important: trustworthy, leadership ability, cooperative, a hard-worker, fair, and competitive. We also added one final item to tap people's global positive versus negative impressions of the target of the rating: competent and likable in general. For each of the 11 dimensions, participants rated themselves at T1a and T2 and the other members of their study group at T1b and T2. Participants rated themselves and others on each dimension relative to other first year MBA students in the university on 10-point, percentile-based scales.

We calculated interpersonal congruence scores between T1a self-views and T1b appraisals (hereafter called T1 congruence) and between T2 self-views and T2 appraisals (T2 congruence). To calculate group-level congruence, we first calculated an individual-level congruence score for each participant. In doing so, we treated each group member as both a target of others' appraisals and as a perceiver of each of his or her group members. For each of the 11 dimensions, we found the absolute value of the difference between a participant's self-view and each other group member's appraisal of that participant. We then calculated the average absolute value of these difference scores across all the group members who appraised that participant. This resulted in each participant having a single congruence score for each of the 11 dimensions. For each participant, we then calculated the mean congruence score across the 11 dimensions. This resulted in each participant having a single congruence score. We then aggregated the individual congruence scores by averaging across all the members of a group to arrive at a group-level congruence score. This aggregation was justified because workgroups accounted for a significant amount of variance in T1 congruence ($F(82, 270) = 1.69$, $p < .001$; intraclass correlation = .14), T2 congruence ($F(82, 323) = 1.79$, $p < .001$; intraclass correlation = .14), and the change in congruence between T1 and T2 ($F(82, 258) = 1.58$, $p < .004$; intraclass

correlation = .12). To aid interpretation, we multiplied these congruence scores by (-1) so that a higher congruence score indicated greater congruence.

Dependent Variables

We collected four outcome measures at the end of the semester (T3) and grades on group projects after the semester.

Social integration. We measured social integration using Smith et al. (1994)'s scale. Respondents indicated the extent to which they agreed or disagreed with statements such as: "Everyone's input is incorporated into most important study group decisions" on a series of scales ranging from 1 (strongly disagree) to 7 (strongly agree). The internal consistency of the scale was sufficiently high ($\alpha = .82$) that we averaged responses to the nine items in the scale.

Group identification. 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., "When someone criticizes the study group, it feels like a personal insult.") The internal consistency of this scale was substantial, $\alpha = .92$, leading us to average the scores of the six items.

Emotional conflict. Participants used Jehn's (1995) emotional conflict scale to rate how much friction they perceived among members of their study group, how much personality conflicts were evident, how much tension there was among study group members, and how much emotional conflict there was among group members over the preceding four weeks on scales ranging from 1 (none) to 5 (a lot). In light of the substantial internal consistency of the four items ($\alpha = .92$), we averaged scores on this scale.

Task conflict. Participants indicated the amount of conflict about the task itself they perceived over the preceding four weeks using Jehn's (1995) task conflict scale. Subjects' rated the four items in this scale (e.g., "How much conflict about the work you do is there in your study group?") on scales of 1 (none) to 5 (a lot). We used the mean of these four items ($\alpha = .81$) as a task conflict score.

For each of these four dependent variables, we averaged individuals' scores within work groups to create group-level dependent measures. This aggregation was appropriate given that responses of participants within groups were more similar than responses of participants from different groups for each outcome measure (all F 's > 2.36 , p 's $< .0001$, intraclass correlation range = .23 to .50).

Group performance. We collected grades for 14 group projects in several different required courses (all participants took Managerial Economics, Financial Accounting, and Statistics; three of the cohorts were also enrolled in Operations Management and Marketing Management, two cohorts also took Organizational Behavior and Financial Management, and the remaining two took Financial Management and an elective course). To strengthen the causal implications of our analyses, we omitted grades on the few preliminary group assignments that were handed in before the administration of the T2 survey. We collected three or four group project grades for the teams in each cohort (except for one cohort for which we collected two group project grades).

We distinguished creative projects (that would benefit from considering divergent perspectives) from computational projects (that would benefit from having a group member with specialized task expertise) (Hambrick et al., 1998). 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. In contrast, the course project in accounting emphasized quantitative analyses of various companies' financial statements, analyses for which students who possessed specialized accounting expertise could find objectively correct solutions more or less on their own. We averaged the z-scores for the two group projects in the accounting course to form a measure of group performance on computational tasks.

Control Variables

We measured or computed several variables that we thought might be related to group processes for use as control variables. Although past research has shown that group size may affect group dynamics (e.g., Pelled et al., 1999), the groups in our sample varied little in size (range of 4 to 6 members, with 76% of the groups comprised of 5 members). Accordingly, we did not include group size in our analyses in order to preserve a degree of freedom. As a precaution, we reran our analyses with group size included as a control variable and it had no significant effects nor did it substantively change the results.

Mean age. Because mean age and age heterogeneity were positively correlated, we controlled for mean age when testing the effects of age heterogeneity. Age was the only heterogeneity measure calculated from a continuous variable for which it made sense to control for the mean.

Team experience. We asked participants on the T1a survey how many months they had worked in a workgroup in their previous employment. Because people may learn how to work effectively in groups through experience, we controlled for group members' mean length of workgroup experience.

Work preference. We included six questions at T1a designed by Wageman (1995) to tap preferences for working in groups ($\alpha = .81$). Examples of work preference items were “I prefer tasks that allow me to work with others” and “I like my work best when I do it all myself” (reverse-scored). We controlled for group heterogeneity regarding these preferences (i.e., the standard deviation divided by the mean of group members’ preference scores averaged across the six items). We controlled for heterogeneity rather than the group’s mean preference because we suspected that the extent to which everyone shared the same work preferences would determine group harmony. To confirm this assumption, we ran preliminary analyses to ensure that our findings did not substantively change when the mean preference score was added along with preference heterogeneity. They did not (i.e., hypothesis tests that were significant at $p < .10$ or better remained significant).

Cohort. Only two full cohorts took Organizational Behavior during their first semester. Because the Organizational Behavior course included a module at the beginning of the semester on work group dynamics, we created a dummy variable set to 1 for those participants who worked in their assigned work group in the Organizational Behavior course, and 0 otherwise. We also ran the regressions with two dummy variables to indicate the three categories of courses that cohorts took together, but the additional dummy variable did not substantively change the results so we conserved a degree of freedom by using only a single cohort dummy variable.

T1 Liking and Perceived Similarity. We asked participants on the T1b survey to rate how much they liked each person in their group and how similar they were to each person in their group on a scale of 1 (not at all) to 10 (extremely well / extremely). For each of these items, we averaged each participant’s ratings of his or her group members, and then calculated the mean of these individual averages within each group to derive group-level scores for liking and perceived similarity. We included

these measures as control variables to ensure that congruence was not confounded with liking or perceived similarity.

Mean Self-view and Mean Appraisal. We computed a group measure of the positivity of self-views and appraisals at T1 and T2 by averaging each set of ratings across all 11 dimensions and all group members. We controlled for these two components from which congruence was derived—mean self-views and mean appraisals from the same time period as the respective congruence score—to ensure that congruence effects were not a spurious consequence of positive appraisals or self-views contributing to group effectiveness. For example, congruence could have been confounded with positive appraisals for targets with positive self-views. This concern stemmed from considerable research in social psychology suggesting that people are motivated to obtain positive appraisals from their partners (e.g., Jones, 1973). Controlling for the valence of self-views and appraisals diminishes the plausibility of the notion that positivity strivings could account for interpersonal congruence effects.

Data Analysis

All analyses were conducted at the group level. We conducted separate simultaneous regression analyses on each dependent variable to test the hypotheses. We computed the interaction terms from mean-centered independent variables to reduce collinearity between the interaction terms and their component main effects (Aiken and West, 1991). Because we expected greater diversity to have a more positive effect when congruence was higher, we expected the interaction coefficients to be significantly greater than zero for social integration, group identification, and creative task performance, and significantly less than zero for emotional conflict.

RESULTS

The means, standard deviations, and intercorrelations among all the group-level measures are

displayed in Table 1.

Insert Table 1 about here

Hypotheses one, two, and three. Did higher interpersonal congruence among workgroup members lead to greater social integration, greater group identification, and less emotional conflict? The regressions reported in Table 2 show that total T2 congruence had a significant positive effect on T3 social integration and group identification, while significantly reducing T3 emotional conflict. Thus, hypothesis one was supported. Hypothesis 2 was not supported, as T2 congruence did not significantly affect T3 task conflict. We expected that higher interpersonal congruence among workgroup members would lead to better performance on creative group tasks. This third hypothesis was not supported by the main effect of T2 congruence on creative group performance, which did not reach significance.

Insert Table 2 about here

Hypotheses four and five. We anticipated that under low levels of interpersonal congruence, diversity would have a negative effect on creative task performance, while under high levels of interpersonal congruence, diversity would have a positive effect on creative task performance. As shown in Table 2, the interaction between T2 congruence and demographic heterogeneity was significant for creative task performance. To interpret the form of this significant interaction effect, we split the sample at the median of T2 interpersonal congruence into low congruence groups (N= 41) and high congruence groups (N= 42). We then regressed creative task performance on the eight control variables and demographic heterogeneity in each subsample. Supporting hypothesis four, demographic

heterogeneity had a negative effect in low congruence groups and a positive effect in high congruence groups on creative task performance ($\beta = -.12$ vs. $+.21$). This interaction is depicted in Figure 1.

 Insert Figure 1 about here

We expected that the lower the group's interpersonal congruence, the more diversity would undermine social integration and group identification, and the more diversity would contribute to emotional conflict. The equations in Table 2 reveal significant interaction effects between demographic heterogeneity and T2 congruence on social integration and between functional heterogeneity and T2 congruence on group identification. Median split analyses revealed that demographic heterogeneity had a more negative effect in low congruence groups than in high congruence groups for social integration ($\beta = -.10$ vs. $+.15$). Similarly, functional heterogeneity had a more negative effect in low congruence groups than in high congruence groups for group identification ($\beta = -.08$ vs. $+.15$). The form of these interaction effects supports hypothesis five.

In addition to these predicted effects, we unexpectedly found a marginally significant interaction between T2 congruence and demographic heterogeneity on computational task performance. Demographic heterogeneity had a more positive effect on computational task performance in low congruence groups ($\beta = .23$) than in high congruence groups ($\beta = -.29$).

Hypotheses six and seven. The sixth hypothesis, that groups with higher levels of social integration and group identification would have better creative task performance, was supported. When entered in separate regression equations, both social integration ($\beta = .30$, $p < .05$) and group identification ($\beta = .36$, $p < .01$) significantly improved creative task performance. When entered simultaneously, these two variables accounted for a significant amount of variance in creative task

performance ($R^2 = .12, p < .05$), but only the coefficient for group identification remained significant as shown in Table 3. Neither social integration nor group identification significantly affected computational task performance.

We obtained some support for the hypothesis that creative task performance would be higher in groups with lower levels of emotional conflict and higher levels of task conflict. As can be seen in Table 3, emotional conflict had a significantly negative effect on creative task performance. The regression coefficient for task conflict, though in the predicted direction, merely approached significance. Together, these two types of conflict accounted for a marginally significant amount of variance in creative task performance ($R^2 = .07, p < .10$). Neither type of conflict had a significant effect on computational task performance.

 Insert Table 3 about here

The building blocks of later congruence. We next tested the effects of the two logical building blocks of T2 congruence—initial T1 congruence and the subsequent change in congruence between T1 and T2. We created the “change in congruence” variable by subtracting T1 congruence from T2 congruence. Based on prior research, we had reason to expect both that group members might achieve relatively high levels of initial congruence and that they then might substantially increase their interpersonal congruence during their first nine weeks of interaction. Remarkably, the results indicated that initial congruence was indeed high enough to affect group outcomes four months later. Table 4 reports the results of these analyses. T1 congruence had a significant positive effect on T3 social integration, T3 group identification, a marginally significant negative effect on T3 emotional conflict, and a marginally significant positive effect on creative task performance. Change in congruence

had a significant positive effect on social integration and group identification, and a significant negative effect on emotional conflict and (marginally) on task conflict. These results provide further support for hypotheses 1 and 3.

These two measures of congruence also interacted with the two types of heterogeneity to influence group functioning, further supporting hypotheses 4 and 5. The interaction between T1 congruence and demographic heterogeneity was significant for T3 social integration, T3 group identification, T3 emotional conflict, and creative task performance. Demographic heterogeneity interacted significantly with change in congruence on creative task performance and (marginally) on computational task performance. Functional heterogeneity interacted significantly with T1 congruence on creative task performance (though not in the predicted direction) and with change in congruence on group identification.

The patterns underlying six of these eight interactions are consistent with hypotheses four and five. The exceptions to this trend were that functional heterogeneity had a more negative effect on creative task performance under high than low T1 congruence, and demographic heterogeneity had a more negative effect on computational task performance when change in congruence was high rather than low.

 Insert Table 4 about here

Hypothesis eight. The eighth and final hypothesis was that increased similarity among work group members would be positively associated with interpersonal congruence. We tested this prediction by regressing initial and later congruence on the two types of heterogeneity and perceived similarity (along with the control variables). Functional heterogeneity had a marginally significant

negative effect on later congruence ($\beta = -.19$, $p < .10$, one-tailed), but there were no other significant effects for heterogeneity. Perceived similarity at T1 had a marginal positive effect on later congruence ($\beta = .20$, $p < .10$, one-tailed) and a stronger positive effect on initial congruence ($\beta = .41$, $p < .01$, one-tailed). These results provide some support for hypothesis eight.

DISCUSSION

Our results suggest that interpersonal congruence moderates the impact of diversity on group processes and performance. Most provocatively, in groups that achieved high interpersonal congruence after several weeks, demographic diversity enhanced creative task performance; in contrast, in groups that failed to achieve interpersonal congruence, diversity impaired performance. In short, when it comes to transforming the “value in diversity” into high performance, a modicum of interpersonal congruence appears to be highly effective.

Interpersonal congruence moderated the effect of diversity on important dimensions of group functioning other than performance. Mid-semester congruence moderated both the effect of demographic diversity on social integration and the effect of functional heterogeneity on social integration and group identification. That is, the detrimental effects of diversity in groups with low interpersonal congruence tended to occur less in groups with high congruence. While these effects of congruence that emerged after several weeks were noteworthy, we were even more impressed to learn that congruence that emerged after a mere ten minutes of interaction proved to be consequential. For example, initial congruence moderated the effect of demographic heterogeneity on social integration, group identification, emotional conflict, and creative task performance. Furthermore, change in congruence over the first half of the semester moderated the relationship between demographic heterogeneity and creative task performance, and the relationship between functional heterogeneity and group

identification. These interaction effects were all driven by a tendency for diversity to have negative effects when congruence was low but not when it was high.

In addition to moderating the effects of diversity, interpersonal congruence had strong main effects on several dependent variables. Initial congruence had positive main effects on social integration and group identification and a marginally positive main effect on creative task performance. Both change in congruence and later congruence had positive main effects on social integration and group identification, and negative main effects on emotional conflict, indicating that increases in congruence over time enhanced group functioning.

The interpersonal congruence resulting from these identity negotiation processes interacted with diversity to affect the group process measures, which, in turn, had unique effects on creative task performance. Specifically, creative task performance was enhanced by group identification, but impaired by emotional conflict. Thus, through its moderating effect on diversity, interpersonal congruence affected creative task performance both indirectly—via group identification and emotional conflict—and directly. We would also expect these group process indicators to influence unmeasured facets of group effectiveness such as individual member well-being and the group's ability to adapt and improve over time (Hackman, 1987).

Interpersonal congruence as a property of groups

The amount of congruence achieved by a particular target was significantly related to the individual congruence levels of the target's group members. In fact, the group effect was as strong after ten minutes as it was after nine weeks (intraclass correlation = .14 at both T1 and T2). But what happened during those first ten minutes for individual congruence to covary within groups? Perceivers' actions could not have influenced targets' initial self-views, which were measured before group

members met each other. Targets, on the other hand, had ten minutes in which to influence perceivers' initial appraisals of them. Apparently, targets were more successful in bringing perceivers' appraisals into line with their self-views in some groups than in others. Because group members were randomly assigned to groups, systematic differences across groups in perceptiveness or perspective-taking ability is an unlikely explanation of differences in congruence. The most plausible remaining explanation is that targets communicated more information about their self-views in some groups than in others.

What would account for such striking between-group differences in the amount of diagnostic personal information revealed by targets after such a brief introductory period? In a new work environment imbued with strong norms toward conformity, some participants were undoubtedly reluctant to risk disclosing unique personal information that would facilitate self-verification (e.g., information about one's strengths, weaknesses, and unique qualities). Sharing personal information might seem less threatening, however, after others in the group have already disclosed personal information about themselves. If group members appear to be supportive of those who first disclose personal information, and this fosters a belief that the team is safe for interpersonal risk taking, such "psychological safety" (Edmondson, 1999) may create a positive spiral of revelatory information sharing. Moreover, norms of reciprocity might make members more likely to disclose personal information once others in the group openly communicate their own individuating information (Dindia, Fitzpatrick, and Kenny, 1997). Of course, if no one in the group initiates such open dialogue, the unbroken pressure to conform may stifle members from revealing unique information. Indeed, some groups may have discussed only impersonal issues in their initial meeting, such as aspects of the participants' new school, recent activities, or upcoming events. The presence of a self-disclosure "trigger" in the group may thus explain why some groups achieved high levels of congruence after only

ten minutes of interaction but other groups did not.

The effects of initial congruence are particularly compelling in light of the brief interval we gave participants to form initial appraisals. This causes one to ask how quickly group members might achieve enough congruence to benefit group functioning. Consider that in ten minutes, five group members had about two minutes each to introduce themselves. Could congruence achieved in even less time benefit the group? Research in other domains indicates that appraisals based on viewing mere seconds of a target's behavior can have meaningful consequences (Ambady and Rosenthal, 1992; 1993). This suggests that the very first moments when group members encounter each other might set the tone for subsequent group processes by determining whether levels of congruence will be high or low.

While the initial group meeting provided a starting point for interpersonal congruence, group interaction over the first half of the semester provided a wealth of opportunity for identity negotiation processes to unfold. In over half the groups (N= 47), these processes indeed led to greater congruence. Somewhat surprisingly, however, total group congruence decreased in a substantial number of groups (N= 36). Just as gains in congruence smoothed the way for effective work interaction, the interpersonal misunderstandings and disagreements likely to be associated with decrements in congruence impaired group members' ability to integrate their efforts.

Our emphasis on interpersonal congruence contrasts sharply with self-categorization theory, the most prevalent approach to solving difficulties associated with diversity. Self-categorization and interpersonal congruence approaches both assume that people are motivated to minimize subjective uncertainty about "one's self-concept and place within the social world" (Hogg and Terry, 2000, p. 124; Swann, 1990). The mechanisms they propose for minimizing uncertainty are very different, however. The sharpest distinction concerns the standing of the self relative to the group. According to

self-categorization theory, “targets are no longer represented as unique individuals but, rather, as embodiments of the relevant prototype—a process of depersonalization” (Hogg and Terry, 2000, p. 123). In contrast, the interpersonal congruence approach requires neither the existence of a prototypical group member nor cognitive assimilation of the self to this prototype. Indeed, interpersonal congruence does not require people’s self-views to conform to any parameters whatsoever; a group with maximally diverse self-views can achieve perfect interpersonal congruence so long as appraisals match self-views. Because congruence requires no shift in self-conception to render its benefits to the group, members can accentuate their unique attributes.

Paralleling the self-view shift at the heart of self-categorization theory, group members can achieve interpersonal congruence by shifting their self-views in the direction of others’ appraisals. Because appraisals of individual targets may vary widely across the particular targets within a group, this route to congruence is orthogonal to whether members’ self-views become more similar to each other. Moreover, congruence may be most beneficial to creative task performance and harmonious group processes when it is achieved through group members shifting their appraisals toward the self-views of targets rather than the other way around (Swann et al., 2000).

These divergent conceptions of the interplay between the self and group reflect different assumptions about the type of feedback people desire. Self-categorization theory assumes that people are motivated to acquire self-enhancing positive feedback (Hogg and Terry, 2000), whereas the interpersonal congruence approach is predicated on a desire for self-verifying feedback, even if such feedback is negative. Though we did not test these assumptions in our study, they have implications for the accuracy of group members’ appraisals of each other. If group members view themselves as having some negative attribute or lack of ability, the congruence approach suggests they will be more

comfortable among group members who know and understand these qualities than among those who have unsubstantiated positive appraisals. Such an understanding of each other's weaknesses may help group members play to their strengths in contributing to group work.

Interpersonal congruence has several advantages over other theories used to predict and explain the functioning of diverse groups. First, it is parsimonious. In recognizing that group members have unique self-views and hold specific appraisals of each other, it circumvents the need to guess how categorical memberships will play out for particular individuals in particular groups. The interpersonal congruence approach assumes that all factors associated with membership in particular social categories are manifested in group members' specific self-views and appraisals. In this way, all dimensions of diversity are captured in a small set of specific concepts. This framework is also inherently dynamic, recognizing that self-views and appraisals may incrementally change over time in response to group members' interaction. As a dynamic framework, these concepts complement and inform various conceptions of group development. A further advantage is that benefits stemming from interpersonal congruence do not require any externally generated forces or any preexisting conditions (e.g., that group members have particular experiences or social connections before arriving in the group). Any group of people should have the capacity to achieve interpersonal congruence and reap its benefits.

Though any group has the potential to achieve high congruence, our results underscore the fact that not all groups do so. Fortunately, it is easy to imagine how congruence could be increased. For instance, group leaders can encourage members to give honest feedback about their perceptions of others' task-relevant abilities and characteristics and to disclose their own task-relevant self-views. Making such perceptions explicit may increase the probability that group members can reach a mutual understanding of each person's strengths and weaknesses. Of course, such openness may reveal

differences of opinion that are irreconcilable, or evoke defensive behavior that alienates some members of the group. Moreover, some self-views (e.g., lazy, greedy) could hurt the group if verified. Nevertheless, if problems in the group are manifestations of differences in members' implicit perceptions of each other, the potential benefits of getting at the root cause of these problems by illuminating interpersonal perceptions may be worth these risks. Early efforts to increase interpersonal congruence may prevent such problems from arising in the first place. Initial group meetings could be facilitated in ways that lower the risks associated with self-disclosure of relevant diagnostic personal information. From such early interactions a group norm might emerge to value those who draw on their unique experiences to produce novel ideas, fostering continued self-disclosure and respect for idiosyncratic qualities that contribute to the group. Such a norm could be especially potent if members utilize their differences to achieve the shared objectives that presumably brought group members together in the first place. Culture experts typically group together an emphasis on shared objectives and mutual interests with a focus on members' commonalities under the rubric of collectivistic norms (e.g., Chatman and Flynn, 2000). We propose, however, that group members may be able to simultaneously verify each others' unique characteristics—the process that lies at the heart of interpersonal congruence—and keep salient their shared objectives and mutual interests.

Methodological Limitations

The methodological approach we employed has several strengths and, like any single study, some limitations. Our causal claims are strengthened by the study's longitudinal design, which eliminates problems of reciprocal causality inherent in cross-sectional designs. Our control over the timing of the initial surveys relative to group members' introductions allowed us to capture very early congruence, a rare opportunity for non-experimental groups. This control helped to reduce random variation in the

results. Furthermore, we included numerous control variables to reduce the plausibility of alternative explanations for our results, including liking, perceived similarity, participants' team experience, cohort, mean age, and initial work preferences. The results revealed that none of these variables qualified our conclusions. Nevertheless, because we measured rather than manipulated our key variables, this design does not allow us to rule out the possibility that some omitted variable was responsible for scores on both the predictor and criterion variables. Finally, though our participants were adults working together on projects that affected their course grades and subsequent career options, the academic tasks and environment raise questions about the generalizability of our results to other samples and contexts that are left to future research to answer.

We did not hypothesize distinct effects for demographic and functional heterogeneity, although others have done so (e.g., Jehn et al., 1999). For the logic of self-categorization theory to be applicable, a social category is required simply to be a potential basis of self-definition for group members. All of the diversity categories in our study met this requirement. Further, we saw no reason to constrain the hypothesized moderating effect of interpersonal congruence to any particular type of diversity. The logic of this prediction, by focusing on the self-views and appraisals of specific individuals, is applicable to any type of diversity that may disrupt the interaction of these individuals. Empirically, both demographic and functional dimensions of diversity have been found to affect group processes and performance (e.g., Watson et al., 1993; Jehn et al., 1999; Pelled et al., 1999). Given this mixed evidence, our theoretical approach led us to employ a single inclusive conception of diversity in our hypotheses.

Conclusions

Although many have implicated the self-concept in explaining how diverse groups function, few

have established this empirical connection and none have employed our identity negotiation framework to do so. In this framework, individual behavior is guided by a person's self-view and appraisals of interaction partners. Accordingly, interaction among group members will unfold smoothly only insofar as there is mutual understanding. The interpersonal understanding stemming from congruence satisfies members' needs for certainty, coherence, and predictability without requiring them to hold similar self-conceptions. By allowing people with substantial differences to interact harmoniously, congruence liberates diverse members to contribute fully to their group. As a result, interpersonal congruence is a mechanism through which groups can fully capitalize on their diversity.

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Table 1

Means, Standard Deviations, and Correlation Coefficients for Group-Level Variables (N = 83 Groups)

Variables	Mean	S.D.	1	2	3	4	5	6	7
1. Mean Age	27.10	1.29							
2. Team Experience	20.41	11.18	.39						
3. Work Preference Heterogeneity	.20	.08	-.09	.02					
4. Cohort	.29	.46	.00	.01	.12				
5. T1 Liking	7.20	.67	-.07	.00	.01	.07			
6. T1 Perceived Similarity	5.00	.70	-.01	-.02	-.21	.02	.53		
7. Total T1 Mean Self-view	7.51	.50	-.32	-.24	-.12	-.07	.16	.22	
8. Total T1 Mean Appraisal	7.11	.51	-.23	-.07	.24	-.18	.48	.33	.49
9. Total T2 Mean Self-view	7.55	.46	-.21	-.07	-.05	-.10	.10	.09	.57
10. Total T2 Mean Appraisal	7.09	.51	-.16	.12	.19	-.08	.21	.16	.31
11. Demographic Heterogeneity	.30	.06	.01	.03	-.06	.11	-.19	-.15	-.09
12. Functional Heterogeneity	.62	.07	.07	.08	-.14	.03	-.25	-.08	-.03
13. Total T1 Congruence	-1.64	.30	-.13	-.06	-.08	-.09	.09	.33	.23
14. Change in Congruence	-.03	.39	.05	.06	.05	.29	.03	-.13	-.10
15. Total T2 Congruence	-1.67	.33	-.06	.01	-.01	.27	.04	.15	.10
16. Group Identification	5.32	.57	-.10	.17	.08	.03	.22	.24	-.03
17. Social Integration	4.94	.71	-.08	.26	.24	.06	.19	.24	.09
18. Emotional Conflict	2.37	.78	.08	-.18	-.31	.10	-.08	-.13	.15
19. Task Conflict	2.78	.50	.05	.02	-.23	.33	.04	-.11	.11
20. Creative Task Performance	.02	.86	.10	-.08	.11	-.05	-.22	-.13	-.03
21. Computational Task Performance	.00	.79	-.04	.13	.14	.15	-.07	.04	.04

All correlations above .21 are significant at $p < .05$.

Table 1 (continued)

Means, Standard Deviations, and Correlation Coefficients for Group-Level Variables (N = 83 Groups)

Variables	8	9	10	11	12	13	14	15	16
9. Total T2 Mean Self-view	.39								
10. Total T2 Mean Appraisal	.41	.39							
11. Demographic Heterogeneity	-.20	-.07	-.14						
12. Functional Heterogeneity	-.33	-.02	-.28	.04					
13. Total T1 Congruence	.37	.13	.23	-.07	-.12				
14. Change in Congruence	-.29	-.16	.17	.09	-.04	-.58			
15. Total T2 Congruence	-.01	-.08	.41	.05	-.16	.22	.67		
16. Group Identification	.06	-.13	.52	-.17	-.15	.22	.12	.35	
17. Social Integration	.11	-.03	.47	-.06	-.13	.19	.26	.48	.66
18. Emotional Conflict	-.04	.20	-.43	.09	.17	-.08	-.27	-.40	-.53
19. Task Conflict	-.01	.11	-.27	.14	.08	-.12	-.01	-.12	-.24
20. Creative Task Performance	-.01	-.02	.20	.05	-.24	.05	.03	.08	.23
21. Computational Task Performance	.13	.01	-.09	-.08	.20	-.12	.19	.11	.00

All correlations above .21 are significant at $p < .05$.

Table 1 (continued)

Means, Standard Deviations, and Correlation Coefficients for Group-Level Variables (N = 83 Groups)

Variables	17	18	19	20
18. Emotional Conflict	-.79			
19. Task Conflict	-.52	.72		
20. Creative Task Performance	.17	-.19	-.13	
21. Computational Task Performance	.09	-.13	-.01	-.02

All correlations above .21 are significant at $p < .05$.

Table 2

Regression Equations Predicting the Effects of Heterogeneity and T2 Congruence on T3 Dependent Measures and Group Performance

Variable	Social Integration	Group Identification	Emotional Conflict	Task Conflict	Creative Task Performance	Computational Task Performance
Mean Age	-.15	-.19 [†]	.14	.03	.21	-.08
Team Experience	.26**	.20 [†]	-.18 [†]	.05	-.18	.19
Work Preference Heterogeneity	.21*	.04	-.28**	-.27*	.06	.22 [†]
Cohort	-.06	-.04	.21*	.38***	.01	.09
T1 Liking	.03	-.02	.05	.18	-.24	-.12
T1 Perceived Similarity	.21*	.24 [†]	-.15	-.24 [†]	-.06	.12
Total T2 Mean Self-view	-.28**	-.13	.34**	.23 [†]	-.10	.26 [†]
Total T2 Mean Appraisal	.39**	.28*	-.33*	-.24	.33 [†]	-.31 [†]
Demographic Heterogeneity (DH)	.01	-.14	.03	.06	.07	-.12
Functional Heterogeneity (FH)	.05	-.05	.00	-.02	-.23 [†]	.17
Total T2 Congruence (T2C)	.30**	.21*	-.27**	-.09	-.05	.21
DH x T2C	.14*	.09	-.06	-.02	.23*	-.23 [†]
FH x T2C	.02	.30**	.00	-.01	-.14	-.06
Overall model F	7.09***	4.06***	4.94***	2.58**	1.71 [†]	1.81 [†]
R ²	.57	.43	.48	.33	.28	.29
Adjusted R ²	.49	.33	.38	.20	.12	.13
N (Groups)	83	83	83	83	71	72

[†] p < .10; * p < .05; ** p < .01; *** p < .001 tests of directional hypotheses are one-tailed.

Note: Entries represent standardized coefficients from simultaneous regression models.

Table 3

Regression Equations Predicting the Effects of T3 Group Process Measures on Group Performance

Variable	Creative Task Performance	Creative Task Performance	Computational Task Performance	Computational Task Performance
Mean Age	.21 [†]	.19	-.11	-.09
Team Experience	-.25 [†]	-.23 [†]	.18	.14
Group Size	-.11	-.12	.06	.05
Work Preference Heterogeneity	.08	.06	.15	.14
Cohort	-.04	-.06	.13	.12
T1 Liking	-.23 [†]	-.22	-.18	-.19
T1 Perceived Similarity	-.08	-.02	.17	.17
Group Identification	.31*		-.09	
Social Integration	.10		.04	
Emotional Conflict		-.40*		-.12
Task Conflict		.20		.10
Overall model F	1.85 [†]	1.33	0.74	0.75
R ²	.22	.16	.10	.10
Adjusted R ²	.10	.04	.00	.00
N (Groups)	71	71	72	72

[†] p < .10; * p < .05; ** p < .01; *** p < .001 tests of directional hypotheses are one-tailed.

Note: Entries represent standardized coefficients from simultaneous regression models.

Table 4

Regression Equations Predicting the Effects of Heterogeneity, T1 Congruence, and Congruence Change on T3 Dependent Measures and Group Performance

Variable	Social Integration	Group Identification	Emotional Conflict	Task Conflict	Creative Task Performance	Computational Task Performance
Mean Age	-.19 [†]	-.20 [†]	.18 [†]	.06	.18	-.05
Team Experience	.29**	.22 [†]	-.14	.08	-.11	.12
Work Preference Heterogeneity	.33**	.13	-.31**	-.33**	.14	.12
Cohort	-.17 [†]	-.11	.31**	.47***	-.04	.14
T1 Liking	.10	-.01	-.02	.12	-.35*	-.14
T1 Perceived Similarity	.23 [†]	.22 [†]	-.19	-.25 [†]	-.05	.10
Total T1 Mean Self-view	-.09	-.03	.29*	.22	.00	.02
Total T1 Mean Appraisal	-.15	.00	.06	.11	.21	.08
Demographic Heterogeneity (DH)	-.06	-.20*	.10	.13	.03	-.10
Functional Heterogeneity (FH)	-.02	-.06	.05	.00	-.21	.24 [†]
Total T1 Congruence (T1C)	.44***	.32*	-.22 [†]	-.15	.24 [†]	-.08
Change in Congruence (CC)	.58***	.40***	-.58***	-.26 [†]	.12	.13
DH x T1C	.25*	.28*	-.25*	-.21	.29*	-.12
DH x CC	.08	.03	.05	.08	.29*	-.25 [†]
FH x T1C	.05	.16	-.14	.00	-.39*	-.15
FH x CC	.08	.40**	-.02	-.01	-.05	-.22
Overall model F	4.77***	3.29***	4.05***	2.38**	1.49	1.24
R ²	.54	.44	.50	.37	.31	.27
Adjusted R ²	.42	.31	.37	.21	.10	.05
N (Groups)	83	83	83	83	71	72

[†] p < .10; * p < .05; ** p < .01; *** p < .001 tests of directional hypotheses are one-tailed.

Note: Entries represent standardized coefficients from simultaneous regression models.

Figure 1. Interaction of demographic heterogeneity and T2 congruence on creative task performance

