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AN ALTERNATIVE EXPLANATION FOR THE ASYMMETRICAL EFFECTS IN RELATIONAL DEMOGRAPHY RESEARCH

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Several relational demography studies have demonstrated asymmetrical effects of dissimilarity across different groups of employees. Some groups of employees appear to be more influenced by differences from fellow employees, whereas other groups of employees appear indifferent. Although numerous theoretical explanations have been developed to account for these asymmetrical effects, this paper argues that such effects are actually methodological artifacts resulting from an imbalance in the proportion of group members and deficiencies in the most commonly used measure of dissimilarity, Euclidean distance. This paper illustrates how such asymmetrical effects can be observed even when none exist in the population. Suggestions for methodological improvements in future diversity research are discussed along with recommendations for managing diversity in organizations.

As research on the topic continues to accumulate, it is becoming increasingly apparent diversity can have positive, negative, or even no effect whatsoever on a company's bottom line (Jayne & Dipboye, 2004; Webber & Donahue, 2001). Such inconsistent effects have amplified scholarly attention aimed at uncovering the subtle nuances that influence diversity's

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impact on organizational outcomes of interest. For instance, instead of continuing to investigate the simple effects of demography in workgroups, researchers have focused on relative or relational demography. Tsui and O'Reilly (1989) coined the term *relational demography* to refer to "the comparative demographic characteristics of members of dyads or groups who are in a position to engage in regular interactions" (p. 403). This approach estimates the degree to which a person differs from another individual or a larger group with respect to demographic variables (e.g., gender, age, race, tenure) and examines how this dissimilarity influences individual attitudes and behaviors.

Although most relational demography studies are concerned with main effect relationships between dissimilarity and outcomes (e.g., Liao, Joshi, & Chuang, 2004), a number have explored potential moderators. For instance, in perhaps the most oft-cited relational demography study, Tsui, Egan, and O'Reilly (1992) found racial dissimilarity to be negatively associated with psychological commitment, attendance, and intentions to stay with the firm, but the effects were considerably stronger for Whites, as opposed to minorities. One principal conclusion they drew was that Whites care more about being dissimilar than minorities. This seminal study has motivated subsequent researchers (e.g., Bacharach & Bamberger, 2004; Chattopadhyay, 1999; Lichtenstein & Alexander, 2000; Pelled, Eisenhardt, & Xin, 1999) to attempt replication of these effects and explore other instances of asymmetrical effects.

Despite the support in the literature for the existence of asymmetrical effects, this paper calls into question the existence of such effects. We present both theoretical and methodological arguments suggesting that asymmetric effects observed in the literature may be spurious. Our intent is to present an alternative explanation for the asymmetrical effects observed in prior studies. All of the aforementioned studies used the same metric to conceptualize dissimilarity, Euclidean distance (D). We argue that the appearance of asymmetrical effects actually may be a measurement issue resulting from the disproportionate underrepresentation of minorities in work groups. The purpose of this paper is not to add to previous methodological critiques of Euclidean distance. Rather, our aim is to call into question past conclusions in the relational demography literature regarding the existence of asymmetric effects. We present results from a simulation illustrating how previously reported asymmetric effects can be obtained when no such effect truly exists and discuss the implication for future researchers and those interested in managing diversity. In the sections that follow, we review contradictory theory and empirical evidence regarding asymmetry in the relational demography literature. Subsequently, we consider how dissimilarity measurement might help to account for this confusion.

Theoretical Confusion in the Relational Demography Literature

Theoretically speaking, there is reason to expect members of racial/ethnic minority groups to experience equivalent, less pronounced, or more pronounced effects of dissimilarity than those in the majority. In formulating relational demography, Tsui and her colleagues (Tsui et al., 1992; Tsui & O'Reilly, 1989) relied heavily on social identity (Tajfel & Turner, 1986) and self-categorization theories (Turner, 1987). Together, these two perspectives suggest individuals classify everyone (including themselves) along salient dimensions such as race, sex, and age. Based on these classifications, others are deemed either similar (i.e., in-group members) or dissimilar (i.e., out-group members) to oneself and individuals typically exhibit bias in favor of the former. Accordingly, employees, irrespective of group membership, should prefer and react more favorably to organizational settings containing a greater proportion of in-group members. In other words, the effects of dissimilarity should be equivalent across groups.

Although Tsui and O'Reilly's initial theorizing predicted equivalent effects across groups based on this type of reasoning, Tsui et al. (1992) later amended the relational demography framework to include nonsymmetrical effects across demographic groups. These effects were based primarily in two tracts of logic. First, because favorable outcomes (e.g., power, resources) tend to be associated more closely with majority than minority groups, they posited that women and minorities might stand to reap some benefits by being surrounded by more out-group members. Conversely, White male employees would be relatively more disadvantaged as the number of White men decreased. Second, Tsui et al. suggested that women and minorities could be desensitized to dissimilarity (relative to White men) because they have been, and continue to be, underrepresented in most settings within the United States. Collectively, this suggests asymmetrical effects of dissimilarity that are more pronounced for members of the majority group.

Although both of these explanations appear logical, more recent researchers (e.g., Avery, McKay, & Wilson, 2008; Liao et al., 2004) have proposed arguments involving yet a third alternative. Because threats to one's identity are more commonplace for those in the numerical minority, identity affirmation concerns tend to be greater among women and minorities than among White men (Tajfel, 1982). Demographic dissimilarity constitutes a potential identity threat because identity affirmation is more likely (or is at least thought to be) in settings wherein in-group members are better represented. Following this argument, underrepresented groups should be more affected by demographic dissimilarity than Comparable White men.

The preceding discussion illustrates a conundrum within the relational demography literature. Specifically, there are viable theoretical rationales to predict either form of asymmetrical effect or symmetrical effects of demographic dissimilarity. Such theoretical inconsistencies often can be resolved by turning to findings of the empirical literature. In this case, however, the findings provide no help in clarifying the issue. For instance, several authors (e.g., Chattopadhyay, 1999; Mueller, Finley, Iverson, & Price, 1999; Pelled et al., 1999; Tsui et al., 1992) have reported asymmetrical effects that were stronger for the majority. Conversely, other authors (e.g., Avery et al., 2008; Chatman & O'Reilly, 2004; Liao et al., 2004) have found the opposite to be the case. A third group of studies (e.g., Graves & Elsass, 2005; Lichtenstein & Alexander, 2000; Riordan & Shore, 1997) has reported mixed support or no evidence of asymmetry altogether. Thus, the empirical results, like the theoretical rationales used to predict them, conflict with one another.

These contradictions might indicate a number of things. For instance, authors may need to go to greater theoretical depth in formulating the logic underlying symmetrical or asymmetrical effects of dissimilarity. Perhaps there are individual differences or contextual factors that determine whether effects will be stronger for those in the majority or those in the minority. Recent investigations have done just that, examining factors such as an individual's openness to diversity (Hobman, Bordia, & Gallois, 2004), common in-group identity (Cunningham, 2005), and the demographics of the larger organizational context (Martins, Milliken, Wiesenfeld, & Salagado, 2003) as potential moderators of the effects of dissimilarity. This is an important and practical stream of research that should be continued.

Methodological Concerns in the Relational Demography Literature

Another alternative to reconcile these inconsistent findings, however, is to examine more closely the empirical results in search of explanations for their inconsistency. It is possible that some aspect of the research design commonly used in relational demography research could be responsible for the disparity in the results. For example, Harrison and Klein (2007) recently conducted a critique of diversity measurement in general. They recognize that the numerous inconsistencies in diversity research may result from inadequate conceptualization of measures of diversity and a mismatch between the measure used and the theory guiding the research. They were careful to note, however, that their work did not apply to the relational demography literature, stating that:

> Diversity is a unit-level, compositional construct. Thus, in describing the diversity of a given attribute within a unit (e.g., a group or organization), one describes the unit as a whole, not the focal member's differences from other members—which is the subject of most relational demography research (e.g., Tsui, Egan, & O'Reilly, 1992). (p. 1200).

Nevertheless, a similar evaluation of the measures used to assess asymmetrical effects in relational demography may be helpful in reconciling these inconsistencies. Riordan (2000) provides a general review of the three primary measures of demographic similarity, Euclidean distance, the interaction term approach, and the perceptual approach, noting some of the limitations of each. We wish to expand upon Riordan's work by demonstrating how the most common measure of demographic dissimilarity (i.e., Euclidean distance) could contribute to the inconsistencies observed in the literature. Moreover, we identify a never-before recognized limitation of Euclidean distance that could lead to erroneous conclusions regarding whether relational demography effects are equivalent or asymmetrical.

Euclidean Distance

Most commonly, relational demography researchers have conceptualized dissimilarity as distance, usually measured with Wagner, Pfeffer, and O'Reilly's (1984) Euclidean distance measure, between an individual and each remaining member in the group on a particular demographic trait (Tsui & Gutek, 1999). Because of the distribution of demographic characteristics in the workplace (Fullerton & Toossi, 2001), participant samples often consist of a large proportion of nonminority (i.e., White) employees and few minority employees (e.g., African American, Hispanic, Asian, etc.). As will be discussed, this disproportionate representation has severe implications for the variance of Euclidean distance measures of dissimilarity.

The *D*-score formula measures demographic dissimilarity by averaging the difference between an individual and every other person in the group for some variable. The measure was developed to compare age dissimilarity and date-of-entry dissimilarity with turnover in management positions (Wagner et al., 1984). It has been extended in subsequent research to measure distance for variables including gender (Kirchmeyer, 1995; Liao et al., 2004; Pelled, 1996), education (Tsui et al., 1992), company tenure (Pelled, 1996), and race (Cunningham, 2005; Liao et al., 2004; Pelled, 1996). The *D*-score is the square root of the summed squared differences between an individual's (S_i) value for a demographic variable and the value for every other group member on that same variable (S_j), divided by the total number of scores in the group.

$$\left[\frac{1}{n}\sum_{j=1}^{n}(S_i - S_j)^2\right]^{1/2}.$$

D-scores for nominal variables, like gender and race, range from zero and approach 1.00 when using traditional binary 0/1 dummy codes. For continuous variables, such as age or company tenure, the range of possible *D*-scores depends on the variability of group characteristics. The *D*-score index averages the dyadic differences between each individual and all other members comprising the workgroup; high scores indicate greater distance between a person and the group. For example, a man in a group of four men and two women has a relational score of .58 on gender. A woman's score in this group is the square root of .67 (four divided by six), or .82. After computing *D*-scores for each member of a group on the characteristic of interest, they can be correlated with individual-level outcomes, such as absenteeism or organizational commitment.

Despite the widespread use of Euclidean distance in the relational demography literature, the *D*-score suffers from a number of shortcomings commonly found with difference scores. Most notably, difference scores tend to confound the two components by combining them into a single metric (Edwards, 1994). The overall score for any individual ignores the potential predictive value of the individual's characteristics and the demographic characteristics of the group. A second limitation of the measure is its failure to account for the direction of difference (Edwards, 1994). For example, if race is the variable of interest, a person could be different from the majority by being African American, Asian, or Hispanic. Difference scores treat each of these differences synonymously. Edwards (1994) provided a detailed discussion of additional limitations to the difference score approach.

Although problems with Euclidean distance measures are widely known in the methodological community, it is evident that empirical researchers continue to rely on *D*-scores for tests of asymmetrical similarity effects. The purpose herein is not to provide an additional critique of the difference score approach. Rather, the goal of this paper is to illustrate how the use of Euclidean distance can produce the asymmetrical effects previously observed in the literature. In addition to the aforementioned limitations, we believe the Euclidean distance approach applied to the relational demography literature suffers from another serious limitation that has not been recognized to date. Specifically, we propose that the variability of *D*-scores obtained for individuals who are part of minority groups is severely restricted under realistic conditions (i.e., minority underrepresentation). Because minorities make up a disproportionately small percentage

of the workforce, their dissimilarity scores are less variable than the dissimilarity scores for majority group members. The resulting effect of this reduced variability is the inability to find sizeable correlations between minority group members' dissimilarity scores and outcomes of interest, thus producing the asymmetrical effects observed in the relational demography literature. The following simulation is used to illustrate the nature and extent of the restricted variability.

Monte Carlo Simulation

To illustrate the extent to which *D*-score results reported in typical relational demography studies suffer from restricted variances, we examined the variability of this index of dissimilarity between minority and majority subgroups. We conducted a Monte Carlo simulation to generate realistic data for work groups and computed demographic dissimilarity using Euclidean distance. The simulation can be conceived of as representing data found in a typical relational demography study examining racial dissimilarity. Two factors (described below) were manipulated to generate the data. Based on the group composition, *D*-scores were computed for members of each racial–ethnic group in a sample. The manipulated factors are as follows.

Number of minority groups. Many studies of relational demography have consisted of only one minority group (e.g., African Americans), whereas others have employed more diverse samples including Hispanics, Asians, or other ethnic groups. To model realistic conditions, the number of minority groups present in a particular dataset was 1, 2, or 3. If there were two minority groups present in a sample, the proportion of minorities was divided evenly between the two. If three minority groups were present, the proportion of minorities was divided such that two of the groups consisted of similar percentages and the remaining group was half the size of the other two groups. The rationale for this apportionment was to replicate real world conditions wherein African Americans and Hispanics tend to make up a similar percentage of the workforce and Asians account for approximately one-half the percentages observed for these other groups (Bureau of Labor Statistics, 2005). According to the Bureau of Labor Statistics, in 2005, the workforce was 74% White, 10% African American, 11% Hispanic, and 4% Asian.

Proportion of minorities. Data were simulated such that that the average proportion of minority members was .10, .20, .30, .40, or .50 representing realistic values observed in the literature.

In summary, the data simulations consist of a 3 (number of minority groups: 1, 2, or 3) $\times$ 5 (proportion of minorities: .10, .20, .30, .40, or .50) fully crossed design. The values for each of these factors were intended to

TABLE 1
Average Means and Standard Deviations and Correlations of D-Scores for Minority and Majority Groups

	Minority			Majority		
Condition	*M*	*SD*	*r*	*M*	*SD*	*r*
Number of minority groups						
1	.77	.10	.17	.47	.18	.29
2	.88	.06	.12	.47	.18	.29
3	.91	.05	.09	.48	.18	.29
Proportion of minorities						
.1	.95	.03	.08	.28	.13	.37
.2	.93	.04	.11	.42	.11	.32
.3	.90	.05	.14	.52	.10	.29
.4	.87	.06	.16	.61	.09	.26
.5	.85	.07	.18	.68	.08	.23

be realistic and were obtained from a review of the relational demography literature concerning race. For each of the 15 experimental conditions described above, 100 independent datasets were generated, producing 1,500 different datasets. Within each dataset, the average *D*-score and its standard deviation were computed for each ethnic group. As an illustration of the reduced variability, the primary variable of interest was the standard deviation of the *D*-score obtained for minorities relative to the *D*-score observed for majority group members. In addition, we wanted to explore how the simulated conditions would impact the relationship between dissimilarity and an outcome variable such as turnover intentions. To that end, an additional variable was simulated to correlate equally with both majority and minority dissimilarity scores across all the simulated data so that the effects of reduced variability in situations of minority underrepresentation could be observed more directly.

Results

Table 1 contains the means and standard deviations of *D*-scores for both minority and majority groups for the two factors of the simulation. As expected, *D*-scores were higher for minorities than for the majority, as minorities typically are more dissimilar to the rest of a given workgroup. What is particularly noteworthy is the smaller standard deviations for *D*-scores associated with minority groups when compared to majority groups. In most instances, the minority standard deviation is one-half to one-third the standard deviation observed for the majority. This suggests *D*-scores for minority group members may suffer disproportionately from reduced variability.

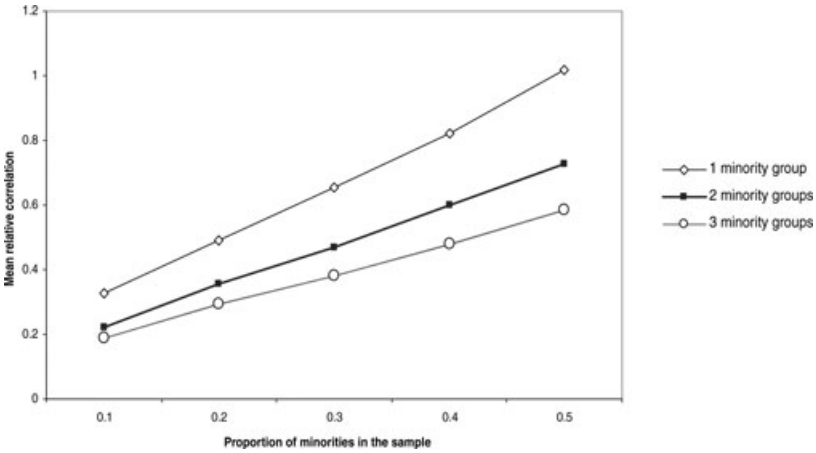

Figure 1: **Mean Relative Correlation Between *D*-Scores and Outcome Variable for Minorities for Increasing Proportions of Minorities When One, Two, and Three Minority Groups Are Present.**

The magnitude of the restricted variability in *D*-scores observed in the simulation was quite severe and had a substantial impact on relationships to other outcome variables. Table 1 also depicts the observed correlation between *D*-scores and a simulated outcome variable for minority and majority groups. Although the data were simulated such that the true relationship between dissimilarity and the outcome variable is equal between the two groups, the observed correlation for minority groups is substantially smaller. In most instances, the observed correlation for minority groups is one-half to one-fourth the size of the observed correlation for majority group members. The observed minority correlation begins to approach the majority correlation as the proportion of minorities increases from 10% to 50%. However, under realistic conditions, where only 10% to 20% of employees are minorities, the magnitude of the observed correlation for minorities is only one-fourth to one-third the size observed for the majority group. Even though the relationship should be identical in magnitude for minority and majority groups, due to the reduced variability in minority *D*-scores, dissimilarity appears unrelated to an outcome in the minority group. In contrast, dissimilarity appears to matter for the majority group because the more extensive variability in their *D*-scores makes a sizable relationship between *D*-scores and an outcome detectable.

Finally, Figure 1 illustrates how these two features interact with one another to affect the correlation between *D*-scores and an outcome. When there is only a single minority group, the larger the proportion of minorities, the more closely the observed correlation for minorities resembles the

correlation found for the majority group. In fact, when minorities comprise approximately half the sample, the relative correlation between *D*-scores and an outcome is approximately 1.00, indicating an identical relationship will be observed in the two groups. However, if more minority groups are present, the proportional increase in minorities has to be divided among more minority groups, thus lessening the relative impact of a larger overall proportion of minorities on the correlation. This suggests that more diverse samples, in terms of the number of minority groups represented, actually produce less variability in minority *D*-scores and makes it more difficult to find sizeable relationships between dissimilarity and outcome variables.

Discussion

In their seminal work on asymmetric effects, Tsui et al. (1992) reported standardized regression coefficients examining the relationship between dissimilarity and psychological commitment to be $-.16$ for Whites and $-.01$ for minorities. But the sample size for Whites was over 1,400 whereas the minority sample size was only 150. A similar pattern was found when frequency of absences was the dependent variable ($\beta = .12$ vs. $\beta = -.04$). Asymmetric effects also were found for gender dissimilarity, suggesting that men were more affected by dissimilarity than women. For example, the regression weight associated with intent to stay was $\beta = -.19$ for men and $\beta = .07$ for women, but the former comprised 70% of the sample. Chattopadhyay (1999) also reported an asymmetric effect of race for multiple outcome variables. For example, the standardized regression weight for the relationship between dissimilarity and altruism was $\beta = -.23$ for Whites and $\beta = .02$ for minorities, and looking at the dependent variable of peer relations, the regression weight was $\beta = -.28$ for Whites and $\beta = .01$ for minorities. For both of these comparisons, the largest minority group was only 23% of the sample.

In all of these instances, the authors investigated the existence of asymmetric effects using Euclidean distance as a measure of dissimilarity when there was disproportionate representation among groups either in terms of race or gender. As we have demonstrated, reduced variability in Euclidean distance measures under realistic conditions of disproportionate representation can have a profound impact on the observed relationship between dissimilarity and subsequent outcomes. This study calls into question prior conclusions in the relational demography literature, namely that dissimilarity matters more to members of majority groups (e.g., Whites, men, etc.) than minority groups. Such a pattern of results may reflect true differences among the groups but also can be explained solely on the basis of methodological artifacts. Past studies measuring dissimilarity with the *D*-score

cannot be counted in support of asymmetrical effects because observed results suggesting majority and minority employees react differently may be due to the measure itself. Moreover, even if a symmetrical relationship is found, limitations associated with the Euclidean distance measure can still produce misleading results. For example, the relationship between dissimilarity and outcome may be stronger for minorities than the majority group. But, because of the reduced variability-associated minority *D*-scores, the magnitude of the observed relationship appears similar to the relationship observed for the majority group.

Alternatives

The above Monte Carlo simulation clearly depicts (a) the extent of reduced variability in *D*-scores when a group is underrepresented and (b) the subsequent impact this has on the correlation coefficient. Given the problems caused by reduction in variance, questions remain regarding the appropriate way to investigate possible asymmetric effects. To that end, other possible approaches will be discussed, as well as, the benefits and limitations of each.

Correction formula. Given that the problems reported herein result from reduced variability, one might consider applying a formula that can correct the observed relationship for restriction of range to determine the true relationship in an unrestricted sample. The standard deviation of the majority group could be used as the unrestricted standard deviation. If such formulas were applied to the simulated data, the corrected correlation for minorities would be identical to the observed correlation for the majority group. Unfortunately, there are a number of important limitations with such an approach. First, such corrections do not solve any of the other aforementioned limitations of *D*-scores. More important, the correction for attenuation formula assumes the slope describing the relationship between the independent and dependent variable is identical in the restricted and unrestricted samples. Clearly, this is an untenable assumption if one is interested in exploring the existence of an asymmetrical effect. If there is no asymmetrical effect, the correction will work appropriately, but if a true asymmetrical effect exists, application of the correction will be misleading.

Proportion dissimilar. Given the problems with Euclidean distance, researchers have advocated other conceptualizations of demographic similarity. One such recommendation is to use proportion dissimilar in place of Euclidean distance. For example, for each individual in the work group, one could calculate the proportion of individuals in the work group that are dissimilar on a particular characteristic. One would no longer be employing difference scores, so concerns regarding that type of measure are

eliminated. Nevertheless, proportion dissimilar is almost perfectly correlated to Euclidean distance. Therefore, when a true symmetric relationship exists between Euclidean distance and an outcome, and an asymmetric pattern of correlations is observed like in the simulation above, proportion dissimilar would display a similar pattern given the almost complete redundancy in the measures. In addition, utilizing proportion dissimilar creates a host of additional problems when the characteristic of interest is no longer categorical. For instance, how does one classify the proportion dissimilar on a characteristic such as age?

Multilevel approaches. One approach advocated by many is to examine demographic similarity as a cross-level effect (see Joshi, Liao, & Jackson, 2006; Sacco, Scheu, Ryan, & Schmitt, 2003). Such an approach may offset some of the many problems associated with difference score indices, while simultaneously accommodating the nested structure of the data that is ignored by Euclidean distance. Using such an approach to examine racial dissimilarity, the Level 1 variable is the demographic categorization of an individual (e.g., minority–nonminority), and the Level 2 variable is the proportion of individuals of a particular demographic category in each work group (e.g., the proportion of minorities in each group). Note that this approach is distinct from the proportion dissimilar approach in some very significant ways. First, everyone from the same group would have the same value for the Level 2 variable using a multilevel approach. Conversely, majority and minority participants from the same group have different values of Euclidean distance or percent dissimilar. Second, the multilevel approach incorporates the true nested structure of the data in the calculation, thereby reducing concerns regarding nonindependence. Unfortunately, like proportion dissimilar, the multilevel approach can be implemented only with categorical data. Moreover, as the number of categories increases, separate equations are needed to incorporate each additional category (e.g., Equation 1 uses proportion of African Americans as the Level 2 variable, Equation 2 uses proportion of Hispanics as the Level 2 variable, Equation 3 uses proportion of Asian as the Level 2 variable, etc.) making interpretation exceedingly difficult. Finally, investigating asymmetry is also more challenging using a multilevel approach because a significant cross-level interaction could be indicative of a symmetrical effect if the interaction is disordinal but also could be indicative of an asymmetric effect if the interaction is ordinal. Similarly, a nonsignificant cross-level interaction could be due to asymmetry but also could be due to low statistical power.

*Recommendation*s. Unfortunately, none of the proposed alternatives adequately addresses questions of asymmetrical effects in relational demography research. As a result, we make the following recommendations to researchers wishing to investigate such effects in the future. Researchers

who rely on Euclidean distance should use caution when analyzing subgroups. At a minimum, future studies should report within-group standard deviations when presenting *D*-score results to alleviate concerns about smaller variances in certain subgroups. In addition, we argue that adequate tests of asymmetrical effects can be performed only when there is sufficient variability among work groups on the measure of dissimilarity being used. Failing to meet this prerequisite will lead researchers to draw potentially erroneous conclusions. We are not alone in our call for the need for more variability. In their critique of diversity research, Harrison and Klein (2007) state, "Samples must include units in which variety is very low and variety is very high. Without this full sampling, relationships between variety and its antecedents or outcomes will be underestimated because of restricted range (p. 1218)."

Theoretical Implications

Our purpose is not to add to the many criticisms of *D*-scores already put forth in the literature. Rather, the unique contribution of this paper is demonstrating that (a) measures of Euclidean distance suffer from reduced variability for minority groups and (b) this reduced variability may account for the asymmetrical effects found in the relational demography literature. From a theoretical standpoint, arguments can be made in support of or in opposition to the existence of asymmetrical effects. Our results do not clarify this theoretical confusion or the contradictory empirical findings within the relational demography literature. Rather, we caution against any interpretation of the existing literature, as the results based on Euclidean distance measures in support of asymmetrical effects are suspect.

Our findings are generalizable to any situation where researchers are evaluating asymmetric relationships using Euclidean distance and there is a disproportionate representation of group members. The problem may be most evident in situations examining asymmetric effects among ethnic groups. Because ethnicity is often severely imbalanced, disproportionate representation is more likely to be present. Moreover, any imbalance may be exacerbated because there are multiple ethnic categories and the number of minorities must now be split up among multiple groups, which causes further reduction in the variance of *D*-scores for minority groups (see Figure 1). The problem of reduced variability is also relevant to the measurement of gender dissimilarity using Euclidian distance, but the severity of the problem is generally smaller for two reasons. First, gender composition in work settings is usually more balanced than racial composition (Fullerton & Toossi, 2001). In addition, gender comparisons are limited to two groups, but racial minority status is often shared by several ethnicities. Nevertheless, researchers still need to be cognizant

of this problem when evaluating the effects of gender dissimilarity. In male-dominated settings, the effects of reduced variability on gender dissimilarity are likely to be just as profound. For example, Bacharach and Bamberger (2004) observed asymmetrical effects for gender dissimilarity, yet men made up 80% of the workforce. Under such conditions, the relative lack of variance in dissimilarity scores for women just as likely could account for the asymmetrical results.

In addition, when exploring potential asymmetric effects of other relational demographic characteristics that have been less focused upon in the literature (e.g., tenure, age, sexual orientation), researchers using *D* should be aware of the potential impact of disproportionate representation. For instance, older, very senior, gay, or lesbian workers may be severely underrepresented in a particular organizational setting. Therefore, using Euclidean distance to capture individual dissimilarity on these dimensions could result in researchers detecting asymmetrical effects when they do not exist, or failing to detect those that do exist.

Practical Implications

Our results also have implications for those wanting to manage diversity in organizations or work groups. Authors of a number of prior relational demography studies using *D*-scores have advised managers to anticipate stronger negative effects of demographic dissimilarity among Whites compared to minority employees. In fact, in a research translation of the oft-cited study by Tsui et al. (1992), Fagenson (1993) proclaimed that what's good for the goose (i.e., more minorities for minorities) wasn't good for the gander (i.e., White employees). Essentially, conclusions such as these lead managers to believe workplace composition concerns are disproportionately more important to White men than they are to women and minorities. Thus, managers come to feel they should devote more attention to helping White men adapt to (and cope with) the often-discomforting effects of demographic dissimilarity in their surroundings than they would for others.

Our findings, however, indicated conclusions concerning the presence of asymmetrical effects of dissimilarity could be overstated. For instance, Riordan, Schaffer, and Stewart (2005) stated recently that authors have "observed that there is strong theoretical and empirical support to incorporate asymmetrical predictions for the effects of demographic dissimilarity" (p. 52). All but one of the studies they alluded to utilized *D*-scores, making it difficult to place any degree of confidence in their conclusions concerning asymmetry. Consequently, we advise managers to exercise caution in adopting diversity management approaches based on the belief that the effects of dissimilarity are more pronounced among

White men or any other demographic group where the findings are based on Euclidean distance, such as age (e.g., Chattopadhyay, 1999). This is especially true in light of recent research using alternatives to *D*-scores showing asymmetric findings in the opposite direction (e.g., Joshi et al., 2006).

Until more definitive conclusions can be drawn, we suggest managers anticipate synonymous effects of dissimilarity for all employees. Rather than trying to cater more to members of any particular group perceived to value similarity more than others, managers should concentrate their efforts on facilitating hospitable diversity climates wherein employees of all types are open to diversity (for more on how to do this, see McKay & Avery, 2005). With progress in this regard, the potentially deleterious effects of demographic dissimilarity are apt to become less pronounced for all employees, irrespective of their race or sex (Hobman et al., 2004).

Conclusion

The theory of relational demography has contributed much to our understanding of diversity in professional settings. Unfortunately, results from studies relying on Euclidean distance as a measure of dissimilarity may be misleading. Future researchers are encouraged to explore further the differential effects of dissimilarity using alternate formulations of dissimilarity that do not obscure the true relationship between dissimilarity and work-related outcomes. Moreover, this research should utilize samples consisting of work groups representing a wider range of dissimilarity.

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