LEVELS OF ANALYSIS AND THE QUALITATIVE STUDY OF QUANTITATIVE DATA

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ABSTRACT

Organizational demography research tends to invoke multi-level concepts that require multi-level theories and analysis. Scholars originally paid little attention to this multi-level work. However, the complex issues involved in studying multi-level demographic phenomena are receiving increasing scrutiny. Three historical oppositions in social science have contributed to current limitations: the disciplinary differences between psychology and sociology; the analytical antagonism between quantitative and qualitative analysis; and the rhetorical distinctions between deductive and inductive discussion. These oppositions suggest that a more qualitative, inductive approach may uncover new directions for multi-level demographic theory. Two possibilities are discussed. One is to refocus on the phenomena themselves instead of their outcomes. Another is to explore how demographic misperceptions influence individual behavior.

You can’t see the dust if you don’t move the couch (Abelson, 1995, p. xv).
INTRODUCTION

Organizational demography has generated numerous multi-level theories and constructs, most residing at the intersection between individuals, groups, and organizations. Kanter (1977, p. 965), for instance, suggests that increasing the proportion of a minority, an organization-level construct, decreases its distinctiveness and thus decreases the extent to which minority employees, an individual-level construct, are treated as "different." Wiersema and Bantel (1993) find that the demographic composition of a top management team, a group-level construct, influences strategic change, an organization-level concept. Tsui and her colleagues (Tsui, Egan & O'Reilly, 1992) show that organizational attachment, an individual-level concept, increases with increasing similarity among team members, an individual-within-the-group level concept. While such studies originally paid little attention to the theoretical and methodological issues involved in multi-level research (Lawrence, 1997), these issues are being accorded increased scrutiny (Dionne et al., this volume).

This scrutiny is important because behavioral phenomena are much more complex than the measures used to capture them. The disjunction between measurement and meaning seems particularly prominent in organizational demography. These studies frequently lie across levels of analysis; thus, in addition to standard measurement concerns, they are fraught with the problems of separating individual and collective behavior. Observing and resolving these problems has been conducted from the quantitative perspective that dominates the organizational demography literature. Lawrence (1997), for example, compares the theoretical assumptions used in these studies and their empirical operationalizations, such as Euclidean distances and group averages. Focusing on multi-level issues, Dionne et al. conduct a similar analysis on a broader scale. They review the organizational demography and diversity literature examining whether multiple levels of analysis are explicitly specified in these studies, and, given the level of analysis, whether the correct analytical technique is used. They conclude that true multi-level research is scarce. This type of careful evaluation, with its increased attention to the empirical and theoretical implications of multi-level research is important. The strength of multi-level research is that it requires at least one level of context in theory and analysis and this strength is easily lost if the details are careless.

However, as Abelson (1995) suggests, sometimes you have to move the couch to see the dust. This essay examines how the history of social research has influenced the paucity of multi-level research that Dionne et al. (this volume) observe. Three historically-generated oppositions in social science and their effect on multi-level research are discussed: psychology vs. sociology; quantitative vs. qualitative; and deductive vs. inductive. The ideas gleaned through this discussion suggest
that applying a more inductive, qualitative approach will help enrich the organizational demography and diversity literatures. Two suggestions for developing multi-level research on organizational demography and diversity are proposed. First, scholars should spend more time considering demographic phenomena before moving so quickly to their outcomes. Second, scholars should consider an individual’s perceptions of demographic attributes as well as these attributes’ actual distributions as a way of expanding multi-level studies in this literature.

Before beginning, however, it is important to provide a few definitions. For this discussion, a level of analysis is a unit around which people have observed behavioral patterns and to which inferences will be made (Rousseau, 1985). Examples include an individual, an individual-within-a-group, a group, or an organization. A multi-level analysis is a study in which a phenomenon at one level of analysis is hypothesized to be related to a phenomenon at another level of analysis. This definition is similar to that for a cross-level analysis, which examines “how variation in situations is related to variations among individuals” (James & Williams, 2000, p. 383). A multi-level phenomenon is a construct that is, itself, defined by more than one level of analysis. For example, an individual’s similarity to others within his or her group, typically measured using Euclidean distance or homophily, is a concept that does not exist without considering both the individual and the others within his or her group.

THREE OPPOSITIONS THAT LIMIT MULTI-LEVEL RESEARCH

All behavioral phenomena unfold across multiple levels of analysis, and thus should, at some point, be studied at multiple levels. The managers in the AT&T studies (Bray, Campbell & Grant, 1974; Howard & Bray, 1988) did not succeed or fail solely on the basis of their individual attributes. They lived during a particular socio-economic period, they worked with different groups of others, and probably had distinct social networks within the company. We know from the mentoring and role model literature (e.g. Ragins, Cotton & Miller, 2000; Scandura, 1992) that managers who have this kind of social support, either from individuals or sets of other individuals, are more successful than those who don’t. These exogenous factors, all contextual phenomena at the group and higher levels of analysis, exert a significant impact on what happens to an individual in his or her career. Ultimately, explaining or understanding patterns of behavior in organizations requires multi-level thinking.
Despite this truism, multi-level research is a relatively recent item on the agenda of organizational scholars. In the early 1900s, management studies, such as those of Taylor (1911) and Gilbreth (1914), focused on individuals. Management studies of collectives, such as groups (Roethlisberger & Dickson, 1939), were introduced as a topic of study in the 1930s and 1940s. Yet, multi-level research did not get identified as a specific type of management study until the 1980s (Rousseau, 1985). This late appearance may have resulted from several bifurcations that underlie this work. First, organizational research draws primarily from two different disciplines, psychology and sociology, each with its own level of analysis, standard research practices, and questions of interest. Second, organizational scholars tend to slot themselves, or to be slotted by others, into distinct research camps. One of these camps is divided by data type, with scholars who use numbers and quantitative analyses in one camp and scholars who use words and qualitative analyses in another. The second camp is divided by the manner in which research stories are told, with scholars who tell deductive stories in one camp and scholars who tell inductive stories in the other.

The Discipline: Psychology and Sociology

Although modern psychology and sociology both emerged from 19th century philosophy, they developed in different directions. Psychology evolved toward the natural science model. Psychologists sought to legitimize their work as "science" by distinguishing themselves from philosophers, who posed theories based on personal experience and logic (Benjamin, 2000). Psychologists' strategy for legitimation involved mimicking the natural sciences. They used positivist, deductive thinking and conducted experiments in laboratories designed to invoke the public's view of natural science (Benjamin, 2000, p. 965). Laboratories were filled with glass cases housing fine instruments, walls covered with charts, shelves filled with specimens, jars and bottles, and scientists wearing white laboratory coats.

The first experimental psychology laboratory was established by Wilhelm Wundt in 1879 at the University of Leipzig (Wren, 1987). Wundt oversaw a community of individuals who worked together to understand psychological phenomena (Danziger, 1990). "Graduates" of this laboratory founded the American branch of psychology. G. Stanley Hall, who completed some of his postdoctoral work with Wundt, established the first American psychology laboratory at Johns Hopkins University in 1883. Another graduate, Hugo Munsterberg, brought experimental psychology to Harvard. Considered the father of industrial psychology, Munsterberg proposed a theory of human factors in work, which included prescriptions for employee selection, training, and increasing worker motivation.
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(Wren, 1987, p. 165). By 1900, 41 university-based psychology laboratories had been established in the United States. This tradition, focusing on controlled experiments at the individual and group levels of analysis, using deductive and quantitative methods, continues today. The appearance of inductive, qualitative work in the psychology literature is still in its initial stages, with little of this work conducted before the 1980s (Rennie, Watson & Monteiro, 2002).

In contrast to psychology’s natural science model, sociology evolved from philosophy through the inductive, systematic study of social data. In the late 1800s, German philosophers established “that human knowledge fell into...two radically different categories, the natural sciences and the studies of culture and social behaviour (Parsons, 1947, p. 9).” These categories divorced psychology from sociology by the assumption that the study of individuals based on the natural science model, was independent of the study of social behavior based on a socio-cultural model. However, early sociologists tried to bridge this gap, not by mimicking the natural science model, but by borrowing the natural science heritage of looking for regularities in data.

Durkheim (1897/1951, p. 36), for instance, noted that sociology should “become more than a new sort of philosophical literature. Instead... the sociologist must take on as the object of his research groups of facts clearly circumscribed, capable of ready definition, with definite limits, and adhere strictly to them.” Although statistics as we know them today were not available, early sociologists did use numbers to uncover patterns of social behavior. Durkheim established suicide, which by definition is an individual act, as grounded in the individual’s social experience. His study involves empirical data from several European countries and thus can be defined as quantitative; however, the analysis unfolds inductively, with questions and answers emerging from, and then explored using, the data. Similarly, Weber’s work demonstrates an attempt to bridge the natural and social sciences in its search for factual regularities in social behavior (Weber, 1921/1968).

While this no doubt over-simplifies the historical origins of the two disciplines that underlie most organizational research, it does suggest that there is a long history of scholars who distinguish between psychology and sociology. The origins of psychology, which assigned studies of individuals to the natural sciences and studies of social systems to socio-cultural philosophy, conflicted with the origins of sociology, which focused on the search for systematic social regularities. Thus, the historical division between psychology and sociology emanates from the direction they followed in evolving beyond philosophy, their individual vs. social system analyses, and their deductive vs. inductive approaches. As organizational research has evolved from these two disciplines, it is not surprising that its research also reflects their differences: the continuing division between studies of individuals
and studies of social systems. This makes it reasonable to speculate that these differences delayed the arrival of multi-level studies to organizational research.

Few organizational scholars begin their careers conducting multi-level studies. They tend to be comfortable at one level of analysis. They “grow up” in academic communities where the theoretical and analytical focus tends to be on either individuals or social systems. This results in studies with a common topic but little consideration for multi-level linkages. For example, studies of a demographic variable, such as age, may show no connection between their psychological and sociological treatments. Psychological studies of adult development (Levinson, with Darrow, Klein, Levinson & McKee, 1978; Vaillant, 1977) discuss age-based life stages as fixed and inevitable without considering historical or cohort effects (Lawrence, 1984). Sociological studies of age stratification explore demographic partitions in social systems (Riley, Johnson & Foner, 1972) with little regard for the impact that individuals might exert on those divisions. This occurs not because scholars are unaware of multi-level effects, but because academic communities do not require their articulation.

The Analysis: Quantitative vs. Qualitative

The second historical opposition that influences multi-level studies is the division between quantitative and qualitative analysis. Scholars who collect numbers and analyze them with statistics frequently disagree with scholars who collect words and analyze them with underlying patterns. Each side tends to view the other in pejorative terms. Quantitative scholars dismiss qualitative studies because they provide no proof that observed patterns result from the data rather than from the scholar’s desire to see them. This side believes that qualitative analyses are really intuitions; and, moreover, that they compromise the generalizability of the results. Qualitative scholars argue that quantitative studies strip the rich description from data, making it impossible to tell what is going on. This side believes that quantitative analyses produce results, but that the results are meaningless. Neither side takes the time to make sense out of the other’s language, the symbol’s the other uses, or the meanings the other attaches to data. This has made it difficult to publish multi-method studies and it has limited the number of multi-level studies, despite the call for more of such work. Multi-level studies of organizational demography have come primarily from the quantitative approach, thus the remainder of the section focuses on the limitations of this side of the discussion.

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created and counted, than with purely descriptive results. This preference has been evident since the early days of behavioral research and has intensified over time. Hubbard and Ryan (2000) studied twelve APA journals involving 8,001 articles and found that between 1894 and 1924, only 10.4% of all empirical articles used statistical significance testing. Between 1925 and 1939 this figure increased to 35.9%. Between 1940 and 1959, the percent jumped to 73.8%, which established statistical significance testing as the dominant mode of empirical analysis. Within the past ten years, statistical significance testing has almost saturated these journals, involving 93.9% of all empirical articles published between 1990 and 1998. The p value has become a synonym for quantitative research.

This preference for quantitative analyses dominated by p values may result from a number of factors. It seems likely, for instance, that it is one of the legacies of the natural science approach. Behavioral scholars have always been concerned about their stature as legitimate scientists, and several attributes of quantitative analysis using statistical significance testing reinforce its role in the legitimization process. The black and white outcomes that accompany p values provide the appearance of certainty to results. Breaking phenomena into small, simple facets provides the illusion of precision (McPherson, 1992). Variables measured by numbers are easier to communicate than variables measured with words. Numbers provide a less complex representation of behavioral phenomena than words, but numbers make interpretive agreement among scholars easier to attain. Phenomena that are easily translated into numbers are more likely to be studied than phenomena that are not (Thomas & Thomas, 1928, p. 567). Finally, the maturation of statistical methods and the availability of computers with which to apply them have facilitated the adoption of quantitative analysis.

However, alongside the dominance of quantitative analysis, an interesting paradox has emerged: the contradiction between scholars’ declarations of certain results and their pronouncements of uncertain interpretations. This statement amplifies both ends of the incongruity, but it highlights two easily-observed phenomena. On the one end, by and large, the field insists on the use of statistical significance tests to establish “the truth” of the findings. It is permissible to interpret any relationship that achieves p < 0.05, but not one that falls below it, although sometimes p < 0.10 is “acceptable.” On the other end, in contrast to scholars’ comfort with the certainties implied by p values, they exhibit considerable discomfort with the certainties implied by conclusive statements. For example, the words absolutely, obviously, certainly, of course, always, and without question, are almost never seen in journal publications. Any author who uses these terms in a submitted manuscript is likely to get his or her hand slapped by the reviewers. The reviewers’ interpretation is that only a novice who doesn’t understand the uncertainties of social science research would use such words. This
is a curious caution given the certainty with which scholars tend to proclaim their numerical results.

Many scholars have questioned the $p < 0.05$ standard (Cohen, 1994). In 1970, following the mid-century's dramatic increase in the use of probability tests, Morrison and Henkel (1970) published an edited volume called The Significance Test Controversy, in which they and colleagues from psychology and sociology debated the indiscriminate use of statistics. Their concerns continue to be discussed today, with a plethora of articles published in the past ten years. These include APA's re-evaluation of the appropriate use of statistics and its new guidelines for authors (Wilkinson et al., 1999). Yet, despite the persistence of this concern, the use of the $p$ value as the test of truth prevails, and encouragements to report other measures of inference, such as effect size and confidence intervals, have produced negligible results.

Another weakness of the quantitative approach is that it encourages the use of sophisticated statistics without also encouraging the use of sophisticated understanding of phenomena. Cooley (1979) presents a particularly vivid commentary about the importance of a qualitative approach to quantitative analysis:

...I vividly remember the time I heard that Paul Lazarsfeld had edited a book that included a section on multivariate analysis, and how amused I was to discover that it dealt with the analysis of multidimensional contingency tables (Lazarsfeld, Pasanella & Rosenberg, 1972). Here I was doing elaborate, cross-lagged, multiple-partial-covariance correlations involving dozens of variables, and that eminent sociologist was still messing around with chi square (sic) tables! What I did not appreciate was that his little analyses were generally more informative than my elaborate ones, because he had the "right" variables. He knew his subject matter. He was aware of the major alternative explanations that had to be guarded against and took that into account when he decided upon the four or five variables that were crucial to include. His work represented the state of the art in model building, while my work represented the state of the art in number crunching" (Cooley, 1979, pp. xxiii-xxiv).

He also provides a commentary about the importance of a qualitative approach to quantitative analysis:

My colleague's "...first big job was to get me out of the qualitative vs. quantitative trap. His work is living proof that it is not an either/or proposition, it is a matter of degree of emphasis. Every research study is inevitably both qualitative and quantitative to some degree. But even more important, he recognized the importance of the interaction between qualitative and quantitative "types" in working toward an improved understanding... We have to talk to each other and reach each others work, not shout at each other" (Cooley, 1979, pp. xxiii-xxiv).

**The Story: Deductive vs. Inductive**

On a parallel track, two different approaches to data analysis have evolved. The natural science approach favored a deductive research process, which is still
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Scholars tend to proclaim their standard (Cohen, 1994). In 1970, the use of probability tests, volume called The Significance from psychology and sociology concerns continue to be discussed past ten years. These include t-tests and its new guidelines for persistence of this concern, the encouragements to report other confidence intervals, have produced that it encourages the use of the use of sophisticated under-particularly vivid commentary quantitative analysis:

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Analysis have evolved. The research process, which is still reflected in much of today’s organizational research. Theoretical hypotheses were generated, data were collected, and then hypotheses were tested. With the introduction of statistics, scholars who took this deductive approach excluded further explorations of the data as a violation of appropriate research practice. Data exploration was and still is considered data mining, in which any subsequent results capitalize on probability, as 5% of all results are significant, and the loss of degrees of freedom. The desirability of precision in measurement, control of external sources of influence, and narrowly-focused studies also limit the exploration of data in the deductive approach.

The socio-cultural approach started with an opposing perspective. Here, the idea was to collect field data and then search for answers. Originally called “political arithmetic” (Best, 2001, p. 11), research on social issues originated in 16th century England and France with studies of population size and life expectancy. By the 19th century, such numbers were used with increasing frequency by reformers who hoped to influence social policy. These early studies were essentially questions of “how many?” and “how much?” However, with the evolution of sociology, the study of social life evolved into “what is this?”, “why does this occur?”, and “under what conditions does it occur?” The process of addressing these questions came to be known as elaboration (Rosenberg, 1968). Research using this approach, whether with numbers or words, told an unfolding story. Instead of presenting hypotheses that constrain the analytical parameters, scholars identified a phenomenon and then considered questions about it. This inductive style of data analysis was a process of uncovering the story rather than a process of proving the theory.

As this style of inductive research with numbers is less familiar to organizational scholars than either inductive research with words or deductive research in general, I’d like to present an example from The American Soldier (Stouffer et al., 1949). This study was conducted for the U.S. Army’s Research Branch, the Information and Education Division of the War Department during World War II, and is widely recognized for identifying relative deprivation, equity, and social comparison as important social-psychological concepts. Chapter 4, “Willingness for Military Service,” presents some of the initial data used to develop these ideas. It begins with a single question: How do men feel about being drafted when they enter the Army? (Stouffer, 1972, p. 185). In a standard deductive story, this question would be followed by a discussion of existing theories about how men might feel, why understanding this phenomenon was important, and what problems or holes existed in previous studies of this phenomenon, which would then be followed by a set of testable hypotheses.

However, this research was not presented deductively. After stating their question at the beginning of the chapter, the researchers show a table with data from a cross-section of soldiers. The table shows the distribution of soldiers who were willing and unwilling to serve. A discussion of these data ensues. The
authors note that 74% of the soldiers felt they should not have been deferred, and were thus willing to serve. From this, the authors conclude that, in general, soldiers felt they were serving for legitimate reasons. Of the remaining 26%, 7% felt they should have been deferred because dependents needed their support, 5% felt they should have been deferred because of the importance of their jobs, 9% felt they should have been deferred for health reasons, and 5% felt they should have been deferred for “other” reasons.

After reporting these results, the authors try to assess whether there are any patterns that elaborate on these results. Do these results vary by demographic variables such as education, age, or marital status of the soldiers? A second table is presented in which the data are divided in this fashion. The authors then discuss a number of interesting patterns that appear. First, independent of education and marital status, willingness to serve increases with decreasing age. Second, independent of age and education, willingness to serve is higher for unmarried soldiers than for married soldiers. Finally, independent of age and marital status, willingness to serve is higher for high school graduates than for those without high school degrees. Up to this point, no theoretical rationale for these differences is presented. Only after discussing these data do the authors first introduce a possible explanation.

To help explain such variations in attitude, by education, age, and marital condition, a general concept would be useful. Such a concept may be that of relative deprivation, which, as we shall see, is to prove quite helpful in ordering a rather disparate collection of data... The idea is simple, almost obvious, but its utility comes in reconciling data... where its applicability is not at first too apparent” (Stouffer, 1972, p. 187).

The authors then proceed to elaborate how this explanation is consistent with the data. Soldiers’ willingness to serve seemed related to the military service of similar others. For example, farmers and skilled laborers, usually without high school diplomas, were most likely to receive occupational deferments. In contrast, high school graduates were prime candidates for induction. Thus, individuals without a high school education were more likely to know others who had been deferred than individuals with a high school education. Stouffer and his colleagues concluded that this knowledge of similar others with deferments made non-high school graduates feel relatively deprived and reduced their willingness to serve.

The point of this example is that an inductive story, even an inductive story with numbers, is told with different rhetorical rules than a deductive story, and these rules influence the flexibility scholars have in building an argument for behavioral patterns. If The American Soldier were written as a deductive story, the authors would have had to provide a theoretical rationale for the existence of relative deprivation, develop hypotheses that could be tested using the data they already had, and then test the hypotheses. The problem for multi-level studies,
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...should not have been deferred. Authors conclude that, in general, reasons. Of the remaining 26%, 7% of dependents needed their support, 18% of the importance of their jobs, and 5% felt they should assess whether there are any patterns vary by demographic variables differences? A second table is presented and in fact for any study, is that this story-telling inversion does violence to the process that underlies thoughtful data analysis. Converting The American Soldier into a deductive story about relative deprivation would have highlighted the limitations of these data. Reviewers would have criticized the fact that the authors' interpretations of the demographic variables, age, education, and marital status, were not tested using data about the communities in which these soldiers lived, and thus did not provide an adequate test of relative deprivation. This focus away from data analysis as a process tends to keep us from seeing or publishing the unanticipated multi-level answers to "why?" and "under what conditions?"

Doctoral students receive training about theory, research design, and statistics, but they are rarely taught about the space between theory and statistics: the process of data analysis. As Rosenberg (1968) notes, "Research procedures in principle are very different from those in practice. The student reading a published report will usually have an erroneous notion of how the research actually went on, and is likely to be dismayed to find that his own research does not correspond to the neat, compartmentalized principles he has learned" (p. xii). The process of analysis involves what happens after you look at your data and test your initial hypotheses. Published articles rarely present the results that were so beautifully planned before data collection. The problem of data analysis is how to elaborate; how to interpret the unexpected associations that frequently arise.

**Summary**

The detritus of these historical developments has been the polarization of organizational research. The legacy of the natural science approach is to eschew anything that sounds as if it might not have been thought out ahead of time. The legacy of the quantitative approach is to reject the inductive analysis of numbers. The legacy of the qualitative approach is to disregard statistics. The legacy of the split between psychology and sociology is the dispersion of existing multi-level studies across both fields with little cross-field integration. The cumulative weight of these disciplinary, practical, and analytical factors has produced a situation in which multi-level research is the exception, rather than the norm.

**APPLYING A MORE INDUCTIVE APPROACH TO MULTI-LEVEL RESEARCH**

The three dimensions along which social science scholars tend to become divided – psychology vs. sociology, quantitative vs. qualitative, and inductive...
vs. deductive — create boundaries around how much of a complex phenomenon is considered in a given study. Organizational demography emerged from the sociological, deductive, and quantitative side of these oppositions. This resulted partly because the "field of study" emerged from concepts defined above the individual level of analysis and partly because this work emerged from the availability of secondary data sets that included demographic data. Thus, in addition to concern about matching the level of analysis of concepts to the statistics used to analyze them (Dionne et al., this volume), I’d like to advocate a more inductive, qualitative approach to the concepts themselves as this may uncover some new theoretical directions for demographic research.

Focus on the Phenomenon

The search for scientific credibility and practical results often focuses management research on outcomes. Organizational demography, for instance, was accepted as a research topic only after it was found to predict outcomes (cf. McCain, O’Reilly & Pfeffer, 1983; Wagner, Pfeffer & O’Reilly, 1984). This focus on outcomes frequently means that more is known about what demographic phenomena predict than is known about the phenomena themselves. One source of new theory may come from redirecting attention from outcomes to meaning. Over the past twenty years, the field has examined demographic phenomena that are easily measured with numbers obtained from organizational records. Frequently, these phenomena are based on attribute similarity or variation and operationalized using measures such as Euclidean distances or the coefficient of variation. This process has produced phenomena from available measurements, rather than producing measurements that operationalize phenomena. Thus, it makes sense to return to the phenomenon and ask questions such as “what is diversity?”

Dionne et al. define diversity as “attributes another person may use to detect individual differences.” The study of diversity typically examines how the distribution of a demographic attribute in a group or organization affects behavior. These studies are considered important because attribute distributions appear related to two desirable outcomes: the equal treatment of minorities in organizations, typically with reference to gender and ethnicity; and, the increased performance of individual teams and organizations. However, it is difficult to understand how diversity produces these outcomes unless we first understand the phenomenon itself.

For instance, there is more than one type of diversity. The type of diversity studied most often is actual diversity. Actual diversity is the observed distribution of an attribute, in which any count of the attributes by any observer produces the same distribution as any count of the attributes by another. If a manager knows that
much of a complex phenomenon of demography emerged from the demography of these oppositions. This resulted from concepts defined above the level of analysis of concepts to the level of analysis of demographic data. Thus, in this volume, I’d like to advocate concepts themselves as this may demographic research.

results often focuses management phy, for instance, was accepted as managing outcomes (cf. McCain, O’Reilly 1984). This focus on outcomes as demographic phenomena predict outcomes. One source of new theory comes to meaning. Over the past decade phenomena that are easily rationalized records. Frequently, these variation and operationalized using efficient of variation. This process measures, rather than producing outcomes. Thus, it makes sense to return to the question: “What is diversity?”

Another person may use to detect indirectly examines how the distribution affects behavior. These studies, distributions appear related to two or more entities in organizations, typically increased performance of individuals. It is difficult to understand how diversity affects the phenomenon itself.

Diversity. The type of diversity is the observed distribution of attributes by any observer produces the same distribution. However, if a manager knows that his or her organization employs 60 women and 300 men, then there is likely to be little disagreement about these numbers. This is the organization’s actual gender diversity. However, another type of diversity is perceived diversity. Perceived diversity is an individual’s cognition of the distribution of an attribute. The individual might be a member or an observer of a group, an organization, or other social system. The individual’s cognition of the attribute distribution might or might not be the same as either the actual distribution or another individual’s perception of the distribution. Such perceptions may provide the basis for the diversity outcomes an individual experiences. If an individual perceives a social setting as diverse, it is liable to exert a different impact on him or her than if he or she sees it as homogeneous.

It seems likely that individuals use contrast effects, such as social comparisons, to assess whether a group is diverse. For example, an engineering group of ten men and three women might be defined as “diverse” only if its members see it as a diverse group. In an organization with many similarly proportioned groups, individuals may not perceive the group as diverse. In an organization where most groups have no women, individuals may perceive the group as quite diverse. Another possibility is that the majority members in this group perceive it one way, whereas the minority members perceive it another way. In an engineering firm where few women are hired, the ten male engineers in the group may experience the three women as being very different and this perceived diversity may make the men uncomfortable. However, if the women have just graduated from an undergraduate engineering program with a relatively large group of female students, the women may not experience the group as diverse at all.

Taking the example further, individuals may use time as the contrast that defines their definition of diversity. For instance, an individual may not experience a group as diverse until he or she observes changes in the behaviors among group members that he or she attributes to demographic differences. Thus, the three female engineers above may come to experience the group as diverse, with themselves in the minority position, only after they observe the discomfort of the ten men or perceive differences in how the men treat the women vs. how the men treat one another.

Finally, an individual’s perceptions of diversity may depend on how he or she defines his or her social context. In the examples above, individuals are making social comparisons to other groups, others in the organization, or others over time. However, this assumes they all perceive the same groups and the same others in the organization. In large organizations, individuals know different sets of others. The organizational reference group that one individual uses for diversity comparisons may differ dramatically from the organizational reference group of another individual (Lawrence, 2003). Thus, if one of the three female engineers works with five other R&D teams, each with five men and six women, then she is
likely to perceive her own team as less diverse than another of the female engineers who works with five other R&D teams, each with thirteen male engineers. Taken from this perspective, the definition of diversity requires a multi-level concept that includes a contrast with other groups, perceptions, or experiences.

A second question about the meaning of diversity concerns the attributes that individuals use to define differences. Organizational demographers have studied background attributes, such as age, organizational tenure, gender, and nationality. However, there are an infinite number of attributes that could be used to define diversity. A group might perceive itself as diverse because it has three members with blonde hair and three with brown hair. A group might perceive itself as diverse because it has three argumentative members and three compliant members. A group might perceive itself as diverse because it has three Methodists and three Muslims. When diversity is defined by perception, a group is only diverse when its members care about the attribute in question. Thus, if people care about hair color, then hair color may be a relevant diversity attribute. Research shows that the salience of demographic attributes differs by national culture (Earley, 1999). In France, diversity by education is more important than diversity by ethnicity, whereas in Thailand, diversity by age group is more salient than diversity by gender. These differences in the salience of demographic attributes raise other multi-level questions. For example, is the group diverse if only a few group members experience it that way? What if half of them experience it that way?

Most organizational demography studies involve either one demographic attribute or a set of demographic attributes as the independent variables. In other words, demographic attributes have rarely been studied in opposition to one another. What happens to an individual’s perception of diversity when he or she is faced, as is likely in real life, with two or more salient attributes? Distinctiveness theory (McGuire et al., 1978; McGuire, McGuire & Winton, 1979; McGuire & Pawawer-Singer, 1976; Mehra, Kilduff & Brass, 1998) suggests that people do rank the status of their similarities and differences from others. When an individual belongs to two different groups, he or she will identify most strongly with the group that is most distinctive in that social setting. Mehra and his colleagues (1998) tested this theory in an MBA class in which 60% of the class are white men, 29% are white women, 6% are minority men, and 6% are minority women (N = 159). Thus, in this class, minority is the most distinctive category, followed by women. Students were asked to place checks next to the names of “those people they considered especially similar to themselves” (1998, p. 443). The results show that whites are more likely to identify with others based on sex than race. For white students, sex is more distinctive than race because 71% are men and 29% are women, whereas 88% of the students are white. In contrast,
for minority students, race is more distinctive than sex because only 12% of the students are minorities, whereas the two sex categories are much larger.

As these examples suggest, individuals require a contrast effect before they define an attribute distribution as "diverse." An individual must perceive attributes as different before he or she experiences them as different. This discussion suggests that prior experience and comparisons with others in the organization provide contrasts, but it seems likely that there are many additional contrasts that play a significant role in perceived diversity. The inclusion of perceived diversity as a type of diversity opens a relatively new set of possibilities regarding the answer to the question "what is it about diversity that produces desirable outcomes?"

**Explore Misperceptions**

The concept of perceived diversity raises another important multi-level question. What happens when an individual's perception of the distribution of an attribute does not agree with the actual distribution of that attribute? What are the cognitive and affective ramifications of such misperceptions and why do they occur? We know little about how individuals perceive demographic distributions in organizations. However, given the literature on biases in human judgment (Nisbett & Ross, 1980; Tversky & Kahneman, 1974), it is not surprising that existing evidence shows that individuals do misperceive them.

Rosenbaum (1989) studied a large organization in which few promotions occur after age 39. The study was conducted during a period of no growth that involved reductions in force; thus, there should have been no heightened expectations about promotions. Interviews with 163 men and women about their career expectations showed that individuals consistently overestimated the probability of future career success. Virtually no foremen over 39 years old and holding college degrees had been promoted during the past six years. Yet, 37% of the over 39 years old who were interviewed thought they had a 50% chance or better of being promoted during the next six years. Of all lower management employees over 39 years old, only 2% had been promoted during the past six years. Yet, 42% of the over 39 years old who held college degrees, and 20% of those without college degrees thought they had a 50% chance or better of being promoted. The results suggested that misperceptions produce positive consequences. Employees who believed that promotions were still possible despite the evidence appear to remain committed to work in exchange for the hope of future possibilities. This positive illusion (S. E. Taylor, 1989) may continue until a time when it is no longer possible for employees to believe that opportunity exists.
Lawrence (1988, 1990) found that managers in a large organization misperceive the age distributions of each career level in their organization. Although their perceptions of these age distributions are related to the actual age distributions, there is a regression toward the mean effect. They tend to overestimate the age of the youngest manager and underestimate the age of the oldest manager in each career level. Moreover, they tend to create age differences between career levels, even when the actual age distributions show no differences at all. Although many managers place themselves accurately on the organization's age-based career timetable, many do not. Of the 35- to 50-year-old managers, 50% of those who see themselves as ahead-of-schedule are actually on-schedule based on the age distribution for their own career level. Twenty-one percent of those who perceive themselves as on-schedule are actually ahead-of-schedule, and none (0%) of those who perceive themselves as behind-schedule are actually behind-schedule based on the age distribution for their own career level.

These studies suggest that employees do misperceive demographic diversity in organizations. Both provide hints about what produces misperceptions, and the judgment bias literature might provide directions for exploring how and under what conditions this phenomenon results. The next question is: What are the psychological consequences of these misperceptions? Continuing with the example above, people in every occupation develop strong notions about who is ahead-of-schedule, who is on-schedule, and who is behind-schedule in their careers. Individuals who are younger than "expected" are seen as hot shots, whereas those who are older than "expected" become the dead wood. However, because individuals do misperceive demographic distributions, some of these self- and other-attributions are inaccurate.

Table 1 outlines one set of possible accuracies and inaccuracies using age-based career timetables as an example. Here, the contrast is between the individual’s self-perception of where he or she falls on the organization’s career timetable and the organization’s actual placement of him or her based on the career timetable.

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<th>Individual Perceives Self as</th>
<th>Individual Actually is</th>
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<tr>
<td>Ahead of schedule</td>
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<td>On-schedule</td>
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<td>Behind schedule</td>
<td>3. Positive illusion</td>
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<td>4. Negative illusion</td>
<td>5.</td>
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<td>6. Positive illusion</td>
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<td>7. Negative illusion</td>
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Misperceptions in a large organization misperceive in their organization. Although their related to the actual age distributions, ct. They tend to overestimate the age the age of the oldest manager in each age differences between career levels, no differences at all. Although many the organization’s age-based career ear-old managers, 50% of those who virtually on-schedule based on the age ty-one percent of those who perceive lead-of-schedule, and none (0%) of schedule are actually behind-schedule career level.

- Misperceive demographic diversity what produces misperceptions, and directions for exploring how and ulis. The next question is: What are misperceptions? Continuing with the develop strong notions about who nd who is behind-schedule in their “expected” are seen as hot shots, become the dead wood. However, aphic distributions, some of these es and inaccuracies using age-based contrast is between the individual’s organization’s career timetable and her based on the career timetable.

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The most interesting categories are those on the off-diagonals, the cases where individuals perceive their placement on the career timetable inaccurately. In cells 2, 3 and 6, individuals inaccurately perceive themselves as being significantly younger than the average age of those in their career level. One consequence of these inaccuracies may be that these individuals experience the positive illusions described in the Rosenbaum study. Another possibility is that others define these individuals as arrogant because of their inflated expectations. In cells 4, 7, and 8, individuals inaccurately perceive themselves as being significantly older than the average age of those in their career level. These individuals may experience negative illusions, in which their commitment to work decreases because of their perception that they are not valued as much as similar others in their career level. Conversely, they may be motivated to work harder and show more commitment because they have to prove that they can still make an important contribution, despite their age.

Actual age distributions alone are unlikely to explain the relationship between an organization’s age demography and its employees’ work attitudes. Both perceptions and reality should be considered. The study of misperceptions may also apply to other questions in organizational demography. For example, what happens when a faculty department perceives itself as diverse but the rest of the school sees it as homogeneous? The department might believe it is diverse because it includes scholars from many areas in sociology. However, the school might see the department as “full of sociologists.” The school might pressure the department to make heterogeneous hires whereas the department might resist, not because its faculty are against diversity, but because they already see themselves as diverse. The size of the differences between individuals’ perceptions and the actual distributions might also be of interest, and here polynomial regression (Edwards, 1994) would provide an appropriate analysis.

MOVING THE COUCH: CONCLUSION

Every field of study needs to move the couch occasionally. We tend to choose a question, study it from one position, and follow it in one direction. This results partly because historical events, individual backgrounds, and personal proclivities channel us to select and study problems defined by our own views. However, it also occurs because as a field of study takes shape, there is an inertial effect. After the initial studies, subsequent work tends to move in the same direction and from the same perspective. Organizational phenomena get shaped by the oppositions that define organizational behavior and theory: psychology vs. sociology; quantitative vs. qualitative; and deductive vs. inductive.
Given the current direction of organizational demography research, applying a qualitative, inductive approach may help re-evaluate the boundaries of the field and generate new ideas for study. Two possibilities were discussed here. The first is to focus on organizational demography as a phenomenon: What is a demographic phenomenon and what other demographic phenomena, besides actual attribute distributions, play a significant role in organizations? One avenue for exploring this question is to study how people perceive diversity in addition to studying actual diversity. The second possibility for expanding our approach is to explore misperceptions. What happens when individuals’ perceptions of demography don’t match the actual demography? Many existing explanations for demographic phenomena assume that there is a direct connection between the distributions represented in the group and the outcomes group members experience. However, these outcomes may depend on how individual members perceive the distribution, with accurate and inaccurate perceptions producing different outcomes.

This chapter has traced the current questions, position, and direction of research in organizational demography. Over the past twenty years, this field of study has focused on the compositional effects of attribute distributions in groups and organizations. Because empirical work is based on data from organizational records, demographic studies tend to be quantitative and deductive. In addition, demographic phenomena are selected for study based on available empirical measures rather than by the theoretical landscape of possible phenomena. The mismatches between levels of analysis classified by Dionne et al. (this volume) identify an area in which the field’s current approach has obscured the complexity of these phenomena. These identifications will encourage a careful review of multi-level issues in organizational demography. Let’s find the coins under the cushions.

REFERENCES

Levels of Analysis and the Qualitative Study of Quantitative Data


