The Role of Social Context:
Putting Similarity Effects on Organizational Attachment in Perspective

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Management

by

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2005
DEDICATION

To my parents, Chengnian Hua and Jilan Wang
And my daughter, Veronica Siran Hua
In memory of this journey you accompanied me through.

献给我的父亲滑成年，母亲王继兰
及女儿滑思燃
纪念你们陪我走过的这段岁月
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ABSTRACT OF THE DISSERTATION

The Role of Social Context:
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by

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How does social context influence the similarity effects on organizational attachment? Using self-categorization theory, similarity attraction theory and social identity theory as the theoretical underpinning, I explore the research question in the formal work group and the organizational reference group, two different conceptualizations of social context. Contrary to predictions, no significant similarity effects were found in either context. In testing a revised model in which communication is a partial mediator between similarity and organizational attachment, however, I find that organizational reference group similarity in gender, ethnicity and organizational tenure significantly predict organizational attachment. In particular, similarity in ethnicity negatively predicts job satisfaction, one measure of organizational attachment. Such results show that a direct positive similarity effect may be too simplistic to capture the nuances in people’s psychological and behavioral reactions to demographic similarity.
I. Introduction

Analyzing the relationship between employees' demographic attributes and their behaviors and attitudes has a long tradition in industrial and organizational psychology (e.g., Schreiber, 1979). One area of focus has been how an individual’s demographic similarity to others affects his or her work outcomes (e.g., Reskin, McBrier, and Kmec, 1999; Riordan, 2000; Williams and O’Reilly, 1998). For example, research has shown that demographic similarity is positively related to communication, intent to stay with the job, job satisfaction, group cohesion, and social integration (e.g., Chatman and O’Reilly, 2004; Jackson and Joshi, 2004; Scheu, Ryan and Schmitt, 2003; Webber and Danahue, 2001; Reskin et al., 1999; Mehra, Kilduff, and Brass, 1998; Wesolowski and Mossholder, 1997; Riordan and Shore, 1997; Pelled, 1996; Wiersema and Bird, 1993; Tsui, Egan and O’Reilly, 1992; Jackson, Brett, Sessa, Julin, and Peyronnin, 1991; Tsui and O’Reilly, 1989; O’Reilly, Caldwell and Barnett, 1989; Zenger and Lawrence, 1989; Wagner, Pfeffer, and O’Reilly, 1984). However, as Lawrence (2005) pointed out, existing organizational theories do not adequately describe how individuals perceive their social context at work. Demography researchers lack a clear understanding of the social context within which demographic similarity leads to work-related attitudes and behaviors (e.g., Jackson and Joshi, 2004), especially the similarity effects on organizational attachment, which is the focus of this dissertation.

Social context, defined here as “the boundary within which individuals collect, process and interpret information through interactions with others in their social
network,” is critical to investigate the similarity effects on work-related attitudes and behaviors because the demographic composition of an individual’s social context determines how similar individuals feel in the work environment. Note, however, that people’s similarity judgments can be changed or manipulated through knowledge, or by drawing people’s focus to different stimulus cues or features (Mehra et al., 1998; Medin, Goldstone & Gentner, 1993; Griffin and Mathieu, 1997; Ely, 1995; Larkey, 1996) in their social context. In organizational settings, each individual simultaneously belongs to composite, nested or overlapping groups that offer distinct referential comparisons. It is highly probable that similarity judgments in these different social contexts differ from each other. For example, a female accountant may feel very similar to the rest of the accounting group when it is largely female. Yet the same accountant may feel very different from everybody she knows in the larger organization, which hires mostly men. It happens to be the case that the accounting department is the only group in this organization that has mostly female members. In other words, depending on the demographic composition of the social context being used for comparison, her similarity judgments will vary.

Thus, before researchers can draw any meaningful conclusions on how similarity affects individuals’ work related attitudes and behaviors, we need to understand what comprises the social context within which similarity judgment is inferred (e.g., Jackson and Joshi, 2004; Reskin et al., 1999). Mostly out of convenience, past research has used formal work groups as the social context of similarity effects (Zenger and Lawrence, 1989; Tsui et al., 1992; Jackson et al., 1991; O’Reilly et al., 1989; Pelled, 1996; Wagner et al., 1984; Wiersema and Bird, 1993; Dwyer, Richard, and Shepherd, 1998). These studies treat social context as a
compositional concept that is uniform for every individual involved rather than “defining it from the individual’s point of view” (Lawrence, 2005). This assumption warrants more careful investigation. Hackman and Lawler (1979) argued that there are substantial differences in objective or actual practices and how they are perceived and experienced by employees. More recently, researchers such as Lawrence (2005), Mortensen (2004) and Mortensen and Hinds (2002) investigated ambiguities in conceptualizing social context in organizations. Mortensen (2004) and his colleagues (2002) challenge the assumption that team members themselves agree upon who are, and who are not, members of their team. His research demonstrates that intra-team boundary disagreement is a prevalent phenomenon even though team members usually assume that they all have a clear idea about group membership. Lawrence (2005) proposes that in large organizations where social information is ambiguous and individuals’ “frame of reference” (Merton, 1968) varies, two individuals may enact quite different versions of social context. Empirically, her research suggests that individuals do not randomly select people from whom they obtain information in the organizational setting, nor are they limited to interacting with members of their formal work groups. Rather, an individualized, idiosyncratic social context represented by “organizational reference group” influences the status level of those with whom individuals compare their own careers.

Riordan and Shore (1997) implicitly used the concept of social context to explain the lack of similarity effects on perception of advancement opportunity in their study. They reported that African-Americans did not exhibit any similarity effects for advancement opportunities in the context of the formal work group. In other words, their attitudes did not change no matter how similar they were to the rest
of the formal work group. The authors argue that one explanation for these results may be that African-Americans use as relevant references other groups than their formal work groups when assessing demographic similarity for advancement opportunities. That is, “the demographic similarity to the immediate work group may not be the most critical determinant of these types of attitudes among African American participants” (p. 352). In other words, the formal work group is not the social context within which similarity judgment was made for advancement opportunities. Instead, the authors speculated that African-Americans might form their similarity judgments in a different context, such as the labor force, or the representation of African-Americans in the management group to evaluate their work situations.

My dissertation builds on these insights to explore how social context affects the relationship between an individual’s demographic similarity to others and his or her organizational attachment. Organizational attachment is defined as “the level of an individual’s psychological and behavioral involvement in the organization of which he or she is a member” (adapted from Tsui et al., 1992). This involvement includes aspects such as job satisfaction, psychological commitment and intent to stay. Although demographic similarity affects various individual, group and organizational outcomes (Jackson, May, and Whitney, 1995; Sessa and Jackson, 1995), there are several reasons why I choose to study organizational attachment as the dependent variable.

First, it is an important outcome for organizations because strong attachment between employees and organizations make employees more responsive to organizational control and discipline systems (Parson, 1951). Achieving
organizational goals requires the committed involvement of employees at all levels (Mintzberg, 1990; Imai, 1986). Research shows that psychological commitment of subsidiary managers is positively associated with their compliance to corporate strategies (Kim and Mauborgne, 1993). Employees who are attached to a team, and more broadly to the organization, are more inclined to cooperate in reaching organizational goals than those who feel little in common with the team or who do not enjoy interacting with other team members (Deutsch, 1949; Tjosvold and Field, 1983). Such lack of attachment may motivate members to pursue self-interest at the expense of reaching collective organizational goals (Guth and MacMillan, 1986).

Second, management could exert influence on organizational attachment in order to reduce employee turnover. Since the personal and organizational costs of leaving a job are often quite high, employees are more likely to stay if they are satisfied with their jobs and committed to their organizations. Although managers cannot control exogenous factors such as alternative job opportunities, in the labor market, they can try to influence employee attitudes and strengthen organizational attachment by sensitizing employees to their social context. Given increasing work force diversity in modern organizations, managers need to understand better how the demographic composition of the social context influences employees’ organizational attachment.

Third, on a personal level organizational attachment provides meaning for employees. Just as maternal attachment helps to secure an infant’s survival, the bond between an individual and the organization he or she works for, while perhaps not quite as vital, provides the security and reliability humans need to thrive.
Last, demography and diversity researchers (e.g., Riordan and Shore, 1997) have argued that affective outcomes, of which organizational attachment is one, are more likely to be influenced by demographic context than are those reflecting productivity or career advancement. Thus I choose to focus on organizational attachment as the dependent variable in this dissertation.

My dissertation explores similarity effects on organizational attachment in two social contexts, namely the formal work group and the perceived organizational context or organizational reference group (Lawrence, 2005). Although Tsui et al. (1992) established that formal work group similarity leads to higher organizational attachment, I argue that organizational reference group (Lawrence, 2005) similarity better predicts organizational attachment. This is because organizational attachment is a person-to-collectivity bond and a person’s perception of the collectivity is shaped in a social context well beyond the formal work group. Thus, similarity judgments in a broader social context should better predict employee attachment to the collectivity than the similarity judgments in a subset of the collectivity, namely, the formal work group.
II. Literature Review

This chapter reviews the literature on the conceptualization of social context, the social psychological explanation of similarity effects, organizational attachment, and the integration of social context in demography literature.

Social Context

In this dissertation, social context is defined as “the boundary within which individuals collect, process and interpret information through interactions with others in their social network.” Such social context emerges from an individual’s perception and interpretation of his or her social and physical environment (Augier, Shariq and Vendelo, 2001). This concept is based on theories developed by researchers such as Schultz (1962, 1964, 1967) and Polanyi (1962). For example, Erickson and Schultz (1997) argue that context emerges from the interaction of the involved individuals. McDermott puts it succinctly (1976): “people in interaction become environments for each other.” Since employees attempt to make sense of the barrage of stimuli from the organization (Nelson and Quick, 1991; Louis, 1980), and their interpretation of the stimuli reflects their organizational experiences, who actually comprises their social context is critical.

This perspective of social context differs from the more typical sociological approach which treats social context as possessing collective properties independent of individual perception or interpretation (Augier et al., 2001). Examples from this approach include shared norms, collective mind (Weick and Roberts, 1993) and group
information processing (Hinsz, Tindale, and Vollrath, 1997). Other organizational scholars have embraced the view that a composite of individuals creates properties that transcend individual characteristics (Morgeson and Hofmann, 1999). Recent developments in multi-level theory building (Klein, Dansereau and Hall, 1994; Rousseau, 1985) demonstrate that contextual variables created by aggregating individual perceptions distinctly influence behavior beyond individual level effects (Choi, Price, and Vinokur, 2003; Dutton, Dukerich, and Harquail, 1994). Research has examined how collectives influence the impact of an individual’s similarity on his or her work-related outcomes (e.g., Ely and Thomas, 2001). However, my focus is on the individual’s conception of context. Since researchers do not yet have an in-depth understanding of social context from the individual’s perspective, proper aggregation from the individual level to a higher level of analysis has been problematic.

Researchers have acknowledged that interplay between individual demographic characteristics and social context is important (Riordan and Shore, 1997; Lawrence, 1997; Mowday and Sutton, 1993; Kulik and Ambrose, 1992). Pfeffer and Salancik (1977) states, “To understand the behavior of an organization, you must understand the context of that behavior.” Pfeffer (1998) identified several streams of research on the contexts of organizations and observed that aspects of context can influence a wide variety of organizational outcomes. Wharton (1992) recommended that diversity researchers consider contextual influences because demographic identities are socially constructed. However, no single theoretical perspective offers parsimonious predictions about how social context influences similarity effects on work related attitudes and behaviors. Jackson and Joshi (2004) proposed that before parsimonious theories are formulated, exploratory work on ways
of integrating social context in this stream of research is justified. My study responds to this call for exploratory research and examines the role of social context in how similarity influences organizational attachment.

Social Psychological Explanations for the Similarity Effects

Traditional wisdom tells us that similarity breeds connection. Observation of similarity effects has had a long tradition in western thought (e.g., McPherson et al., 2001). Plato observed that “similarity begets friendship” (1968, p. 837) and Aristotle noted that people “love those who are like themselves” (1934, p. 1371). The importance of similarity to interpersonal relationships is one of the most ubiquitous findings in psychology (e.g., Medin et al., 1993; Tversky, 1977; Sacco et al., 2003).

Several mechanisms are believed to drive the association between an individual’s similarity to others and his or her relationships with them. An individual’s self-categorizations (Turner, 1982, 1984) are proposed as the mechanism through which both the similarity-attraction paradigm (Byrne, 1971) and social identity theory (e.g., Tajfel and Turner, 1986; Turner, Hogg, Oakes, Reicher, and Wetherell, 1987; Tajfel, 1978) explain similarity effects (e.g., Hogg and Terry, 2000). The following section summarizes these theories as they pertain to organizational demography, similarity effects, and organizational attachment.

Self-Categorization Theory
Self-categorization theory (Turner et al., 1987) has been very influential in social psychology (e.g., Abrams and Hogg, 1999; Spears, Oakes, and Ellemers, 1997). However, it attracted little attention in organizational psychology until Hogg and Terry (2000) used self-categorization to explain how social identity theory and the similarity-attraction paradigm generate similarity effects. The core concept of self-categorization is prototype-based depersonalization. Prototypes are “the defining and stereotypical attributes of groups” in the form of “representations of exemplary members or ideal types” (Hogg and Terry, 2000, p. 123). (For a detailed account of prototype, see Hogg and Terry, 2000). Thus, interpersonal interactions are not necessary before employees can choose a social category to identify with.

Categorization, the process by which individuals place themselves and others into different social categories, is fundamental to cognitive processes (see, e.g., Brewer, 1979; Brewer and Miller, 1984; Pettigrew, 1979; Tajfel, 1978, 1982). Human perception relies heavily on categories and categorization of both people and things. It is through categorizing that we see meaningful patterns in the wide array of stimuli which confront us. We then use these social categories to infer others’ underlying attributes (Fiske and Taylor, 1991; Klimoski and Donahue, 2001). According to self-categorization theory (Turner, 1987), categorizing oneself as a group member accentuates an individual’s experienced similarity to the group. Self-categorization theory states that, when an attribute becomes salient, there is an “assimilation of the self to the prototype and thus the self is transformed: Self-perception, beliefs, attitudes, feelings, and behaviors are now defined in terms of the group prototype” (Terry, Hogg, and White, 2000, p. 72).

Theoretically, two mechanisms are proposed to explain why individuals
choose a certain group for categorizing themselves: the self-esteem hypothesis, also
called “self-enhancement” (e.g., Abrams and Hogg, 1988; Hogg and Abrams, 1990,
1993; Hogg and Mullin, 1999; Long and Spears, 1997; Rubin and Hewstone, 1998)
and the uncertainty reduction hypothesis (Hogg and Terry, 2000; Hogg and Abrams,
1993; Hogg and Mullin, 1999). The self-enhancement hypothesis argues that human
beings have an innate need for positive self-esteem which then guides people’s
cognition and evaluation of inter-group behavior. Specifically, once categories are
formed based on prototypes of different groups, they guide, but do not entirely
circumscribe, human observation. This process later leads to affective reaction and
behaviors. For instance, the information selected to make categorical distinctions
usually generates positive pre-judgments about in-group members and social
stereotyping (Fiske, 1987; Tajfel, 1981). These judgments in turn suggest negative
assessments of out-group members. Through processes of attribution, human beings
tend to favorably interpret their own behaviors but unfavorably interpret those of out-
groups (Pettigrew, 1979).

The second explanation of how self-categorization works is the “uncertainty
reduction hypothesis” (Hogg and Terry, 2000; Hogg and Abrams, 1993; Hogg and
Mullin, 1999). This argues that “in addition to being motivated by self-enhancement,
humans are also motivated by a need to reduce subjective uncertainty about one’s
perceptions, attitudes, feelings, and behaviors and, ultimately, one’s self-concept and
place within the social world” (Hogg and Terry, 2000, p. 124). Certainty is naturally
desirable for human beings since it provides meaning as well as confidence about how
to behave and what to expect from the outside world (McPherson et al., 2001;
Lazarsfeld and Merton, 1954). Self-categorization reduces uncertainty by
“transforming self-conception and assimilating self to a prototype that describes and prescribes perceptions, attitudes, feelings, and behaviors” (Hogg and Terry, 2000, p. 124). Thus, uncertainty motivates socialization behaviors and self-categorization is proposed as the “social cognitive process that resolves uncertainty through prototype-based self-depersonalization” (Hogg and Terry, 2000, p. 125).

Next I review the similarity-attraction paradigm and social identity theory, and explain how self-categorization underlies these two theories of similarity effects.

**Similarity-Attraction Paradigm**

The similarity-attraction paradigm suggests that the more people are similar in background variables like socioeconomic status or attitudes, the more they are likely to be attracted to each other, especially initially (e.g., Berscheid and Walster, 1969; Byrne, 1971; Newcomb, 1956; Kanter, 1977; Pfeffer, 1983; Ziller, 1972). This occurs because individuals who possess similar backgrounds may share similar values and common life experiences and, as a result, find the experience of interacting with each other positively reinforcing (e.g., Milliken and Martins, 1996). Thus, people are motivated to use common attributes as the basis for self-categorization so they can identify others to whom they may feel attracted. As Zimbardo (1994, p. 625) noted, similar people “gain a sense of personal validation, since a similar person makes us feel that our attitudes are, indeed, the right ones.” Blau (1977) views similarity in terms of probabilities of inter-group contact and assumes that categorization into a common group membership will lead to social associations. Note that a necessary condition for similarity attraction is direct interpersonal interaction between the two
parties.

Although early research on the similarity-attraction paradigm focused on the similarity of attitudes between individuals and their levels of interpersonal attraction (e.g., Baskett, 1973; Byrne, 1971; Byrne, Clore, and Worchel, 1966; Lincoln and Miller, 1979; Werner and Parmelee, 1979; Condon and Crano, 1988), this research has been extended to include a variety of attributes. Of interest here, organizational scholars began using an individual’s demographic attributes (e.g., Pfeffer, 1983; Tsui and O’Reilly, 1989) as a proxy for similarity in attitudes and thus interpersonal attraction (Baskett, 1973).

Social Identity Theory

In addition to the similarity-attraction paradigm, social identity theory (e.g., Tajfel and Turner, 1986; Turner et al., 1987; Tajfel, 1978) has also been widely cited to support the similarity effects on work-related outcomes. Social identity theory was developed by European social psychologists, particularly Henri Tajfel and John Turner and their colleagues from the University of Bristol. It is not new to organizational psychologists (Ashford and Mael, 1989; Ashforth and Humphrey, 1993; Nkomo and Cox, 1996), however. Tajfel first introduced the concept of social identity and defined it as “the individual’s knowledge that he belongs to certain social groups together with some emotional and value significance to him of this group membership” (1972, p. 292).

Social identity theory (Tajfel and Turner, 1986) proposes that in addition to personal identity (the individuated self represented by characteristics differentiating
one individual from others), individual’s self-concepts are partly determined by the
groups to which they think they belong, and that individuals tend to support and
positively evaluate the groups that embody salient aspects of their social identities.
Social identities are “categorizations of the self into more inclusive social units that
depersonalize the self-concept, where I become we” (Brewer, 1991, p. 476, italics
original). Social identity entails “a shift towards the perception of self as an
interchangeable exemplar of some social category and away from the perception of
self as a unique person” (Turner et al., 1987, p. 50). Note here that social identity
theory argues that people derive their social identity by using prototypes as the basis
for self-categorization; thus it is not necessary for individuals to engage in
interpersonal interactions with every single member of the demographic group.
Rather, after deciding to use a demographic attribute as the basis of one’s social
identity, other individuals who share that attribute are automatically assumed to
possess the prototypical features of that group. For example, if an employee identifies
him or herself as an African-American, it is unnecessary for the employee to get to
know each member of the same race to assume that they all belong to one “in-group.”

Most organizations and groups have a membership that is diverse in terms of
ethnicity, gender, age, etc. (e.g., Cox, 1991; Ibarra, 1995; Kandola, 1995). Although
different factors may influence how individuals categorize themselves and others into
groups in different situations, research indicates that demographic variables are
important (Sacco et al., 2003). Both the self-enhancement and uncertainty reduction
hypotheses support the notion that individuals may use readily accessible
demographic categories to define their own group membership, and feel identified
with the chosen group. A social unit to which the individual is similar in terms of
demographic characteristics may, therefore, increase the individual’s identification with that social unit which then “enhances support and commitment to it” (Ashforth and Mael, 1989, p. 25). Conversely, membership in a group that is unlike an individual yields little continuity for self-identity. Thus, to the extent that self concept is important to a person, any discontinuity in self concept that is due to employment in a social group may prevent the individual from positively evaluating that group and feeling committed to it.

**Research on Organizational Attachment**

As mentioned earlier, organizational attachment is the level of an individual’s psychological and behavioral involvement in an organization of which he or she is a member (adapted from Tsui et al., 1992). Research on the attitude-driven process that produces organizational attachment and its component parts has been extensive. Griffeth, Hom and Gaertner (2000), Maertz and Campion (1998) and Hom and Griffeth (1995) provide excellent reviews. Bowlby (1973, 1982) formulated a theory of attachment behavior, which argues that its primary function is to defend against predators. Bowlby believes that individuals who form healthy attachments to others are more secure and self-reliant than those who do not. Quick, Nelson and Quick (1987, 1990) extended Bowlby’s theory from mammals, birds and human infants to corporate executives. They propose that psychologically, executives form attachments with others so that they get essential social support in time of stress. When the ability to form healthy attachment is compromised, individuals become vulnerable to various environmental risks due to their isolation. Research shows that individuals who perceive themselves to be out-group members, not attached to a relevant group, may
suffer negative health consequences, such as elevated blood pressure and lose self-reported well-being (James, Lovato, and Khoo, 1994).

Two approaches have been taken to inform organizational attachment research. The first is the capital value approach underlying economic theories of job quitting (Parsons, 1972; Becker, 1975; Mortensen, 1978; Jovanovic, 1979). This framework represents the attachment employees have with organizations as the capital value of the pay relation governing the exchange of productive resources for economic rewards. The second perspective is the job satisfaction/psychological commitment approach pioneered by organizational and industrial psychologists (Porter and Steers, 1973; Locke, 1976; Mowday, Porter, and Steers, 1982). This approach treats organizational attachment as an instrumental, emotionally charged, affective psychological bond between employees and organizations. Demography researchers have traditionally adopted the second approach for the following reasons.

Tyler (1999) discussed two streams of psychological theory for the linkages between employees and organizations. The first is social exchange theory, which argues that people interact with others to gain desired material resources (Thibaut and Kelley, 1959). Thus, the quality and nature of the resources employees receive from the organization determines the level of attachment to the organization. For instance, if a person receives a high salary and other financial or material benefits from an organization, they would demonstrate attachment by choosing to stay with it.

The second type of theory argues that people use interactions with others as a source of information about their social identities. One way that people form their social identities is through the nature of their treatment by other people. This “looking glass” self is created through interpretations made through interacting with others.
Tyler (1999) argued that social identities derived from the organizational experience are “more influential than are judgments about the favorability of the resources obtained from the organization.” (p. 203). Similarly, Kelman and Hamilton (1989) distinguished instrumental and sentimental attachment. Sentimental attachment refers to an emotional connection to organizations, their rules, institutions and values, while instrumental attachment refers to attachment linked to receiving favorable outcomes. Along this line, O’Reilly and Chatman (1986) demonstrate that non-instrumental motives influence both extra-role behavior and turnover intentions. There has been clear evidence that people are motivated by factors other than concerns about financial gains and resources.

Embracing the second line of argument, I conceptualize organizational attachment as comprised of three aspects: job satisfaction, psychological attachment and intent to stay.

**Job Satisfaction**

Job satisfaction is a “pleasurable or positive emotional state resulting from the appraisal of one’s job experiences” (Locke, 1976, p. 1297). Thus, individuals are satisfied with their jobs when they obtain pleasure from applying their values to work (Locke, 1969). Spector (1997, p.2) believes that job satisfaction “can be considered as a global feeling about the job or as a related constellation of attitudes about various aspects or facets of the job.” Job satisfaction was one of the earliest attitudes studied by industrial psychologists (Locke, 1976).
Psychological Commitment

Psychological commitment is “a strong belief in and acceptance of the organization’s goals and values; a willingness to exert considerable effort on behalf of the organization; and a strong desire to maintain membership in the organization” (Mowday et al., 1982, p. 27). Scholars suggest that psychological commitment appears both in individuals’ behaviors (Becker, 1960; Staw and Salancik, 1977) and attitudes (Mowday, Steers and Porter, 1979; Porter, Steers, Mowday and Boulian, 1974). The attitudinal approach recognizes that “the identity of the person [is linked] to the organization” (Sheldon, 1971, p. 143); and thus, the person develops an emotional or psychological attachment to his or her employer.” Psychological commitment is equivalent to “affective commitment,” one component of organizational commitment as defined by Allen and Meyer, together with continuance and normative commitment. The latter two are more related to the economic approaches of organizational commitment studies, not the focus here.

Although both job satisfaction and psychological commitment are studied as attitudes, they differ in several ways (Mowday et al., 1982). Job satisfaction is focused on a specific job or facets of the job (Wiener, 1982), whereas psychological commitment is a more global response to the organization (Mowday et al., 1982). It is likely that, over time, an individual’s psychological commitment will be more stable than his or her job satisfaction. This happens because “although day-to-day events in the work place may affect an employee’s level of job satisfaction, such transitory events should not cause an employee to reevaluate seriously his or her attachment to the overall organization” (Mowday et al., 1982, p. 28). In addition to such day-to-day events, individuals may change jobs within an organization, and not all jobs are
equally satisfying.

The relationship between psychological commitment and job satisfaction is rather controversial. There is some evidence that psychological commitment is antecedent to job satisfaction (Bateman and Strasser, 1984; Wong, Hui and Law, 1995); other findings indicate that job satisfaction is a significant predictor of psychological commitment (Bagozzi, 1980; Bartol, 1979; Brown and Peterson, 1994; Curry, Wakefield, Price and Mueller, 1986; DeCotiis and Summers, 1987; Luthans, Baack and Taylor, 1987; Mathieu and Hamel, 1989; Reichers, 1985; Testa, 2001; Porter et al., 1974; Price, 1977; LaLopa, 1997). Job satisfaction has been found to be positively related to both intent to stay and psychological commitment (Mowday et al., 1982). Mathieu's (1991) nonrecursive test of the causal ordering of job satisfaction and psychological commitment supports the earlier work of Williams and Hazer (1986). They found that a variety of antecedents of psychological commitment had only indirect effects, mediated by their impact on job satisfaction (Tsui et al., 1992).

Intent to Stay

The third aspect of organizational attachment studied here is an individual’s intent to remain a member of the organization. In general, research suggests that job satisfaction and commitment have consistent, statistically significant, and negative relationships with turnover (e.g., Jaros, 1997). While turnover directly measures the decision to leave an organization, intent to stay is the behavioral intention that immediately precedes turnover (Kraut, 1975; O'Reilly, Chatman, and Caldwell, 1991). If an individual finds membership in a social unit to be satisfactory, he or she
will most likely desire to maintain it, and thus be more likely to stay in rather than leave an organization.

Three Approaches to Organizational Demography—The Integration of Social Context

To study the similarity effects on organizational attachment, social context has to be considered, as argued from the interactionist perspective (Lewin, 1951). Demography researchers did not explicitly embrace this point until the relational approach was adopted (Tsui and O’Reilly, 1989). Interactionists see behaviors as a function of both person and situation, with the nature of the combined effect broadly conceived. This stream of research established the need to conceive and assess contextual factors (such as organization, subunit and group) that affect individuals’ perceptions, attitudes, and behaviors. Thus, behavior is viewed as a combined result of contextual and individual effects. Below I review the relevant history of demography research in the treatment of social context.

According to Tsui and Gutek (1999), organizational demography research can be broadly classified into three approaches—categorical, compositional, and relational. The first two approaches did not adequately embrace social context. Research using the categorical approach focuses on demography as an individual trait and is also called “simple demography” (Tsui and O’Reilly, 1989). This work focuses on discovering differences in work-related attitudes and behaviors in different demographic categories. Its underlying assumption is that all individuals sharing the same demographic attribute are similar. In this framework, individuals in certain categories of a demographic characteristic (e.g., males) will have experiences at work
that differ from others in a separate category (e.g., females). Such differences come from the unique social-cultural perspectives or stereotypes associated with the demographic category considered. Articles in this stream of research conclude that gender or racial minorities tend to have less favorable employment experiences than majority members (Waldman and Avolio, 1986; Morris and Sherman, 1981; Nieva and Gutek, 1980; Johns, 1978; McIntire, Moberg and Posner, 1980). Yet the categorical approach fails to explain why individuals in the same demographic category also have different experiences.

Research using the compositional approach treats demography as a structural property of a group. It studies the distribution of basic attributes such as age, race, gender, educational level or organizational tenure within a social entity. Pfeffer (1983) introduced the term “compositional demography” to refer to such distributional characteristics. The basic research question posed by this approach is whether the experiences of employees and the functioning of groups are affected by different distributions of demographic attributes. Assuming that the social and psychological dynamic will differ for units with different collective demographic profiles, the compositional approach focuses on the relationship between the collective demographic profile and outcomes like the work unit’s internal processes and performance as well as group members’ behaviors or attitudes. This approach ignores the demography of the individual: it assumes that the effect of the group’s demographic distribution will be the same for all individuals within the group. Although the distribution of demographic attributes could be a proxy for social context, the interaction between individuals and the social context is not considered in this approach.
Relational demography (Tsui and O’Reilly, 1989) explicitly considers the individual’s social context to assess the full impact of demographic similarity. It predicts how individual demographic characteristics and the social context will interact (Mowday and Sutton, 1993; Riordan and Shore, 1997). Specifically, it examines demography as social relationships between an individual and the members of his or her social context by focusing on how an individual’s demographic characteristics resemble or differ from those of others in the context. In other words, relational demography researchers consider not only individual but also situational demographic variables that comprise the social context (e.g., Cleveland and Shore, 1992; Kanter, 1977; Wagner et al., 1984). The argument is that demographic composition of a certain social context, by itself, may not adequately reflect the full meaning and impact of similarity within a work setting, since individuals with their unique demographic profiles may infer different similarity judgments. Just as “the same individual demographic characteristic may yield different work-related attitudes in different social contexts,” (Riordan and Shore, 1997, p. 342) the same social context may generate different similarity judgments among different members. It is critical, therefore, to include both individual attributes and contextual composition to assess the full impact of demographic similarity.

**Operationalization of Social Context in Relational Demography**

Although the conceptual importance of social context has rarely been challenged by demography researchers, and the relational approach explicitly embraces social context in studying similarity effects, researchers do not agree with each other as to the operationalization of social context. There is no general
agreement on what social context really means. Social context has been operationalized in different ways to investigate its impact on important work-related outcomes.

Most relational demography research focuses on formal work groups. Researchers have studied groups in organizational settings rather than artificial groups in lab settings, since Williams and O'Reilly (1998) proposed that lab studies based on artificial, short-lived groups are insufficient for judging the effects of diversity on the group’s long-term viability. Thus, empirical research on intact working groups in which members are interdependent over extended periods is reviewed below.

**Formal Work Group as the Social Context**

A formal work group is defined as “comprising three or more individuals whose members engage in regular work-related interactions” (Tsui and Gutek, 1999, p. 78). Other similar definitions include “collections of individuals who are interdependent, share responsibility for outcomes, and are viewed as an intact social identity” (Cohen and Bailey, 1997). What is the rationale for using formal work groups as the social context? Since organizations have a formal hierarchical structure, employees in a work group tend to interact more dynamically and intensely with each other than with individuals outside their group (Simon, 1973). Research has shown that certain patterns emerge as a result of this routine interaction. For example, workflow transactions—the ways in which people are linked to accomplish the work of the unit (Thompson, 1967)—pattern interactions and exchanges. Other researchers have also argued that employees directly linked by the work flow tend to interact more with each other than with those linked indirectly (Brass, 1985, 1995). Thus,
demography research has focused on well-established social units, such as work
groups in older firms (Arrow, McGrath, and Berdahl, 2000).

In this body of research, independent variables studied include age, company
 tenure, education, functional background, industry experience and tenure on the team.
Studies in this research stream focus on two categories of outcomes: social and task
(Tsui and Gutek, 1999). Specifically, variables that have been studied include
turnover (Jackson et al., 1991), innovation and adaptation, change and firm
performance, satisfaction (Wharton and Baron, 1987, 1991), commitment (Tsui et al.,
1992), frequency of communication (Zenger and Lawrence, 1989), performance
evaluation and absenteeism. These research studies use formal groups in
organizations such as R&D teams (e.g., Ancona and Caldwell, 1992) and top
management teams (e.g., Bantel and Jackson, 1989; Smith, Smith, Olian, Sims,
project teams (Zenger and Lawrence, 1989), work groups (Konrad, Winter and Gutek,
1992; Pelled, 1996; Riordan and Shore, 1997) and “high involvement” teams
(Magjuka and Baldwin, 1991).

The empirical evidence of similarity effects is supportive, but not strong
that a composite measure of dyadic demographic similarity was positively associated
with the job satisfaction and performance ratings of subordinates. Tsui and O’Reilly
(1989) report that demographic similarity leads to subordinates’ performance and role
outcomes. Diversity in experience or functional background has reduced informal
communication, group cohesiveness, and social integration (Glick, Miller, and Huber,
1993; O’Reilly et al., 1989; Smith et al., 1994). Wesolowski and Mossholder (1997)
find that similarity in race, but not in age, gender or education, leads to job satisfaction and perceptions of procedural justice. Vecchio and Bullis (2001) linked demographic similarity and satisfaction with one’s supervisor to continued membership in the Army.

Other Ways of Operationalizing Social Context

In addition, there are some other ways to operationalize social context. For example, Zenger and Lawrence (1989) demonstrated that although both age and organizational tenure similarity contributes to the frequency of technical communication, their contribution differs inside and outside project groups. Specifically, inside project groups, age similarity exerts more influence on communication than organizational tenure similarity does, but the latter affects communication more than age similarity outside project groups. That is, depending on which social context we are looking at—a project team or the whole organization—demographic similarity influences communication frequencies differently.

Tsui and Gutek (1999) proposed a model in which organizational context moderates similarity effects on work-related attitudes and behaviors. By ‘organizational context,’ Tsui and Gutek (1999) mean two different concepts—the “overall diversity climate” or the whole organization as “a super-ordinate identity.”

First is the “overall diversity climate” (Tsui and Gutek, 1999, p. 136), which may heighten or minimize differences between people from unlike social categories. Specifically, in a positive diversity climate, the effect of difference would be mitigated. This happens because the organization consciously highlights commonality
and so reduces the relevance of differences. The concept here is consistent with the macro perspective of social context. Similarly, the few studies on how context shapes similarity effects looks at group or organizational level outcomes and how the higher level context (group or organization) affects individuals in shaping group effectiveness and/or organizational outcomes. Concepts that have been used as a proxy for social context include organizational culture (Brickson, 2000; Ely and Thomas, 2001; Cox, 1993), team decision-making and conflict management approaches (Simons, Pelled, and Smith, 1999; Bottger and Yetton, 1988), the demographic structure of work units (Joshi, 2004), the demographic characteristics of team managers and demography of larger business units (Jackson and Joshi, 2004). The common thread in this literature is that the consequences of team demographic diversity partly depend on the social environment within which the team works (Jackson and Joshi, 2004).

In the same line of using “overall diversity climate” (Tsui and Gutek, 1999) as the operationalization of social context, Ely and Thomas (2001) looked at how the group’s “diversity perspective”—defined as “group members’ normative beliefs and expectations about cultural diversity and its role in their work group”—impacts group functioning. That is to say, Ely and Thomas (2001) use “diversity perspective” as the social context within which demographic similarity affects group functioning. Although not explicitly stated, this view of context is “macro”—a collective that transcends individual perceptions. In their study, Ely and Thomas (2001) asked participants to describe “how a diversity perspective shaped group processes and individual experiences and how these, in turn, influenced individual or group functioning” (p. 235).
Second, Tsui and Gutek (1999) argue that the organization may also serve as a “super-ordinate” category for employees to be identified with, especially in “strong cultured” organizations (defined as high consensus in the beliefs and values of organizational members). That is, organizational identity may be more salient to employees than any other social identities, such as demographic identities. According to Tsui and Gutek (1999), this happens because all employees use the organization as primary for self-categorization so it becomes a meaningful and binding psychological group or “common identity that provides a sense of togetherness among people who may be widely dispersed geographically (p. 54).” Their argument draws on the concept of organizational culture in which members share one strong and uniform organizational identity. Such identification highlights positive attributes and enhances the employees’ self-image. One example that has been cited as typically “strong-cultured” is the old IBM (Peters and Waterman, 1982). Other researchers also propose that when common goals are important to members, demographic similarity matters less (Chatman, Polzer, Barsade, and Neale, 1998).

Yet a super-ordinate organizational identity may be difficult to maintain, since it requires strong unifying goals and may be inappropriate for large groups (see Brewer, 1991; Brewer and Brown, 1998). “Classification of the self as a member of a highly inclusive superordinate category [may] motivate … an active search for subgroup differentiation” (Brewer, 1993, p. 159). Hornsey and Hogg (1999) also provided evidence that subgroup relations cannot be improved by encouraging subgroup members to focus on their shared super-ordinate category. For instance, we commonly find employees in strong-cultured organizations using demographic categories to define themselves rather than emphasizing their organizational identity.
Empirical evidence is also available to show that people tend to have greater loyalty to, and identification with, their work units than their organizations as a whole (Barker and Tompkins, 1994; van Knippenberg and van Schie, 2000). Hornsey and Jetten (2004) proposed that members of large, international corporations might identify with a department within the organization to resolve their needs for distinctiveness. They also proposed that “Even if there are no formalized subgroup structures, subgroups can emerge informally. For example, many organizations comprise cliques and cabals, informal subgroup structures that emerge as a product of interpersonal ties, geographical proximity, and/or strategic considerations (Burns, 1955; Thibaut and Kelley, 1959)...there is a myriad of subgroup identities to choose from—informally and formally defined...group members simply shift the level at which they self-categorize to suit their distinctiveness needs” (p. 252).

In sum, demography and diversity researchers have not reached general agreement as to how to operationalize social context in studying similarity effects on work-related attitudes and behaviors. Next I discuss an alternative social context to study similarity effects on organizational attachment—organizational reference groups (Lawrence, 2005).
III. Similarity Effects on Organizational Attachment in a Perceived Social Context

The previous chapter summarized the theoretical underpinning of and general findings in the organizational demography and diversity literatures, emphasizing the relational approach for embracing social context in exploring similarity effects. This chapter builds on the relational approach. I introduce the concept of perceived social context from the employee’s point of view—the “organizational reference group” (Lawrence, 2005) for this study as an alternative conceptualization of social context, and then derive specific hypotheses.

**Informal Groups in Organizations**

Demography researchers have used formal work groups as the social context within which similarity affects organizational attachment. Tsui et al. (1992) established that ethnicity and gender similarity among equal status members of a work group increased organizational attachment. Yet this study used demographic similarity with formal work group members only to predict employees’ attachment to the whole. Does this mean that social interaction outside the formal work group has no impact on attachment level? Along the same lines, Pelled and Xin (1997) reported that age and gender similarity with the supervisor are related to members’ organizational attachment. Again, this study seems to assert that only the interactions between supervisors and subordinates determined the level of organizational attachment.
An alternative but not reasonable operationalization is to use the whole organization as the social context. In large organizations, employees usually do not know every single other member. It is impractical to expect employees to exhaust all possible information sources before they form their perception of the organization. Thus, it is not reasonable to use demographic similarity with all members therein to predict organizational attachment. What should be used to measure the social context within which individuals feel involved with the organization then? This question needs to be answered on solid theoretical ground.

Organizational attachment is a person-to-collectivity bond that is determined by interactions between the employee and the organization. The key here is how to define the “collectivity,” or organization properly. A formal work group is undoubtedly an important part of any organization since employees work with their immediate colleagues on a regular basis. Their organizational experiences are largely determined by such interactions. Research shows that group members can be used as a frame of reference that gives employees a guide to what attitudes and behaviors are appropriate in a given situation (Deutsch and Gerard, 1955; Turner, 1991). Yet informal groups tend to shape common sense-making about the organization. If we use only the formal work group to represent the “collectivity,” we ignore potentially critical members in the organization that contribute to the employee’s social experiences. Members of the same formal work group may belong to very different informal units, which may confirm or disconfirm information acquired from the formal work group. Thus, members in the same formal work group may enact very different perceptions of the “collectivity” from informal group members. The latter should be included when we think about the organization as a collectivity.
As proposed by Katz and Kahn (1966), organizations are social systems in which individuals define their own informal social entities. In organizations, employees socialize with each other through different means, from choosing music to play in the work place to signaling subtle norms of dress code and language or investing time and energy to make friends and help each other. Through the attraction, selection, and attrition (ASA) process, individuals tend to self-select themselves into informal groups (Schneider, 1987; Schneider, Goldstein, and Smith, 1995).

Informal patterns of interaction that transcends formal work group boundaries and work flows play a major part in organizational lives. Socialization in such informal groups operates as a powerful force that shapes shared sense-making (Louis, 1980). Many phenomena may define entities that do not correspond to formal work group boundaries. Even in 1980 Moch argued that supervisors have little impact on friendship patterns. They are likely to have little influence over which relevant comparison group employees take for determining relative deprivation. They surely will have little effect on how comparable others fare because these people are likely to be linked to employees outside the formal work group. Similarly, Dimaggio and Louch (1998) and Zelizer (1994) proposed the concept of “socially embedded patterns of associations.” Rentch (1990) demonstrates that social interactions across work groups affect sense-making processes, and employees from different work groups who meet informally develop a shared understanding of the organization’s culture. Thus, when the phenomena of interest are examined within formal units but are driven by informal processes, it is problematic to rely on the formal group as the social context (Brown and Kozlowski, 1997).
Thus, a social context within which employees collect and interpret relevant information about the whole organization better captures the boundary within which all the social exchanges between employees and the organization happen. Such a context goes beyond the formal work group, yet does not cover every single employee in a large organization. Only those who make it to the “radar” of the employee should be included. Individuals not in the formal work group may have an important role in developing another’s organizational attachment. Although such individuals do not work directly with the employee, that they exist in the organization determines an employee’s perception of the actual demographic composition of the social context. That perception may change the similarity judgments of the employee. Thus, it is critical to include these other individuals in defining the social context within which an employee develops organizational attachment. One way to operationalize this context is the organizational reference group (Lawrence, 2005), discussed in more detail below.

**Organizational Reference Group**

The organizational reference group provides a starting point to operationalize the informal groups in organizations as an alternative conceptualization of the social context within which employees develop attachment to the organization. Organizational reference group (Lawrence, 2005) refers to “the set of people that an individual perceives as belonging to his or her work environment and who define the social world of work in which he or she engages.” As described by Lawrence (2005),

> “An individual’s organizational reference group includes everyone he or she thinks of when answering the question: Who works here? It incorporates the individual’s co-workers, friends, enemies, and
acquaintances as well as people with whom the individual has no direct contact, such as those he or she sees in the next building or knows only through stories, reputation and email. The individual’s inferences about the attitudes, values, and beliefs of the rest of the organization are largely based on these people. They constitute the “social frame of reference” (Merton, 1968) through which he or she receives information, interprets work-related experiences, and makes decisions to act.”

As discussed in detail in Lawrence (2005), organizational reference groups extend beyond the employee’s social network in the workplace because they include people with whom individuals have no direct contact (Lawrence, 2005)—those “distant, extended associations—those delineated by “awareness” as well as by communication” (p. 4). Other researchers also argued that relationships exist when there is no reciprocation (Brickson, 2000). Also as argued in the same article,

“When organizational theories move beyond dyadic relationships and small groups, they tend to assume that all individuals experience a common social context. Yet, the set of people who define one individual’s organizational experience may vary significantly from that of another.”

This means that by taking into consideration the potential differences in individual perceptions of the organizational context, researchers need to revise their assumption that all organizational members experience a social context that comprises everybody in the same organization. This new conceptualization of social context is not the first explicit research effort to distinguish objective characteristics of the organizational context from individuals’ interpretations. Researchers in organizational climate have done so (e.g., James and Jones, 1974). Their macro conceptualization views climate perceptions as a result of contextual and individual characteristics, which ascribe meaning to the context. Their distinction is that the organizational reference group is defined from the individual’s point of view.
Individuals’ similarity judgment is determined by the demographic composition of their social context. In formal work groups and organizational reference groups, the demographic composition could be different. For instance, two male employees of the same work group, one Caucasian and one African American, may categorize themselves based on their gender in a primarily male work group. Thus, the gender composition of the formal work group is the same for these two members. Beyond their formal work groups, however, the Caucasian man may know mostly other Caucasian men, yet the African American may be challenged to find enough African American men to interact with. As a result, the African American men may have quite a few African American women in his organizational reference group. Thus, although the formal work group similarity in gender is the same for these two employees, the organizational reference group similarity in gender is very different. If we use the composition of the work group as the social context within which these two employees form attachment to the organization, we are likely to conclude that their attachment level is the same. Yet a closer look at their respective organizational reference group would lead to surprisingly different conclusions.

Thus, rather than relying on the convenience of the formal work groups, researchers must rely on theory to conceptualize social context. Because organizational attachment is an individual-to-collectivity variable, we should explore how employees perceive the whole organization through their enacted context, the organizational reference group, rather than use the formal work group as the social context. In this way we truly investigate the social context within which individuals collect and interpret relevant information about the organization.
To demonstrate the advantages of adopting the organizational reference group as the refined conceptualization of social context, I employ three analytical steps. In step 1, I test the traditional relational demography model in the formal work group context (see Figure 1). By using formal work groups as the conceptualization of social context, demography researchers envision a positive association between formal work group similarity and organizational attachment.

H1. There is a positive association between formal work group similarity and organizational attachment.

In step 2, I use the organizational reference group as the conceptualization of the social context to test a model of the effects of demographic similarity on organizational attachment (see Figure 2). As the organizational reference group is argued to be an alternative social context for employees, I also expect to observe the similarity effects on organizational attachment here.

H2. There is a positive association between organizational reference group similarity and organizational attachment.

As argued, organizational attachment is developed through interactions of all members in employees’ organizational reference groups. Thus, defining social context by the organizational reference group should explain more variance in organizational attachment than using formal work groups. This is the substance of step 3 and leads to the following hypothesis:
H3. Organizational reference group similarity is more predictive of organizational attachment than formal work group similarity.
IV. Methods

Sample

For this dissertation, I had access to data on a systematically stratified sample (N=537) of employees in one organization for which I have complete archival and demographic data, including self-reported organizational reference group and self-reported job satisfaction, psychological commitment, and intent to stay data (See Lawrence, 2005).

The original data were collected in a large organization with over 9,000 employees located in Southern California, USA (Lawrence, 2005). In the past, managers in this organization enjoyed long and stable careers, but they now face uncertainties as the company responds to dramatic changes in the market. In the five years prior to data collection, the company went through several major reorganizations and reductions in its employee body. During and after these structural changes in the company, the tradition of job rotation stayed. Managers usually spend an average of less than two years in one position. Thus they have enough opportunities to develop work and friendship associations with a large and diverse sample of all employees in the company.

Demographic data were acquired from company archives on the population of management and ready-for-management employees (N = 2685). In this company, women comprise 32% (N = 848) of the managers and ready-for-management employees. The distribution by ethnicity is: Black, 9.8% (N = 263); Asian, 12.1% (N = 326); and Hispanic, 15.9% (N = 428). The average age of these employees is 44
(range = 23-74) and their average organizational tenure is 17 years (range = 0-50). Sixty-five percent of these employees hold a college degree. There are fifteen levels of management in this organization.

**Procedure**

In the original study, surveys were mailed to a 20% systematic, stratified sample (N = 537) of management and ready-for-management employees. Four hundred and twenty-three surveys were returned, yielding a response rate of 79%. Twelve surveys were deleted because they were completed by employees outside the sampling frame, leaving 411 (77%) usable surveys. In the process of extracting demographic data for members of formal work group and organizational reference groups, eleven respondents dropped out, resulting in a final sample size of 400. The survey sample was similar to the population in all dimensions of stratification: age (t = 1.11, p = 0.27), organizational tenure (t = -0.31, p = 0.75), career level (t = 0.79, p = 0.43), gender ($X^2 = 0.23, p = 0.63$), ethnicity ($X^2 = 1.02, p = 0.91$), and hire type ($X^2 = 0.12, p = 0.73$). The last term refers to whether the employee was in a professional or non-professional job when he or she was hired.

In the original study, surveys were not anonymous. Subjects were asked to provide their social security number on an identification page that was perforated and easily detached from the survey booklet. Both parts had a code that was used to match the returned responses in sealed envelopes. Subjects sent back the completed surveys in two parts—one for the identification page and one for the rest of the completed survey. Subjects’ sealed responses could not be identified without opening the envelopes and matching the codes, thus ensuring that responses would not be
individually identified by people other than the researchers. The data were then coded and double-entered. After that, a 5% sample of the surveys was cross-analyzed with the entered data to estimate the percent of entry errors. This evaluation yielded an error rate of .002%.

Data on members of subjects’ organizational reference groups were obtained by asking subjects to list the names of employees they knew. The questions in the original survey followed those used by Hampton and Wellman (2000) and McCarty, Bernard, Killworth, Shelley, and Johnson (1997) for generating lists that include people with whom a subject has no face-to-face communication. As in large organizations, it is impractical to ask subjects to answer questions about a list including more than one hundred to one hundred and fifty people, this name generation approach is necessary. Subjects were given a complete roster of management and ready-for-management employees. The survey form had fifty-six blank lines, the highest number that could be fit comfortably in one page. Subjects were asked to add names if they felt they had more than fifty-six names to be included. They also had the option of including names not on the list. The average number of names listed was 49.86 (range 0–56).

Lawrence (2005) argued that asking subjects to list the names of employees they know has several advantages as a name generator. First, there is a distinction between her approach and the request for strength of association in previous studies. In this survey subjects identify all the names before they answer any questions about these people. Examples of other name generators used in literature are “Who do you go to for critical sources of buy-in for projects?” “Who do you go to for informal discussion and socializing?” (Burt, 1992, 1997) “With whom do you talk frequently
about work-related topics,” and “Who do you consider a close friend?” (Brass, 1985). Name generators like these explicitly request strong relationships. In other words, asking for “critical sources” or “close friends” guarantees that subjects do not name people with whom they have peripheral associations. In Lawrence’s (2005) survey though, these distant relationships are an important part of the organizational reference group. It actually distinguishes the organizational reference group from traditional network studies.

Second, Lawrence (2005) provided evidence that asking subjects to name employees they know elicited a larger number of associations than is typical in other name generation studies. Thus, the probability of obtaining a broad set of close and distant associations significantly increases. Most previous studies explicitly focus subjects on a set of core relationships by requesting a small number of names and by limiting questions to relationships with specific content. Quoting from Lawrence (2005),

“For instance, Lincoln and Miller (1979) asked employees to name five persons with whom they worked closely and five persons with whom they were friends. Sixty-four percent of their subjects provided less than five work contacts and seventy-three of them named less than five friends. Ibarra (1992) asked subjects to generate names in response to each of five questions about instrumental and expressive relationships. She provided ten blank lines for each question and notes that a few individuals added lines. A review of 22 samples from 21 widely-cited studies using name generators shows that the average list includes eight names.”

Lawrence (2005) did acknowledge possible weakness in using this name generator in the original data collection. As there is no a priori guidance as to the actual size of organizational reference groups, the pre-set fifty-six lines were based mostly on a judgmental decision. Previous research in acquaintance studies reported that people may generate several hundred names inside and outside of work (deSola
Pool and Kochen, 1978). This suggests that the names generated in the dataset, “although a good bit more numerous than usual, may not capture an individual’s entire organizational reference group.” (Lawrence, 2005).

Data on members of subjects’ formal work groups were obtained by identifying employees with the same supervisor. Demographic data on the survey respondents, their organizational reference group members, and their formal work group members were subsequently obtained from the company archives.

Measures

Dependent Variable—Organizational Attachment

Organizational attachment was measured by three variables: job satisfaction, psychological commitment and intent to stay. This measure is adapted from the original study by Tsui et al. (1992).

*Job Satisfaction.* Job satisfaction was measured by six standard questions such as “how satisfied are you with your job?” in the original survey. Lawrence (2005) employed a 7-point Likert scale ranging from Strongly Disagree to Strongly Agree. A complete list of all the items can be found in Appendix I. The scale score was the average of the six items (alpha = .86).

*Psychological commitment.* Psychological commitment was measured by a scale of one to five, using a 10-item value commitment index (Angle and Perry, 1981) drawn from a well-known 15-item organizational commitment scale (Porter et al.,
The value index includes all items measuring an individual's psychological attachment to the organization. The scale score was the average of the ten items (alpha = .88). Specific items for this scale are listed in Appendix I.

**Intent to stay.** Intent to stay was measured with a self-reported single item “How long do you expect to remain with the organization?” Options for the answer ranged from the very low intent of “less than a year,” to the very high intent to stay “until retirement.” Subjects close to age 62 (the official retirement age for this company) who circled a specific category of years for their intent to stay were recoded as “until retirement.” For example, when a 60 year old employee circled 1-2 years in the answer, it was coded as “until retirement.” When employees circled “unsure,” they were coded as missing values. This variable is measured with a 9 point Likert scale.

**Independent Variables**

**Organizational Reference Group Similarity.** Demographic similarity with members of the organizational reference group was measured on five demographic attributes: age, organizational tenure, education, gender and ethnicity. The similarity score is the similarity between an individual and all other members in his or her organizational reference group on a specific demographic attribute. Here I use a formula that was similar to that used by Tsui et al. (1992): the negative square root of
the summed squared differences between an individual $S_i$’s value on a specific demographic variable and the value on the same variable for every other member $S_j$ in his or her organizational reference group, divided by the total number of members in the organizational reference group. The formula was used for this calculation:

$$-\sqrt{\frac{1}{n} \sum_{j=1}^{n} (S_i - S_j)^2}$$

The only difference from the formula in the Tsui et al. (1992) study is that I take a negative of the Euclidean distance. It is scaled negatively so that a larger value connotes more similarity. This Euclidean distance measure is a network analog for representing social similarity or isolation (Burt, 1982). A similarity score was calculated for each demographic variable. Similarity in gender and ethnicity was measured by a score ranging from 0 to approaching but never reaching negative -1.00. For example, a man with an organizational reference group of seven men and four women would have a similarity score of -0.58 on gender: 0 for being the same as the other man and 4 for being different from each of the four women. Then I would divide the score 4 by 12 and take the square root of the result. Hypothetically, if a female has an organizational reference group with exactly the same demographic composition, she would have a similarity score of -0.82. A score of -0.999 could be obtained in an extreme case, by someone who chose all different others in his or her organizational reference group (on either gender or ethnicity). The man’s similarity score -0.58, higher than the woman’s similarity score -0.82, means that the man is more similar to his organizational reference group members than the woman.
The similarity score on ethnicity was computed in the same fashion. Suppose an Asian or a Caucasian individual has an organizational reference group with one Hispanic, one Asian, two African-Americans and three Caucasians. The Asian would get 6 for being different from all other members, and the similarity score would be -0.93. The Caucasian would get a similarity score of -0.76. This would mean that the Caucasian is more like his or her organizational reference group members than the Asian is.

Similarity scores for the continuous variables were also scaled negatively so that a larger value connotes more similarity. Age and organizational tenure were measured by years. Education was measured by a five point continuous variable with 1 meaning trade school or 1-2 years college, 2 meaning associate degree or 3-4 years college, 3 meaning college degree or some graduate school, 4 meaning master degree and 5 meaning doctoral degree. In other words, an individual with a larger score on a certain demographic attribute is more similar to his or her organizational reference group members than somebody with a smaller similarity score.

Variations of this Euclidean distance measure have been used in previous studies. Jackson et al. (1991) and Zenger and Lawrence (1989) used the number of individuals in the group minus one (n-1) as the denominator. Other studies such as Pelled (1996), Tsui and O’Reilly (1989), Tsui et al. (1992), Wagner et al. (1984) used the total number of individuals (n) including the focal person whose distance score was computed. The difference between these two measures was that when we use (n-1) as the denominator, the similarity score could reach -1 (meaning that the individual chose members who all share the same gender or ethnicity); when we use n as the denominator, the similarity score would be -0.99. In this dissertation I used both
measures but did not find any differences in the results. There was no case of an individual choosing a 100% homogenous organizational reference group. Thus, I report the measure with n as the denominator.

Of the four hundred employees in the sample, the size of employees’ organizational reference groups ranges from 4 to 56, with a mean of 51 and a standard deviation of 11 (all numbers rounded to the nearest integer). The actual range of organizational reference group similarity measures for age was -22 to -5.5, -23.7 to 0 for organizational tenure, and -2.1 to -0.2 for education. The actual organizational reference group similarity scores for ethnicity were -0.99 to -0.3, and -0.99 to 0 for gender.

**Formal Work Group Similarity.** Demographic similarity with members of the formal work group was measured in the same way as that for organizational reference group similarity. That is, formal work group similarity scores on five attributes were calculated by using the measures of the focal employee and his or her formal work group members. The actual range of formal work group similarity measures for age was -32 to -.99, -30.34 to 0 for organizational tenure, and -2.1 to 0 for education. The actual formal work group similarity scores were -0.99 to 0 for both gender and ethnicity.

Of the four hundred employees in the sample, the size of their formal work groups ranges from 1 to 17, with a mean of 6 and a standard deviation of 4 (all numbers rounded to the nearest integer). Of interest here is that not all employees included their formal work group members in their organizational reference group. In extreme cases, no or all formal work group members were listed in the organizational
reference group. On average, the proportion of the formal work group members included in the organizational reference group is .67, with a standard deviation of .33. The median of the proportion is .75. The correlation between the size of the formal work group and the organizational reference group is not statistically significant ($r = -.05, p < .33$).

It is also interesting to note that for all five demographic attributes, the correlations between measures of the formal work group similarity and the organizational reference group similarity are positive and statistically significant (See Table 5). The actual correlations range from .39 ($p < .0001$) for education to .67 ($p < .0001$) for ethnicity. Organizational reference groups tend to be more similar with the focal employee in age and organizational tenure than formal work groups, but less similar in education, gender and ethnicity. The standard deviation in all five attributes is smaller in organizational reference groups than in formal work groups.

**Control Variables**

There are five control variables: age, organizational tenure, education, gender and ethnicity. These demographic characteristics are included as control variables because extant research shows that they are related to organizational attachment.

Age and organizational tenure are measured by years. As indicated above, education is a five point continuous variable with 1 meaning trade school or 1-2 years college, 2 meaning associate degree or 3-4 years college, 3 meaning college degree or some graduate school, 4 meaning master degree and 5 meaning doctoral degree. Simple gender is dummy coded with women being 1. Simple ethnicity is also dummy
coded with dummy 1 representing Blacks, dummy 2 representing Hispanics and dummy 3 representing Asians.

**Data Analysis**

To empirically test the advantage of organizational reference group rather than formal work group as the conceptualization of social context for examining similarity effects on organizational attachment, I used a three-step approach. In step 1, I test the traditional relational demography model by regressing formal work group similarity on organizational attachment. In step 2, I use organizational reference group similarity to predict organizational attachment. In step 3, I compare the results to see whether organizational reference group similarity predicts organizational attachment better than formal work group similarity.

Specifically, in step 1 I use regression to test how formal work group similarity affects organizational attachment. This is a standard hierarchical regression with five simple demographic characteristics (age, organizational tenure, education, gender and ethnicity) as control variables. Hypothesis 1 will be supported if the regression coefficients of the formal work group similarity measures remain positive and significant after controlling for the main effects of the simple demographic attributes.

In step 2 I use hierarchical regression to test how organizational reference group similarity affects organizational attachment. Hypothesis 2 predicts a direct positive association from organizational reference group similarity in all five demographic attributes to each of the three measures of organizational attachment (job satisfaction, psychological commitment and intent to stay). This step should
replicate the traditional relational demography stipulation that demographic similarity leads to work related attitudes and behaviors in a simple linear fashion after controlling for the main effects of simple demographic attributes, in the “perceived social context”—organizational reference groups. Hypothesis 2 will be supported if the regression coefficients of the organizational reference group similarity measures remain positive and significant after controlling for the main effects of the simple demographic attributes.

In step 3 I compare the results of the previous two steps to find out whether using the organizational reference group as the social context within which employees develop organizational attachment has more predictive power than using formal work groups.
V. Results

Step 1. The Impact of Formal Work Group Similarity on Organizational Attachment

Table 1 presents the means, standard deviations, and correlations among the independent, dependent, and control variables. The correlations among these variables do not indicate a multi-collinearity problem. The median correlation (absolute value) is \( r = 0.10 \), with only one correlation exceeding 0.70 (\( r = 0.81 \) between two control variables—organizational tenure and age). A standard rule of thumb is that multi-collinearity is an issue when a predictor has a variance-inflation factor (VIF) larger than 10 (Belsley, Kuh, and Welsch, 1980). In my regression models there is no VIF larger than 10. So multi-collinearity is not a problem here.

H1. Direct Impact of Formal Work Group Similarity on Organizational Attachment

Table 2 presents regression models for the three measures of organizational attachment, with two models for each measure. In model 1, the five simple demographic attributes are entered to predict each organizational attachment measure, and then in model 2, formal work group similarity measures on the five attributes are added. Hypothesis 1 predicts a simple positive association between formal work group similarity and organizational attachment, which receives no support from the results. No formal work group similarity measures are found to have any significant
associations with any organizational attachment measures. In fact, the overall F for psychological commitment is not even statistically significant in both models.

**Results for the Control Variables**

Most of the findings for the simple demographic attributes are consistent with and extend the findings of past research. For example, women and employees with a longer organizational tenure tend to be more attached to the organization. Employees who have a higher level of education tend to be less committed. Hispanics seem less attached to the organization when there are more of them in it.

**Step 2. The Impact of Organizational Reference Group Similarity on Organizational Attachment**

Table 3 presents the means, standard deviations, and correlations among the independent, dependent, and control variables. The correlations among the dependent, independent, and intervening variables indicate no multi-collinearity problem. The median correlation (absolute value) was $r = 0.10$, with only one correlation exceeding .70 ($r = 0.81$ between two control variables: organizational tenure and age). Again, a rule of thumb is that multi-collinearity is an issue when a predictor has a variance-inflation factor (VIF) larger than 10 (Belsley, Kuh, and Welsch, 1980). In my regression models there is no VIF larger than 10. So multi-collinearity is not a problem here.

**H2. Direct Impact of Organizational Reference Group Similarity on Organizational Attachment**
Table 4 presents regression models for the three measures of organizational attachment, with two models for each measure. In model 1, the five simple demographic attributes are entered to predict each organizational attachment measure. In model 2, organizational reference group similarity measures on the five attributes are added. Although hypothesis 2 predicts a simple positive association between organizational reference group similarity and organizational attachment, there is very little support from the results. Only organizational reference group similarity in gender is reported to have a significant impact on job satisfaction (with a coefficient of 1.21, p < 0.05). No other organizational reference group similarity measures have any significant association with any of the organizational attachment measures. Again, the overall F coefficient for psychological commitment is not even statistically significant. Therefore hypothesis 2 is not supported.

**Step 3. Comparison**

As no significant results were found for either formal work groups or organizational reference groups, there is no direct evidence that organizational reference group similarity has more predictive power than formal work group similarity. A closer look at Table 2 reveals that adding the set of formal work group similarity measures only serve to reduce the explained variance of organizational attachment. In Table 4, the explained variance of organizational attachment remains the same after entering the set of organizational reference group similarity measures. Thus, hypothesis 3 is not supported.
VI. Subsequent Analysis

The findings of the original model do not support the traditional relational demography argument that formal work group similarity leads to organizational attachment. Nor do they validate the argument that using the organizational reference group as the social context within which employees develop organizational attachment exceeds the predictive power of using the formal work group. Does organizational reference group similarity contribute anything to predict organizational attachment? If so, how? If not, we may ask, “What is lacking in order to establish similarity effects on organizational attachment?”

Additional Data Analysis I

In the initial study, neither formal work group similarity nor organizational reference group similarity is a significant predictor for organizational attachment. In both contexts, simple demographic attributes turn out to be significant predictors, and adding similarity measures only serve to reduce the explained variance (in the case of formal work groups), or the explained variance remain the same (in the case of organizational reference groups). This result is unexpected, and made a direct comparison of the predictive powers between the two conceptualizations difficult.

To answer the question of whether organizational reference group similarity contributes anything, if at all, to predict organizational attachment, I conduct additional analysis by entering organizational reference group similarity measures to
the regression models with formal work group similarity measures and control variables as predictors. Table 5 presents the means, standard deviations, and correlations among the two sets of independent variables (formal work group similarity and organizational reference group similarity), and the dependent and control variables. The correlations among these variables do not indicate a multicollinearity problem. The median correlation (absolute value) is \( r = 0.06 \), with only one correlation exceeding 0.70 (\( r = 0.81 \) between two control variables—organizational tenure and age). A rule of thumb is that multicollinearity is an issue when a predictor has a variance-inflation factor (VIF) larger than 10 (Belsley, Kuh, and Welsch, 1980). In my regression models there is no VIF larger than 10. So multicollinearity is not a problem here.

Table 6 presents the three sets of regressions for each measure of organizational attachment. Adding organizational reference group similarity measures to formal work group similarity measures do not contribute much in explaining the variance of organizational attachment. There is an increment of 0.01 in \( R^2 \) in job satisfaction by entering the set of similarity measures in organizational reference groups, with organizational reference group similarity in gender and ethnicity being statistically significant in opposite directions. The overall \( F \) for both psychological commitment and intent to stay is not statistically significant. It seems that a direct similarity effect model on organizational attachment is not working. Thus I explore other possibilities such as a mediating model.

Revised Model with Communication as the Mediator
Mediating processes help to explain how demographic similarity affects organizational attachment. Ever since Lawrence (1997) called for research to explore the “black box” between demography and work-related outcomes, researchers began to explore how demographic similarity influences work-related attitudes and behaviors (e.g., Pelled, Eisenhardt and Xin, 1999; Kilduff, Angelmar and Mehra, 2000; Flynn, Chatman and Spataro, 2001; Reagans and Zuckerman, 2001; Reuf, Aldrich, and Carter, 2003). For instance, Flynn et al. (2001) found that employees’ impressions of demographically different people, not the mere presence of such diversity, predict individual outcomes better. Reagans and Zuckerman (2001) demonstrated that it was the network structure that reflects distinct forms of social capital, rather than surface level group diversity which is often used as a proxy for network patterns on a team, that leads to team productivity. Interestingly, these authors did not find any diversity effect in organizational tenure on productivity, but significant effects for network structure variables. These results suggest that previous research may have overemphasized the direct relationship between demographic similarity and important individual outcomes. Results of the Reagans and Zuckerman (2001) study confirms Lawrence’s (1997) words of caution regarding the danger of treating demographic diversity and interaction patterns as “congruent” by providing evidence that network structures inside teams are independent of the team’s demographic composition, and it is the network structure rather than the demographic composition that affects productivity. Thus, demographic similarity may influence organizational attachment through various intervening variables. Consequently, in my revised model, I add communication as one possible mechanism through which
organizational reference group similarity affects organizational attachment (see Figure 3 for the revised conceptual model).

Research has reported that demographic similarity is positively related to communication (e.g., Zenger and Lawrence, 1989). This happens because communication provides an “efficient medium for the transfer of information and ideas” (Zenger and Lawrence, 1989, p. 354; Mintzberg, 1973; Tushman, 1978). As argued by March and Simon (1958), the frequency of communication between two individuals increases with the efficiency or ease of communication. Demographic similarity, as proposed by Pfeffer (1981, 1983), provides a readily available proxy for such efficiency, since demographic similarity signals shared experiences, beliefs and values. Such linkage creates language compatibilities. Therefore, Pfeffer (1983), March and Simon (1958) suggest that demographic similarity influences communication frequency and ultimately results in organizational outcomes. Other researchers (Wagner et al., 1984; McCain, O’Reilly, and Pfeffer, 1983) supported this notion. Kim and Mauborgne (1993) report a positive correlation between the extent of bilateral communication between managers of primary offices and managers of subsidiary units and the latter’s organizational commitment. O’Reilly et al. (1989) argue that demographic dissimilarity will decrease communication frequency within a group. Thus, communication is one possible mechanism through which demographic similarity affects organizational attachment.

Accordingly, I tested a mediating model with communication as the mechanism through which organizational reference group similarity influences organizational attachment. It would be ideal to test the mediating model both in the
formal work group context and the organizational reference group context. Yet because I use a secondary dataset in the dissertation, no communication measure is available for formal work groups. Thus I explore the mediating process only in the context of organizational reference groups.

Communication was measured using subjects’ responses to the question: “How often do you discuss work with the individuals on your list?” This was a five point Likert scale frequency measure. Subjects indicated that they communicate with the person once every day (5 points), once every week (4 points), once every two weeks (3 points), less than once every two weeks (2 points), or not at all (1 point) for every member included in the organizational reference group. This self-reported measure reflects the communication pattern between the employee and everybody else in the perceived organizational context. Acknowledging that this is a single item measure, I choose to use it as a first step in exploring the black box between demographic similarity and organizational attachment.

Three hypotheses were tested in this revised model. Since there could be other viable mediators between organizational reference group similarity and organizational attachment, the mediation is expected to be a partial one. Therefore,

H4. Communication partially mediates the relationship between organizational reference group similarity and organizational attachment.

In addition, according to similarity attraction theories such as social identity and social categorization theory, there is a direct positive relationship between
demographic similarity in the organizational reference group and organizational attachment. Therefore,

H5. In addition to the partial mediation of communication, there is a direct positive association between organizational reference group similarity and organizational attachment.

In sum, with both the direct effect and the partial mediating effect of communication, organizational reference group similarity is expected to have a significant total effect on organizational attachment. This is stated in hypothesis 6.

H6. Organizational reference group similarity has a positive total effect on organizational attachment.

Additional Data Analysis II

Structural equation modeling was the analytical method used to test the hypotheses. The EQS (Version 6.1) program was used to develop and test the structural model. Structural equation modeling (SEM) is a multivariate technique that defines and estimates dependent and independent relationships between endogenous and exogenous variables simultaneously (e.g., Yuan and Bentler, 2004; Bentler and Raykov, 2000; Bollen, 1989; Hair, Anderson, Tatham, and Black, 1998; Rakov and Marcoulides, 2000). It considers measurement error, gives parameter estimates based on the maximum likelihood estimation, and provides various indices of how the
proposed covariance structural model fits the data (Cardona, Lawrence, and Bentler, 2004; Bentler and Liang, 2003; Rakov and Marcoulides, 2000). Structural equation modeling has been used in the fields of psychology, econometrics, biology, sociology, education, marketing, organizational behavior, and genetics (Hair et al., 1998).

All fit indices generated by EQS are reported to assess the goodness of fit in the covariance structural models. The most common goodness-of-fit index is the chi-square value. The rule of thumb is that if the p-value of the chi-square statistic is greater than 0.05 (i.e., the chi-square value is not significant), then the proposed model is acceptable (Hu and Bentler, 1995, 1999; Arbuckle and Wothke, 1995; Bollen and Long, 1985; Bollen and Stine, 1993; Bentler and Chou, 1987). Thus, the null hypothesis is that the unstructured population covariance matrix ($\Sigma$) is equal to the model implied structured covariance matrix ($\Sigma_\Theta$). The null hypothesis is assessed by evaluating the closeness of the sample covariance matrix $S$ to the estimator ($\hat{\Sigma}$). However, because the traditional chi-square test is very sensitive to sample size, researchers (Jamshidian and Bentler, 2000; Browne and Cudeck, 1993) have suggested using the fit indices and the RMSEA as the principal goodness-of-fit index. They also suggest that a value of RMSEA of less than 0.05 indicates a close fit and that values up to 0.08 represent reasonable errors of approximation in the population. Because Bollen (1989) and Bentler (1990) have shown that IFI and CFI are much less dependent on sample size, I also use IFI and CFI to assess fit. The CFI is similar to an R-squared multiple regression coefficient in representing the proportion of the observed covariance explained by the model-implied covariance (Kline, 1998). The values of GFI, IFI, and CFI can vary between 0 and 1, with values closer to 1
indicating a close fit between data and model (Arbuckle and Wothke, 1995; Hair et al., 1998; Joreskog and Sorbom, 1993). Both the covariance and the correlation matrix for the observed variables were used as input for the model (Bollen, 1989).

Specifically, in this step I test for hypothesis 4 (the partial mediating effect of communication), hypothesis 5 (the main effect of organizational reference group similarity on organizational attachment), and hypothesis 6 (the total effect of organizational reference group similarity on organizational attachment). Structural equation modeling is used in this step (see Figure 4 for the path model). In the path model, organizational reference group similarity measures of five different demographic variables—age, organizational tenure, education, gender and ethnicity—are modeled as independent variables. Communication is the mediator between the set of organizational reference group similarity measures and the dependent variable: organizational attachment. Conceptually, organizational attachment could be modeled in at least two ways: first, as a latent variable with three indicators—job satisfaction, psychological commitment and intent to stay. Second, it could be represented as a sequence of the three measured variables. As research shows that both job satisfaction and psychological commitment are antecedents for intent to stay, I modeled intent to stay as the last in the sequence. Also as research shows that the relationship between job satisfaction and psychological commitment is controversial, I tested for both models and found that job satisfaction was an antecedent of psychological commitment in this study. I tested yet failed to find reasonable model fit by measuring organizational attachment as a latent variable with three indicators. Therefore, I report here the findings with the three measured variables in a sequence, with job
satisfaction predicting psychological commitment which in turn predicts intent to stay.

To test all three hypotheses, a reasonable model fit needs to be achieved. In addition, hypothesis 4 postulates that the relationship between organizational reference group similarity and organizational attachment is partially mediated by communication. To test for this hypothesis, I expect to see a positive and significant path coefficient between each of the five organizational reference group similarity measures and communication, and again between communication and the organizational attachment measures. Since organizational attachment is modeled as a sequence of three measures, this hypothesis will be supported if I find positive and significant path coefficients from organizational reference group similarity measures and communication, and from communication to job satisfaction. Because the structural equation model contains both direct effect and the mediation simultaneously, support for this hypothesis means that the mediating effect of communication is partial.

Hypothesis 5 predicts that in addition to the partial mediation, organizational reference group similarity directly affects organizational attachment. Based on this hypothesis, I expect the path coefficient between the organizational reference group similarity measures and each of the attachment measures to be positive and significant. Therefore, hypothesis 5 is tested directly by examining the path coefficients from the organizational reference group similarity measures to each of the three organizational attachment measures. Hypothesis 5 will be supported if such path coefficients are positive and statistically significant. Such positive associations mean
that the more similar an individual is to the organizational reference group members, the more attached the individual will be to the organization.

Hypothesis 6 examines the total effect of organizational reference group similarity on organizational attachment, which sums both the direct and indirect effect through communication. This hypothesis will be supported if the total effects parameter as reported in the output file of the fitted model is statistically significant.

Additional Data Analysis III

Table 7 shows the means, standard deviations, and correlations among all measured variables for the proposed path model. The correlations among the dependent, independent, and intervening variables indicate no multi-collinearity problem. The median correlation (absolute value) was $r = -.06$, with no correlation exceeding .70, and only two correlations exceeding .50 ($r = .59$ between organizational reference group similarity in organizational tenure and in age; $r = .51$ between job satisfaction and psychological commitment). A rule of thumb is that multi-collinearity is an issue when a predictor has a variance-inflation factor (VIF) larger than 10 (Belsley, Kuh, and Welsch, 1980) in the regression model. In the regression equivalent to that of the structural equation model, there is no VIF larger than 10. So multi-collinearity is not a problem here.

Model Estimation

Before I discuss the results for the three hypotheses in this subsequent analysis, I first introduce the model estimation and modification to achieve a parsimonious model that fits the data well. The hypothesized process model (see
Figure 4) is tested by structural equation modeling using EQS 6.1 Beta version (Bentler and Wu, 2000). Inputs for the program are the raw data (n=400).

**Identifiability.** As a preliminary check of the identifiability of the model, the number of data points and parameters to be estimated is counted. With 6 measured variables there are $6 \times (6 + 1)/2 = 21$ data points. The hypothesized model contains 18 parameters to be estimated (11 regression coefficients, 1 covariance, 6 variances). Therefore, the model is over-identified and is tested with a degree of freedom of 3.

**Sample size and missing data.** For this study there are 400 participants and 6 observed variables. The ratio of cases to observed variables is 67:1, the ratio of cases to parameters is 36:1. Missing data are replaced by the mean value of the variable in the sample. This process leads to more conservative results. Of the 6 X 400 scores, less than 2% were missing.

**Normality and linearity.** Normality of the observed variables is assessed by examining the summary descriptive statistics in EQS. The multivariate kurtosis parameters are reported as follows: Mardia’s coefficient is 10.6, and the normalized estimate is 7.5. This result violates the multivariate normality assumption of using conventional maximum likelihood estimation. Therefore the hypothesized model is estimated in EQS by the “robust” maximum likelihood estimation method.

**Model Estimation.** Figure 5 summarizes the standardized results of the fitted model. In Figure 5 I omit the paths that lack a statistically significant coefficient and
the variables associated with the paths. Only paths with statistically significant coefficients and associated variables are included.

As we can see, the Chi square value (0.77, p < 0.86), the various test statistics by the robust estimation and the fit indices for the hypothesized model are close to perfect (ranging from 0.99 to 1.00), indicating good fit with the data. However, organizational reference group similarity measures in education and age exhibit no significant impact on either the mediator (communication) or any dependent variable (organizational attachment as measured by three variables: job satisfaction, psychological commitment and intent to stay). Such results make a model with all five measures of organizational reference group similarity unnecessarily cumbersome. This is consistent with the argument that some demographic attributes (in this case, gender, ethnicity and organizational tenure) are more salient in shaping individuals’ work related attitudes and behaviors than others (e.g., Tsui et al., 1992). Therefore, I run the model modification as detailed below.

**Model Modification**

Since the original model includes statistically insignificant paths and variables that lack impact on either the mediator or any dependent variable, model modification is executed by dropping two variables: organizational reference group similarity in education and age. I then test the first modified model, as represented in Figure 6.

In modified model I, all measured variables are normally distributed (Mardia’s coefficient is 2.83, and the normalized estimate is 2.53). Therefore, conventional maximum likelihood estimation is used to test this model. In modified model I, both
the path from organizational reference group similarity in gender to communication and the measures of organizational attachment become non-significant. Other path coefficients remain largely unchanged. Thus, I run modified model II, in which I omit one path from organizational reference group similarity in gender to communication. All the other parts of the model remain the same as in modified model I. Figure 7 summarizes modified model II.

In modified model II, omitting the path from organizational reference group similarity in gender to communication does not change the model fit indices much. The path coefficients also remain largely the same. Thus, after two rounds of modification, I choose modified model II (see Figure 7) as the final parsimonious model that fits the original data structure.

The Fitted Model

The final fitted model (Figure 7) is over identified with acceptable multivariate normality parameters (Mardia’s coefficient = 2.83, and normalized estimate = 2.53). Therefore, the conventional maximum likelihood solution is used to assess the model’s fit. No problems are reported and the distribution of standardized residuals seems symmetrical.

Chi-square is 10.93 with a degree of freedom of 11, p < 0.45. Because a chi-square statistic is directly proportionate to sample size, fit indices are also reported to evaluate the modified model’s fit. Given controversy in the literature over goodness-of-fit indices, several are computed to evaluate the overall fit of the model (Hu and Bentler, 1999; Bollen, 1989). The following goodness-of-fit indices are reported:
Bentler-Bonett Normed Fit Index (NFI)=0.95, Bentler-Bonett Non-normed Fit Index (NNFI)=1.00, Comparative Fit Index (CFI)=1.00, Bollen (IFI) Fit Index=1.00, McDonald (MFI) Fit Index=1.00, LISREL GFI Fit Index=1.00, and LISREL AGFI Fit Index=0.98, the Root Mean-Square Residual (RMSR)=0.04, and the Standardized RMR=0.03. All these values suggest a close to perfect fit (Bentler and Bonett, 1980; Pedhazur and Schmelkin, 1991), which indicates that the modified model adequately explains how the measured variables inherent in the data relate.

Although the overall model fits well, not all hypothesized effects are supported by the results. In some cases such effects are in the opposite direction, as detailed below.

**H4: Partial Mediating Effect of Communication**

Hypothesis 4 predicts that communication works as a partial mediator between organizational reference group similarity and organizational attachment. This hypothesis is partially supported, since among the organizational reference group similarity measures in three relevant demographic attributes (gender, ethnicity and organizational tenure), only organizational reference group similarity in ethnicity is found to be positively related to communication with a standardized path coefficient of .25 (p < .05). This in turn is positively associated with the sequence of the three measures of organizational attachment: first with job satisfaction (standardized path coefficient = .12, p < .05), which positively predicts psychological commitment (standardized path coefficient = .51, p < .05), and next with psychological commitment, which is positively associated with intent to stay (standardized path coefficient = .28, p < .05).
In brief, hypothesis 4 is partially supported.

**H5: Main Effect of Organizational Reference Group Similarity on Organizational Attachment**

Hypothesis 5 predicts that in addition to the partial mediation, the greater the organizational reference group similarity, the higher the individual's attachment to the organization, as reflected in higher levels of job satisfaction, psychological commitment, and intent to stay. This hypothesis is partially supported. Among the organizational reference group similarity measures in five demographic attributes (age, organizational tenure, education, gender and ethnicity), three (organizational reference group similarity in gender, ethnicity and organizational tenure) are found to significantly affect organizational attachment.

Specifically, organizational reference group similarity in gender is positively associated with job satisfaction, with a standardized path coefficient of .18 (p < .05). Job satisfaction is positively associated with psychological commitment (standardized path coefficient = .51, p < .05), which in turn predicts intent to stay (standardized path coefficient = .28, p < .05).

Organizational reference group similarity in organizational tenure is positively associated with intent to stay, with a standardized path coefficient of .13 (p < .05). It does not have any significant impact on the other two measures of organizational attachment—job satisfaction or psychological commitment.

Organizational reference group similarity in ethnicity is found to be negatively related to job satisfaction, with a standardized path coefficient of -.11 (p < .05). It
does not have any significant direct impact on psychological commitment or intent to stay, although the three measures of organizational attachment are positively related to each other in a sequence, from job satisfaction to psychological commitment, then to intent to stay.

Organizational reference group similarity in age and education are not found to be related to any of the three measures of organizational attachment.

Thus, hypothesis 5 is partially supported.

H6: Total Effect of Organizational Reference Group Similarity on Organizational Attachment

Hypothesis 6 predicts that there is a positive total effect from organizational reference group similarity to organizational attachment. This hypothesis is partially supported. As can be seen from the output of the estimated modified model II (Appendix II), the positive total effect from organizational reference group similarity in gender is significant on psychological commitment (p < .05) and intent to stay (p < .05). Its total effect on job satisfaction is not significant.

The total effect from organizational reference group similarity in ethnicity and organizational tenure is not significant on any of the organizational attachment measures. And as organizational reference group similarity in age and education does not have any impact on organizational attachment at all, there is no total effect either.

Therefore, H6 is partially supported.
The subsequent findings in the revised model partially confirm the positive similarity effects with some unexpected counter-intuitive results. Below I discuss the findings in more detail, provide possible explanations for the unexpected result, and present the implications for future research.

**The Direct and Indirect Positive Similarity Effects on Organizational Attachment**

In brief, the positive similarity effects on organizational attachment receive some support by using the perceived organizational context—organizational reference groups—as the social context and adding communication as an intervening variable. Organizational reference group similarity in three demographic attributes, namely gender, ethnicity and organizational tenure are reported to positively influence organizational attachment either directly, indirectly or both.

Specifically, organizational reference similarity in gender directly and positively influences job satisfaction, which in turn positively predicts psychological commitment and intent to stay. The total effects of organizational reference group similarity in gender on psychological commitment and intent to stay are both positive and statistically significant. This means that the more similar an employee is with his or her perceived organizational context, the more satisfied the employee is with his or her job. Additionally, through such positive impact on job satisfaction, gender similarity in the perceived organizational context accentuates psychological
commitment, which eventually enhances intent to stay. This positive impact on organizational attachment is not mediated by communication. Such findings provide evidence that in some cases, a direct positive similarity effect exists. Also, although organizational reference group similarity in gender does not directly influence psychological commitment or intent to stay, the positive impact “spills over” through the causal chain from job satisfaction.

The second confirmation my subsequent findings furnish in support of the positive similarity effects is the significant association between organizational reference group similarity in organizational tenure and intent to stay. This means that the more similar an employee is with others with regard to organizational tenure, the less likely the employee is to leave. Such positive association is not mediated by communication, nor does job satisfaction or psychological commitment play a role for indirect effects. Thus, a direct positive similarity effect is confirmed.

The third confirmation of the positive similarity effects is the positive association between organizational reference group similarity in ethnicity and communication, which in turn positively predicts job satisfaction. This means that the more ethnically similar an employee perceives him- or her-self to be with the rest of the organization, the more frequently the employee engages in communication with others. As a result, the more satisfied the employee is with the job. Such findings support an indirect impact from organizational reference group similarity in ethnicity on job satisfaction through communication.
The Unexpected Finding

I also found an unexpected result that contradicts the traditional positive similarity effects. Organizational reference group similarity in ethnicity is reported to negatively influence job satisfaction. In other words, the more ethnically similar an employee is with the rest of the organizational reference group, the less satisfied he or she is with the job.

It is worth noting, however, that this negative association should be interpreted with caution and within context. That is, although the direct effect of being ethnically similar with the rest of the organization is negative on job satisfaction, the indirect effect on job satisfaction through communication is positive. In addition, the strength of the negative result, represented by a path coefficient of -.11 (p < .05) is much weaker than the indirect positive impact on job satisfaction through communication. As a matter of fact, the positive association of .25 (p < .05) between ethnic similarity and communication is more than twice of the absolute value of the negative impact of -.11 (p < .05). The positive impact from communication to job satisfaction (path coefficient = .12, p < .05) is bigger than the negative impact of -.11 (p < .05) as well.

This means that ethnic similarity in the perceived organizational context both “pulls” and “pushes” in employees’ organizational experiences. On the one hand, employees do not seem to enjoy a social context with too many ethnically similar others. Yet the availability of ethnically similar colleagues facilitates communication, and the more frequently the employee talks with others, the more satisfied he or she is with the job. In addition, the magnitude of the positive association between job satisfaction and psychological commitment (path coefficient = .51, p < .05) is the
largest in the whole model, followed by the positive association between psychological commitment and intent to stay (path coefficient = .28, p < .05). This means that the negative impact on job satisfaction does not influence the other two measures of organizational attachment. In other words, although employees’ job satisfaction may suffer from too much ethnic similarity in the perceived organizational context, the negative impact is not powerful enough to outweigh the positive effect through communication.

Note here that no significant total effect is reported from organizational reference group similarity in ethnicity to any of the three measures of organizational attachment. This means that the two opposite forces may have cancelled out each other and led to a neutral outcome. In this sense, the traditional belief in similarity effects is challenged on two accounts: the direction of its impact, and whether such impact is always as straightforward as being direct.

The Non-Significant Paths in the Revised Model

Another intriguing issue raised by my findings is that organizational reference group similarity in two demographic attributes, namely age and education, do not have any significant impact on organizational attachment either directly or indirectly (through communication). Such lack of statistical significance is open to various interpretations. Next I present my analysis and the implications for future research.

One possible explanation of why I did not find statistically significant results on age and education is that these two attributes are not as salient as gender, ethnicity and organizational tenure. The latter three attributes are much more widely researched than the first two. For example, Jackson and Joshi (2004) looked at gender, ethnicity,
and organizational tenure in their study. Many other researchers have considered gender and ethnicity too (e.g., Sacco et al., 2003; Wesolowski and Mossholder, 1997). Scholars have indicated that because gender and ethnicity are both easily detected demographic characteristics, they are often the basis for spontaneous categorizing (Stangor, Lynch, Duan, and Glass, 1992; Fiske and Neuberg, 1990). Tsui et al. (1992) reported significant findings on gender and ethnicity rather than on age, education or organizational tenure in their study on similarity effects on organizational attachment. McPherson et al. (2001) reported that race is an important similarity feature in people’s networks. Organizational tenure has also been reported to be relevant to employees’ turnover intentions (e.g., Pfeffer and Salancik, 1977; Pfeffer and O’Reilly, 1987)

Specific to the impact on communication, Reagans and Zuckerman (2001) reported that gender and race are more salient for the network structure than organization tenure because “bringing members with different organizational tenure into communication with one another does not emerge when the boundaries between the different demographic categories are so great as to preclude effective communication” (p. 513). This is consistent with my finding that similarity in organizational tenure has no impact on communication, but it does have a direct positive impact on intent to stay.
Implication for Future Research

Theoretical Implication

The theoretical implication of the saliency issue as argued in the possible explanation is two-fold. First is the fact that individuals have multiple identities (Kramer, 1993; Merton, 1972), thus scholars need a theoretical account on when and how different attributes become salient. Most demography and diversity research report findings of certain demographic attributes with the implicit assumption that the attribute under investigation “represent the dominant, salient, or central criteria for social divisions (Merton, 1972) and that each characteristic is as important as any other. Any individual’s array of characteristics, however, may be more or less salient, depending on its context (Kramer, 1991, 1993). As a result, examining only a single demographic attribute or set of attributes singly may cause analysts to miss the potential impact of other attributes or their interactions.” (Lau and Murnighan, 1998, p. 326-327). As Lawrence (1997) pointed out, demographic variables cannot replace the study of subjective or psychological processes in explaining organizational outcomes. This is consistent with Merton’s (1972) notion that the imposition of researchers’ paradigms on selected demographic characteristics fails to represent participants’ active identities.

The second implication is that scholars need more theorizing on the potentially different impact each demographic attribute may have on work-related attitudes and behaviors (Webber and Danahue, 2001). Although research shows that demographic attributes may have “differing complexities and importance in the ways they affect attitudes” (Riordan and Shore, 1997), scholars often use a single theory to
propose that all types of diversity would have a particular effect (Webber and Donahue, 2001). Most studies lumped all different demographic attributes in one model, assuming that they work on outcome variables in the same fashion. Despite the importance and potential value of considering the joint effects of multiple dimensions of demographic similarity (Jackson and Joshi, 2004; Joshi and Jackson, 2003; Webber and Donahue, 2001; Lau and Murnighan, 1998), only about 5 per cent of recent diversity studies addressed whether the effect of a particular demographic attribute depends on the presence or absence of other attributes (Jackson, Joshi and Erhardt, 2003). The dearth of empirical evidence limits scholarly understanding of exactly how similarity leads to work related attitudes and behaviors. And as argued by Jackson and Joshi (2004), conclusions drawn from studies that adopt the additive model may be inaccurate if such effects depend on particular combinations or configurations of diversity. In other words, there might be interactions among demographic attributes. So far, no conclusive findings exist about the effects of diversity on work group processes and outcomes (Webber and Donahue, 2001; Cohen and Bailey, 1997).

Methodological Implication

In addition to the theoretical fuzziness, quite a few weaknesses exist in the methodology of demography research. First of all, demography scholars need to address the skewed sample issue. Most organizational samples are skewed across gender and ethnicity. As pointed out by Riordan and Shore (1997), disproportionate samples may reduce statistical power for detecting significant interaction effects
(Stone-Romero, Alliger, and Aguinis, 1994) and so create a possibility for Type II statistical errors in the search for interaction effects (i.e., falsely concluding that there are none). This problem is shared by all relational demography research since most organizations will not be evenly distributed in terms of employee demographic attributes. But more research is needed on how this methodological issue should be addressed, and if not corrected, what influences skewed samples have on properly interpreting results. In my study, organizational reference group similarity in age and education are found to violate the assumption of multi-variate normality. This could have contributed to the reduction of power and the subsequent lack of statistically significant impact on organizational attachment.

A second issue has to do with the causality of similarity effects. The idea of similarity affecting work-related outcomes comes from sociology and social psychology. Sociologists and social psychologists observed, mostly in experimental studies, that attitude, belief, and value similarity lead to attraction and interaction (e.g., Huston and Levinger, 1978; McPherson et al., 2001). Thus, it is precarious to argue that demographic similarity leads to attitudinal convergence. It could be that attitudinal similarity effectively draws a crowd of similar or dissimilar demographic background (Schneider, 1987; Schneider et al. 1995). We need great caution and deliberation in addressing this question, since it taps into the assumption upon which demography research is founded. Research design aimed to resolve this issue is also challenging: it seems that longitudinal design will not be enough. Perhaps lab studies that allow for manipulating both demographic and attitude similarity could shed some light. The lab results should then be cross-validated and corroborated by field research.
VIII. Conclusions

This dissertation explored two ways of conceptualizing social context in organizations—formal work groups and organizational reference groups—to study similarity effects on organizational attachment. Empirical results did not support the direct, positive and linear relationship in either context. Rather, subsequent analysis demonstrates that by conceiving social context from the individual’s perspective, and by specifying communication as a mediating process, organizational reference group similarity exhibited both positive and negative effects on organizational attachment.

Answering the call for exploratory studies on social context (Jackson and Joshi, 2004), and acknowledging that demography literature is young and in need of a parsimonious theoretical framework, this dissertation makes the following two contributions. First, I propose and empirically demonstrate a plausible micro concept of social context to define the boundary of similarity effects on organizational attachment. Second, to explore the “black box” (Lawrence, 1997) of demography study, I provide further empirical evidence that communication may serve as an important but sometimes counter-intuitive mechanism through which demographic diversity influences organizational attachment.

My findings exhibit a few limitations. First is the common method variance issue (Podsakoff and Organ, 1986; Aviolo, Yammarino and Bass, 1991; Doty and Glick, 1998). Common method variance would be an issue if one part of the observed correlation between any two of the items is “true,” and another part is attributable to survey responses bias (Berman and Kenny, 1976; Salancik and Pfeffer, 1977; Arnold and Feldman, 1981). In spite of an important mitigating factor that the demographic
data were obtained from company archives to measure demographic similarity in formal work groups and the perceived social context, communication and attachment data were obtained by self-reported measures in the same survey. This procedure may lead to common method variance also known as “percept-percept inflation” (Crampton and Wagner, 1994).

The second limitation involves generalizability. Since I sampled employees from only one large organization in southern California, my findings may not be generalizable to other parts of the country. This however, also serves as a “natural control” for possible organizational level effects, such as organizational culture and diversity climate. With that said, future research should use a representative sample from several large organizations exemplifying different industries and geographic locations to establish relationships among variables that can be generalized.

A third limitation concerns the null results I obtained between gender similarity and communication. Because the results are inconsistent with the arguments proposed by various researchers, possible alternative explanations are warranted. One possibility is that the similarity effect has been overstated in previous work, especially since the magnitude of the relationship has been quite small. Many researchers have discussed the issue of limited magnitude in the reported relationship, if any, between similarity and outcome variables. Vecchio and Bullis (2001) argued that weak empirical support suggests that demographic similarity is “a weak contributing, and certainly not controlling, factor in subordinate affective reactions” (p. 893). Pelled and Xin (2000) also reported a modest observed similarity effect on supervisor-subordinate relationship quality in race and gender in the US. They indicated that demographic similarity might be a small sub-set of the various factors shaping
employment relationships. At the same time, other researchers argue that even weak demographic effects can have substantial practical impact (Eagly, 1996; Martell, Lane, and Emrich, 1996). Further research evidence will clarify the validity of these competing opinions.

A fourth issue that is not covered by this dissertation is the time factor, such as length of relationship and group tenure (Harrison, Price, and Bell, 1998; McGrath, 1991). Researchers generally assume that similarity has its strongest effects at the beginning of a group’s life: its formative stage (e.g., Lau and Murnighan, 1998; Vecchio and Bullis, 2001). Such effects are expected to diminish with time, during which group members get to know each other more. Gradually surface level attributes are overcome and deep level attributes such as value, personality, and attitudes have bigger impact. It is possible that after the initial attraction based on visible demographic attributes such as ethnicity and gender, more and more knowledge is acquired about differences in members so that initial similarity will not greatly influence later social integration patterns.

A fifth issue I did not explore is the following. How convergent is an individual’s perceived similarity with the measured similarity based on demographic data? Perceived similarity refers to a member’s perception that members of the social context are similar to him/her (adapted from Turban and Jones, 1988; Pelled and Xin, 1997). Empirical support for perceived similarity effects in managerial dyads includes Pulakos and Wexley’s (1983) finding on performance ratings, Turban and Jones’s (1988) finding on job satisfaction, and results on the quality of leader-member relationships (e.g., Liden, Wayne, and Stilwell, 1993; Phillips and Bedeian, 1994). It will be interesting to triangulate the effect of “perceived similarity” with my findings.
A sixth issue deals with the perspective I take in studying similarity effects—that I basically focus on the internal conditions of the organization rather than integrating external environment management, as implicitly cautioned by Ancona and Caldwell (1992). In other words, my dissertation study focuses on endogenous rather than exogenous factors such as group tasks.

Nowadays employers are investing in initiatives to improve the morale, commitment, and productivity of their diverse workforces (Jackson and Joshi, 2004). According to a recent survey of Fortune 1000 companies, the Society for Human Resource Management estimated that 95 percent of large U.S. companies have implemented diversity initiatives to address racial and gender diversity (Grensing-Pophal, 2002). Having to confront diversity within organizations suggests that a manager’s task will become increasingly complex, especially to manage the organization’s identity as a means of gaining commitment from organizational members (Albert and Whetten, 1985). Yet both employers and scholars have struggled during the past two decades over how diversity affects organizations, work teams, and individual employees (Jackson and Joshi, 2004). The grand experiment in equal opportunity in employment in the United States is not going smoothly. Rather, there is much complaint about unfair treatment and unequal opportunity (Tsui and Gutek, 1999). It seems that all the different diversity initiatives only lead management to lose the battle with both the minority and the majority. Although current literature, including the findings of this study, offers more questions than prescriptions for practitioners, progress is visible. After a collective effort of “muddling through,” I hope that scholars will eventually unravel the mystery.
Figure 1. The Impact of Formal Work Group Similarity on Organizational Attachment
Figure 2. The Impact of Organizational Reference Group Similarity on Organizational Attachment
Figure 3. The Impact of Organizational Reference Group Similarity on Organizational Attachment through Communication
Figure 4. Hypothesized Path Model: The Impact of Organizational Reference Group Similarity on Organizational Attachment Through Communication
Figure 5. Standardized Results of the Estimated Model: The Impact of Organizational Reference Group Similarity on Organizational Attachment Through Communication

INDEPENDENCE MODEL CHI-SQUARE = 223.996   df = 15
CHI-SQUARE = .615    df = 3   p = .893

FIT INDICES

BENTLER-BONETT NORMED FIT INDEX = 0.997
BENTLER-BONETT NON-NORMED FIT INDEX = 1.000
COMPARATIVE FIT INDEX (CFI) = 1.000
BOLLEN (IFI) FIT INDEX = 1.000
MCDONALD (MFI) FIT INDEX = 1.000
LISREL GFI FIT INDEX = 0.999
LISREL AGFI FIT INDEX = 0.996
ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.008
STANDARDIZED RMR = 0.007
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.000
Figure 6. Standardized Results of the Estimated Model: The Impact of Organizational Reference Group Similarity on Organizational Attachment Through Communication—Modified Model I

INDEPENDENCE MODEL CHI-SQUARE = 239.19   df = 21
CHI-SQUARE = 7.27   df = 10   p = .70

FIT INDICES

BENTLER-BONETT NORMED FIT INDEX = 0.970
BENTLER-BONETT NON-NORMED FIT INDEX = 1.000
COMPARATIVE FIT INDEX (CFI) = 1.000
BOLLEN (IFI) FIT INDEX = 1.000
MCDONALD (MFI) FIT INDEX = 1.000
LISREL GFI FIT INDEX = 0.995
LISREL AGFI FIT INDEX = 0.986
ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.006
STANDARDIZED RMR = 0.034
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.022
Figure 7. Standardized Results of the Estimated Model: The Impact of Organizational Reference Group Similarity on Organizational Attachment Through Communication--Modified Model II

INDEPENDENCE MODEL CHI-SQUARE = 239.19 df = 21
CHI-SQUARE = 10.93 df = 11 p = .45

FIT INDICES

BENTLER-BONETT NORMED FIT INDEX = 0.954
BENTLER-BONETT NON-NORMED FIT INDEX = 1.000
COMPARATIVE FIT INDEX (CFI) = 1.000
BOLLEN (IFI) FIT INDEX = 1.000
MCDONALD (MFI) FIT INDEX = 1.000
LISREL GFI FIT INDEX = 0.992
LISREL AGFI FIT INDEX = 0.980
ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.035
STANDARDIZED RMR = 0.029
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.000
Table 1. Means, Standard Deviations, and Intercorrelations among Formal Work Group Similarity and Organizational Attachment

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<th>Y1</th>
<th>Y2</th>
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<th>Z6</th>
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<td>Y1 Job satisfaction</td>
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<td>Y2 Psychological commitment</td>
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<td>Y3 Intent to stay</td>
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<td>X4 Formal Work Group Similarity in gender</td>
<td>0.05</td>
<td>0.02</td>
<td>0.07</td>
<td>0.03</td>
<td>0.04</td>
<td>0.16***</td>
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<td>X5 Formal Work Group Similarity in ethnicity</td>
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<td>0.03</td>
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<td>0.03</td>
<td>0.12*</td>
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<td>-0.15*</td>
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<td>-0.12**</td>
<td>-0.10*</td>
<td>-0.19***</td>
<td>0.01</td>
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<td>-0.02</td>
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<td>-0.13**</td>
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<td><strong>Mean</strong></td>
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<td>5.22</td>
<td>6.1</td>
<td>-10.09</td>
<td>-10.77</td>
<td>-0.31</td>
<td>-0.47</td>
<td>-0.64</td>
<td>43.14</td>
<td>17.27</td>
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<td>1.05</td>
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<td>0.3</td>
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*p<.05, **p<.01, ***p<.001

n=400. Listwise deletion for missing data.
Table 2. The Effect of Formal Work Group Similarity on Organizational Attachment

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*p < .05, **p < .01, ***p < .001, n = 396 (Listwise deletion for missing data)

Standard errors in parentheses and italic.
Table 3. Means, Standard Deviations, and Intercorrelations among Organizational Reference Group Similarity and Organizational Attachment

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| Mean | 4.35 | 5.22 | 6.1 | -9.79 | -10.56 | -0.75 | -0.54 | -0.67 | 43.14 | 17.27 | 2.41 | 0.31 | 0.16 | 0.14 |
| Standard Deviation | 1.37 | 1.05 | 2.59 | 2.86 | 3.1 | 0.29 | 0.18 | 0.18 | 8.33 | 9.84 | 0.83 | 0.46 | 0.3 | 0.37 | 0.34 |

*p<.05, **p<.01, ***p<.001
n=400. Listwise deletion for missing data.
Table 4. The Effect of Organizational Reference Group Similarity on Organizational Attachment

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*p < .05, **p < .01, ***p < .001, n = 396 (Listwise deletion for missing data)
Standard errors in parentheses and italic.
Table 5. Means, Standard Deviations, and Intercorrelations among Formal Work Group Similarity, Organizational Reference Group Similarity and Organizational Attachment

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<td>9. Intent to stay</td>
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<td>0.13***</td>
<td>-0.02</td>
<td>0.07</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.16***</td>
<td>0.30***</td>
<td>1</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>-9.79</td>
<td>-10.56</td>
<td>-0.75</td>
<td>-0.54</td>
<td>-0.67</td>
<td>1.93</td>
<td>4.35</td>
<td>5.22</td>
<td>6.10</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>2.86</td>
<td>3.10</td>
<td>0.29</td>
<td>0.18</td>
<td>0.18</td>
<td>0.56</td>
<td>1.37</td>
<td>1.05</td>
<td>2.59</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  
n=400. Listwise deletion for missing data.
APPENDIX I: Measures of Organizational Attachment

JOB SATISFACTION

Respondents replied using a scale from 1 ("Not at All") to 7 ("An Exceptional Extent").

1. How satisfied are you with your job?
2. How satisfied are you with your current career choice?
3. How satisfied are you with your career progress?
4. How satisfied are you with your career accomplishments when you compare yourself with the accomplishments of your work associates and friends?
5. My main satisfactions in life come from the work I do.
6. I am considered a successful person at company name.

PSYCHOLOGICAL COMMITMENT

Respondents replied using a scale from 1 ("strongly disagree") to 5 ("strongly agree").

1. I am willing to put in a great deal of effort beyond what is normally expected in order to help this organization to be successful.
2. I talk up this organization to my friends as a great place to work.
3. I find that my values and the organization's values are similar.
4. I am proud to tell others that I am part of this organization.
5. The organization really inspires the very best in me in the way of job performance.
6. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.
7. Often, I find it difficult to agree with this organization's policies on important matters relating to its employees. Reverse-coded!
8. I really care about the fate of this organization.
9. For me, this is the best of all possible organizations for which to work.
10. Deciding to work for this organization was a definite mistake on my part. Reverse-coded!

INTENT TO STAY

How long do you expect to remain with company name?

The scale for responses was as follows: 1 = I am leaving; 2 = Less Than 1 Year; 3 = 1-2 years; 4 = 3-4 years; 5 = 5-9 years; 6 = 10-14 years; 7 = 15-19 years; 8 = More than 20 years; 9 = Until Retirement.
Appendix II. EQS Output for Modified Model II.

1

PROGRAM CONTROL INFORMATION

1 /TITLE
2 Model built by EQS 6 for Windows
3 /SPECIFICATIONS
4 DATA='D:\my research\dissertation\wh cd files\eqsraw3b.ESS';
5 VARIABLES=7; CASES=400;
6 METHOD=ML; ANALYSIS=COVARIANCE; MATRIX=RAW;
7 /LABELS
8 V1=V1; V2=V2; V3=V3; V4=V4; V5=V5;
9 V6=V6; V7=V7;
10 /EQUATIONS
11 V4 = *V2 + E4;
12 V5 = *V7 + E5;
13 V6 = *V3 + *V5 + E6;
14 V7 = *V1 + *V2 + *V4 + E7;
15 /VARIANCES
16 V1 = *;
17 V2 = *;
18 V3 = *;
19 E4 = *;
20 E5 = *;
21 E6 = *;
22 E7 = *;
23 /COVARIANCES
24 V2,V1 = *;
25 V3,V1 = *;
26 V3,V2 = *;
27 /PRINT
28 FIT=ALL;
29 TABLE=EQUATION;
30 Effect = Yes;
31 /END

31 RECORDS OF INPUT MODEL FILE WERE READ

DATA IS READ FROM D:\my research\dissertation\wh cd files\eqsraw3b.ESS
THERE ARE 7 VARIABLES AND 400 CASES
IT IS A RAW DATA ESS FILE

100
SAMPLE STATISTICS BASED ON COMPLETE CASES

UNIVARIATE STATISTICS
---------------------

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>-.54</td>
<td>-.66</td>
<td>-10.56</td>
<td>1.93</td>
<td>5.22</td>
</tr>
<tr>
<td>SKEWNESS (G1)</td>
<td>.35</td>
<td>.03</td>
<td>-.87</td>
<td>.44</td>
<td>-.77</td>
</tr>
<tr>
<td>KURTOSIS (G2)</td>
<td>-.2</td>
<td>-.87</td>
<td>2.67</td>
<td>.09</td>
<td>.76</td>
</tr>
<tr>
<td>STANDARD DEV.</td>
<td>.18</td>
<td>.18</td>
<td>3.1</td>
<td>.56</td>
<td>1.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>6.05</td>
<td>4.35</td>
</tr>
<tr>
<td>SKEWNESS (G1)</td>
<td>-.42</td>
<td>-.19</td>
</tr>
<tr>
<td>KURTOSIS (G2)</td>
<td>-.86</td>
<td>-.71</td>
</tr>
<tr>
<td>STANDARD DEV.</td>
<td>2.63</td>
<td>1.37</td>
</tr>
</tbody>
</table>

MULTIVARIATE KURTOSIS
---------------------

MARDIA'S COEFFICIENT (G2,P) = 2.8344
NORMALIZED ESTIMATE = 2.5251

ELLiptical theory kurtosis estiMates
------------------------------------

MARDIA-BASED KAPPA = .0450 MEAN SCALED UNIVARIATE KURTOSIS = .0417
MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA = .0450

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:
-------------------------------------------------------------------------
Covariance matrix to be analyzed: 7 variables (selected from 7 variables) based on 400 cases.

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>0.032</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>0.007</td>
<td>0.033</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td>0.059</td>
<td>-0.029</td>
<td>9.619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td>-0.004</td>
<td>0.025</td>
<td>-0.041</td>
<td>0.318</td>
<td></td>
</tr>
<tr>
<td>V5</td>
<td>0.003</td>
<td>-0.020</td>
<td>0.108</td>
<td>0.028</td>
<td>1.105</td>
</tr>
</tbody>
</table>

Bentler-Weeks structural representation:

<table>
<thead>
<tr>
<th></th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>V6</td>
<td>6.940</td>
<td></td>
</tr>
<tr>
<td>V7</td>
<td>0.542</td>
<td>1.867</td>
</tr>
</tbody>
</table>

Parameter estimates appear in order, no special problems were encountered during optimization.
V6  V  6        .010
V7  V  7        .019        -.007

AVERAGE ABSOLUTE COVARIANCE RESIDUALS  =  .0162
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS  =  .0207

STANDARDIZED RESIDUAL MATRIX:

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>V 1</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>V 2</td>
<td>.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td>V 3</td>
<td>.000</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td>V 4</td>
<td>-.090</td>
<td>.000</td>
<td>-.011</td>
<td>.000</td>
</tr>
<tr>
<td>V5</td>
<td>V 5</td>
<td>-.070</td>
<td>-.081</td>
<td>.021</td>
<td>-.004</td>
</tr>
<tr>
<td>V6</td>
<td>V 6</td>
<td>.007</td>
<td>-.019</td>
<td>.006</td>
<td>-.033</td>
</tr>
<tr>
<td>V7</td>
<td>V 7</td>
<td>-.011</td>
<td>.000</td>
<td>-.037</td>
<td>-.017</td>
</tr>
</tbody>
</table>

V6  V  6        .001
V7  V  7        .005        -.004

AVERAGE ABSOLUTE STANDARDIZED RESIDUALS  =  .0151
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS  =  .0198
LARGEST STANDARDIZED RESIDUALS:

<table>
<thead>
<tr>
<th>NO.</th>
<th>PARAMETER</th>
<th>ESTIMATE</th>
<th>NO.</th>
<th>PARAMETER</th>
<th>ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V4, V1</td>
<td>-.090</td>
<td>11</td>
<td>V6, V1</td>
<td>.007</td>
</tr>
<tr>
<td>2</td>
<td>V5, V2</td>
<td>-.081</td>
<td>12</td>
<td>V6, V3</td>
<td>.006</td>
</tr>
<tr>
<td>3</td>
<td>V5, V1</td>
<td>-.070</td>
<td>13</td>
<td>V7, V6</td>
<td>.005</td>
</tr>
<tr>
<td>4</td>
<td>V7, V3</td>
<td>-.037</td>
<td>14</td>
<td>V5, V4</td>
<td>-.004</td>
</tr>
<tr>
<td>5</td>
<td>V6, V4</td>
<td>-.033</td>
<td>15</td>
<td>V7, V7</td>
<td>-.004</td>
</tr>
<tr>
<td>6</td>
<td>V5, V3</td>
<td>.021</td>
<td>16</td>
<td>V6, V5</td>
<td>.002</td>
</tr>
<tr>
<td>7</td>
<td>V6, V2</td>
<td>-.019</td>
<td>17</td>
<td>V7, V5</td>
<td>-.002</td>
</tr>
<tr>
<td>8</td>
<td>V7, V4</td>
<td>-.017</td>
<td>18</td>
<td>V6, V6</td>
<td>.001</td>
</tr>
<tr>
<td>9</td>
<td>V7, V1</td>
<td>-.011</td>
<td>19</td>
<td>V5, V5</td>
<td>-.001</td>
</tr>
<tr>
<td>10</td>
<td>V4, V3</td>
<td>-.011</td>
<td>20</td>
<td>V7, V2</td>
<td>.000</td>
</tr>
</tbody>
</table>

DISTRIBUTION OF STANDARDIZED RESIDUALS

<table>
<thead>
<tr>
<th>PERCENT</th>
<th>RANGE</th>
<th>FREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.00%</td>
<td>1 -0.5</td>
<td>0</td>
</tr>
<tr>
<td>20.00%</td>
<td>2 -0.4</td>
<td>15</td>
</tr>
<tr>
<td>25.00%</td>
<td>3 -0.3</td>
<td>17</td>
</tr>
<tr>
<td>30.00%</td>
<td>4 -0.2</td>
<td>14</td>
</tr>
<tr>
<td>35.00%</td>
<td>5 -0.1</td>
<td>13</td>
</tr>
<tr>
<td>40.00%</td>
<td>6 0.0</td>
<td>15</td>
</tr>
<tr>
<td>45.00%</td>
<td>7 0.1</td>
<td>15</td>
</tr>
<tr>
<td>50.00%</td>
<td>8 0.2</td>
<td>15</td>
</tr>
<tr>
<td>55.00%</td>
<td>9 0.3</td>
<td>15</td>
</tr>
<tr>
<td>60.00%</td>
<td>A 0.4</td>
<td>15</td>
</tr>
<tr>
<td>65.00%</td>
<td>B 0.5</td>
<td>15</td>
</tr>
<tr>
<td>70.00%</td>
<td>C ++</td>
<td>15</td>
</tr>
<tr>
<td>75.00%</td>
<td>TOTAL</td>
<td>28</td>
</tr>
<tr>
<td>80.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE = 239.190 ON 21 DEGREES OF FREEDOM

INDEPENDENCE AIC = 197.18999  INDEPENDENCE CAIC = 92.36923
MODEL AIC = -11.07079  MODEL CAIC = -65.97690

CHI-SQUARE = 10.929 BASED ON 11 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .44921

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 11.049.

FIT INDICES
-------------
BENTLER-BONETT NORMED FIT INDEX = .954
BENTLER-BONETT NON-NORMED FIT INDEX = 1.001
COMPARATIVE FIT INDEX (CFI) = 1.000
BOLLEN (IFI) FIT INDEX = 1.000
MCDONALD (MFI) FIT INDEX = 1.000
LISREL GFI FIT INDEX = .992
LISREL AGFI FIT INDEX = .980
ROOT MEAN-SQUARE RESIDUAL (RMR) = .035
STANDARDIZED RMR = .029
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .000
90% CONFIDENCE INTERVAL OF RMSEA (.000, .052)

RELIABILITY COEFFICIENTS
------------------------
CRONBACH'S ALPHA = .292
GREATEST LOWER BOUND RELIABILITY = .429
BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY = .424
SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE = .673
WEIGHTS THAT ACHIEVE SHAPIRO'S LOWER BOUND:

<table>
<thead>
<tr>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>.171</td>
<td>-.027</td>
<td>.055</td>
<td>.076</td>
<td>.625</td>
<td>.313</td>
<td>.688</td>
</tr>
</tbody>
</table>

ITERATIVE SUMMARY

<table>
<thead>
<tr>
<th>ITERATION</th>
<th>PARAMETER</th>
<th>ABS CHANGE</th>
<th>ALPHA</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>.740936</td>
<td>1.0000</td>
<td>.47554</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>.545553</td>
<td>1.0000</td>
<td>.03051</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>.012119</td>
<td>1.0000</td>
<td>.02740</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>.001076</td>
<td>1.0000</td>
<td>.02739</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>.000029</td>
<td>1.0000</td>
<td>.02739</td>
</tr>
</tbody>
</table>
MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS

STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

\[ V_4 = 0.760 \times V_2 + 1.000 \times E_4 \]
\[ \pm 0.150 \]
\[ 5.068@ \]

\[ V_5 = 0.391 \times V_7 + 1.000 \times E_5 \]
\[ \pm 0.033 \]
\[ 11.797@ \]

\[ V_6 = 0.699 \times V_5 + 0.109 \times V_3 + 1.000 \times E_6 \]
\[ \pm 0.119 \]
\[ \pm 0.040 \]
\[ 5.865@ \]
\[ 2.695@ \]

\[ V_7 = 0.292 \times V_4 + 1.408 \times V_1 - 0.851 \times V_2 + 1.000 \times E_7 \]
\[ \pm 0.122 \]
\[ \pm 0.384 \]
\[ \pm 0.387 \]
\[ 2.387@ \]
\[ 3.669@ \]
\[ -2.201@ \]
### Maximum Likelihood Solution (Normal Distribution Theory)

#### Variances of Independent Variables

Statistics significant at the 5% level are marked with @.

<table>
<thead>
<tr>
<th>V</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1 - V1</td>
<td>0.032*I</td>
</tr>
<tr>
<td>V2 - V2</td>
<td>0.033*I</td>
</tr>
<tr>
<td>V3 - V3</td>
<td>9.619*I</td>
</tr>
</tbody>
</table>
### TITLE: Model built by EQS 6 for Windows

**MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)**

**VARIANCES OF INDEPENDENT VARIABLES**

Statistics significant at the 5% level are marked with @.

<table>
<thead>
<tr>
<th>E</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4  - V4</td>
<td>.299*I</td>
</tr>
<tr>
<td></td>
<td>.021 I</td>
</tr>
<tr>
<td></td>
<td>14.124@I</td>
</tr>
<tr>
<td>E5  - V5</td>
<td>.820*I</td>
</tr>
<tr>
<td></td>
<td>.058 I</td>
</tr>
<tr>
<td></td>
<td>14.124@I</td>
</tr>
<tr>
<td>E6  - V6</td>
<td>6.269*I</td>
</tr>
<tr>
<td></td>
<td>.444 I</td>
</tr>
<tr>
<td></td>
<td>14.124@I</td>
</tr>
<tr>
<td>E7  - V7</td>
<td>1.785*I</td>
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<tr>
<td></td>
<td>.126 I</td>
</tr>
<tr>
<td></td>
<td>14.124@I</td>
</tr>
</tbody>
</table>
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES

STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

<table>
<thead>
<tr>
<th></th>
<th>V</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2 - V2</td>
<td>.007*I</td>
<td>I</td>
</tr>
<tr>
<td>V1 - V1</td>
<td>.002 I</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>4.212@I</td>
<td>I</td>
</tr>
<tr>
<td>V3 - V3</td>
<td>.059*I</td>
<td>I</td>
</tr>
<tr>
<td>V1 - V1</td>
<td>.028 I</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>2.119@I</td>
<td>I</td>
</tr>
<tr>
<td>V3 - V3</td>
<td>-.029*I</td>
<td>I</td>
</tr>
<tr>
<td>V2 - V2</td>
<td>.028 I</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>-1.026 I</td>
<td>I</td>
</tr>
</tbody>
</table>
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH NONSTANDARDIZED VALUES
STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

PARAMETER TOTAL EFFECTS
------------------------

V4    = 0.760*V2 + 1.000 E4

V5    = 0.114 V4 + 0.391*V7 + 0.550 V1 - 0.246 V2
      + 0.114 E4 + 1.000 E5 + 0.391 E7
      + 0.049            + 0.033            + 0.157            + 0.149
      2.340@             11.797@             3.504@             -1.649

V6    = 0.080 V4 + 0.699*V5 + 0.273 V7 + 0.385 V1
      + 0.172 V2 + 0.109*V3 + 0.080 E4 + 0.699 E5
      + 0.108            + 0.037            + 0.158            + 0.119
      -1.587             2.173@             5.865@             3.008@
      + 1.000 E6 + 0.273 E7
      + 0.052             5.252@

V7    = 0.292*V4 + 1.408*V1 - 0.629*V2 + 0.292 E4
      + 0.122            + 0.378            + 0.122            + 0.122
      2.387@             -1.665             2.387@
**TITLE:** Model built by EQS 6 for Windows

**MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)**

**DECOMPOSITION OF EFFECTS WITH NONSTANDARDIZED VALUES**

Statistics significant at the 5% level are marked with @.

**PARAMETER INDIRECT EFFECTS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>V5</td>
<td>0.114</td>
<td>0.049</td>
<td>2.340@</td>
<td>0.020</td>
</tr>
<tr>
<td>V6</td>
<td>0.080</td>
<td>0.037</td>
<td>2.173@</td>
<td>0.033</td>
</tr>
<tr>
<td>V7</td>
<td>0.222</td>
<td>0.103</td>
<td>2.160@</td>
<td>0.033</td>
</tr>
</tbody>
</table>

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**V5**

\[ V5 = 0.114 V4 + 0.550 V1 - 0.246 V2 + 0.114 E4 + 0.391 E7 \]

**V6**

\[ V6 = 0.080 V4 + 0.273 V7 + 0.385 V1 - 0.172 V2 + 0.080 E4 + 0.699 E5 + 0.273 E7 \]

**V7**

\[ V7 = 0.222 V2 + 0.292 E4 \]
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH STANDARDIZED VALUES

PARAMETER TOTAL EFFECTS

\[
\begin{align*}
V_4 &= V_4 = 0.246 V_2 + 0.969 E_4 \\
V_5 &= V_5 = 0.061 V_4 + 0.509 V_7 + 0.093 V_1 - 0.043 V_2 + 0.059 E_4 + 0.861 E_5 + 0.496 E_7 \\
V_6 &= V_6 = 0.017 V_4 + 0.279 V_5 + 0.142 V_7 + 0.026 V_1 - 0.012 V_2 + 0.128 V_3 + 0.017 E_4 + 0.241 E_5 + 0.951 E_6 + 0.139 E_7 \\
V_7 &= V_7 = 0.128 V_4 + 0.184 V_1 - 0.084 V_2 + 0.117 E_4 + 0.976 E_7
\end{align*}
\]
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH STANDARDIZED VALUES

PARAMETER INDIRECT EFFECTS

\[
\begin{align*}
V_5 &= V_5 = 0.061 V_4 + 0.093 V_1 - 0.043 V_2 + 0.059 E_4 + 0.496 E_7 \\
V_6 &= V_6 = 0.017 V_4 + 0.142 V_7 + 0.026 V_1 - 0.012 V_2 + 0.017 E_4 + 0.241 E_5 + 0.139 E_7 \\
V_7 &= V_7 = 0.030 V_2 + 0.117 E_4
\end{align*}
\]
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION: R-
SQUARED

\[
\begin{align*}
V_4 &= V_4 = 0.246 V_2 + 0.969 E_4 \\
&= 0.246 V_2 + 0.969 E_4 \\
&= 0.060 \\
V_5 &= V_5 = 0.509 V_7 + 0.861 E_5 \\
&= 0.509 V_7 + 0.861 E_5 \\
&= 0.259 \\
V_6 &= V_6 = 0.279 V_5 + 0.128 V_3 + 0.951 E_6 \\
&= 0.279 V_5 + 0.128 V_3 + 0.951 E_6 \\
&= 0.095 \\
V_7 &= V_7 = 0.120 V_4 + 0.184 V_1 - 0.113 V_2 + 0.976 E_7 \\
&= 0.120 V_4 + 0.184 V_1 - 0.113 V_2 + 0.976 E_7 \\
&= 0.048
\end{align*}
\]
### Maximum Likelihood Solution (Normal Distribution Theory)

#### Correlations Among Independent Variables

<table>
<thead>
<tr>
<th>V</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2 - V2</td>
<td>.216*I</td>
</tr>
<tr>
<td>V1 - V1</td>
<td>I</td>
</tr>
<tr>
<td>V3 - V3</td>
<td>.107*I</td>
</tr>
<tr>
<td>V1 - V1</td>
<td>I</td>
</tr>
<tr>
<td>V3 - V3</td>
<td>-.051*I</td>
</tr>
<tr>
<td>V2 - V2</td>
<td>I</td>
</tr>
</tbody>
</table>

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**END OF METHOD**

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Execution begins at 01:08:43
Execution ends at 01:08:44
Elapsed time = 1.00 seconds
1. Note that demographic similarity and difference/diversity are essentially the same constructs being the two sides of a coin. The more similar an individual is to the rest of the context, the more different he or she is from others, hence the more diverse the whole context is. In this dissertation I use the construct of demographic similarity but integrate discussion from both the demography and diversity literature.

2. Many researchers argue that the similarity-attraction paradigm and social identity theory have direct relevance for demographic studies (Brewer, 1996; Brewer, von Hippel, and Gooden, 1999; see also Alderfer and Thomas, 1988; Kramer, 1991; Oakes, Haslam, and Turner, 1994). In addition, there are several other theories not as widely embraced that complement the similarity-attraction and social identity explanations of similarity effects. Dipboye (1987) developed a “stereotype-fit” model based on the similarity-attraction hypothesis. Other researchers also described the similarity attraction as a “similar-to-me” phenomenon (Wexley, Alexander, Greenawalt, and Couch, 1980; Pulakos and Wexley, 1983). “Theory of isolation” comes from the literature on neighborhoods. This theory argues that people different from their groups tend to feel isolated. In game-theory literature (e.g., Greif, 1993), researchers find that demographic minorities tend to participate in fewer cooperative encounters. In the theory of workplace public goods, research suggests that if all else is equal, the minority group tends to find the mix of public goods less satisfying. From industrial relations literature, Gary Becker
(1957) proposes that many employees dislike working with dissimilar or minority employees (co-worker discrimination rather than employer discrimination or customer discrimination). These theories predict similarity effects like those predicted by similarity attraction and social identity theory. Researchers also propose an “information/decision-making perspective” (Elsass and Graves, 1997; Watson, Kumar, and Michaelsen, 1993), arguing that demographic diversity furnishes groups access to a wide range of information. When the information is useful, relevant and effectively communicated to others, diverse groups are expected to benefit from such advantages in decision-making (Lazear, 1999). This perspective is more pertinent to aspects of problem solving so it is not emphasized here.
REFERENCES


Brass, D. J. 1995. *Social network perspective on human resources personnel*.


Griffin, M. A., & Mathieu, J. E. 1997. Modeling organizational processes across hierarchical levels: Climate, leadership, and group process in work groups. 18: 731-744.


