Observations of Dyadic Power in Interpersonal Interaction

Norah E. Dunbar; Gordon Abra

Online publication date: 02 December 2010

PLEASE SCROLL DOWN FOR ARTICLE

Routledge
Taylor & Francis Group

Observations of Dyadic Power in Interpersonal Interaction

Norah E. Dunbar & Gordon Abra

Power and dominance are widely recognized as fundamental concepts in the study of human relationships. A theory of power, Dunbar's dyadic power theory (DPT), was tested experimentally by manipulating power in interactions with confederate strangers. Participants' verbal and nonverbal dominance behaviors were coded from videotapes of their interactions. DPT proposes that individuals will display more dominance in equal power relationships than in unequal relationships and increasing an individual's relative power will increase that individual's satisfaction with the encounter. The results revealed that the equal-power and unequal high-power conditions displayed more dominance and were more satisfied than those in the unequal low-power conditions but those in the unequal-high power condition were the least affected by their partners and maintained the most control over the partnership's decisions. Implications for DPT and the relationship between microlevel dominance behaviors and the macrolevel impressions of dominant interactants are discussed.

Keywords: Observations; Dyadic Power; Interpersonal Interaction; Interpersonal Dominance; Nonverbal Communication

Many scholars in psychology, sociology, communication, and related fields have identified power and dominance as fundamental constructs in the study of human relationships (Burgoon & Hale, 1984; Jacobson, 1986; Olson & Cromwell, 1975). A frequently cited quotation by Russell (1938) claims that "the fundamental concept in social science is Power; in the same way that Energy is the fundamental concept in

physics" (p. 10). Our goal is to further explore the link between power and the behavioral expression of dominance in interpersonal interaction. Dyadic Power Theory (DPT) is tested experimentally in an effort to address some of the deficiencies in previous tests of the theory. Dunbar and Burgoon (2005a), Dunbar and Allen (2005), and Dunbar, Bippus, and Young (2008) sampled romantic couples and friends in pre-existing relationships but were unable to compare the partnerships with high levels of relative power to partnerships with low levels of relative power because the majority of the participants reported that they shared power equally in their relationships. This experiment manipulates power so that interactions with power discrepancies can be compared to interactions with equal levels of power. We examine both verbal and nonverbal dominance displays and triangulate the perspectives of third-party observers with the participants themselves in an effort to more fully understand the nature of interpersonal dominance as it relates to power.

Distinguishing Power and Dominance

Power and dominance have been conceptualized in a variety of ways, ranging from ethological approaches that emphasize hierarchy (Liska, 1988, 1992) to linguistic or psycho-social approaches that emphasize particular behaviors (Burgoon, Johnson, & Koch, 1998). From a social psychological perspective, *power* is generally defined as the capacity to produce intended effects and, in particular, the ability to influence the behavior of another person even in the face of resistance (Bachrach & Lawler, 1981; Berger, 1994; Burgoon & Dunbar, 2006; Foa & Foa, 1974; Dunbar, 2004; Emerson, 1962; French & Raven, 1959; Gray-Little & Burks, 1983; Henley, 1995; Huston, 1983; Neff & Harter, 2002; Olson & Cromwell, 1975).

Dominance, on the other hand, refers to context- and relationship-dependent interactional behaviors in which power is made salient and influence is achieved (Burgoon et al., 1998; Mack, 1974; Rogers-Millar & Millar, 1979). Although dominance may sometimes be viewed as a personality trait (e.g., Schmid Mast & Hall, 2003), in the context of interpersonal exchange it is based upon a combination of individual temperament and situational features that encourage dominant behavior (Aries, Gold, & Weigel, 1983; Burgoon & Dunbar, 2000; Dunbar & Burgoon, 2005b). Power is the ability to influence another whereas interpersonal dominance is relationally based communication behaviors dependent on the context and motives of the individuals involved (Burgoon & Dunbar, 2000). For example, imagine a boss and a subordinate in the workplace have a disagreement. The boss controls the subordinate's employment status and thus has power over the subordinate. If the boss yells at the subordinate during the disagreement, the boss has displayed dominance. Power provides the context for the dominance behaviors. Although dominance can at times be used to acquire power, it should not be considered synonymous with power (Keltner, Gruenfeld, & Anderson, 2003).

Social Perspectives of Power

Perhaps the most prominent theoretical perspective with implications for power is the group of *social exchange theories*. In general, social exchange theorists assume that individuals will act to increase their interpersonal rewards and decrease their interpersonal costs (Blau, 1964; Emerson, 1972; Homans, 1958; Molm & Cook, 1995; Thibaut & Kelley, 1959; Walster, Berscheid, & Walster, 1973). Decisions about interaction are based on an evaluation of a relationship against both absolute and relative standards. Individuals' dependence on a particular exchange partner is based on both the degree to which they value their partner's resources and on the availability of alternatives for those same resources. People are more dependent on those whose resources they value highly, especially when alternatives are few (Molm & Cook, 1995). Social exchange theory predicts general patterns of behavior, but does not generate predictions about the specific behavioral form of interactions.

In a social setting, dominance and power are relative to one's social partner and are not absolute (Dunbar, 2004). As Emerson (1962) and other theorists have noted, power is equivalent to dependence on others, and therefore presupposes a social relationship. A dyadic approach to social power assumes that one's own power is not the inverse of one's partner's power but both individuals depend on one another to some extent (Langner & Keltner, 2008). Power and dominance are especially important in close relationships, because people often depend upon one another to attain their goals and this interdependence creates high-power relationships (Molm, 1994). Although dominance and power are inextricably linked to one another, persons who fail to achieve their own ends or express dominance are not necessarily powerless, however. Since power is an ability, like other abilities, it is not always exercised. When exercised, it is not always successful and even when successful; its magnitude may not be fully evident unless it is pitted against a counterforce of appropriate strength (Huston, 1983). This is similar to the concept known as "power use" by exchange theorists (Molm, 1981).

Power use is not always easily identifiable, however. Komter (1989) distinguishes between manifest power, latent power, and invisible power. Manifest power concerns the visible outcomes of power such as open conflicts or particular verbal and nonverbal strategies used to achieve certain ends. Latent power is used when the needs of the powerful person are identified or conflicts are avoided due to fear of retaliation by the powerful partner. Invisible power is the result of social or psychological mechanisms that do not necessarily surface in overt behavior or even latent grievances, but may be manifest in systematic differences between interactants due to gender norms, situational expectations, or other culturally relevant expectancies. The powerful person is not necessarily aware of their power since power is based in the relationship between two people but the level of awareness is heavily influenced by cultural norms in the society at large (Komter, 1989).

Interest in interpersonal power has had a recent resurgence and experimental studies with power manipulations have begun to emerge more commonly in the social psychological literature. Generally, these studies use role-play scenarios that

manipulate power and then examine the effects of power on the use of stereotypes (Guinote, 2007b; Guinote, 2008), goal pursuit (Guinote, 2007a), decision-making (Schmid Mast & Hall, 2003; Schmid Mast & Hall, 2004), trust and commitment to a relationship (Molm, Takahashi, & Peterson, 2000), and the accuracy in emotional or nonverbal reading of one's partner (Gonzaga, Keltner, & Ward, 2008; Hall, Coats, & LeBeau, 2005; Hall, Coats, LeBeau, & Hantula, 2006; Hall, Rosip, Smith LeBeau, Horgan, & Carter, 2006). Keltner and colleagues (Gonzaga et al., 2008; Keltner, Gruenfeld, & Anderson, 2003) have argued that those with greater power relative to their partner will feel less inhibition and will approach situations with the confidence that comes from having high status and an abundance of physical and social rewards. Their low-power counterparts experience greater inhibition because they feel greater anxiety and self-consciousness and their fear of reprisals or punishments forces them to attend more vigilantly to their partners. This corresponds with Guinote's (2008) finding that low-power subordinates are under greater cognitive load than their high-power superiors (presumably due to their increased vigilance in observing their partners) and are less able to adapt their problem-solving to the situation. The bulk of these studies examines only a comparison between high and low power partners and do not consider partners who are equal in relative power. In some cases, the experimental participants are not actually interacting but are imagining their interactions with a high- or low-power partner (Guinote, 2008; Russell & Fiske, 2008) or are communicating through computer terminals or closed-circuit telephone with no visual cues available (Molm et al., 2000; Operario & Fiske, 2001). Our research offers a theoretical position that postulates differences not only between partners who are relatively high and low in power but also those who are equal in power. We build on the tradition of psychological experimental work but add an important element of including dyadic communication and the coding of verbal and nonverbal cues which are important to understanding the process of communication but are often omitted from the experimental literature.

Dyadic Power Theory

One theory that illustrates the connection between dominance and power is dyadic power theory (DPT; Dunbar, 2004). This theory builds on the social exchange perspective of power in four ways. First, it extends the social exchange perspective to include communication strategies that become manifest during interaction. Consistent with social exchange, DPT reinforces the idea that resources and dependence are key sources of power in close relationships. Second, the theory also recognizes from the literature on relational control (Ayres & Miura, 1981; Rogers, Castleton, & Lloyd, 1996; Rogers & Farace, 1975; Rogers-Millar & Millar, 1979) that the authority to utilize or exchange resources in interactions is often granted to individuals by societal norms as well as the interactants' own relational history (Rogers et al., 1996). Third, as the chilling effect demonstrates (Cloven & Roloff, 1993; Roloff & Cloven, 1990; Solomon & Samp, 1998), DPT emphasizes the idea that power should be viewed relatively, or in relation to others. Thus, it acknowledges that power is a

dynamic, multidimensional construct that incorporates the perspectives of both individuals in the interaction. Fourth, consistent with a communication perspective, it puts the interaction itself on center stage. The attempts to take control of any given interaction through dominance, although determined by power, are the focus of the theory because they determine the outcome of the process—the final decision that has ramifications for the future of the relationship.

First proposed by Rollins and Bahr (1976) and later revised by Dunbar (2004; Dunbar et al. 2008; Dunbar & Burgoon, 2005a), DPT emphasizes the dyadic nature of power. It asserts that power is an integral part of any relationship, especially close romantic relationships, because it determines how the partners relate to each other and how decisions are made. The theory assumes that perceptions of legitimate authority to make decisions and control over a variety of resources increase individuals' perceptions of their own power compared to their partner. Perceptions of power, in turn, increase the likelihood of using dominance as a way to control the interaction through a mechanism Rollins and Bahr called "control attempts."

Rollins and Bahr (1976) originally argued for a linear relationship between dominance and power, stating "an increase in a spouse's perception of her (his) own power in a marriage role relative to that of her (his) partner will produce an increase in her (his) attempts to control her (his) spouse in the role" (p. 623). Furthermore, they argued that the "effectiveness of the control attempts is influenced by the relative power of the initiator as perceived by the recipient such that the greater the relative power of the initiator, the more likely the control attempts will be complied with" (p. 623). From this perspective, the more powerful someone is, the more dominance they will exert through control attempts, and the more their partner will comply with their requests.

However, previous tests of DPT (Dunbar & Allen, 2005; Dunbar & Burgoon, 2005a; Dunbar et al. 2008) have not supported Rollins and Bahr's (1976) linear proposition but have indicated that it is more likely that the relationship between perceived relative power and manifest dominance is *curvilinear*, such that partners who perceive their relative power difference as extremely high will use fewer control attempts than partners who perceive their relative power difference as low. High-power individuals do not need to make a large number of control attempts over low-power individuals; by virtue of their latent power, they can maintain control without dominant behaviors. A prominent example of this is the demand-withdraw interaction pattern. Christensen and Heavey (1990, 1993) found that the common wife-demand/husband-withdraw interaction pattern was more pronounced when the topic was of greater importance to the wife than the husband. Women typically want more changes in the areas of closeness, housework, and childcare. Husbands, who are typically presumed to be the overbenefitted and more powerful partners in a marriage, may resist cooperating in those areas through withdrawal from communication. Because they have nothing to gain from discussing problems with their partner, they can preserve the status quo and their position of power by avoiding conflict rather than making their power manifest through confrontation (Christensen & Heavey, 1990).

On the other hand, in line with the chilling effect (e.g., Cloven & Roloff, 1993; Roloff & Cloven, 1990), low-power individuals are unlikely to express grievances to high-power individuals if they fear that retaliation, violence, or termination of the relationship will result from their control attempt. Low-power individuals weigh the potential gain or loss of engaging in conflict and find that tolerating or accommodating a conflict at a minor cost is more beneficial than running the risk of pursuing the conflict and disrupting the relationship (Leung, 1988). Thus, individuals in unequal power relationships should be disinclined to use control attempts and more likely to exhibit control avoidance. Those who find themselves in relationships who are relatively equal in power are inclined to demonstrate more behavioral dominance as they vie for position with their partners and compete openly for resources. Therefore, we propose the following hypothesis to test Dunbar's (2004) contention that the relationship between power and dominant behavior is a nonlinear one:

> H1: Individuals will display more dominance (both verbal and nonverbal) in equal power relationships than in unequal relationships.

Dunbar's (2004) perspective of DPT does not make any specific predictions about the difference between those interactants with extremely high or low relative power, except to say that they will use fewer dominance attempts than those of equal power. In other words, it seems unlikely that the curve will be a symmetrical one, with those high in power exhibiting the same lack of verbal and nonverbal dominance behaviors as those low in power. The question remains, then, what is the nature of the nonlinear relationship between dominance and power? It seems more probable that those in relatively high-power positions will display more dominance than those in relatively low-power positions because of the chilling effect experienced by those with little resource control. Although those high in relative power do not need to express dominance in order to exert influence, they do not experience the chilling effect that prevents assertive behavior in their low-power partners. Additionally, those in positions of high power may exhibit subtle signs of dominance even without intending to. This may be similar to what scholars who study nonverbal cues of deception call "leakage" (Ekman, 1985) since their dominance cues may be outside their conscious awareness. As this relationship is not postulated by DPT, we ask the following research question:

> RQ1: In unequal power relationships, what is the difference between dominance displayed by individuals in high-power positions and dominance displayed by individuals in low-power positions?

Verbal and Nonverbal Dominance Displays

For quite some time, communication scholars have argued the necessity of studying both verbal and nonverbal signals of relational states in order to gain an accurate and complete understanding of relational definitions (e.g., Higginbotham & Yoder, 1982; Jones & LeBaron, 2002). While we advocate the idea that all interaction studies should include elements of both verbal and nonverbal cues, dominance in particular

warrants such treatment due to its sometimes subtle influence on behavior. In a previous test of DPT, Dunbar and Burgoon (2005a) tested a variety of verbal and nonverbal cues that have been shown to be manifestations of dominance. At the nonverbal level, widely ranging cues have been associated with expressions of dominance and power such as composed or relaxed facial expressions, more eye gaze (especially while speaking), confident and poised posture, purposeful body movements and gestures (and few nervous adaptor gestures), higher elevation, greater body relaxation and open posture, less smiling, and fewer hedges and hesitations (Aguinis & Henle, 2001; Aguinis & Simonsen, 1998; Burgoon, Birk, & Pfau, 1990; Burgoon & Hoobler, 2002; Cashdan, 1998; Gregory & Webster, 1996; Kimble & Musgrove, 1988; Lamb 1981; Schwartz, Tesser, & Powell, 1982; Sillars, Coletti, Parry, & Rogers, 1982). At the verbal level, there are a variety of influence strategies individuals can use to try to alter the behavior of their partner in relationships, ranging from the use of deception, insults, threats, and physical force as dominant strategies to integrative problem-solving, compromise, and unilateral accommodation as more submissive strategies (Falbo & Peplau, 1980; Frieze & McHugh, 1992; Klein & Johnson, 1997; Rogers & Farace, 1975; Sillars, 1980). Following Dunbar and Burgoon (2005a), we tested whether specific verbal and nonverbal dominance behaviors used by previous researchers and assessed by independent coders were related to general perceptions of dominance, overall. In this study, we assessed a variety of nonverbal and verbal behaviors including overall anxiousness and body activation, facial pleasantness, vocal expressivity, and fluency, as well as specific behaviors such as dominant utterances and illustrator or adaptor gestures. Thus, we asked:

> RQ2: What is the relationship between the specific verbal and nonverbal dominance behaviors displayed and overall perceptions of dominance during an interaction?

Interaction and Relational Outcomes

The process of displaying verbal and nonverbal dominance during interaction is central to DPT but the outcomes of such displays cannot be ignored. The model proposed by Rollins and Bahr (1976) ends with one partner's compliance, or the outcome of the conflict interaction, but Dunbar (2000) extended it to examine the outcomes of the interaction for the health of the relationship and satisfaction with the interaction itself. In ongoing relationships, satisfaction is an especially important outcome to examine because, according to Clements, Cordova, Markman, and Laurenceau (1997), dissatisfaction can "erode" the relationship and lead to distress if left unchecked. Researchers have studied the impact of power on satisfaction especially in the context of marriages and have found power to be a large determinant of marital satisfaction (e.g., Argyle & Furnham, 1983; Beier & Sternberg, 1977; Clements et al., 1997; Corrales, 1975; Glidden, 1986; Gray-Little & Burks, 1983; Haskins, 1986; Schaap & Jansen-Nawas, 1987). We expect the relationship between

power and satisfaction to be sustained even in task-oriented interactions where there is no on-going relationship.

While power equality can enhance satisfaction, the perception of a loss of power can be particularly destructive to relational or interactional satisfaction. Equity has to do with how fair or just a person's relational rewards are but do not necessarily correspond to power equality (Adams, 1965). Perceived inequity in the resources of exchange and unfair distribution of power are often cited as sources of conflict and reasons for relational dissatisfaction (Cahn, 1992; Walster, Traupmann, & Walster, 1978). Specifically, Walster et al. found that women and men who perceived they were underbenefitted compared to their partner were more likely to have extramarital affairs than those who perceived they were equitable or overbenefitted compared to their partner. Feelings of inequity can be particularly salient for women. For example, Ball, Cowan, and Cowan (1995) found that women often feel that their husbands have veto power over their decisions and that the husband had "final say" over the outcomes of their problem-oriented talk. Those wives expressed frustration and powerlessness at their subordinate position in their marriages and were significantly more dissatisfied with their relationships than their husbands. The influence of power on satisfaction should not be confined to the context of marriage, however. Powerlessness should also have an influence on an individual's satisfaction with a particular interaction, even one with a total stranger. Van Dijke and Poppe (2003) found that people prefer slight superiority in power over comparison others. This is consistent with Keltner and colleagues (2003) proposition that having power over one's partner increases one's mood while a loss of power results in negative mood or affect.

> H2: Increasing an individual's relative power will increase that individual's satisfaction with the encounter.

Finally, DPT proposes that the recipient of the control attempt decides what the appropriate response is based on their perceptions of the power of the initiator of the control attempt. If the initiator is perceived to be relatively powerful, then the control attempt is more likely to elicit compliance. If the initiator is perceived as relatively powerless, then the control attempt is more likely to be met with a countercontrol attempt that reduces the effectiveness of the original control attempt. This is supported by Rogers' and colleagues program of research in which pairs of messages in dyadic conversation have been examined. They have found that interactants continually define the degree of dominance or submissiveness in their relationship based on who has the right to direct, delimit, and define the action of the interpersonal system (Millar & Rogers, 1987; Rogers & Farace, 1975; Rogers, Castleton, & Lloyd, 1996). De Dreu and van Kleef (2004) found that the types of questions asked by negotiators with more power result in greater control over the outcome of the negotiation. Thus, we propose this hypothesis:

> H3: Increasing an individual's relative power will decrease their willingness to change their opinion in the face of dissent.

Method

Participants

Participants were recruited through flyers, mass-distributed emails, and personal contact with the researchers and research assistants ($N = 164$) at a large west coast university to participate in a study of "communication and decision-making." They were assigned to interact with a trained confederate in the experiment. Confederates were one male and one female undergraduate student in communication studies who were selected because they were similar to one another in age, ethnicity, and attractiveness. The confederates received extensive training and conducted numerous practice sessions to ensure that they maintained consistency in verbal and nonverbal performance between themselves and across sessions. Twelve participants were excluded from the analyses because they failed to follow the experimenters' directions or did not complete the experiment in its entirety. Two participants were excluded from analyses because they were used in training sessions for the confederates. In the analyses reported below, 150 participants were included. All participants were paid $12.

The participants ranged in age from 18 years to 45 years old ($M = 21.33$; $SD = 4.09$). The sample was largely Caucasian ($n = 50$) with the remainder Latino/a-American ($n = 34$), Asian American ($n = 32$), African American ($n = 16$) and other ethnicities ($n = 18$). An equal number of male and female participants were used in the experiment and all participants interacted with a same-sex partner.

Experimental Procedures

Participants were randomly assigned to one of three power conditions (unequal-high, equal, unequal-low). The research was conducted at the communication research laboratory (CRL), which consists of a series of rooms for videotaping and viewing interaction. The interaction room in the CRL is a simulated living room environment with comfortable chairs that face each other and is decorated with bookshelves, art on the walls, and an area rug. The room is designed to make the space appear home-like and encourage natural conversation. The room also is equipped with two small video cameras positioned on tripods and two small omni-directional microphones hung from the ceiling. The cameras and microphones are visible but out of the line of site of the participants so as to be as unobtrusive as possible. Upon arrival at the CRL, subjects entered isolated waiting rooms where they filled out consent forms, a packet of preinteraction questionnaires and were given preliminary information regarding the experiment, after which they were taken to the interaction room and introduced to a same-sex confederate.

The task—a version of the Desert Survival Problem (DSP)—asked participants to imagine that their jeep had crashed in the Arabian Desert, with no sign of potable water but some salvageable items from the wreckage (Burgoon, Bonito, Ramirez, Dunbar, Kam, & Fischer, 2002). This task was selected because it allows a fair amount of experimental control over disagreements while still approximating features of normal conversation. Before meeting their conversation partner, participants

rank-ordered twelve items for their survival value (e.g., a gun, matches, a mirror, a flashlight, a magnetic compass). Once the participant was finished with the rankings, a research assistant asked them to wait while their partner "finished their rankings." At this point, the participants' initial rankings were collected, analyzed privately by the research assistant, and then returned to the participants. The participants' initial rankings were used to derive the confederates' rankings to ensure consistent and identical differences between the two lists. Standard differences were created on seven of the twelve items on the DSP[1]. The participants discussed their rankings of all twelve items with the confederate and were instructed to compile a joint list that would be compared to survival expert rankings. Discussions lasted between six and thirty-five minutes ($M = 15:48$; $SD = 6:24$). In order to create an incentive, the participants were told they would be paid \$1 for each correct rank, but in reality, all participants were paid \$12 for their participation. Following completion of the postinteraction questionnaires, the subjects were debriefed, paid, and thanked for their participation. They were asked not to discuss their participation with anyone else.

Power manipulation. Relative power was manipulated through the instructions given to the interactants prior to the start of their discussion. Our manipulation of power follows the work of others who "layer" many different forms of power (such as reward, expertise, or legitimate power as defined by French & Raven, 1959) in order to instill in participants the sense that the power difference between them is real and legitimate (e.g., Gonzaga et al., 2008; Guinote, 2007a; Schmid Mast & Hall, 2003). In the unequal power conditions, either the participant or the confederate was told, in front of the partner, that based on the accuracy (compared to the experts' ranking) of their individual rankings on the DSP, they were the "leader" of the group and thus had the ability to determine what was on the final list. This follows Guinote's (2007a, b) method using a bogus leadership test that is meant to give legitimacy to the high-power partner. Our own pilot test (described below) revealed that high-power participants were not sufficiently high in self-perceived power without giving their position legitimacy. In addition, following the findings from Ball et al. (1995) that power is related to the ability to veto final decisions, those high in power were told that they had the ability to veto any decision made by the dyad. Finally, the high-power partners were given a blank DSP rankings sheet and were instructed to physically write the final list for the experimenter giving them control over reporting the dyad's decision. In the equal power condition, the participant and confederate were both told that based on the accuracy of their individual rankings on the DSP, they were equals in the decision-making and that both people had the ability to say what was on the final list and had the ability to veto any decisions. They were both given a copy of the blank DSP rankings sheet and were both instructed to write the final list for the experimenter.

Measures

Following the interaction, the participants' perceptions of their *power* relative to their partner was measured in two ways. First, participants responded to a four-item, scale,

based on Dunbar's research (Dunbar & Burgoon, 2005a; Dunbar et al., 2008) containing the items "In general, who had more power in your relationship?," "Who made most of the decisions about how to rank the items?," "Who influenced the decisions of the other person more?," and "Who could more easily persuade the other to change their mind?" The scale was a seven-point likert scale ranging from "my partner" (1) to "me" (7) with the midpoint identified as "both equally" ($\alpha = .86$). Second, a slightly modified version of Neff and Harter's (2002) measure that combines visual representations in conjunction with verbal descriptions was used. Participants were asked to choose one picture from five that best represented their relationship with their partner. For example, one high power-differential description included a large circle labeled "me" and a small circle labeled "partner." Underneath, the description read "I made *most* of the decisions and I was definitely the one in charge." In the equal power description, two circles of equal size were used and the description read "my partner and I jointly made decisions and were *equals*—no one person was in charge." The five representations were designed to allow participants to indicate various levels of power in their partnership.

Participants then rated their own *conversational dominance* on a series of seven-point semantic-differential questions (Burgoon & Dunbar, 2000; Dunbar & Burgoon, 2005b). The directions specifically asked participants to think about their behavior during the interaction. The items included dominant:submissive (reverse-coded), confident:unconfident (reverse-coded), low status:high status, sluggish:energetic, hesitant:decisive, dynamic:passive (reverse-coded), poised:awkward (reverse-coded), outgoing:withdrawn (reverse-coded), silent: talkative with the adjective on the left representing a "1" and the adjective on the right representing a "7" on the scale. The responses ranged from 2.22 to 6.67 for self-rated dominance ($M = 4.65$, $SD = 0.92$; $\alpha = .87$).

The participants were asked fourteen questions designed to measure their *satisfaction with the conversation* in which they had engaged taken from Hecht (1978). Items included "The conversation flowed smoothly," "I was very satisfied with the conversation," "I would like to have another conversation like this one," and "nothing was accomplished" (reverse-coded). The responses ranged from 2.29 to 6.86 on the seven-point scale ($M = 5.35$, $SD = 0.89$). A principal-components factor analysis with varimax rotation was conducted to examine the unidimensionality of the scale. Twelve of the fourteen items loaded on the same factor with eigenvalues greater than 1 that collectively accounted for 96.97 percent of the variance. Each item had a primary factor loading of .50 or better and did not have a secondary loading of .35 or higher on any other factor. Thus, the scale was treated as unidimensional ($\alpha = .86$).

Finally, we computed the amount each participant was influenced by the confederate by examining the number of *discrepancies* between their pre- and postinteraction rankings on the DSP. For example, if the participant began with canteens of water ranked #1 but the dyad moved it to #3 on their joint list that was a discrepancy of 2. We compared participants' individual preinteraction rankings and their dyad's postinteraction rankings and calculated the total number of ranking

changes made by the participant. The participants made between 0 and 30 total changes in their rankings ($M = 20.27$, $SD = 6.66$).

Verbal and Nonverbal Coding

Three graduate students were trained to code the interactions. All coders were blind to the experimental hypotheses. All three coders viewed a randomly selected sample of 20 percent of the videotapes and an intraclass correlation (ICC)[2] was computed to establish intercoder reliability for each scale used (see Shrout & Fleiss, 1979). After reaching a minimum acceptable ICC of .60 for each code (Fleiss, 1981), each of the remaining interactions was rated by one coder. Coder training lasted approximately twenty hours and the coders met frequently while coding the remaining videotapes to check perceptions and guard against slippage in reliabilities. The ICC reliabilities for all coded variables appear in Table 4.

The exact behaviors examined in the coding process were culled from the literature described earlier and from pre-existing scales (Dunbar & Burgoon, 2005b; Guerrero 2005). Following the example of Dunbar and Burgoon (2005a), verbal and nonverbal behavior was coded at both the macroscopic level and the microscopic level. Macroscopic measures identify large-scale, molar phenomena, whereas microscopic measures identify precise, fine-grained behavior (Baesler & Burgoon, 1987). For example, asking participants or observers to make a holistic, gestalt judgment about an individual's dominance during an entire interaction is asking for a more general, macrolevel assessment than looking at particular verbal and nonverbal indicators of dominance such as particular utterances or gestures. When looking at macroscopic variables like dominance, anxiousness, or expressiveness, coders watched the entire interaction and then rated the participant. Coders used the same measure for conversational dominance as participants to assess overall dominance. The responses ranged 2.50 to 6.20 for coder-rated dominance ($M = 4.14$, $SD = 0.80$; $\alpha = .93$). For microscopic behaviors like gesture counts or verbal utterance counts, coders made tallies while watching the entire interaction and then the tallies were weighted according to the length of the interaction.

For verbal control attempts, a coding scheme similar to the one created by Dunbar and Burgoon (2005a) was used. Coders analyzed the videotapes and counted the number of times the participants used certain types of utterances that are associated with dominance including making suggestions, making demands, reasoning with their partner, disagreeing with their partner, ignoring, and expressing uncertainty. Some codes were used so infrequently that they were omitted from the analyses (91.3 percent of participants did not make any demands and 68 percent of participants did not ignore their partner's comments).

After watching the videotapes, coders also rated the participants' verbal, vocal, and nonverbal behavior using seven-point semantic differential scales loosely based on the coding scheme developed by Guerrero (2005). The coders rated the fluency of the participants' speech using three items (e.g., "choppy/smooth"; $\alpha = .80$). The argumentativeness of the participant was measured using seven items (e.g., "very

argumentative/very compliant"; $\alpha = .88$). The expressiveness of the participants' voice was measured using eight items (e.g., "was monotone/contained vocal variety"; $\alpha = .89$).

For the nonverbal control attempts, coders counted the number of adaptor and illustrator gestures for each person. As with the verbal coding, the observers also rated the participants' nonverbal behavior. The coders rated the participants facial pleasantness based on three items (e.g., "was facially pleasant/was facially unpleasant"; $\alpha = .83$). The participants' overall body movement was measured using five items (e.g., "frequent/infrequent rocking or twisting"; $\alpha = .80$). The overall anxiousness displayed by the participants was measured using eight items (e.g., "anxious/calm"; $\alpha = .83$).

Dominance Composite Variable

We created a single composite dominance variable from several of the verbal and nonverbal indicators of dominance. A principal-components factor analysis with varimax rotation revealed three factors but only one major factor that included the majority of the variables with eigenvalues greater than 1 and accounted for 28.91 percent of the variance. Each item on factor one had a primary loading of .53 or better and did not have a secondary loading higher than .40 on any other factor. The factor included coded global dominance, number of illustrator gestures, body movement, number of reasons given, coded argumentativeness, vocal expressiveness, and speech fluency. Since the number of illustrators and reasons were counts of behaviors and the other variables were rated on a seven-point scale, we normed the number of illustrators and reasons around a seven-point scale. The alpha reliability for the eight items included in our dominance composite was .77. This analysis suggested a unidimensional solution was warranted and the dominance composite measure was used in the subsequent analyses. Scores on the dominance composite variable ranged from 19.74 to 39.43 ($M = 29.61$, $SD = 4.07$).

Pilot study. In order to test our procedures, we conducted a pilot study with nineteen dyads in which two naïve participants interacted on the DSP task. Instead of interacting with a confederate, two naïve participants were brought to the interaction room with their individual rankings in hand and the rankings were not manipulated. The procedures were otherwise identical to that of the general experiment. The purpose of the pilot study was twofold: to ensure the manipulation of relative power was successful and to allow the confederates to observe naïve participants in the task and to create an experimental script that would approximate "real" interactions. The power manipulation was somewhat weak. Although a one-way ANOVA with power condition as the independent variable was significant for both the scale measure of power, $F(2, 37) = 4.01$, $p < .05$ and Neff and Harter's (2002) visual measure $F(2, 37) = 7.00$, $p < .01$, post-hoc comparisons revealed that although the means were in the expected direction (see means in Table 1), the equal-power and high-power conditions did not significantly differ. Participants saw themselves as

Table 1 Means for Power Measures in Pilot Study

Condition	Scale measure (1–7)			Visual measure (1–5)	
	N	M	SD	M	SD
Low power	10	3.38	.97	2.30	.48
Equal power	17	4.35	1.13	3.12	.78
High power	11	4.64	1.07	3.36	.67

less powerful in the unequal-low power condition compared to the equal-power condition $t(25) = -2.28$, $p < .05$ but those in the equal-power condition were not significantly different from the unequal-high power condition $t(26) = -.66$, $p = ns$. Thus, in order to increase the self-perceived power of the high-power participants, we gave them false feedback on their individual DSP and created expertise power and legitimate power for them by telling them they had been chosen to be the leader because of their DSP rankings (French & Raven, 1959). This change resulted in a successful manipulation check for the final experiment (see results below).

The confederates were present for every naïve-naïve dyad in the pilot study and observed the interactions live on a video monitor. Afterward, the video for each dyad was watched again and a researcher took notes on the reasons participants gave for their rankings and any statements made regarding power. Based on these observations, a loose experimental script was created. The confederates memorized the reasons for leaving or staying based on reasons given by naïve participants in the pilot study. Because we noticed that many naïve-naïve dyads engaged in a discussion about whether it was most prudent to stay and wait for rescue or trek to the base, we instructed confederates to begin the interactions with a discussion on this topic. They were instructed to disagree with the participants on this point. The confederates also memorized the reasons naïve participants gave for ranking their items and used those reasons to justify each of their rankings (for example, several participants mentioned survival strategies they had seen on the TV show *Man vs. Wild* so we instructed our confederates to use that show to justify their suggestions for survival rankings). They proceeded to discuss the rankings with the subject and negotiating their rankings to make the joint ranking list. In addition, the confederates were instructed to remind the participant of the power manipulation and the participant's relative power at some time during the interaction (for example, in the high-power condition, the confederate told the participant, "you're in charge" when there was an impasse in the negotiation).

Results

Manipulation Checks

In order to verify that the three groups created by our power manipulation were significantly different from one another, a one-way ANOVA for both the scale

measure of power, $F(2, 147) = 118.51$, $p < .01$ and the visual measure (Neff & Harter, 2002) was significant $F(2, 147) = 135.08$, $p < .01$. Participants saw themselves as least powerful in the unequal low-power condition and most powerful in the unequal high-power condition (see Table 2). Post-hoc comparisons revealed these means are significantly different from one another: participants saw themselves as less powerful in the unequal-low power condition compared to the equal-power condition $t(98) = -9.08$, $p < .01$ and those in the equal-power condition saw themselves as less powerful than those in the unequal-high power condition $t(98) = -6.85$, $p < .01$. The manipulation of power was successful.

In order to verify that the two sex conditions were equivalent, independent samples t-tests were conducted for the two measures of power, participants' ratings of the confederates' dominance, the length of the interaction, satisfaction with the interaction, the dominance composite variable, and the demographic variables. The analysis revealed only two differences between male and female interactions on length of interaction $t(148) = 2.51$, $p < .05$ and ratings of confederates' dominance $t(148) = -2.45$, $p < .05$. The male interactions were longer ($M = 17:56$, $SD = 07:16$) than the female interactions ($M = 13:56$, $SD = 04:31$) and the female confederate ($M = 4.60$, $SD = .79$) was rated as slightly more dominant than the male confederate ($M = 5.02$, $SD = .83$) by their partners. These were minor sex differences and these differences proved insignificant when sex was included as a covariate in the analyses. The length of the interaction was accounted for by weighting the verbal and nonverbal codes by length of interaction. Thus, males and females were combined for the following analyses.

Hypotheses and Research Questions

Hypothesis 1 predicted a curvilinear relationship between power and dominance such that individuals will display more dominance when they are relatively equal in power to their partners than when they have more or less power than their partner. An ANOVA was conducted that treated the experimental condition (unequal high-power, equal-power, or unequal low-power) as the independent variable and the dominance composite variable as the dependent variable. The results revealed a significant main effect for power, $F(2, 147) = 4.13$, $p < .01$, partial $\eta^2 = .05$ (Figure 1). Although the means are in the expected direction with both unequal-high and unequal-low power participants exhibiting less dominance than equal-power participants, post-hoc comparisons show the effect to be primarily the result of the unequal low-power condition vs. the equal-power condition. Participants were less dominant in the

Table 2 Means for Power Measures in Experiment

Condition	Scale measure (1–7)			Visual measure (1–5)	
	N	*M*	*SD*	*M*	*SD*
Low power	50	2.72	.78	2.10	.51
Equal power	50	4.05	.68	3.06	.42
High power	50	5.11	.86	3.74	.56
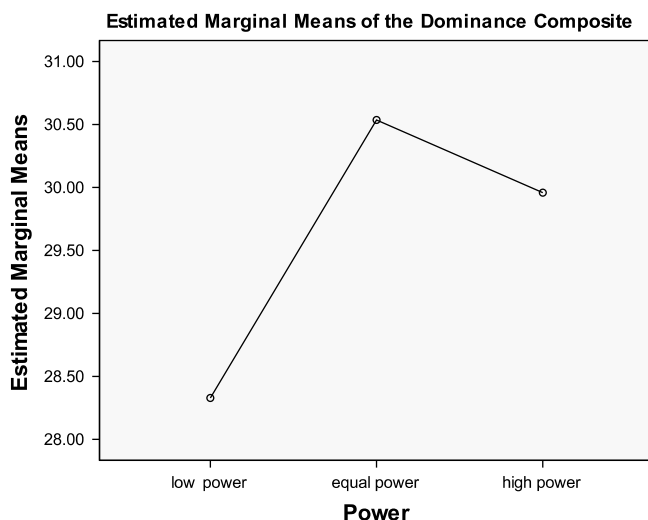
Figure 1 Means for dominance composite variable by experimental condition.

unequal-low power condition compared to the equal-power condition $t(98) = -2.65$, $p < .01$ but those in the equal-power condition were not significantly different from the unequal-high power condition $t(98) = .77$, $p = ns$ (see means in Table 3). This result provides partial support for hypothesis 1.

Research question one asked whether there would be a difference in dominance displayed between those individuals in unequal high-power positions and those in unequal low-power positions. The relationship revealed in Figure 1 suggests that there is difference between having unequal low-power and unequal high-power in the amount of dominance used. A *t*-test was conducted to compare the unequal low-power and unequal high-power conditions on the dominance composite variable as well as self-reported ratings of dominance. This *t*-test was significant for both dominance measures: the composite measure $t(98) = -2.01$, $p < .01$ and self-reported dominance $t(98) = -4.02$, $p < .01$. Individuals in the unequal-high condition were more dominant than those in the unequal-low condition (see means in Table 3). Although not hypothesized, a follow-up analysis was conducted comparing the difference between the equal-power and unequal high-power conditions based on the relationship indicated in Figure 1. This analysis revealed

Table 3 Means for dominance, pre- and postinteraction ranking discrepancies, and satisfaction

Condition		Dominance composite		Ranking discrepancy		Satisfaction	
	N	*M*	*SD*	*M*	*SD*	*M*	*SD*
Low power	50	28.32	4.39	26.00	.73	4.82	1.10
Equal power	50	30.54	3.85	19.78	5.42	5.71	.69
High power	50	29.95	3.68	15.04	6.59	5.54	.52

no significant difference for self-reported dominance $t\,(98) = -1.08$, $p = ns$, or the dominance composite variable $t\,(98) = .77$, $p = ns$.

Research question two asked whether an individual's verbal and nonverbal control attempts would be related to overall perceptions of dominance during an interaction. A bi-variate correlational analysis was conducted that examined the relationship between self and coder reports of overall dominance and the individual verbal and nonverbal behaviors examined by the coders. The results (see Table 4) revealed that self-reports of dominance were related to four of the seven verbal indicators of dominance (number of reasons offered, speech fluency, coded argumentativeness, and vocal expressiveness) and four of the five nonverbal indicators of dominance (number of illustrator gestures used, facial pleasantness, body movement, and reduced overall anxiousness). Coder's ratings of overall dominance were related to six of the seven verbal indicators of dominance (number of suggestions and reasons offered, fewer statements that express uncertainty, speech fluency, coded argumentativeness, and vocal expressiveness) and four of the five nonverbal indicators of dominance (number of illustrator gestures used, facial pleasantness, body movement, and reduced overall anxiousness). Self-reported and coder-rated overall dominance were correlated with one another $r\,(149) = .43$, $p < .01$ as well as to many of the same verbal and nonverbal dominance indicators suggesting that participants' own views of their dominance were concordant with coders' perceptions of their dominance. The correlation suggests, however, that participants and third-party raters did have some differences in their perceptions of dominance.

Hypothesis 2 predicted that increasing an individual's relative power will increase that individual's satisfaction with the encounter. An ANOVA was conducted that treated the experimental condition (unequal high-power, equal-power, or unequal low-power) as the independent variable and the participants' self-reported satisfaction with the interaction as the dependent variable. The results revealed a significant main effect for power, $F(2,\ 145) = 16.72$, $p < .01$, partial $\eta^2 = .19$ (Figure 2). Contrary to the hypothesis, those in the equal power condition appear to be the most satisfied (see means in Table 3). A follow-up analysis comparing the difference between the unequal-low power condition and the equal power condition revealed that those in equal power were more satisfied than those low in power $t\,(98) = -4.81$, $p < .001$ but there was no difference between equal-power and unequal-high power conditions for satisfaction, $t\,(96) = 1.35$, $p = ns$. Hypothesis 2 was partially supported.

Hypothesis 3 predicted that increasing an individual's relative power will increase control over the dyad's decision. An ANOVA was conducted that treated the experimental condition (unequal high-power, equal-power, or unequal low-power) as the independent variable and the total number of discrepancies between their preinteraction rankings and postinteraction rankings on the DSP as the dependent variable. The results revealed a significant main effect for power, $F(2,\ 143) = 57.68$, $p < .01$, partial $\eta^2 = .45$ (Figure 3). The results revealed that those in the unequal high-power position changed their rankings the least while those in unequal low-power changed their rankings the most (see means in Table 3). A post-hoc analysis revealed significant differences between the unequal-low power and equal-power

Table 4 Correlations between participant measures, coded dominance, and individual dominance indicators

	ICC	SA	DC	SD	CD	SU	RE	DS	UN	FL	AR	VE	IL	AD	FP	BM	AX
Self-reported Power (PW)		.37**	−.68**	.45**	.35**	.29**	.10	−.03	.00	.18*	.44**	.13	.13	.00	.11	.19*	.12
Satisfaction (SA)			−.22**	.53**	.23**	.20*	.04	−.29**	−.11	.16*	.09	.32**	.10	−.03	.35**	.22**	.16
Discrepancies (DC)				−.23**	−.25**	−.24**	−.05	.01	.02	−.05	−.40**	−.07	−.00	.08	−.06	−.05	−.10
Self-reported dominance (SD)					.42**	.15	.16	−.07	−.03	.22**	.23**	.38**	.21*	−.04	.27**	.20*	.22**
Coded dominance (CD)	.88					.17*	.30**	.15	−.18*	.42**	.55**	.39**	.49**	−.01	.33**	.35**	.48**
Suggestions (SU)	.68						.60**	.04	.05	.06	.16	.04	.32**	.25**	.12	.32**	.01
Reasons (RE)	.72							.31**	−.03	.13	.32**	.03	.48**	.22**	−.02	.23**	.11
Disagreements (DS)	.85								.06	.13	.46**	−.15	.25**	.13	−.22**	.07	.08
Uncertainty (UN)	.68									−.18*	−.12	−.05	−.05	.09	−.07	−.01	−.14
Fluency (FL)	.69										.47**	.49**	.19*	−.08	.17*	.12	.17*
Argumentativeness (AR)	.79											.09	.22**	.00	−.11	.11	.25**
Vocal expressiveness (VE)	.68												.24**	−.02	.54**	.35**	.08
Illustrators (IL)	.99													.29**	.30**	.56**	.07
Adaptors (AD)	.98														.03	.59**	−.29**
Facial Pleasantness (FP)	.83															.39**	.20*
Body Movement (BM)	.69																−.21**
Anxiousness (AX)	.70																

Note. Ebel's Intraclass correlations used to establish inter-rater reliability for the coded variables (Shrout & Fleiss, 1979) are reported in the first column and are highlighted in bold.

**$p < .01$; *$p < .05$.
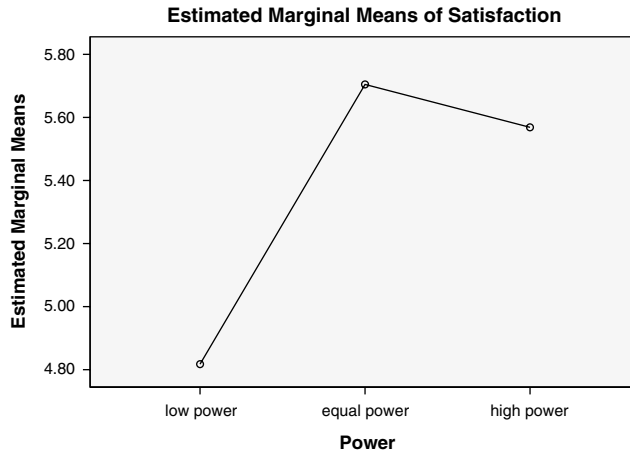
Figure 2 Means for self-reported satisfaction with interaction by experimental condition.

conditions $t(98) = 8.05$, $p < .001$ as well as the equal-power and unequal-high power conditions $t(98) = 3.93$, $p < .001$. Hypothesis 3 was supported.

Discussion

Support for Dyadic Power Theory

Dyadic power theory posits that there will be a curvilinear relationship between dominance and power. Those in an equal power relationship exchange dominant messages as a way to deal with conflict and assert themselves. In contrast, those in unequal low-power positions might feel a chilling effect or might assume they have less to contribute to a conversation than their more powerful counterpart and
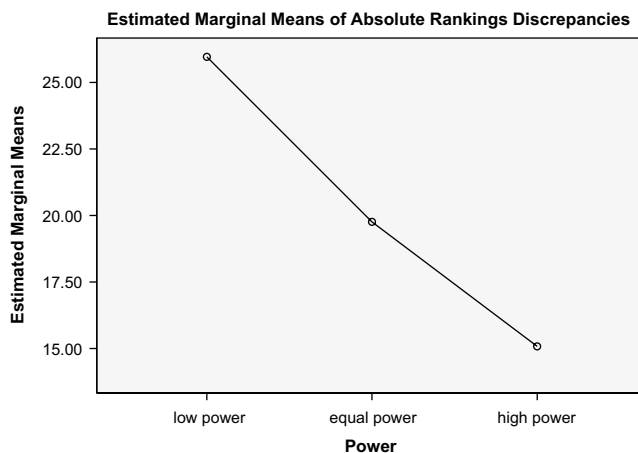
Figure 3 Means for the absolute discrepancy between pre- and post-interaction rankings by power condition.

withhold expressing their opinions. Those in unequal high-power positions show less dominance than those in equal-power because it is already assumed that they control the interaction so there is no need for them to use dominance to establish their powerful position. This flies in the face of conventional wisdom (e.g., Rollins & Bahr, 1976) which suggests that the more powerful a person is, the more dominant they will act. DPT's predictions were supported somewhat by the results reported here. Specifically, there is a measurable increase in dominance moving from an unequal low-power position to an equal-power position. Also, the data suggest the predicted decrease in dominance moving from an equal-power position to an unequal high-power position even though this was not statistically significant. Clearly, the relationship between power and dominance is not a linear one but the differences between equal-power and high-power need to be explored more fully. It is possible that even though individuals in both the unequal low- and unequal high-power positions demonstrate less dominance than those in the equal-power positions, those in the high-power position probably illustrate their power through subtle nonverbal cues or verbal messages that sound dominant. Just as deceivers "leak" unconscious cues to their deceit when trying to appear honest (Buller & Burgoon, 1994), so do powerful individuals leak their dominance even when they don't need to display it overtly. Whether or not the dominance displayed by high-power partners is strategic or accidental is something that requires further research.

Another reason for our failure to find a difference between the equal-power and unequal high-power participants may have been methodological. Our experimental confederates in the high-power position were trained to use the veto whenever necessary to enforce their decision, but participants in the high-power position almost never used their granted veto ability. Participants appeared unwilling to act with the commensurate finality that high-power enables. Instead of using the veto, participants elected to continue their attempts to influence the opinion of the confederates and thus displayed more dominance than DPT predicts. Overall, the confederates' use of the veto likely increased the difference between equal-power and unequal low-power conditions, but the participants' lack thereof decreased the difference between equal-power and unequal high-power conditions. It is possible that participants wanted to convince their low-power partners to acquiesce rather than use their ascribed power to get their way.

The behavior of unequal partners provides some insight into the first research question which asked about differences between unequal partners in high-power vs. low-power positions. Although there was no significant difference between those in the equal and high conditions in terms of behavioral dominance, the unequal high-power individuals did not have to change their rankings following the interaction to the same degree as those in equal power (as H3 predicted). In other words, they engaged their partner in a debate about the rankings but their power position ensured they maintained control over the outcome of the debate. In fact, two high-power participants made no changes to their rankings at all despite the confederate's attempts at persuasion. In general, high-power participants solicited input from their less powerful partner but then wrote down the rankings that they preferred. Their

structural power advantage allowed them to sidestep a more overt display of disagreement.

The link between power and satisfaction was also explored in this experiment. The results from hypothesis 2 suggest that people in unequal low-power positions are generally less satisfied than people in equal-power positions, and people in unequal high-power positions are also less satisfied than people in equal-power positions (although this difference was not statistically significant). It is not difficult to understand why low-power individuals would prefer equal-power, as this implies a greater ability to generate favorable outcomes. However, it is worth examining why individuals with high-power are not the most satisfied. Equity theory suggests that individuals experience distress when they are in inequitable relationships (when their inputs do not correspond to their outputs) and they attempt to restore equity between the partners. In close relationships, men and women who believe they have been equitably treated feel more content in their relationships and perceive the relationship to be more stable than those in inequitable relationships, even when they benefit from the inequality (Adams, 1965; Hatfield, Traupmann, Sprecher, Utne, & Hay, 1984; Sprecher, 2001; Utne, Hatfield, Traupmann, & Greenberger, 1984; Walster et al., 1973, 1978). In this experiment, those lowest in power were clearly the least satisfied but those highest in power were not more satisfied than those in the equal power condition. Perhaps the participants experienced some discomfort by being placed in a position of power or were sensitive to the apparent discomfort of their lower-power partner.

Behavioral Indicators of Dominance

Research question two compared microsocial control attempts to broader perceptions of interactional dominance. The data suggest that there is a relationship between the micro and macro levels of social interaction. This is commensurate with the belief in the communication field that the particulars of communication, irrespective of intent, generate more general impressions. While previous researchers have shown that smaller sets of microbehaviors are linked to these general impressions, we find that the broad impressions are also linked to a much larger collection of interactional specifics. This finding lends credibility to research that aggregates microsocial behaviors into macrosocial measures.

Specifically, there appear to be certain verbal and nonverbal cues that are associated with dominance for both third-party observers and the participants' ratings of themselves found in Table 4. All but two of the verbal and nonverbal behaviors we coded for were associated with perceptions of dominance (using adaptor gestures or disagreeing with one's partner). Participants who were more fluent in their speech, who were more argumentative, who were more vocally expressive, who used greater numbers of illustrator gestures, who were more facially pleasant, who were more dynamic in their bodily movements, or who were less anxious were seen as dominant by both third-party raters and the participants themselves. Coders additionally saw those making more suggestions and reasons to

their partners and who displayed less uncertainty as dominant as well. However, the fact that there was only a .42 correlation between global measures of dominance between coders and participants suggests that the view from the two perspectives is not isomorphic. Several research studies prior to ours have found a lack of concordance between participant and observer ratings of dominance (e.g., Dunbar & Burgoon, 2005a) and other research has found low levels of agreement between self-report and objective measures of the same construct (Sypher & Sypher, 1984). Dunbar and Burgoon (2005a) argue that interactants may not be using individual behaviors to make their dominance judgments, but as they are more cognitively busy and less able to scrutinize individual behaviors, they may be using a more gestalt, holistic judgment than coders. Although this investigation revealed some commonalities between the perceptions of dominance of both actors and observers, the results suggest that interactants may not be using individual behaviors to make their dominance judgments, but as they are more cognitively busy and less able to scrutinize individual behaviors, they may be using a more gestalt, holistic judgment than coders.

Limitations

The study should be viewed in light of its limitations. First, rather than using trained confederates, future researchers should investigate power in pre-existing hierarchical relationships (such as teacher–student, parent–child, physician–patient, or superior–subordinate in the workplace). Recruiting these types of dyads create their own methodological problems but might give greater insight into how power operates in existing relationships. Our previous research suggests that romantic couples report a general equality in their relationships that makes testing DPT difficult unless distressed couples or those with a clear power inequality are specifically recruited (Dunbar & Burgoon, 2005a; Dunbar et al., 2008). Using relationships with both a structural power difference and a relational history (and future) might influence the participants' behavior differently than in a short-term interaction with a stranger.

Second, while every attempt was made to ensure similarity of confederate behavior across interactions, there are inevitably some differences as the confederates react to situationally specific cues. This similarity between the two confederates might have created an unexpected expectancy violation for the females. The fact that female participants saw the female confederate as more dominant than the male participants saw the male confederate suggests that our female confederate, in acting similarly to her male counterpart was actually acting in a way that was counter to the female stereotype. Although none of the participants indicated they knew that she was a confederate, they might have been taken aback by her confident, dominant demeanor that was a replication of the male style. Perhaps future research should not necessarily strive for similarity between confederates but should emphasize acting in accordance with gender expectations.

Third, we created a composite variable to minimize the number of tests being conducted and to make the tested model more parsimonious. Table 4 revealed that our

measures of dominance included in the composite variable, while correlated, were not highly correlated. Combining these many measures into a single factor may have attenuated our results somewhat so these results should be viewed in light of the fact that they may be somewhat diluted.

Conclusion

This study further supports DPT's basic contention that there is not a linear relationship between dominance and power. It does not appear to be the case, as Rollins and Bahr (1976) predicted, that people display more dominance as they become more powerful. Instead, it is those who feel relatively equal to their partners who display the most dominance as they dance their interactive dance and solidify their position relative to their partner. This investigation also revealed the complexity of dominance as a behavioral communication variable. Researchers often struggle to identify verbal and nonverbal cues that may indicate dominance in interaction. It appears that most of the verbal and nonverbal behaviors coded in this study including using various types of verbal utterances, fluent speech, argumentativeness, vocal expressiveness, facial pleasantness, body control, illustrator gestures and avoiding the appearance of anxiousness or uncertainty were related to general perceptions of dominance by both the participants themselves and third-party observers. These findings support the work of previous nonverbal and verbal researchers and further identify specific behavioral indicators that are related to the enactment of dominance during interaction. They also remind us that dominance is a multifaceted construct that can be demonstrated interactively in many ways and should be measured using a variety of verbal and nonverbal methods.

Notes

[1] Subject's rank became this Confederate rank (all the rest remained the same): 1...3; 4...1; 3...9; 5...7; 7...4; 9...12; 12...5.

[2] Intraclass correlations (ICC) are used to establish a correlation between pairs of observations that do not have an obvious order. The ICC is the correlation between one measurement (either a single rating or a mean of several ratings) on a target and another measurement obtained on that target (Shrout & Fleiss, 1979). Shrout and Fleiss discuss six different versions of the ICC and most can be calculated using the reliability analysis function in SPSS. We used the one-way random version of the ICC with a 95 percent confidence interval and a test value of 0.

References

Adams, J.S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 2, pp. 267–299). New York: Academic Press.

Aguinis, H., & Henle, C.A. (2001). Effects of nonverbal behavior on perceptions of a female employee's power bases. *Journal of Social Psychology*, 141, 537–549.

Aguinis, H., & Simonsen, M.M. (1998). Effects of nonverbal behavior on perceptions of power bases. *Journal of Social Psychology*, 138, 455–469.

Argyle, M., & Furnham, A. (1983). Sources of satisfaction and conflict in long-term relationships. *Journal of Marriage and the Family, 45,* 481–493.

Aries, E.J., Gold, C., & Weigel, R.H. (1983). Dispositional and situational influences on dominance behavior in small groups. *Journal of Personality and Social Psychology, 44,* 779–786.

Ayres, J., & Miura, S.Y. (1981). Construct and predictive validity of instruments for coding relational control communication. *Western Journal of Speech Communication, 45,* 159–171.

Bachrach, S.B., & Lawler, E.J. (1981). *Bargaining: Power, tactics, and outcomes.* New York: Jossey-Bass.

Baesler, E.J., & Burgoon, J.K. (1987). Measurement and reliability of nonverbal behavior. *Journal of Nonverbal Behavior, 11,* 205–233.

Ball, F.L.J., Cowan, P., & Cowan, C.P. (1995). Who's got the power? Gender differences in partners' perceptions of influence during marital problem-solving discussions. *Family process, 34,* 303–321.

Beier, E.G., & Sternberg, D.P. (1977). Subtle cues between newlyweds. *Journal of Communication, 27,* 92–97.

Berger, C.R. (1994). Power, dominance, and social interaction. In M.L. Knapp & G.R. Miller (Eds.), *Handbook of interpersonal communication* (pp. 450–507). Thousand Oaks, CA: Sage.

Blau, P.M. (1964). *Exchange and power in social life.* New York: Wiley.

Buller, D.B., & Burgoon, J.K. (1994). Deception: Strategic and nonstrategic communication. In J.A. Daly & J.M. Wiemann (Eds.), *Strategic interpersonal communication* (pp. 191–224). Hillsdale, NJ: Erlbaum.

Burgoon, J.K., Birk, T., & Pfau, M. (1990). Nonverbal behaviors, persuasion, and credibility. *Human Communication Research, 17,* 140–169.

Burgoon, J.K., Bonito, J.A., Ramirez, Jr. A., Dunbar, N.E., Kam, K., & Fischer, J. (2002). Testing the interactivity principle: Effects of mediation, verbal and nonverbal modalities, and propinquity in decision-making interactions. *Journal of Communication, 52,* 657–677.

Burgoon, J.K., & Dunbar, N.E. (2000). Interpersonal dominance as a situationally, interactionally, and relationally contingent social skill. *Communication Monographs, 67,* 96–121.

Burgoon, J.K., & Dunbar, N.E. (2006). Nonverbal expressions of dominance and power in human relationships. In V. Manusov & M.L. Patterson (Eds.), *The Sage Handbook of Nonverbal Communication* (pp. 279–297). Thousand Oaks, CA: Sage.

Burgoon, J.K., & Hale, J.L. (1984). The fundamental topoi of relational communication. *Communication Monographs, 51,* 193–214.

Burgoon, J.K., & Hoobler, G. (2002). Nonverbal signals. In M.L. Knapp & J. Daly (Eds.), *Handbook of interpersonal communication* (pp. 240–299). Thousand Oaks, CA: Sage.

Burgoon, J.K., Johnson, M.L., & Koch, P.T. (1998). The nature and measurement of interpersonal dominance. *Communication Monographs, 65,* 308–335.

Cahn, D.D. (1992). *Conflict in intimate relationships.* New York: Guilford.

Cashdan, E. (1998). Smiles, speech, and body posture: How women and men display sociometric status and power. *Journal of Nonverbal Behavior, 22,* 209–228.

Cloven, D.H., & Roloff, M.E. (1993). The chilling effect of aggressive potential on the expression of complaints in intimate relationships. *Communication Monographs, 60,* 199–219.

Christensen, A., & Heavey, C.L. (1990). Gender and social structure in the demand/withdraw pattern of marital conflict. *Journal of Personality and Social Psychology, 59,* 73–81.

Christensen, A., & Heavey, C.L. (1993). Gender differences in marital conflict: The demand/withdraw interaction pattern. In S. Oskamp & M. Costanzo (Eds.), *Gender issues in contemporary society* (pp. 113–141). Newbury Park, CA: Sage.

Clements, M.L., Cordova, A.D., Markman, H.J., & Laurenceau, J.P. (1997). The erosion of marital satisfaction over time and how to prevent it. In R.J. Sternberg & M. Hojjat (Eds.), *Satisfaction in close relationships* (pp. 335–355). New York: Guilford.

Corrales, R.G. (1975). Power and satisfaction in early marriage. In R.E. Cromwell & D.H. Olson (Eds.), *Power in families* (pp. 197–216). New York: Sage.

De Dreu, C.K.W., & Van Kleef, G.A. (2004). The influence of power on the information search, impression formation, and demands in negotiation. *Journal of Experimental Social Psychology, 40*(3), 303–319.

Dunbar, N.E. (2000). *Explication and initial test of dyadic power theory*. Unpublished Doctoral Dissertation, University of Arizona.

Dunbar, N.E. (2004). Dyadic power theory: Constructing a communication-based theory of relational power. *Journal of Family Communication, 4*, 235–248.

Dunbar, N.E., & Allen, T.H. (2005, November). *Power, conflict, and strategic communication: A dyadic view of compliance-gaining during conflict.* Paper presented to the National Communication Association annual convention, Boston, MA.

Dunbar, N.E., Bippus, A.M., & Young, S.L. (2008). Interpersonal dominance in relational conflict: A view from dyadic power theory. *Interpersona, 2*, 1–33.

Dunbar, N.E., & Burgoon, J.K. (2005a). Perceptions of power and interactional dominance in interpersonal relationships. *Journal of Social and Personal Relationships, 22*, 207–233.

Dunbar, N.E., & Burgoon, J.K. (2005b). The measurement of nonverbal dominance. In V. Manusov (Ed.), *The sourcebook of nonverbal measures: going beyond words* (pp. 361–374). Mahwah, NJ: Lawrence Erlbaum.

Ekman, P. (1985). *Telling lies*. New York: W.W. Norton & Company.

Emerson, R.M. (1962). Power-dependence relations. *American Sociological Review, 27*, 31–41.

Emerson, R.M. (1972). Exchange theory, Part I: A psychological basis for social exchange. In J. Berger, M. Zelditch, & B. Anderson (Eds.), *Sociological theories in progress* (Vol. 2, pp. 38–57). Boston: Houghton-Mifflin.

Falbo, T., & Peplau, L.A. (1980). Power strategies in intimate relationships. *Journal of Personality and Social Psychology, 38*, 618–628.

Fleiss, J.L. (1981). *Statistical methods for rates and proportions*. New York: Wiley.

Foa, E., & Foa, U. (1974). *Societal structures of the mind*. Springfield, Il: Charles C. Thomas.

French, J.R.P.,Jr., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research.

Frieze, I.H., & McHugh, M.C. (1992). Power and influence strategies in violent and nonviolent marriages. *Psychology of Women Quarterly, 16*, 449–465.

Glidden, M.V. (1986). *Effects of power bases, processes, and outcomes on marital satisfaction*. Unpublished doctoral dissertation, Northern Illinois University.

Gray-Little, B., & Burks, N. (1983). Power and satisfaction in marriage: A review and critique. *Psychological Bulletin, 93*, 513–538.

Gregory, S.W., & Webster, S. (1996). A nonverbal signal in voices of interview partners effectively predicts communication accommodation and social status perceptions. *Journal of Personality & Social Psychology, 70*, 1231–1240.

Guerrero, L.K. (2005). Observer ratings of nonverbal involvement and immediacy. In V. Manusov (Ed.), *The sourcebook of nonverbal measures: Going beyond words* (pp. 221–235). Mahwah, NJ: Lawrence Erlbaum.

Gonzaga, G.C., Keltner, D., & Ward, D. (2008). Power in mixed-sex stranger interactions. *Cognition & Emotion, 22*(8), 1555–1568.

Guinote, A. (2007a). Power and goal pursuit. *Personality and Social Psychology Bulletin, 33*(8), 1076–1087.

Guinote, A. (2007b). Power and the suppression of unwanted thoughts: Does control over others decrease control over the self? *Journal of Experimental Social Psychology, 43*(3), 433–440.

Guinote, A. (2008). Power and affordances: When the situation has more power over powerful than powerless individuals. *Journal of Personality and Social Psychology, 95*(2), 237–252.

Hall, J.A., Coats, E.J., & LeBeau, L.S. (2005). Nonverbal behavior and the vertical dimension of social relations: A meta-analysis. *Psychological Bulletin, 131*(6), 898–924.

Hall, J.A., Coats, E.J., LeBeau, L.S., & Hantula, D.A. (2006). Is smiling related to interpersonal power? Theory and meta-analysis *Advances in social & organizational psychology: A tribute to Ralph Rosnow*. (pp. 195–214). Mahwah, NJ US: Lawrence Erlbaum Associates.

Hall, J.A., Rosip, J.C., Smith LeBeau, L., Horgan, T.G., & Carter, J.D. (2006). Attributing the sources of accuracy in unequal-power dyadic communication: Who is better and why? *Journal of Experimental Social Psychology*, *42*(1), 18–27.

Haskins, E.C. (1986). *Dominance, satisfaction and nonverbal affect in marital conflict resolution.* Unpublished doctoral dissertation, University of Florida.

Hatfield, E., Traupmann, J., Sprecher, S., Utne, M., & Hay, J. (1984). Behavioral interdependence: Social exchange. In W. Ickes (Ed.), *Compatible and incompatible relationships* (pp. 1–27). New York: Springer-Verlag.

Hecht, M.L. (1978). The conceptualization and measurement of interpersonal communication satisfaction. *Human Communication Research*, *4*, 253–264.

Henley, N.M. (1995). Gender politics revisited: What do we know today? In P.J. Kalbfleisch & M.J. Cody (Eds.), *Gender, power, and communication in human relationships* (pp. 27–61). Hillsdale, NJ: Erlbaum.

Higginbotham, D.J., & Yoder, D.E. (1982). Communication within natural conversational interaction: Implications for severe communicatively impaired persons. *Topics in Language Disorders*, *2*, 1–19.

Homans, G.C. (1958). Social behavior as exchange. *American Journal of Sociology*, *62*, 597–606.

Huston, T. (1983). Power. In H.H. Kelley, E. Berscheid, A. Christensen, J. Harvey, T. Huston, G. Levinger, E. McClintock, A. Peplau, & D. Peterson (Eds.), *Close relationships* (pp. 169–219). New York: W.H. Freeman.

Jacobson, G.F. (1986). Power dynamics in love and marriage. *Psychiatric Annals*, *16*, 647–649.

Jones, S.E., & LeBaron, C.D. (2002). Research on the relationship between verbal and nonverbal communication: Emerging integrations. *Journal of Communication*, *52*, 499–521.

Keltner, D., Gruenfeld, D.H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, *110*(2), 265–284.

Kimble, C.E., & Musgrove, J.I. (1988). Dominance in arguing mixed-sex dyads: Visual dominance patterns, talking time, and speech loudness. *Journal of Research in Personality*, *22*, 1–16.

Klein, R.C.A., & Johnson, M.P. (1997). Strategies of couple conflict. In S. Duck (Ed.), *Handbook of personal relationships* (pp. 469–486). New York: John Wiley & Sons.

Komter, A. (1989). Hidden power in marriage. *Gender & Society*, *3*, 187–216.

Lamb, T.A. (1981). Nonverbal and paraverbal control in dyads and triads: Sex or power differences? *Social Psychology Quarterly*, *44*, 49–53.

Langner, C.A., & Keltner, D. (2008). Social power and emotional experience: Actor and partner effects within dyadic interactions. *Journal of Experimental Social Psychology*, *44*(3), 848–856.

Leung, K. (1988). Some determinants of conflict avoidance. *Journal of Cross-Cultural Psychology*, *19*, 125–136.

Liska, J. (1988). *Dominance-seeking strategies in primates: An evolutionary perspective.* Paper presented at the XII Congress of the International Primatological Society, Brasilia, Brazil.

Liska, J. (1992). Dominance-seeking language strategies: Please eat the floor, dogbreath, or I'll rip your lungs out, okay? In S.A. Deetz (Ed.), *Communication yearbook 15* (pp. 427–456). New Brunswick, NJ: International Communication Association.

Mack, D.E. (1974). The power relationship in black families and white families. *Journal of Personality and Social Psychology*, *30*, 409–413.

Millar, F.E., & Rogers, L.E. (1987). Relational dimensions of interpersonal dynamics. In M.E. Roloff & G.E. Miller (Eds.), *Interpersonal processes: New directions in communication research* (pp. 117–139). Newbury Park, CA: Sage.

Molm, L.D. (1981). The conversion of power imbalance to power use. *Social Psychology Quarterly*, *51*, 108–122.

Molm, L.D. (1994). Dependence and risk: Transforming the structure of social exchange. *Social Psychology Quarterly*, *57*, 163–176.

Molm, L.D., & Cook, K.S. (1995). Social exchange and exchange networks. In K.S. Cook, G.A. Fine, & J.S. House (Eds.), *Sociological perspectives on social psychology* (pp. 209–235). Boston: Allyn and Bacon.

Molm, L.D., Takahashi, N., & Peterson, G. (2000). Risk and trust in social exchange: An experimental test of a classical proposition. *American Journal of Sociology*, *105*(5), 1396–1427.

Neff, K.D., & Harter, S. (2002). The role of power and authenticity in relationship styles emphasizing autonomy, connectedness, or mutuality among couples. *Journal of Social and Personal Relationships*, *19*, 835–857.

Olson, D.H., & Cromwell, R.E. (1975). Power in families. In R.E. Cromwell & D.H. Olson (Eds.), *Power in families* (pp. 3–11). Beverly Hills, CA: Sage.

Operario, D., & Fiske, S.T. (2001). Effects of trait dominance on powerholders' judgements of subordinates. *Social Cognition*, *19*(2), 161–180.

Rogers, E.L., Castleton, A., & Lloyd, S.A. (1996). Relational control and physical aggression in satisfying marital relationships. In D.D. Cahn & S.A. Lloyd (Eds.), *Family violence from a communication perspective* (pp. 218–239). Thousand Oaks, CA: Sage.

Rogers, L.E., & Farace, R.V. (1975). Analysis of relational communication in dyads: New measurement procedures. *Human Communication Research*, *1*, 222–239.

Rogers-Millar, E.L., & Millar, F.E. (1979). Domineeringness and dominance: A transactional view. *Human Communication Research*, *5*, 238–246.

Rollins, B.C., & Bahr, S.J. (1976). A theory of power relationships in marriage. *Journal of Marriage and the Family*, *38*, 619–627.

Roloff, M.E., & Cloven, D.H. (1990). The chilling effect in interpersonal relationships: The reluctance to speak one's mind. In D.D. Cahn (Ed.), *Intimates in conflict: A communication perspective* (pp. 49–76). Hillsdale, NJ: Erlbaum.

Russell, A.M.T., & Fiske, S.T. (2008). It's all relative: Competition and status drive interpersonal perception. *European Journal of Social Psychology*, *38*(7), 1193–1201.

Russell, B. (1938). *Power: A new social analysis.* New York: W.W. Norton.

Schaap, C., & Jansen-Nawas, C. (1987). Martial interaction, affect, and conflict resolution. *Sexual and Marital Therapy*, *2*, 35–51.

Schmid Mast, M., & Hall, J.A. (2003). Anybody can be a boss but only certain people make good subordinates: Behavioral impacts of striving for dominance and dominance aversion. *Journal of Personality*, *71*(5), 871–891.

Schmid Mast, M., & Hall, J.A. (2004). Who is the boss and who is not? Accuracy of judging status. *Journal of Nonverbal Behavior*, *28*(3), 145–165.

Schwartz, B., Tesser, A., & Powell, E. (1982). Dominance cues in nonverbal behavior. *Social Psychology Quarterly*, *45*, 114–120.

Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *2*, 420–428.

Sillars, A.L. (1980). Attributions and communication in roommate conflicts. *Communication Monographs*, *47*, 180–200.

Sillars, A.L., Coletti, S.F., Parry, D., & Rogers, M.A. (1982). Coding verbal conflict tactics: Nonverbal and perceptual correlates of the "Avoidance-Distributive-Integrative" distinction. *Human Communication Research*, *9*, 83–95.

Solomon, D.H., & Samp, J.A. (1998). Power and problem appraisal: Perceptual foundations of the chilling effect in dating relationships. *Journal of Social and Personal Relationships*, *15*, 191–209.

Sprecher, S. (2001). Equity and social exchange in dating couples: Associations with satisfaction, commitment, and stability. *Journal of Marriage and the Family*, *63*, 599–613.

Sypher, B.D., & Sypher, H.E. (1984). Seeing ourselves as others see us: Convergence and divergence in assessments of communication behaviour. *Communication Research*, *11*, 97–115.

Thibaut, J.W., & Kelley, H.H. (1959). *The social psychology of groups*. New York: Wiley.

Utne, M., Hatfield, E., Traupmann, J., & Greenberger, D. (1984). Equity, marital satisfaction, and stability. *Journal of Social and Personal Relationships, 1*, 323–332.

van Dijke, M., & Poppe, M. (2003). Preferred changes in power differences: Effects of social comparison in equal and unequal power relations. *Journal of Experimental Social Psychology, 39*(2), 149–160.

Walster, E., Berscheid, E., & Walster, G.W. (1973). New directions in equity research. *Journal of Personality and Social Psychology, 25*(2), 151–176.

Walster, E., Traupmann, J., & Walster, G.W. (1978). Equity and extramarital sexuality. *Archives of Sexual Behavior, 7*(2), 127–142.