Spring 2006

Social hierarchy in leaderless groups

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Rhetoric and Communication Department Honors Thesis
Fall 2005 – Spring 2006

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The idea of social rank-ordering (indicative of status, dominance, or potential leadership capacity) was first extensively researched by Robert F. Bales in the early 1950's. Bales shaped group communication around the principle that groups inevitably evolve into unequal power structures and develop a hierarchy of participation and status (Bales et. al, 1951). This hierarchy is evident in many different areas of life, such as social interactions, socio-economic status, and task-related rank, and the idea of dominance is established early on in life. From 1961, when Gellert observed dyads of 4- to 6-year-old children and found that a stable pattern of dominance and submission was established, to 2005 when Jose Munez's research asserted that social hierarchies exist even in preschoolers' playgroups, research has consistently identified a natural human tendency toward the hierarchisation beginning in our earlier social interactions.

Dominance hierarchies are not only researched with humans, they are heavily studied in the animal kingdom as a field of biological and behavioral research. Research on primates (Abbott et.al., 2003, Sapolsky, 2005) shows that a complex social dominance hierarchy is established early and maintained through group behavior and "rank within [the hierarchy] can greatly influence the quality of life of an animal" (Sapolsky, 2005, p. 648). Animals claim status in very obvious ways: dominant chimps chatter loudly, dominant wolves bare their teeth and growl, and dominant lionesses swat subordinates with their paws. Dominance is desirable because the alpha animal enjoys greater access to the group's resources, and these "pecking orders" limit conflict and increase both individual and group survival (Mazur, 1973).

My interest in group hierarchy began through my work on female aggression, primarily in middle-school aged girls. I hypothesized that one of the underlying causes of aggression in middle school females is this struggle for power and dominance between competing individuals and social groups. In Turiel's 2005 research on resistance and subversion, he asserts that social resistance and subversion are

more common in those in positions of lesser power in social hierarchies (this includes minorities such as women).

I. Small Group Research: Dominance is Always Present

Motivation and the Social Stratification Theory

Why do humans even enter into groups at all? Social motivation is the most common answer. Grounded in previous research, Forsyth (1999) outlines four main reasons why individuals are socially motivated towards groups: the need for affiliation, the need for intimacy, the need for power, and FIRO – the Fundamental Interpersonal Relations Orientation Theory. Schutz's (1966) FIRO theory explains that humans are oriented toward inclusion (establishing and maintaining relations with others), intimacy (affection from others), and control (power over others). Similarly, Maslow's (1943) hierarchy of needs theory asserts that once physiological and safety needs are met, humans pursue love and belonging in a social setting. All of these explanations necessitate humans surrounding themselves with the presence of others.

In these group settings, there is a clear positive bias towards being at the top of any given social hierarchy. As Bormann suggests, humans compete for positions in social hierarchy based on a desire for increased social and self-esteem (1990). Building on this favorable bias towards high social status, Ellis (2001) proposes a theory suggesting that human females, like females of other animal species, "have evolved mating preferences biased toward males who are competent in provisioning resources" (Ellis, 2001, p. 300). A result of this is that females are biased towards males "who attain or at least strive for high *social* status, and who advertise and even exaggerate whatever status they already have achieved" (Ellis, 2001, pp.302-303).

How do we act in groups?

Theories on small group leadership cannot be discussed without the work of Ernest Bormann. A strong advocate of group roles and of a group hierarchy dependent on those roles, Bormann advocates the idea that "individuals change their personalities in important ways depending on the roles they play in a

particular group" (Bormann, 1990). These roles can comprise many different things. Dimock (1987) describes two different categories of group member roles: task roles (defining problems, seeking or giving information, seeking or giving opinions, and testing feasibility) and maintenance roles (coordinating, mediating-harmonizing, orienting-facilitating, supporting-encouraging, and following). Group members can also play non-cohesive, individual roles, such as blocking, delaying, and digressing (Dimock, 1987).

Group cohesiveness is dependent on members' understanding of these roles and rules, and "understanding of how members develop their relationships in a sort of conformity hierarchy is essential to understanding the group process, and appreciation of this aspect of group behavior is imperative to survival in a group context" (Phillips & Erickson, 1970, p.83). Accepting the conferred roles and statuses allocated, adopting the group's communication system, deferring to the leader, associating with group goals, and even behaving similar to other group members are all means of conformity to the group (Phillips & Erickson, 1970). However, conformity isn't always the goal for all members. Because hierarchies and ranks develop within groups, sometimes weaknesses or gaps create situations where members can upset the current roles, "which in turn may result in disruptive factions, or in the emergence of highly talented new leaders" (Phillips & Erickson, 1970, p.112).

Ethnocentrism: Social Identity Theory and Social Dominance Theory

Competition, dominance, and hierarchy do not simply occur *within* groups, but also *between* groups. By definition, ingroups, or socially supported cliques, compete for dominance with outgroups, viewed as subordinate and contemptibly different. Social scientists have long agreed that society both values and favors ingroups over outgroups, a theory known as *ethnocentrism* (Sumner, 1906) and later described through social identity theory.

Social identity theory (SIT) was developed by Tajfel and Turner in the late 1970's as a social-psychological theory of intergroup relations and group processes. They devised a series of experiments where the intergroup situation was minimal (participants were told that they belonged to one of two groups that they had never heard of before, with no history of interaction or stereotypical beliefs about) *and* where the assumed preconditions for prejudice and discrimination were lacking (group formation and

zero-sum structure). Participants were not told who was a member of which group and were asked to allocate minimal resources (pennies or points) to others but could not allocate points to themselves. Tajfel found that even in this "minimal group" situation, discrimination and bias occurred. Most surprising was that when given the choice between (a) allocating points where both groups benefit but the "other" group is slightly favored, or (b) allocating points to the "in" group resulting in absolute loss to both groups, strategy (b) was favored. (Sidanius, 1999). Serino extended this research to include personal identity. She asserts that "when considering self/others comparisons performed in a concrete social context, it seems that (a) even personal identity is socially defined, depending on individuals' and groups' place in a given social hierarchy, and that (b) even categorical information can be processed in a 'personalized' manner" (Serino, 1998, p.37).

While ethnocentrism occurs in most group situations, it doesn't play a large role in determining group hierarchy. The continuum model described in Tajfel's SIT theory is not always representative of reality. Turner (2003), an initial proponent of Tajfel's social dominance theory work has recently been critical of SIT in favor of Social Dominance Theory. Social dominance theory "suggests that prejudice legitimizes and maintains the existing social hierarchy" (Quist, 2002, p.291). Furthermore, dominants themselves help maintain that hierarchy; "because they live under qualitatively different social circumstances, social dominance theory (SDT) predicts that dominants behave in ways that are more beneficial to themselves than subordinates do "(Sidanius, 1999, p. 227). However, according to Sidanius, "in-group favoritism in SIT is sufficient to produce discrimination and even group conflict, [but] it is not sufficient to produce group hierarchy" (Sidanius, 1999, p. 227). *Where, then, do our ideas of group hierarchy come from and how is an individual's status determined?*

Status Organizing Processes: Expectation States Theory and Status Construction Theory

To answer the above questions, we turn to theories of status organizing processes. This category of group dominance interaction embodies two main theories to explain how groups form initial status constructions and how those status characteristics acquire value: status theory and status construction theory.

Expectation States theory explains the formation of power and prestige orders. Developed by Berger in the late 1970's and 1980's, expectation states theory (EST) asserts that the *external characteristics* of individuals – such as gender, race, occupation, or educational attainment – determine what is known as the "observable power and prestige order" in a group (Skvoretz & Fararo, 1996; Webster & Foschi, 1988). Characteristics may be specific - referring to the individual's abilities in a specific situation (such as knowledge on the legal system or math skills), or diffuse - characteristics not restricted to a specific task (such as gender, race, and beauty), but analyzing which characteristics count as status characteristics depends on the cultural definitions in a society. The resulting power and prestige order is largely determinative of a group's treatment of its members, because "individuals who are high on status-valued external characteristics, compared with those who are low, are more likely (1) to have chances to perform, (2) to initiate problem-solving performances, (3) to have their performances positively evaluated, and (4) are less likely to be influenced when there are disagreements" (Berger, 1998, p.386). While this theory is supported by research, it only applies to situations where group members are both task-focused (the primary purpose in meeting is to solve a problem) and collectively oriented (the problem belongs to the group in its entirety), such as juries, work committees, and athletic teams.

In 1991, Ridgeway built upon this work and presented a theory of social construction of status value to try and explain *how* status characteristics (particularly gender) acquire status value. Status construction theory argues that "structurally constrained interaction plays a crucial role in the construction and spread of status value beliefs" (Ridgeway 1991, p.16). Development of the theory is two-fold; first, individuals interact in interpersonal situations where their nominal and yet-unevaluated characteristics (gender, race, etc.) are mixed with their "exchangeable resources" (things or traits valued in society that can be transferred such as salary, etc.) and incorrectly linked together in the minds of other group members trying to make sense of the experience. Secondly, these ideas on dominance and inferiority based on traits are carried out in group interaction situations.

Ridgeway and Balkwell (1997) further explored status construction theory and how consensual beliefs about an individual's status value are created in a society. They found that group members let

general (diffuse) status characteristics influence their expectations even when members know that those characteristics have no relevance to the given task situation. This influence is created because "small group processes are crucial for translating macrostructural constraints on actors into widely accepted cultural beliefs" (Ridgeway & Balkwell, 1997, p.18). Evidence of this theory shows that differences in pay (salary and wages) can create corresponding differences in subjective ability assessments relative to others (Stewart & Moore, 1992). Furthermore, in dyad interactions, the partner who was paid more was also more resistant to influence from the partner paid less (Stewart & Moore, 1992).

Obviously, this status allocation is often unfair, and more often unfairly affects minorities. Research shows that gender "activates" both conscience and unconscious assumptions about generalized competence and social worth (Balkwell & Berger, 1996). Even when performing at the same level, women are often held to higher expectation standards simply to remain "on par" with men (Foschi 1996). In most situations where status and power are allocated this way, minorities suffer; women and blacks report more feelings of dissatisfaction about how this status is allocated in groups than most men or whites (Cohen 1982).

Rank Ordering and First Impressions

The above theories all assume that rapid rank-ordering may occur on the basis of prior experience outside of the experimental or group situation. With this information, it is safe to assume that it may be possible to rank order a group of individuals from a first-glance impression because of cognitive construction of prior experience and affective processes. Kalma (1991) found that stable hierarchies form from the very beginning of verbal interactions, and that they are often formed prior to verbal interaction. Studies support the idea that rapid rank-ordering occurs because individuals are "motivated to reduce uncertainty in order to enhance their control over a situation" (Kalma, 1991, p.73). To do this, individuals make an assessment on the basis of whatever information or cues they have available, both cognitive and affective (Rosa & Mazur, 1979). Furthermore, Kalma asserts that any cognitive activity that occurred within group discussions (post first-impression) did not change the first-glance impressions (1991)

II. Dominance Theory: Deconstructing the Motives and Means

When isolated from its group context, dominance can be examined critically. Buss (1986) breaks dominance down into four different categories: aggression, superiority, assertiveness, and leadership. Buss further divides these categories based on those that require conflict (aggression, superiority, and assertiveness) and those that do not (leadership).

While the term conflict has negative connotations, dominance in conflict can be both angry – resulting in only hurt – and instrumental. Buss distinguishes between these two types of conflict by labeling instrumental aggressors as motivated by an economic or an achievement reward instead of simply being rewarded by the pain and suffering of their victims (1986). In contrast, dominance sought through *leadership* does not require conflict at all. Whether in conflict or out, aggressiveness, superiority (competitiveness), and assertiveness, as well as leadership, are all elements of power.

Dominance as Power

Some of the first classification systems of power were offered by Lasswell and Kaplan (1950). They introduced eight different means of attaining power and eight resulting powers: power attains political power, respect attains councillorship, rectitude attains mentorship, affection attains personal influence, well-being attains violence, wealth attains economic power, skill attains expertness, and enlightenment attains advisory influence. Nearly ten years later, French and Raven (1959) expanded on this theory by reducing power into only five types: reward, coercion, expert, legitimate, and referent.

Furthermore, dominance and power seem integral parts of the human personality, however, not every person desires to exhibit power in the same ways. In *Power*, D.H. Wrong (1979) distinguishes between power *to* and power *over* with the clarification: "Clearly, everyone seeks to acquire the power to satisfy their wants and achieve their goals, but this is implied by the very concepts of 'want' and 'goal' themselves. It does not, however, follow from this truism that everyone seeks power over other people, that is, strives to produce intended effects on the actions and attitudes of others" (Wrong, 1979, pp. 84). A leader, then, can be distinguished as actively seeking power over others.

What Makes a Leader?

With research supporting the notion that members in groups play different roles, and also that competition for dominant, or leadership, positions is inevitable, we should now explore what "cognitive" and "affective" criteria group members use to choose group leaders. Most texts are extremely reluctant to describe exactly what they deem to be the qualities of leadership, or when they do, their definitions appear ambiguous or even seemingly fictitious. Many theorists are highly concerned with specific performance-based task skills. Buss asserts that the necessary traits of leadership are "assumed to be" initiative, decisiveness, and responsibility. Forsyth (1999) labels task-oriented leaders as: active, determined, influential, and in command. Robert (1991), author of *The Essence of Leadership* boils leadership down into "three fundamental skills" that include: strategic thinking (formulating and communicating a vision), innovative thinking (creativity and promoting innovation in others), and rational decision making. Other theorists focus more on skills to carry leaders though any situation rather than to perform well in specific ones. Forsyth (1999) labels "people skills" leaders as: caring, interested, truthful, and open. Dimock, creator of the Dimock Leadership Inventory (1987), measures leadership though the personality traits of flexibility, open-mindedness, and interdependence. Goleman (2001) chooses only one trait: emotional intelligence[1], which he further breaks down into: self-awareness, self-regulation, motivation, empathy, and social skill.

Many leadership theorists simply rely on the Leader Categorization Theory, a model that "assumes that group members rely on their *implicit theories of leadership* to *intuitively* classify other group members as leaders or non-leaders" (Forsyth, 1999, p. 213). This theory is similar to Kalma's assertions that group members form impressions often based on affective (gut-feeling) processes alone (1991).

How Leaders Emerge

Once a basic idea of what leadership is has been established, it is important to understand how leaders emerge in group settings. In his research on group hierarchy, Bormann brings into discussion the idea that group members jockey for leadership positions based on their *esteem* needs. Because of their

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[1] Goleman believes that "the most effective leaders are alike in one crucial way: they all have a high degree of what has come to be known as emotional intelligence" (Goleman, 2001, p.3).

juxtaposition, both internal esteem rewards and rankings of group status are awarded unequally, and "as a result, people with high esteem needs contend for the top positions and, in this struggle, come into conflict and disagreements" (Bormann, 1990).

His ideas on leadership emergence are based on a "residual" system. Bormann believes that any given group does not select their leader, but instead undergoes a process of eliminating the people perceived as unqualified or unfit for leadership. His research shows that "the one outstanding impression that people report having in early meetings of [leaderless group discussion] is that there is difficulty in estimating who will emerge as leader, but little disagreement about who will *not* be the leader" (Bormann, 1990). The emergence of these roles occurs after only a few minutes, and case studies show that roughly half of the members are eliminated as potential leaders "on the basis of very crude and limited evidence" (Bormann, 1990).

Some of that "very crude" evidence may be based on physical characteristics. Height, weight, attractiveness, and athleticism have all been correlated with leadership and dominance. Stogdill (1974) found that leaders are typically both taller and heavier. Historically, taller presidential candidates have a better record of winning elections. In a job interview setting, tall people are typically favored over short people (Guerro, DeVito, & Hecht, 1999). In the late 1970's, Savin-Williams studied dominance in young coed teens (12- to 14-year-olds) in a summer camp; in describing the uppermost extreme of the dominance hierarchy, Savin-Williams wrote: "the most dominant child has been characterized as being older, taller, heavier, tougher, and healthier and more popular, athletic, daring, and attractive to the other group members" (Savin-Williams, 1979, p. 933). Even up until the early 1980's Canadian police units had a minimum height and weight requirement with the ideology that larger people commanded more respect (Dimock, 1987).

Sheppard and Strathman (1989) studied how assessments of power or suitability are often made on the basis of attractiveness. As "the most visible and most easily accessible trait of a person," it's an obvious basis for judgment (Patzer, 1985, p. 92). Generally, the more physically attractive a person is, the more positively the person is received, the more favorably the person is responded to, and the more

successful is the person's personal and professional life (Patzer, 1985). Individuals rated as attractive have been found to get better grades in school, are more valued as both friends and lovers, and are preferred as coworkers (Burgoon, Buller, & Woodall, 1995), and individuals of higher physical attractiveness are "assumed to possess more positive and favorable characteristics than their counterparts of lower physical attractiveness" (Patzer, 1985, p. 94). Though many components of attractiveness are dependent on the rater, recent research is showing that many definitions are becoming universal (Brody, 1994). Furthermore, contrary to the popular belief that "beauty is in the eye of the beholder," research shows that people agree on the level of physical attractiveness of a person" (Patzer, 1985, p. 97). These "universal" definitions of attractiveness for females include: oval face shape, clear complexion, large and far-set eyes, long eyelashes, small and slim nose, high cheek bones, a gentle, medium-sized mouth, and non-protruding, small-lobed ears (Patzer, 1985).

Age, race, and gender are also potential limiting factors based on physical characteristics. Gender has huge implications for both limiting and enabling leadership. Men are five times more likely to enact leadership behaviors than women in small, mixed-sex leaderless groups (Forsyth, 1999), and thus are much more likely to emerge as leaders (Eagly, 1987). Males exhibit more status and power than females in gender-neutral task situations, and this is only enhanced in task situations that are gender-biased towards males (Balkwell & Berger, 1996). The lone man in an often-female group often becomes the leader, but lone females rarely take the same control in all-male groups (Crocker & McGraw, 1984). This tendency for men to dominate women even occurs when both men and women are deemed "androgynous" (Porter, Geis, Cooper, & Newman, 1985), when group members were personally committed to equality, and when the women in the group were labeled as more dispositionally dominant (Nyquist & Spence, 1986).

Expanding beyond physical characteristics, intelligence level, personality, and social intelligence also factor in to leadership competency. Intelligence level has been found be correlated with leadership. Leaders of small groups typically score higher than average on standard intelligence tests, make superior judgments with greater decisiveness, are more knowledgeable, and speak more fluently than their

followers (Stodgill, 1974). It is important to note, however, that leaders do not appear to exceed their followers in intelligence by a wide margin because it is important that they not appear too superior (Simonten, 1985).

The most extensive and widely-recognized studies on personality have been conducted by Digman (1990) under the "Big 5" personality survey. Digman compartmentalized personality into five distinct categories: extraversion, agreeableness, conscientiousness, stability, and intelligence. Leaders tend to have higher scores on all of these five categories, and especially with extraversion, conscientiousness, and intelligence (Barrick & Mount, 1994). Another important component of personality is the element of *social intelligence*, "the ability to perceive the needs and goals of group members and then adjust to meet these varying situational demands," in which leaders also tend to score higher in (Forsyth, 1999, p.166).

Finally, expertise and participation comprise the last categories of traits and aspects of a leader. Technical, task-related skills were important leader traits as viewed by group members in their leadership choice decisions (Stogdill, 1974). Foddy and Smithson (1996) used inference of ability (absolute performance, relative performance, and degree of difference in comparison with another) to test acceptance of influence in a perceptual task dyad. They found that participants deferred to their partners if those partners seemed more competent in any of the three skill areas. Groups are more accepting of leaders who have demonstrated prior task ability (Goldman & Fraas, 1965), and groups are more willing to follow directions of a person perceived to be task-competent (Hollander, 1965). Gerber (1996) studied police team dyads and found that more experienced officers were seen as having higher status and were more likely to be characterized with a dominating disposition. Supporting Bormann's theories on leadership emergence, high task ability may facilitate leadership, but low task-ability is even more powerful in disqualifying it (Palmer, 1962). It is also important to note that "groups vary substantially in their ability to recognize member expertise" (Littlepage, Glenn, & Mueller, 1997, p.326), but that "group experience led to more accurate recognition of expertise" (Littlepage, Robinson, & Reddington, 1997, p. 136)

Simple physical participation is a huge signifier of both leadership and dominance. Research supports that often, the person who simply talks the most is the most likely to emerge as leader (Forsyth, 1999). Compared to the other categories listed above, the correlation between leadership emergence and most personal characteristics usually averages in the low .20's, but the correlation between participation rate and leadership spikes from .61 to .72 (Littlepage & Mueller, 1997). Unexpectedly, it doesn't appear to matter *what* is said, just how much. While quality of verbal interaction was found to predict "perceived differences on competence, influence, and contribution to the group's goal," it was only quantity of verbal interaction that predicted differences in leadership ability (Sorrentino & Boutillier, 1975, p.404). For determining leaders from participation alone, quantity overpowers quality, however, "a talkative expert tends to be more influential because talking allows expertise to be recognized by other group members" (Littlepage & Mueller, 1997, p. 326).

III. Group Dominance Actualized: Enactment of the Theories through Communication

What other "crude evidence" do we have to go on as evaluators of social hierarchy and potential leadership in groups? In the same way that dominant animals assert their status through physical signifiers, humans often use "socially acceptable" physical cues to establish dominance. High status-seekers are more likely to tell others what they should do, to interpret others' statements, to confirm or dispute others' viewpoints, and to summarize and reflect on the discussion than low status-seekers (Forsyth, 1999). Humans further establish dominance with a "firm handshake, an unwavering gaze, a relaxed but poised posture, and an unsmiling countenance" (Leffler, Gillespie, & Conaty, 1982, p. 154). Both verbal and nonverbal communicative signifiers of dominance and acquiescence are used by humans.

Verbal Communication

The strength of individuals' own personal advocacy and persuasion is often a key indicator of dominance. For example, "people who want others to respect them often initiate conversations and shift the discussion to their own areas of competence" (Forsyth, 1999, p.121). During conversations, high-status participants generally both talked more and attempted to interrupt more (Leffler, Gillespie, & Conaty, 1982)

An important component of verbal dominance behavior is paralanguage, the vocal but nonverbal aspect of language that encompasses such topics as rate, pitch, and volume. Research found that listeners were able to accurately judge the status (as high, middle, or low) of speakers from only a 60-second voice sample, usually within the first 15 seconds of the sample. Those ranked as high status were also rated as being of higher credibility than those rated of middle or low status (Argyle, 1988, Trager, 1958, 1961). Furthermore, most listeners agree with each other about the personality of a speaker even if the judgments are wrong (Devito, 1999). Rate of speech typically conveys persuasion – faster talkers are evaluated as being more persuasive, more intelligent, more competent, and more dominant than slower talkers, whether the speed of the speaker is natural or electronically altered (Buller, LePoire, Aure, & Eloy, 1992; Maclachlan, 1979).

Nonverbal Communication

A major area of research in the area of nonverbal communication focuses on eye contact. The average person maintains a higher level of eye contact while listening and a lower level while speaking, but this pattern is reversed when speakers want to assert dominance (Exline, Ellyson, & Long, 1992). Lowered eyebrows are another signifier of nonverbal dominance, both in photographs and even in cartoons (Keating, Mazur, & Segall, 1977). Allan Mazur's research extends this as far as to demonstrate that eye contact and what he labels as "eyebrow signaling" can "manipulate another person's physiology by altering stare behavior during mutual gaze" (Mazur, 1984, p. 127). In a different study, Mazur shows that engagement in or response to mutual gaze (essentially, staring) is indicative of that person's degree of influence and dominance because subjects who were more comfortable during mutual gaze scored higher on a dominance index in subsequent interactions (Mazur, 1984).

Another important area of nonverbal behavior is touch. Touch can be used to communicate many things including such positive feelings as composure, immediacy, affection, trust, similarity, and informality (Burgoon, 1991). Touch can also be used to indicate dominance, with research suggesting higher-status more-dominant people usually initiate touch (Henley, 1977). Touch and barriers of physical space are important indicators of status in both coed and same-sex groups. Status consistently structures

nonverbal behavior; generally high-status participants (teachers) claimed more direct body space and "symbolically intruded on upon their partners noticeably more" by "touching and pointing both to their partner and to their partner's possessions" than their lower status (student) partners (Leffler, Gillespie, & Conaty, 1982, p. 159). Even when these status roles were simply flipped within the same dyad (teachers became students and students became teachers), the relationship between status and nonverbal behavior held true.

Posture, stance, and expression also can signify dominance or submission. Schwarts, Tesser, and Powell investigated four common nonverbal signifiers of social dominance: lateral opposition, precedence, posture (both sitting and standing), and elevation. They found that "elevation accounts for about two-thirds of the explained variation in dominance attribution," followed by precedence, posture, and (weakest) lateral opposition (Schwartz, 1982). Even appearance can be a nonverbal signifier of dominance. Mazur and Keating (1984) studied facial appearance and military rank in the West Point Class of 1950, and found a substantial correlation, the strongest being perceptions of "facial dominance" (how dominant or submissive a cadet appears based on facial structure and features) on senior-year officer selection.

This literature survey outlines the general theories of dominance, hierarchisation, and status in groups. Through this survey, we can understand how leaders emerge, how they are regarded and chosen (often through a process of elimination) by group members, and on what characteristics they are judged. Furthermore, this research explains motivations to enter into groups, roles members take on in groups, and the dominance theories and rank-ordering systems that occur in these groups. This should serve as a solid foundation for a study on dominance, group leadership, and rank-ordering in ad-hoc task groups. My subsequent research is intended to fill gaps here by studying if members' perceptions of dominance and hierarchisation in ad-hoc groups are consistent with other participants perceptions (both group insiders and group outsiders), and also by further exploring the element of time to investigate how quickly these impressions are formed.

In light of this research, a set of research questions were established to further explore the issues of social hierarchy in groups. These research questions are:

1. How consistently do group members assess social hierarchy and do different members of groups perceive the same social hierarchy?

2. With what traits does social hierarchy most strongly correlate with?

To attempt to answer these questions, an experimental study was created that involved participants in informal and task-related interactions, assessing their perceptions of one another in relation to social hierarchy variables.

Method

Participants

Participants were 30 volunteer undergraduate students at the University of Richmond enrolled in entry-level Rhetoric and Communication classes. These participants comprised 8 insider groups with between 3 and 5 non-overlapping members each.

Participants were recruited through email communication (see Addendums E and F for a script of the emails requesting participation). No students were recruited from Dr. Scott Johnson's classes (the supervising faculty member) so that participants did not in any way feel coerced into participating.

Because of varying experiment conditions (one group with only 2 members that were also roommates) and too few participants, two experiment groups were excluded from data analysis. 6 groups were included in the final analysis, 3 with 5 members each, 2 with 4 members, and 1 with 3 members.

Procedure and Analysis

Overview

Assessing the perceptions of social hierarchy was done by assembling groups of undergraduate students who interacted in an unguided fashion for varying amounts of time. Length of time was varied toward determining how quickly perceptions of social hierarchy were established. Participants rated one

another based on their perceptions of social hierarchy. Groups then completed a task, after which participants again rated one another on social hierarchy.

Experiment

Using undergraduate entry-level Rhetoric and Communication Studies classes as forums for acquiring participants, students were sent an email requesting their participation in a study about group dynamics. Students who agreed to participate were asked to meet at a specific date and time at a lab on campus.

Upon arrival, participants were directed to separate classrooms (intended to limit group interaction before the start of the experiment) and asked to complete a consent form (see Addendum A). The consent form described the study, mentioned that participants would be video-taped and photographed, gave information about the researcher, the dissemination of data, and risk to the participants; participants were asked to sign indicating that they had read all experiment information and gave their consent to participate.

After completion of the participant consent form, group members were directed to another room. Once inside, they were seated in a circle of chairs and instructed to wait a few moments for the group task to begin. After either 4 minutes, 6 minutes, or 8 minutes (depending on which group) of informal and unguided interaction, the researcher entered the room and handed out Survey I (see Addendum B). Physical barriers were implemented (tri-fold poster board) to separate participants, prevent participants from viewing others' responses, and give each participant a sense of privacy. The researcher also remained present to ensure confidentiality. Survey I asked for participants to speculate on their perceptions of group hierarchy and to try to establish a trait-dependent rank-ordering of the group members based on the previous 4, 6, or 8 minutes of informal interaction. Pictures taken at the start of the experiment, instead of group member names, were used to help participants identify their fellow group members. No names were used anywhere on the survey, and participants were given randomly-assigned numbers used for rating and data entry purposes to help ensure anonymity. Participants had about 10 minutes to complete this survey.

Participants were then instructed to attempt to complete a discussion-based task as a group. First, the fictional case study "Lost on the Moon: NASA Survival" was read aloud to all participants (see Addendum C). The group then came together as a whole to try and reach a consensus on the rank ordering of the items. Participants had 8 minutes total to execute this task. The purpose of this task was solely to stimulate discussion and allow participants to engage in a group activity.

After completing the discussion-based task, participants again filled out Survey I (Addendum B), this time based on interaction during the group discussion. Lastly, participants completed Survey II (Addendum D), a series of questions devised by the researcher on the participant's history of group participation and past experience with group dynamics and social hierarchy, and about ideas on the qualities and attributes of both leaders and followers. Once again, physical barriers were implemented and the researcher remained present to ensure the confidentiality of participants' responses.

Completion of Survey II signified the end of the experiment for participants. "Answers" to the fictional case study were handed out to satisfy curiosity and participants were debriefed on the purpose of the experiment. The experiment took participants on average 45 minutes to complete: 25 minutes of questionnaires and surveys, a maximum of 16 minutes of group participation (either 4, 6, or 8 minutes of pre-task interaction and 8 minutes of group discussion task participation), and additional time for explanations, questions, and transitions.

Results

Research data were ordinal, and because of that analysis was limited to nonparametric statistics. Spearman's Rho takes into account issues of ordinal data and was used to determine correlations that helped answer most research questions.

The first research question was aimed at the inter-rater reliability of all members in a specific group. Essentially, this would determine whether Rater 1's rankings were correlated with Raters 2, 3, 4, and 5 (etc...), and assess the degree to which group members had similar perceptions of the group hierarchy. To do this, each participant's scores for a specific variable were summed to create individual variable total scores (in a 5-member group, these ranged from 5 [rating of all 1's] to 25 [rating of all 5's]).

Each rater's individual correlations were compared with every other rater and analyzed for significant correlations. Within each group, rankings were separated by time period, using the "first impression" informal interaction ratings as A, and the post-task ratings as B.

A wide range in number of significant inter-rater correlations among group members were evident – as low as 1 significant correlation out of 8 in one group and as high as 9 significant correlations out of 10 in another. Time A (informal interaction) groups showed the following correlations: 4/10 (Group 1), 9/10 (Group 2), 2/8 (Group 3), 1/6 (Group 4), 1/8 (Group 5), and 4/10 (Group 6). Correlations for time B (post-task) groups were reported as: 2/10 (Group 1), 9/10 (Group 2), 3/8 (Group 3), 2/6 (Group 4), 1/8 (Group 5), and 2/10 (Group 6).

The second research question led me to explore variables related to social hierarchy as identified in previous research. I wanted to determine what variables were most closely associated with the term "social status" as perceived by group members. Data were analyzed horizontally for correlations between the 10 social hierarchy variables using the aggregate rank of each participant to determine the variables that were most closely correlated. Again data were separated within groups to before the task and after the task.

In all six groups, there were variables showing strong correlations. Because there were a maximum of 5 ratings per group (as group membership was limited to 5), to achieve significance very high correlations must be identified (in this study, only correlations of 0.895 and higher were found to be significant at .04 or lower). Lists of correlated data within each group were compiled and ultimately only the correlations that were recurring in multiple groups were included in this report (see Addendum E).

Between all 6 groups, the most significant pre-task correlations, evident in 4/6 or 5/6 groups, were the relationships between social status, coolness-popularity, and attractiveness. In half of all groups, leadership was added to this mix. Coolness to social status was the strongest pre-task correlation, the only correlation evidenced in 5 out of the 6 groups. In 4 out of these 5 groups, this correlation showed significance levels of $p < 0.00$, and in the other group of $p < 0.037$.

The strongest post-task correlations, evidenced in 4/6 or 5/6 groups, were between leadership, assertiveness, and competence, showing significance levels of $p < 0.04$ or less. Also highly correlated were the relationships between intelligence and competence and between coolness and social status each in 4 out of 6 groups.

Group 4 (4 minutes, 3 people) evidenced the largest number of correlations of any group, 34, followed by group 5 (4 minutes, 4 people) at 30 correlations, group 3 (6 minutes, 4 people) with 23 correlations, groups 1 (8 minutes, 5 people) and 6 (6 minutes, 5 people) each with 20 correlations, and finally by group 2 (8 minutes, 5 people), with 14 correlations.

Discussion

The two questions this research sought to answer were, first: Do different members of groups perceive the same social hierarchy?, and second, With what traits does social hierarchy most strongly correlate?

The first research question asked: How consistently do group members assess social hierarchy and do different members of groups perceive the same social hierarchy? This question attempted to determine the inter-rater reliability of all members in a specific group, looking at correlations between raters for a unified "group vision" of the social hierarchy.

Across all groups, inter-rater correlations varied widely. For pre-task times, correlations ranged from 1 out of 8 to 9 out of 10, with an average of 3.7 out of 10. Post-task, correlations also ranged from 1 out of 8 to 9 out of 10, and the average number of correlations only slightly decreased to 3.6 out of 10. This suggests two main points: first, groups varied in their degrees of inter-rater reliability between group members, but mostly showed a small degree of correlation. Secondly, on the whole, inter-rater reliability remained consistent both before the task and after, suggesting that while the group vision of social hierarchy may have changed, the group members remained fairly consistent in their ability to see the same hierarchy.

My second research question explored direct correlations between variables, seeking to answer the question: With what traits does social hierarchy most strongly correlate with?

As I indicated in the results, different variables correlated in different groups, but there were a number of variables that showed consistent correlations in the majority of all experiment groups. The strongest correlations in the first rating set, evident in 4 out of 6 or 5 out of 6 total groups, were the relationships between social status, coolness-popularity, and attractiveness, and in 3 out of 6 cases, with leadership. These correlations suggest that the more attractive a participant was perceived to be, the more likely he/she was perceived as having high social status and a high level of coolness-popularity, and in some cases, high leadership skills.

In the post-task evaluations, social status and coolness-popularity remained strongly correlated, however, attractiveness notably dropped in its significance. What did increase post-task were correlations between leadership, competence, intelligence, and assertiveness.

Post-task evaluations also evidenced interesting inverse correlations. In 2 out of the 6 total cases, similarity was inversely correlated with both intelligence and leadership. This shows that the more likely raters were to rank someone as similar to themselves, the less likely they would rank them as either intelligent or as a leader. The same inverse correlations were found between intelligence and likeableness and between social status and leadership. In 2 out of 6 cases before the task, the more likeable someone was ranked, the less likely they were to be ranked high on social status or leadership.

Both research questions seek to explain the differences evident in pre- to post-task rankings, whether looking solely at if those rankings were shared by other members of the group or looking more specifically at which variables were correlated. In both situations, member composite rankings of social status shifted in pre- to post-task observations suggesting that people create initial assessments that are subject to change with task performance. Social groups that do not have task experience seem to have different variables than those that do jointly undergo a task activity.

These findings evidence both theories referenced as status organizing processes, the Expectation States theory and the Status Construction theory. The group "On the Moon" activity met the requirements of Berger's Expectation States theory by allowing members to be both task-focused as a primary purpose and collectively-oriented. Because of this, Expectation States can be used to explain how group members

were able to reach a certain level of consensus on the group social hierarchy after such a limited period of informal interaction. The differences in specific and diffuse characteristics are an important distinction within Expectation States theory when members use prior experience to help form social hierarchy perceptions, however, both are equally important in formulating those opinions. The ten variables used in this study represent a range of both specific and diffuse characteristics. Post-task, participants had significantly more information on other members' specific characteristics (namely intelligence, assertiveness, competence, and leadership) as well as more time to assess diffuse characteristics (such as social status, attractiveness, coolness/popularity, likeableness, trustworthiness, and similarity to yourself) and were thus potentially able to make more "accurate" perceptions of others' variable rankings. This explanation could be a reason why there was such a dramatic shift in pre-task and post-task rankings. Future research could separate group members into sub-groups by characteristics of external analysis (such as gender, race, age, year in school, etc.) in order to further determine the extent to which Expectation States theory was a part of member perceptions, as well as to better understand which external characteristics factor into status-organizing processes the most.

Secondly, the Status Construction theory is relevant because it provides a possible explanation for how group members chose to rank others in the way that they did. Within status construction theory, both general and diffuse personality characteristics are coupled with member opinions on others' "exchangeable resources" (potentially even variables in the experiment such as whether a member was wearing a sorority t-shirt or whether they received phone calls during the experiment that could be interpreted as evidence of social status) to allow participants to make judgments on the perceived social hierarchy. As confirmed by Ridgeway and Balkwell (1997), group members allow these outside variables to influence their hierarchy decisions even when they know that the influencing characteristics are irrelevant to the given situation. Future research could explore more specifically what "exchangeable resource" variables are utilized in making those status decisions.

These findings also support the conclusions of Kalma (1991) that hierarchies are formed from the very beginning of social interactions and that they can often occur *prior* to verbal interaction. Most

groups engaged in casual discussions during the informal interaction period but frequently this discussion only occurred between a few, and not all, group members. In two groups, no conversation occurred at all until the group task activity. In these situations of little or no verbal interaction, members had to use information outside of direct conversation experience in order to assess other members' on social hierarchy variables. Whether or not participants were required (as in this experiment) to make judgments on social hierarchy, Kalma asserts that rapid rank-ordering occurs because individuals are "motivated to reduce uncertainty in order to enhance their control over a situation."

Closely related to Kalma's work and providing a related perspective on the materialization of social hierarchy is Bormann's Leadership Emergence theory. This emergence theory asserts that leaders are not as much selected by their groups but that non-leaders (those perceived as unqualified for leadership) are gradually eliminated leaving leaders to emerge residually. This theory could be applied to non-leadership variables as well. During this study, those rated lower in rank on one variable typically remained consistently low-ranked on most all other variables. While it was rare that a clear singular top-ranked group member emerged through member ratings, often a clear singular lowest-ranked group member received consistently low participant ratings.

In replication of this experiment, the researcher would most importantly take measures to increase group consistency to achieve a better idea of experimental results. These measures include increasing the number of groups studied from 6 to at least 15, keeping the number of members in each group consistently at 5, and maintaining a consistent mix of "minority" members (including the ratio of men to women, of different races and cultural backgrounds, of class years, and of greeks to non-greeks, etc.).. Replication of this experiment at a larger institution would aid in these measures by both increasing the participant pool and decreasing the likelihood that group members had prior social experience with one another. Lastly, the researcher would more widely broaden the time frame used in the informal interaction period from 4, 6, and 8 minutes to 1, 3, 5, 7, and 9 minutes, and increase the amount of groups representing each time period from 2 to at least 3 or higher.

Overall this study has served as a significant preliminary step in subsequent research on group member communicative behavior in group social hierarchy. Current research shows a movement away from studying social hierarchy in favor of studying leadership emergence trends, but the researcher believes that this study gives merit to the need to further explore social hierarchy and increase understanding on both the motivations and driving forces behind it. Furthermore, research on social hierarchy could be potentially be the key to understanding current social problems, such as both female aggression and lacking self-esteem in today's youth, reasons that also merit extending research on the subject. It is the researcher's hope that this field of study will become an important new area of communication research.

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Addendum A

Informed Consent

Thank you for your interest in this research project. Please read the following information about the study.

The purpose of this study is to learn more about how social groups interact in different situations. Your participation in this project involves being part of a group, engaging in a task as a group participant, and filling out surveys and questionnaires both before and after the experiment. The entire study should last approximately 40 to 60 minutes: about 20 minutes of questionnaires and surveys, 20 minutes of group participation, and additional time for explanations and questions. The surveys and questionnaires will ask you about your own experience with group participation, your thoughts on the dynamics of the group during the task, and about your perceptions of yourself and others in the role of a group participant. They will also ask you to rate yourself and fellow participants on various personal and performance attributes in a structured and unstructured environment.

Video and audio recording is also necessary for the purposes of this experiment. By agreeing to this consent form, you give your consent to be recorded (video and audio) throughout your participation in this study, and for your picture to be used during this research. The video and your photo will be viewed by other research participants. Please note that the highest level of confidentiality will be used with these images and that all materials will be destroyed upon completion of this study.

Your participation in this project is voluntary and you are free to withdraw your consent and discontinue participation in the project at any time without penalty. Specifically, if any of the research questions make you uncomfortable you are free to leave your responses blank or to leave the experiment. Neither your name nor any identifying information is connected in any way to your written responses in this experiment, and results will be reported only in aggregate form. The results from this study will be presented at the Arts and Sciences Student Symposium in April 2006 and in a thesis defense in the spring of 2006. In the presentation of this data, no images or recordings of participants in any form will be used.

The principal investigator is Angie White and she is being supervised by Dr. Scott Johnson. Should you have any questions or concerns you can reach them via contact information at the end of this page. If you have any questions concerning your rights as a research subject, you may contact the Chair of the University of Richmond's Institutional Review Board for the Protection of Research Participants at 289-8417 for information or assistance.

This study requires you to reflect group dynamics and group participation in your life and in the lives of others. If you experience any discomfort or distress during the course of this study, please contact the university's counseling center, CAPS, at 289-8119 or another trusted mental-health professional.

Participant's Consent

The study has been described to me and I understand that my participation is voluntary and that I am free to withdraw my consent and discontinue my participation in the project at any time without penalty. I understand that I will be in a potentially stressful environment caused by rating myself and fellow participants on various personal and performance attributes. I agree to allow my picture to be used during the course of this study and I am aware that video and audio recording may occur at any time during this experiment and shown to other participants. I also understand that the results of the study will be treated in strict confidence and reported only in aggregate form. I understand that if I have any questions or concerns about this experiment, I may pose them to Angie White (837-2828, angie.white@richmond.edu) and Dr. Scott Johnson (287-6698, sjohnson@richmond.edu). Please retain a copy of this consent form so that you will have access to this information after the experiment.

I have read and understand the above information and I consent to participate in this study by signing below.

_____   _____
Signature   Date

_____
Signature of Investigator

Addendum B
Survey I

Group _____   Survey _____
Member Number _____

Please rank-order the group members according to how you
feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Social Status

Highest (shows the most of)   _____

                                         _____

                                         _____

                                         _____

Lowest (shows the least of)   _____

Group _____   Survey _____
Member Number _____

Please rank-order the group members according to how you
feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Leadership

Highest (shows the most of)   _____

                                         _____

                                         _____

                                         _____

Lowest (shows the least of)   _____

Group _____   Survey _____
Member Number _____

Please rank-order the group members according to how you
feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Competence

Highest (shows the most of)   ———

                                     ———

                                     ———

                                     ———

Lowest (shows the least of)   ———

Group ———   Survey ———
Member Number ———

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Intelligence

Highest (shows the most of)   ———

                                     ———

                                     ———

                                     ———

Lowest (shows the least of)   ———

Group ———   Survey ———
Member Number ———

Please rank-order the group members according to how you
feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Assertiveness

Highest (shows the most of)   ———

                                     ———

                                     ———

                                     ———

Lowest (shows the least of)   ———

Group _____ Survey _____
Member Number _____

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Attractiveness

Highest (shows the most of)   _____

                                      _____

                                      _____

                                      _____

Lowest (shows the least of)   _____

Group _____ Survey _____
Member Number _____

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Coolness/Popularity

Highest (shows the most of)   _____

                                      _____

                                      _____

                                      _____

Lowest (shows the least of)   _____

Group _____ Survey _____
Member Number _____

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Trustworthiness

Highest (shows the most of)   _____

_____

_____

_____

Lowest (shows the least of)   _____

Group _____ Survey _____
Member Number _____

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Likeableness

Highest (shows the most of)   _____

_____

_____

_____

Lowest (shows the least of)   _____

Group _____ Survey _____
Member Number _____

Please rank-order the group members according to how
you feel they have so far exhibited the trait or quality listed below.
No Ties please.
Use only one number for each ranking, and please include yourself.

Similarity to Yourself
Highest (shows the most of)   _____

_____

_____

_____

Lowest (shows the least of)   _____

Addendum C

Group Discussion Worksheets
"Lost on the Moon: NASA Survival Case Study"

Case Study: Consider yourself a member of a space-shuttle crew. Your shuttle was originally scheduled to rendezvous with a space station on the lighted surface of the moon. Due to an energy failure, however, it was necessary for you and your crew to crash land some two-hundred miles from the space station. In landing, much of the equipment was damaged beyond use and several of the crew were injured. Fifteen items of equipment were left intact and undamaged after the crash. Since it is necessary for you to reach the space station quickly if you are to survive, only some of the undamaged equipment may be taken on the two-hundred mile trek. You have been given a sheet which lists the fifteen items of equipment that are still usable.

Directions: Your task is to rank order the fifteen items in terms of their importance and utility in ensuring your survival on your journey to the space station. Please rank order the items from 1 – 15 (1 being MOST IMPORTANT and 15 being LEAST IMPORTANT).

RANK   ITEM

Group

_____   Box of wood matches

_____   Food concentrate

_____   50 feet of nylon rope

_____   Parachute silk

_____   Portable heating unit

_____   Two .45 caliber pistols

_____   1 case of dehydrated milk

_____   Two 100-pound tanks of oxygen

_____   Stellar map of moon's constellation

_____   Life raft

_____   Magnetic compass

_____   5 gallons of water

_____   Signal Flares

_____   First-aid kit with injection needles

_____   Solar powered FM receiver-transmitter

Answer Sheet
"Lost on the Moon" Survival Exercise

RANK	ITEM	RATIONALE
15	Box of wood matches	no oxygen
4	Food concentrate	can live for some time without food
6	50 feet of nylon rope	for travel over rough terrain
8	Parachute silk	carrying
13	Portable heating unit	lighted side of moon is hot
11	Two .45 caliber pistols	some use for propulsion
12	1 case of dehydrated milk	needs water to be useful
1	Two 100-pound tanks of oxygen	no air on the moon
3	Stellar map of moon's constellation	needed for navigation
9	Life raft	some value for shelter or carrying
14	Magnetic compass	moon's magnetic field is different from Earth
2	5 gallons of water	you can't live long without water!
10	Signal Flares	no oxygen
7	First-aid kit with injection needles	first-aid kit might be needed, but needles are useless
5	Solar-powered FM rec-transmitter	communication

Addendum E

All-Group Correlations[*]

Pre-Task A: DIRECT

Variable	Correlated With:	Groups with Correlations	Total Groups
Social Status →	Coolness	1, 2, 3, 5, 6	(5)
	Attractiveness	1, 3, 5, 6	(4)
	Leadership	3, 4, 5	(3)
Attractiveness →	Social Status	1, 3, 5, 6	(4)
	Coolness	1, 3, 5, 6	(4)
	Leadership	3, 5	(2)
Coolness →	Attractiveness	1, 3, 5, 6	(4)
	Social Status	1, 2, 3, 5, 6	(5)
	Leadership	3, 5	(2)
Leadership →	Social Status	3, 4, 5	(3)
	Attractiveness	3, 5	(2)
	Coolness	3, 5	(2)
Likeableness →	Trustworthiness	2, 4	(2)
Trustworthiness→	Likeableness	2, 4	(2)
Competence →	Intelligence	2, 4	(2)
Intelligence →	Competence	2, 4	(2)

Pre-Task A: INVERSE

Variable	Correlated With:	Groups with Correlations	Total Groups
Social Status →	Likeableness	4, 5	(2)
Likeableness →	Social Status	4, 5	(2)
	Leadership	4, 5	(2)
Leadership →	Likeableness	4, 5	(2)

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[*] Each variable with correlations is show under its own heading, so there are many correlated variables which overlap