STATUS PROCESSES IN PERMANENT WORK GROUPS

Bernard P. Cohen
Jon Hooper
Xuegang Zhou

Stanford University

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Abstract

This research examines the operation of status processes in teams working on research and development projects in large corporations. It takes a multi-level approach, investigating team, organizational and societal status characteristics. Data are from 2077 respondents, representing 91% of the membership of the 224 teams which were drawn from 30 corporations. Hypotheses based on Status Characteristic Theory are supported; both external (organizational and societal) and internal (team) status characteristics affect team interaction. When team status is controlled, only one external characteristic has a significant effect. Team status is, in turn, significantly affected by each of the external characteristics studied. Gender affects team status even when educational level and seniority are controlled. Findings support the contention that a multi-level conceptualization, rather than either individualistic or institutional formulations, is necessary to represent status processes adequately.

While many researchers have examined the effects of status on the initiation and receipt of interaction, most of our knowledge comes either from the study of ad hoc groups that have a very brief existence or from intensive case studies of more enduring groups (Homans, 1961; Liebow, 1967; Whyte, 1955). Little is known about how status affects interaction in permanent work groups pursuing their ordinary work activities. Are the interaction patterns in these groups similar to those observed in more controlled settings? Do the same status processes noted by the observers of informal interaction in the Park-Hughes-Goffman tradition occur? Do the theoretical predictions tested experimentally by Expectation States researchers apply to established work groups in an organizational setting?

It is not surprising that these questions have not been addressed. Permanent work groups operate in a broader social context and taking this context into account greatly increases the complexity of any explanatory model of the effects of status. Dealing with groups in their organizational environment requires a multi-level approach and we take such an approach in the present study. In order to explain levels of interaction and group status structures in 224 Research and Development (R & D) teams from 30 large corporations, we examine three types of characteristics: 1) Characteristics that reflect position in society; 2) those that reflect position in the larger organization and 3) characteristics that reflect performance in the group. While most of these characteristics may signify abilities required for group task performance, at least one characteristic, gender, seems to operate independently of its task relevance and this will receive special attention later in this report.

Multi-level approaches have not received much attention either in small group or organizational studies. Markovsky (1988) suggests that the investigation of status characteristics is particularly suitable for such an approach; he writes that "because of the explicitness of the theories in the expectation states program, it is possible to determine those elements of a given theory on which macro-level processes are likely to have an impact." (p.351)

Not all writers agree on the need for multi-level conceptualizations to relate larger structures to micro-processes. At one end of the spectrum are perspectives that are heavily individualistic (Weick, 1969; Collins, 1981). Weick, for example, takes the position that organizations do not behave, people do and Collins writes:

> ...the active agents in any sociological explanation must be microsituational. Social patterns, institutions and organizations are only abstractions from the behavior of individuals and summaries of the distribution of different microbehaviors in time and space. These abstractions and summaries do not do anything. (P. 989, emphasis in original.)

In this radical microsociology, which according to Collins, aspires to "study real life interaction in second-by-second detail," the larger structures of society, such as the R & D group or the company of which it is a part, are products of, and contingent on, interactions between individuals. For the investigator, this perspective "implies that

explanations in terras of norms, rules, and role taking should be abandoned..." In the present instance, this view-taken literally-would exclude from consideration what we later call external factors, that is, the impinging social structure in these work groups and the research norms, company rules and status evaluations reflected in that social structure.

At the other end of the spectrum, institutional theorists seem to argue that individual and group behavior are largely reflective of larger institutional structures. Meyer, Boli and Thomas (1987, p.12) state their position quite unequivocally:

> Most social theory takes actors (from individuals to states) and their actions as real, a priori, elements of modern social processes and institutional forms. We see the "existence" and characteristics of actors as socially constructed and highly problematic, and action as the enactment of broad institutional scripts rather than a matter of internally generated and autonomous choice, motivation and purpose.

The implication of this orientation is that "the ontological status of the individual is a social construction..."; strictly following this view in our study would exclude consideration of those factors that arise from the specific experiences of being members of particular teams.

Neither individualists nor institutionalists adhere rigidly to their positions; Collins does not totally rule out macrophenoraena and Meyer et al. do not rule out people. Each, however, treats the other's focus as residual and, in so doing, is able to raise interesting questions about organizational and group phenomena. But it is also clear that strong individualistic or strong institutional orientations mitigate against asking cross-level questions and developing multi-level formulations. In contrast, it is our view that understanding the operation of status processes in permanent teams working in an organizational environment requires a synthesis of macro- and micro- analysis.

In this paper, we will show that the same status processes observed in aci hoc groups occur in permanent work teams in an organizational setting, provided that one takes into account status characteristics that emerge in group interaction and also status characteristics from the external environment. Both characteristics that are clearly relevant to performance and those that are not operate to affect the ordering of interaction within the team. While we relate characteristics of an individual to that individual's position in interaction order, our approach is not equivalent to either an individual or a group level analysis; it is a contextual analysis-the individual in the context of his or her particular team. As Expectation States theories require, the individual's value on status or interaction variables is relative to the other team members, eg., a college graduate is high on educational status in a team composed of college and high school graduates and low in a team

composed of college graduates and Ph.Ds. Furthermore, a given characteristic only operates in those teams where members are differentiated on that characteristic, eg., all-male teams are excluded in examining the effects of gender. Analyzing individuals in team contexts and choosing characteristics that signify societal, organizational and team status are the central features of our multi-level approach.

The Problem

How do status orders govern interaction in groups working on a set of common tasks over a relatively long period of time? Expectation States theorists formulate the generalization that when the members of a group are ranked according to the states of a status characteristic, they will tend to have the same rank in the initiation and receipt of interaction (Berger, Cohen and Zelditch, 1966, 1972). The theory of Status Characteristics and Expectation States provides the conditions under which the generalization should hold and formulates a model of the process by which status organizes interaction. The present study is not a test of this theory; issues of scope (Walker and Cohen, 1985) and issues of extrapolating the theory to groups as large as 34 members where many individuals share the same state of a characteristic preclude regarding this study as a test. Nevertheless, Status Characteristics Theory has guided the planning of the research and the interpretation of the results.

Status Characteristics Theory deals with the operation of status organizing processes, where "a status organizing process is any process in which evaluations of and beliefs about the characteristics of actors become the basis of observable inequalities in face-to-face social interaction." (Berger, Rosenholtz and Zelditch, 1980). A status characteristic is any characteristic of actors around which evaluations and beliefs about the actors come to be organized. Status characteristics can be "diffuse"- actor i is superior, equal or inferior to actor j over a wide range of situations and performances-or "specific"-the status relation is limited to a particular type of situation, task or performance. They may be external to the interaction or may emerge in the course of task interaction. They may be explicitly relevant to the group task or they may become relevant in the course of interaction. Gender, race, and military rank are examples of diffuse characteristics that are typically external to the group interaction. Mathematical ability is a specific status characteristic that is explicitly relevant to solving mathematical problems and may become relevant to a whole range of verbal and non-verbal tasks.

The theory asserts that status characteristics operate in face-to-face groups creating inequalities in interaction. And the theory formulates a set of principles that explains how this takes place: (Berger, et. al, 1966, 1972; Berger, Fisek, Norman and Zelditch, 1977; Humphreys and Berger, 1981)

1) Activation principles: If actors possess different states of one or more status characteristics and the differences are salient, then the beliefs and evaluations associated with states of the status characteristics become operative. Characteristics on which actors are equal that are seen as relevant to the task become salient and their associated beliefs and evaluations become activated.

2) Combining principles: If multiple characteristics become activated in a task situation, they may provide the actors with consistent or inconsistent information; the consistent case is when one actor possesses the positively evaluated states of all salient characteristics and another actor possesses the negatively evaluated states. (As an example, consider a college math major working with a undergraduate education major to solve a math problem.) The inconsistent case occurs when actors each possess both positive states of some, and negative states of other, active status characteristics, (eg., a male clerical worker who is being examined by a female physician.) These principles assert that the actors use all the available status information (rather than using some, for example the consistent information, and rejecting other information), provided that the information is salient. Actors combine this status information to form beliefs and evaluations of themselves and the others with whom they are interacting. But this aggregation of information is governed by an attentuation principle-each new piece of

like-signed (positive or negative) information adds less to the beliefs and evaluations than that previously processed. Combining is not a universal phenomenon, but is assumed to occur because of strong task demands and the collective orientation of the actors.

3) Relevance principles: The beliefs and evaluations associated with these status characteristics are either explicitly relevant to the group task (math ability for solving math problems) or become relevant through a "Burden of Proof" process.ˆ- These principles assert that since interacting on a common and collective task requires actors to estimate the abilities of themselves and others, they will use status information unless there are specific barriers to such use. An important relevance principle involves the idea that "the more direct the linkage (or shorter the path of task relevance) between a possessed differentiating status characteristic and a task outcome, the greater the strength of the bond between them and thus the greater the differentiating effect of that status

For example, through this process, occupational status becomes a basis on which jurors decide who will be a good foreman. The "burden of proof" is on stopping the inferences. If you are personally acquainted with a politically naive Nobel Prize winner, this personal knowledge will be a barrier to the often held belief that such people are experts across the board.

characteristic." (Berger, Fisek, Norman and Zelditch, 1977) We will refer to this as the "path of relevance" principle.

4) Translation principles: Activation, relevance and burden of proof provide actors with information that enables them to define their immediate task situation. On the basis of this information, specific expectations about who has higher levels of required task ability and who has lower are formed for self relative to the other(s) in the interaction. These expectations in turn determine the relative power and prestige order in the group and this power and prestige order manifests itself in the inequalities that are observed in the interaction. Hence the distribution of amount of participation, influence attempts, influence acceptance and evaluations correspond to this order.

It is important to emphasize that Status Characteristic Theory is a situational theory. Which characteristics are status characteristics, which are positively and negatively evaluated states, **and** which level of expectations of task ability is higher or lower are all relative to the given task situation and the actors involved in the interaction. For example, an actor's expectation of high task ability signifies that he/she expects to be better at the task than the other(s) in the situation. This is especially important in connection with the present study-while gender may be a differentiating characteristic in the larger organization, it may not be in a particular team and thus would have no bearing on the interaction inequalities in that team.

We should also note that there are other sources of expectations and interaction behavior besides status characteristics. Formal role designations, e.g., team leader, generate expectations and affect performances in addition to the affects of their status aspects. A leader with low task ability may still have a high interaction rate as a consequence of carrying out the requirements of the role. Moreover, in some types of permanent work groups, the consequences of executing formal roles may completely mask status processes.

An important distinction for the present study is that of external versus internal status characteristics. An external characteristic is one for which social significance is defined prior to and outside of the interaction situation that is the focus of concern. An internal status characteristic is one for which social significance emerges during, or as a result of, the focal interaction situation. In this study, a given R & D team is the interaction situation of concern, so characteristics that society or the larger organization define are external while those that emerge in the team are internal. Gender and seniority are examples of external status characteristics whereas most valuable team member or most helpful technical adviser are examples of internal.

Many hypotheses can be derived from the theory but we will focus on three:

1) Inequalities in interaction among team members will correspond to inequalities on internal status characteristics.

2) Inequalities in interaction among team members will correspond to inequalities on external status characteristics.

3) Inequalities in interaction will be more closely related to inequalities on internal than to inequalities on external status characteristics.

If members of a team are differentiated with respect to a status characteristic, that characteristic will become activated whether it is specific or diffuse, external or internal. Any status characteristic that is activated will either be directly relevant to the group task or will become relevant through the burden of proof process. And, according to the translation principles, team members will form expectations about each other. These expectations determine the relative power and prestige order in the team and this order will manifest itself in interaction inequalities. Hypothesis 3 is based on the path of relevance principle discussed above since internal status characteristics are assumed to have shorter paths of relevance to task outcomes than external. For the present, we do not distinguish between types of external characteristics, since those defined in the larger society do not invariably have longer paths of relevance than those which are defined in the organizational context. In the case of R & D teams, for example, educational level probably has a shorter relevance path than seniority.

Although our hypotheses represent a straightforward application of the theory, it may be that some features of permanent work groups preclude directly applying it. Permanent work groups in their natural environment are not only multi-characteristic situations (which the theory addresses in its combining principles) but they are also multi-task situations. It may be that there is not one stable power and prestige order, but that the order varies with the task. If this is so, then some status characteristics may be more relevant to one task than another and thus make differential contributions to the development of different power and prestige orders. Multiple tasks may affect the way characteristics combine and also how the attenuation principle operates. Furthermore, enduring work groups are typically part of a larger organizational context that imposes constraints on the development of status systems, promoting some developments and inhibiting others. For example, the more important seniority is in an organization, the more likely it is to be an important source of status within the work group. To some degree, there are status processes operating in enduring work groups that are institutionalized in the organization. In some cases, these processes may operate by simply creating a set of external (to the work group) status characteristics whose effects are like those of race, sex, etc., in ad hoc groups. If, for example, a corporation highly rewards people who bring scientific information from academia into the organization, "gatekeepers" (Allen and Cohen, 1969), then a person known as a gatekeeper may have high status in a team even if he/she does not act in that capacity for the team. In other

instances, organizational rules may not create new status characteristics, but may affect status organizing processes by making some characteristics illegitimate bases of status distinctions. (One could interpret Affirmative Action programs as acting in this way.)

Multiple task situations and processes of institutionalization are complications that may operate to hinder the application of Status Characteristic Theory or, on the other hand, may facilitate its application. Clearly, institutionalization creates another class of phenomena; status structures that are based on conformity to organizational norms are very likely to form and endure. If such structures are independent of those based on external or internal status characteristics or if they combine with other structures, their operation may or may not be detectable. If these structures are isolable, then the application of the theory may not be at all problematic. On the other hand, those structures that are illegitimate in the organization are less likely to form or, if formed, more likely to be unstable and such instability could make the theory inapplicable. Finally, as we noted above, a formal role structure may interfere with the operation of status processes and that also would make the theory inapplicable.

Permanent work groups raise a number of interesting issues, some of which are under investigation and will be discussed in subsequent reports. For this study, however, we assume that the application of the theory is not problematic. We assume that despite their multiple tasks, permanent work groups have a single power and prestige order, that once these teams have worked together for a few months the order

is stable and that external as well as internal status characteristics, whether or not legitimated, operate in the way described by the theory. With this assumption, we reaffirmed the necessity to examine both status factors that emerge in the course of group interaction and also status factors brought to the group from its social environment, both the organization and society.

Description of the Study

The data for this report is from a larger study of the relationship between team social structure and team productivity that investigated research and development teams working in private corporations in the U.S. Two hundred twenty four teams from thirty major corporations took part in the study. These companies represented eight different industry groups. We made no attempt to obtain a random or representative sample-how one would define a universe is not a simple question-but sought instead to maximize the heterogeniety of the sample.

These teams had a total of 2285 members and all were asked to complete a twenty-two page questionnaire. 2077 individuals returned questionnaires (a 90.9% rate of return). Even though we asked many sociometric- type questions concerning the individual's relationships to other members of the team, the respondent answered the questionnaire anonymously. This was made possible through the use of roster sheets which listed team members, assigned code numbers from 1 to S (where S=team size) to each person and allowed respondents to

answer questions using their own and others' code numbers. In addition, procedures protected the confidentiality of the questionnaires so that no one else in the respondent's company saw the member's answers.

Teams varied in size from 3 to 34 members and every team had at least one formal leader. For the most part, team members were scientists, engineers and technicians although some teams included non-technically trained managers and marketing specialists. The sample included teams involved in basic research, applied research, product or process development and product evaluation. The educational level of respondents ranged from high school graduate to Ph.D. Two hundred fifty eight women turned in questionnaires. One hundred thirty one teams had female members; ninety three teams were all male and there were no all-female teams in the study.

Indicators of Status Characteristics and Interaction Level

We investigated seven status characteristics, five of them external, i.e., attributes the significance of which was defined in the larger social context, and two internal characteristics, i.e. attributes the significance of which resulted from activities of the team. The external characteristics consisted of gender, educational level, the individual's seniority on the team, the individual's relative position in the company and whether or not the individual was a formally designated leader of the team. As we noted earlier, the theory asserts that an individual's state of a status

characteristic is high or low depending on the status characteristic states of the others in the interaction; hence, all status measures are relative to the team. And as also discussed above, since differentiation is a condition for the activation of a status characteristic, gender analyses only include individuals who belong to mixed gender teams.

Educational status was classified high or low as follows:

1. On teams with Ph.D.s and non-Ph.Ds-Ph.Ds=high, all others=low;
2. On teams with M.S.s and others less than M.S.-M.S.=high, all others=low;
3. On teams with B.S.s and others less than B.S.-B.S.=high, all others=low.

The indicator for relative position in the company, which we will call company status, employed a sociometric-type question. We asked respondents to check the roster numbers of those people who "have a higher position in the organization than I do." For each person, we counted the number of mentions received and expressed that as a percentage of the maximum possible mentions, P_{mx}. The maximum number of possible mentions, Mx, is:

Mx = S - N - 1j if the member is not a missing case;

Mx = S - N if the member is a missing case;

where S is teamsize and £$_s$ the number of missing cases on the team. We relativized this measure by computing the mean and standard deviation of P for the team and then converting each member's

p_{mx} into a standard score (Z). Finally, we trichotomized the Z scores as follows:

If -.5 > Z then company status = low;

If .5 >= Z >= -.5, then company status=middle;

If .5 < Z then company status = high.

By using mentions received, we obtained data for missing cases as well as for those who turned in questionnaires.

Leadership status was measured by having liaison persons in each company indicate the formally designated leaders for each team. Although most teams had a single leader, 36 teams had two and 6 had three leaders. Team seniority was based on the respondent's report of the month and year when he/she joined the team.

To measure status characteristics that emerged in the course of team interaction, we inquired about the respondent's view of the value of team members to the team. One question, which concerned overall value, was used as an indicator of team status. A second question was more specific, focussing on value as a provider of technical support to the team; we regarded this as an indicator of "expert status". (In fact, we asked 6 questions attempting to tap various "expert" statuses, but these were very highly intercorrelated.) The format for both questions was the same. The question for Expert Status asked the respondent to indicate which three members "are most instrumental in providing technical support

to other unit members." We assigned individuals a within-team status score using the following question:

> In any research unit, the loss of one individual member might be more or less detrimental to the unit's chance of success, depending upon the individual's contribution of insights and/or possession of specialized training or experience that would be difficult to replace. Among all unit members, including yourself, which 3 people would be most difficult to replace?

The number of mentions received was computed and expressed as a percentage of the maximum possible. We regarded this question as a measure of an individual's generalized value to the team and thus as an appropriate basis for determining an individual's status within the team. Team Status and Expert Status were standardized and trichotomized using the procedures described above.

A number of items on the questionnaire dealt with the level of interaction on the team. The most general question asked team members, "How often do you talk with other members of the unit concerning matters related to the unit's work?" Using one of five categories ranging from "never" to "daily", the respondent indicated his or her frequency of interaction with each other member of the team. The categories were assigned weights from 1 to 5 and then a "score" for average interaction received was computed for each individual. These were then converted to standard scores by team.

We examined the reliability of the indicators and, in so far as possible, validated them against external criteria based on other items in the questionnaire. For the interaction measure, interrespondent agreement on category was satisfactory-86% of the time that individual i chose a category to describe interaction with member j, j's description of the interaction differed by one category or less. Furthermore, this measure was regressed on four other interaction measures yielding a multiple correlation of .76. As one indicator of validity, full-time team members received more interaction than those who were only part-time; those who were less than 25% time received the least interaction. We evaluated the reliability and validity of Team Status, Expert Status and Company Status scores in a similar fashion.

Results

In this section, we will first examine the relationship between mean interaction score and each of the seven status characteristics taken separately; secondly, we will consider the effects of external status characteristics when we control an internal characteristic, team status; finally, we will look at the way in which external characteristics relate to team status. In the next section, we will return to gender and investigate its operation more closely.

Although the individual is the unit of analysis in this report, all individual attributes are assessed relative to his/her team. Team-based Z scores of interaction received provide a measure of the

individual's position in the observable power and prestige order of his/her team. As we indicated earlier, we only examined gender and educational level for those individuals belonging to teams where these characteristics were differentiated; hence sample size varies from analysis to analysis.

We hypothesized that inequalities in interaction correspond to: 1) inequalities in internal status and 2) inequalities in external status. This led us to expect the average Z score on the interaction measure to vary with: 1) the team status and expert status Z scores and 2) gender, education and leader statuses as well as the Z scores for seniority and company status. Figure 1 presents mean interaction scores for high and low categories of each of the seven status characteristics and Table 1 displays the data on which the figure is based. The diagonally shaded bars represent the low state of each characteristic and the cross-hatched bars represent the high state. (Although Table 1 presents high, middle and low categories for some characteristics, only high and low are plotted in Figure 1.) The figure shows that the data support our expectations. Using t-tests, all comparisons in Table 1-with the exception of middle vs. high seniority-yield statistically significant differences. The figure also indicates that the effects associated with "leader", "expert status score" and "team status score" are greater than the effects of the other status characteristics.

Figure 1 about here; Table 1 about here.

Fig. 1: Status and Interaction

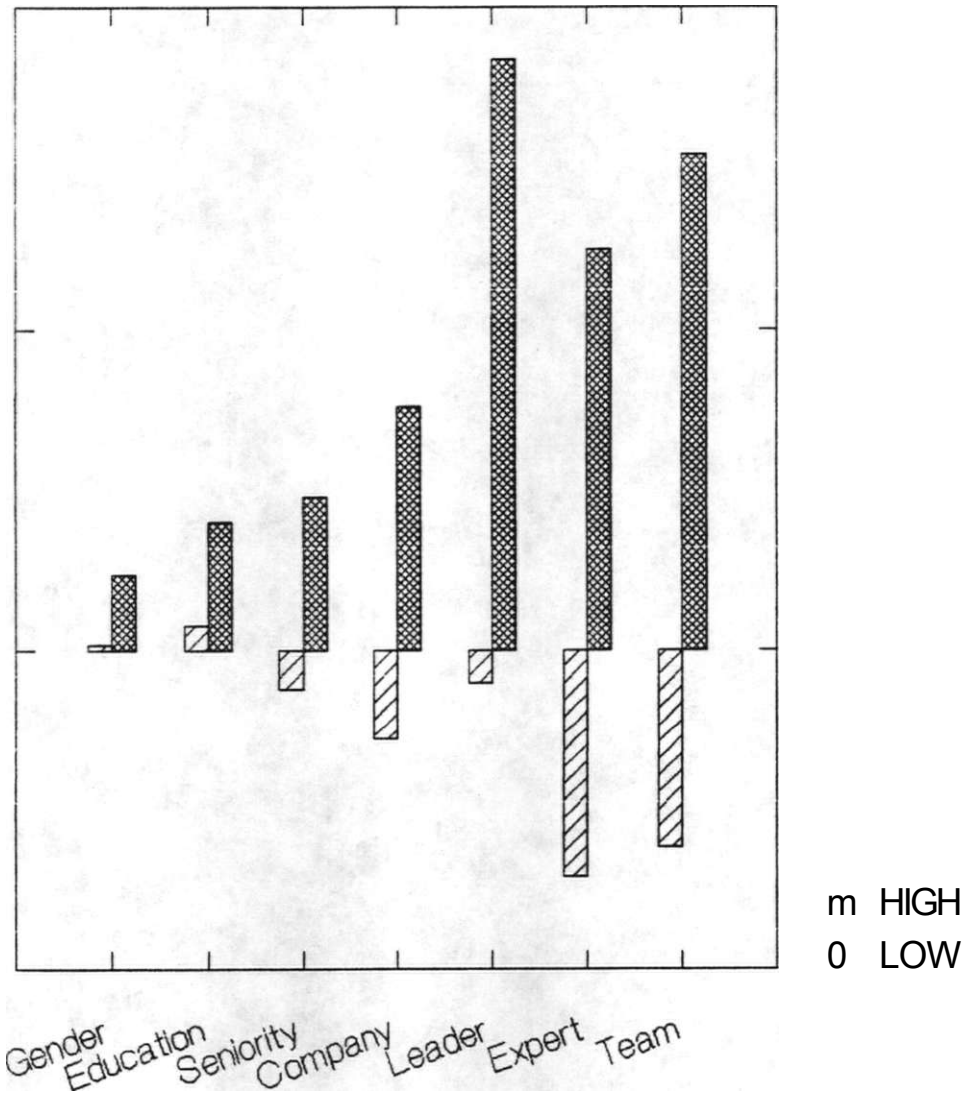


TABLE 1

Relationships between Mean Interaction Received and Status Characteristics

Status Characteristic	Mean Interaction Score		
	Mean	S.D.	
Gender			
Female	.00	.94	256
Male	.12	.99	1124
Educational Status			
Low	.04	.97	1217
High	.20	.97	818
Company Status			
Low	-.14	.91	791
Middle	-.01	.92	757
High	.38	1.05	683
Seniority			
Low	-.06	.94	689
Middle	.18	.97	696
High	.24	.98	497
Leader			
Member	-.05	.99	1975
Leader	.92	.92	261
Expert Status			
Low	-.36	.87	956
Middle	.10	.88	599
High	.62	.93	681
Team Status			
Low	-.31	.87	817
Middle	.04	.84	661
High	.77	.90	572

Means are averages of z scores.

All within characteristic comparisons are statistically significant except middle vs. high seniority.

These seven characteristics are intercorrelated so we do not have independent tests of our two hypotheses. However, regression analyses (not presented here) done separately for internal and external characteristics indicate that each status characteristic is a significant predictor of interaction score. As we will show, combining internal and external characteristics in the same analysis yields more complex patterns of relationships.

(Since the data plotted are averages of Z scores, the reader might wonder how both bars for gender and both bars for educational status can indicate that all of these averages are greater than zero. Part of the reason is that interaction scores are computed on the entire sample including those missing cases who did not turn in a questionnaire, but missing cases are excluded from analyses such as gender and educational status which depend upon information from the individual respondent. It turns out that missing cases receive significantly less interaction than those team members who returned questionnaires.)

Our third hypothesis asserted that the inequalities in interaction would correspond more closely to inequalities in internal status than to inequalities in external status. With the exception of the characteristic, "leader," which we consider external, Figure 1 suggests support for hypothesis 3; differences in mean interaction scores are much greater for external than for internal status characteristics. This is confirmed when we examine the relationships between external status characteristics and interaction received, controlling for internal status characteristics. When team status is

held constant, there are no consistent relationships between interaction score and gender, education, seniority or company status. However, leader status does affect interaction score even when we control team status. Figure 2 illustrates the result for the relationship between interaction and company status for each of three levels of team status and Table 2 presents the results for the other characteristics. The same pattern obtains if we control expert status instead of team status, but as Table 2 shows, expert status still affects interaction level even when team status is controlled. (Using t-tests, all comparisons with the exception of the difference between low and middle expert status for low team status, show significant differences.)

Figure 2 about here; Table 2 about here.

Although Figure 2 does not show a consistent relationship between company status and interaction score, it does appear that high company status differs from low and middle company status for both middle and high values of team status. In fact, these differences are statistically significant. If, however, we eliminate the operation of leader status by looking only at non-leaders and again control team status, then these relationships disappear as the last set of entries in Table 2 demonstrates. For middle team status, the mean interaction scores are .03, -.02 and -.02 for low, middle and

Hg.Z interaction by Company & learn Status

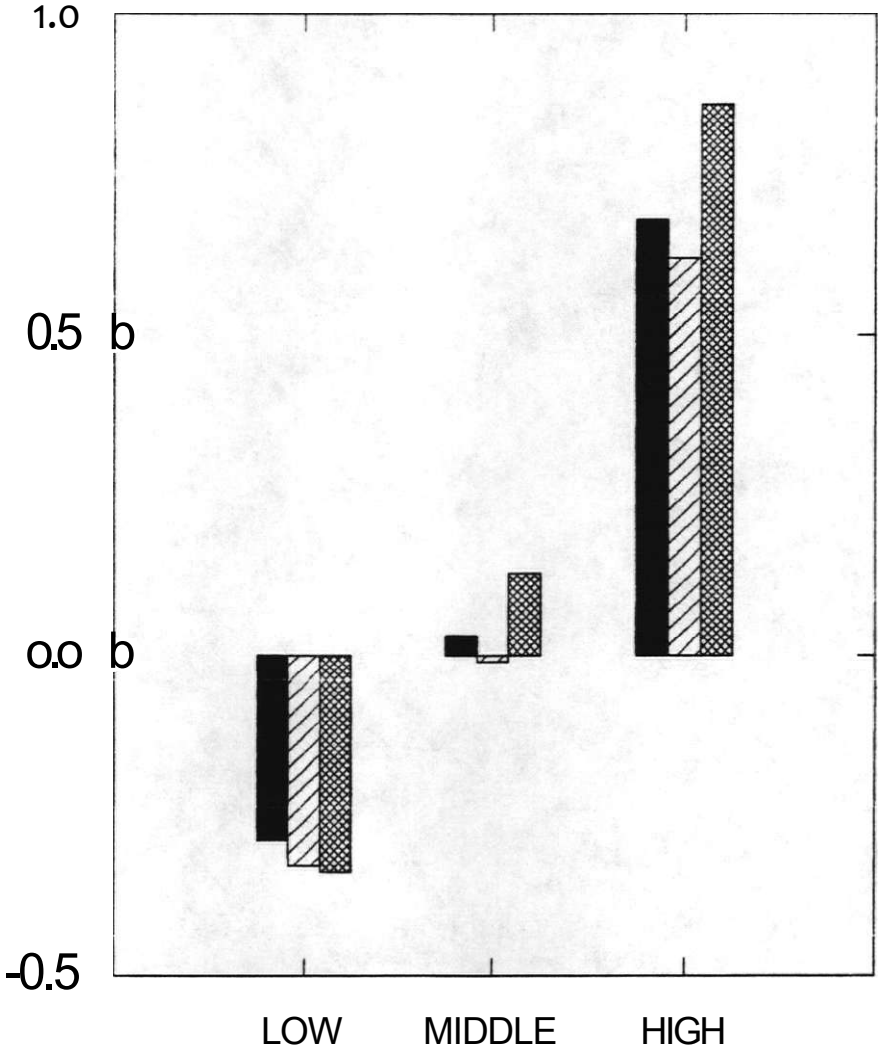


TABLE 2

Relationships between Mean Interaction Scores and Status Characteristics Controlling for Team Status

Status Characteristic	Team Status: Low	Middle	High
Gender			
Female	-.26 (.84)	.11 (.79)	.90 (1.05)
Male	-.32 (.88)	.01 (.84)	.79 (.90)
Educational Status			
Low	-.30 (.87)	.04 (.85)	.82 (.92)
High	-.33 (.87)	.06 (.82)	.72 (.88)
Company Status			
Low	-.29 (.87)	.03 (.87)	.68 (.71)
Middle	-.33 (.84)	-.01 (.80)	.62 (.88)
High	-.34 (.92)	.13 (.86)	.86 (.95)
Leader			
Member	-.32 (.86)	-.01 (.82)	.60 (.85)
Leader	-.14 (1.18)	.64 (.79)	1.13 (.92)
Seniority			
Low	-.36 (.87)	-.02 (.82)	.77 (.88)
Middle	-.26 (.86)	.13 (.81)	.81 (.95)
High	-.19 (.88)	.00 (.90)	.68 (.93)
Expert Status			
Low	-.41 (.85)	-.16 (.83)	.16 (1.01)
Middle	-.12 (.86)	.12 (.80)	.53 (.90)
High	-.01 (.87)	.24 (.85)	.86 (.87)
Company Status (excluding leaders)			
Low	-.29 (.87)	.03 (.87)	.65 (.71)
Middle	-.33 (.84)	-.02 (.79)	.58 (.83)
High	-.38 (.85)	-.02 (.82)	.59 (.92)

TABLE 2 (continued)

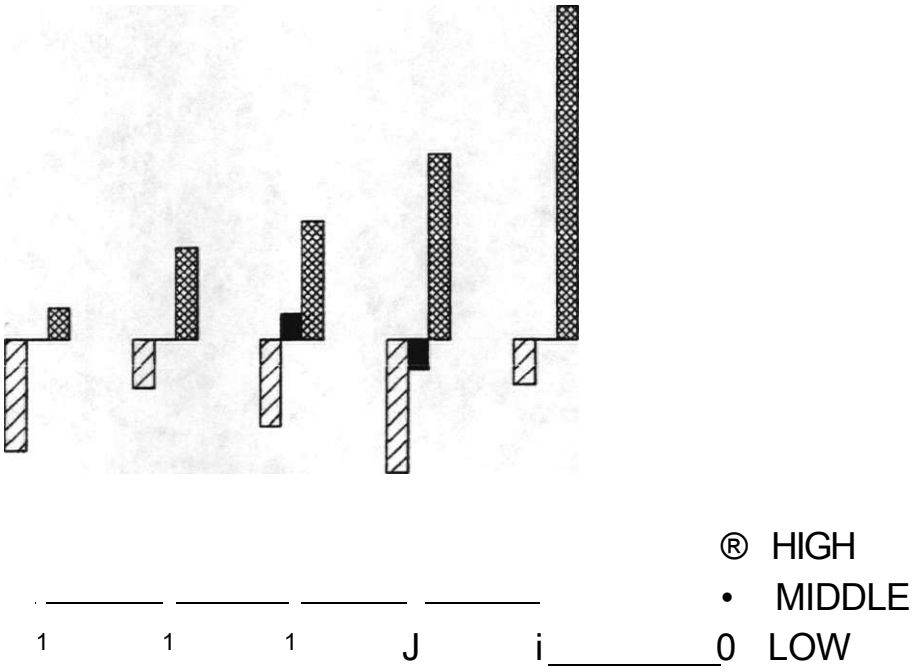
Status Characteristic	Team Status: Low	Middle	High
Gender			
Female	148	74	34
Male	422	364	338
Educational Status			
Low	570	399	248
High	238	258	322
Company Status			
Low	427	199	80
Middle	273	265	164
High	114	196	327
Leader			
Member	793	612	391
Leader	24	49	181
Seniority			
Low	369	211	109
Middle	258	235	203
High	126	157	214
Expert Status			
Low	568	252	26
Middle	192	258	109
High	57	151	437
Company Status (excluding leaders)			
Low	426	197	77
Middle	273	260	155
High	92	154	159

high company status while for high team status, the means are .65, .58 and .59 respectively.

Table 3 about here; Figure 3 about here.

The distinction between external and internal status characteristics suggested further exploration of the relationships among our status variables. Although the observed inequalities in interaction do not relate to external status characteristics once team status is controlled (except for leader status) it may be the case that these external characteristics affect interaction by operating indirectly through their effects on team status. Hence a natural question follows: To what extent does internal status depend on external status characteristics? Table 3 provides the relevant data and Figure 3 presents the relationships graphically. The regression analysis in Table 3 is based on the sample of individuals belonging to teams differentiated on gender and educational status, whereas the upper part of the table includes all members of teams differentiated on the given characteristic. All the status characteristics are significantly related to team status score and, as the regression analysis shows, each contributes independently to team status. We should also note that the five external characteristics are also significant predictors of expert status

Fig,3: External Factors and Team Status



External Status Characteristics

TABLE 3

Relationships between External Status Characteristics and Team Status

External Status Characteristic	Team Status Score		
	Mean	S.D.	
Gender			
Female	-.35	.76	256
Male	.10	.98	1124
Educational Status			
Low	-.15	.87	1221
High	.29	1.02	819
Company Status			
Low	-.42	.66	794
Middle	-.09	.83	757
High	.58	1.06	685
Seniority			
Low	-.27	.81	692
Middle	.08	.96	697
High	.37	1.02	498
Leader			
Member	-.14	.85	1979
Leader	1.04	1.02	262

Regression of Team Status on External Status Characteristics

Variable	b	B	T	p(2 tail)
Constant	-.30	.00	-5.5	.000
Gender	.21	.08	3.6	.000
Educational Status	.14	.07	2.9	.003
Company Status	.24	.29	9.8	.000
Seniority	.16	.16	6.9	.000
Leader	.70	.23	8.3	.000

N=1296 R =.56 R^2 =.31

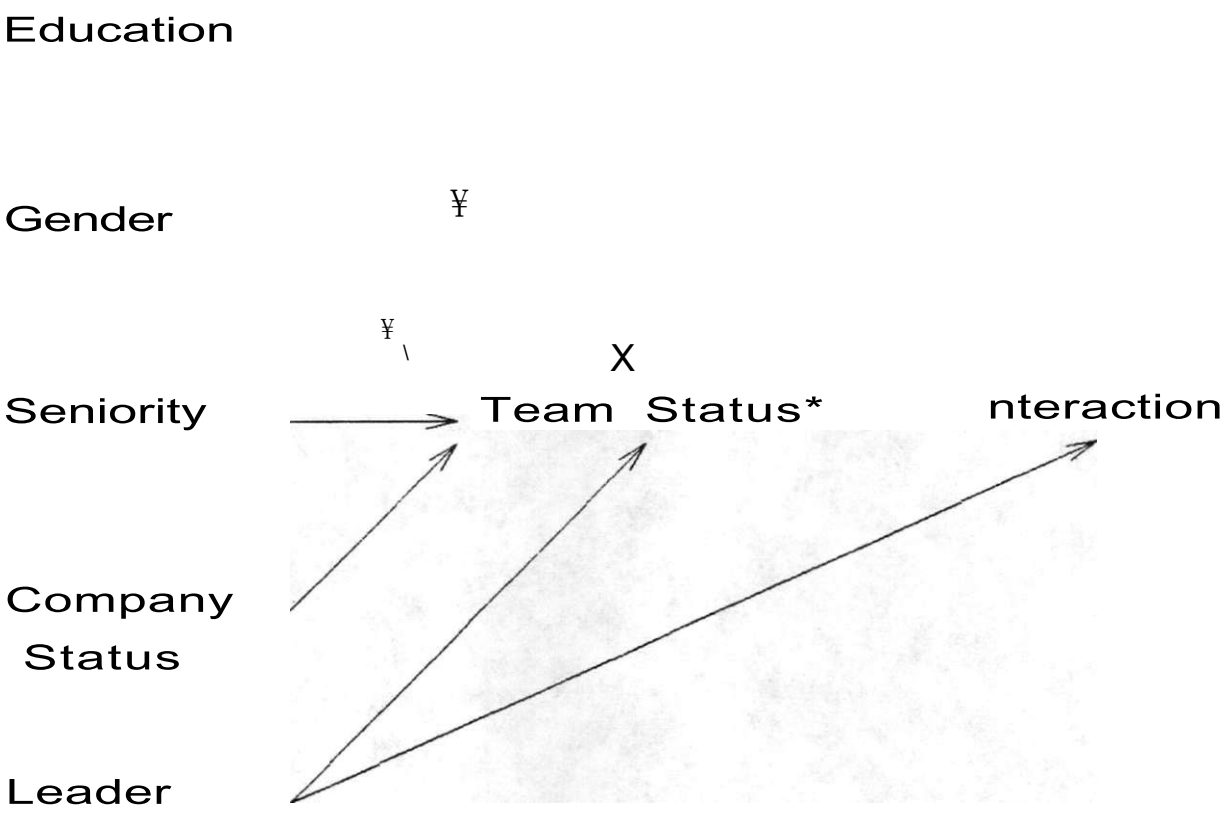
Discuss ion

We can summarize the relationships we have found. Educational status, gender, seniority, company status and leadership status independently affect team status. Team interaction inequalities correspond to team status. Figure 4 presents these relationships. Expert status also affects interaction even when team status is controlled. None of the other characteristics, with the exception of leadership status, has an independent effect on team interaction.

Figure 4 about here.

The original spirit of Status Characteristic Theory considered status information as a substitute for direct experience of actors' task performances. In task groups, people need to know about each other's competence in order to increase the group's chances of successfully accomplishing its task. In the absence of first-hand knowledge about the relative abilities of the group members, individuals use the information conveyed by status characteristics. (Current versions of the theory regard status information as part of the process even when actors have direct knowledge of actors' task performances and abilities.) The processes described by the theory clearly operate in jad hoc or newly formed groups, but what about groups that have been in existence long enough for members to acquire

FIG.4: Principal Relationships



Expert Status oa.n be si_itoetitLjtecd for Status

first hand knowledge about each other's task-relevant abilities? Shouldn't members of such groups be able to use immediately relevant specific performances to judge relative abilities and thus be less likely to employ generalized expectations based on external diffuse status characteristics?

We could interpret our internal status characteristics-team status and expert status-as a reflection of performance-based judgments of relative abilities of team members and regard the hierarchies in the teams we studied as competence-based. In this interpretation, team interaction then follows beliefs about task competence; the position of an individual in the power and prestige order is determined by that person's performance which other team members observe first-hand. Under this interpretation, we would need to explain the relationship of team status to the other status characteristics as also reflecting members' relative competence that has been validated by relevant performance in the past.

For some of these status characteristics, it is possible to assume such a relationship to task competence. Presumably, team leaders are chosen for their technical knowledge and managerial skill. Similarly, we can suppose that company status represents the outcome of a history of promotions resulting from successful job performance. And it is not difficult to believe that higher educational status reflects greater scientific training. With these assumptions, we can argue that team status and the observed power and prestige order in the team are based on task competence and expertise. But beliefs about task competence involve more than

observations of performance and inferences about past performances as the operation of gender in these teams demonstrates.

Gender, a performance-based status?

Clearly competence and performance are not the sole bases for status in these teams. We have shown that gender has an effect on team status that is independent of the other status characteristics studied. Figure 5 illustrates this result in a more dramatic fashion than Table 3. This figure presents the relationship between gender and team status holding educational status and team seniority constant. (Because there are only 256 women in our sample, in this type of analysis, we cannot control more than two other status characteristics at a time without running out of cases. A similar picture results when educational status and company status are controlled. There are too few female leaders [14] to do this type of analysis holding leadership status constant.) For the analysis presented in this figure, we have divided seniority scores at the median and classified team members in four categories: Low seniority-low educational status, low seniority-high educational status, high seniority-low educational status, and high seniority-high educational status. In every category, men have higher team status scores than women. While it is true that women are less likely to be high on educational status and seniority than men (and less likely to be leaders or have high company status), their lower states of these characteristics cannot account fully for

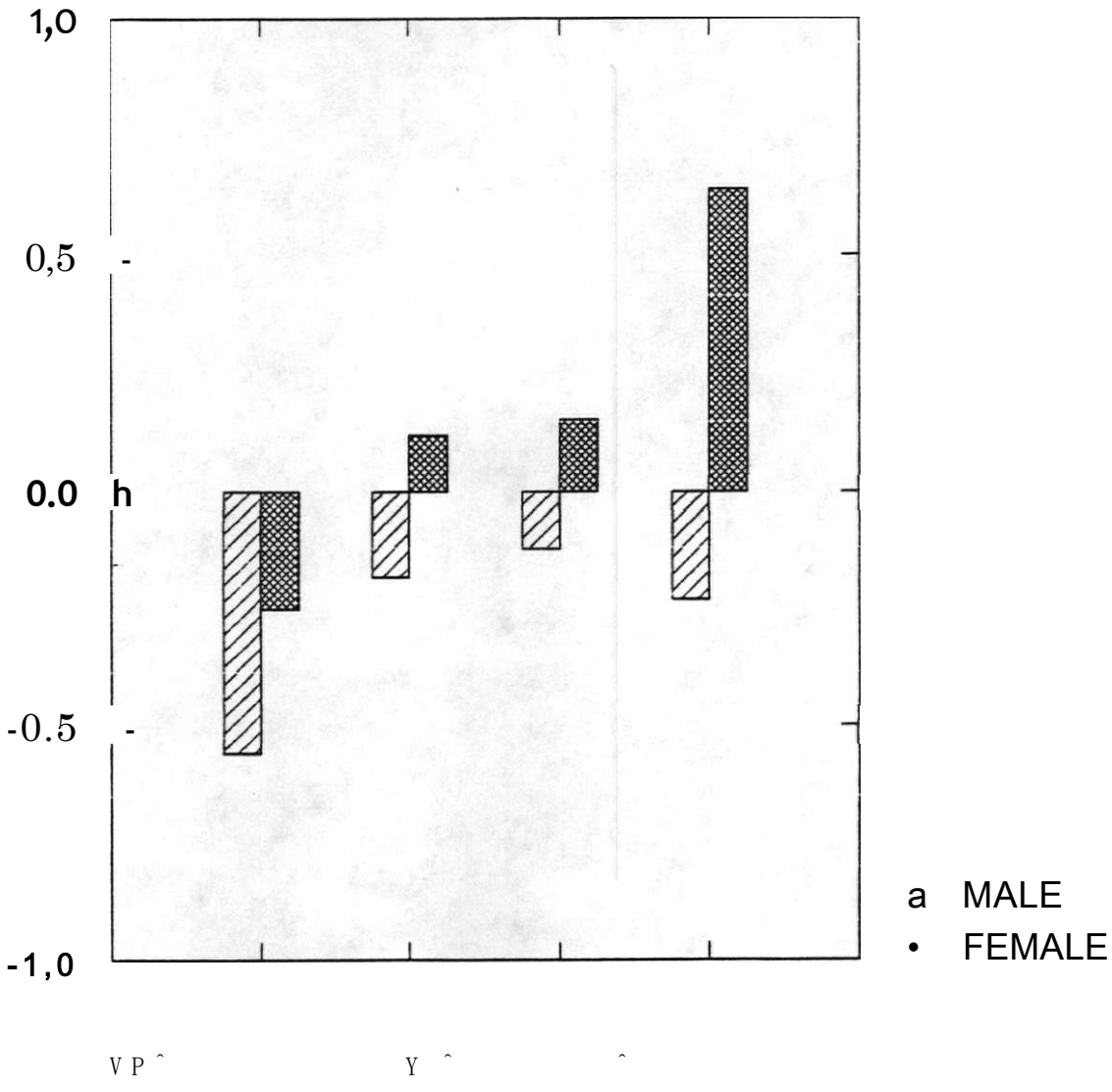
their lower team status scores. Note that the largest difference between men and women occurs in the high seniority-high educational status category; in other words, women who have the most experience and training achieve less team status relative to men than women in the other three education-seniority categories. Since we reject the notion that women per se are less competent than men, these findings attest that something more than performance-based judgments of competence are involved in the creation and maintenance of status orders in these teams.

Figure 5 about here.

If there are stereotypical expectations associated with gender-with, in this instance, negative halos for women and/or positive halos for men-it suggests that similar stereotypical expectations may be operating in connection with the other status characteristics we have studied. After all, not all company designated team leaders are good managers and-dare we say it-not all Ph.Ds are technically competent. While the status processes operating in these teams may have a larger component of performance-based assessments of competence, our results indicate that these processes behave very much like those observed in ad hoc groups.

Fig,5: Team Status by Gender

(Controlling Education and Seniority)



Some issues in applying the theory

Our study points to some respects in which the application of Status Characteristics theory is not as straightforward for permanent groups as it is for ad hoc groups. The finding that five external status characteristics are independently related to team status is consistent with the combining principle of the theory. On the basis of the principle, however, we would also infer that these five characteristics would combine with team status to determine the inequalities in team interaction. This does not seem to be the case since only team and leadership statuses have independent effects on interaction inequalities. Since it does not seem appropriate to explain this by invoking the attenuation principle, it might be necessary to formulate a modified combining principle to deal with permanent groups. For example, we might posit separate combining processes for external and internal status characteristics such as, for example, external status characteristics combine to produce one or more internal characteristics whereas internal status characteristics combine separately to determine the observed power and prestige order.

The distinction between external and internal status characteristics is probably much more significant for permanent than for £d hoc groups. Since ad hoc groups have no history, internal characteristics-even those that are experimentally manipulated and task relevant-are, in a sense, external; they are prior to group interaction. With ad hoc groups, then, it seems appropriate to apply

the combining principle in an unqualified way. With groups that have a history, however, external characteristics may have had their effects on the status order in the distant past whereas the current status order may be a product of that past status structure and the dynamics of the group. This interpretation is consistent with the fact that the highest R we have observed for team status is .31.

Formal leadership has greater importance in permanent than ad hoc groups. This may account for the fact that, after we control team status score, leadership status still relates to team interaction. To be sure, leadership status may be more than a status characteristic in that it designates a formal role as well as symbolizing an evaluated position. Furthermore, the role is central to team performance and executing the role requires receiving interaction. Since in most ad hoc groups, leadership roles are not very elaborate, in such groups it is probably appropriate from the point of the theory to treat leadership status like other status characteristics. For permanent groups, however, treating leadership status like other characteristics requires us to separate its evaluative (status) and performance (role) aspects. If we could do this, we conjecture that the relationship between the status aspect of leadership and interaction would not be independent of team status. In other words, we hypothesize that the status aspect would behave like other external status characteristics we have examined.

Conelusions

While our discussion suggests that a few theoretical additions might be useful in dealing with permanent groups, several conclusions are clear from this investigation. First, the status processes we report are continuous with those described in both research on ad hoc groups and in case studies of permanent groups. Secondly, Status Characteristic Theory applies to permanent work groups and our results extend the applicability of the theory. The status generalization phenomena which the theory addresses occur in permanent work groups and the bases and consequences of these phenomena correspond to the theoretical descriptions of how beliefs associated with status characteristics determine interaction whether these beliefs have any relation to the group task or not.

Thirdly, the results with respect to gender underscore the role that cultural beliefs play in the development of status orders in face-to-face groups. External characteristics, whether they are performance-based or not, carry with them a broad range of cultural stereotypes and these stereotypes combine with task-relevant characteristics, observations of task performance and feedback processes from both within the group and the environment to create and modify the internal status order. In permanent task groups, the generalization of cultural beliefs associated with status may contribute to, or interfere with, the accomplishment of the group task. To the degree that beliefs are negatively related, or

unrelated, to competence, generalization processes can be detrimental to group achievement.

Finally, this research has successfully employed a multi-level approach, using status characteristics from the societal level, the organizational level and the team level to explain both face-to-face interaction and team status orders. We have brought together variables not usually considered in the same investigation and have demonstrated the benefits that accrue from going beyond a purely individualistic or a purely institutional conceptualization. Gender, status in the larger organization and providing expertise in the smaller unit-institutional, organizational and emergent group properties-all are involved in an important way in the dynamics of our R & D teams. Anything less than a multi-level conceptualization would not provide an adequate representation of the operation of status processes in permanent work groups.

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