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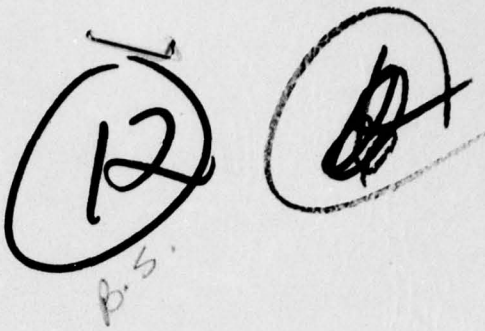
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Psychological and Organizational Climate Dimensions and Relationships

Allan P. Jones and Lawrence R. James

In collaboration with John R. Bruni,
Chris W. Hornick, and S. B. Sells

Final Report

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The present study represented an attempt to develop a comprehensive measure of psychological climate and to investigate the appropriateness of aggregating psychological climate scores to describe subunit or organizational climate. Theoretical assumptions underlying the two constructs were reviewed and relationships with various situational, positional, and individual variables were posited as indices of construct validity. Analyses indicated that: (a) five of six psychological climate dimensions found for 4,315 U.S. Navy

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enlisted men were generalizable to comparison samples of firemen (n=398) and health care managers (n=504); (b) aggregating psychological climate scores to describe subunit climates appeared appropriate only for homogeneous subunits (e.g., divisions); (c) subunit climates were significantly related to division context, structure, and personnel composition, while psychological climate appeared more related to individual resources and position variables; and (d) subunit climate, structure, context, and personnel composition measures were significant predictors of division performance criteria. Results were interpreted relative to the theoretical properties of climate and prior research on structure and context.



Abstract

The present study represented an attempt to develop a comprehensive measure of psychological climate and to investigate the appropriateness of aggregating psychological climate scores to describe subunit or organizational climate. Theoretical assumptions underlying the two constructs were reviewed, and relationships with various situational, positional, and individual variables were posited as indices of construct validity. Analyses indicated that: (a) five of six psychological climate dimensions found for 4,315 U. S. Navy enlisted men were generalizable to comparison samples of firemen (n = 398) and health care managers (n = 504); (b) aggregating psychological climate scores to describe subunit climates appeared appropriate only for homogeneous subunits (e.g., divisions); (c) subunit climates were significantly related to division context, structure, and personnel composition, while psychological climate appeared more related to individual resources and position variables; and (d) subunit climate, structure, context, and personnel composition measures were significant predictors of division performance criteria. Results were interpreted relative to the theoretical properties of climate and prior research on structure and context.

Psychological and Organizational Climate: Dimensions and Relationships

Several recent articles and reviews have attested to the current popularity of climate research and, more important, have offered suggestions for future theoretical and empirical efforts (cf. Campbell, Dunnette, Lawler, & Weick, 1970; Guion, 1973; Hellreigel & Slocum, 1974; James & Jones, 1974; Payne & Pugh, 1976; Schneider, 1975a; Howe & Gavin, Note 1). The strongest, most frequent recommendation was for a clear, explicit description of the conceptual properties of climate that identified variables relevant to measuring the construct and specified relationships with various situational and individual attributes. As a first step in this process, James and Jones (1974) suggested that a distinction be made between climate as an individual, perceptual attribute (psychological climate) and climate as a situational attribute (organizational climate). In light of this distinction, certain of the recommendations in the above articles appeared especially relevant.

Regarding psychological climate, for example, it was recommended that the focus of perceptual measurement be descriptive, that measures include task as well as person and social characteristics, and that studies investigate the direct and interactive influences of situational and individual attributes upon climate perceptions. With respect to organizational climate, it was suggested that a further differentiation be made between organizational climate and subunit climate (e.g., workgroup climate, division climate, etc.), with the former term reserved for descriptions of the total organization. This suggestion was particularly important given the popular procedure of basing subunit and organizational climate measures on aggregated psychological climate scores and was consistent with a recommendation that criteria be developed to assess the appropriateness of such aggregation. Finally, it was suggested that research on each of the

levels of climate (including psychological climate) should incorporate longitutinal as well as cross-sectional designs and should explore the construct validity of climate in terms of relationships with a variety of situational and individual characteristics, and with performance by individuals, subunits, and organizations.

The present study addressed a subset of the above recommendations concerning needs for theoretical development and empirical research. The objectives of the study were: (a) to develop a comprehensive measure of psychological climate; (b) to investigate the appropriateness of aggregating psychological climate scores to describe subunit and organizational climate; (c) to investigate the construct validity of psychological and subunit climate scores in terms of relationships with selected situational and individual variables; and (d) to explore relationships between subunit climate scores and subunit performance.

The theoretical basis for the development of the psychological climate measure is presented below. Included in this presentation is a comparison of assumptions for psychological climate and for climate treated as a situational attribute. This comparison is then used to explore the appropriateness of aggregating psychological climate scores to describe the climate at various levels of the organization, including the total organization. A brief overview of probable relationships between psychological and subunit climate and selected situational, individual, and subunit performance variables is also presented. Finally, a specific statement of the research strategy is provided.

Theoretical Properties Underlying Psychological Climate

In the literature describing climate as an individual, perceptual attribute, there appeared to be certain common assumptions regarding properties of the construct. Before discussing such assumptions, however, it must be noted that, while the authors cited below stressed psychological or perceptual attributes

of climate, most of them specifically used the term "organizational climate". Thus, describing their work as psychological climate represents an interpretive liberty.

1. One of the most common assumptions was that psychological climate represents a perceptually based, psychologically processed description of the situation, where the individual filters, interprets, and structures perceived situational attributes. For example, Schneider (1975a) described climate as a set of macro perceptions which reflected processes of concept formation and abstraction based on micro perceptions about specific organizational conditions, events, and experiences. Campbell and Beaty (Note 2) expressed similar ideas of perceptual filtering, summation, and cognitive structuring. Ittelson, Proshansky, Rivlin, and Winkel (1974) suggested that the individual organizes perceptions of the environment into an abstract "cognitive map" that serves to guide future predictions and behavior. This cognitive map refers to the individual's internalized representation of the situation and reflects an inherently inseparable combination of perceptual and cognitive processes.

The above authors stressed the descriptive, cognitive nature of psychological climate, divorcing it from the affective, evaluative aspects that would render it tautological with job-related attitudes such as satisfaction. At a conceptual level, authors in both the climate (cf. James & Jones, 1974, 1976; Payne & Pugh, 1976; Payne, Fineman, & Wall, 1976) and job satisfaction literature (cf. Locke, 1976) carefully distinguished between perceptual/cognitive representations of the situation and affective/evaluative reactions to that situation. Although empirical findings have been somewhat mixed, recent research has tended to support this distinction between psychological climate and satisfaction (La Follette & Sims, 1975; Schneider & Snyder, 1975). It should be noted that dynamic interrelationships were generally assumed and often found in climate-

satisfaction studies (cf. Hellreigel & Slocum, 1974).

2. Another common assumption regarding psychological climate was that a limited number of dimensions can characterize a large and varied group of social environments. Insel and Moos (1974) proposed three such dimensions--relationship, personal development, and system maintenance. Campbell et al. (1970) isolated four dimensions as common to a number of empirical climate studies in organizations. These dimensions (individual autonomy; degree of structure imposed on the situation; reward orientation; and consideration, warmth, and support) were supported by subsequent factor analytic studies of perceptual data (Sims & La Follette, 1975; Waters, Roach, & Batlis, 1974), although it was noted that a communality of items might have contributed to such results and that the number of dimensions was perhaps too few. In this respect, Payne and Pugh (1976) added a fifth dimension, orientation toward development and progressiveness, and several authors noted that specific dimensions might be needed to describe particular situations.

The major divergence from the idea of a common core of dimensions appeared when Schneider (1975a) postulated that the question of dimension salience was relevant only in the context of a particular criterion. He viewed organizations (subunits and workgroups) as having many climates (e.g., climates for creativity, motivation, etc.) and concluded that the term climate "should refer to an area of research rather than a construct with a particular set of dimensions." Schneider's viewpoint represents a serious divergence requiring empirical examination.

3. Another important assumption was that psychological climate represents an intervening variable in a model of organizational functioning. The intervening nature of psychological climate is inherent in the concept of a cognitive map, whereby the individual transforms situational stimuli into perceived situ-

ational influences (i.e., perceptions of how the situation influences the individual). Such perceived influences (e.g., ambiguity, warmth, progressiveness, etc.) are employed to achieve a "fit" with the situation by "apprehending order" and "gauging appropriateness of behavior" (Ittelson et al., 1974; Schneider, 1975a). Thus, psychological climate acts as an internalized, psychologically meaningful representation of the situation that guides future attitudes and behaviors (Campbell et al., 1970; Ittelson et al., 1974; James & Jones, 1974).

4. There also appeared to be considerable agreement that the situational variables that are most related to psychological climate are those with relatively direct and immediate ties to individual experience. For example, it was pointed out that characteristics that are conceptually more distal or remote from individual experience require more complex, intervening linkages to be related to individual perceptions and behavior (Indik, 1968; Jessor & Jessor, 1973; James & Jones, 1976). In a similar vein, Lawler, Hall, and Oldham (1974) argued that perceptions of climate were more related to relatively immediate characteristics such as organizational and subsystem processes than to structural attributes.

In summary, certain common assumptions appeared to underlie treatments of climate as a psychological, perceptually based attribute, namely, that psychological climate: (a) is primarily descriptive; (b) involves a psychological processing, abstracting, and structuring of perceived situational attributes into an internalized representation (or cognitive map) that reflects influences of the situation; (c) is multidimensional, with a central core of dimensions (although specific dimensions might be added to describe particular situations); (d) tends to be most closely related to situational characteristics that have relatively direct and immediate ties to individual experience; and (e) occupies an intervening role in a model of organizational functioning, where the point of intervention is <u>within</u> the individual. Based on these assumptions, it was

concluded that, as discussed in the literature, psychological climate refers to the individual's internalized representations of situational conditions within the organization and its subunits, tends to emphasize conditions that are relatively immediate to individual experience, and reflects a cognitive transformation and structuring of these conditions into perceived situational influences.

Implications for Measurement of Psychological Climate

The foregoing discussion of assumptions appears to have important implications for measuring psychological climate. The assumptions that psychological climate is primarily descriptive, represents a psychological transformation of perceived situational characteristics into perceived situational influences, and is most closely related to situational attributes that are relatively proximal to individual experience indicate that empirical indices of psychological climate might be based on perceptions of such proximal attributes. Previous reviews and research (Hellriegel & Slocum, 1974; Indik, 1968; James & Jones, 1974, 1976; Payne & Pugh, 1976; Schneider, 1975a; Sells, 1963, 1968a) have suggested a variety of relevant situational attributes, including: (a) job or role characteristics such as job variety and challenge, job pressures, and role ambiguity; (b) leadership characteristics and behavior such as support, goal emphasis, and initiation of structure; (c) workgroup and social environment characteristics such as friendliness and cooperation; and (d) certain subunit and organizational characteristics with relatively direct ties to individual experience (e.g., management awareness of employee needs, fairness of the reward process, etc.). Thus, the empirical exploration of relationships among perceptions of these various attributes would seem important in developing a measure of psychological climate.

Assumptions Underlying Climate as a Situational Attribute

Many of the assumptions regarding psychological climate appeared to have relatively direct parallels in the literature treating climate as a situational

attribute. First, such treatments assumed that climate describes situational conditions (Payne & Pugh, 1976) and second, that this description is multidimensional with what appears to be a common core of dimensions (Insel & Moos, 1974). The caution by Schneider (1975a) is important, however, because some dimensions of climate may be more appropriately interpreted at levels below the total organization. For example, cooperation and friendliness may vary across different subunits and thus might be interpreted most meaningfully at the subunit and workgroup levels of analysis. Third, it has been assumed that the variables that are most closely related to workgroup, subunit, and organizational climate are those proximal situational variables that are most likely to have psychological importance to individuals in the situation (Payne & Pugh, 1976).

There has been considerable agreement also that climate treated as a situational attribute represents an intervening variable in an organizational model. Insel and Moos (1974) characterized organizational environments as having "personalities" that exert directional influences on behavior, while Ittelson et al. (1974) pointed out that environments possess a "demand character" that not only describes the immediate sensory stimuli of the situation but also encompasses a social and symbolic meaning. In a related vein, Payne and Mansfield (1973) described organizational climate as a conceptual linkage between organizational and individual levels of analysis. From this perspective, climate intervenes between specific situational attributes or events and individual perceptions, attitudes, and behavior (Payne & Pugh, 1976) and has often been viewed (albeit implicitly) as a summary description of how the situation influences individuals. Hellriegel and Slocum (1974) referred to climate as a set of organizational or subsystem attributes that may be induced from the way an organization or its subsystems deal with its members. For example, relatively specific situational attributes such as unstructured role prescriptions, unclear reward contingencies,

and nondirective leadership might be transformed into the set of situational influences referred to as a conflicting and ambiguous climate. This transformation of specific situational attributes into situational influences is further evident in the names given to most climate dimensions (e.g., autonomy, consideration, warmth, etc.).

In summary, theoretical treatments of climate as a situational attribute (i.e., organizational or subunit climate) suggested that it: (a) is primarily descriptive of organizational and subunit situations; (b) is multidimensional with what appears to be a central core of dimensions (although specific dimensions might be added to describe particular situations or populations); (c) tends to reflect primarily aspects of the organizational and/or subunit environment that are most proximally related to individual experience and behavior; and (d) indicates an intervening variable in a model of organizational functioning where the point of intervention lies between the relatively specific characteristics and events of the situation and the individual and represents a transformation of situational attributes into situational influences. Based on these assumptions, therefore, it appears that climate as a situational attribute describes a set of situational influences within the organization and its subunits, tends to emphasize those conditions that are relatively immediate to individual experience, and reflects relationships among situational characteristics in terms of the ways the situation influences people.

In terms of the current literature, therefore, the basic differences between climate viewed as a psychological attribute and climate viewed as a situational variable appear to rest on assumptions about the point of intervention. For psychological climate, the assumed point of intervention lies within the individual, so that any transformation of situational attributes into psychologically meaningful, internalized representations of the situation and its influences must

involve the individual as a perceiver and as a cognitive processor. For climate viewed as a situational attribute, however, the assumed point of intervention lies outside the individual. Thus, the latter concept describes only the situation, although this description includes the social and personnel characteristics of the situation, as well as structural, technological, process, and other such variables.

The concept of intervening variable as applied to situational climate is a difficult one. It is perhaps clearest in considering experimental studies of climate, where one does not attempt to manipulate climate directly but rather manipulates variables such as structure, leader behavior, etc., which presumably result in variations in climate that equally influence all persons within a particular treatment condition. Thus, it appears that situational climate cannot be assessed directly but must be inferred either from the configuration of salient situation characteristics which are presumed to lead to a particular climate or from consistencies in the responses of individuals who are assumed to have experienced that climate.

Conceptually, it appears that situational climate refers to the character of the situation that is represented by the pattern of relationships among a variety of situational events, organizational processes, role expectations, and so forth and which exerts a common core of influence on workgroup (subunit, or organizational) members, whereas psychological climate represents the individual's cognitively transformed, internal representation based on perceptions of such characteristics, events, role expectations, and influences. Thus, the most important difference between the two constructs as discussed in the current literature appears to lie in the assumed presence or absence of individually based, cognitive processing of the external situational characteristics and influences that have potential impact on individual members.

Given such a perspective, one would expect dynamic and substantial interrelationships between the two constructs. Although such interrelatedness does not negate basic conceptual distinctions between the constructs and, as discussed below, does provide a rationale for the use of aggregated psychological climate scores to infer situational climate, the same overlap makes it difficult to devise independent empirical indices of the two constructs in any given study.

Aggregation of Psychological Climate Scores to Represent Subunit and Organizational Climate

Many organizational researchers have sought to develop measures of the sets of situational influences referred to as subunit or organizational climate because of the presumed relationships between these influences and organizational or subunit performance. For example, climate has been discussed as a direct predictor of various criteria or as a moderator of certain predictor-criterion relationships (cf. Campbell et al., 1970; James & Jones, 1976; Payne & Pugh, 1976). The most popular approach to measuring subunit or organizational climate has been by aggregating psychological climate scores.

The rationale for aggregating psychological climate scores to describe subunit or organizational climate appears to rest primarily on the communality of assumptions underlying the two constructs. Of major importance are the assumptions that both constructs describe situational influences and represent something more than a simple listing of relatively specific situational attributes. This dual emphasis on description and transformation of specific situational attributes into situational influences appears to provide the basic conceptual linkage between the two concepts. In other words, to the extent that individuals perceive particular aspects of the situation that are reflected as situational influences, it appears reasonable to expect a correspondence between organizational (and/or subunit) climates and the perceived situational influences which

form psychological climate.

The use of aggregated psychological climate scores to measure subunit or organizational attributes requires, however, that the aggregated scores meaningfully represent the situation.[1] A common strategy to assure such representativeness has stipulated that agreement must exist among perceivers before aggregation is justified, on the basis that perceptual agreement implies a common situational influence (cf. Guion, 1973; Insel & Moos, 1974; James & Jones, 1974; Schneider, 1975a).

Various methods have been used to assess perceptual agreement, including differences in mean perceptions across different situations or treatments, interrater reliability within a single group, and correlations among the perceptions of individuals occupying different organizational levels. High indices of interrater reliability or statistical power connote that the perceptions primarily reflect differences across situations and thus imply perceptual agreement whereas within situation variance implies a lack of perceptual agreement. Empirical indices of statistical power (eta-squared, omega-squared) or interrater reliability (intraclass correlation) have generally been low to moderate, varying between .06 and .35 (Bass, Valenzi, Farrow, & Solomon, 1975; Schneider, 1975a; Campbell & Beaty, Note 2). Converted to Spearman-Brown estimates of reliability of the mean (aggregated) score (Ebel, 1951), values have varied between .70 and .91 (Schneider, 1975a). Unfortunately, when many individuals are involved, aggregation across relatively heterogeneous individual perceptions might still yield high estimates of the reliability of the mean, questioning this procedure as an index of perceptual agreement.

Another potential index of the representativeness (and thus appropriateness) of aggregated psychological climate scores concerns the degree to which various climate-related, situational measures differ from subunit to subunit or from

individual to individual. For example, recent reviews suggested that context (technology, goals, etc.) and structure (size, centralization of decision making, span of control, etc.) are among the situational variables that influence organizational or subunit climate (James & Jones, 1976; Payne & Pugh, 1976). These and other authors (Litwak, 1961; Mahoney & Frost, 1974; Scott, 1975), however, have questioned whether many context and structure measures are meaningful when used to describe organizations consisting of heterogeneous subunits with varying goals, technologies, subgroup sizes, and so forth. Thus, to the extent that climate reflects variations in such variables, aggregation of perceptions across subunits with heterogeneous context or structure attributes would appear questionable.

Perceptions of climate also have been shown to reflect differences in organizational position such as hierarchical level and job type (Hellreigel & Slocum, 1974; Johnston, 1974; Jones, James, & Bruni, 1975; Payne & Mansfield, 1973; Schneider & Snyder, 1975; Stone & Porter, 1975). Newman (1975) demonstrated that organizational position (functional division, department, workgroup, and hierarchical level) accounted for more variance in climate perceptions than did personal characteristics (age, sex, number of dependents, education, and tenure). He concluded that different positions were subject to different experiences and that positional differences were more important than personal characteristics in the development of the individual's perceptual-cognitive map of the organizational situation.

Conclusions that different organizational positions experience different situational influences have important implications for the aggregation of psychological climate scores. That is, although many studies (e.g., Gavin, 1975; Pritchard & Karasick, 1973; Schneider, 1975b; Schneider & Snyder, 1975) have shown that climate perceptions vary by organization or subsystem, it is dubious

whether aggregated individual scores represent all the various positions within a heterogeneous organization or subsystem (Payne & Mansfield, 1973). Furthermore, heterogeneity of position, by limiting communality of experience for different individuals, limits probable interperceiver agreement and provides a potential explanation for some of the low to moderate indices of interrater reliability and statistical power reported earlier. Thus, it appears that psychological climate scores should be aggregated only for relatively homogeneous organizational units.

Another factor related to agreement on climate perceptions across members of organizations or subunits reflects the influences of individual characteristics on the perceptual process. For example, previous studies have shown that climate perceptions covary with a variety of individual characteristics including personality attributes, cognitive styles, ability, adaptability (Johnston, 1974; Kerr & Schreisham, 1974; Schuler, 1975; Vannoy, 1965), alienation from cultural norms (Blood & Hulin, 1967; Hulin & Blood, 1968), and need strength (Hackman & Lawler, 1971; Hackman & Oldham, 1975; Pritchard & Karasick, 1973; Steers, 1975), as well as age, race, sex, and intelligence (Hellreigel & Slocum, 1974). Therefore, to the extent that an organization or its subunits contain a wide range of individual characteristics, a greater diversity of perceptions might be expected.

A final index of the appropriateness of using aggregated psychological climate scores as situational measures would appear to be the empirical demonstration that such aggregated scores were meaningfully and predictably related to various situational measures and to organizational or individual criteria. In other words, the rationale for using aggregated perceptual data is enhanced to the extent that it is possible to establish the construct validity of the aggregated scores by empirically demonstrated utility in predicting and understanding

organizational and subunit functioning.

In summary, the assumed correspondence between situational influences and individual perceptions of those influences appeared to provide a logical basis for using aggregated psychological climate scores to represent shared situational influences. Other factors (differences in position, technology, type of job, etc.) contribute to a heterogeneity of influences across individuals or subunits, however, requiring an empirical demonstration of shared situational experiences before aggregation to a particular subunit or organization is undertaken. Potential criteria which might justify aggregation include the demonstration of: (a) differences in aggregated or mean perceptions across different organizations or subunits; (b) interperceiver reliability or agreement; (c) homogeneous situational characteristics (e.g., similarity of context, structure, job type, etc.); and (d) construct validity for the aggregated score in terms of meaningful relationships to various organizational, subunit, or individual criteria.

Issues Related to the Construct Validity of Psychological and Subunit Climate

In regard to the construct validity of psychological, subunit, and organizational climate scores, it was noted that such scores should be meaningfully and predictably related to other indices of subunit and organizational situation and functioning. The following section therefore presents a brief overview of hypothesized relationships among measures of psychological and subunit climate and subunit measures such as context, structure, and personnel composition. (Relationships with individual resources and position vafiables were reviewed in the earlier discussion of factors related to aggregation.) These hypotheses were derived from extensive reviews of the literature published elsewhere (cf. Campbell et al., 1970; Forehand & Gilmer, 1964; Hellreigel & Slocum, 1974; James & Jones, 1976; Lawler et al., 1974; Payne & Mansfield, 1973; Payne & Pugh, 1976; Porter & Lawler, 1965; Porter, Lawler, & Hackman, 1975) and, in the interests of brevity,

are presented generally and in summary.

The first general hypothesis regarded relationships between climate (both subunit and psychological) and context measures, especially technology. It was hypothesized that the more complex, nonroutine technologies would be associated with climates reflecting higher levels of task complexity, variety, importance, and challenge as well as higher levels of role ambiguity and autonomy. Further, because complex, nonroutine jobs tend to be intrinsically satisfying and motivating, it was expected that there would be less emphasis on efficiency and morale as direct subunit goals, although the subunits with nonroutine technologies were also expected to have more capable, better trained personnel and to achieve higher levels of subunit performance.

The second general hypothesis concerned relationships with measures of "anatomical" structure, that is, variables describing distributions and formal relationships among subunits or positions (Porter et al., 1975). It was expected that high levels of anatomical structure as reflected by large size, tall configurations, large spans of control, and high specialization (division of labor) would be associated with climates characterized by relatively uncooperative, unfriendly workgroup relationships, communication difficulties, unsupportive leadership, and monotonous, low challenge tasks. Also expected were relatively unskilled, low aptitude personnel compositions as well as low levels of subunit performance.

The third general hypothesis concerned relationships with measures of "operational" structure or measures reflecting the structuring of events (Katz & Kahn, 1966). It was expected that high levels of operational structure, defined by high centralization of authority, formalized roles and communication procedures, and standardized procedures, would be associated with climates characterized by low levels of role conflict and ambiguity, task-oriented leadership, low levels

of individual autonomy, and monotonous, unchallenging tasks that were low in complexity. Also expected were lower scores on subunit performance measures and less capable, less trained personnel.

The final hypothesis reflected a general theme of a social system, integrating model approach to organizational investigation (cf. James & Jones, 1976). Based on the linkage concept that variables in direct conceptual proximity would be more highly intercorrelated than variables connected by indirect linkages or intervening variables (Indik, 1968), it was hypothesized that subunit context and structure measures would be more highly related to subunit climate than to psychological climate which by definition includes the additional elements of perception and psychological processing of situational attributes.

Strategy of the Present Research

Development of a psychological climate measure. The development of a measure of psychological climate involved three steps. Following a comprehensive review of the literature (cf. James & Jones, 1974, 1976; Jones, James, & Hornick, Note 3; Jones, James, Bruni, Hornick, & Sells, Note 4), measures of a variety of perceived situational attributes with relatively direct ties to individual experience were constructed and administered to a sample of U. S. Navy enlisted men. Second, these measures were component analyzed and the resulting components were used as indices of psychological climate. Third, component solutions were compared across two additional types of organization to assess dimension generalizability and the potential for a common core of dimensions.

Aggregation of psychological climate scores. Within the Navy sample, psychological climate scores were aggregated to describe subunit and organizational climate. The representativeness of each level of aggregation was empirically assessed on the basis of: (a) significant differences in subunit mean psychological climate scores, (b) indices of statistical power and interrater reliability,

(c) estimates of the reliability of the mean scores, and (d) representativeness of other climate-related situational measures (e.g., structure). As treated later, the data suggested that aggregation should be restricted to the level of the smallest (and most homogeneous) subunit studied.

Construct validity of psychological climate and subunit climate measures. The construct validity of the psychological and subunit climate scores was further assessed by relating such measures to measures of subunit context and structure and to measures of individual resources and position variables (for psychological climate) and personnel composition (for subunit climate).

Prediction of subunit performance. The relationships of situational attributes (including subunit climate) with subunit performance were investigated by using subunit context, structure, climate, and personnel composition measures to predict subunit performance.

Method

Sample

The U. S. Navy sample consisted of male, enlisted personnel (n = 4,315) on 20 ships operating in the Atlantic and Pacific Oceans during the latter half of 1973. The ships included two aircraft carriers with crews of approximately 4,000 men, and four classes of destroyer with crews averaging between 225 and 375 men. Ships were organized into four or more departments, each responsible for a major set of duties (e.g., engineering, operations, supply, weapons). Departments were further subdivided into divisions; for example, the Engineering Department consisted of divisions concerned with the main propulsion unit, boilers, electrical systems, and so forth. The total possible subunit sample was 105 departments and 281 divisions.

Individual sampling on carriers was limited to non-aviation personnel and stratified by department and division; destroyers were sampled on a 100% basis.

Individual questionnaire data were collected in group sessions during the first weeks of deployment. Responses were obtained from 76% of the available men on destroyers and 45% of the men in sampled divisions on carriers (90% of the distributed questionnaires). Age ($\underline{M}$ = 23.8 years) and time in the Navy ($\underline{M}$ = 4.8 years) indicated that most respondents were in their first enlistment. Levels ranged from E-1, the lowest enlisted pay rate, to E-9, the highest enlisted grade; mean education was 12 years.

Two additional samples were studied to explore the generalizability of the psychological climate measures. One sample consisted of 393 male firemen below the rank of district chief in two departments in the southwest United States. Fire stations consisted of one to four companies of four men each; questionnaires were administered to groups of 8 to 16 persons. Data were obtained from 72% of eligible respondents. The average age was 36 years; mean tenure was 11.3 years; 43% of the sample had completed one or more years of college.

A second comparison sample consisted of 504 exempt employees of a private health care program, ranging from top regional management to first-line supervisors. Fourteen functional areas (e.g., nursing, data processing, accounting) and 42 separate locations (including seven large hospitals were represented. Questionnaires were administered by mail, with a 74% usable return rate. Females, primarily nursing supervisors, represented 52% of the sample. Mean age was 42 years; approximately half the sample possessed a college or professional degree.

Individual Level Measures

Psychological climate questionnaire. The psychological climate questionnaire (administered to all three samples) consisted of 145 items that described relatively specific aspects of the work situation. The items represented 35 a priori composites, many of which had been shown by previous research to be internally consistent, psychologically meaningful measures of the work environ-

ment (see Table 1). Each composite consisted of two to seven items, each with a stem and three to five scaled responses. Composites were scored by summing across relevant item responses (variances were similar).

Insert Table 1 about here

Job or role related measures included role ambiguity, role conflict (House & Rizzo, 1972a; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Lichtman & Hunt, 1971), autonomy (Campbell et al., 1970; Hackman & Lawler, 1971; Turner & Lawrence, 1965), task variety, task identity, job challenge (Forehand & Gilmer, 1964; Hackman & Lawler, 1971; Porter & Lawler, 1965), and opportunities for growth and advancement (Herzberg, 1966; House & Rizzo, 1972a, 1972b). Other measures reflected job pressure and standards of performance (House & Rizzo, 1972a; Sells, 1963, 1968a).

Leader related measures included support, interaction facilitation, goal emphasis, and work facilitation (Bowers & Seashore, 1966; Campbell et al., 1970; Halpin, 1966; House & Kerr, 1973; Likert, 1961; Litwin & Stringer, 1968; Taylor, 1971), as well as measures of the leader's ability to plan and coordinate activities and influence superiors (House & Kerr, 1973). Also included were measures reflecting confidence and trust between supervisors and subordinates (Flacks, 1969; Jones et al., 1975; Sells, 1968a; Wood, 1974).

Measures of the workgroup environment included cooperation, friendliness, pride, and workgroup image (Blau, 1954; Farris, 1971; Hackman & Lawler, 1971; Hall, 1971; Steiner, 1972). Finally, variables primarily related to larger subunits and the total organization included organizational level ambiguity and conflict (Rizzo, House, & Lirtzman, 1970), communication patterns (Sells, 1968b; Shaw, 1971), consistency and fairness of organizational policies and reward pol-

icies and reward processes (Hackman & Lawler, 1971; Porter & Lawler, 1968; Vroom, 1964), esprit (Friedlander & Margulis, 1969; Halpin & Croft, 1963; Litwin & Stringer, 1968), and professional and organizational identification (Farris, 1971).

Individual resource measures. Measures of individual characteristics and resources were obtained for the Navy sample. These measures included age, marital status, years of formal education, intelligence (Navy General Classification Test or GCT scores), number of grades failed in school, size of preenlistment home town (5-point scale ranging from small town to large city), number of rooms in childhood house (5-point scale ranging from four or fewer rooms to 11 or more), and three composites measuring Ego Needs (three items reflecting needs for recognition and approval, α = .59), Self-Esteem (four items reflecting self-confidence and self-rated ability, α = .54), and preenlistment disciplinary record (three items reflecting school and discipline problems, α = .64).

Position variables. In an earlier article, Herman and Hulin (1972) suggested that variables primarily controlled by the organization (e.g., size, technology, etc.) are situational and thus may be distinguished from variables such as age or education which are brought into the situation by the individual and are relatively independent of organizational control. In attempting to apply this distinction, however, they found that the classification of some variables (e.g., tenure, hierarchical level) was arbitrary because such variables were mutually controlled by both the individual and the organization. Thus, in the present study, variables which reflected mutual organizational and individual influences were considered separately as a third category. Because such variables are typically related to the individual's position or status in the organization, they were referred to as "position variables".

Position measures obtained from the Navy sample included self-report meas-

ures of tenure, level or pay grade, number of men supervised, number of advanced or technical training schools (A or B schools) completed, and number of functional or other training schools completed. In addition, measures of job specialty were obtained from ship records and grouped into four types--unskilled, requiring little training; medium level mechanical; clerical and low level technical; and high level skilled (Orr, 1960; Seymour, Gunderson, & Vallacher, 1973).

Organizational and Subunit Situational Measures

Although situational measures were obtained from the Navy sample for ships, departments, and divisions, analyses were restricted to the subunit level for reasons discussed later. Thus, situational measures are described only for the levels at which subsequent analyses were conducted (i.e., departments and divisions).

Subunit structure measures. Measures of the anatomical aspects of subunit structure were obtained from ship records. These measures included: size--the number of men in the division/department; specialization--the number of separate occupational titles in the division/department; configuration/shape--the number of actual ranks between the lowest and highest ranking enlisted men in the division/department; and configuration/span of control--a ratio of the number of enlisted supervisory personnel (E-6 or above) to the number of men below that rank (a high score reflected a low span of control).

As shown in Table 2, operational aspects of subunit structure were measured by 21 questionnaire items (4 or 5-point Likert scales) derived from interviews with Navy personnel and from the research literature (James & Jones, 1976; Inkson, Pugh, & Hickson, 1970; Pugh, Hickson, Hinings, & Turner, 1968). Questionnaires were administered during the first weeks of deployment; responses were obtained from the heads of 91 departments and 224 divisions.

Insert Table 2 about here

A principal components analysis of the 21 items yielded seven components with eigenvalues $\geq$ 1.0. The seven components were: (a) General Centralization of Decision Making, (b) General Standardization of Procedures, (c) Interdependence with Other Work Units, (d) Formalization of the Role Structure, (e) Centralization of Work Allocation and Scheduling, (f) Formalization of Communication, and (g) a unique component reflecting Standardization of Procedures for Expending Funds. Separate analyses for departments and divisions yielded similar results. Component scores ($\underline{M}$ = 50, $\underline{SD}$ = 10) were calculated for each department and division by a direct solution method (see Harman, 1967, p. 349).

Internal consistency estimates of reliability were based on items with loadings $\geq |\pm.40|$. Except for Formalization of Communication ($\underline{\alpha}$ = .27) and the one item component for Standardization of Expenditures, alpha varied from .52 (Interdependence with Other Work Units) to .72 (General Centralization of Decision Making) and was considered acceptable given the limited number of items. The Formalization of Communication and Standardization of Expenditure components were deleted from remaining analyses.

Context measures. Context measures (also based upon questionnaire data from the 315 division and department heads) included technology and emphasis on various goals, as well as personnel, habitability, and equipment resources. Technology was measured by a 4-item composite (range = 4 to 19). A high score reflected a nonroutine, complex technology where success was difficult to evaluate and subject to uncertainty (cf. Hage & Aiken, 1969; Mohr, 1971; Perrow, 1967; Pugh, Hickson, Hinings, & Turner, 1969; Woodward, 1965). Coefficient alpha was only .44, but significant item intercorrelations suggested that they sampled one

conceptual area (James & Ellison, 1973).

The emphasis placed on various goals was measured in terms of two component scores. Four-point, Likert type items were constructed to measure nine major division and department goals as defined by Navy personnel. Components analyses of these items yielded two components ($\underline{\lambda}$ = 1.0, 42% of trace): (a) Emphasis on Morale, reflecting the emphasis on improving morale, developing new procedures and programs, promotion of personnel, and doing better than other departments/ divisions aboard ship ($\underline{\alpha}$ = .62); and (b) Emphasis on Following Standardized Procedures, reflecting the emphasis on following standardized procedures, reliability of performance, and overall effectiveness ($\underline{\alpha}$ = .51). Component scores ($\underline{M}$ = 50, $\underline{SD}$ = 10) were computed for each department and division by a direct solution method (Harman, 1967).

Other context measures included single, 5-point, questionnaire items for: (a) condition of work equipment; (b) availability of funds and supplies for work; (c) availability of funds for habitability improvements; and (d) personnel resources within the department/division.

Subunit criteria. The primary measures of subunit performance were developed through a multistage process. First, interviews with naval officers and ship commanders generated eight aspects of effective division performance: (1) Quality of Work, (2) Adherence to Planned Maintenance Schedules, (3) Readiness to Fulfill Commitments, (4) Performance under Pressure, (5) Efficiency, (6) Cooperation with Other Divisions, (7) Safety, and (8) Leadership Ability of Enlisted Supervisors. Following identification and definition of these dimensions, officers were asked to suggest three statements describing levels of performance (i.e., poor, adequate, superior) for each dimension.

The resulting 24 statements were randomly mixed (Arvey & Hoyle, 1974). Each department head rated subordinate divisions on each statement by indicating

whether the division performed: (a) better than, (b) equal to, or (c) below the performance level described in the statement (cf. Blanz & Ghiselli, 1972). Scores on each of the eight dimensions were calculated by summing the appropriate ratings where a "better than" rating was scored as a 3, "equal to" received a 2, and "worse than" received a 1. (The Guttman scaling procedure recommended by Blanz and Ghiselli provided no improvement over the above approach.)

Additional criteria included ratings by division heads concerning problems caused by the use of drugs and alcohol (4-point scale varying from frequent to nonexistent) and frequency of request to transfer from the division (3-point scale ranging from many requests to no requests).

Criterion data were collected at the end of each ship's deployment period (five to seven months after the context, structure, and individual questionnaire data). Data were obtained from 160 divisions, representing 19 ships and all division types. Despite attempts to obtain data for all divisions, some of the department and division heads had been rotated from the ship near the end of the cruise and their replacements lacked sufficient observations to provide the ratings.

Results

Results are presented as follows: (a) dimensions of psychological climate, (b) comparison of these dimensions across samples, (c) agreement and representativeness analyses for aggregated scores, (d) correlates of psychological and division climate, and (e) prediction of division criteria.

Dimensions of psychological climate. A principal components analysis of the 35 a priori composites was conducted on the Navy sample (see Table 3). Reliability estimates (coefficient alpha) for these composites ranged from .44 to .81 and were considered acceptable because alpha is a function of the number of items in the composite and tends to be conservative (Lord & Novick, 1968).

Similar values were found for the other samples.

Insert Table 3 about here

Six components with eigenvalues $\geq$ 1.0 were found (59% of trace). Following varimax rotation, the first component reflected perceived conflict in organizational goals and objectives, combined with ambiguity of organizational structure and roles, a lack of interdepartmental cooperation, and poor communication from management. Also included were poor planning, inefficient job design, a lack of awareness of employee needs and problems, and a lack of fairness and objectivity of the reward process. This component was labelled "Conflict and Ambiguity."

The second component reflected a job perceived as challenging, important to the Navy, and involving a variety of duties, including dealing with other people. The job was seen as providing autonomy and feedback, and demanding high standards of quality and performance. This component was designated "Job Challenge, Importance, and Variety."

The third component, "Leader Facilitation and Support," reflected leader behavior such as the extent to which the leader was perceived as helping to accomplish work goals by means of scheduling activities, planning, etc., as well as the extent to which he was seen as facilitating interpersonal relationships and providing personal support.

The fourth component, "Workgroup Cooperation, Friendliness, and Warmth," generally described relationships among group members and their pride in the workgroup. Only composites describing the workgroup loaded on this component. The fifth component, "Professional and Organizational Esprit," reflected perceived external image and desirable growth potential offered by the job and by the Navy. Also included were perceptions of an open atmosphere to express one's

feelings and thoughts, confidence in the leader, and consistently applied organizational policies, combined with non-conflicting role expectations and reduced job pressure.

The sixth and final component had loadings for only three composites. This component, "Job Standards," reflected the degree to which the job was seen as having rigid standards of quality and accuracy, combined with inadequate time, manpower, training, and resources to complete the task. Also reflected were a perceived lack of confidence and trust by supervisors and management personnel. Scores for the six components (M = 50, SD = 10) were computed by a direct solution method (Harman, 1967).

Comparison of psychological climate dimensions across samples. Psychological climate components from the Navy sample were compared to components derived from the other two samples (James, Hartman, Stebbins, & Jones, in press; Jones & James, Note 5). Each comparison sample also yielded six components with eigenvalues $\geq$ 1.0 (62.8% of trace for firemen, 66.8% for health managers). As indicated in Table 4, five of the six components--Leadership Facilitation and Support; Workgroup Cooperation, Friendliness, and Warmth; Conflict and Ambiguity; Professional and Organizational Esprit; and Job Challenge, Importance, and Variety--were similar across the three samples.[2]

Insert Table 4 about here

The sixth component tended to be somewhat less generalizable. For health managers, this component appeared to represent a finer breakdown of the Challenge, Importance, and Variety Component, with loadings by Job Importance (.70), Job Challenge (.58), and Job Standards (.40). Both latter variables, however, also had loadings $\geq |\pm.40|$ on components similar to the five mentioned previously for

the Navy sample. The sixth component for the firemen appeared to reflect mutual trust, with loadings by Confidence and Trust in Subordinates (.68) and in the Leader (.50).

Aggregation of psychological climate scores. As discussed earlier, the use of aggregated (i.e., mean) psychological climate scores to describe organizational and/or subunit climates required an empirical demonstration that various criteria were met. Suggested analyses included the demonstration of differences in perceptions across different situations, an assessment of the reliability of the aggregated score, and a demonstration of the construct validity of the aggregated score. In the present study, these analyses were conducted for each of the six psychological climate components. A subset of the Navy sample was used and aggregated scores were constructed for 223 divisions, 97 departments, and 20 ships (3,693 individuals). Only divisions with psychological climate data for six or more persons were included in these and subsequent analyses.

Between group differences in perception were assessed by means of separate one-way ANOVAs computed for each climate component, where each division represented a treatment cell and individual scores on the component were the dependent variable. Similar analyses were run for departments and ships. All resulting F ratios were significant.

As described in Ebel (1951), the ANOVA results were converted to intraclass correlation coefficients as estimates of statistical power and interrater reliability (McNemar, 1969). These values were relatively low, however. Median intraclass correlations were approximately .12 for divisions, .06 for departments, and .02 for ships. Only the values for divisions were within the range of power estimates reported in earlier studies. The reliability of each aggregated (mean) score was then measured by applying Spearman-Brown (S. B.) estimates to the intraclass correlation, where the harmonic mean for the appropriate organizational

level (e.g., division) was used as the adjusting factor (Guilford, 1954). The resulting estimates were considerably higher, with medians of approximately .68 for divisions and .71 for departments and ships.

The S. B. estimates indicated stability for the aggregated scores, but appeared to be somewhat fallible indicators of perceptual agreement where larger sample sizes were involved (e.g., departments and ships). This conclusion was further supported when department context and structure measures were compared with division context and structure scores (see Table 5). Department scores were added to the appropriate division data records (i.e., all divisions within a department received the same department score) and correlated with division scores (n = 205 divisions). Except for size and the two configuration variables, relationships were low or nonsignificant, indicating considerable intradepartment heterogeneity for context and structure measures. In other words, the majority of department context and structure scores did not appear to meaningfully describe their respective divisions. Such results coincided with the information provided by the intraclass correlations (rather than the S. B. estimates) that departments (and ships) consisted of relatively heterogeneous subunits.

Insert Tables 5 and 6 about here

The meaning of the aggregated score was further addressed by exploring relationships of psychological and subunit climate scores with various situational, individual, and position variables. Based on the results described above and because divisions were the most homogeneous subunits in terms of technology, function, personnel composition, etc., the remainder of the study focused on the division as the most meaningful organizational subunit. Thus, the division was the highest level of organizational subunit used in the remaining analyses and

psychological climate scores were aggregated only to the division level.

Correlates of psychological climate. Correlations with psychological climate were based on a sample of 3,726 sailors for whom all data were available. No differences were found between the total sample and this reduced sample in terms of psychological climate, individual resource, or position variable scores. Each man in a particular division was assigned that division's context and structure scores and these scores were correlated with his individual scores (see Table 6). In the interests of brevity, only significant correlations were reported (complete analyses are available from the authors).

Relationships between psychological climate and division context and structure scores were low and generally nonsignificant. Only the Workgroup Cooperation, Friendliness, and Warmth component showed any consistent pattern of relationship with these measures and then only in terms of low correlations with size-related variables (e.g., size, span of control, number of levels). The pattern of relationships between psychological climate and individual resource and position variables was somewhat stronger, although correlations were again low except for the Job Challenge, Importance, and Variety measure. This component was positively related to age, time in the Navy, hierarchical level, number of men supervised, number of other training schools, and self-esteem, but was negatively related to assignment to unskilled jobs. Such correlations appeared to reflect an increased responsibility and challenge associated with promotion. Individual resources and position variables were also related to Workgroup Cooperation, Friendliness, and Warmth and to Professional and Organizational Esprit. Higher scores on the latter component were generally found for the older, less educated sailors in the relatively unskilled jobs.

The major interest of the present study was identifying relationships with psychological and division climate. Some knowledge of relationships among the

various nonclimate domains was essential to fully interpret these findings, however. In the interests of brevity, such nonclimate interrelationships are presented in summary only. In general terms: (a) relationships among division context variables were generally low or nonsignificant; (b) correlations among anatomical structure measures were generally significant but moderate, operational structure measures represented uncorrelated components, and relationships between anatomical and operational structure measures were generally low and nonsignificant; (c) with the exception of the four job-type measures, relationships among the position variables were significant and greater than $|\pm.40|$; (d) relationships among individual resource measures were low but significant; (e) relationships between division context and structure measures tended to be low, although nonroutine technology and higher rated personnel resources were associated with smaller division sizes and low role formalization; (f) relationships between position variables and individual resource measures were low to moderate, where significant relationships among tenure, number of men supervised, hierarchical level, and training reflected general patterns of promotion in the military; and (g) relationships of division context and structure with position variables and individual resource measures tended to be low or nonsignificant, although divisions with higher levels of technology tended to have more intelligent men in more highly trained job specialties.

Correlates of division climate. In order to study the correlates of division climate, a typology of division climate was developed and the resulting climate types were correlated with the nonclimate variable domains. The division climate typology was obtained by clustering divisions with similar profiles on the six division climate scores. The profile analysis was simplified, however, because the divisions represented certain existing (formal) types based on homogeneity of function or task. Twelve types were represented (e.g., Navigation,

Deck Maintenance, Electronics, Communication, etc.) and divisions within each type tended to have similar climate profiles (e.g., the climate profiles for all Deck Maintenance divisions across the 20 ships were similar). Furthermore, the vectors of mean division climate scores, were visibly similar for some of the 12 functional types. Thus, it appeared that the functional types might be further collapsed on the basis of similarities in climate score profiles.

Both an a priori grouping and a hierarchical clustering of the 12 functional types (Ward & Hook, 1963) suggested seven meaningful climate clusters (a separate hierarchical clustering of the 223 separate divisions corroborated this conclusion). Finally, a multiple discriminant analysis (MDA) was conducted with the seven clusters as partitioning variables and the division climate scores (n = 223) as dependent variables. The MDA results supported the division climate typology and demonstrated that 78% of the variance in the discriminant space was attributable to between group differences, based on significant discriminant functions and the multivariate analog of ω^2 (Tatsuoka, 1970). An average of 72% of the climate score variance was included in the discriminant space.[3] Thus, the seven division climate types appeared to provide a meaningful basis for the remaining analyses addressing division climate.

Each of the seven division clusters was described and named on the basis of differences between the climate mean of that division cluster and the grand means for all divisions (see Table 7). For example, Cluster 1 was named "Cooperative and Friendly" because of comparatively high scores on Workgroup Cooperation, Friendliness, and Warmth. This cluster consisted of divisions concerned with navigation, antisubmarine warfare, and gunnery duties. Cluster 2, labelled "Conflicting and Ambiguous" because of a comparatively higher mean on Conflict and Ambiguity and a low mean score on Job Standards, was comprised of divisions concerned with missiles, nuclear weapons, fire control for the weapons system,

and divisions concerned with maintenance and repair of the ship's electrical, air conditioning, and life support systems. The means for Cluster 3 (Communications and Intelligence Divisions) suggested an uninvolving atmosphere which had relatively high, rigidly adhered to job standards. This cluster was interpreted as an "Alienating and Constrictive" division climate. Cluster 4 (Boilers and Main Propulsion Divisions) had a lower mean on the workgroup climate component, connoting an "Uncooperative and Unfriendly" climate. Comparatively lower means on Job Challenge, Importance, and Variety, Leadership Facilitation and Support, and Workgroup Cooperation, Friendliness, and Warmth suggested that Cluster 5 (Deck Maintenance) described a "Monotonous, Cold, and Unsupportive" climate.

Insert Table 7 about here

Cluster 6 reflected jobs that were challenging, important, multifaceted, and flexible, in conjunction with a cooperative, friendly, and warm workgroup atmosphere. Such a profile suggested an enriched and warm work environment. A low mean on organizational esprit, however, indicated that these divisions (primarily concerned with sophisticated electronics) did not provide opportunities that compared favorably with other organizations, especially civilian occupations. This cluster was therefore labelled "Enriched and Warm Work Environment/ Organizationally Uninvolving." In contrast, Cluster 7 (Supply Division) suggested a climate that was "Organizationally Involving" with high esprit and identification with the Navy and the ship, connoting a climate that compared favorably with alternatives. As discussed later, however, both Clusters 6 and 7 appeared to be influenced by the nature of their personnel and may thus be somewhat idiosyncratic.

Relationships between division climate and other variable domains were exam-

ined by means of an MDA. The seven division climate clusters provided the partitioning variables, and division context, structure, and aggregated position variables and individual resource scores served as dependent variables. Individual resource and position variables were aggregated only if the resulting scores appeared meaningful at the division level of analysis. Such aggregated variables were viewed as situational attributes representing the personnel composition of the division. Finally, whenever variables evidenced substantial conceptual and statistical overlap (e.g., age and tenure), only one was included.

The resulting MDA produced four significant discriminant functions ($p < .05$, Bartlett's V statistic). The first function accounted for 56.09% of the between cluster variance, the second 21.61%, the third 11.47%, and the fourth 5.07%. The multivariate analog of ω^2 for the four functions was .91. (Separate MDAs for each of the nonclimate domains provided ω^2s of .38 for division context, .67 for division structure, .62 for aggregated position variables, and .55 for aggregated individual resources.)

The first function discriminated most clearly between Clusters 1 and 6 and Clusters 4 and 5. Enriched and Warm Work Environment/Organizationally Uninvolving climates and, to a lesser extent, Cooperative and Friendly climates had a more intelligent and highly trained personnel composition than the Monotonous, Cold, and Unsupportive, and to some extent, Uncooperative and Unfriendly climates. In addition, the latter two climates were more specialized (i.e., more jobs per division) than the enriched and warm climates, but less specialized than the Cooperative and Friendly climates. These results were consistent with the characteristics of the divisions comprising the climate clusters; for example, Electronics and Navigation Divisions required advanced, technical training, while Deck Maintenance, Boilers, and Machinery Divisions did not require the same combination of technical training and personnel intelligence.

The second discriminant function most clearly identified the Organizationally Involving climate cluster. A defining variable for this function was tenure, partly reflecting the somewhat idiosyncratic nature of the cluster. The divisions comprising this cluster (Supply) contained several foreign-born individuals who had enlisted in the Navy as stewards because such assignment was seen as preferable to organizations and careers available in their own country. Thus, an above average percentage of these individuals had reenlisted. Supply Divisions were also the most structurally specialized of the divisions studied, providing a variety of personnel services (ship's store, food service, barber, laundry, etc.).

The third discriminant function differentiated most distinctly between the Uncooperative and Unfriendly and the Monotonous, Cold, and Unsupportive climates. The latter (i.e., Deck Maintenance Divisions) had comparatively flatter division configurations, larger spans of control, less formalization of roles, and better work equipment than the former. Moreover, Deck Maintenance Divisions had the lowest average tenure and training of all divisions studied.

The last discriminant function indicated that a Conflicting and Ambiguous division climate (e.g., Missile and Nuclear Weapons Divisions), and to a lesser extent an Enriched and Warm Work Environment/Organizationally Uninvolving climate, had comparatively higher degrees of interdependence with other divisions, more nonroutine and complex technologies, higher ratings of personnel, and more formal education. Lower overall standardization of procedures and a higher emphasis on morale were also indicated. These latter variables, however, had nonsignificant univariate F ratios and thus were interpreted with caution.

In summary, the psychological climate measures had generally low relationships with variables reflecting division context and structure as well as individual resources and position, although many of these variables differentiated

among the division climate clusters. This contrast in results reflected both theoretical and statistical factors discussed later.

Prediction of division criteria. Division performance ratings evidenced a moderate positive leniency (range = 3 to 9, $\underline{M}$ = 6.34 to 7.41, $\underline{SD}$ = 1.10 to 1.60). Also indicated were few requests for transfer and infrequent problems with drugs and alcohol. Except for the safety rating, criterion intercorrelations were significant, positive, and of moderate magnitude (see Table 8). While not indicating large amounts of "halo," the correlations did suggest the possibility of a more parsimonious composite criterion. Thus, a unit-weighted criterion composite excluding safety ($\underline{\alpha}$ = .94) was constructed for subsequent validity analyses.

For cross-validation purposes, the 160 divisions with criterion data were randomly separated into two subsamples (after stratification by ship type and number of divisions with data); all divisions from a ship were placed in the same subsample. This provided "true" cross-validation samples ($\underline{ns}$ = 84 and 76) where the two subsamples were independent (i.e., from different ships).

Initial predictive validities for each subsample are reported in Table 9. Predictors included all the division context, structure, and aggregated position and individual resource variables employed in the MDA for division climate.[4] Validities for these variables were calculated as product-moment correlations. A somewhat more complex procedure was needed to calculate the validities for the seven division climate clusters. The validity coefficient for the climate clusters was based on a unit-weighted regression procedure (cf. Wainer, 1976; Wainer & Thissen, 1976) whereby a correlation was computed between a unit-weighted composite of the division climate clusters (represented by dummy variables) and the criterion. The formula for the procedure was presented by Guilford and Fruchter (1973) and James and Ellison (1973). It is important to note that the initial

and cross-validities were identical because of the use of unit-weights and the inclusion of all climate clusters when calculating the validities.

Insert Tables 8, 9, and 10 about here

The cross-validities for the nonclimate domains are reported in Table 10. These cross-validities were calculated as follows. Only variables in each domain which had significant initial validities in the other sample were included in these analyses. Predictors were standardized, combined into a unit-weighted composite, then correlated with the criterion. For example, the cross-validity for division context for Sample B was based on Emphasis on Morale, condition of equipment, rating of personnel, and availability of funds and supplies for work needs, all of which had significant initial validities in Sample A. The overall cross-validity reported in Table 10 was based on all variables used to compute the cross-validities for the reported subsample.

The cross-validities (also predictive validities) were, with one exception, significant and at least moderate in magnitude. Among the nonclimate domains, the variables of greatest interest were those with significant predictive validities for both subsamples. For example, the context variables with significant validities for both samples were the rating of personnel and the availability of funds and supplies for work. In terms of personnel composition, all the aggregated individual resource and position variables except tenure contributed to prediction in both samples. The relationship between the climate clusters and the criterion was assessed in terms of the mean criterion scores for each climate cluster. The Enriched and Warm Work Environment/Organizationally Uninvolving and Cooperative and Friendly climates received the highest criterion scores, while the Monotonous, Cold, and Unsupportive climate received the lowest.

Discussion

The discussion of results is presented in terms of four basic issues: (a) the development of a measure of psychological climate, (b) the construct validity of the psychological climate measure, (c) the use of aggregated psychological climate scores to describe subunit and organizational climates, and (d) the construct validity of subunit climate measures. When interpreting the findings of the present study, however, certain idiosyncracies of the U. S. Navy sample should be noted. For example, decisions regarding personnel selection, training, assignment, promotion, pay, and so forth tended to be outside the immediate jurisdiction of the ship. Enlistment contracts were for designated terms, with high turnover after the first enlistment. Further, although the data demonstrated variance in many aspects of context and structure, ships have relatively formal, mechanistic structures compared to many other organizations; many context and structure characteristics are determined by levels of command above the ships. Such factors might dampen relationships among structure, context, individual resources, position variables, and subunit and psychological climate, thus reducing generalizability of results.

Development of a psychological climate measure. In regard to the psychological climate measure, findings were strengthened by the use of multiple, divergent samples (i.e., military/civilian, managerial/nonmanagerial, large/small subunits). For example, assumptions that psychological climate represented multidimensional descriptions of the situation and that a common core of dimensions applied across organizations were supported by the similarity of components across samples. Such similarity also argued for component stability and generalizability.

The components themselves appeared psychologically meaningful, were lacking in statistical complexity, and reflected distinctions among various organiza-

tional levels of explanation. One component described task and role characteristics; a second reflected workgroup aspects; a third described leadership characteristics; and two components generally reflected subunit and organizational attributes. Such results suggested that work environment perceptions are not entirely global or diffuse but reflect organizational and conceptual distinctions. This interpretation was bolstered by other findings (Mowday, Porter, & Dubin, 1974) that workgroup perceptions (and attitudes) differed from those about the total organization. Conversely, components reflecting the total organization also had loadings by variables describing leader and task or role characteristics. Such findings were consistent with the hypothesis that characteristics at more macro organizational levels were linked to individual experience in terms of influences on more immediate aspects such as those of the task, role, and so forth.

The psychological climate components generally reflected dimensions reported in the literature. Workgroup Cooperation, Friendliness, and Warmth was similar to dimensions labelled Team Spirit (Meyer, 1968), Distant vs. Close Working Relationships (Thornton, 1969), Intimacy (Friedlander & Margulis, 1969), Social Relations (Pritchard & Karasick, 1973), and Friendly-Unfriendly (Lawler et al., 1974). Conflict and Ambiguity was reflected as conflict by Litwin and Stringer (1968), Schneider and Bartlett (1968), and Pritchard and Karasick (1973), while ambiguity was reflected (although negatively) by structure (Campbell et al., 1970; Litwin & Stringer, 1968; Pritchard & Karasick, 1973; Schneider & Bartlett, 1968), Organizational Clarity (Meyer, 1968), Normative Control (Payne & Pheysey, 1971), Effective Organizational Structure (Waters et al., 1974), and Efficiency and Clarity of Purpose (Thornton, 1969). Similar comparability was evident for Job Challenge, Importance, and Variety and Professional and Organizational Esprit.

Leadership Facilitation and Support, however, was not as directly general-

izable, although most studies incorporated one or more leadership dimensions. For example, Schneider and Bartlett (1968) mentioned Managerial Support, and Campbell et al. (1970) discussed Consideration, Warmth, and Support. Waters et al. (1974) mentioned Close, Impersonal Supervision and Employee Centered Orientation, whereas Friedlander and Margulis (1969) mentioned four separate leadership factors--Aloofness, Production Emphasis, Trust, and Consideration. Closer inspection, however, revealed that most of the factors from these other studies were represented as a priori composites in the present study, indicating that the Leadership Facilitation and Support component might reflect a more abstract variable representing relationships among a number of aspects of leadership.

In sum, the psychological climate instrument yielded components that appeared to be: (a) conceptually meaningful, (b) internally consistent, (c) generalizable across organizations and organizational levels, and (d) compatible with the existing literature. Other indications of the construct validity of the instrument were less clear, however.

Construct validity of the psychological climate measure. It was suggested earlier that psychological climate represents an individual processing of situational data and thus reflects both the situation and the individual. The present study, however, generally failed to identify significant relationships between psychological climate and subunit context and structure, although differences in psychological climate were found across divisions. A partial explanation for such findings might lie in the "level of explanation" argument (cf. Campbell et al., 1970; Indik, 1968; Payne & Pugh, 1976) that influences of context and/or structure upon climate perceptions are mediated by organizational, subunit, or group "processes" such as leadership, communication, workgroup interaction, and reward mechanisms. Thus, psychological climate should be more highly related to process variables than to context or structure. In the pres-

ent study, although perceptions of such processes were reflected by many of the a priori composites in the questionnaire, psychological climate was viewed as involving a psychological processing, abstracting, and structuring of these perceptions and is thus somewhat removed from direct ties to context and structure. Such reasoning suggested that the influences of subunit context and structure upon psychological climate are indirect so that such relationships would not be expected to be as large as relationships with more directly linked variables (note the fourth general hypothesis).

The same reasoning suggested that position variables and individual resources should be more highly related to psychological climate because different positions are expected to have different organizational experiences and thus different psychological climates. Moreover, it has been suggested that individual resources influence entry into various positions (Herman, Dunham, & Hulin, 1975; Newman, 1975). Such expectations received but limited support. For example, Job Challenge, Importance, and Variety evidenced positive but moderate relationships with correlates of hierarchical level (e.g., age, training, tenure, men supervised, and self-esteem) and reflected perhaps the responsibility and challenge inherent in supervisory positions as well as the trend for men in more technical jobs to be promoted more rapidly. Other correlations between psychological climate, position variables, and individual resources were considerably lower and often nonsignificant ; however, although certain patterns were indicated. For example, more technically trained, intelligent sailors tended to perceive more cooperation, friendliness, and warmth in their workgroup, while at the same time perceiving the Navy as not providing careers that compared favorably with civilian organizations.

The suggestion that position variables accounted for more psychological climate variance than individual resources (Herman et al., 1975; Newman, 1975)

was generally not supported. Correlations with psychological climate were similar in pattern and magnitude for both sets of variables. It is likely, however, that such findings reflected certain sample characteristics as well as the fact that position variables represent mutual influences by situational and individual characteristics. For example, promotion to a higher level requires a specified time in pay grade and thus a minimum age. In a similar vein, selection for various types of training depended upon the attainment of certain test scores. Finally, the sample included only enlisted personnel, thus limiting the variance on some variables, especially those related to position.

In sum, indications of the construct validity of the psychological climate measure were, at best, mixed. The similarity of components across samples and the resemblance to components reported by other studies supported assumptions of validity, but the low magnitude of correlations with situational, individual, and positional measures remains troublesome. The patterns of significant correlations were generally as hypothesized, but most were too low to produce clear evidence of construct validity for the measure. While the level of explanation concept provides a partial rationale for such findings, many questions remain unanswered about the nature of the linkages between individual perceptions as represented by the psychological climate components and the relatively objective aspects of the situation reflected by the structural and context measures.

Aggregation of psychological climate scores. Indications of construct validity for the aggregated climate scores were generally stronger than for the individual scores in terms of both the magnitude of correlations and the predictive validities against division performance criteria. The level of explanation argument again provided a possible rationale for such findings insofar as division climate represented a situational attribute and was thus expected to be more highly related to other situational measures (i.e., division context and struc-

ture) than was psychological climate, which was individual in nature. On the other hand, the use of aggregated (mean) individual scores to represent division climate partialled out variance due to individual differences in perception and raised questions of aggregation bias. Thus, justification of such aggregation was of major importance.

Both the aggregation of psychological climate to the division level and the decision to limit aggregation to that level were based on several factors, including: (a) the apparent predictive and construct validity of the division climate scores, (b) the apparent inappropriateness of higher levels of explanation for interpreting aggregated psychological climate scores, (c) the low indices of perceptual agreement for departments and ships, and (d) the lack of representativeness for many of the department context and structure variables. With respect to perceptual agreement, estimates of variance attributable to organizational units (e.g., intraclass correlations) appeared to be more meaningful than Spearman-Brown estimates adjusted for the average number of raters per organizational unit. The Spearman-Brown estimates for departments and ships were substantial in spite of findings of heterogeneous division context, structure, personnel compositions, and climates. Thus, while the Spearman-Brown formula indicated the reliability of the mean score, it appeared misleading when used as an estimate of perceptual or situational homogeneity.

Construct validity of subunit climate measures. An important index of the validity of the division climate scores was the pattern of relationships of the seven division climate clusters with both the potential correlates and with the division performance criteria. In terms of such relationships, Monotonous, Cold, and Unsupportive climates were associated with large spans of control and large division sizes, low interdependence with other divisions, relatively routine and noncomplex technologies, and lower average intelligence, education, training,

and tenure. Furthermore, the divisions in this cluster (e.g., Deck Maintenance) had the lowest overall ratings on the criteria. Similarly, Uncooperative and Unfriendly climates (e.g., Boiler Divisions) were related to comparatively large spans of control, tall configurations, low interdependence, and low average tenure, education, and training. Criterion ratings also tended to be below average.

In contrast, Enriched and Warm Work Environment/Organizationally Uninvolving climates (Electronics Divisions) tended to have comparatively nonroutine, complex technologies, flat configurations, low specialization, small division sizes, and high average intelligence, education, and training (but not tenure). Cooperative and Friendly climates (e.g., Navigation Divisions) had the lowest average span of control of all climates studied and were further characterized by high averages on intelligence and training as well as above average criterion ratings.

Such results at least partially supported the hypothesis that comparatively large subunit sizes and tall configurations were related to uncooperative and unfriendly workgroup interrelationships (Payne & Mansfield, 1973; Porter & Lawler, 1965), unsupportive leadership, communication difficulties (Payne & Pheysey, 1971), reduced group involvement, and less harmonious interpersonal relationships (Pheysey, Payne, & Pugh, 1971). Also supported were hypotheses that the above forms of anatomical structure, when combined with routine technology and specialization (also related to size and tall configuration), were associated with low task complexity, variety, challenge, and importance (Hackman & Lawler, 1971; Hackman & Oldham, 1975; Woodward, 1965), monotony (Blood & Hulin, 1967; Hulin & Blood, 1968); and reduced autonomy (Forehand & Gilmer, 1964). Finally, climates related to higher levels of anatomical structure (i.e., large size, tall configuration, and high specialization), and, to a lesser extent routine technology, tended to be associated with low subunit criterion scores, whereas the opposite was true for climates reflecting low levels of anatomical structure and

nonroutine technology.

Of further interest were findings that small spans of control, often linked to mechanistic structures, were associated with warm and enriched climates, whereas large spans of control, often linked to organic structures, were associated with cold and monotonous climates. Such findings reflected the nature of the divisions comprising the above climates. For example, divisions with warm and enriched climates tended to be more technologically advanced, smaller, and comprised of individuals at higher pay grades. These results appeared to support suggestions that appropriate spans of control depend upon such factors as technology, job, and personnel characteristics and that no one span of control is ideal for all situations (cf. House & Miner, 1969).

With respect to the remaining climate clusters, Conflicting and Ambiguous climates (e.g., Missiles, Nuclear Weapons) were characterized by comparatively high interdependencies with other divisions and by nonroutine, complex technologies. A partial explanation of these results was provided by Corwin (1969) who noted that increased interdependencies and interactions among organizational units increased the probability for organizational conflict, and by House (1971) who hypothesized that nonroutine jobs tended to be inherently ambiguous. On the other hand, Conflicting and Ambiguous climates were not associated with such measures as low role formalization, decentralized decision making, and low standardization, as suggested by Hickson (1966), House (1971), House and Rizzo (1972a), and Pheysey et al. (1971). In fact, a high level of standardization was indicated for these divisions.

Alienating and Constrictive climates (e.g., Communications and Intelligence Divisions) were most closely related to personnel compositions with high average scores on intelligence and training, although small division size and low specialization were also indicated. In contrast, the Organizationally Involving cli-

mates (Supply Divisions) consisted of personnel with longer average tenure but below average training and intelligence. Large division sizes, high specialization, high role formalization, routine technologies, and below average criterion scores were also indicated. These results, when combined with those for the Enriched and Warm Work Environment/Organizationally Uninvolving climate cluster, indicated that involving climates were positively related to routine technologies and high levels of anatomical structure, whereas uninvolving climates were related to nonroutine technologies and low levels of anatomical structure. Certain aspects of personnel composition are important in interpreting these findings, however. That is, uninvolving climates failed to provide relatively intelligent and trained individuals with careers that compared favorably to civilian occupations, while the opposite appeared to be the case for involving climates (which, as noted earlier, included several foreign-born individuals for whom the Navy provided a comparatively advantageous career). Such points further emphasized the need to consider personnel compositions when interpreting relationships among measures of subunit climate, context, and structure (Payne & Pugh, 1976).

In summary, it appeared that the division climate clusters (and thus the division climate measures) were related to both situational and personnel characteristics in predictable and meaningful ways. Except for the measures of operational structure, relationships were generally as hypothesized. Moreover, the 5- to 7-month predictive validities against division performance measures were quite encouraging given the low magnitude of such relationships normally reported in the literature. Such findings appeared to argue for the construct validity of aggregated psychological climate scores used to describe subunit climate when the subunits are relatively homogeneous.

Implications. The present study had a number of implications for future research involving psychological and/or subunit climate. Among these was the

finding of a common core of dimensions that characterized individual perceptions (psychological climate) across diverse situations. Such results implied that a parsimonious set of dimensions may describe different situations, although additional, more specific dimensions might be needed to describe certain idiosyncracies of each situation. Also important was the finding that the use of aggregated psychological climate scores or profiles of aggregated scores to describe situational influences was appropriate only for relatively homogeneous subunits and that these tended to be at lower levels of the organization. In a related vein, it appeared that the functional type of division was a more important facet of its climate than was the superordinate organization. In other words, climates in similar divisions from different ships were more alike than were climates in disparate divisions from the same ship. Similar results were found for context and operational structure. Such findings have numerous implications for future organizational research and development programs, suggesting that attention should be focused on relatively homogeneous units rather than larger subunits and total organizations.

One of the most important findings of this study was that division climate appeared to provide a meaningful linkage between situational attributes such as context and structure and subunit criteria. That is, division climate reflected situational differences that appeared to portray how such measures were operationalized into situational influences on subunit performance. Regarding psychological climate, on the other hand, division context and structure appeared to be several steps removed from individual perceptions and perhaps mediated by intervening variables such as processes and division climate. Moreover, psychological climate appeared to reflect complex relationships among positional and individual characteristics as well as situational measures. The present study addressed a number of these relationships, with only partial success. Future

research is needed to more adequately identify salient individual and position variables and their roles in the formation of psychological climate. Such studies will likely benefit from the inclusion of objectively measured process variables to explore relationships with psychological, subunit, and organizational climate.

The present study must be viewed as a preliminary step, awaiting additional investigations with other types of organizations to extablish the generalizability of results and the further incorporation of longitudinal designs to provide a basis for causal interpretation. This study, however, suggested several apparently fruitful areas for future research regarding conceptual properties of subunit and psychological climate.

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Footnotes

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[1]Two points should be discussed regarding the uses of aggregated scores. First is the form of aggregation. Most frequently used are mean perception scores. As discussed by Payne et al. (1976), the mean score appears to provide a legitimate situational descriptor as long as the perceptual referent is the situation and not the individual. Second, aggregated and individual scores will be functionally dependent on each other thus limiting the researcher's ability to simultaneously investigate psychological and subunit or organizational climate (cf. Hannan, 1971).

[2]Sampling distributions are not available for coefficients of congruence, thus significance tests could not be conducted. Mulaik (1972), however, pointed out that it is a common practice to accept two factors as equivalent if the index of factor similarity is .90 or greater. On the other hand, this practice, or subjective criterion, is generally employed only after a least squares approxi-

mation (i.e., Procrustes rotation) of one factor pattern from the other. Otherwise, the coefficients of congruence may underestimate the actual degree of factor similarity. Due to recent questions regarding Procrustes rotations (Horn & Knapp, 1974; Katzenmeyer & Stenner, 1975), such a procedure was not employed in the present study. Rather, the component structures provided by the varimax rotations were compared. Although a point-estimate for equivalence could not be provided, .90 appeared somewhat conservative.

[5]The multivariate analog of $\underline{\omega}^2$ provides an estimate of the proportion of variance in the discriminant space attributable to group differences. It is usually not, however, an index of redundancy or the proportion of variance in the dependent variables attributable to group differences. Procedures for assessing redundancy are unclear at the present time (cf. Nicewander & Wood, 1974, 1975). Thus, the proportion, .72, reflects the average amount of variance of the dependent variables accounted for by the discriminant space, based on the sum of the squared correlations between the dependent variables and the significant discriminant functions divided by the number of variables (cf. Nicewander & Wood, 1975).

[6]The context scores, the operational structure scores, and the two global ratings (requests for transfer and use of drugs and alcohol) were all provided by the division head, thus experimental dependence may have contributed to the predictive validities. However, the magnitude of the predictive validities for the context-global rating criteria (same rater) were approximately equal to the median predictive validities for the context-performance rating criteria (different raters). A similar result was also found for operational structure. Thus, spurious relationships based on experimental dependence were not indicated.

Table 1

Climate Related Variables Arranged by Four Categories

Job and Role Characteristics

Role Ambiguity - The extent to which a task is unclear in its demands, criteria, or relationships with other tasks.

Role Conflict - The presence of pressures for conflicting or mutually exclusive behaviors.

Job Autonomy - The ability of a person in a given job to determine the nature of the tasks or problems facing him and to arrive at a course of action.

Job Variety - The degree to which the job calls for the individual to engage in a wide range of behaviors or to use a variety of equipment in his work.

Job Importance - The extent to which the person feels his job makes a meaningful contribution and is important to the organization.

Job Feedback - The extent to which an individual is aware of how well he is performing on his job.

Job Challenge - The extent to which a job gives the individual a chance to use his skills and abilities.

Job Pressure - The extent to which there is inadequate time, manpower, training, or resources to complete assigned tasks.

Efficiency of Job Design - The extent to which job behaviors and job design lead to organizationally valued goals.

Job Standards - The extent to which the job demands rigid adherence to exacting standards of quality and accuracy.

Opportunities to Deal with Others - The extent to which the task requires or provides opportunities to interact with other persons.

Characteristics of Leadership

Leader Support - The extent to which the leader is aware of and responsive to the needs of his subordinates. Behavior which enhances someone else's feelings of personal worth and importance.

Goal Emphasis - Behavior which stimulates personal involvement in meeting group goals. Leader emphasizes high standards of performance and sets an example by working hard himself.

Work Facilitation - Behavior which helps achieve goal attainment. Includes such activities as scheduling, coordinating, planning, and providing resources.

Interaction Facilitation - Behavior which encourages the development of close, mutually satisfying relationships within the group.

Planning and Coordination - Supervisor's ability to plan and coordinate the group's activities so that maximum performance is possible.

Upward Interaction - The degree to which a supervisor is successful in his interactions with higher levels of command.

Confidence and Trust-UP - Group members' feelings of trust and confidence in the supervisor.

Confidence and Trust-DOWN - The degree to which supervisors trust the performance and judgments of subordinates.

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Table 1 (Cont'd)

Workgroup Characteristics

Workgroup Cooperation -	An atmosphere in which there is cooperative effort among individuals to carry out difficult tasks.
Reputation for Effectiveness -	The extent to which the group is seen as able to produce work of higher quality and quantity than other groups in the organization.
Workgroup Esprit de Corps -	The extent to which members take pride in their group.
Workgroup Friendliness and Warmth -	The extent to which there is communication and trust among members of a workgroup and the atmosphere is characterized by friendly relations.

Subsystem and Organizational Characteristics

Openness of Expression -	The degree to which individuals feel the atmosphere is conducive to the expression of individual opinions, ideas, and suggestions.
Organizational Communication-DOWN -	The degree to which information is communicated to subordinates concerning impending changes in procedures, policies, and so forth.
Interdepartmental Cooperation -	The extent to which there are friendly, cooperative interactions between departments.
Conflict of Organizational Goals and Objectives -	The degree to which goals and policies of one subsystem are in conflict with those of other groups in the same organization.
Ambiguity of Organizational Structure -	The extent to which organizational channels of authority are obscure or undefined.
Consistent Applications of Organizational Policies -	The degree to which organizational policies are consistently and fairly applied.
Organizational Esprit de Corps -	The degree to which an individual believes his organization performs an important function and offers him unique opportunities for growth and reward.
Planning Effectiveness -	The degree to which the organization is able to plan so that workgroups have the required supplies and there is little wasted effort.
Fairness and Objectivity of the Reward Process -	The degree to which an organization rewards individuals for performance rather than seniority or other non-performance reasons.
Opportunities for Growth and Advancement -	The degree to which an individual feels that the organization provides a vehicle for development and advancement of desired personal skills, goals, and rewards.
Awareness of Employees' Needs and Problems -	The extent to which an organization attempts to assess and respond to its employees' needs and problems.
Professional Esprit de Corps -	The degree to which an individual believes his profession has a good image to outsiders and provides opportunities for growth and advancement.

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Table 2

Principal Components for Items Reflecting Four Proposed Dimensions of Operational Structure

Variables	Component Loadings							
	1	2	3	4	5	6	7	h^2
Formalization								
1. Job responsibilities are defined				.85				.75
2. Activities specified in writing				.84				.73
3. Emphasis on written communication						.79		.72
4. Must follow chain of command						.59		.58
Standardization								
5. Procedures for and frequency of inspections		.48						.42
6. Reporting performance		.57						.37
7. Procedures for discipline		.48						.42
8. Initiating of meetings and formal activities		.74						.57
9. Expenditure of funds							.87	.79
10. Training personnel		.59						.46
Interdependence								
11. Depend on other units for resources			.70					.51
12. Consider other units' needs in preparing work schedules			.70					.52
13. Joint decision making bearing on own act			.70					.56
Centralization of Decision Making								
14. Determine own budget[a]	.52							.40
15. Allocate work					.82			.74
16. Determine work schedule					.80			.74
17. Adopt new program or policy	.67							.47
18. Set standards of performance	.70							.53
19. Set overall goals	.77							.61
20. Autonomy in making decisions	.66							.52
21. Determine methods for goals and activities	.48							.34

Note. Proportion of trace accounted for = .56; only loadings $\geq |.40|$ are reported; n = 315 divisions and departments.

[a] High scores reflect high centralization.

Table 3

Principal Components of Psychological Climate for U.S. Navy Enlisted Personnel

Composites	Component Loadings[a] 1	2	3	4	5	6	h^2	Alpha	No. of Items
Job or Role									
1. Role Ambiguity	.48	-.44					.62	.62	6
2. Role Conflict					-.49		.59	.58	6
3. Job Autonomy		.52					.66	.68	4
4. Job Variety		.67					.59	.68	4
5. Job Importance		.68					.61	.65	4
6. Job Feedback		.46	.51				.55	.52	3
7. Job Challenge		.75					.69	.77	4
8. Job Pressure					-.53	.40	.59	.54	6
9. Efficiency of Job Design	-.46						.47	.46	5
10. Job Standards		.42				.54	.60	.52	5
11. Opportunity for Dealing with Others		.54					.33	.47	2
Leadership									
12. Support			.72				.78	.81	5
13. Goal Emphasis			.72				.69	.62	4
14. Work Facilitation			.80				.79	.73	5
15. Interaction Facilitation			.77				.73	.70	4
16. Planning and Coordination			.61				.65	.56	3
17. Upward Interaction			.50		.48		.50	.47	2
18. Confidence and Trust - EP					.61		.49	.50	2
19. Confidence and Trust - DOMH						-.40	.54	.52	5
Workgroup									
20. Cooperation				.75			.74	.73	4
21. Friendliness and Warmth				.72			.65	.63	3
22. Reputation for Effectiveness				.59			.58	.54	3
23. Workgroup Esprit de Corps				.64			.63	.69	4
Subsystem and Organization									
24. Openness of Expression					.64		.64	.69	5
25. Organizational Communication - DOMH	-.55						.62	.68	4
26. Interdepartmental Cooperation	-.57						.37	.56	3
27. Conflict of Organizational Goals and Objectives	.66						.57	.55	5
28. Ambiguity of Organizational Structure	.66						.58	.44	3
29. Consistent Applications of Organizational Policies	-.47				.45		.46	.47	4
30. Organizational Esprit de Corps					.66		.61	.61	6
31. Professional Esprit de Corps					.79		.67	.67	5
32. Planning and Effectiveness	-.53						.56	.54	5
33. Fairness and Objectiveness of the Reward Process	-.51						.40	.53	2
34. Opportunities for Growth and Advancement					.57		.62	.63	7
35. Awareness of Employee Needs and Problems	-.61				.52		.54	.56	3

Note. $N = 4,315$.

[a]Only Loadings $\geq |.40|$ are reported.

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Table 4

Coefficients of Congruence for Psychological Climate Components Across Three Samples

Sample	Components								
	Leadership Facilitation and Support			Workgroup Cooperation, Friendliness and Warmth			Conflict and Ambiguity		
	1	2	3	1	2	3	1	2	3
1. Navy Enlisted[a]	--			--			--		
2. Health Management[b]	.97	--		.91	--		.75	--	
3. Firemen[c]	.96	.96	--	.87	.90	--	.93	.74	--
	Professional and Organizational Esprit de Corps			Job Challenge, Importance, and Variety					
	1	2	3	1	2	3			
1. Navy Enlisted	--			--					
2. Health Management	.83	--		.77	--				
3. Firemen	.90	.77	--	.89	.89	--			

[a] $\underline{n}$ = 4,315

[b] $\underline{n}$ = 504

[c] $\underline{n}$ = 398

Table 5

Correlations Between Department and Division Context and Structure

Variables	Department/Division Correlations
Context	
1. Emphasis on Morale	.15*
2. Emphasis on Following Standardized Procedures	.06
3. Technology	.13
4. Funds for Habitability	.03
5. Condition of Equipment	.23**
6. Rating of Personnel	.23**
7. Funds and Supplies for Work	.23**
Structure	
8. Size of Department (Division)	.62**
9. Specialization - Jobs/Department (Division)	.11
10. Configuration - Span of Control	.64**
11. Configuration - Number of Levels	.64**
12. General Centralization	.21**
13. General Standardization	-.01
14. Interdependence	.14*
15. Formalization of Roles	.16*
16. Centralization of Work	.07

Note. n = 205 divisions with both department and division data.

*$p < .05$.

**$p < .01$.

Table 6

Correlations Between Psychological Climate and Individual Resources, Position Variables, and Selected Division Content and Structure Measures[a]

Variables	Psychological Climate: Conflict and Ambiguity	Job Challenge, Importance, and Variety	Leadership Facilitation and Support	Workgroup Cooperation, Friendliness, and Warmth	Professional and Organizational Esprit	Job Standards
Division Content						
1. Technology				.10		-.09
Division Structure						
2. Size of Division				-.10		
3. Configuration - Span		.14		.13		
4. Configuration - Levels				-.13		
Position Variables						
5. Time in Navy		.44			.17	
6. Hierarchical Level		.50		.15		
7. Men Supervised		.30				
8. Number Advanced Training Schools		.21		.15		
9. Number Other Training Schools and Courses		.33		.13		
10. Unskilled Jobs		-.31		-.14	.12	
11. Mechanical Jobs		.15		-.09		
12. High Level Technical Jobs				.23	-.13	
Individual Resources						
13. Age		.42			.18	
14. Education				.10	-.11	
15. Intellectual Aptitude				.12	-.19	
16. Ego Needs		.14			.17	.17
17. Esteem		.25		.19		
18. House Size		-.09			-.15	
19. Discipline	.10	-.11		-.12		

Note. $n = 3,726$.

[a]Only significant ($p < .01$) relationships are reported.

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Table 7

Deviations of Division Climate Cluster Means From the Mean of All Clusters

Division Climate Cluster[a]	Division Climate: Conflict and Ambiguity	Job Challenge, Importance, and Variety	Leadership Facilitation and Support	Workgroup Cooperation, Friendliness, and Warmth	Professional and Organizational Esprit	Job Standards
Cluster 1 (n = 53)				+		
Cluster 2 (n = 37)	+					-
Cluster 3 (n = 40)					-	+
Cluster 4 (n = 34)				-		
Cluster 5 (n = 20)		- -	-	- -		
Cluster 6 (n = 15)		+ +		+	-	-
Cluster 7 (n = 24)					+	

Note. + + = the division cluster mean for the respective climate dimension was one standard deviation or more above the mean for all divisions; + = the division cluster mean was one-half of a standard deviation above the overall mean; - = the division cluster mean was one-half standard deviation below the overall mean; and - - = the division cluster mean was one standard deviation or more below the overall mean.

[a]The division types included in each climate cluster were as follows: Cluster 1--Navigation, Antisubmarine Warfare, and Guns; Cluster 2--Missiles, Fire Control, Nuclear Weapons, and Auxiliary; Cluster 3--Communications and Intelligence; Cluster 4--Boilers and Machinery; Cluster 5--Deck Maintenance; Cluster 6--Electronics; and Cluster 7--Supply.

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Table 8

Correlations Among Division Criteria

Criteria	1	2	3	4	5	6	7	8	9	10
1. Quality of Work	—									
2. Planned Maintenance Schedule	.55**	—								
3. Readiness to Fulfill Commitments	.59**	.41**	—							
4. Performance under Pressure	.48**	.48**	.42**	—						
5. Efficiency	.69**	.57**	.56**	.49**	—					
6. Cooperation	.51**	.29**	.49**	.40**	.51**	—				
7. Safety	.31**	.14	.36**	.03	.24**	.09	—			
8. Leadership	.54**	.42**	.36**	.46**	.51**	.46**	.12	—		
9. Requests for Transfer	.27**	.21**	.20**	.08	.24**	.14	.23**	.25**	—	
10. Use of Drugs and Alcohol	.42**	.34**	.27**	.13	.32**	.24**	.23**	.26**	.54**	—

Note. $n = 160$.

**$p < .01$.

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Table 9

Predictive Validities for a Composite Division Criterion for Two Subsamples

Predictors	Predictive Validities: Sample A (n = 76)	Sample B (n = 84)
Division Context		
1. Emphasis on Morale	.23*	.02
2. Emphasis on Standard Procedures	.07	.01
3. Technology	.10	.05
4. Funds for Habitability	-.02	-.13
5. Condition of Equipment	.37**	.16
6. Rating of Personnel	.36**	.52**
7. Funds and Supplies for Work	.23*	.36**
Division Structure		
8. Size of Division	-.23*	-.22*
9. Specialization - Jobs/Division	-.10	-.23*
10. Configuration - Span of Control	.21	.11
11. Configuration - Number of Levels	-.06	.11
12. General Centralization	.05	-.06
13. General Standardization	.10	-.09
14. Interdependence	.12	.07
15. Formalization of Roles	.12	.08
16. Centralization of Work	-.08	-.03
Division Climate		
17. Climate Clusters	.41**	.39**
Position Variables		
18. Time in Navy	.33**	.10
19. Number of Advanced Training Schools	.46**	.52**
20. Number of Other Training Schools and Courses	.54**	.25*
Individual Resources		
21. Years of Formal Education	.32**	.35**
22. Intellectual Aptitude	.37**	.33**

*$p < .05$.

**$p < .01$

Table 10

Cross-Validities for a Composite Division Criterion

Based on Unit-Weighted Predictors

Predictor Domains	Cross-Validities	
	Sample A (n = 76)	Sample B (n = 84)
Division Context	.41**	.43**
Division Structure	.21	.22*
Climate Clusters	.41**	.39**
Position Variables	.55**	.37**
Individual Resources	.39**	.39**
Overall	.60**	.55**

*p < .05.

**p < .01.

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