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Personality composition, group norms, and group effectiveness in military work teams

Terry R. Halfhill

To the Graduate Council:

I am submitting herewith a dissertation written by Terry R. Halfhill entitled "Personality composition, group norms, and group effectiveness in military work teams." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Eric Sundstrom, Major Professor

We have read this dissertation and recommend its acceptance:

Michael G. Johnson

Accepted for the Council:

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Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

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Interim Vice Provost and

Dean of the Graduate School

Personality Composition, Group Norms, and Group Effectiveness in Military Work Teams

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Terry Halfhill

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Abstract

An internet-based field study of 40 military service teams explored relationships among personality variables - *agreeableness and conscientiousness*, process variables – *task and social group norms*, and group effectiveness. At the individual level of analysis, it was hypothesized that agreeableness and conscientiousness were positively related to individual performance. At the group level of analysis for agreeableness and conscientiousness, it was hypothesized that the group average, minimum, maximum, and variance scores, as well as the percentage of team members scoring above the mean were related to group effectiveness – *group performance, group cohesion, and group viability.* Each operationalization has distinct implications for work teams. Groups high in agreeableness and conscientiousness were expected to be more effective than other types of groups. Group task and social norms were expected to correlate with conscientiousness and agreeableness, respectively. Groups with high scores for both task and social norms were expected to be more effective than other types of groups.

Surveys and performance ratings were administered and collected electronically over the internet. Supervisors provided performance ratings for individuals (N = 198) and work teams (N = 40), as well as ratings of group viability for teams.

Eight of nine hypotheses were at least partially supported. Individual performance is related to agreeableness and conscientiousness. Group average, minimum, maximum, and variance scores, and percentage of team members scoring above the mean correlate with group effectiveness. Groups high in agreeableness and conscientiousness are more cohesive than other types of groups. Group conscientiousness is related to group task

norms, and group agreeableness is related to group social norms. Groups with high levels of task and social norms are more cohesive than other types of groups.

Post hoc analyses revealed that task interdependence moderates relationships between group conscientiousness and group task norms, as well as group agreeableness and group viability.

In addition to illustrating that personality is related to performance at the individual and group levels, this study extends the current literature on group composition by demonstrating linkages between group conscientiousness and group task norms, and group agreeableness and group social norms. Results carry implications for staffing specialists by demonstrating that high levels of conscientiousness and agreeableness are related to increased cohesion, which is related to group performance.

A summary of findings is presented, and an agenda for future research is suggested.

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1. Introduction

Work teams have grown increasingly common in business and industry (Lawler, Mohrman, & Ledford, 1998). "Work group" *and* "work team" are defined as interdependent collections of individuals who share responsibility for specific outcomes for their organizations (Sundstrom, DeMeuse & Futrell, 1990). Much evidence suggests that teams can improve organizational performance (Batt & Applebaum, 1995; Guzzo & Dickson, 1996). Other evidence suggests that many teams do not live up to their potential (Buller & Bell, 1986; Cordery, Mueller, & Smith, 1991; Hackman, 1990; Wall, Kemp, Jackson, & Clegg, 1986). One explanation for a failure to achieve potential concerns team composition, or the mix of personality characteristics in the team (Driskell, Hogan, & Salas, 1988; Moreland & Levine, 1992). Unfortunately, only limited research is available concerning team personality composition and effectiveness (Neuman & Wright, 1999; Barrick, Stewart, Neubert, & Mount, 1998).

Several models describe the requisite knowledge, skills, and abilities for work teams (Klimoski & Jones, 1995; Stevens & Campion, 1994). Until recently, however, few empirical field studies have linked specific team member personality traits with team performance. Driskell et al. (1988) cite three reasons for the lack of evidence regarding the role of personality in team effectiveness: 1) personality psychology has traditionally emphasized psychopathology, 2) the lack of a unifying framework for the definition of personality measurement, and 3) that early research largely ignored the importance of the task in determining group performance. In the last 15 years, organizational researchers

have begun to address these issues. A sufficient body of research pertaining to non-psychopathological personality as a predictor of individual performance has accumulated (Hogan, Hogan, & Roberts, 1996). We now have a unifying framework of personality to work with in The Five Factor Model (McCrae &Costa, 1987, Digman 1990), and the type of task teams engage in has become an indispensable part of research design concerning empirical studies of work teams (Cohen & Bailey, 1997; Sundstrom, DeMeuse, & Futrell, 1990).

The primary purpose of this study is to assess how the group member personality traits of agreeableness and conscientiousness relate to work team effectiveness. Expanding on Hackman and Oldham's (1980) model of group effectiveness, it is proposed that the group design features of composition and group norms influence each other. Group norms influence the task strategies utilized by groups, and the appropriateness of these strategies is correlated with group performance. Social and task group norms are believed to influence the relationship between group personality composition and group effectiveness.

Several authors (Hackman & Oldham, 1980; Sundstrom et al. 1990) have suggested that a comprehensive model of team performance among work teams must consider both current team effectiveness and the ability to work together in the future, or *viability* (Sundstrom et al. 1990). Teams without viability are subject to burnout, because of unresolved conflict and a decreased willingness to work cooperatively. Hackman & Oldham (1980) define team effectiveness as: 1) the productive output of the group that meets or exceeds organizational standards of quantity and quality, 2) the group

experience serves more to satisfy than frustrate the personal needs of group members, and 3) the social process used in carrying out the work maintains or enhances the capability of members to work together on future tasks.

Although the second and third components of this definition appear closely related, a meaningful distinction exists. Group cohesion seems to best fit the definition of the second component, and group viability seems to fit the third component. Cohesion seems to be more relative to the group in the present tense, and viability more concerned with the group's ability to work in the future. This study will measure all three components of effectiveness. Although group cohesion is expected to correlate with viability, it will be viewed as a distinct component of group effectiveness.

The remainder of this chapter will focus on five areas: 1) identifying a framework for studying team personality composition, group norms, and team effectiveness, 2) current research regarding the personality traits of agreeableness, conscientiousness, and individual performance, 3) methods of operationalizing group variables, 4) current research regarding the personality traits of agreeableness, conscientiousness, and team effectiveness, and 5) the role of task and social group norms in the relationship between personality composition and group effectiveness.

Framework for Analysis

Perhaps the most influential model of work group effectiveness is that of Hackman and Oldham (1980). This model built on the "input-process-output" sequence proposed by McGrath (1964) and was refined by Hackman and Morris (1975). The model shows group interaction as a mediator of the relationships of "inputs" like

composition and "outputs" like group performance. The model has three inputs: task design, composition, and norms about performance processes. Inputs influence the intermediate criteria of effectiveness - effort level, knowledge and skill applied to the task, and appropriateness of task performance strategies used by the group. The intermediate criteria influence work group effectiveness, defined as – group performance, quality, speed, satisfaction, and cohesiveness.

One criticism associated with this model is its inability to account for reverse causality. Performance can influences process, which can affect subsequent task design. An alternative model that accounts for the possibility of multiple directions of influence, limited to the variables included in this study, is presented in Figure 1.

The present study focuses on team personality composition as a design feature, and group norms as potential factors in effectiveness. The traits of agreeableness and conscientiousness will serve as group personality composition variables. Group norms play an important role in the group choosing a performance strategy to accomplish its task. For example, if the group task requires team members to openly discuss ideas and share information, norms that support smooth social interactions among group members and open communications are appropriate. These norms are effective because they allow and encourage group members to engage in a task related strategy that has the potential to increase effectiveness. When a group employs a norm that is not optimal for accomplishing its tasks, the norm is inappropriate.

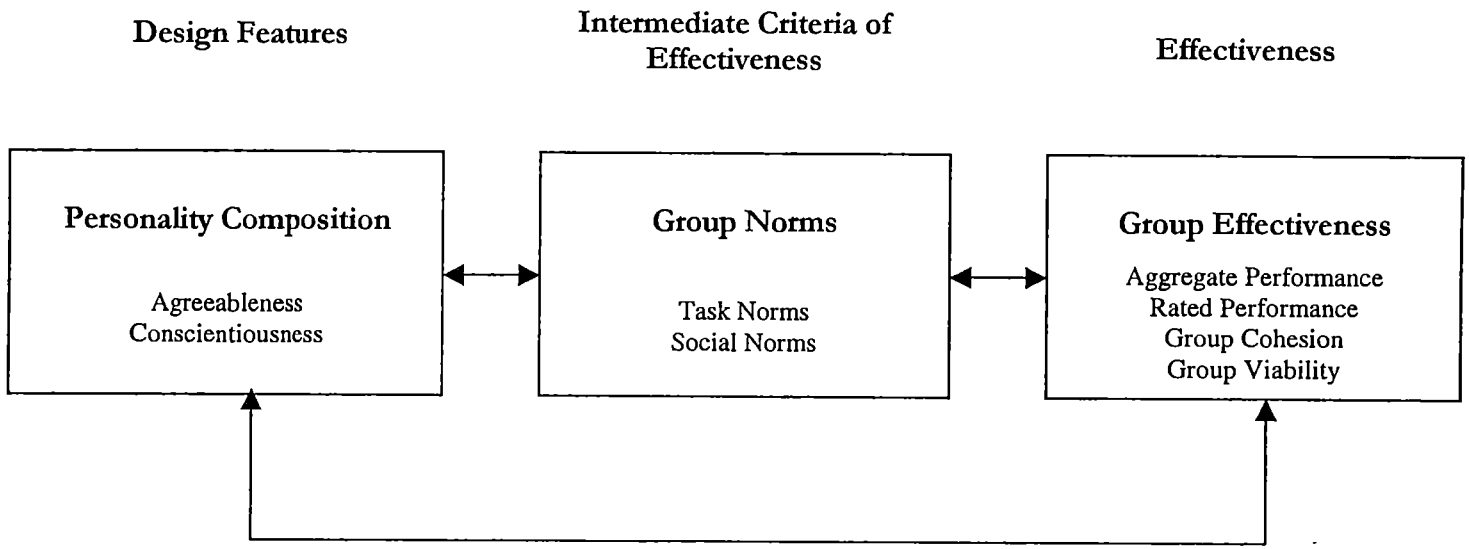

Figure 1. Model of work group effectiveness*

*Note that arrows represent multidirectional influence between predictors, process variables and criterion.

Personality and Performance at the Individual Level

Until recently, organizational psychologists seldom examined personality as a predictor of work performance. From 1965 through the 1980s very few studies were published (Landy, 1985). In the 1990s, researchers showed new interest in personality predictors of performance. Hollenbeck and Whitener (1988) attributed low validity coefficients of earlier research to theoretical inadequacies and methodological problems. Guion (1991) called for evidence on the validity of specific personality traits in predicting performance. The five-factor model gained acceptance as a general framework for personality research (Costa & McCrae, 1988; Digman, 1990). Meta-analyses that used the five-factor model to examine criterion-related validity of personality traits consistently found relationships between some traits and individual performance (Barrick & Mount, 1991; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Tett, Jackson, & Rothstein, 1991). These results supported Hogan, Hogan, and Roberts' (1996) argument that competently developed personality measures can serve as valid predictors of work performance.

Conscientiousness. One trait consistently associated with individual performance is conscientiousness, defined as someone who is scrupulous, careful, and meticulous. McCrae and John's (1992) review of the five-factor model includes five factors in conscientiousness: *competence* – efficient, dependable and responsible; *order* – organized and productive; *dutifulness* – planful and able to delay gratification;

achievement striving – reliable and not self-indulgent; *self-discipline* – responsible and behaves ethically; and *deliberation* – thorough and has high aspiration level.

Research has linked conscientiousness with several individual performance criteria: sales performance (Barrick, Mount, & Strauss, 1994); volume of sales and supervisor ratings of sales success (Barrick, Mount, & Strauss, 1993); goal setting among salesmen and commitment to goals (Dollinger & Orf, 1991); academic achievement in the form of course grades, rote learning, and early completion of projects (Dinius & McIntyre, 1979); successful performance in accounting courses (Arthur & Graziano, 1996); decreased driving accident involvement (Stewart, 1996); voluntary turnover among truck drivers (Barrick & Mount, 1996); problem-solving orientation to coping with stress (Vickers, Kolar, & Hervig, 1989); job attendance, performance, and employee perceptions of being valued and cared about by the organization (Eisenberger, Fasolo, & Davis-LaMastro, 1990); and supervisor evaluation of self-direction and self-efficacy for participating in self-managed work groups (Stewart, Carson, & Cardy, 1996).

H1a: Individual conscientiousness is positively related to individual performance.

Individual conscientiousness may contribute to performance in a team setting by way of task-related contributions, and should be predictive of team members concerned with completing assignments on time and in an orderly manner. However, conscientiousness is not an intrinsically interpersonal trait (McCrae & Costa, 1989). Of the broad traits in the Five Factor Model agreeableness is most likely to relate to interpersonal dimensions of performance in a team setting.

Agreeableness. According to Costa and McCrae (1989a), agreeableness refers to a quality of interpersonal interaction defined by six facets: *trust* – the tendency to attribute benevolent intentions to others; *straightforwardness* – the tendency to be frank and straightforward with others; *altruism* – the tendency to be selfless and concerned about others; *compliance* – the willingness to cooperate in conflict situations; *modesty* – the tendency to be humble and lack arrogance; and *tender-mindedness* – the ability to express sympathy and empathy.

Hough's (1992) meta-analysis examined personality correlates of teamwork, and identified agreeableness as one of three (the others were conscientiousness and emotional stability). Agreeableness has been associated with interpersonal dimensions of performance in several settings: customer service orientation (Frei & McDaniel, 1998; McDaniel & Frei, 1994); situated competitiveness and task performance in group settings (Graziano, Hair, & Finch, 1997); training proficiency (Salgado, 1997); self-efficacy for participating in self-managing work groups (Thoms, Moore, & Scott, 1996); performance ratings among astronauts (Rose, Fogg, Helmreich, & McFadden, 1994); and the ability to accomplish work-related goals and to adapt to changing work conditions (Piedmont & Weinstein, 1994).

Aronoff and Wilson (1985) describe the facets of trust, straightforwardness, altruism, and compliance as particularly desirable for the types of social interactions found in teams. Additionally, team member agreeableness was positively related to peer perceptions of conflict resolution and open communication skills among human resource teams (Neuman & Wright, 1999). These smooth social interactions may be particularly

important for service team members because of the necessary customer service orientation required of service teams.

In summary, agreeable team members will tend to exhibit the traits necessary for increased social interactions required for performance in team settings.

H1b: Individual agreeableness is positively related to individual performance.

Group Level of Analysis: Group Personality Composition and Group Effectiveness

In the early part of this century a considerable amount of research examined relationships between personality and performance in small groups. Mann (1959, p.241) notes, "One interest has been dominant for more than 50 years. While phrased in various ways, the relationship between the personality characteristics of the individual and his performance in the group has remained a central concern... but it has been test rich and integration poor". A number of relationships were identified linking specific personality traits with performance at the individual and group levels. Two traits, ability and adjustment, emerged as fairly consistent predictors of performance at both levels. Extraversion and dominance were identified as significant predictors of individual performance within a team setting. Authoritarianism was negatively related to performance in a team setting.

The study of personality among applied psychologists was active until the 1960s when two powerful critiques were written. Guion and Gottier (1965) and Mischel (1968) argued that personality measures were neither reliable nor valid predictors of performance. Mischel (1968) argued that personality was not consistent across situations and was therefore of little use in the study of human behavior. Nevertheless, empirical

studies linking team member personality traits with group performance have increased over the past 15 years, and several researchers have proposed that personality is as important to team effectiveness as ability and job-specific skills (Golembewski, 1962, Hackman & Morris, 1975; Neuman & Wright, 1999). A number of reviews have found that personality and team performance are related (Heslin, 1964; Jackson, 1992; Moreland & Levine, 1992).

Operational Definitions of Group Personality Composition

Barrick et al. (1998) note that researchers typically adopt one of four methods of operationalizing team composition. The most common method is to calculate the *mean score* for the group, and works under the assumption that the amount of the characteristic possessed by each individual increases the collective pool of that characteristic. This collective increase is presumed to have positive or negative influences on the group, regardless of how it is distributed.

A second method of operationalizing team composition is to assess the variability of individual personality traits. The *variance* and *range* of individual scores and *proportion of team members* possessing a particular trait are three ways to operationalize variance. Variance can capture differences in team composition that are masked by the mean. Variance is particularly useful when researchers want to examine a relationship between team composition homogeneity and group process variables. Higher (or lower) mean scores indicate homogeneity of a construct within the group, and high variance is an indicator of heterogeneity within the group.

The third approach focuses on the *minimum* score in the group. There are two ways to conceptualize the effects of this operationalization. Barrick et al. (1998) note that this method assumes that one individual can significantly affect the group outcome, and is measured simply by taking the lowest score within the group. An example of where this method is useful is in assembly line work, where poor performance from one team member can impact the performance of other team members. Another way to conceptualize the effects of the minimum group score is in terms of group norms. The minimum group score might represent a norm "floor" within the group. Considering the construct of conscientiousness, the minimum score might represent the lowest acceptable level of conscientiousness within the group, or the norm floor for conscientiousness. Conceptually, the minimum conscientiousness score may now be thought of as a characteristic of the group, as opposed to a characteristic of the lowest scoring member.

The fourth approach focuses on the *maximum* score in the group. There are two ways of conceptualizing this operationalization as well. Barrick et al. (1998) note that this method assumes that one individual can significantly affect the group outcome, and is measured simply by taking the highest score within the group. An example of where this method is useful is in problem solving groups, where one team member can arrive at a solution and make the group successful. Another way to conceptualize the effects of the maximum group score is in terms of group norms. The maximum group score might represent a norm "ceiling" within the group. Considering the construct of agreeableness, the maximum group score might represent an acceptable upper-limit of agreeableness, beyond which the group becomes less task focused.

This study will operationalize team composition using all four methods. It is assumed that a collective increase in personality has a positive impact on the group outcome (mean score). We want to assess a relationship between team personality composition and group process variables – as well as capture differences that have the potential to be masked by the mean (variance and proportion of team members possessing personality traits). And finally, groups may have lower boundaries regarding acceptable levels of composition variables within the group (minimum score), as well as upper-limits (maximum score).

Research on Group Effectiveness

Several empirical studies measured agreeableness and conscientiousness and correlated them with group effectiveness. Various operationalizations of the predictors were used across the studies, and one, Barrick et al. (1998) included all of the operationalizations mentioned above except proportion scoring above average. A review of these studies provides insight into the current state of the literature. One interesting finding relates to the experimental setting of the studies, laboratory versus field. Of the studies completed, two were conducted in the laboratory, and both report nonsignificant relationships between personality and group performance. All of the field studies report significant relationships between personality and group performance. The following section summarizes the results of these studies.

Barrick et al. (1998) surveyed 51 assembly and fabrication teams from four organizations. They operationalized agreeableness and conscientiousness as the group mean, group variance, minimum, and maximum scores in the group. Social cohesion served as a process variable, and group effectiveness criterion included measures of team viability and supervisory ratings of team performance. Cohesion was unrelated to conscientiousness, but was related to *all* of the operationalizations of agreeableness. Cohesion correlated positively with the group average agreeableness score and group minimum agreeableness score (.32 & .38, respectively) and the relationship between the variance of the group agreeableness score and cohesion was negative (-.23). Group viability was unrelated to agreeableness and conscientiousness. Group average agreeableness and conscientiousness correlated positively with supervisor ratings of team performance (.34 & .26, respectively). Group variance scores for agreeableness and conscientiousness correlated negatively with performance (-.23, -.33), and the maximum scores for the group were unrelated to supervisor ratings of team performance.

Neuman et al. (1999) studied 82 four-person teams in a large retailing organization with stores located across the U.S. The authors use the terms Team Personality Elevation (TPE) and Team Personality Diversity (TPD) to refer to the mean and variance operationalizations of agreeableness and conscientiousness. The final group effectiveness measure was a composite of two ratings of team performance. The first rating was based on the number of customer complaints the group received over a one-month period, and the second rating was based on the number of days the group completed work on time over a one-month period. Group average agreeableness and

conscientiousness both correlated positively with group performance (.41 & .40, respectively). However, neither of the group variance scores correlated significantly with performance.

Neuman and Wright (1999) studied 79, four-person, human resource work teams from a large wholesale department store organization. These teams were structured to maximize interaction and interdependence. Each team member was responsible for a different phase of the work process, but shared the responsibilities of payroll and benefit tasks. A bonus, equivalent to 25% of employee's salary, could be earned on the basis of team performance. Teams had been together for three years at the time of data collection. In this study, agreeableness and conscientiousness were operationalized as group *minimum* score. Group effectiveness criteria included archival records of work completed and work accuracy, and supervisor ratings of group performance. Additionally, a peer rating measure of individual team member effectiveness was factored into two subscales, task performance (overall performance, problem solving, work procedures, and planning) and interpersonal skills (conflict resolution and team communication). The group minimum agreeableness score correlated positively with task performance (.36), interpersonal skills (.39), and work complete (.37). The group minimum conscientiousness score correlated positively with accuracy (.31), and task performance (.27).

Neuman (2000) studied predictors of effectiveness in 76 work teams from three manufacturing organizations. The teams had similar tasks, 39 assembled electronic components, 23 assembled and manufactured doors, and 14 assembled small appliances.

In this study, agreeableness and conscientiousness were operationalized as group *minimum* score. Team process measures were rated by team members, and included task focus, team cohesion, and communications. Three group level criterion included: 1) work complete – a percentage based on the number of days for one year that team task assignments were completed within scheduled time limits, 2) supervisor ratings of group performance, and 3) supervisor ratings of team viability. Group minimum agreeableness correlated positively with cohesion (.36), supervisor ratings of group viability (.37), and supervisor ratings of team performance (.32). Group minimum conscientiousness correlated positively with work completed (.36), task focus (.23), and supervisor ratings of team performance (.25).

Halfhill et al. (1999) conducted two field studies of military teams. Study one consisted of 26 mechanized infantry teams located in the northeast U.S. Study two consisted of 61 teams from an air-refueling wing in the southeastern U.S. Both of these studies operationalized agreeableness and conscientiousness as group average score and proportion of team members scoring above average. Supervisor ratings of performance served as the group level criteria for both studies. In study 1, conscientiousness was not related to group performance. Proportion of agreeable team members scoring above average correlated negatively (-.46) with supervisor ratings of team performance. In study 2, conscientiousness was again unrelated to group performance. Group average agreeableness correlated positively with supervisor ratings of team performance (.33), and proportion of team members scoring above average correlated positively with supervisor ratings of team performance (.37). The authors proposed that differences in

proportion of above average agreeable team members with group performance was related to the type of teams studied. Study 1 consisted of action/performing teams, where high levels of team agreeableness might get in the way of effective task performance. Study 2 consisted of service teams, where higher levels of agreeableness might facilitate effective group performance. Additionally, the lack of a significant correlation between group average conscientiousness and group performance in both studies was attributed to range restriction in the predictors and criteria.

Together, these studies provide support that various operationalizations of group agreeableness and conscientiousness are related to group effectiveness. Several consistencies have emerged from the data, and are summarized in Table 1.

For group conscientiousness average, positive relationships were identified with group performance (Barrick et al., 1998; Neuman et al., 1999). The minimum group conscientiousness score has also correlated positively with group performance (Barrick et al., 1998; Neuman & Wright, 1999), as well as task focus and work complete (Neuman 2000, In-Press). The group conscientiousness variance score has correlated negatively with group performance (Barrick et al., 1998). Although the percentage of group members scoring above the mean did not correlate positively with group performance (Halfhill et al., 1999), this population was severely range restricted.

H2a: The group conscientiousness average score will be positively correlated with group performance.

H2b: The group conscientiousness minimum score will be positively correlated with group performance.

Table 1. Summary of results for several group level field studies of personality composition and group effectiveness.

Study	# of teams	Size	Type of team	Operational-ization of the predictor	Criteria	Results	
						Agreeableness	Conscientiousness
Barrick et al. (1998)	51	~13	Production	Mean Minimum Maximum Variance	Viability and supervisor ratings of performance	Mean score; .32 with cohesion .34 with performance Minimum score; .38 with cohesion Variance -.23 with cohesion -.23 with performance	Mean score; .26 with performance Variance; -.33 with performance
Halfhill et al. (1999)	61	~4	Service/ Action	Mean & Proportion above mean,	Supervisor ratings of performance	Proportion correlates; -.46 with performance in action teams .37 with performance in service teams Mean correlates .33 with service teams	No significant correlations
Neuman & Wright (1999)	79	4	HR	Minimum	Work completed, accuracy, ratings of performance	Minimum score; .39 with interpersonal skill .37 with work complete .36 with task performance	Minimum score; .31 with accuracy .27 with task performance
Neuman (2000 Unpublished MS)	76	4	MFG	Minimum	Viability, Team ratings of performance, work completed	Minimum score; .37 with viability .32 with performance .36 with cohesion	Minimum score; .36 with work complete .25 with performance .23 with task focus
Neuman et al (1999)	82	4	Retail Service	Mean & Variance	Customer service and task completion ratings	Mean correlated .41 with performance.	Mean correlated .40 with performance.

H2c: The proportion of team members scoring above average for conscientiousness will be positively correlated with group performance.

H3: Group conscientiousness variance correlates negatively with group performance.

For group agreeableness average, positive relationships were identified with performance (Barrick et al., 1998; Halfhill et al., 1999; Neuman et al., 1999) and group cohesion (Barrick et al., 1998). The minimum group agreeableness score has also correlated positively with group performance (Barrick et al., 1998; Neuman & Wright, 1999; Neuman, 2000 In-Press; Neuman et al., 1999), interpersonal skill and work complete (Neuman & Wright, 1999), and viability and cohesion (Neuman, 2000 In-Press). Proportion of group members scoring above the mean has correlated positively with performance (Halfhill et al., 1999). The variance of group agreeableness scores has correlated negatively with cohesion (Barrick et al., 1998).

H4a: The group agreeableness average score will be positively correlated with group viability, group cohesion, and group performance.

H4b: The group agreeableness minimum score will be positively correlated with group viability, group cohesion, and group performance.

H4c: The maximum group agreeableness score will be positively correlated with group viability, group cohesion, and group performance.

H4d: The proportion of team members scoring above average for agreeableness will be positively correlated with group viability, group cohesion, and group performance.

H5: Group agreeableness variance will correlate negatively with group cohesion.

Another trend from the data are specific relationships that did not correlate significantly. As mentioned previously, conscientiousness is more closely associated with task functions, and agreeableness with interpersonal functions, so we would expect conscientiousness to correlate with measures of cohesion and viability weakly. For example, in the Barrick et al. (1998) study, none of the group conscientiousness operationalizations were related to social cohesion or viability, while all of the group agreeableness operationalizations correlated with group cohesion. Group conscientiousness did not correlate with interpersonal skill (Neuman & Wright, 1999), group cohesion or group viability (Neuman , 2000). Agreeableness did not correlate with accuracy (Neuman & Wright, 1999), task focus, and work complete (Neuman , 2000).

From reviewing the literature on group personality composition and group effectiveness, it appears that group agreeableness and conscientiousness are related to group effectiveness, and in particular instances, the constructs have unique relationships with certain elements of effectiveness. For example, the variance of group conscientiousness appears to be negatively related to group performance, but it is not negatively related to group cohesion. On the other hand, the variance of group agreeableness is negatively related to cohesion, but not negatively related to group performance (Barrick et al., 1998). Groups that maximize the potential "gains" from both constructs would appear to have an advantage, or "composition synergy" over groups that do not maximize the potential "gains" from both constructs.

H6: Groups high in conscientiousness and agreeableness perform better than other types of groups.

Group Norms as Mediators of Personality Composition and Team Effectiveness

Group norms are the informal rules that groups adopt to regulate group member behavior. These norms are rarely written down or openly discussed, but often have a powerful and consistent influence on group members' behavior. Norms usually develop gradually and informally as group members learn what behaviors are necessary for effective team functioning (Hackman, 1976). Norms are formed and enforced for behaviors that are significant to the group. In a review of the development and enforcement of group norms, Feldman (1984) notes that the frequent distinction between task maintenance duties and social maintenance duties helps to explain why groups bring certain behaviors under control. Feldman (1984) also states that norms are likely to be enforced when they; a) facilitate group survival (task maintenance function), and; b) help the group avoid embarrassing interpersonal problems (social maintenance function). *Task norms* refer to norms that provide a task maintenance function for the group, and *social norms* refer to those norms that provide a social maintenance function for the group.

The literature on conformity and deviance supports the notion of a group task norm, in that group members are more likely to reject a group member that violates group norms when the perpetrator has not been a "good" group member (Hollander, 1958, 1964). Support for social norms is present in early work done by Bales (1955, 1958). This research suggests that few people are capable of simultaneously fulfilling both the

task and socioemotional needs of the group. As a result, group members other than the task specialists will attempt to reduce interpersonal conflict.

Research on individual career choice indicates that individuals select work environments compatible with their personal characteristics (for a review see, Kristof, 1996). Judge and Cable (1997) found some Big Five personality traits positively associated with preferences concerning organizational culture. In particular, agreeableness correlated positively with organizational cultures that were team oriented and supportive - and negatively correlated with organizational cultures that were aggressive, outcome oriented, rewards oriented, and decisive. Conscientiousness was positively correlated with organizational cultures that were detail oriented, aggressive, and outcome oriented. Conscientiousness correlated negatively with cultures that were innovative and team oriented.

Empirical studies support the notion that personality traits are associated with certain types of work, and that to some extent, individuals self-select into certain types of *organizations*. There is also evidence that *organizations* possess a modal personality, or a homogeneous set of personality characteristics (Eigel & Kuhnert, 1996; Schneider, Smith, Taylor, & Fleenor, 1998). Do *team members* self-select based on personality? Do *teams* possess a modal personality, or homogenous set of characteristics important for task accomplishment? If so, what impact might this have on group interaction? Even more important, is the subsequent interaction related to group effectiveness.

George (1990) found that individual affect was consistent within groups. This consistency of affect among group members was positively associated with the positive

and negative affective tones of the groups, and the affective tone of a group was related to certain group behaviors. George (1990) conceptualized her study from the ASA framework (Schneider, 1987). It is plausible that people are attracted to teams on the basis of the fit between the individual's personality and the modal personality of the team. It is also plausible that people seek teams that fit their personal characteristics. Through formal and informal selection strategies, teams could choose those individuals compatible with the working environment, and individuals that do not fit in the team could leave.

Another method of conceptualizing these questions is from the revised model of work group effectiveness (see figure one). Here, it is proposed that personality composition influences group norms about performance processes, and that these norms are related to group effectiveness. The relationships are not directional, and it is possible that group norms influence the personality composition of the group, and that group effectiveness can have an impact on the norms adopted by the group. Regardless of the direction of influence, when the personality composition of the group is aligned with an appropriate norm, effectiveness should increase. *Aligned* refers to an appropriate group level of a given trait with a corresponding group norm. For example, groups that are composed of mostly conscientiousness members and employ a task oriented performance norm will likely be more effective than groups with no conscientiousness members that employ a task oriented norm. Conversely, groups composed of mostly agreeable members that favor interpersonal norms should perform better than groups with no agreeable members.

The minimum and maximum group scores for agreeableness and conscientiousness may be particularly important regarding group norms. For conscientiousness, the minimum group score may represent a minimally acceptable level of conscientiousness necessary for maintaining the groups' task maintenance function. To the extent that group members enforce or require a minimum level of conscientiousness, this score is indicative of a group norm. A group member that fails to accomplish his or her tasks will likely be viewed as a weak link, or someone that threatens the task maintenance function of the group. The maximum group conscientiousness score does not fulfill the same function. If the group contains a member that is very conscientious, he or she may fill the role of task specialist, or someone responsible for guiding the team towards task accomplishment.

For agreeableness, the minimum group score is also indicative of a group norm. However, this score is not necessarily related to performance, because a lone disagreeable group member can be ignored without compromising the groups' task maintenance function. The maximum group agreeableness score in this case may indicate that a socioemotional specialist is present in the group. The presence of a socioemotional specialist at least points to the possibility that the groups' social maintenance function can be met.

In summary, groups exert influence over group member behavior via group norms, and these norms can substantially influence the behavior of group members. Groups tend to make a distinction between task and social norms, in part due to the difficulty of serving task maintenance functions and social maintenance functions

simultaneously. Organizations have been shown to favor certain types of individual personality characteristics over others, and to some extent teams have also. The minimum group conscientiousness score may be particularly important for groups to uphold the task maintenance function necessary for group performance, while the maximum group agreeableness score may be particularly important for the group to maintain the social maintenance function within the group. It is hypothesized that task norms are adopted and enforced more readily by group members that are conscientious, compared to agreeable group members who may be more likely to adopt and enforce social group norms. Additionally, groups that are able to maintain both the task and social maintenance functions of group interaction should have a performance advantage over groups that do not.

The following hypotheses were generated from the preceding discussion:

H7a: Group average conscientiousness will correlate positively with group task norms.

H7b: Group minimum conscientiousness will correlate positively with group task norms.

H7c: The proportion of team members that score above the mean for conscientiousness will correlate positively with group task norms.

H8a: Group average agreeableness will correlate positively with group social norms.

H8b: Group minimum agreeableness will correlate positively with group social norms.

H8c: Group maximum agreeableness will correlate positively with group social norms.

H8c: The proportion of team members that score above the mean for agreeableness will correlate positively with group social norms.

H9: Groups that utilize both task and social norms are more effective than groups that do not utilize both.

The Present Study

Criteria. There are two task oriented group effectiveness criteria; supervisor ratings of team performance and aggregate supervisor ratings of individual performance. For the remainder of the study, the term "group performance" will refer to both types of performance, and aggregate ratings of individual performance and supervisor rated performance will be specifically identified as such. There are also two interpersonal, or social oriented effectiveness criteria - group viability, and group cohesion.

Population. An important note should be considered at this point. The population involved in the present study has had previous issues with range restriction for conscientiousness. That is, most members are to some degree high in conscientiousness because of its job relevance. As a result, simply administering a conscientiousness scale may not elicit the variation needed in the construct to make meaningful distinctions with performance at both the individual and group levels. Stewart (1999) proposes that specific facets of conscientiousness demonstrate different relationships with performance at varying stages of employee tenure. Orderliness was found to be most predictive of performance with employees with less than two years experience while the achievement

facet was found to correlate with performance strongest when employees had more than two years experience. The work by Stewart (1999) is especially relevant to this study given that they are both service teams. In an attempt to maximize conscientiousness variance in this population, the facets of orderliness and achievement will be used. Because most of the employees in the population (> 90%) have more than two years experience, achievement will likely be the stronger predictor.

Electronic vs. Paper and Pencil Surveys. Kuhnert and McCauley (1996) propose that, "...the organizational survey, which in the past was primarily a paper and pencil exercise, is now and perhaps forever changed by advancing technology" (p. 233). There are numerous benefits associated with administering a survey electronically. One concern however, focuses on the psychometric properties of measures originally designed for paper and pencil administration, transported to computer, or web-based form. Research has shown differences in individuals' responses to measures administered by computer rather than paper and pencil. Mead & Drasgow (1993) found cognitive tests administered by computer or paper and pencil differ when tests are speeded. Other evidence suggests that non-cognitive measures such as attitude and personality are not affected by delivery medium. A study by Stanton (1998) demonstrated that web-based data had fewer missing values than similar paper and pencil data, and variability in responding was higher. The factor structure of the scales used was not different regarding delivery method. Miles and King (1998) conducted a laboratory study involving 874 students. They employed four personality scales across two methods of

delivery (paper and pencil vs. computer), and found no appreciable mean score differences between mode of delivery, gender, or psychometric test properties.

Any conclusions regarding the measurement equivalence of computer-based measures are premature at this point. However, early findings do support the notion that non-cognitive measures are transportable to a computer format with respect to psychometric properties.

2. Method

Research Design

A field study of military work teams was conducted in the southeastern U.S. involving 198 members of 40 teams. Individuals completed personality inventories that assessed agreeableness and conscientiousness and questionnaires of group norms and group cohesion. Group effectiveness was measured via; 1) aggregate supervisor ratings of individual performance, 2) supervisor rated group performance, 3) group cohesion, and 4) group viability.

Setting

There are more than 100 teams in this organization, and most of them have different tasks. In most instances there are between 2 and 10 teams in a section. For example, the communications flight section has (among others) a radio maintenance team, telephone maintenance team, computer maintenance team, and information management team. These teams, like others in the organization, are responsible for accomplishing individual and group tasks, and report to a section chief. The section chief, in turn, reports to a higher-level supervisor responsible for multiple sections. Examples of teams and their tasks/responsibilities are described here.

The communications flight radio maintenance team is responsible for the maintenance and functioning of all radio equipment for the organization. This includes equipment in wheeled vehicles as well as aircraft. They fix and maintain equipment found in the air-traffic control tower, as well as hand held radios. They are responsible

for phasing out old equipment, and installing new equipment. They are also tasked with training airmen on how to use new equipment as well as establishing ground communication between sections when displaced in a field environment. Some tasks require individual work, and some tasks require that the group work together.

The operations intelligence section is tasked with all matters related to operational intelligence. This includes gathering information on the enemy in wartime, and disseminating the information to others in the organization. In peacetime operations, it may mean coordinating with local authorities to conduct training in a particular area, or with airport authorities to ensure the use of airspace for training.

Participants

The organization in this study is comprised of more than 1,000 Air National Guardsmen stationed at an Air National Guard base in the southeastern United States. The population was 77% male, with 53% full-time and 47% part-time or traditional guardsmen; officers represented 17%, enlisted personnel 83%. The median age group was between 37 – 41 years of age, and the average respondent had nearly 16 years of service with the organization. During three monthly, weekend drill sessions, an electronic survey was available to all members of the unit.

Procedures

In exchange for conducting an organizational climate assessment, the organization's leadership agreed to participate in the research. All data collection took place via the Internet using the World Wide Web (WWW).

At a commander's meeting, leaders were informed by the commanding officer that the survey was online and accessible through a hyperlink on the organization's home page - leaders disseminated this information to subordinates orally. The hyperlink directed participants to a page on the WWW that contained the survey items. See Appendix 2 for a complete list of instructions and survey items.

The web page containing the survey and performance ratings was created using Microsoft's "Front Page" web page designer. Appendix two lists the web pages used in the study. The raw data were transferred to a tab-delimited file using a common gateway interface (CGI) script, it was then transferred to an SPSS file for data analysis. Participants were authorized to use terminals throughout the organization during business hours. Participants were encouraged to complete the survey while at work for consistency purposes, but were allowed to "log-on" to the network from home if they desired. The standard computer used by this organization was an IBM clone, running Windows NT as an operating system. For security purposes, passwords were incorporated into all rating forms. Supervisors received the password via electronic mail, and all raters were checked from a master personnel roster to ensure immediate supervisors provided ratings.

A total of 460 surveys and 266 performance ratings were completed. Of these, 198 were matched with an appropriate supervisor rating form to qualify for inclusion in the study. Supervisors ($\underline{N}$ = 57) averaged 3.4 ratings each. The number of individuals rated per supervisor ranged from 1- 7. In order for a team to be included in the study, survey data from at least three team members and corresponding supervisor performance

ratings must have been obtained. Forty teams met these inclusion criteria and were included in the study.

Survey Items. Participants completed measures of personality, group norms, and group cohesion. The personality measure includes the agreeableness and conscientiousness dimensions from the Big-Five personality framework. Group norms include task and social measures.

Performance Ratings. Supervisors rated individual team member performance, group performance, and group viability.

Measures

Task Interdependence. This variable was included to quantitatively assess the extent to which teams met our definition of a team. This technique was first used by Barrick et al. (1998) and is an effective means of screening for groups that should not be included group level analyses. Seven items from Kiggundu's (1983) task-interdependence scale were rated on the 5-point scale mentioned above with the same instructions. Sample items include, "most of my job activities are affected by the work activities of other people", and, "I provide other people with the help or advice they need to do their work". Coefficient alpha for the scale is .75.

Personality. Individual personality was assessed via an adapted version of the NEO-FFI short form (Costa and McCrae, 1992). Items were contextualized to a military work environment, and the instrument is intended to be a measure of normal personality. Participants were asked to report to what degree they agreed with the statements provided. The conscientiousness scale consists of 14 items, and examples include, "I am

not highly motivated to succeed (R)" and "At work, I am not bothered by messy people (R)". Participants had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

The conscientiousness scale consisted of two separate facets, achievement and orderliness. The achievement subscale consisted of nine items. Sample achievement items are, "sometimes I get so focused on a task I ignore other parts of my work", and "I strive for excellence in everything I do at work". The instructions and response scale used for conscientiousness are the same for the achievement facet.

The orderliness subscale consisted of five items. Sample items include, "I prefer to do things according to a plan", and "I never seem to be able to get organized (R)". The instructions and response scale used for conscientiousness are the same for the achievement facet.

The agreeableness scale also contained 14 items, and examples include, "On the job, I am a cheerful, high-spirited person", and "I tend to be cynical and skeptical of my coworkers intentions". Participants had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Member Ratings of Group Norms. The items for the group norm scales were adapted from the Manifest Needs Questionnaire (Steers & Braunstein, 1976). The task norm scale is adapted from the "need for achievement" scale and consists of five items. Items were reworded from the individual level to fit the group level, and it was necessary to create a stem in order to place the items in a group norm context. The stem read, "Our work group places a lot of emphasis on…". Examples of task norm items include,

"continuously improving our performance at work", "performing efficiently when our job assignments are extremely difficult", and "avoiding any added responsibilities on our job (R)". Participants had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

The social norm scale is adapted from the "need for affiliation" scale (Manifest Needs Questionnaire - Steers & Braunstein, 1976) and consists of two items. Items were reworded from the individual level to fit the group level, and it was necessary to create a stem in order to place the items in a group norm context. The stem read, "Our work group places a lot of emphasis on...". Examples of social norm items include, "having a good time while together at work", and "paying attention to other group members' feelings while at work". Participants had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Member Ratings of Group Cohesion. The scale consists of seven items. Sample items include, "Our work group is composed of members that fit well together", and "there is a feeling of team unity and cohesion in our work group".

The group cohesion scale is adapted from Stokes (1983), and has demonstrated coefficient alpha's as high as (.99), and correlates moderately with personality and process variables (.31-.45). Group cohesion items were mixed with personality items, and therefore had the same instructions, "Please indicate your level of agreement by selecting the appropriate (radio) button". Participants had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Supervisor Ratings of Individual Performance. The individual performance rating scale was adapted from Halfhill et al. (1999). Coefficient alpha for the original scale is (.97), and the measure correlates with personality and process measures (.22-.43). The original scale included 10 items, however, five items (*attendance, quality, safety, productivity, and dependability*) yield a coefficient alpha of (.95) so an abbreviated scale was used. The five performance areas consisted of a general dimension, and included several behavioral anchors to provide a common frame of reference for raters. A sample performance item is, "Attendance and timeliness; *gets to work a little early so he/she can start work promptly; does not come in late except for rare, unavoidable circumstances; has a superior attendance record*". Participants had six response choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Supervisor Ratings of Group Performance. The group performance scale was adapted from Neuman (2000). The scale consists of five items. Sample group performance items include, "This group meets all objectives for work completed", and "This group takes initiative in solving problems and decision making". Supervisors had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Supervisor Ratings of Group Viability. The group viability scale is adapted from DeStephen & Hirokawa (1988) and Evans and Jarvis (1986). The scale consists of three items, "This group should continue together as a unit in the future", "This group is not capable of working together as a unit (R)", and "As a work unit, this group shows signs

of falling apart (R)". Supervisors had six choices, *1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 - strongly agree, 6 – unselected.*

Variables

Individual Conscientiousness. This variable was scored as the sum of the 14 items, with seven items reverse scored. The maximum possible range is from 14 to 70. The actual range was 25, the minimum 39 and the maximum 64. Coefficient alpha for the scale is .84

The conscientiousness subscale of achievement was scored as the sum of the nine items with three items reverse scored. The maximum possible range is from 9 to 45. The actual range was 17, the minimum 25 and the maximum 42. Coefficient alpha for the scale is .78

The conscientiousness subscale of orderliness was scored as the sum of the five items with four items reverse coded. The maximum possible range is from 5 to 25. The actual range was 12, the minimum score 8 the maximum 20. Coefficient alpha for the scale is .81.

Individual Agreeableness. This variable was scored as the sum of the 14 items, with eight items reverse scored. The maximum possible range is from 14 to 70. The actual range was 28, the minimum 42 and the maximum 70. Coefficient alpha for the scale is .79.

Individual Performance. This variable was scored as the sum of the five items. No items were reverse scored. The maximum possible range is from 5 to 25. The actual range was 20, the minimum 5 and the maximum 25. Coefficient alpha for the scale is .85.

Group Level Variables. At the group level of analysis, there were 15 variables. Conscientiousness and agreeableness each had four operationalizations (group average, minimum, proportion scoring above average, and variance), there were two types of group norms (task and social), four operationalizations of effectiveness (aggregate individual performance, group performance, group cohesion, and group viability), and of course, task interdependence. Teams membership ranged from 3 to 12 members, and the average team had 4.40 members.

Group average conscientiousness – This variable could range from a minimum of 14 to a maximum of 70. The actual range of scores was 12.33, with a minimum of 45, and the maximum 57.33. Higher scores represent higher levels of conscientiousness within the group.

Group minimum conscientiousness – Calculated as the lowest score for by any individual member. The lowest group minimum score was 39, and the highest group minimum score was 55, for a range of 16.

Group maximum conscientiousness – The score of the highest scoring group member is the group's maximum conscientiousness score. The lowest maximum group score was 50, and the highest maximum group score was 64.

Group conscientiousness variance – The group conscientiousness variance score is a measure of dispersion among group members relative to the group mean. If all group members scored exactly the same on the conscientiousness scale, the group variance would be zero. The maximum possible variance score for the group is 1568. The actual variance ranged from .33 to 114.33.

Percent above the population mean for conscientiousness – This variable refers to the percentage of group members that score above the population mean for the conscientiousness variable. The possible range of scores is from zero to 100%. The minimum score is zero (no group members scoring above the mean) and the maximum is 100% (all group members scoring above the population mean). Actual scores ranged from 0 to 100%.

Group average agreeableness – Calculated as the average of 3 to 8 group member scores. Actual scores for groups ranged from 50 to 63. Higher scores represent higher levels of agreeableness within the group.

Group minimum agreeableness – Calculated as the minimum agreeableness score for any individual in the group. The possible range of scores for this variable was 14 to 70. The actual range was 42 to 59.

Group maximum agreeableness – The score of the highest scoring group member is the group's maximum agreeableness score. The actual range of scores for the variable was 17, the lowest maximum group score was 53, and the highest maximum group score was 70.

Group agreeableness variance - The group agreeableness variance score is a measure of dispersion among group members relative to the group mean. If all group members scored exactly the same on the agreeableness scale, the group variance would be zero. The maximum possible variance score for the group is 1568. The actual variance ranged from 3.58 to 100.33.

Percent above the population mean for agreeableness – This variable refers to the percentage of group members that score above the population mean for the agreeableness variable. The possible range of scores is from zero to 100%. The minimum score is zero (no group members scoring above the mean) and the maximum is 100% (all group members scoring above the population mean). Actual scores ranged from zero to the maximum, 100%.

Task Norms – The group mean was used to calculate the group's task norm variable. The James, Demaree, and Wolfe (1984) r_{wg} statistic was used to assess inter-member agreement. The average r_{wg} score for groups was .90. One group reported an r_{wg} less than .70, the established cut-off, and was excluded from task norm analyses. ICC (1) was .34 and ICC (2) was .72 – both significant. The possible range of scores for this variable is 20, a minimum of five and a maximum of 25. The actual range of scores was 7.25; the minimum group score was 15, the maximum 22.25. Higher levels of this variable indicate higher levels of task norms within the group.

Social norms - The group mean of individual ratings was used to calculate the group's social norm variable. The mean score was appropriate due to unequal group sizes. The James, Demaree, and Wolfe (1984) r_{wg} statistic was used to assess inter-member agreement. The average r_{wg} score for groups was .85, and none of the groups had an r_{wg} less than the traditional cut-off score of .70. ICC (1) was .55 and ICC (2) was .71 – both significant. The possible range of scores for this variable is 8, a minimum of two and a maximum of 10. The actual range of scores was 2.42; the minimum group score

was 6.83, the maximum 9.25. Higher levels of this variable indicate higher levels of social norms within the group.

Aggregate Team Member Performance – The individual team member performance ratings were averaged to arrive at a group performance score. The possible range of scores for this variable is 20, a minimum of five and a maximum of 25. The actual range of scores was 6.75, the minimum group score was 18.25, the maximum 25. As this number increases, aggregate group performance increases.

Supervisor Rated Group Performance – The group performance variable was calculated by summing the supervisor performance rating scale scores for each team. The possible range of scores for this variable was 20, a minimum of five and a maximum of 25. The actual range of scores was 12, the minimum group score was 13, the maximum 25.

Group Viability – Group viability was derived by summing the scale items for each team. The possible range of scores for this variable was 12, a minimum of three and a maximum of 15. The actual range of scores was 5.25, the minimum group score was 5.25, the maximum 15.

Group Cohesion – Because individual team members assess group cohesion, and teams in this study had unequal group sizes, it was necessary to calculate the mean score for the group cohesion variable. The James, Demaree, and Wolfe (1984) r_{wg} statistic was used to assess inter-member agreement. The average r_{wg} score for groups was .91, and none of the groups had an r_{wg} less than the traditional cut-off score of .70. ICC (1) was .59 and ICC (2) was .89 – both significant. The possible range of scores for this variable

is 28, a minimum of seven and a maximum of 35. The actual range of scores for this variable was 9.75, the minimum group score was 23, the maximum 32.75.

Task Interdependence – The possible range of scores for this variable is 28, a minimum of 7 and a maximum of 35. The actual range of scores is 16, a minimum of 16 and a maximum of 32. Coefficient alpha for the scale is .75, and the mean score for the scale is 4.08 with a standard deviation of .48. In order to assess agreement among team members' perceptions of task-interdependence, the James et al. (1984) r_{wg} statistic and ICC's were calculated. The mean r_{wg} score for the scale is .84, and no teams report an r_{wg} less than the traditional .70 cut-off. ICC (1) was .30 and ICC (2) was .75, both significant. This indicates a significant level of agreement both within groups and between groups.

3. Results

Data Analysis

Individual Level. The number of participants included in the study for individual level analyses is (N=198). Individual scale scores were summed to create individual variables.

Group Level. The number of teams for group level analyses is (N=40). The task interdependence scale was used to quantitatively assess how well the groups met the definition of "group". Coefficient alpha for the scale is .75, and the mean score for the scale is 4.08 with a standard deviation of .48. In order to assess agreement among team members' perceptions of task-interdependence, the James et al. (1984) r_{wg} statistic and ICC's were calculated. The mean r_{wg} score for the scale is .84, and no teams report an r_{wg} less than the established .70 cut-off. ICC (1) was .30 and ICC (2) was .75, both significant. All of these estimates are well within the expected range, and as a result all 40 teams quantitatively meet our definition of "team" – and are included in all analyses.

Several predictors were checked for suitability of aggregation. Individual team members rated group social and task norms, and the level of group cohesion present in their group. The James et al. (1984) r_{wg} statistic was calculated for each group, as well as intra-class correlation coefficients for the four measures. The average group r_{wg} for the measures were: social norms = .85; task norms = .90; and group cohesion = .91. None of the groups in the study reported an r_{wg} less than .70, except for one group for the task norm scale. All intra-class correlation coefficients were significant as well. Predictors were aggregated to the group level using the mean, minimum, maximum, percentage of

group members scoring above the population mean, and variance operationalizations. Hypotheses 2,3,4,5,7, & 8 were tested with correlation coefficients. Hypotheses 6 and 9 were tested using regression.

Individual Level Results

Individual level means, standard deviations, and correlations are presented in Table 1. The personality variables were moderately inter-correlated ($p<.01$), as were the demographic variables. The performance data had a skewed distribution, as expected.[1]

Hypotheses 1a and 1b. Conscientiousness and agreeableness were significantly correlated with supervisor ratings of individual performance ($r = .17$, and $r = .16$. respectively, $p<.01$), supporting Hypothesis 1. The two facets of conscientiousness, achievement striving and orderliness, produced very different results. Achievement striving correlated ($p<.01$) with quality ($r = .17$), productivity($r = .19$), dependability, ($r = .17$) and the overall performance index ($r = .16$). It did not correlate significantly with attendance of safety.

Orderliness did not relate to any variable in the matrix. There was sufficient power to detect, ($N = 198$), and there was ample variance in the scale ($sd = 2.64$). The range of scores was 12, the minimum eight, the maximum 20. There was however, severe range restriction for tenure. Less than three percent of the population ($n = 5$) reported less

[1] With the exception of individual performance ratings and tenure, all of the distributions appeared normal. The tenure data were not normalized for practical reasons. Two methods of normalization were used with the performance ratings, a square transformation and a log 10 transformation. Neither of these attempts was successful at normalizing the distribution's skewness. The distribution was mesokurtic to begin with, and attempts at normalization resulted in a tendency toward a leptokurtic distribution. Therefore the raw distribution was used, albeit negatively skewed.

Table 1. Individual Level Means, Standard Deviations, Reliabilities and Correlations.

		M	SD	1	2	3	4	5	6	6a	6b	7	8	9	10	11	12	
1.	Age	5.07	1.78															
2.	Rank	7.32	3.03	.46**														
3.	Sex	1.23	0.42	-.13*	-.09													
4.	Status	1.46	.50	-.18**	-.22*	-.01												
5.	Tenure	5.17	1.74	.79**	.53**	-.18**	-.30**											
6.	Conscient.	52.08	5.92	-.13*	-.06	.02	.17**	-.13*	(.84)									
6a.	Achievement	35.15	3.59	-.16*	-.02	.05	-.00	-.12*	.79**	(.78)								
6b.	Orderliness	15.84	2.64	-.13*	-.14*	-.04	.27**	-.17**	.77**	.33**	(.81)							
7.	Agreeableness	57.30	6.13	.02	.01	.11	.22**	-.01	.51**	.41**	.38**	(.79)						
8.	Attendance	4.26	.92	.08	-.03	-.19**	-.10	.10	.05	.03	.06	.04						
9.	Quality	4.36	.75	-.04	.03	-.01	-.01	-.02	.16*	.17**	-.01	.13*	.44**					
10.	Safety	4.32	.67	-.07	-.10	-.07	.01	-.06	-.03	.01	-.01	-.06	.52**	.50**				
11.	Productivity	4.29	.80	-.09	-.03	.08	-.05	-.05	.19**	.19**	.06	.15*	.44**	.80**	.51**			
12.	Dependability	4.45	.69	-.07	.09	-.07	-.06	-.03	.17**	.17**	.07	.12*	.49**	.67**	.48**	.67**		
13.	Performance	17.36	2.60	-.03	.01	-.06	-.07	.01	.17**	.16**	.06	.13*	.74**	.87**	.61**	.87**	.84**	(.85)

than two years experience. More than half of the population reported 17 or more year's service with the organization.

Group Level Results

The means, standard deviations, scale reliabilities and correlations at the team level are reported in Table 2. The reliabilities of the measures were all over the minimum of .70 established by Nunnally (1978).

Task Interdependence. The initial role of the task interdependence variable was to quantitatively assess how well teams met the definition of work team as set forth by Sundstrom et al., (1990). However, the task interdependence variable was related to several variables in the study and deserves further attention here. Task interdependence is related to group viability and group task norms, as well as several operationalizations of conscientiousness and achievement. The minimum conscientiousness score, and the mean, maximum, and percentage above the mean scores for achievement are related to task interdependence.

Hypothesis 2a. This hypothesis predicted that the group conscientiousness average score would correlate positively with group performance. Partial support for this hypothesis was found. The average score correlated positively with aggregate individual performance ($r = .34$, $p < .05$), but not with supervisor rated group performance.

Hypothesis 2b. This hypothesis predicted that the minimum group conscientiousness score is positively related to group performance. Partial support for this hypothesis was found. The minimum group score correlated positively with aggregate

Table 2. Group level means, standard deviations, and correlations.

Variable	M	SD	Aggregate Individual Performance	Supervisor Rated Group Performance	Group Cohesion	Group Viability	Task inter-dependence	Social Norms	Task Norms
1. Aggregate Ind Perf.	17.42	1.52	-						
2. Group Performance	21.41	2.85	.22	-					
3. Group Cohesion	29.06	2.52	.22	.36*	-				
4. Viability	9.09	1.08	.17	.60*	.23	-			
5. Task Interdependence	28.54	1.92	.12	-.12	.17	.32*	-		
6. Social Norms	7.96	.65	-.02	.10	.57**	.13	.14	-	
7. Task Norms	19.68	1.60	-.10	.17	.40*	.25	.41**	.40*	-
8. **Conscientiousness**									
Mean	52.04	2.89	.34* (H2a)	.07 (H2a)	.47**	.19	.26*	.39*	.32* (H7a)
Minimum	46.08	4.39	.47** (H2b)	.04 (H2b)	.29*	.15	.36*	.12	.10 (H7b)
Maximum	58.03	3.29	.14	-.19	.24	.04	.29*	.32*	.29
Variance	5.39	2.06	-.32* (H3)	-.18 (H3)	-.20	.02	-.03	.15	.07
Percentage above Mean	53.49	27.73	.19 (H2c)	-.03 (H2c)	.37*	.00	.02	.33*	.19 (H7c)
9. **Achievement**									
Mean	35.18	1.72	.26*	.18	.60**	.14	.32*	.37*	.46**
Minimum	31.55	2.91	.24	.11	.35*	.12	.23	.20	.08
Maximum	38.80	2.20	.08	-.11	.33*	.02	.44**	.17	.56**
Variance	3.33	1.51	-.14	-.19	-.17	.01	.18	-.00	.31*
Percentage above Mean	43.28	24.52	.33*	.21	.39*	.26*	.33*	.15	.43**
10. **Orderliness**									
Mean	15.79	1.46	.17	-.11	.18	.02	.26*	.29	.12
Minimum	13.13	2.65	.27*	-.07	.06	.09	.17	.18	.05
Maximum	18.30	1.44	.04	-.09	.19	.10	.08	.37*	.07
Variance	2.31	1.10	-.24	-.00	-.02	.00	-.08	.04	-.04
Percentage above Mean	69.39	24.98	.15	.19	.23	.19	-.11	.31	.12
11. **Agreeableness**									
Mean	57.22	3.13	-.01 (H4a)	.31* (H4a)	.52** (H4a)	.17 (H4a)	.02	.56** (H8a)	.17
Minimum	50.28	4.78	-.09 (H4b)	.19 (H4b)	.30* (H4b)	.17 (H4b)	.15	.48** (H8b)	.05
Maximum	62.78	3.83	-.08	.19	.38*	-.10	-.21	.32* (H8c)	.17
Variance	5.45	2.18	.02	.03	-.09 (H5)	-.10	-.21	-.21	.05
Percentage above Mean	52.73	26.02	.05 (H4c)	.28* (H4c)	.39* (H4c)	.32* (H4c)	.06	.37* (H8d)	.05

H = hypothesis N = 40 teams (39 teams for task norm correlations). * p <.05, **p <.01. (One-tailed)

individual ratings of performance ($r = .47$, $p < .01$), but not with supervisor rated group performance.

Hypothesis 2c. This hypothesis predicted that the percentage of group members scoring above the population mean for conscientiousness would correlate positively with group performance. This hypothesis was not supported. The percentage of group members scoring above the population mean was not related to aggregate performance ratings or supervisor rated group performance ($p > .05$).

Hypothesis 3. This hypothesis proposed that the variance of group conscientiousness would correlate negatively with group performance. Partial support was found for this hypothesis. A significant negative relationship was found between group conscientiousness variance and aggregate individual performance ($r = -.32$, $p < .05$). Although the relationship between group conscientiousness variance and supervisor-rated group performance was negative in direction ($r = -.21$), it was not significant.

Hypothesis 4a. This hypothesis proposed that the group agreeableness average score would correlate positively with group viability, group cohesion, and group performance. Partial support for this hypothesis was found. The mean agreeableness score correlated positively with group cohesion ($r = .52$, $p < .01$), and supervisor rated group performance, ($r = .31$, $p < .05$), but not with aggregate group performance or group viability ($p > .05$).

Hypothesis 4b. This hypothesis predicted that the group agreeableness minimum score would be positively related to group viability, group cohesion, and group

performance. Partial support for this hypothesis was found. The group minimum agreeableness score was positively related to group cohesion ($r = .30$, $p < .05$), but not with group viability or group performance ($p > .05$).

Hypothesis 4c. This hypothesis proposed that the proportion of team members scoring above the population mean for agreeableness would be positively related to group viability, group cohesion, and group performance. Partial support for this hypothesis was found. The percentage of team members scoring above the population mean for agreeableness correlated positively with supervisor rated group performance, ($r = .28$, $p < .05$), group cohesion, ($r = .39$, $p < .05$), and group viability ($r = .32$, $p < .05$), but not with aggregate group performance ($p > .05$).

Hypothesis 5. This hypothesis predicted that the variance of group agreeableness would correlate negatively with group cohesion. No support for this hypothesis was found. The relationship was negative in direction but did not achieve significance.

Hypothesis 6. This hypothesis predicted that groups high in conscientiousness and agreeableness would perform better than other types of groups. Results of the regression analyses revealed that groups did not differ relative to group performance or group viability.

There was a relationship with group cohesion however. Figure 2 shows the mean scores for groups that were; a) high in both conscientiousness and agreeableness, ($N = 12$), b) high in one construct and low in the other, ($N = 16$), and c) low in conscientiousness and low in agreeableness ($N = 12$). High is defined as scoring above the population mean score for each construct, and low is defined as scoring below the

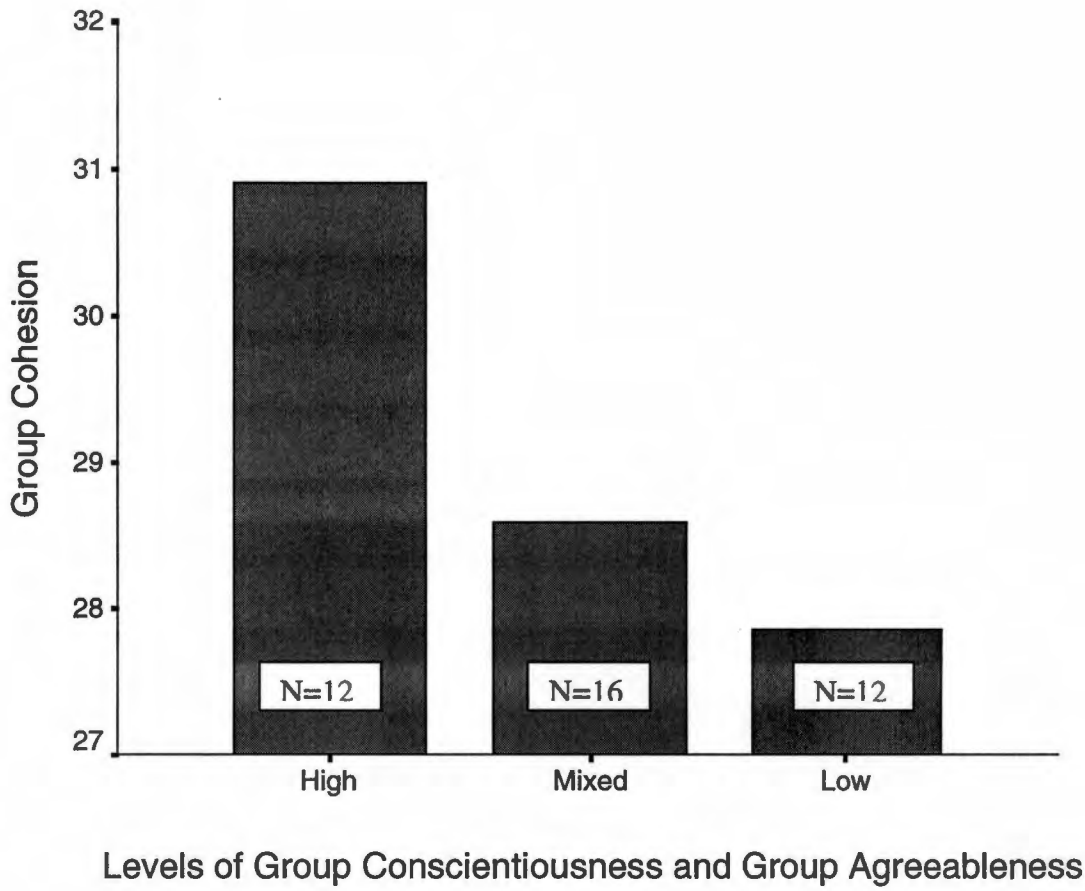

Figure 2. Comparison of within-group levels of conscientiousness and agreeableness for group cohesion.

population mean. The regression analysis indicates that the level of personality composition in a group is related to group cohesion, $F(1,38) = 11.03$, $p < .01$. Post hoc comparisons reveal that groups high in both conscientiousness and agreeableness are more cohesive than groups high in one construct and low in the other. Groups high in agreeableness and conscientiousness are also more cohesive than groups low in both agreeableness and conscientiousness. Groups low in both constructs were not less cohesive than groups high in one and low in the other.

Hypothesis 7a. This hypothesis predicted that the group average conscientiousness score would correlate positively with group task norms. Support was found for this hypothesis, the correlation between the variables was positive and significant ($r = .32$, $p < .05$).

Hypothesis 7b. This hypothesis predicted that the minimum group conscientiousness score would correlate positively with group task norms. This hypothesis was not supported, ($p > .05$).

Hypothesis 7c. This hypothesis predicted that the percentage of team members scoring above the population mean for conscientiousness would correlate positively with group task norms. No support for this hypothesis was found ($p > .05$).

Hypothesis 8a. This hypothesis predicted that group average agreeableness would correlate positively with group social norms. This hypothesis was supported, the group agreeableness average score was positively related to group social norms, ($r = .58$, $p < .01$).

Hypothesis 8b. This hypothesis predicted that the minimum group agreeableness score would correlate positively with group social norms. Support was found for this hypothesis, ($r = .56$, $p < .01$).

Hypothesis 8c. This hypothesis proposed that the maximum group agreeableness score would correlate positively with group social norms. Support was found for this hypothesis, ($r = .32$, $p < .05$).

Hypothesis 8d. This hypothesis proposed that the percentage of group members scoring above the population mean for agreeableness would correlate positively with group social norms. Support was found for this hypothesis. The percentage of group members scoring above the population mean for agreeableness correlated significantly with group social norms ($r = .37$, $p < .05$).

Hypothesis 9. This hypothesis predicted that groups that are high in both task and social norms are more effective than other types of groups. Partial support was found for this hypothesis. Results of the regression analyses revealed that groups did not differ with respect to group performance or group viability.

There was a relationship with group cohesion however. Figure 3 shows the mean scores for groups that were; a) high in both task and social group norms, ($N = 12$), b) high in one type of group norm and low in the other, ($N = 19$), and c) low in task norms and low in social norms ($N = 9$). High is defined as scoring above the population mean

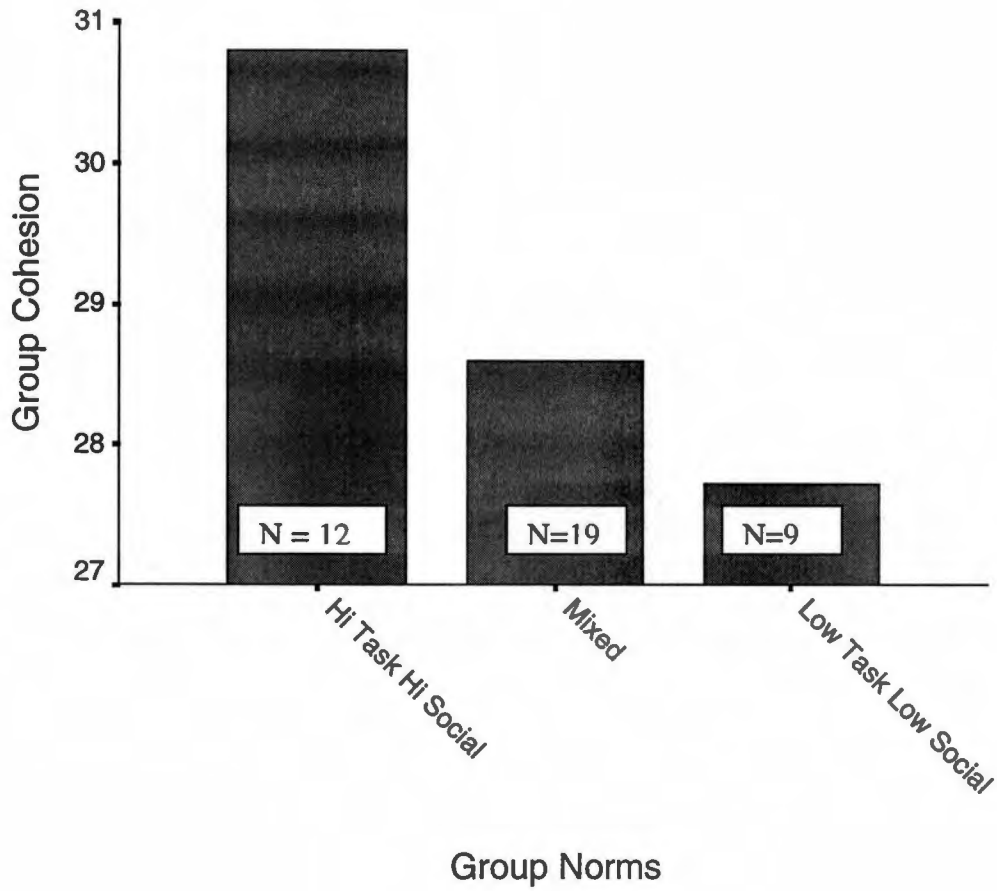

Figure 3. Comparison of three levels of group norms with group cohesion.

score for each type of group norm, and low is defined as scoring below the population mean. A regression analysis indicates that levels of group norms are related to group cohesion, $F(1,38) = 10.17$, $p < .01$. Post hoc comparisons reveal that groups high in both task norms and social norms are more cohesive than groups high in one type of norm and low in the other. Groups high in task and social norms are also more cohesive than groups low in both task and social norms. Groups low in both types of group norms were not less cohesive than groups high in one and low in the other.

4. Discussion

Eight of the nine hypotheses were supported, or partially supported. Hypothesis five was the only hypothesis not supported at least partially.

Individual Level

H1: Individual performance correlates positively with a) conscientiousness and b) agreeableness.

Individual team member performance correlated positively and significantly with agreeableness and conscientiousness. The results support earlier findings linking personality and individual performance (Barrick & Mount, 1991; Hough, Eaton, Dunnette, Kamp, & McCloy, 1990; Tett, Jackson, & Rothstein, 1991).

Conscientiousness correlated with the individual performance dimensions of quality, productivity, and dependability, but not with safety and attendance. To the extent that conscientiousness represents a task-oriented trait (McCrae & John, 1992), these variables should be related. More difficult to explain is the fact that conscientiousness did not correlate with safety, given that it has correlated with safety in other empirical studies (Stewart, 1996), the same is true for attendance (Eisenberger, Fasolo, & Davis-LaMastro, 1990).

The two facets of conscientiousness, achievement and orderliness, produced very different results. Achievement was responsible for the positive correlations between conscientiousness and performance. Orderliness did not correlate with individual performance dimensions or the performance index. Although there was sufficient power to detect a relationship, and sufficient variability in the scale, the population was range

restricted for tenure. Less than three percent of the population reported being with the organization for less than two years, and more than half had over 16 years experience. The findings also support the work by Stewart (1999) regarding trait bandwidth and stages of job development, and extend the results to a military organization.

Task Interdependence

Task interdependence appears to be an omnipresent variable in group functioning. It is related to inputs (conscientiousness), process variables (task norms), and outcomes (group viability). Although conscientiousness is related to task interdependence, the achievement facet correlates stronger than the orderliness facet. The strongest correlation among the achievement operationalizations is with the group maximum score. Someone that is conscientious or achievement oriented may be task focused, and able to see the big picture regarding task accomplishment. High levels of achievement are related to group task norms. Perhaps the strong presence of task norms alerts group members to the required interdependence necessary for completing group tasks.

The relationship between group task norms and task interdependence is similar to that between task interdependence and group conscientiousness. If a group has strong task norms, group members understand what their function is in accomplishing the group task. The role clarity associated with group task norms may be related to an increased awareness of task interdependence among group members.

Finally, if the group task were highly interdependent one might expect increased group viability. This is not necessarily true for group performance, as increased task

interdependence may not result in more effective performance. However, over the course of time, increased task interdependence may require more group interaction and could presumably have an impact on group viability.

Because of the seemingly pervasive relationship between task interdependence and other variables in the study, it is likely that task interdependence moderates several key relationships. Baron and Kenny (1986) note that significant correlations should be present between predictors and criteria before these relationships are assessed. As a result, it is prudent to first look at those relationships where task interdependence is present, like group conscientiousness, group task norms, and group viability.

Post hoc hierarchical regression analyses were conducted to explore the presence of moderating relationships between task interdependence and several key relationships. Hierarchical regression was used to assess incremental validity added to the prediction between two variables. In this study, the existence of incremental validity indicates that task interdependence helps to explain variance accounted for in the criterion variable, above and beyond that attributed to the predictor in the equation. Task interdependence did not moderate any of the relationships of aggregate individual performance or supervisor rated group performance with any of the input or process variables. This is likely due to the lack of relationship that task interdependence has with either type of group performance in this study (Baron and Kenny, 1986).

Table 4 shows that two relationships were moderated by task interdependence. First, task interdependence is shown to moderate the relationship between group conscientiousness and group task norms. Second, task interdependence moderates the

relationship between group agreeableness (operationalized as percentage scoring above the population mean) and group viability.

As the level of conscientiousness increases within the group, so does the level of group task norms. However, increased group conscientiousness along with increased task interdependence provides even greater prediction of group task norms. This finding is not

Table 4.
Post hoc regression analyses: The moderating effects of task interdependence (N = 40).

Model (criterion variable)	b	ΔR^2	Total R^2	df	ΔF
Conscientiousness (Task Norm)					
Conscientiousness	.18*	.102	.102	1,38	4.33*
Conscientiousness, Task Interdependence	.29*	.111	.214	1,37	5.24*
Agreeableness[1] (Group Viability)					
Agreeableness	.02*	.100	.100	1,38	4.22*
Agreeableness, Task Interdependence	.28*	.127	.228	1,37	6.11**

Note. *b* = unstandardized regression coefficients. 1 = Percentage of group members scoring above the population mean.
* $p < .05$ (one-tailed) ** $p < .01$ (one-tailed), for *t* values (for unstandardized regression coefficients) or *F* values (for overall model).

surprising, given that group conscientiousness is related to group task norms. Conscientious team members are more likely to adopt group task norms than are low conscientious group members. The group task norms serve to define and clarify member roles and duties relative to accomplishing group tasks. As the level of task interdependence increases within these groups, there is an implicit need to coordinate

efforts to accomplish tasks. Thus, task norms are even more important for group functioning when the level of task interdependence increases.

The same is true of the relationship between group agreeableness (percentage scoring above the population mean) and group viability. As the percentage of group members scoring above the population mean for agreeableness increases, so does group viability. However, the prediction is even greater if task interdependence is included in the regression equation. In groups where task interdependence is high, the impact of agreeableness could be more pronounced simply because of the need to sustain smooth social interactions over an extended period of time.

In summary, task interdependence initially had a finite role as a screen to determine which groups should be included in the study- but because it was related to key variables in the study post hoc regression analyses were conducted to explore moderating effects between several relationships. Task interdependence added incremental validity to the prediction of two relationships; group conscientiousness and group norms, and group agreeableness (operationalized as percentage of group members scoring above the population mean) and group viability.

Group Level Conscientiousness

H2 (a, b, c): Group conscientiousness average, minimum, and proportion scoring above average will be positively correlated with group aggregate ratings of individual performance and supervisor ratings of team performance.

Support for this hypothesis was found in aggregate ratings of individual performance, but not supervisor ratings of group performance. This was perhaps due to

the fact that conscientiousness is not a relationship-based trait, and that aggregate individual performance is simply that, the aggregation of individual team member performance.

Support was found for the relationship between the mean and minimum scores, not for percentage scoring above the mean. This supports current findings on mean (Barrick et al, 1998; Neuman & Wright, 1999) and minimum (Barrick et al, 1998; Neuman & Wright, 1999; Neuman et al, 1999) operationalizations of conscientiousness. A minimum level of conscientiousness is related to aggregate individual performance, and as the average level of conscientiousness within a group increases, so do aggregate ratings of individual performance.

It was proposed that the minimum group agreeableness score is indicative of a group norm, the minimally acceptable level of the construct an individual may bring to the group and continue to remain in good standing with group members. This score is important, and should be related to performance. Although the maximum group score was not significant, it may be more indicative of a task specialist, someone that keeps the group focused or on task. Although this specialist may add to group functioning, it is not necessarily related to group performance.

Yet another explanation may be found in the homogeneity/heterogeneity literature. Lepine et al, (1997) found that low conscientiousness group members were ignored, compared to low ability members who were helped. In the Barrick et al (1998) study, the group maximum conscientiousness score was not related to group performance, but was negatively related to the amount of communication among group

members, further support that heterogeneously composed conscientiousness groups result in decreased communication, ultimately affecting group processes.

Together, these relationships suggest that for conscientiousness at the group level; a) a minimum level present in the group is related to aggregate individual performance, and b) groups perform better when they are homogenous (high) compared to heterogeneous. Further support for this claim is found in Hypothesis 3.

H3: The variance of group conscientiousness correlates negatively with group aggregate ratings of performance and group performance.

The variance of group conscientiousness was indeed negatively related to aggregate individual performance, and negative in direction with supervisor rated group performance. This supports current findings in the literature regarding group conscientiousness variance and group performance (Barrick et al, 1998; Neuman et al, 1999).

Group Level Agreeableness

H4 (a, b, c, d): Group agreeableness average, minimum, maximum, and proportion scoring above the population mean are positively related to group effectiveness (aggregate performance, supervisor rated group performance, group cohesion, and group viability).

Similar to conscientiousness, group agreeableness correlated with one type of performance and not the other. However, unlike conscientiousness, agreeableness was related to supervisor rated group performance and not aggregate ratings of performance. The mean and percentage of team members scoring above the population mean correlated

positively with group performance. These findings support current literature regarding the mean score for agreeableness (Barrick et al. 1998; Halfhill et al, 1999; Neuman et al. 1999) and performance, as well as the percentage of group members scoring above the mean (Halfhill et al. 1999) and performance.

This pattern of relationships may be related to the level of performance being rated. Agreeableness is an interpersonal trait, particularly well suited to group settings. It is not surprising then that this trait is more strongly related to supervisor rated group performance than the aggregation of individual performance.

The minimum and maximum scores may be related to the presence of group norms for agreeableness. It was proposed that although the minimum group agreeableness score may represent a minimally accepted level of agreeableness for the group, it might not be related to group performance. It is possible that a disagreeable team member can simply be ignored when he or she is acting disagreeable. Group members may choose to overlook an unfavorable disposition, especially if the disagreeable member is highly conscientiousness, helping to sustain the groups' task maintenance function.

The minimum group agreeableness score, and percentage of group members scoring above the population mean for agreeableness were both related to group viability. The relationship between the minimum group agreeableness score and group viability might well be indicative of a group norm "floor". Perhaps disagreeable team members can be ignored if they contribute to the groups' task maintenance function, but they might not be able to be ignored forever, especially if they do not contribute to the groups' task

maintenance function. A minimally acceptable level of agreeableness is needed within the group to maintain the group's social maintenance function over time (sustained viability).

Similar relationships were found with cohesion. The mean, percentage above the mean, and maximum scores were positively related to cohesion. The results support current research findings regarding cohesion and performance (Barrick et al.1998; Neuman, 2000 In Press).

In contrast to current research findings, the minimum group agreeableness score was not related to group performance (Barrick et al. 1998; Neuman & Wright, 1999; & Neuman, 2000 In Press). The correlation was ($\underline{r} = .19$, $\underline{p} > .05$), most probably due to the small population ($\underline{N} = 40$).

An unexpected finding in the agreeableness domain was the positive relationship between the maximum score in the group with performance. This finding is in contrast to Barrick et al. (1998) who report a negative relationship between maximum group score and cohesion. In fact, the maximum group agreeableness score with cohesion in this study is positive and significant, again in difference to Barrick et al. (1998). One plausible explanation for differences in these studies is type of team. If one considers the nature of production work (Barrick et al. 1998) and the role of agreeableness in that setting, it makes sense that elevated levels of agreeableness in the work group may lead to increased social interaction, perhaps negatively impacting group output. In service teams, the work itself may demand more face-to-face interaction. It is also possible that

teams do well when they have a good interpersonal, or socioemotional leader in the group (Bales, 1955, 1958).

H5: The variance of group agreeableness correlates negatively with group cohesion.

Similar to conscientiousness, the variance of group agreeableness scores was thought to have a detrimental effect on group effectiveness, specifically group cohesion. Although the relationship was negative in direction, it was not significant.

H6: Groups high in conscientiousness and agreeableness perform better than other types of groups.

Partial support was found for this hypothesis. There was no relationship between groups high in conscientiousness and agreeableness with group performance or group viability. This was in part due to the number of teams included in the study ($\underline{N} = 40$). In order to maintain adequate cell sizes, distinctions between high and low groups were rather negligible. As a result, there was not enough separation between groups with respect to variance to detect differences in group performance or group viability.

Groups high in conscientiousness and agreeableness were related to group cohesion. Post hoc comparisons revealed that groups high in both conscientiousness and agreeableness are more cohesive than groups high in one construct and low in the other. Groups high in agreeableness and conscientiousness are also more cohesive than groups low in both agreeableness and conscientiousness. Groups low in both constructs were not less cohesive than groups high in one and low in the other.

It is not surprising to find that groups high in agreeableness and conscientiousness are more cohesive than other types of groups. If groups are high in agreeableness, it is

likely that the social maintenance function of the group is being met. Similarly, groups high in conscientiousness are likely addressing the groups' task maintenance function. Together, this makes for a comfortable work environment where group members' needs are being met with respect to task and social maintenance functions. This finding may be affected by common method bias, as team members rated both variables, however, the variables are at two different levels of analysis (individual and group).

The fact that a relationship was not found between groups high in agreeableness and conscientiousness with group performance is likely more statistical than theory based. Agreeableness correlated with supervisor rated group performance only, and conscientiousness with aggregate performance only. If no relationship exists between two variables, it is unlikely that one will add predictive value in a regression equation.

Group Norms

H7 (a, b, c): Group average conscientiousness, group minimum score, and percentage of team members scoring above the mean correlate positively with group task norms.

The group average conscientiousness score was related to group task norms. The minimum score and percentage above the mean were not. Upon further inspection of the conscientiousness facets, results indicate that the achievement facet of conscientiousness was related to task norms, and the orderliness facet was not. The achievement mean, (r = .46, p <. 01), maximum, (r = .56, p <. 01), variance, (r = .31, p <. 05), and percentage above the mean, (r = .43, p <. 01), are all positively related to group task norms.

This finding is not surprising. The items in the achievement scale represent to a large extent task focus, self-motivation, proactive behavior, and going beyond what is

expected of an individual. The task norm items reflect the extent to which a group emphasizes continuous improvement, taking on extra responsibilities, competition with other groups, and task completion. The compositional effects of high achievement orientation within the group will likely manifest themselves in the form of shared group behavior, or norms. To the extent that a group is the sum of its parts, the group norms espoused by its members are a direct reflection of their compositional attributes. Therefore, if you fill a group with members high on achievement orientation, it is likely that they will adopt behaviors congruent with their own attributes. It is also possible that the task(s) the group engages in demands that the group adopt a task-oriented norm. The observed relationships between the achievement scale and group task norms may be helpful in understanding the task specialist role discussed earlier. The mean score may reflect a level of consensus within the group regarding appropriate levels of task norms, and the variance and maximum scores may reflect the presence of a task specialist.

The preceding conceptualization of the relationship between a group's aggregate personality and its norms are supported empirically. Consider that some organizations possess a modal personality, or a homogenous set of personality characteristics (Eigel & Khunert, 1996; Schneider, Smith, Taylor, & Fleenor, 1998). It is clear that there is an expected level of these characteristics required by the organization, or the pattern would be random. It is therefore not that far of a reach to suggest that teams might expect certain levels of particular characteristics as well. Consider that George (1990), and George and Bettenhausen (1992) have demonstrated that the aggregate affective tone of group members result in a group affective tone. This conceptualization also supports

Schneider's (1984) attraction-selection-attrition (ASA) framework, in that people are attracted to and retained by organizations (and perhaps teams) based on compatibility of personality. If particular traits are associated with the attraction, selection, and attrition of individuals to organizations and teams, it makes sense then that there exists some minimally accepted value within the group, below which an individual will leave or be asked to leave. Perhaps the individual does not meet the minimum level of conscientiousness defined by the task. Maybe he or she does not meet the minimum level of conscientiousness defined by the group's task norm. This norm "floor" is probably not a finite number generalizable across groups. In fact, the norm "floor" is likely different for each group, depending on the groups' task norm. However, it is conceivable that type of task will provide at least some level of consistency for groups regarding the estimate of a norm floor. The formation of group norms can be influenced by both individual member inputs, as well as demand characteristics from the task. In both instances it benefits the individual, as well as the group, to possess traits that aid in successful task completion.

H8 (a, b, c, d): Group average agreeableness, group minimum and maximum score, and proportion of team members that score above the mean correlate positively with group social norms.

All of the hypothesized relationships between agreeableness and group social norms were positively related. Similar to the relationship between conscientiousness and task norms, this finding is not surprising. The agreeableness items assess the extent to which individuals are courteous to coworkers, are thoughtful and considerate, as well as

trusting and cooperative of coworkers. Items from the social norm scale assess the extent to which the work group emphasizes interpersonal relationships and the social aspect of functioning while performing group tasks. If a work team is composed of agreeable members, the social norms espoused by the group should reflect a comparable level of agreeableness.

The group norm hypotheses were supported. Conscientiousness (achievement) is highly correlated with task norms, and agreeableness is highly correlated with social norms. Achievement does not correlate with social norms, nor does agreeableness correlate with task norms. It appears as though there is a strong relationship between the personality composition of the group, and the corresponding norm the group chooses to emphasize while carrying out the groups' task. This is not to say that groups are either conscientious *or* agreeable, they can be both, and may emphasize both types of norms while performing tasks.

H9: Groups that utilize both task and social norms are more effective than groups that do not utilize both.

This hypothesis was partially supported. Groups high in both task and social group norms had no relationship with group performance or group viability. This may have been due in part to the limited number of teams in the study. It may also be due to weak relationships between task and social norms with group performance and group viability.

There was a relationship with group cohesion however. Post hoc comparisons reveal that groups high in both task norms and social norms are more cohesive than

groups high in one type of norm and low in the other. Groups high in task and social norms are also more cohesive than groups low in both task and social norms. Groups low in both types of group norms were not less cohesive than groups high in one and low in the other.

Task and social group norms are closely linked with the personality composition of the members in a group. As demonstrated earlier, a relationship exists between the personalities that individuals bring to the group, and the type of group norms adopted by the group. Given these relationships, it is not surprising to find that groups high in both task and social group norms are more cohesive than other types of groups. Again, this speaks to the group taking care of both task and social maintenance functions within the group.

Contributions to current knowledge

Personality. At the individual level of analysis, the results support current research regarding relationships between personality and performance. Both conscientiousness and agreeableness are valid predictors of performance at the individual level. There was also partial support for the bandwidth and stages of development of job performance proposed by Stewart (1999). This proposition simply states that the conscientiousness facet of *orderliness* is a robust predictor of performance for individuals new to a job. Beyond the first few years, orderliness is less powerful a predictor – and *achievement* becomes more predictive of performance. The participants in this population averaged between 13 and 16 years tenure, and less than 5% had fewer than two years experience. This finding was important for this study for two reasons. First, it was

known from previous experience that the population was composed of individuals with many years of experience. It was also known that the population is range restricted for conscientiousness, and that obtaining sufficient variance for the construct would be difficult. Using an adapted version of the NEO-PIR short form conscientiousness scale likely would have resulted in insufficient variance to test the proposed hypotheses. As a result of the work by Stewart (1999) this issue was avoided.

At the group level of analysis, this study provides support that group personality is related to group performance. The results reaffirm the findings of Barrick et al. (1998) and Neuman et al. (1999) that group conscientiousness mean and minimum scores are predictive of group performance, as are the mean and percentage above the mean for agreeableness. This study extends current knowledge of (service) teams by identifying that a growing body of evidence supports the notion that; a) a minimum level of conscientiousness is needed for group performance, b) homogeneous (high) groups are more effective than heterogeneous groups, regarding conscientiousness, and c) increasing the maximum level of conscientiousness does not appear to result in increased group performance. Until now, researchers have assumed that increasing conscientiousness in general increases group performance, these results indicate otherwise. To the extent that an individual very high in conscientiousness is introduced to a group of average conscientiousness members, there is the possibility that the discrepancy in conscientiousness will result in some type of conflict between group members.

The results also extend the literature on group personality and group effectiveness with respect to group cohesion. Groups high on agreeableness and conscientiousness are

more cohesive than other types of groups. This may be related to minimum levels of each construct necessary for the group to maintain the task and social maintenance functions within the group. It also points to the notion that task and socioemotional specialist roles are defined for the group, enabling these groups to be more cohesive than groups without defined task and socioemotional specialist roles.

Group Norms. The results extend the literature on group personality and group norms by demonstrating linkages between a task-oriented personality trait (conscientiousness) and group task norms. This study also demonstrated a linkage between a relationship-based personality trait (agreeableness) and group social norms. The results also extend the literature on group norms and group effectiveness. Groups high in task and social group norms are more cohesive than other types of groups.

This study also contributed to group norms by identifying the possibility of norm "floors" and "ceilings" – potential thresholds related to aspects of group effectiveness. It is important to maintain that norm floors and norm ceilings are probably not finite numbers or even point estimates along a conscientiousness or agreeableness scale. Rather, norm floors and ceilings will be different for different types of groups - and there are many different factors that might affect this fluctuation.

Implications

Theory. The prevailing theoretical model of small group research regarding the conceptualization of group functioning is the input-process-output (IPO) approach introduced by Hackman and Morris (1980). The fundamental assumption underlying this paradigm is that inputs affect outcomes through processes (Hackman & Morris, 1978).

Results of the current study are partially consistent with this theory. Individual level factors (personality) were strongly related to interaction processes (group norms), however, group norms were not consistently related to group outcomes. Task norms were not related to group performance or group viability, but were related to group cohesion. Social norms were not related to group performance or group viability, but were related to group cohesion. Group inputs (personality) were not related to outcomes *through* interaction processes, and individual level inputs were more strongly related to outcomes when they did *not* go through processes.

One potential explanation for the lack of relationship between group norms and group performance is the disconnect between self-report scores and manifest behavior observed by the individual rating group performance. That is, this study measured group member perceptions of group norms – it did not measure actual behavior in groups.

Another important contribution to theory is the idea of "norm floors" for conscientiousness and agreeableness. The norm floor for conscientiousness is related to aggregate individual performance, and the norm floor for agreeableness is more strongly associated with the cohesion, group viability, and group social norms. These findings are particularly important regarding the task and social maintenance functions of the group. The idea of a "norm ceiling" for group personality composition was not supported by data in this study, but did point to the notion that task and socioemotional "specialist" roles are important for balancing the task and social maintenance functions within the group.

Research. The understanding of any phenomenon advances only when important distinctions are made, and several important distinctions are advanced regarding group personality composition and effectiveness. Perhaps the strongest research implication is simply that group member personality is related to group effectiveness. The notion of a minimally acceptable level, or "norm floor", of conscientiousness is important for group performance. This result appears to be fairly robust in the literature, evident in service teams (Neuman & Wright, 1999) and production teams (Barrick et al. 1998; Neuman et al. 1999; Neuman in Press). Homogeneous (high) groups predict performance more consistently than heterogeneous groups (Barrick et al. 1998; Halfhill et al. 1999).

Application. The results of this study have important implications for individuals involved in the staffing, development, and measurement of teams.

Staffing specialists may pay particular attention to the types of tasks the teams engage in. The task will be instrumental in considering appropriate norms the team will need to use to be successful. By staffing teams with individuals high in achievement one increases the chance of those teams adopting task-oriented norms, however, there does not appear to be a relationship between task norms and group performance. If the group task is more appropriate for social norms, increasing the amount of agreeableness in the group increases the probability that the group will adopt social norms. Increased social norms are related to group cohesion, which is related to group performance.

Further, by staffing a team with at least one member high in conscientiousness and at least one member high in agreeableness, it is at least possible that the task and socioemotional specialist roles within the group will be filled. By staffing the team with

multiple members high in both agreeableness and conscientiousness, the team is likely to be more cohesive than with other types of selection strategies. This may be particularly important to consider if the team will be working together for an extended period of time.

Human resource professionals are often tasked with the development of work teams. Team facilitation is an important developmental tool that can be used to guide teams through conflict, change initiatives, organizational issues and trouble spots. Through the identification of individual differences among team members with respect to personality, team facilitators may forecast potential conflict. Variance in conscientiousness scores may lead to decreased communication among team members as well as decreased performance and social processes. Extremely disagreeable team members may jeopardize the long-term viability of the group.

The results of this study raise an interesting question for those interested in the measurement of team effectiveness. Aggregate ratings of individual performance were significantly related to conscientiousness, while the ratings of group performance were significantly related to agreeableness. No crossover existed between the personality predictors and types of performance. No relationships were observed between conscientiousness and group performance, as well as agreeableness and aggregate individual performance. The effect was observed in this population previously however (Halfhill et al., 1999), but is not consistent in other types of teams – like production teams (Barrick et al., 1998) or human resource teams (Neuman & Wright, 1999).

Limitations

This study has at least seven major limitations. The relevant population for the analyses included 40 teams, yielding power to detect relatively weak. This is a general problem in group research, and may help to explain why some of the hypotheses were not supported. It should be noted that individual-trait measures and group norm measures were both collected using self-report methods. This leaves open the possibility that significant relationships were due to common response bias. However, because the measures dealt with different levels of analysis (individual and group) the likelihood of this confound is minimized. The teams in this study represent many different shops within the organization. Internal validity may be compromised if critical factors within shops differ. Because of the web-based administration of this study, the population may be range restricted relevant to computer literate team members. This certainly seems plausible, given that response rates were considerably lower compared to a paper and pencil study administered in the same organization two years earlier. The population is also restricted in range for tenure. More than half of the participants reported 17 or more years experience with the organization.

The experimental design itself is a limitation. Obviously one cannot make causative statements about correlations, and the direction of influence among related variables is indeterminable using a correlational design. However, not having control over assignment to groups seems a fair trade-off for increased external validity.

External validity is limited by the population and setting. The types of teams in this study are military, specifically Air Force, and can best be classified as service teams.

At best the results generalize to other service teams, and perhaps only to other military, Air Force, service teams.

Future Directions

The results of this study can be extended in several ways. The idea of a norm floor for conscientiousness in a group should be tested with more rigor than presented here. It should also be tested in different types of teams. Additionally, the homogeneity/heterogeneity of group conscientiousness is a study in itself. Task and socioemotional specialist roles need further investigation with respect to additional personality variables (such as extroversion and openness). All of the findings should be replicated, and extended to other populations.

The linkages between personality and group norms remain ambiguous in a larger context. Are group norms more important for different types of teams, or types of work? Will the linkages look the same using more objective measures of group performance?

Further, many of the results supported findings in the current literature, however, several findings were in difference to the extant literature. To what extent is the administration method (internet-based) related to differences in the findings. Additionally, to what extent does the administration method differ with respect to paper and pencil administration at the group level of analysis?

Finally, a point mentioned only briefly deserves further attention. Several studies have found that web-based data collection is superior to paper and pencil data in many respects (Miles and King, 1998; Stanton, 1998). The number of individuals participating in this study (web-based) was far less than the number that participated in an earlier

(paper and pencil) study, both from the same organization. While the psychometric properties of scales may improve with web-based administration, perhaps response rates are range restricted by the abilities of team members with respect to computer skills.

Conclusions

An internet-based field study of 40 military teams found the personality traits of conscientiousness and agreeableness related to several individual and group outcomes. At the individual level of analysis, both conscientiousness and agreeableness were related to individual performance. At the group level of analysis, conscientiousness and agreeableness were again related to group performance, as well as other effectiveness criteria.

The minimum group conscientiousness score was related to aggregate individual performance, and is thought to represent a "norm floor", or minimally acceptable level for the construct regarding group performance. The maximum group conscientiousness score is indicative of a task specialist role important for maintaining the groups' task maintenance function. Variance in group conscientiousness is negatively associated with performance, and homogeneously (high) composed groups are related to group performance.

The minimum group agreeableness score was not related to group performance, perhaps due to the fact that disagreeable members can be ignored, especially if they contribute to group effectiveness through other mechanisms, such as helping to maintain the task maintenance function within the group. However, the minimum group agreeableness score was related to group viability, perhaps demonstrating that

disagreeable members cannot be ignored forever, especially if they are not contributing to group effectiveness through alternative means.

The maximum group agreeableness score was related to group cohesion and group social norms. This points to the possibility of the presence of a socioemotional specialist within the group, helping to maintain the groups' social maintenance function.

When groups were high in both agreeableness and conscientiousness, they were more cohesive than other types of groups. This provides additional support that task and social norms, as well as the roles of task and socioemotional specialists are related to at least one aspect of group effectiveness. It also supports earlier contentions (Bales, 1955, 1958) that both aspects (task and social) are important for group effectiveness, and that it is difficult for an individual to assume both roles simultaneously.

Results indicate that group conscientiousness is associated with group task norms, and group agreeableness is associated with group social norms. However, group norms are not directly associated with group performance. Group norms are associated with group cohesiveness, which is related to group performance. Groups high in task and social norms are more cohesive than other types of groups.

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Appendices

Appendix 1: Measures

Task Interdependence

1. Other people's work depends directly on my job.
2. My job depends on the work of many different people for its completion.
3. I provide other people with the help of advice they need to do their work.
4. Most of my job activities are affected by the work activities of other people.
5. I provide other people with information they need to do their work.
6. I provide support services, which other people need to do their work.
7. I depend on other people's work for information I need to do my work.

Personality

Agreeableness

1. I try to be courteous to everyone I meet at work
2. I often get into arguments with my family and coworkers (R)
3. Some people at work think I am selfish and egotistical (R)
4. I would rather cooperate with others than compete against them while at work
5. I tend to be cynical and skeptical of my coworkers intentions (R)
6. I believe that most people will take advantage of you if you let them (R)
7. Most people at work like me
8. I often get angry at the way people treat me at work (R)
9. On the job, I am a cheerful, high-spirited person

10. Some coworkers think of me as cold and calculating (R)
11. I am not a cheerful optimist
12. I'm hard headed and tough minded in my attitudes (R)
13. I generally try to be thoughtful and considerate
14. If I don't like people at work, I let them know it (R)

Conscientiousness

1. Orderliness
2. I keep my workspace neat and clean
3. At work, I am not bothered by messy people (R)
4. My office or workspace is often a mess (R)
5. I prefer to do things according to a plan
6. I never seem to be able to get organized (R)
7. At work, I often forget to put things back in their proper place (R)

Achievement

1. At work it is easy for me to turn plans into actions
2. I consistently do more than what is expected of me
3. I am not highly motivated to succeed (R)
4. I have a clear set of goals and work toward them in an orderly fashion
5. I work hard to accomplish my goals
6. Sometimes I do just enough work to get by (R)

7. I strive for excellence in everything I do at work
8. I sometimes put little time and effort into my work (R)
9. Sometimes I get so focused on a task I ignore other parts of my work

Group Norms

Task

Our work group places a lot of emphasis on....

1. continuously improving our performance at work
2. taking risks when needed in order to get ahead at work
3. avoiding any added responsibilities on our job (R)
4. performing better than other work groups in our unit
5. performing efficiently when our job assignments are extremely difficult
6. rules and regulations when working on our tasks

Social

Our work group places a lot of emphasis on....

1. having a good time while together at work
2. paying attention to other group members' feelings while at work
3. doing our work individually as opposed to together (R)
4. expressing disagreements with others openly (R)
5. talking about non work-related matters

Performance

Individual Performance Ratings with Behavioral Anchors

1. Attendance and timeliness:

Gets to work a little early so he/she can start work promptly

Does not come in late except for rare, unavoidable circumstances

Has a superior attendance record

2. Quality:

Tries to do the best possible work he/she is capable of--doesn't settle for good enough

Thinks in terms of how we can do better and improve

Initiates ideas about alternative solutions

3. Safety:

Complies with safety rules (e.g., wears safety equipment where required on a regular basis)

Openly supports safety rules by referring to them in a positive manner

4. Productivity:

Achieves a high level of productivity on the job

Always accomplishes as much or more than what you expect

5. Dependability:

Keeps his/her word even when it is inconvenient or unpleasant

Follows through on what he/she commits to

Is honest--does not lie or tell half-truths

Supervisor Ratings of Group Performance

1. This group understands how to accomplish its tasks
2. This group meets all objectives for work completed
3. This group's work is always of the highest quality
4. This group takes initiative in solving problems and decision making
5. This group is very good at planning how to accomplish their work objectives

Group Cohesion

1. I really enjoy being a member of my work group
2. I want to remain a member of the work group that I am a part of
3. I want future teams I work with to have similar members
4. There's a feeling of team unity and cohesion in our work group
5. I trust the members of this team
6. Our work group is composed of members that fit well together
7. Members of this team work well together

Group Viability

1. This work group should continue working together as a unit in the future
2. This group is not capable of working together as a unit (R)
3. As a work unit, this group shows signs of falling apart (R)

Appendix 2

Survey and Rating Forms

Vita

Terry's interest in small groups and work teams began when he was an infantry officer in the United States Army National Guard. He studied psychology as an undergraduate at the University of Pittsburgh, and later pursued a master's degree at Towson State University in Baltimore, Maryland. As a graduate student at the University of Tennessee, Knoxville, Terry worked as a research assistant, and held internships at an international consulting firm, and the Tennessee Valley Authority's Corporate University. Some of Terry's consulting experience includes the U.S. Air Force, U.S. Army, and a large government petroleum organization in Thailand. His specialty areas include work teams, assessment centers, training measurement and evaluation, and web-based assessment at the individual, group, and organizational levels.

Terry has accepted a faculty position at the University of North Texas, where he will teach courses in Industrial/Organizational psychology, and be an associate with the Center for the Study of Work Teams (CSWT).

Air National Guard
Organizational Development Assessment

Instructions: Thank you for participating in this survey. Completing this survey should take approximately 30-40 minutes. The purpose of this survey is to assess the organizational climate within your unit. The University of Tennessee research team conducted a similar assessment in 1998, and we will compare the results of this assessment with the 1998 results. We are also attempting to compare the results of your organization with a similar organization from another state. We call this a benchmark, and it will provide valuable information to the leaders of your organization. We ask that you provide your name and your supervisor's name. We ask this because it is necessary to match your responses with some information provided by your supervisor. It is important to remember that your individual responses will not be available to anyone in your organization. When you hit the submit button at the bottom of this page, your responses are sent to a secured file that only the research team has access to. All results will be reported at the work center, department, or organizational level. No individual names will ever be used. In the event that your work center has less than three members, the results for that work center will not be reported - however, we will add your responses to the data set to be used at the organizational level of analysis.

A secondary purpose of this assessment is to explore relationships between the personality of group members and how different personalities affect the way a group operates. As a result some of the items listed below address your behavior at work, and how your work center tends to operate. There are no right or wrong answers to any of these questions, they simply reflect your ideas and perceptions about your workplace.

If you are uncomfortable providing responses in this (electronic) format, a paper and pencil version of the survey is available. If you prefer to use a paper and pencil version you will be provided with a return envelope that can be mailed directly to the research team. Please contact your supervisor if you would like a paper and pencil version of the survey.

Continue

Air National Guard - Organizational Development Assessment

Please respond to all of the items. If you do not provide a response to an item, you will be asked to do so after you submit your responses.

Unit: Unselected Sex: Unselected Age: Unselected Rank Unselected

Status Unselected Years of Service Unselected

The following is a list of shops, please take a moment to find your appropriate shop and work center.
(Once the field is highlighted, you may skip through the list by typing the first letter of your shop.)

Shop: Unselected

Your Name: Last: First:

.Supervisor's Name: Last: First:

Please indicate your level of agreement by selecting the appropriate button:

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
1.	I am proud to tell others that I am a member of this organization	○	○	○	○	○	◉

2.	Most employees believe clients are satisfied with the quality of services	○	○	○	○	○	◉
3.	I try to be courteous to everyone I meet at work	○	○	○	○	○	◉
4.	Managers at my location set definite quality standards for our services	○	○	○	○	○	◉
5.	Other people's work depends directly on my job	○	○	○	○	○	◉
6.	I often get into arguments with my family and coworkers	○	○	○	○	○	◉
7.	Some people at work think I am selfish and egotistical	○	○	○	○	○	◉
8.	My supervisor listens to my ideas and concerns	○	○	○	○	○	◉
9.	I would rather cooperate with others than compete against them while at work	○	○	○	○	○	◉
10.	My job depends on the work of many different people for its completion	○	○	○	○	○	◉
11.	I tend to be cynical and skeptical of my coworkers intentions	○	○	○	○	○	◉
12.	My supervisor lets me know in a timely way how well I perform my job	○	○	○	○	○	◉

13.	I tell my friends that this organization is a great place to work	○	○	○	○	○	◉
14.	I believe that most people will take advantage of you if you let them	○	○	○	○	○	◉
15.	Most people at work like me	○	○	○	○	○	◉
16.	I often get angry at the way people treat me at work	○	○	○	○	○	◉
17.	When I face a difficult task, I can depend on my coworkers to help out	○	○	○	○	○	◉
18.	I provide other people with the help or advice they need to do their work	○	○	○	○	○	◉
19.	I am kept well informed about the things I need to know to do my job	○	○	○	○	○	◉
20.	On the job, I am a cheerful, high-spirited person	○	○	○	○	○	◉
21.	Some coworkers think of me as cold and calculating	○	○	○	○	○	◉
22.	I have sufficient opportunity in my job to learn and develop new skills	○	○	○	○	○	◉
23.	I am not a cheerful optimist	○	○	○	○	○	◉

24.	Most of my job activities are affected by the work activities of other people	○	○	○	○	○	◉
25.	People served by my work group receive truly excellent service	○	○	○	○	○	◉
26.	Favoritism is not a problem in the office where I work	○	○	○	○	○	◉
27.	I'm hard headed and tough minded in my attitudes	○	○	○	○	○	◉
28.	I generally try to be thoughtful and considerate	○	○	○	○	○	◉
29.	If I don't like people at work, I let them know it	○	○	○	○	○	◉
30.	I keep my workspace neat and clean	○	○	○	○	○	◉
31.	My responsibilities are clearly defined	○	○	○	○	○	◉
32.	At work, it is easy for me to turn plans into actions	○	○	○	○	○	◉
33.	I consistently do more than what is expected of me	○	○	○	○	○	◉
34.	Rules and regulations rarely interfere with getting the work done	○	○	○	○	○	◉

35.	Employees in my office care about the people we serve	○	○	○	○	○	◉
36.	I am not highly motivated to succeed	○	○	○	○	○	◉
37.	I provide other people with information they need to do their work	○	○	○	○	○	◉
38.	I have a clear set of goals and work toward them in an orderly fashion	○	○	○	○	○	◉
39.	I am encouraged to use my own judgment	○	○	○	○	○	◉
40.	At work, I am not bothered by messy people	○	○	○	○	○	◉
41.	My job hardly ever interferes with my family life	○	○	○	○	○	◉
42.	I work hard to accomplish my goals	○	○	○	○	○	◉
43.	Sometimes I do just enough work to get by	○	○	○	○	○	◉
44.	I am treated with respect by people in my office	○	○	○	○	○	◉
45.	My office or workspace is often a mess	○	○	○	○	○	◉
46.	The amount of work I have to do rarely keeps me from doing a good job	○	○	○	○	○	◉
47.	I prefer to do things according to a plan	○	○	○	○	○	◉

48.	I am satisfied with the opportunities for advancement in my position	○	○	○	○	○	◉
49.	I provide support services, which other people need to do their work	○	○	○	○	○	◉
50.	I never seem to be able to get organized	○	○	○	○	○	◉
51.	I strive for excellence in everything I do at work	○	○	○	○	○	◉
52.	I really enjoy being a member of my work group	○	○	○	○	○	◉
53.	I understand exactly what I am expected to accomplish	○	○	○	○	○	◉
54.	I want to remain a member of the work group that I am a part of	○	○	○	○	○	◉
55.	I have confidence in the leadership of this organization	○	○	○	○	○	◉
56.	I want future teams I work with to have similar members	○	○	○	○	○	◉
57.	There is a feeling of team unity and cohesion in our work group	○	○	○	○	○	◉
58.	I trust the members of my work center	○	○	○	○	○	◉

59.	I depend on other people's work for information I need to do my work	○	○	○	○	○	◉
60.	Our work group is composed of members that fit well together	○	○	○	○	○	◉
61.	I have accomplished many worthwile things in this job	○	○	○	○	○	◉
62.	Members of my work center work well together	○	○	○	○	○	◉
63.	I know what the people in my work group expect of me	○	○	○	○	○	◉
64.	I sometimes put little time and effort into my work	○	○	○	○	○	◉
65.	Sometimes I get so focused on a task I ignore other parts of my work	○	○	○	○	○	◉
66.	At work, I often forget to put things back in their proper place	○	○	○	○	○	◉

Our work group places a lot of emphasis on.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
67.	continuously improving our performance at work	○	○	○	○	○	◉

68.	taking risks when needed in order to get ahead at work	○	○	○	○	○	◉
69.	avoiding any added responsibilities on our job	○	○	○	○	○	◉
70.	performing better than other work groups in our unit	○	○	○	○	○	◉
71.	performing efficiently when our job assignments are extremely difficult	○	○	○	○	○	◉
72.	rules and regulations when working on our tasks	○	○	○	○	○	◉
73.	having a good time while together at work	○	○	○	○	○	◉
74.	paying attention to other group members feelings while at work	○	○	○	○	○	◉
75.	doing our work individually as opposed to together	○	○	○	○	○	◉
76.	expressing disagreements with others openly	○	○	○	○	○	◉
77.	talking about non work-related matters	○	○	○	○	○	◉

Submit Survey

Thank You

Air National Guard - Individual Rating Form

Your Name: Last: _____ First: _____

. **Person You Are Rating:** Last _____ First: _____

Please indicate your level of agreement by selecting the appropriate button:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
1. **Attendance and Timeliness:**	○	○	○	○	○	◉
Gets to work a little early so he/she can start work promptly						
Does not come in late except for rare, unavoidable circumstances						
Has a superior attendance record						

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
2. **Quality:**	○	○	○	○	○	◉

Tries to do the best possible work he/she is capable of--doesn't settle for good enough

Thinks in terms of how we can do better and improve

Initiates ideas about alternative solutions

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
3. **Safety:**	○	○	○	○	○	◉

Complies with safety rules (e.g., wears safety equipment where required on a regular basis)

Openly supports safety rules by referring to them in a positive manner

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
4. **Productivity:**	○	○	○	○	○	◉

Achieves a high level of productivity on the job

Always accomplishes as much or more than what you expect

Puts forth a lot of extra effort

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
5. **Dependability:**	○	○	○	○	○	◉
Keeps his/her word even when it is inconvenient or unpleasant						
Follows through on what he/she commits to						
Is honest--does not lie or tell half-truths						

Submit Survey

Thank You

Air National Guard - Group Rating Form

Your Name: Last [ ] First: [ ]

.Group You Are Rating: [Unselected]

If the group or work center that you are rating is not listed above, please specify the group here:

[>]

Please indicate your level of agreement by selecting the appropriate button:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Unselected
1. This group understands how to accomplish its tasks	○	○	○	○	○	◉
2. This group meets all objectives for work completed	○	○	○	○	○	◉
3. This group¡ls work is always of the highest quality	○	○	○	○	○	◉
4. This group takes initiative in solving problems and decision making	○	○	○	○	○	◉
5. This group is very good at planning how to accomplish their work objectives	○	○	○	○	○	◉

6. This work group should continue working together as a unit in the future	○	○	○	○	○	◉
7. This group is not capable of working together as a unit	○	○	○	○	○	◉
8. As a work unit, this group shows signs of falling apart	○	○	○	○	○	◉

Submit Survey

Thank You

Vita

Terry's interest in small groups and work teams began when he was an infantry officer in the United States Army National Guard. He studied psychology as an undergraduate at the University of Pittsburgh, and later pursued a master's degree at Towson State University in Baltimore, Maryland. As a graduate student at the University of Tennessee, Knoxville, Terry worked as a research assistant, and held internships at an international consulting firm, and the Tennessee Valley Authority's Corporate University. Some of Terry's consulting experience includes the U.S. Air Force, U.S. Army, and a large government petroleum organization in Thailand. His specialty areas include work teams, assessment centers, training measurement and evaluation, and web-based assessment at the individual, group, and organizational levels.

Terry has accepted a faculty position at the University of North Texas, where he will teach courses in Industrial/Organizational psychology, and be an associate with the Center for the Study of Work Teams (CSWT).