

## 7. A CONTINGENT CONFIGURATION APPROACH TO UNDERSTANDING THE ROLE OF PERSONALITY IN ORGANIZATIONAL GROUPS

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### ABSTRACT

*We argue that past research has taken one of three basic theoretical approaches to explaining the nature of member personality effects on group process and team performance: (1) universal – certain traits always predict teamwork success; (2) contingent – certain traits predict team performance depending on the task or organizational culture; and (3) configuration – the mix of traits within a group, or the “fit” of individual members with each other, predicts team performance. Each of these three approaches to personality in groups has received significant empirical support in the literature and yet has some shortcomings. We offer suggestions for improving research using each approach but argue that a full understanding of the role of personality in group processes must integrate all three of these approaches into what we call the contingent configuration approach. We conclude by discussing the implications of adopting this approach to understanding the role of personality in organizational groups.*

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Composition effects have long been of interest to researchers studying group processes and team performance. Most of the scores of studies, edited volumes (e.g. Neale, Mannix & Gruenfeld, 1998), and reviews (e.g. Williams & O'Reilly, 1998) focusing on composition effects in groups have, however, concentrated on demographic and knowledge diversity. Group member personality has not played a central role in this theoretical development, despite a large literature with significant findings on personality effects in groups.

This paper aims to direct the attention of groups researchers to the importance of member personality as a composition variable by providing a review of the relevant research and proposing a new theoretical direction. In doing so we make three central arguments. First, we argue that member personality has more direct and powerful effects on group process than other composition variables typically studied (e.g. age, race, gender, and information distribution). Second, we argue that member personality affects group process in three basic ways – universally across all teams, contingently by task or organizational culture, and configurationally by taking account of the complement of personality traits represented in the team. Third, we argue that these three approaches need to be combined into a contingent configuration approach to fully appreciate the role of member personality in organizational groups.

We begin our review by drawing on the traditional systems view of groups as having inputs, processes, and outputs (Hackman, 1987; McGrath, 1984). To date, groups researchers interested in composition effects have focused almost exclusively on individual abilities and demographic characteristics such as age, sex, race, and functional background as “inputs” to group process. Researchers interested in composition have been drawn to the use of demographic variables because of the relative ease of data collection and have often assumed that these variables are proxies for the values, perspectives, or cognitive orientation of an individual that affect group process and performance (e.g. Pfeffer, 1983; Williams & O'Reilly, 1998). These assumptions are tenuous at best, however, and risk reliance on stereotypical views of individual differences. While age, sex, race, and functional background may shape values and orientations, they are not the primary roots of individual differences. The appropriateness of using demographic variables as such indicators is therefore questionable. For example, a number of recent studies have found little or no differences in values according to sex (Bengston & Lovejoy, 1973; Sanders, 1993; Rowe & Snizek, 1995). High levels of variation in values and attitudes have also been found across individuals of the same race (Block, Roberson & Neugen, 1993). Thus, because demographic characteristics are not consistent indicators of

values, perspectives, or cognitive orientations, it is important to measure these attributes more directly.

One key method for digging more deeply into individual differences is through the use of personality traits. Personality researchers have defined personality as the essence of a person, what is most representative of him or her, not only because it differentiates between people, but because it embodies what a person is (Allport, 1937; Hall & Lindsey, 1957). Personality is the pattern of relatively enduring ways in which a person thinks, feels, and behaves (Pervin, 1980). Personality is thus an important factor in accounting for how employees behave in groups and in organizations. Personality has been shown to influence career choice (Holland, 1966), job satisfaction (Staw & Ross, 1985), and leadership style (Bass, 1990). Because personality influences career choice, it is an earlier antecedent to cognitive and affective orientation than functional background. Similarly, teamwork skills stem in part from personality as it affects individual preferences for behavior and, in turn, intragroup relations (Kinlaw, 1991; Yeatts & Hyten, 1998). In short, personality traits are closer antecedents of cognitive and affective orientations than demographic variables and thus are more likely to be more powerful predictors of group processes and performance than demographic characteristics. Personality traits are the key antecedent of an individual's cognitions and affective states that may influence his or her task and interpersonal or socioemotional role behavior in teams (Bales, 1958; Jackson, May & Whitney, 1995). The collective task and interpersonal behavior within the team, in turn, affects the team's performance, the satisfaction of its members, and its ability to work together in the future (Hackman, 1987).

The importance of personality as a composition variable has also increased with the rise of research on team-based work in firms (Ilgen, 1999). Attention has shifted in the last two decades from research on small groups of strangers in laboratory settings to existing teams based in organizations. Historically, the group composition literature developed around demographic variables because visible and underrepresented attributes were the most immediately salient drivers of composition effects on group processes, especially in the zero-history groups typically studied. Personality, being a less visible aspect of group interaction, received far less attention as a composition variable. More recent social cognition research has revealed, however, that the demographic characteristics of other group members become less salient over time as members of a group or team get to know each other better, while underlying personal characteristics, such as personality traits, become more salient (Harrison, Price & Bell, 1998; Levine & Moreland, 1998). Empirical findings show that over time, surface-level demographic differences in a group will be

transcended by deeper-level differences in values (Watson, Kumar & Michaelsen, 1993). Because personality traits are closely related to deep-level values (Adorno, Frenkel-Brunswik, Levinson & Sanford, 1950; Fazio & Zanna, 1981; Rokeach, 1968), they become important predictors of the processes of intact teams. This is particularly true for self-managed teams. Unlike teams with prescribed group role structures that may suppress the role of personality (Berkowitz, 1956; Heslin, 1964), self-managed teams allow individual group roles to evolve autonomously over time, enhancing the power of personality effects (Barry & Stewart, 1997).

Although personality has not received as much attention as demographic composition variables in theory development, there is already a significant body of empirical results examining personality as an input to group process outcomes. We review that literature here and use the systems model of inputs, process, and outputs (Hackman, 1987; McGrath, 1984) as a framework for explaining the research on personality and group processes. Following a categorization scheme from the human resources management literature (Delery & Doty, 1996), we organize the literature on the effects of personality on group process into three basic forms: universal, contingent, and configuration, each with differing views of the nature of what the inputs, processes, and outputs are in the systems model.

Each of the three perspectives articulates different mechanisms by which personality has an impact on group processes. The early literature on composition focused on identifying simple universal effects. Research taking this perspective began in the 1940s and views personality traits as having direct effects on group performance, no matter what the task or context. Beginning in the 1970s, the literature became more differentiated, with interest in the fit of personality to task type, organizational culture, or other members of the team. This more recent contingent perspective suggests that personality affects group performance contingent on how personality interacts with task characteristics or organizational culture. Finally, the configuration perspective suggests that personality affects group performance through the internal fit of the members with each other, or the configuration of traits within the group. Each of these perspectives has distinct implications for the optimal composition of groups for achieving superior performance.

Research on personality composition in groups is challenging to review because it assesses the effects of many types of personality traits, focuses on many different dependent variables, and employs a wide range of groups and settings. In selecting articles to include in our review, we began with articles published after 1970 because two classic reviews by Mann (1959) and Heslin (1968) already cover the early literature. We then searched the last three

decades of research journals in personality, psychology, organizational behavior, and management and chose empirical articles that focused on personality and groups. We limited our review to studies that had group-level outcomes (as opposed to individual level outcomes). That process yielded the articles summarized in the Appendix and discussed later in this paper.

*Theoretical Perspectives on Personality's Effect in Groups – Differing Views of Inputs, Processes, and Outputs*

Research taking the universal perspective views personality as the primary input in the systems model. Member personality is assumed to have a universal direct effect on individual behavior and interpersonal processes in groups which then affects group outcomes. Results of these studies do not always conform to this rule, but the studies are designed as though this is true. Universal studies assume that personality inputs affect individual-level cognition, motivation, and affective states. These states, in turn, shape group-level task and interpersonal process behavior in teams (Bales, 1958; Jackson, May & Whitney, 1995) and, ultimately, team-level information processing and cohesion (Hackman, 1987).

Cognitive traits, those that describe individual perception and information processing, are hypothesized to operate via individuals' perceptions of the group task or challenge. For example, field independence is the autonomous predisposition to structure ambiguous situations analytically (e.g. DeBasio, 1986). Field-independent individuals rely less on others for social information when encountering ambiguous situations (Witkin & Goodenough, 1977; Witkin, Moore, Goodenough & Cox, 1977). A group composed entirely of field-independent members may not consult extensively with each other while working on an ambiguous task because each member may tend to rely on her or his own cognitive structuring of the problem, which could lead to reduced information sharing and lower-quality group performance. Motivational traits, those individual differences that influence how an individual's energy is directed, are hypothesized to affect interpersonal relations in groups. Affective states, such as extroversion, emotional stability, and agreeableness, are all linked to how people interact with others in groups (e.g. Barrick et. al., 1998) and high levels of emotional stability among members have long been associated with cohesive group process. In short, the argument is that member personality shapes group process and performance directly through individual behavior.

The contingent perspective has a more complex view of the inputs in the systems model of group functioning. Inputs are as seen as including personality traits as well as task characteristics or organizational culture. Personality is

assumed to have an impact on group outcomes through the interaction between personality and situation. This perspective has become increasingly popular as social psychologists have generally come to accept a more interactionist perspective toward personality in which the same situation can affect different people in different but predictable ways, depending on personality (Lewin, 1936; Magnusson & Endler, 1977; Penner, 1986). For example, in situations of high task complexity, employees who are high on need for achievement have a desire to perform challenging tasks well and will do better on those tasks than those who are low on this trait, but not on tasks that are not challenging. It is the interaction of personality and situational factors that determine how people think, feel, and behave. Thus, the group task or social context will interact with the individual group members' personality to affect group process and performance.

The configuration perspective takes an even more complex view of the inputs in the systems model, viewing inputs as the configuration of traits within the group. This differs from the universal perspective that only considers the mean group level of one or two particular traits rather than how the variety of traits represented within the group interact with each other. Configurationists argue that people do not display their personalities one trait at a time and that something is missing when research focuses solely on the relationship between aggregate team levels on a personality dimension and team performance. An individual's behavior is the result of the simultaneous influence of the multiple traits represented within the group (Brandt & Devine, 2000). High performance is theorized to be caused by the harmonious interaction of members with complementary personalities. For example, one optimal pattern of complementary group personality is to have all group members be uniformly high on conscientiousness to encourage follow-through; but to have variation in extroversion so that there are not too many members seeking dominance in the group (Buchanan & Foti, 2000; Mohammed, Angell & Ringseis, 2000).

### **THREE VIEWS ON THE EFFECTS OF PERSONALITY ON GROUP PERFORMANCE**

#### *The Universal Approach*

The universal approach assumes that some traits are universally better (or worse) for group work, and thus some individuals are better suited for teamwork than others. This assumption is implicit in research that discusses staffing in terms of "teamwork KSAs" or the knowledge, skills, and abilities that are necessary for work in groups that may not be required for individual

work (e.g. Klimoski & Jones, 1995; Stevens & Campion, 1994). This perspective takes the position that successful team performance depends not only on the KSA inputs for individual task performance but also on those characteristics of individual team members that facilitate interaction among team members (Bales, 1958). A great deal of progress has been made by looking at the direct effects of personality on a team's interaction and performance.

The majority of early studies conducted in the 1950s and 1960s were concerned almost exclusively with identifying the traits that should be universally important inputs into the performance of any group task (Levine & Moreland, 1998). This early literature focused on the direct effects of personality on the quality of interpersonal relations and group processes. Shaw (1981) summarized this literature into five categories: interpersonal orientation, social sensitivity, ascendant tendencies, dependability, and emotional stability. He further identified some patterns across studies relating personality traits to types of behaviors in group processes, for example, that individuals with a positive orientation toward others encourage a cohesive group process. Specifically, those who are conscientious and emotionally stable facilitate cohesive group functioning, while highly anxious individuals in particular inhibit smooth group functioning.

Though this early work provided many generalizable insights, it was limited by uncertainty about which traits were most important to group work and how the large number of traits studied were related to each other (Levine & Moreland, 1998). The field also suffered from a lack of integration during this time because there was little consensus about what constituted important group outcomes (Barrick et al., 1998). The literature reported on a variety of process and outcome measures, but most often focused on cohesive interaction processes. Two relatively recent developments in the literature since the last comprehensive review of this field have helped to clarify the contributions of this early research. First, Hackman's (1987) categorization of group productivity outcomes into: (a) current performance; (b) the ability of a group to fulfill the individual needs of its members (i.e. member satisfaction); and (c) the ability of a group to work together over time (i.e. viability) clarified the dependent measure problem. Researchers now commonly focus on the outcomes specified by this model (Ilgen, 1999).

The second development in the literature that has helped to clarify the contributions of the early research is the emergence of the five-factor model of personality which helped to integrate results by clarifying on the predictor side of the equation. The five-factor model provides a framework for how traits are organized as well as identifying robust individual differences likely to affect

work performance (Barrick et al., 1998; Driskell, Hogan & Salas, 1987; Levine & Moreland, 1998). The five factors include extroversion, conscientiousness, neuroticism, agreeableness, and openness to experience (Barrick & Mount, 1991; Costa & McCrae, 1992). Broadly defined, extroversion is characterized by the tendency to be assertive, active, dominant, and sociable. Conscientiousness is characterized by the tendency to be purposeful, responsible, and determined. Neuroticism is characterized by the tendency to experience negative emotions such as fear, embarrassment, and guilt. Agreeableness is characterized by a desire to get along with and have sympathy for the problems of others. Openness is characterized by intellectual curiosity, active imagination, and preference for variety (Costa & McCrae, 1992). Many earlier scales are now recognized as being subsumed under this big-five taxonomy. For example, the scale of "adjustment" is now recognized as a part of "neuroticism" in the five-factor model of personality. Early work also used scales of dominance and authoritarianism, which are now recognized as consistent with the extroversion subscale of assertiveness in the five-factor model (e.g. Haythorn, 1953; Heslin, 1964; Mann, 1959). Thus Shaw's (1981) review can now be better understood with the recognition that these many traits can be collapsed into the broad traits of neuroticism, extroversion, and agreeableness factors in the five factor model of personality.

Research in the past two decades has continued to be concerned with identifying the traits that should be universally important to the performance of any team. These more recent studies are more easily summarized than the early literature because they consistently utilize the five-factor model of personality and agreed performance criteria (Barrick & Mount, 1991; McCrae & Costa, 1989). This allows a clearer understanding of which personality traits affect which specific performance outcomes. Four of the five factors have been theoretically and empirically linked to task and interpersonal processes in teams (i.e. conscientiousness, extroversion, agreeableness, and neuroticism, but not openness). We now review the research linking four of the five factors to team processes and performance.

*Conscientiousness.* Conscientiousness has been examined in team performance because it is a reliable predictor of individual performance and has consistently been found to be positively related to task focus. Neuman & Wright (1999) found that conscientiousness predicted ratings of performance at both the individual and group level in a sample of human resources teams. The group level of conscientiousness was measured as the level of the lowest scoring member of the team, using the rationale that the group task is a conjunctive one, or dependent on the "weakest link" or the level of the lowest



member of the group (Steiner, 1972). Neuman and Wright (1999) argued that group tasks required interdependence because teams met regularly to discuss human resource policies and procedures and respond to employee benefits claims. The level of the lowest team member on conscientiousness predicted peer ratings of individual performance in the teams beyond the measures of general cognitive ability and specific skills identified through job analysis. The minimum conscientiousness score also predicted supervisors' ratings of team performance as well as objective measures of amount and accuracy of work completed. Both mean level and minimum level of conscientiousness have also been found to predict supervisors' ratings of manufacturing team performance (Barrick, Stewart, Neubert & Mount, 1998).

Leader conscientiousness has also been found to affect team processes. For example, the conscientiousness of the chief executive officer (CEO) was found to be positively related to both flexible top management team decision-making and firm performance (Peterson, Owens & Martorana, 1998). The conscientiousness of a team's leader was also found to moderate the effect of team conscientiousness in a laboratory study of hierarchical decision-making teams with distributed expertise (Lepine, Hollenbeck, Ilgen & Hedlund, 1997). The level of team conscientiousness was again operationalized as the level of the lowest member in the group because of members' high level of interdependence. Team members were trained on specific areas of a military simulation and were required to perform a decision task that required unique information input from each member. In this task, the leader considered staff input and then made a final decision. Conscientiousness positively affected team performance, but only when both the team-level conscientiousness (measured by the lowest team member) and the leader's conscientiousness were high. In sum, conscientiousness has been found to be a broad predictor of team and individual performance in field and laboratory settings.

Conscientiousness seems to be less important, however, in tasks requiring creativity, which involves both generating novel approaches to problems and identifying which novel approaches are useable. Several laboratory studies revealed no effects for conscientiousness. (e.g. Barry & Stewart, 1997; Waung & Brice, 1998). A study on brainstorming showed that when group members were allowed to discuss strategies, groups composed of highly conscientious people produced better quality performance (in terms of feasibility), whereas groups composed of low-conscientiousness members produced a greater quantity of potential solutions (Waung & Brice, 1998). Such studies suggest that tasks requiring creativity may moderate the relationship between group conscientiousness and task performance. Conscientious individuals prefer consistency and order and thus are not as likely to generate novel solutions to

problems. Therefore, conscientiousness may be broadly applicable across many types of tasks but may not predict performance on specific types of tasks that require a substantial degree of creativity.

*Extroversion.* The trait of extroversion has been shown to have positive effects on individual job performance for jobs requiring a high degree of social interaction, such as sales (Barrick & Mount, 1991; Mount, Barrick & Stewart, 1998). Following the reasoning that most teams also require a good deal of social interaction, researchers have investigated the effect of extroversion in team settings. In a study of 51 work teams in a manufacturing setting, for example, Barrick et al. (1998) investigated the impact of extroversion on team processes, current team performance, and team viability. They found that teams higher in mean levels of extroversion received higher ratings of team performance from their supervisors than teams low on extroversion. Further, teams higher in extroversion received higher supervisor ratings for team viability. Results showed that the impact of extroversion on team viability was mediated by the group process variable of social cohesion. In other words, teams with more extroverted members tend to be more socially cohesive and ultimately more highly evaluated by their supervisors (cf. Ancona, 1990 on external boundary spanning). Supporting evidence that extroversion is positively related to interpersonal relations within groups was also found in a lab study showing that the amount of talking a member did in a group was perceived by other group members as an indication of degree of expertise (Littlepage, Schmidt, Whisler & Frost, 1995).

More recently, however, Barry & Stewart (1997) found that groups with very high proportions of extroverted members (measured by variance as well as the mean) can actually experience reduced cohesion and performance. Their argument is that such groups can have too many people jockeying for dominance in the group. The results of their study suggest that the degree of variance of extroversion has a curvilinear relationship to task focus and performance, suggesting that too many or too few extroverts in a group can be detrimental to the performance of a group. In general, some degree of extroversion appears to facilitate cohesive group process, but too many dominant individuals in one group have trouble getting along with each other.

*Agreeableness.* Mixed results have also been found for the effects of mean level of agreeableness on team performance. Hogan, Raza & Driskell (1988) found that agreeableness had positive effects on performance for mechanical tasks but not on social tasks. Another study found that teams with high mean levels of agreeableness have higher team viability (Barrick et al., 1998). Because agreeableness is characterized by concern for a group over one's

individual desires and interests, it is also sometimes called collectivism (e.g. Wagner, 1995; Wagner & Moch, 1986). Wagner (1995) found that for groups of management students working on a case study analysis and presentation task, individuals high on agreeableness were more likely to be rated as cooperative group members by their peers. Researchers have also found that low levels of agreeableness (high individualism) are associated with increased social loafing in groups (Comer, 1995; Earley, 1989, 1993).

Other studies have found negative effects of agreeableness on team performance (Berkowitz, 1959; McGrath, 1962; Weick & Penner, 1976). McGrath (1962) found that teams low on agreeableness showed improvement on a marksmanship task, whereas teams of highly agreeable individuals showed no improvement. Individuals low on agreeableness tended to focus on their own task performance rather than social adjustment in the group. These results suggest that group members high on agreeableness may be more concerned with interpersonal success than with task success, which can be detrimental to group performance. The fact that results from this study differ from others is likely due to the nature of the group task, however, since marksmanship is an individually performed or additive task. Thus the group performance level was solely based on the sum of individual performance, and no social interaction or group coordination was required. It could be argued that this task was in fact not a true “group” task.

*Neuroticism.* Neuroticism, also known as emotional stability on the low end of the scale, has been identified as a universally detrimental trait for work team performance. Haythorn (1953) conducted an early study illustrating the influence of this trait on group performance using a sample of Reserve Officer Training Corps (ROTC) sophomores. Participants worked in five unique groups on three different types of tasks, a design used to isolate the impact of individual personality traits in groups. Results showed that emotional stability, measured as the mean of the individuals, was positively related to observers’ measures of group productivity and job completion of tasks involving syllogistic reasoning, mechanical assembly, and creative story composition. Results of other early studies also showed that emotional stability is positively related to team performance (see reviews by Heslin, 1964; Mann, 1959). Heslin’s (1964) review cites military research findings that ratings of a squad’s effectiveness were positively related to squad members’ adjustment, while the neurotic traits of paranoia and nervousness were negatively related to these performance ratings (Greer, 1955). Two more recent field studies employing pre-existing teams further supported the importance of neuroticism. First, in a study of manufacturing teams, emotional stability was positively related to

team viability, or the ability to work together in the future (Barrick et al., 1998). This study also examined the minimum level of emotional stability in the group, based on the reasoning that manufacturing teams employ both additive and conjunctive tasks, but the level of the lowest member on emotional stability (high neuroticism) was not related to team performance the way the mean level was. Second, in a study of top management teams, the CEO's emotional stability was found to be positively related to the top management team's flexibility, cohesion, and performance (Peterson et al., 1998).

Another closely-related study examining the group level of positive affectivity on group process behaviors in groups of salespeople showed that the positive affective tone of a group was related to the pro social behavior of its members (George, 1990). Teams with negative affective tone (negative affectivity or neuroticism) experienced higher rates of absenteeism (George, 1990). Taken together, the studies reviewed here indicate that emotional stability is positively associated with cohesive group process and effective decision-making.

*Limitations of the universal approach and future research directions.* Our review of the literature revealed empirical support for a positive main effect of: (1) conscientiousness on individual and group performance, except for creative tasks; (2) agreeableness, except on additive tasks; (3) emotional stability on both group cohesion and task performance; and (4) moderately high extroversion on group process and performance.

The simplicity and elegance of the universal approach creates at least three interrelated weaknesses in this literature. First, most research from the universal perspective has used the mean of the individual members in the group to represent the group level of personality. Using the mean to represent the group is to implicitly assume that the group is engaged in an additive task in which the composition of traits within the group is compensatory. For example, the use of the mean of members to represent the group-level score on conscientiousness implies that a member who is very high on conscientiousness can compensate for a team member who is very low on conscientiousness. The use of the mean may also assume homogeneity in a group or organization (Klein, Dansereau & Hall, 1994). Use of the mean presumes that it accurately reflects the group as a whole and that there are low levels of variability about the mean (O'Connor, 1998).

Future research using the universal approach needs to consider the meaning of how personality is aggregated to the group level and measure it appropriately. Although relatively neglected in this literature, issues about levels in organizational behavior are commonplace (Klein et al., 1994). Many

other literatures in the field address this issue by specifying that the functional relationships among phenomena at different levels of analysis *reference the same construct*, but acknowledge that they may be qualitatively different at different levels of analysis (Rousseau, 1985; Chan, 1998). For example, it is important for universalist researchers to think about whether the group level of conscientiousness is theoretically an additive and compensatory construct. That is, can members compensate for the trait levels of others in the group? If so, the mean is an appropriate measure of group level of a trait. If that is not the case, it is important to remember that individual group members' scores can be aggregated in many different ways to fit the researcher's theoretical position (Barrick et al., 1998; LePine et al., 1997; Mohammed, Angell & Ringseis, 2000). Drawing on Steiner's (1972) typology of group task types, aggregating based on the mean is most appropriate only for tasks that are additive, meaning that the group outcome is a result of the summative combination of the contributions of all group members. Use of the minimum individual score in a group is most appropriate if the task is conjunctive, meaning that the group's task is highly interdependent and performance is dependent on the level of the lowest member (or weakest link). For example, one highly neurotic person may disrupt an entire group's interpersonal processes, regardless of the level of overall neuroticism in the group (see LePine et al., 1997). Use of the maximum score is most appropriate when the task is disjunctive, meaning that the group outcome is determined by the performance of the best member in the group (or strongest link). For example, it may be that having a superstar high-end conscientious member has a main effect on group task performance, regardless of the level of the trait in other members of the group. Use of variance is most appropriate when testing hypotheses about diversity (or consensus) on team outcomes (Chan, 1998; O'Connor, 1998). All three of these aggregation measures (e.g. minimum, maximum, and variance) have been woefully underutilized in the universal literature.

The second major weakness in the universal approach is the lack of attention to explicating and measuring the mediating processes through which personality affects group processes and outcomes. Very few studies develop a theoretical discussion of exactly how group process mediates the relationship between conscientiousness, agreeableness, extroversion or emotional stability and group outcomes. Do groups low in conscientiousness fail because the individuals are not very task focused (i.e. assuming an obvious translation from the individual to the group level)? Or do such groups fail because they get distracted by relationship conflict stemming from a lack of hierarchy and order (i.e. assuming a more complex path)? Insufficient theoretical attention to the

mediating processes results in many of these studies failing to account for the effects they report.

Future research in the universal tradition should focus on refining our understanding of *how* personality traits are related to the task and interpersonal behaviors in group processes (cf. Bales, 1958). In most cases, social processes are theorized to be mediating mechanisms, but only a handful of studies actually measure such mediating processes (e.g. Eby & Dobbins, 1997; George, 1990; Littlepage et al., 1995; cf. Barrick et al., 1998). Greater attention needs to be directed at measuring actual interpersonal process behaviors along with their group performance effects. One example of how to do this comes from the literature on feedback-giving and mentoring behavior in teams (e.g. Druskat & Wolff, 1999; LePine & Van Dyne, 1998; Van Dyne & LePine, 1998). Druskat and Wolff (1999) hypothesized that developmental peer feedback in self-managed teams would improve group performance via improved group cohesion, satisfaction, and task motivation. They measured each of these constructs with separate scales administered before and after peer feedback, allowing them to identify feedback as the likely cause of the process and performance effects. Much more can and should be done on how group personality influences mediating task behaviors, such as performance monitoring (Bales, 1958; Jackson, May & Whitney, 1995) and boundary spanning (Ancona, 1990).

The inattention to mediating mechanisms is exacerbated in the literature by the tendency to focus on desirable behaviors (e.g. helping, cooperation). For the most part, undesirable interpersonal behaviors, such as malingering, social loafing, dishonesty, and sabotage, have been ignored. Many researchers measure group level conflict as a dependent measure, for example, but do not measure the interpersonal behaviors that cause the conflict to occur. One study that did this in a post-hoc examination was LePine et al. (1997). They found that groups that had one member who was very low on conscientiousness performed poorly because the other group members did not help that person. One bad apple has a negative effect on the whole group's cohesion and performance. We suspect, in short, that many of the process theories need to explicate the negative individual behaviors that cause poor group performance.

The third weakness of the universal approach is a lack of attention to the type of task being performed or its context, although results of studies conducted in this tradition strongly suggest such effects. There is wide variation in the tasks employed across studies, and relatively little attention is given to how the nature of the task may affect how personality influences group processes and outcomes (Driskell et al., 1987; Neuman & Wright, 1999), even though

previous research has found that task differences moderate the relationships between group inputs and outcomes (Goodman, 1986; McGrath, 1984; Stewart & Barrick, 2000). The effects of personality and measurement in specific task contexts (Barrick et al., 1998; LePine et al., 1997; Neuman & Wright, 1999) has been brought to center stage, however, in the contingent approach.

### *The Contingent Approach*

The contingent approach to personality in groups assumes that group performance is contingent on the nature of the group task or organizational culture. From this theoretical perspective, the inputs in the group process model include both personality traits as well as task or context. These studies conceptualize the mean group level of a trait as being the important factor in the match of group composition to context. Much of the research in this tradition has been in the form of laboratory studies in order to effectively control for task or context. These studies usually involve constructing groups to be homogeneous on level of trait with no attention being given to variance of traits in a group (e.g. Aronoff, Meese & Wilson, 1983). Groups that are high or low on a certain trait are examined in situations that are high or low on a certain contextual factor. The assumption in this perspective is that the optimal personality composition of a team depends on the nature of the work it performs and/or the organizational culture in which it operates. A number of studies have examined the moderating effects of different situational variables on the relationship between personality and group process or performance.

*Organizational culture as moderator.* Studies investigating organizational culture as a moderator of the relationship between personality and group performance have conceptualized the “fit” of personality needs to culture as the process mechanism through which performance effects occur. Aronoff, Meese, and Wilson (1983), for example, predicted higher group productivity when individual needs fit the “social structure” context because individual needs lead group members to seek specific types of rewards from group processes and outcomes. Using a laboratory study design and a model-building task, Aronoff et al. (1983) examined individuals with varying levels of esteem needs in egalitarian vs. hierarchical contexts. Culture was manipulated by instructing groups in the hierarchical condition to select and utilize a group leader; the egalitarian groups were instructed not to have status distinctions and to be completely democratic. Results revealed that individuals with high needs for esteem were more productive in egalitarian than in hierarchical structures. Individuals with high needs for esteem demonstrate competence or ability to other group members through active participation and are respectful of others

in order to gain reciprocal respect. Since egalitarian contexts offer more opportunity for individual inputs, they enhance the performance of members with high esteem needs (Aronoff et al., 1983).

Chatman and Barsade (1995) studied the influence of individualistic vs. cooperatively dispositioned people in collective vs. individualistic cultures. In this laboratory study, using MBA students and the Looking Glass Simulation task, individualistic and collective culture were again manipulated through task instructions. Results confirm that organizational culture moderates the cooperative behavior of those predisposed to cooperate – they cooperate in a cooperative culture and compete in an individualistic culture. The culture manipulation had no effect, however, on those with individualistic dispositions – they were always competitive. Thus, individualists are less affected by cultural contexts than those with more collective orientations. Individualists place a high priority on maximizing their own welfare, and the workplace culture does not alter this priority or their behavior (Argyle, 1991). Collectivists, in contrast, seek social approval and are more congenial (i.e. high in agreeableness), so they are more likely to be affected by cultural norms guiding behavior in any given context (Chatman & Barsade, 1995).

*Task characteristics as moderator.* Several studies have found effects of fit between characteristics of the group task and the personality of group members on group performance. Schneider & Delaney (1972) examined the performance of groups varying on need for achievement on low- and high-complexity tasks in a laboratory study. Need for achievement was characterized by a desire to perform challenging tasks well and to meet one's own high standards (McClelland, 1985). The low-complexity task involved identifying a commonly held symbol and the high complexity task was performing difficult arithmetic computations. Results revealed that the need for achievement moderated performance on high-complexity tasks, but had no effect on low complexity tasks. Groups with members that were high on need for achievement solved complex problems faster than those low on this trait – but had the same solution-speed rates as groups low on need for achievement when problems were simple.

DeBasio (1986) used a laboratory study to examine the fit between field independence and a low-versus a high-structure group task. Field independence is characterized as a cognitive trait of autonomously providing analysis and structure to situations rather than relying on social comparison processes (Witkin, Moore, Goodenough & Cox, 1977). In the low-structure task, the group was instructed to list five traits for career success. The high-structure task involved asking the group to develop a method of blowing out two candles



from an eight-foot distance. Results revealed that both groups took longer to complete the highly structured task, but that the speed of task completion in field dependent groups was more impaired by the type of task than in field-independent groups. Thus, for work that requires fast response on unstructured projects, teams composed of field independents should perform better.

Hogan, Raza & Driskell (1988) drew on McGrath's (1984) group-task typology to investigate the relationship of conscientiousness (prudence), extroversion (as ambition and sociability), and agreeableness (likability) to group performance of mechanical vs. social tasks. They hypothesized that different types of tasks require different types of behavior, and so the importance of traits depends on the task at hand. They used the mechanical task of a navy simulation requiring the movement of freight from one ship to another, which required a great deal of team coordination. The social task involved dealing with or helping others, including training navy recruiters on persuasion techniques. Results suggested that high levels of conscientiousness, extroversion (ambition only), and agreeableness were related to performance on the mechanical task, which required cohesion, integration, and care to maintain proper procedures. For performance on social tasks, however, only conscientiousness had a positive relationship with group performance. Performance on these social tasks was dependent on the quality of oral communication, the degree of adapting the presentation content to the needs of the audience, and informing and advising rather than selling or persuading the audience. Groups with high levels of extroversion (both ambition and sociability) or agreeableness did not perform as well as groups low on these traits. Teams with high mean scores for ambition, sociability, and agreeableness performed poorly primarily because they attempted to persuade the audience to accept their point of view too forcefully (Hogan et al., 1988). This study, like others using the contingent approach, found support for performance benefits stemming from fit of team personality with contextual factors.

*Limitations of the contingent approach and future directions.* The contingent approach makes a valuable contribution to the literature through its recognition of the interaction of personality with the situation and research findings that support both organizational culture and task type as moderator variables. These strengths notwithstanding, there are three important limitations in the current stream of research. First, the few studies available specifically designed to test this approach rely exclusively on laboratory designs to control for task type or organizational culture. Because these studies focus on the fit between personality and culture or task characteristics, they employ laboratory

situations that are intentionally strong situations, which creates an interpretation problem, in that the strength of the situation as a variable is not considered in itself within the research design. Situations created in the laboratory are often made to be strong so as to maximize variance of the treatment and minimize individual differences (Weiss & Adler, 1984). As a result, they fail to represent the full range of context strengths that exist in the real world and thus may not be externally valid.

To address these concerns about external validity, future research in this tradition should be different in a number of ways. First, and most obviously, conducting contingent studies in the field would be a great way to address these external validity concerns. This is easier said than done, of course. Conducting field research from a contingent approach creates a number of thorny problems. The most important of these problems is one already discussed in the universal approach – the levels of analysis problem of how to represent personality at the group level. Does having one person who is exceptionally high on some dimension compensate for the rest of the group? Or does the mean level of group members best represent the group? Similarly, where organizational culture is the moderator, the researcher will face the parallel problem of how to represent the organizational level construct. And where task type is the moderator, the problem is likely to be that real-world groups simultaneously process multiple goals and tasks that do not fall neatly into any single task classification. Moving away from ad hoc groups in the laboratory will also require careful consideration of how groups develop over time (cf. Gersick, 1988; Tuckman, 1965). One might expect, for example, that poor fit between group personality and organizational culture would be easier to detect before the transition point of punctuated equilibrium in the group as reassessment at the half-way point generally brings group process into better alignment with organizational norms.

That is not to say that field research is the only way forward for the contingent approach. Laboratory studies continuing in this tradition should pay greater attention to the strength and representativeness of the manipulations employed. For example, future research on work or organizational culture should employ manipulations with a range of situation strength. Such manipulations will allow us to test the boundary conditions of the effects to know when extremely strong situations directly determine behavior and performance, rather than just enhancing performance through fit with personality. We need to know at what point the strength of the work culture overwhelms individual differences.

The second limitation of the contingent approach is the low number of personality traits and moderator variables that have been examined to date. Of

the traits in the five-factor model of personality, only agreeableness (i.e. individualism vs. collectivism) has been studied with organizational culture as a moderator, for example. There is much potential ground to cover here. The danger is that the possible combinations of personality variables and moderating task or organizational variables is vast with potential for indiscriminant data-mining. We therefore suggest that scholars turn their attention to the rather large person-environment fit literature for guidance on which constructs are likely to be fruitful. The person-environment fit literature in human resource management, for example, suggests that synchrony (the number of projects one can handle simultaneously), activity level (part of extroversion – related to pace, speed, duration of work), equity sensitivity (concern for fairness), and self-monitoring (flexibility in reacting to others' interpersonal styles) should be useful personality traits to investigate. Moreover, this literature also includes a number of process theories suggesting *how* group personality and performance are related through processes such as: (1) reduced job stress, strain, anxiety, absenteeism, turnover intentions, and turnover; (2) improved physical health, psychological health, emotional stability, adjustment, goal-setting behavior, adaptation, attitudes toward learning, and job choice; and (3) increased motivation, creativity, performance, career success, organizational commitment, job satisfaction, work morale, and tenure. Similarly, the group decision-making literature suggests a number of task typologies that should theoretically guide future research in this area (e.g. McGrath, 1984; Steiner, 1972).

The contingency approach shares its third limitation with the universal approach, in that no attention is given to the composition of the group. In the interaction designs of these lab studies, groups were constructed to be homogenous on the level of a trait, being either homogeneously high or low. Real groups in organizations are, of course, composed of members with varying levels on a particular trait, and the success of a group depends on the constellation of people in the group and their individual personality profiles. In other words, every group has a number of individuals in it, and each individual possesses a variety of personality traits that simultaneously influence her or his interpersonal and task behavior in groups. The personality composition of groups is explicitly considered only in the the third approach we discuss, the configuration approach.

#### *Configuration Approach*

In the configuration approach, the role of personality in group composition is seen as more complex than in either the universal or the contingent approach.

The personality inputs in the group systems model include not only mean or minimum measures of personality but the variance of a particular trait or the mix of different traits in a group as well. This line of research assumes that it is either the trait similarity or dissimilarity or the mix of complementary traits within a group that leads to performance effects. The internal fit of members to each other affects interpersonal and task processes in the group. Two streams of research have examined the mix of traits within a group; the first focuses on homogeneity vs. heterogeneity and the second on whether people in a group are complementary to and thus compatible with each other. The homogeneity vs. heterogeneity approach is generally concerned only with group variance on one trait, while the compatibility line of research is concerned with the mix of multiple traits that work well together in a group. Team members are thought to be compatible when they share multiple complementary traits or when they possess different complementary levels of the same trait (Moreland & Levine, 1992). Thus operationalization of group personality is either variance on a single trait or variance/agreement on complementary traits. For example, need for power and need for affiliation have high agreement if there is a balance of members high and low on those traits in a group.

*Homogeneity and heterogeneity.* The homogeneity vs. heterogeneity debate in personality runs parallel to the larger body of literature in team composition concerned with heterogeneity of demographic diversity (cf. Williams & O'Reilly, 1998). The assumption is that it is the trait similarity or dissimilarity that leads to performance effects, rather than the average level of a trait within the group. The argument in favor of homogeneity in groups is that similarity enhances the cohesion, communication, and motivation to work together on collective tasks. The argument in favor of heterogeneity is that it will encourage seeing the same information in different ways and a division of labor among group members based on preferences and skills (Haythorn, 1968). In other words, homogeneity is theorized to facilitate group productivity through cohesive interpersonal processes while, heterogeneity is hypothesized to facilitate group productivity through task-focusing behaviors and greater information resources (cf. Steiner, 1972).

A number of studies have found support for homogeneity. For example, three studies have found that the variance in conscientiousness as well as the group mean level is important for predicting group performance (Barrick et al., 1998; Bond & Shiu, 1997). Barrick et al. (1998) found a negative relationship between variance in conscientiousness and team performance. These results

imply that a mix of members high and low on conscientiousness leads to lower performance. Post hoc analyses suggested that teams with one low conscientious member did not perform as well as teams with none that were particularly low, regardless of mean level (LePine et al., 1997). One bad apple spoiled the group. Thus, distribution of conscientiousness (i.e. variance of the distribution) matters for group process issues. Although these and other researchers originally conceptualized conscientiousness as operating through the task rather than through interpersonal processes, one or a few members low in conscientiousness may be detrimental to the interpersonal processes in a team. The highly conscientious members of the group may want to focus closely on the details of the task while those low on conscientiousness place a lower priority on these issues, resulting in conflict. An exploratory longitudinal lab study conducted by Bond & Shiu (1997) produced some results supporting this interpretation when examining the effects of conscientiousness on willingness to share information in a group. The tasks in this study were undirected group projects in an introductory social psychology class. The researchers found that the variance in self-discipline (a subscale of conscientiousness) negatively affected willingness to share information in a group, reducing the level of free and expressive interaction between members. These results suggest that the variance in conscientiousness among members may alter group performance through interpersonal processes. Highly conscientious members may be irritated or frustrated when working with low-conscientiousness members and cut them out of the conversation in the group.

Toquam, Macaulay, Westra, Fujita and Murphy (1997) also found evidence in support of homogeneity. They found that crews of nuclear power plant operators who were homogenous on social skills (MMPI scale) performed more effectively on control room simulations than heterogeneous crews. They theorized that because communication is very important for these types of crews, parity in social skills leads to enhanced performance though its effect on crews' communication patterns. They found support for this idea in that crews that were more consistent in the types of communications provided across various scenarios were rated as more effective. These results suggest that crews that are homogenous and high on social skills have more consistent communication patterns, which in turn leads to better performance, though this link was not directly tested in this study. Thus, recent literature recognizes that the homogeneity of conscientiousness and social skills also matters for team performance, and the mediating mechanism for this personality composition effect operates through interpersonal and communication process loss when skewness (i.e. one-tailed variance) is high.

*Internal fit of multiple traits.* The importance of the heterogeneity of multiple traits, or the mix of traits within a group rather than diversity on one trait within a group, has also been demonstrated in the literature. The intent of these studies was to construct groups of members similar on global personality orientation, rather than on a particular trait or dimension of personality. A key early study by Hoffman and Maier (1961) suggested that heterogeneity of traits in groups leads to better group outcomes. Groups were formed to be homogenous or heterogeneous based on the profile similarity of members' scores on the ten dimensions of the Guilford-Zimmerman Temperament Survey (Guilford & Zimmerman, 1949). Groups were composed of members with the most similar or most different profiles. The intent was to construct groups of members similar or different on global personality orientation, rather than on one particular trait. The researchers used four different types of problem-solving tasks, with a range of potential value conflicts, to test the relative abilities of homogenous vs. heterogeneous groups on the quality of their solutions. Results revealed that heterogeneous groups provided higher-quality solutions than homogenous groups. Hoffman & Maier (1961) concluded that the greater the differences in perceptions among group members, the higher the quality of their problem solving because the presence of opposing viewpoints caused more complete solutions to emerge or new ones to be developed by the group to deal with the conflicts or problems raised (cf. Nemeth, 1986 on minority influence). Other studies have also provided consistent results that general personality heterogeneity leads to better group performance outcomes than homogeneity (Aamodt & Kimbrough, 1982; Ghiselli & Lodahl, 1958). For example, Aamodt & Kimbrough (1982) used global personality types and found that heterogeneity in generalized behavioral styles enhanced the quality of solutions to group tasks.

Evidence thus suggests that homogeneity promotes group cohesion, especially when considering a single personality dimension while heterogeneity improves group information sharing and problem solving, especially when considering very broad indices of variance on multiple traits. These results are not necessarily in conflict. Some recent studies have suggested that whether homogeneity or heterogeneity is preferable depends on the specific personality trait in question. For example, homogeneity on conscientiousness and social skills, and heterogeneity on extroversion have been found to have a positive influence on group process and performance. The collective results of these studies further suggest that the group personality input in a systems model of group processing may be more complex than a simple mean level on a trait. The most significant implication for groups researchers is that knowing how group personality is measured is critical – both mean and variance on a trait can

be important. Theory should dictate which is the proper operationalization of group-level personality (Klein, Dansereau & Hall, 1994).

*Congruence and compatibility.* Some team configuration studies take multiple traits into consideration, as well as the nature of a particular trait, to determine optimal group composition. Rather than being concerned only with group variance on one trait or type, this line of inquiry is concerned with the mix of people with different traits that work well together in a group. These studies are concerned with the ways in which group members must be compatible in order to work together most effectively. This view recognizes that people do not display their personalities one trait at a time but, rather, that an individual's behavior is the result of the simultaneous influence of multiple traits (Brandt & Devine, 2000). Group performance is assumed to stem from the harmonious interpersonal interaction of members with complementary personalities.

Most of the research on compatibility has used Schutz's (1958) Fundamental Interpersonal Relations Orientation (FIRO), which posits that all interpersonal behavior reflects the degree to which three basic human needs are expressed and wanted from others. These needs are inclusion, affection, and control. Need for inclusion is the need for membership in a cohesive group. Need for affection is the need for close and warm relationships with others. Need for control is the need to dominate others. Members of a group are thought to be compatible when they share multiple similar traits, or when they possess dissimilar but mutually-supporting (complementary) traits (Moreland & Levine, 1992). Both congruent and complementary groups have a balance of initiators and receivers of control, inclusion, or affection. An incompatible group would include some members who would want more affection, inclusion, or control than other members are able or willing to provide.

Schutz (1958) predicted that compatible groups would generally be more efficient and productive than incompatible groups, but the evidence for compatibility using the FIRO-B is mixed. A supportive laboratory study by Reddy & Byrnes (1972) using managers as subjects on a Lego assembly task, found that congruence (in terms of similar levels) on control and affection was positively related to speed of assembly. Other studies have found support for incompatible groups being more effective (Hill, 1975; Shaw & Webb, 1982). In a field study utilizing naturally intact groups of system analysts, Hill (1975) found that congruence on needs for inclusion, affection, and control were negatively related to group members' perceptions of performance. Thus, although there is support for the idea that individual fit within a group is dependent on how well each member fits within the configuration of traits of

the other group members, some of these effects are also contingent on the task at hand (a three-way interaction).

More recently, Barsade, Ward, Turner & Sonnenfeld (2000) investigated affective diversity in top management teams and found that homogeneity of affect in these teams encouraged use of participatory decision making and improved the financial performance of these teams. Brandt & Devine (2000) also explicitly examined how compatibility on dominance (extroversion) and affiliation (agreeableness) affect task-related communication and interpersonal conflict. Groups were defined as compatible if they had moderate mean levels of extroversion (with some variance in the group) and high mean levels (with low variance) on agreeableness, traits that have to do with the internal fit of members with each other, rather than with the effect of the trait on a task or the external fit of the traits with the task. Teams of undergraduates performed a managerial decision-making task simulation that required them to decide which of seven applicants to hire as a new manager. Results revealed that compatibility had a significant negative relationship with interpersonal conflict, and that interpersonal conflict was negatively related to the time required to complete the task, but compatibility had no effect on the amount of task-related communication.

Another study by Buchanan & Foti (2000) examined the group-level patterns of extroversion, conscientiousness, and openness as predictors of group performance on a creative brainstorming task in a sample of undergraduates. Individuals were put into groups by clustering them based on their similarity across multiple personality variables, to better control for the context in which these traits operate. The researchers hypothesized that groups with high levels of conscientiousness and openness but moderate levels of extroversion would be the optimal configuration and would perform best. They assumed that high mean levels indicates that there is low variance on these traits in the group – most or all members are high on conscientiousness and openness – and that moderate mean levels of extroversion indicates that there is variance on extroversion in the group. The authors reasoned that because openness and conscientiousness had been previously related to team performance, high levels would be desirable at the group level (cf. Barry & Stewart, 1997). Three contrasting configurations were used as comparisons. Contrast A groups were high on all three traits, contrast B groups were high on conscientiousness, moderate on extroversion, but low on openness, and contrast C groups were high on openness, moderate on extroversion, but low on conscientiousness. Results revealed that the predicted optimal configuration for a group did indeed predict a larger quantity of ideas generated as well as greater numbers of high quality ideas than the alternative contrast configurations. Further, there were no



significant differences between the alternative contrast configurations. Thus, these results suggest that group performance was due to the pattern of personality traits in the optimal configuration rather than on the specific personality trait (Buchanan & Foti, 2000).

*Limitations of the configuration approach and future directions.* On balance, the findings reviewed above suggest that group configurations that contain high homogeneous levels of conscientiousness, agreeableness, and openness, and heterogeneity on extroversion lead to positive group processes and outcomes. As with the other two approaches there are, of course, limitations. There are at least three problems with the current state of the research. First, some studies attempted to group people by broad categories and treated them as mutually exclusive “types” (e.g. Aamodt & Kimbrough, 1982; Hoffman, 1959; Hoffman & Maier, 1961), but the process detail of how the particular traits interact with each other are lost. The findings from past studies need to be replicated, and a broader range of traits and hypothesized mediating mechanism needs to be examined in the future. As with the other two approaches, a more sophisticated view of how members’ personality is represented at the group level is needed. Researchers should further ask what variance means theoretically. Having one person in an average group with exceptional skill or energy is quite different from having one person (or minority) exceptionally low on these dimensions. Future research conducted from the configuration approach should employ additional measures of distribution, such as skewness to explain how groups might function in a highly interdependent task with one or a few weak members.

A second and closely related problem with the configurational approach is its lack of measurement of and attention to affective or cognitive mediators likely to influence relations-oriented or task-oriented behaviors that lead to performance. Such mediating mechanisms are nicely outlined in Jackson et al.’s (1995) general causal model for understanding the dynamics of diversity in teams. In Jackson’s model of diversity, which we can also think of in terms of personality composition, diversity influences the cognitions, affect, status, and power of group members, which leads to short-term behaviors directed at either tasks or interpersonal relations within the group. These short-term behaviors have long-term consequences in terms of norms and patterns relating to task and interpersonal relations. We found only two studies that explicitly hypothesized and measured mediating processes. Barsade et al. (2000) found that group decision-making processes mediated the relationship between top management team affective diversity and the financial performance of the firm; and Brandt and Devine (2000) examined group communication and conflict processes.

Future configuration research needs to focus more attention on such process aspects of the group systems model.

A third limitation of configuration research is its lack of attention to situation or contextual factors. The mixed results of studies on compatibility may be due to the fact that they employed tasks with different levels of task interdependence. Hill (1975) even suggested that a possible reason for his results in favor of incompatibility stem from the fact that he used a field sample of system analysts who had a great deal of autonomy in their jobs. Compare this to Reddy & Byrnes' (1972) assembly task, which required a great deal of task interdependence without the chance to remove oneself from the group and work independently on a part of the task. Such interdependence can lead to more destructive aggression and poor interpersonal relations in the group when personalities are not compatible. In short, the effects of personality can be moderated by both the task and the configuration of people in the group (i.e. a three-way interaction).

Future research could extend the configurational approach by drawing on other work, in particular, research on assembly effects (cf. Rosenberg, Erlick & Berkowitz, 1955). This argument suggests that different configurations of abilities among individual team members will produce different levels of performance in each individual, such that the contributions of any one individual can be different from group to group depending on the mix of other people in the group (Moreland & Levine, 1992). The behavior of an individual with average abilities may be quite different when he or she is in a group with others of a similar ability level than when in a group with others of lower or higher ability. LePine et al.'s (1997) finding that group members do not like to help those with conscientiousness levels that are much lower than their own suggests just such an effect. This has also been called the "frog-pond" effect, meaning that a big frog may act differently in a small pond than in a big one, and is a critical issue in multilevel research (Rousseau, 1985). Research in organizational psychology has found that individuals' attitudes are affected by those around them, so one's own relative standing in the group has psychological and behavioral ramifications. For example, the work attitudes and pay level of co-workers have been found to affect individuals' satisfaction, commitment, and intention to stay with an organization (Rynes & Gerhart, 2000; Salancik & Pfeffer, 1978). These studies have been done at the individual level of analysis, by measuring the difference of an individual's score from a group mean, but such examinations could also be done at the group level using measures of skewness.

Finally, it is worth noting that the configuration approach is commonly used in organizational consulting, despite the fact that there has been relatively little

empirical research supporting this perspective. Several team measures exist in the practitioner domain that are concerned with trait configuration (referred to as roles) in a team, such as Belbin's Team Roles Model (Belbin, 1981, 1993) and the Team Management System (Margerison & McCann, 1984). These models propose that there are various team roles and that a balance of these roles leads to optimal team functioning. This suggests two things: (1) practitioners may be espousing team personality configurations that have little grounding in current research; and (2) there is practitioner interest in further scholarly work in this tradition.

### **TOWARD A CONTINGENT CONFIGURATION APPROACH**

We found support for all three approaches we reviewed. There are universal effects of personality on group performance – positive relationships between agreeableness or emotional stability and cohesive group process, and between conscientiousness and task focus (e.g. Barrick et al., 1998; Bond & Shiu, 1997; LePine et al., 1997). We also found support for the contingent approach – organizational culture and task type both moderate the relationship between group-member personality and performance (e.g. Aronoff et al., 1983; Hogan et al., 1988). Finally, we found support for the configuration approach – heterogeneity often benefits task-related outcomes and homogeneity is helpful for relationship-related outcomes (e.g. Hoffman & Maier, 1961). Nevertheless, we also found significant problems for each of these approaches – for example, conscientiousness is a nearly universal predictor of team and individual performance, except with tasks requiring creativity where it both hurts and helps, resulting in a nil effect. We argue, therefore, that a new and more integrated approach to research on the role of personality in groups is needed – something we call the contingent configuration approach.

In developing a new perspective, we recognize first that the universal, contingent, and configuration approaches are not necessarily mutually exclusive, and may indeed be complementary. Another way to think about these approaches is in terms of degree of specificity. The universal perspective can be thought of as the broadest perspective documenting the effects of personality across all contexts. The contingent perspective helps us look more deeply into organizational phenomena to derive more specific theories about the circumstances under which particular types of personality traits will be most effective for group performance. Finally, the configuration approach helps us look even more deeply into organizational contexts, into the internal dynamics within the teams and how the individual members interact with each other. Thus, all three

perspectives on the role of personality composition in teams may be operational simultaneously. By combining all three approaches, we may be able to develop a new contingent configuration approach that can offer additional insights into each of the three current approaches to understanding the role of personality in organizational groups.

As an example of this approach, consider current research on the optimal tension between heterogeneity and homogeneity on any given trait. Past research has generally assumed that the effects of homogeneity and heterogeneity are either good or bad (e.g. groups with all extroverts are always good). A more integrated approach suggests that heterogeneity is neither universally good nor bad. Rather, it is likely that optimal levels exist depending on a variety of circumstances. Barry and Stewart (1997) looked at just such a possibility and found a curvilinear result for the effect of extroversion on task performance, with a mix of people high and low on extroversion being optimal. Thus, we can recognize that moderate mean-level extroversion almost always encourages greater group cohesion and task performance than high mean-level extroversion (a universal effect). We also know that certain tasks and organizational cultures such as sales strongly favor extroversion (a contingent effect) and that too many extroverts in a group create a dysfunctional competition for dominance because part of the extroversion construct includes the desire to dominate others (a configuration effect by which there are too many leaders and not enough followers). Thus the personality effects we would expect when taking a universal perspective may not hold for a particular task or configuration. If teams engaged in sales activities have a high proportion of extroverts, there may not be negative intra-team competitive effects because the drive to dominate others is collectively focused on making sales rather than internally on each other. In fact, optimal configurations of all traits are likely to depend on both the trait and the context in which the group operates (cf. Williams & O'Reilly, 1998 on demographic diversity).

*Future Directions for Research Using the Contingent Configuration Approach*

There are numerous implications of a contingent configuration approach for the future of research in this area. We organize our discussion according to the framework of the systems model of group inputs, process, and outputs for the sake of simplicity.

*Inputs: How group personality is measured.* Levels of analysis issues, or concerns about the best way to conceptualize and measure the group level of personality must be of paramount concern in future research. In line with tradition in most groups research, prior work has largely employed the mean level of traits in a group to represent the aggregate. Recent work is more likely

to have used other methods (e.g. minimum, maximum, variance, etc.) to represent the aggregate level, but such practices are still not common practice, as they are in the skill composition literature. From the theoretical perspective of the contingent configuration approach, the appropriateness of the operationalization should come from the mediating theory of group process used to connect group personality and performance (cf. Steiner, 1972; Thompson, 1967). In few of the studies we reviewed, however, did the researchers explicitly recognize that their choice of operationalization was based implicitly on their choice of process theory (with the exception of Barrick et al., 1998; LePine et al., 1997; and Mohammed, Angell & Ringseis, 2000).

By focusing almost exclusively on the mean level of individual characteristics to represent the aggregate, groups researchers have almost assuredly committed both Type I errors, in which one finds “effects” that do not exist, and Type II errors, in which one does not detect differences that do exist. Use of the mean to aggregate data suggests two things that are often not true about the distribution of personalities in a group: (1) that the mean accurately reflects the group as a whole, and (2) that there are low levels of variability about the mean (O’Connor, 1998). Making such assumptions in multi-level research leads to findings that are in reality artifacts of the data combination method and do not really reflect the researcher’s intention (Nunally & Bernstein, 1994; Rousseau, 1985).

We did uncover a number of alternative practices in our review, however, that may prove useful to future researchers. Options for aggregating the individual scores to represent the group include aggregating based on: (1) the mean for tasks that are additive in nature, meaning that the group outcome is a result of the summative combination of the contributions of all group members; (2) the minimum individual score in a group for tasks that are conjunctive, meaning the groups tasks are highly interdependent and its performance is dependent on the level of the weakest member; (3) the maximum score for tasks that are disjunctive, meaning that the group outcome is determined by the performance of the best member in the group; (4) variance for tasks when testing hypotheses about the effects of diversity of inputs is important to the task (or consensus), and where potential conflict on team outcomes is critical (Chan, 1988; O’Connor, 1998). Other possible measures that we did not see used but believe could make important contributions are: (5) skewness for interdependent tasks where excluding individuals in the tail of the distribution (i.e. a subculture or subgroup) is not possible or feasible; (6) leader personality for situations where the leader has a great deal of discretion such as in top management teams (cf. Peterson, Owens & Martorana, 1998; see also Bass (1990) for a review of the voluminous literature on the effects of leader personality that runs roughly

parallel to the studies reviewed here). When these theoretical issues are explicitly considered, they will serve to advance an integrated understanding of the relationships among personality inputs, group processes, and performance outcomes.

*Process: Theories of How Personality Affects Group Performance.* Most work on personality and groups does not specify the theoretical process mechanisms by which personality influences outputs. In our discussion, we identified task and interpersonal relations as process mechanisms alluded to in many studies, but more often than not, these were not made explicit, and even more rarely were they measured. Such tests of mediating links are more likely to be employed in recent than in past research, but it is still not common practice. Part of the explanation for this problem comes from the personality literature itself because there are very few process theories of personality. Nevertheless, researchers in this area can and should draw more explicitly on the rich existing theoretical base that can be found in the group dynamics area. Answers to questions of *why* and *how* particular traits have which specific effects is essential if this literature is to make a substantive contribution to our understanding of why certain teams succeed and others fail. Do groups succeed on highly complex tasks because they work together well (interpersonal relations) or because they stay focused on task? Which personality traits or configuration of traits work best to achieve smooth interpersonal relations and/or task focus? Answers to questions about which traits lead to interpersonal vs. task processes in groups, and why they do, will begin to help scholars understand why certain aspects of organizational culture moderate the relationship between personality and group outcomes.

In an effort to jump-start theory development in this area, we propose that group processes can be categorized into three main types of group-member behaviors working back from Hackman's (1987) tripartite model of group effectiveness (i.e. outputs can be measured as task performance, member satisfaction, and team viability). For task performance there are task behaviors; for member satisfaction there are interpersonal behaviors; and for team viability there are resource behaviors. Within each category, alternative theories exist. Even where task and interpersonal relations behavior have been previously identified as mechanisms through which group composition may affect outcomes (e.g. Jackson, May & Whitney, 1995), actual theories about why or how personality leads to any of these behaviors are rarely discussed explicitly. In Fig. 1, we identify process theories implied in the existing literature.

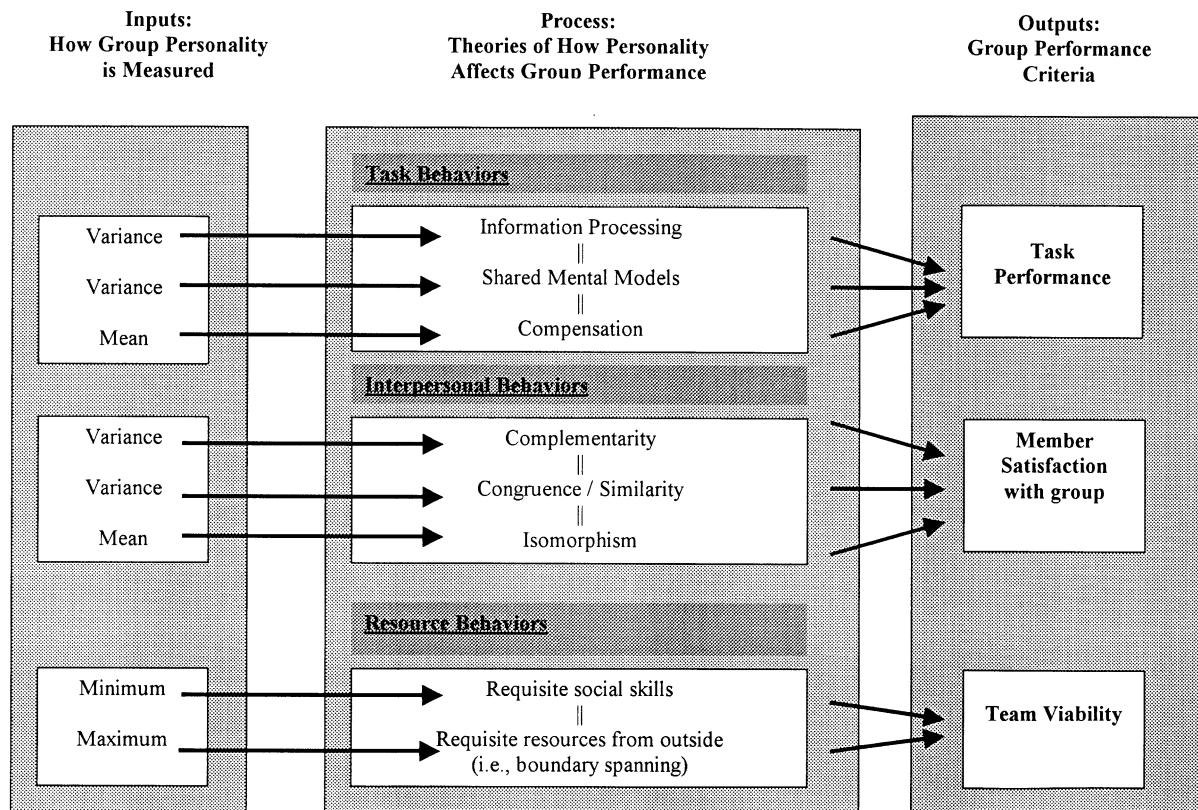


Fig. 1. Contingent Configuration Approach to Building Theory on the Effects of Personality in Organizational Groups.

*Process theories about task behavior.* Three dominant classes of theories in the literature could be used to explain how task behaviors moderate the relationship between group personality and task performance. The first and most dominant class of theories takes a cognitive information processing perspective. The past two decades have witnessed growing interest in such cognitive theories of group effectiveness, which assumes that information exchange and data processing lead to superior group performance (e.g. Hinsz, Tindale & Vollrath, 1997; Goodman, Ravlin & Schminke, 1990; Pearce & Ravlin, 1987; Wittenbaum & Stasser, 1996). A basic premise of the cognitive theoretical stream supporting the use of teams in organizations is that they can enhance performance through making members better information processors (e.g. pooling the unique knowledge of the members, reducing individual cognitive biases, etc.). Depending on the specific process theory, variance or other measures of dispersion (e.g. skewness) are the appropriate aggregation methods.

A second class of theories implicit in the literature is that of shared mental models, which lead to a common understanding of a problem and improved group performance (e.g. Cannon-Bowers, Salas & Converse, 1993; Klimoski & Mohammed, 1994). Shared knowledge of task content or mental models is hypothesized to operate by increasing consensus about how to perform group tasks, which leads to increased coordination and efficiency. The implication of this line of thought is that some overlapping of perspectives or values should enhance group effectiveness. Thus, relatively low variation in a group is preferable and measures of variance are the appropriate aggregation method.

The third class of theories implicit in the literature is that of compensation. This model assumes that contributions to the group are made independently by each member, thus the assumption is that the task at hand is additive and that the performance of the group is summative across the members (cf. Steiner, 1972). In some ways, this is not a group at all but, rather, a collection of individuals who are working side-by-side to accomplish something. Thus, the appropriate method for aggregation according to this theory is to use the mean.

*Process theories about interpersonal behavior.* Theories explaining how interpersonal behaviors moderate the relationship between group personality and member satisfaction with the group are more developed than those for either task or resource behaviors. We identify here three distinct classes or groups of such theories, the first one being complementarity. The basic argument of this group of theories is that different people have different personal needs and skills, and the best teams are ones in which those needs and



skills are evenly matched. For example, according to one theory of complementarity, Fundamental Interpersonal Relations Orientation (FIRO) theory (Schutz, 1958), a cohesive group is one that has a balance of initiators and receivers of interpersonal control, and all interpersonal behavior reflects the degree to which three basic human needs (inclusion, affection, and control) are expressed and wanted from others. Members of a group are compatible in a complementary manner when they possess dissimilar but mutually supporting traits (Moreland & Levine, 1992). Depending on the specific theory, different variance measures are the most appropriate aggregation method.

The second class of theories in the literature on interpersonal process concerns similarity or congruence. The basic argument of this group of theories is that relative similarity leads to interpersonal liking, low levels of relationship conflict, and high levels of group cohesion. Thus, people are satisfied working in a group with others similar to them. Social categorization theory, for example, suggests that group members will prefer other group members whom they perceive to be similar to themselves. This perspective suggests that individuals identify any salient characteristics of other group members and form an in-group in order to build up their self-esteem needs (Tajfel, 1982). Other theories of similarity attraction have a similar theoretical basis and make similar predictions. Indeed, some research has found evidence for homogeneity in personality promoting favorable interpersonal interaction, attachment, and member satisfaction (e.g. Lott & Lott, 1965). Thus, variance is the appropriate measure of personality as a group input according to these theories.

Interpersonal behavior processes may also be viewed as isomorphic with or cumulative from the individual level. The assumption here would be that the group process construct is the same as or directly transferred from the individual level. For example, cooperative behavior may be conceived as being qualitatively the same on a group level as it is on an individual level, thus the group level of cooperative behavior is simply the sum of the individual members' cooperative acts and taking the mean of the individual members is the best representation of the group.

*Process theories about resource behavior.* Theories about how personality influences resource behavior and team viability also need to be explored in future research. At least two sets of group resources should have a strong impact on group viability, or the ability to work together successfully over time (Hackman, 1987). The first set has to do with the internal social resources of the group, or the requisite social traits for communicating adequately and successfully fending off conflict. Social resources may be lowered with the presence of one very emotionally unstable group member. In such cases, the

minimum level of emotional stability of the group may be the key antecedent of interpersonal or task processes (e.g. helping behavior) that leads to the long-term viability of the group.

A second set of group resources that should affect a group's viability is its ability to acquire the external resources it needs from the broader organization. Groups in organizations do not act in isolation, and group processes have both internal and external components (Gladstein, 1984). Teams must interact with others in the broader organization. Theory on boundary spanning maintains that high-performing teams seek out contacts with other departments and information from outside parties (Ancona & Caldwell, 1992; Tushman & Scanlon, 1981). The personality composition of a group is likely to be important for boundary-spanning processes. For example, having one very extroverted member may be all that is needed to ensure adequate boundary spanning. Alternatively, the team may need to "sell" its ideas to many different departments. If the team "sales representative" is very high on self-monitoring, the team will be able to adapt its communication style to the varying needs and interests of different organizational populations. For such boundary-spanning resource behavior, the maximum level of a trait in a group may then be the optimal way to measure personality as a group input.

In sum, we have drawn on the groups literature here to suggest additional process mechanisms that can lead to enhanced performance and may have their roots in personality traits. Examples here come from the notion that personality is likely to be an important predictor of information sharing, identity formation, external boundary spanning, and information gathering activities.

*Outputs: group performance criteria.* The vast majority of the early work on group performance focuses on member satisfaction, and later work largely focuses on task performance. We found very little work focused on long-term team viability. And yet, Hackman (1987, 1990) argued that viability is as important as the other two criteria for natural groups because it is what differentiates teams that work from those that do not in the long term. One of the primary reasons for this lack of attention to long-term viability is reflected in the kind of research done to date in this area. Our review of the literature revealed that 68% of the studies employed laboratory designs. Most of the literature we reviewed used ad hoc groups and collected data immediately following a laboratory task. Field designs utilizing natural groups were the exception rather than the rule. Conducting additional research in field settings to collect data on intact groups whose members know each other well and have had a chance to develop group processes should direct attention toward viability as an important performance criterion. This will be particularly

important in self-managed teams, in which roles are not prescribed by an appointed manager or leader. In self-managed teams, individual group roles are allowed to evolve autonomously over time, enhancing the power of personality effects (Barry & Stewart, 1997).

*An Example of Theorizing Using the Contingent Configuration Approach*

Going back to the earlier example of contingent configurational effects for extroversion, we can now extend theorizing about the effects of extroversion using the this new approach in a two-step process. The first step involves selecting a process theory according to the contingencies (i.e. task or organizational culture) and group performance outcomes (i.e. group performance, member satisfaction, and long-term viability) of interest. So in our example, the researcher could take an information processing theory perspective and be interested in task performance. This would involve theorizing, for example, that groups with relatively high variance on extroversion are more likely to approach a problem-solving task by having some members approach it directly through conversation and others through quiet contemplation, and that such groups would be more likely to find a solution because they used multiple methods (e.g. Goodman et al., 1990). If the researcher assumes a shared mental models theory perspective (e.g. Klimoski & Mohammed, 1999), however, and is interested in task performance, this might involve theorizing that a shared approach to the problem (e.g. group discussion as the primary method of work) will reduce excessive process conflict and increase the chances that the group will uncover a superior solution. Or, if the researcher is more interested in member satisfaction and takes a complementarity perspective (e.g. Schutz, 1958), this might involve theorizing that diversity on extroversion is good because some members of the group will want to be socially dominant and others will be happy to allow them to do this while they take a more low-key role. Alternatively, for member satisfaction, one might take a congruence or similarity approach and assume that a group uniformly matched on extroversion will be most satisfied because members will all share a similar interpersonal style and this will help avoid interpersonal conflict (e.g. Lott & Lott, 1965). And finally for team viability, one might take a requisite social skills approach on the problem-solving task and argue that a minimum level of extroversion is needed in all members to avoid task conflict spiraling into relationship conflict (see Simons & Peterson, 2000). Or using a boundary spanning argument, one might hypothesize that just the maximum score among group members matters because this person will have the necessary social skill

and drive to go outside of the group to acquire relevant information (see Ancona, 1990).

The second step in using the contingent configuration approach is to take the chosen process theory and consider possible configuration effects. So in the case of boundary spanning theory and team viability, it may be that the maximum score on extroversion will generally predict team viability except when one of three configurations occurs. The first is when everyone in the group is highly extroverted (very high mean level) and group members become overly competitive for the boundary spanning role, causing relationship conflict or leading them to ignore internal process concerns. A second boundary or configuration effect might be when groups with one or more highly neurotic individuals overreact to the environmental signals that any boundary-spanner brings to the group (i.e. much as they do individually), resulting in chaos and lack of attention to key problems. Alternatively, a third possible boundary or configuration effect would be that groups with low mean conscientiousness do not attend to the information brought to the group by a boundary-spanner and thus render that contribution useless. Our point here is not that any one of these specific hypotheses is correct, but simply that such hypotheses illustrate the depth of theorizing necessary for the field to advance to the next stage.

## CONCLUSION

We are optimistic about the future of research investigating the effects of personality on group performance. We believe there is much to learn using the contingent configuration approach. A number of recent interrelated theoretical and empirical developments such as the big-five personality taxonomy, Hackman's three measures of team performance, and the discovery of personality as more fundamental than other composition variables – suggest that groups and personality researchers have missed an opportunity to collaborate for joint gains across levels of analysis. Groups researchers have largely ignored personality as a composition variable, and personality researchers have largely ignored group process theory. We hope that this chapter we will provide a bridge that helps to better connect personality, groups, and organizational performance – for as organizations increasingly structure their work through teams, a more nuanced understanding of teams may ultimately tell us a great deal about the performance of the organization as a whole.

Taking us back to the earlier example of contingent configurational effects for extroversion, we can now extend theorizing about the effects of extroversion using the this new approach in a two-step process. The first step

involves selecting a process theory according to the contingencies (i.e. task or organizational culture) and group performance outcomes (i.e. group performance, member satisfaction, and long-term viability) of interest. So in our example, the researcher could assume an information processing theory and be interested in task performance. This would involve theorizing, for example, that groups with relatively high variance on extroversion are more likely to approach a problem-solving task by having some members approach it directly through conversation and others through quiet contemplation and be more likely to find a solution because they used multiple methods. However, if the researcher assumes a shared mental models theory and is interested in task performance, this might involve theorizing that a shared view of the problem will reduce excessive process conflict and increase the chances that the group will uncover a superior solution. On the other hand, if the researcher is more interested in member satisfaction and takes a complementarity perspective, this might involve theorizing that diversity on extroversion is good because some members of the group will want to be socially dominant and others will be happy to allow them to do this while they take a more low-key role. Alternatively for member satisfaction, one might take a congruence or similarity approach and assume that a group uniformly matched on extroversion will be most satisfied because they will all share a similar interpersonal style and this will help avoid interpersonal conflict. And finally for team viability, one might assume a requisite social skills approach on the problem-solving task and argue that a minimum level of extroversion is needed by all to avoid task conflict spiraling into relationship conflict (cf. Simons & Peterson, 2000). Or assuming a boundary spanning argument, one might hypothesize that just the maximum score in the group matters most because this person will have the necessary social skill and drive to go outside of the group to bring in relevant information.

The second step in using the contingent configuration approach is to take the chosen process theory and consider possible configuration effects. So in the case of boundary-spanning theory, it may be that maximum score on extroversion will predict team viability except when everyone in the group is highly extroverted (very high mean level) because group member become overly competitive for the boundary-spanning role causing relationship conflict, or to the exclusion of internal process concerns. A second boundary or configuration effect might be that groups with one or more highly neurotic individuals overreact to the environmental signals that any boundary-spanner brings to the group (i.e. much as they do individually,) resulting in lack of attention to key problems. Alternatively, a third possible boundary or configuration effect would be that groups with low mean conscientiousness do

not attend to the information brought to the group by a boundary-spanner and thus render that contribution useless. Our point here is not that any one of our specific hypotheses is correct, simply that it illustrates the depth of theorizing necessary for the field to advance to the next stage.

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## APPENDIX

### *Universal Studies (most recent first)*

Authors	Sample	Kind of Study	Personality Variable Studied	Aggregation Method	Task/Definition of Team	Results
Barrick, Stewart, Neubert and Mount (1998)	51 work teams (652 employees) in manufact. setting	Field	Conscientiousness Extroversion Emotional stability Agreeableness	Mean Variance Minimum Maximum	Manufacturing plant setting; characterized teamwork as additive and conjunctive	Conscientiousness (mean, minimum, and maximum) positively related to Team Performance Extroversion (mean) positively related to team viability Emotional Stability (mean) positively related to team viability Mean and Minimum operationalizations of personality are most predictive.
Neuman and Wright (1998)	79 four person HR teams	Field	Conscientiousness Agreeableness	Minimum	Personnel benefits related claims filing	Conscientiousness (minimum) positively related to task performance and work accuracy. Agreeableness (minimum) positively related to task performance and amount of work completed.
Peterson, Owens and Martorana, (1998)	17 top management teams	Field	Conscientiousness Extroversion Neuroticism Agreeableness Openness to experience	CEO	Top management team	Neuroticism related to negative team dynamics and poor financial performance Agreeableness related to positive team dynamics and firm performance Conscientiousness related to positive team dynamics and firm performance

Waung and Brice (1998)	120 undergraduate students (number of teams not reported)	Lab	Conscientiousness	Mean	Idea generation of alternate uses of target objects	Conscientiousness was positively related to quality of ideas generated.
Barry and Stewart (1997)	61 teams (of 4–5) graduate students	Lab	Extroversion Conscientiousness	Variance	Series of creative problem solving tasks performed by self-managed groups over an 8-week time period.	No impact of conscientiousness on either the individual or group level Proportion of High Extroverts has curvilinear relationship to performance Proportion of High Extroverts has curvilinear relationship to task focus (but in unexpected direction: U-shaped relationship) Extroversion operated through both task and socio-emotional mediators (though only predicted to operate through socio-emotional mediators)
Eby & Dobbins (1997)	148 students in 33 teams of 4–6	Lab	Self-efficacy for teamwork Locus of control Need for Social Approval	Variance (% of members who expressed high collectivist orientation)	Task = computer simulation of business strategy: teams meet over a seven week period to do simulation teams: selected to have breadth of expertise (in major area: marketing, finance, etc.)	Self-efficacy and Need for Social approval are positively related to self-reported collectivism. Cooperative team behaviors mediated the relationship between team collective orientation and team performance.

Authors	Sample	Kind of Study	Personality Variable Studied	Aggregation Method	Task/Definition of Team	Results
Lepine, Hollenbeck, Ilgen and Hedlund (1997)	51 teams (4 person) students	Lab	Conscientiousness	Minimum	Decision-making task that requires information input from various team members.	Interaction of staff conscientiousness (minimum) $\times$ leader conscientiousness positively related to team decision accuracy No main effects.
Toquam, Macaulay, Westra and Fujita (1997)	126 male Japanese nuclear power plant operators	Lab	Dependability Social Skills Sense of Competence Validity (MMPI Lie scale)	Mean Variance	training simulation of nuclear plant control room	Crews with high mean Lie scores performed less effectively than crews with low Lie scores Crews with higher mean sense of competence have greater performance variability than crews low on sense of competence (if overestimate abilities, perform less consistently) Crews homogenous on social skills perform more effectively than groups heterogeneous on social skills No effect of personality trait homogeneity/heterogeneity on performance variability
Thoms, Moore and Scott (1996)	126 employees	Field	Extroversion Agreeableness Openness Conscientiousness Neuroticism	Mean	Manufacturing plant teams	Conscientiousness, Extroversion, and Emotional Stability positively correlated with individual attitudes toward and self efficacy for participation in SMWT.

Littlepage, Schmidt, Whisler and Frost (1995)	166 undergraduates in 4-5 person teams (34 groups)	Lab	Extroversion dominance (FIRO-B: expressed need for control)	Individual level analyses of personality (model of influence in group) Mean	“Non eureka” intellectual (prob. solving) task = Desert Survival Situation	Extroversion, Dominance, & Confidence positively related to amount of talking Dominance & Confidence ⇒ reason, autocratic tactics ⇒ perceived expertise ⇒ influence Perceived expertise mediated the relationship between talking & influence
George (1990)	26 sales groups	Field	Positive Affectivity Negative Affectivity	Mean Variance	Sales groups. A workgroup is defined as employees who all work for the same dept. manager (low interdependence).	Characteristic levels of PA and NA (mean of mean members) are positively related to the positive and negative affect tones of group, respectively. Groups with negative affective were negatively related to the extent to which the group engaged in prosocial behavior. Absenteeism was negatively related to groups with the positive affective tone.

*Contingent Studies (most recent first)*

Authors	Sample	Kind of Study	Personality Variable Studied	Aggregation Method	Task/Definition of Team	Results
Chatman and Barsade (1995)	139 MBA students	Lab	Agreeableness	Mean	Culture = Collective or Individualistic (manipulated through task directions) Task = Looking Glass Simulation	Cooperative subjects in cooperative conditions acted the most cooperatively. Individualistic subjects in individualistic conditions acted the least cooperatively. Interaction of person to culture style impacted the cooperative behavior of those with a predisposition to cooperate, but not those with individualistic dispositions (individualists are less affected by culture).
Hogan, Raza and Driskell (1988)	Male students	Lab	Prudence (subscale of Conscientiousness) Ambition (Subscale of Extroversion) Likability (Subscale of Agreeableness)	Mean	Task Type (Mechanical vs. Social)	High Prudence, Ambition, and Likability was related to higher performance for Mechanical tasks. High Prudence was related to performance for Social tasks.
DeBasio (1986)	126 students	Lab	Field independence	Mean	Task structure (two levels: high and low) low = list 5 traits for success high = blow out 2 candles from 8 feet away	Both field independent and field dependent groups took longer to complete the highly structured task, but that speed of task completion of field dependent groups was more impaired by type of task than field independents.



Aronoff, Meese and Wilson (1983)	50 male students (study 1) 72 male students (study 2)	Lab	Safety needs Esteem needs	Mean	Social structure: egalitarian vs. hierarchical. Manipulated by giving instructions to group identifying leader vs. telling to be egalitarian. Task = build a model of an office building	Groups with high levels of need for esteem were more productive in egalitarian structures
Schneider and Delaney (1972)	72 students	Lab	Need for Achievement (subscale of Conscientiousness)	Mean	Task complexity low = identify a commonly held symbol high = arithmetic computations	Group with high levels of Need for Achievement had higher levels of performance on complex problems than groups with low levels of Need for Achievement. There were no differences in performance on simple problems.

*Configuration Studies (most recent first)*

Authors	Sample	Kind of Study	Personality Variable Studied	Aggregation Method	Task/Definition of Team	Results
Barsade, Ward, Turner and Sonnenfeld (2000)	62 top management teams	Field	Positive affect (neuroticism)	Mean Fit with team	Top management team Decision making	Fit with team on positive affect is related to positive attitudes about team and perceptions of greater influence Team diversity on positive affect related to less participative style of CEO and reduced financial performance
Buchanan and Foti (2000)	65 three person teams of undergraduate students	Lab	Extroversion Conscientiousness Openness	4 patterns: <i>Optimal</i> High C High O Moderate E <i>Contrast A</i> High C High O High E <i>Contrast B</i> High C Low O Moderate E <i>Contrast C</i> Low C High O Moderate E	Creative brainstorming task (20 minutes long). Generate ideas university could use to address transition issues facing new incoming students.	Personality composition pattern is significantly related to quantity (the optimal pattern has significantly more ideas than the other patterns. There are no significant differences between the three alternative contrast patterns) Personality composition pattern is significantly related to quality (the optimal pattern has significantly more creative ideas than the other patterns. There are no significant differences between the three alternative contrast patterns on number of creative ideas)

Brandt and Devine (2000)	50 groups of 3–7 undergraduate students	Lab	Dominance (subscale of Extroversion) Affiliation (subscale of Agreeableness)	Configuration (3 levels of compatibility) 9 incompatible groups 32 compatible groups 14 high compatible	Managerial decision-making simulation Team task = hire a new manager from 7 applicants (each member had shared and unshared information). Had to identify best candidate and specific reason/s for choice	Personality compatibility is negatively related to conflict Conflict is negatively related to task time Communication is positively related to task time.
Mohammed, Angell and Ringseis (2000)	51 teams of business students (3–6 members per team)	Field	Conscientiousness Extroversion Agreeableness Neuroticism	Mean Standard deviation	Semester long process improvement project sponsored by real organizations. Teams required to systematically evaluate business processes in order to improve efficiency and effectiveness 2 types of tasks: (1) 2 written reports (2) Oral presentation	High mean Conscientiousness was positively related to performance on written task High variability (SD) on Extroversion was positively related to performance on oral task High variability (SD) on Agreeableness, Neuroticism was negatively related to performance on oral task (Post hoc analyses were also done looking at maximum and minimum levels of traits within the group, but no results were found)
Bond and Shiu (1997)	102 students in 17 groups	Lab	Conscientiousness Extraversion Neuroticism	Mean Variance	Three academic group over a three-month period	Mean Conscientiousness was positively to level of shared exchange at time 2 Low variability on Conscientiousness was positively related to shared exchange at time 3

Authors	Sample	Kind of Study	Personality Variable Studied	Aggregation Method	Task/Definition of Team	Results
Shaw and Webb (1982)	Study 1: 22 pairs of students Study 2: 34 students rotated in 49 groups	Field	Need for inclusion Need for affection Need for control	Sum of all types of compatibility	Trigonometry class Group Dynamics class group projects, some shared, some unique info.	Control incompatibility was positively related to performance in the course.
Hill (1975)	22 teams of systems analysts (8–10 per team)	Field	Need for inclusion Need for affection Need for control	Sum of all types of compatibility	Systems analyst group work.	Overall reciprocal and interchange compatibility negatively related to perceptions of performance.
Reddy and Bymes (1972)	22 groups of middle managers (10–12 per group)	Lab	Need for inclusion Need for affection Need for control	Variance	Lego man (plan an assembly design, then execute the design)	Compatibility on control and affection positively related to speed of assembly.