Personality Configurations in Self-Managed Teams: A Natural Experiment on the Effects of Maximizing and Minimizing Variance in Traits

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In this study, we examined the impact of seeding teams to create maximal and minimal levels of extroversion and conscientiousness variance. Using the theories of complementary and supplementary fit, we make predictions regarding the main and interactive effects of extroversion and conscientiousness variance on performance. Testing our hypotheses in a longitudinal study of MBA teams, our results demonstrate that the combination of minimizing conscientiousness variance (consistent with complementary fit) and maximizing extroversion variance (consistent with supplementary fit) produced the highest levels of short-term and long-term performance.

There has been a great deal of interest in the use of personality in team composition (Moynihan & Peterson, 2001), as personality is inherently socially derived (Cattell, 1943). However, research on the effect of personality in teams has been equivocal at best (Bell, 2007). That is, Bell's meta-analysis showed somewhat small effect sizes for the "Big 5" (Goldberg, 1981) personality traits on team effectiveness, most notably in terms of the lack of a relationship between variance on personality characteristics and effectiveness.

Although there are numerous theoretical frameworks discussing composition in general (e.g., Arrow, McGrath, & Berdahl, 2000; Chan, 1998; Harrison & Klein, 2007), and composition with personality characteristics in specific, empirical tests have not demonstrated consistent support for these theories. For example, as documented by Bell (2007), the rationale espoused by LePine, Hollenbeck, Ilgen, and Hedlund (1997) of matching personality aggregation to Steiner's (1972) task typology (see also Barrick, Stewart,

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Neubert, & Mount, 1998) does not demonstrate stronger relationships between team member characteristics and team performance. Instead, whereas Bell demonstrated that there is support for various compositional aggregations, depending on the characteristic being studied (e.g., minimum agreeableness has been demonstrated to have a ρ of .37 with team effectiveness in field studies), other characteristics such as extroversion (which others have suggested should be logically related to team effectiveness; Barrick & Mount, 1991) have not demonstrated as large relationships with effectiveness. This suggests that it may be worthwhile to utilize a new theoretical and empirical approach to team composition for team personality.

One potential reason for this problem may be the primary focus of the literature on additive models of personality composition, wherein team personality is considered solely to be the average of individual team member personality traits (Chan, 1998). Humphrey, Hollenbeck, Meyer, and Ilgen (2007) argued that even if the mean level of a trait matters in a team, organizations must still consider the configuration of the trait within a team. Because organizations must staff teams from a set population, they will always encounter tradeoffs on the extent to which teams have larger or smaller variance on the traits within teams. For example, given a population of 100 individuals normally distributed on a given trait, an organization can create 10 teams of 10 members that all have approximately the same mean level of the trait, but differ widely across teams on the amount of variance on the trait within the team or, alternately, the same 100 individuals can be configured into 10 teams of 10 members that all have approximately the same variance on the trait within the team, but differ widely across teams on the mean level of the trait. Thus, a focus on equating teams on the mean of a trait can produce wide disparities on the amount of variance on the trait within the team.

This, therefore, requires researchers to determine the effect of personality variance on team performance. Yet, the results of research studying the variance of a personality trait within a team have been equivocal (Bell, 2007). Rather than conclude that variance is not important, Humphrey et al. (2007) argued that existing research has significantly underestimated the effect of personality composition on team performance as a result of suboptimal staffing designs. They further argued that either not considering personality when staffing teams, or using random assignment to place individuals on teams, can result in up to a threefold decrease in the amount of variance across teams, which essentially results in a restriction in range on the variable of interest (i.e., personality variance). Thus, they proposed a method of seeding teams to maximize personality variance within a study to better test the effect of personality variance.

In this paper, we present the first test of Humphrey et al.'s (2007) seeding process by focusing on how the variance of specific personality traits (i.e.,

extroversion, conscientiousness) impacts team performance. Of the five personality factors traditionally discussed in the literature, extroversion and conscientiousness appear to be particularly relevant for the study of team personality variance. First, by its very nature, extroversion is an interpersonal construct (McCrae & Costa, 1997; Wiggins, 1979), such that extroversion refers to sociability and dominance that individuals exhibit (Costa & McCrae, 1992; John & Srivastava, 1999). In a team context, how an individual interacts with others is likely a function of his or her extroversion level; the distribution of extroversion within the team is thus likely to impact meaningfully the interaction between members (i.e., the interaction between individuals will be much different in teams that include highly extroverted members than in teams that do not include such individuals).

Second, because conscientiousness captures the achievement-orientation and organization of team members (Costa & McCrae, 1992), the distribution of this trait within a team is likely to impact the goals team members set and the effort they exert (Humphrey et al., 2007). Moreover, as conscientiousness is the best personality predictor of performance at the individual level (Barrick & Mount, 1991), it is important to determine how best to make placement decisions in teams using this trait. It is important to note that our focus on these two traits does not preclude the potential impact of other personality traits on team performance. In fact, Humphrey et al. noted that complementary and supplementary fit may be applied to numerous other individual differences. However, following the arguments of Humphrey et al., we believe that these traits are particularly well suited for the study of team composition.

In this paper, we draw from the literature on complementary and supplementary fit (Kristof, 1996) and trait configurations in teams (Humphrey et al., 2007) to argue that different types of fit can and should be promoted through specific personality configurations. We provide a test of Humphrey et al.'s theory that complementary fit should be promoted for extroversion (i.e., maximizing within team variance), supplementary fit should be promoted for conscientiousness (i.e., minimizing within-team variance), and combining both high extroversion variance and low conscientiousness variance within teams will be particularly beneficial in terms of team performance. Although we draw from Humphrey et al.'s theory of trait configuration, we further elucidate the theoretical rationale for why conscientiousness and extroversion variance will impact team performance by integrating such literature as LePine and Van Dyne's (2001) theory on peer responses to low performers in teams. In all cases, we make the explicit ceteris paribus assumption that the mean levels of personality are held constant.

In addition to providing a test of Humphrey et al.'s (2007) theory of trait configuration, our study is the first to apply maximization and minimization principles systematically in teams with an explicit seeding process (Humphrey

et al., 2007), as opposed to relying on naturally occurring variance. That is, the teams in our study were explicitly created in a manner that produced higher levels of variance on conscientiousness and extroversion than would be found in naturally occurring teams, which are generally randomly assigned on these characteristics, thereby creating a more optimized study than previously undertaken (McClelland, 1997).

Theories of Supplementary and Complementary Fit

Researchers have been studying fit within organizations for decades (Kristof, 1996), concentrating on the fit between individuals and the environment, organization, vocation, and job. As this research has demonstrated that fit between an organizational member and each of these contexts impacts both attitudes and behaviors, it is not surprising that researchers have more recently begun to examine the fit between team members and the team (i.e., person–team [P-T] fit; Hollenbeck et al., 2002; Kristof, 1996). Following Humphrey et al. (2007), we begin building our theoretical model on the tenets of fit theories.

Fit theories have traditionally been based on one of two approaches: supplementary or complementary fit. According to Muchinsky and Monahan (1987), supplementary fit arises from situations in which someone "supplements, embellishes, or possesses characteristics which are similar to other individuals" (p. 269). That is, in a team context, a person is said to have supplementary fit with the rest of the team if he or she is similar to the other team members on specific dimensions. Essentially, this theory of fit focuses on addressing questions of when homogeneity is helpful for the team.

In contrast, complementary fit arises from situations in which someone fills an unmet need in a collective (Cable & Edwards, 2004; Muchinsky & Monahan, 1987). That is, in a team context, a person is said to have complementary fit with the rest of the team if he or she is different from the other team members; but in being different, he or she brings critical knowledge, skills, and abilities (KSAs) to the team that are not currently possessed by the team. Essentially, this theory of fit focuses on addressing questions of when heterogeneity is helpful for the team.

These theories are not opposite ends of a continuum. That is, a person will not necessarily have high levels of supplementary fit with the team, or high levels of complementary fit. These two theories are instead different perspectives on how an individual may fit with a team (or a job or an organization). When defining person–organization fit (an organization-level analogue to P-T fit), Kristof (1996) said that *fit* is "the compatibility between people and organizations that occurs when (a) at least one entity provides what the other

needs; (b) they share similar fundamental characteristics; or (c) both" (pp. 4–5). Applying this to P-T fit, it can be said that a person fits with the team to the extent that he or she provides unique KSAs, is similar to the rest of the team on fundamental characteristics, or both.

Several studies have examined P-T fit by examining the similarity or differences of team members (e.g., Beersma et al., 2003; Hill, 1975; Hollenbeck et al., 2002; Mohammed & Angell, 2003). Meta-analytic results suggest that P-T fit can meaningfully impact individual behavioral and attitudinal outcomes, such as satisfaction, performance, and organizational commitment (Kristof-Brown, Zimmerman, & Johnson, 2005). However, these studies have often discussed fit independent of the theories of complementary and supplementary fit (e.g., Hollenbeck, 2000; Hollenbeck, DeRue, & Guzzo, 2004).

To date, few studies have applied the theories of complementary and supplementary fit to the study of P-T fit (Kristof, 1996). Some notable exceptions include Kristof-Brown, Barrick, and Stevens' (2005) application of the complementary fit perspective to the study of extroversion composition in teams; Neuman, Wagner, and Christiansen's (1999) application of both supplementary and complementary fit to the study of team personality diversity; and Humphrey et al.'s (2007) theoretical arguments around the use of supplementary and complementary fit in dealing with trait configurations in teams. However, none of these studies tested the interaction between supplementary and complementary fit. For example, whereas Neuman et al. introduced diversity on personality in teams by discussing supplementary and complementary fit, they focused on main effects. They stated that:

> It has been suggested that the compatibility of the members in a group is a function of both similar and diverse traits. . . . Thus, certain traits may enhance performance when the team is homogeneous, whereas other traits may enhance performance when the team is diverse. (p. 32)

Additionally, Humphrey et al. (2007) presented a theoretical rationale for why complementary and supplementary fit should interact in teams, but they did not test their theory. We take the logical next step in this literature by examining the interaction between complementary and supplementary fit.

Personality Traits in Self-Managed Teams

Extroversion: Conceptual and Empirical Case for Complementary Fit

Conceptual development. One personality factor that should be particularly important in self-managed teams (SMTs; i.e., leaderless teams who can

structure their own work; Manz & Sims, 1987) is extroversion. By its very nature, extroversion is an interpersonal construct (McCrae & Costa, 1997; Wiggins, 1979). Individuals who are extroverted tend to be sociable, assertive, full of energy, and dominant (Costa & McCrae, 1992; John & Srivastava, 1999).

Recent research has suggested that a complementary fit perspective is most appropriate for creating high-performance teams utilizing extroversion (Humphrey et al., 2007; Kristof-Brown, Barrick et al., 2005). According to Humphrey et al., high extroversion variance can create role differentiation in teams through two paths. First, because there is no pre-existing leadership structure in SMTs (Manz & Sims, 1987), an SMT needs emergent leadership in order to be successful. Extroverts are frequently identified as being effective (Hogan, Curphy, & Hogan, 1994) and strong leaders (Taggar, Hackett, & Saha, 1999). Extroversion is composed of both dominance (Costa & McCrae, 1992) and sociability (Hough, 1992), both of which are consistent with traditional perceptions of leadership (Eagly, Johannesen-Schmidt, & van Engen, 2003).

When people act in ways that are consistent with traditional perceptions of leadership, they are more likely to be perceived of as leaders (Eagly et al., 2003). Based on the leadership characteristics that extroversion tends to imbue on a person, it is likely that they will fill the leadership roles in a team. However, a second piece of emergent leadership is the need for followers in order for leadership to be successful (Meindl, 1993). Introverts are a better fit for filling this role, as they are more passive (Costa & McCrae, 1992) and are more likely just to listen (Kristof-Brown, Barrick et al., 2005). Thus, complementary fit within teams is expected to be higher when a team possesses high extroversion variance (Humphrey et al., 2007).

Second, Humphrey et al. (2007) argued that role differentiation is increased as a result of high extroversion variance because role conflict is likely to be decreased. Ilgen, Hollenbeck, Johnson, and Jundt (2005) noted that role negotiation is important during team formation. However, it can also cause team conflict when team members compete for either high-status or simple roles.

Conflict may be avoided in this situation if roles are assigned hierarchically (Murnighan & Conlon, 1991), as hierarchical decision making can speed decision making and reduce the likelihood of conflict escalation (Beersma et al., 2009). Having high extroversion variance in a team is likely to result in a dominant individual emerging as a leader, who is likely to enact decisions without the input of other group members. Moreover, given that high extroversion variance implies that some members will be low on extroversion, there will also be a number of submissive (i.e., low dominance) team members who are essentially followers. This unilateral decisionmaking

process can speed role clarification as a result of the leader's ability to impart role assignments explicitly without as much chance of role ambiguity (Graen, 1976).

Essentially, having a high variance on extroversion makes it easier to detect differences between team members. The prior point noted that a person high in extroversion is likely to be perceived of as a leader. However, if everyone in the team has the same level of extroversion, it will not be possible to differentiate members based on their dominance or sociability. That is, role differentiation will not occur in low extroversion variance teams as a function of extroversion. In contrast, having high variance on extroversion within the team suggests that there will be greater opportunities to differentiate among team members (which will only grow larger as the variance increases). Consequently, having high variance on extroversion provides greater opportunities to detect differences in dominance and sociability among team members, creating a better chance that team members will differentiate roles within the team, based on extroversion. Thus, as Humphrey et al. (2007) argued, high extroversion variance is expected to advance complementary fit through role differentiation that results in efficient knowledge utilization (Hyatt & Ruddy, 1997), high adaptability (Moon et al., 2004), and exceptional performance (Druskat & Kayes, 2000).

Moreover, we believe that regardless of the level of extroversion mean, low extroversion variance will result in low role differentiation. By definition, low extroversion variance signifies that everyone has the same level of extroversion. That implies that no one on the team is any more or less dominant than any of the team members. At low levels of extroversion mean, all team members will have low levels of dominance. At high levels of extroversion mean, all team members will have high levels of dominance. In either case, no team member will be more or less meaningfully dominant than another member. Given that situation, the team members are unlikely to differentiate roles within the team based on extroversion composition.

Empirical support. We have suggested that maximizing extroversion variance will promote higher team performance. No research to date has actually studied teams that utilize variance maximization principles for creating extroversion variance. In contrast, studies examining naturally occurring extroversion variance have provided mixed results.

Some research has suggested that higher extroversion variance is helpful. Barry and Stewart (1997) found that there was a curvilinear relationship between the proportion of the group that were high on extroversion and team performance. That is, using post hoc cutoff points, they found that team performance was highest when between 20% and 40% of the team scored in the top third of extroversion scores. In contrast, teams that had either a lower or higher percentage of high-scoring extroverts performed at a lower level.

Similarly, Neuman et al. (1999) examined extroversion configuration by measuring variance in naturally occurring field teams. Their results suggested that extroversion variance was significantly related to higher levels of performance. Finally, Kristof-Brown, Barrick et al. (2005), in a study of pre-existing manufacturing teams, found that higher levels of extroversion variance related to higher levels of performance at the individual level.

In contrast, Barrick et al. (1998), who also examined extroversion variance in field teams, did not find a significant relationship between extroversion variance and performance. Similarly, Kichuk and Wiesner's (1997) study of randomly assigned engineering student teams did not find a significant relationship between extroversion variance and performance. Finally, Mohammed and Angell's (2003) study of student teams did not find a significant zero-order correlation between extroversion variance and performance.[2]

Although these studies generally did not find significant relationships, this may be partially attributable to the specific datasets. Barrick et al. (1998) found a very low level of variance in extroversion variance across the teams. With a restriction in range on the independent variable, it is more challenging to find significant relationships. In Kichuk and Wiesner's (1997) study, extroversion variance was created by dividing the standard deviation in extroversion within the team by the mean level of extroversion. Thus, they combined extroversion variance and mean within the same variable. Their results, therefore, are less interpretable than are others.

Taken together, the empirical results generally suggest that higher levels of extroversion variance should promote better team performance. However, as we have noted previously, no study has directly attempted to seed teams on extroversion variance. For this reason, because of restriction in range limitations, all existing parameters that have been reported are underestimates of what might be detected within seeded teams (Humphrey et al., 2007). Thus, based on the conceptual arguments and existing empirical evidence, we advance the following hypothesis:

> *Hypothesis 1*. Maximizing extroversion variance will result in positive team performance.

Conscientiousness: Conceptual and Empirical Case for Supplementary Fit

Conceptual development. Conscientious people are purposeful, achievement-oriented, organized, and self-disciplined (Costa & McCrae,

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[2]However, after controlling for the mean and variance of all other personality characteristics, they found that extroversion variance predicted oral team performance.

1992). Meta-analyses at the individual level have consistently demonstrated that conscientiousness is a consistent predictor of performance (Barrick & Mount, 1991; Hurtz & Donovan, 2000). In contrast to extroversion variance, Humphrey et al. (2007) proposed that supplementary fit is more appropriate for conscientiousness variance, because of its effect on goal congruence. Minimizing conscientiousness variance creates a team in which all members have essentially the same perspective on how to accomplish work, how much effort to put in, and what they hope to achieve. Because they essentially agree on these factors, group norms in terms of the effort they should put in will be readily established, resulting in low levels of team conflict. Antonioni and Park (2001) made this direct argument when they suggested that conscientiousness similarity "could actually lead to better interpersonal relationships and higher job performance" (p. 334) because team members are similar in purpose, achievement orientation and organization.

Humphrey et al. (2007) argued that teams with high conscientiousness variance will behave very differently because high and low conscientiousness team members have different performance goals and levels of perseverance. Highly conscientious members want to try hard and put in a great deal of effort because they are achievement-oriented (Costa & McCrae, 1992), whereas team members who possess low levels of conscientiousness do not want to exert themselves. Essentially, these different aspirations will result in highly conscientious members feeling bitter about the low conscientiousness members' lack of effort, particularly because the highly conscientious members will likely have to exert themselves even more to reach their (and the team's) goals. That is, conflict will emerge in the team or the high conscientiousness team members will attempt to make up for the low conscientiousness team members' free riding. *Free riding* (Williams & Karau, 1991) is the practice of putting in less effort when working in a group setting than when performing individually. Meta-analytic results have shown that expecting other team members to perform well results in people putting in less effort (Karau & Williams, 1993).

LePine and Van Dyne (2001) provided additional rationale for this argument. They proposed that team members make attributions about low performers based on the characteristics of the low performer. As having low levels of conscientiousness is expected to result in lower performance (Barrick & Mount, 1991), LePine and Van Dyne argued that team members attribute the low performance in individuals with low levels of conscientiousness to be highly controllable behavior caused by factors internal to the low-performing individual. That is, the low performance is attributable to this person, rather than to uncontrollable factors (e.g., bad luck, low cognitive ability) or external factors (e.g., management interference). In fact, team members have been shown to make the attribution that low conscientious-

ness team members are free riders (Taggar & Neubert, 2008) and unmotivated (Jackson & LePine, 2003), while their behavior has been judged as uncooperative (LePine & Van Dyne, 2001) and unhelpful (Porter et al., 2003).

Given these attributions as a result of low levels of conscientiousness, LePine and Van Dyne (2001) suggested that team members will become angry with the low performers. They are then expected to express this anger in one of two ways, depending on perceptions of the stability of the low performance. If they believe that the action is caused by unstable factors (e.g., the team member has not been completing tasks because of his or her interest in "day trading"), the team members will act by trying to either motivate the low performer or provide punitive feedback (Moss & Martinko, 1998). That is, although they will be unhappy with the performance of team member, they believe they can change the behavior through their own actions.

In contrast, the team may attribute the low performance to stable factors. This attribution will likely occur when the low performance persists over time (i.e., it is not a single, isolated incident) and the low performer is thought to be socially loafing (LePine & Van Dyne, 2001). In this situation, the team members are expected to reject the low performer. This rejection is expected to impact social relationships in the team, wherein the team isolates the low performer (Jackson & LePine, 2003); and team task performance, wherein the team members reduce their own performance to avoid being thought of as "suckers" (Jackson & Harkins, 1985; Kerr, 1983). The impact on team task performance is most relevant to our theoretical model, as the focus of our research is specifically on the performance of the team, rather than on the social interaction within the team. Thus, following the arguments of Humphrey et al. (2007) and building off LePine and Van Dyne's theory, we believe that low conscientiousness variance will produce supplementary fit, creating goal congruence and resulting in team members being attracted to each other (Tsui & O'Reilly, 1989), creating high levels of performance (Beal, Cohen, Burke, & McLendon, 2003).

Empirical support. We have suggested that minimizing conscientiousness variance will promote higher team performance. Minimizing conscientiousness variance implies that the most conscientious individuals will be placed on one team, the next highest will be placed on another team, and so on for the remaining members. Just as extroversion variance has not been maximized in previous research, conscientiousness variance has not been minimized.

Some research has found that conscientiousness variance has been negatively related to performance (Barrick et al., 1998; Kichuk & Wiesner, 1998). In contrast, both Neuman et al. (1999) and Mohammed and Angell (2003) found nonsignificant, small, negative, zero-order correlations between con-

scientiousness variance and team performance. In summary, the empirical results suggest a small negative relationship between conscientiousness variance and performance. As we have theorized that minimizing conscientiousness variance will promote supplementary fit within teams, which is expected to improve team performance through the goal congruence, we hypothesize the following:

> *Hypothesis 2*. Minimizing conscientiousness variance will result in positive team performance.

Interactive Effects of Complementary and Supplementary Fit

In addition to the potential main effects that extroversion variance and conscientiousness variance may exert on team performance, Humphrey et al. (2007) suggested that these two personality dimensions may combine to produce unique team performance effects. Although complementary and supplementary fit are traditionally examined independently, some research has suggested that they can operate simultaneously (Cable & Edwards, 2004; Humphrey et al., 2007; Kristof, 1996).

Following the main-effect logic presented earlier, one can visualize how the interaction between these two configurations can act simultaneously to present unique performance outcomes. Role differentiation (which emerges from maximized extroversion variance) is normally considered to impact team performance positively because it produces efficiency. However, research has noted that differentiated role structures in teams have the side effect of reducing individual accountability, as individual contributions to team performance are more difficult to identify and measure (Hollenbeck et al., 2002). That is, because of the differences in what each member is doing within a team (keeping in mind that in a completely differentiated role structure, there is no overlap at all between team roles), it is hard to assess how well a team member is doing and how much effort he or she is exerting.

For example, consider two management teams: One team (Team A) has a completely undifferentiated role structure, in which all members perform the same role; whereas a second team (Team B) has a completely differentiated role structure, in which all members perform unique roles. In Team A, because each member is responsible for performing the same behaviors, the members can easily gauge whether teammates are performing better or worse on the same tasks, given the constraints on the team. In contrast, in Team B, it is very difficult to assess whether Person X is performing better than Person Y, given the fact that they are performing different tasks, with different inputs and outputs, and possibly different performance metrics.

As Humphrey et al. (2007) argued, if a team has high levels of role differentiation and high levels of goal congruence, team members are all committed to the same objectives, free riding should not be a concern, and team members' contributions should not need to be quantified. Again, consider Team B. Although it may be nearly impossible to compare the outputs of Person X and Person Y objectively, the fact that they both want the same thing for their team (i.e., high levels of performance) should curb any need to expend resources to monitor their effort.

Next, consider the partial-fit teams. First, if a team has low role differentiation and high goal congruence, team members will share the same goal expectations. As motivation is both intensity and direction (Locke & Latham, 1990), the team will share a common direction (i.e., goal) and thus be expected to put effort into their performance. However, the lack of role differentiation limits the overall efficiency of the team (Hollenbeck et al., 2002), as there is more redundancy in roles and behaviors. Thus, the low extroversion variance (i.e., low fit), low conscientiousness variance (i.e., high fit) teams are expected to perform at a lower level than are the high fit–high fit teams.

Second, if a team has high role differentiation and low goal congruence, team members are likely to be working on divergent tasks or free riding. For example, a team composed of two high-conscientiousness and two low-conscientiousness members would be expected to have divergence in expectations for task completion. That is, the high-conscientiousness members would tend to be achievement-striving and interested in getting work completed early and accurately. In contrast, the low-conscientiousness members would be more likely to put off work and allow others to complete tasks. In a team with high role differentiation, it is more difficult to determine exactly what members in other roles are doing and to identify the amount of effort they are exerting (Hollenbeck et al., 2002). Thus, the high extroversion variance (i.e., high fit), high conscientiousness variance (i.e., low fit) teams are expected to struggle to perform.

Finally, consider teams with both low extroversion variance and high conscientiousness variance. Under conditions of low goal congruence, it might actually be preferable for the team to experience low degrees of role differentiation because of the effects that this will have on those who are low in conscientiousness (i.e., those most likely to free ride). Indeed, there is direct empirical evidence that supports the notion that isolating and recognizing individual-level contributions is a cure for free riding (Miles & Greenberg, 1993). Thus, just as there may be synergistic effects that make the high–high fit conditions superior to what may be expected based solely on their main effects, there may also be synergistic effects associated with the low–low fit combination that make this much less worse than might be expected based solely on main effects. However, dedicating cognitive resources to monitor-

ing team behaviors is likely to reduce the amount of time and effort spent on performing task-relevant behaviors (as a result of a person's limited set of cognitive resources; Kanfer & Ackerman, 1989). Thus, although this configuration may have synergistic effects, low extroversion variance (i.e., low fit), high conscientiousness variance (i.e., low fit) teams should still perform worse than the high fit–high fit teams.

> *Hypothesis 3*. Extroversion variance and conscientiousness variance will interact, such that the positive impact of higher levels of extroversion variance on performance will be stronger in teams with lower levels of conscientiousness variance.

Method

Team Composition

Participants were first-year students in a full-time Master of Business Administration (MBA) program at a large, midwestern university. Independently of the research team, the MBA program at this university made a conscious effort to create teams based on the basic premise of equating team diversity (the specific process is described more fully later). This process resulted in the construction of 77 teams[3] that varied in size from 5 to 6 team members, with most having 5 members. The participants' average age was 28 years ($SD = 3.80$). Their average work experience was 57 months, and 75% were male (215 males, 73 females).

Past research has defined *teams* as "small groups of interdependent individuals who share responsibilities for outcomes" (Sundstrom, de Meuse, & Futrell, 1990, p. 120); or alternately, an interdependent group of individuals who perceive themselves and are perceived by others as a team, who are embedded in a larger social system, such as an organization (cf. Cohen & Bailey, 1997; Guzzo & Dickson, 1996; Hackman, 1987). The MBA teams performed numerous tasks during their lifespan. Their primary responsibility during this time was to complete in-depth case analyses on a variety of topics. For the case analyses, teams generally were expected to spend several weeks determining problems in an organizational situation, developing potential solutions to the problems, and providing plans for implementing the best solution. For many of the case analyses, the teams were expected not only to prepare a written brief, but also to present and defend their analysis orally in front of their peers.

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[3]Although our initial sample size was 77, the final sample size was 54, as we will discuss later.

MBA teams are a subset of the broader team category, and are best conceptualized as project-development teams (Sundstrom et al., 1990). Specifically, reflecting Sundstrom et al.'s conceptualization, there is high differentiation among team members (i.e., the team is composed of individuals with different KSAs, including functional background differences; e.g., finance, accounting, human resource management, marketing-specific knowledge), they operate autonomously, they have an extended team lifespan, and their outputs are typically presentations and reports. This is a common form of team found in organizations, and encompasses workgroups, such as research teams, strategic task forces, product-development teams, and consulting teams. Indeed, most of the projects that the MBA teams worked on were simulations of what research teams, strategic task forces, product-development teams, and consulting teams would do in organizations.

The MBA program at this institution places a large emphasis on teamwork, and much of the curriculum is centered on group projects that span various classes. The teams stayed together throughout the entire first year; thus, the director of the MBA program went to great lengths to equate the teams on a number of factors. This was done because the team's component of this MBA program had suffered from numerous problems that were attributed to team composition (e.g., some teams felt they were at a disadvantage because they lacked specific KSAs that other teams had in abundance). As a result, the program director set the goal of creating teams that were matched on as many individual differences as possible.

All of the teams were mixed-gender, cross-cultural teams whose members had diverse major areas of concentration (e.g., finance, marketing, human resources). The director also used data to compose teams that were similar, on average, on the mean levels of extroversion; conscientiousness; and cognitive ability, as reflected in their GMAT test scores, undergraduate GPA, past work experience, and distribution of undergraduate and MBA majors.

A side effect of matching teams on the mean level of extroversion and conscientiousness was that it created considerable "variance in the variance" within teams on these traits. That is, in order to place someone with a low level of extroversion on a team while creating a mean level of extroversion equivalent to other teams, the person had to be paired with someone high on extroversion. Thus, this team would have high variance in extroversion (i.e., maximal extroversion diversity; Harrison & Klein, 2007). On the other hand, if a team member was at the mean on extroversion, in order to compose a team that was equivalent to the other teams, he or she would need to be paired with other team members who were close to the mean. This creates a team that is low in extroversion variance (i.e., minimal extroversion diversity). Thus, the composition process held the mean constant, but created variability on variance across teams.

The assignment process of approximately matching the teams on the aforementioned variables accomplished the previously stated director's goal. When the research team became aware of this procedure, we recognized the opportunity to treat this as a natural experiment involving extroversion and conscientiousness variance. We solicited and obtained permission to study the performance of these teams on the dependent variables that are of interest to us.

Individual Characteristics

Before the students arrived on campus, they completed the Personal Characteristics Inventory (PCI; Mount & Barrick, 1995), which provided both extroversion and conscientiousness scores. The theoretical range for both conscientiousness and extroversion were 0 to 24, whereas the actual ranges in our dataset at the individual level were 9 to 24 (for conscientiousness) and 2 to 24 (for extroversion). In this sample, the coefficient alphas were .70 and .71, respectively, for extroversion and conscientiousness.

As noted by Harrison and Klein (2007), constructs such as personality are best conceptualized as separation diversity constructs, meaning that they represent differences in opinions or beliefs of team members. Because these constructs can be measured with interval scales, Harrison and Klein suggested that the team-level diversity construct be operationalized using the standard deviation. Thus, we operationalized extroversion variance and conscientiousness variance by taking the standard deviation of each measure.

Team Outcomes

At both the team level and the individual level, there are a multitude of articles espousing different conceptualizations of performance (e.g., Campbell, 1990; Cohen & Bailey, 1997; Levine & Moreland, 1998; Viswesvaran, Ones, & Schmidt, 1996). The most important aspect of these articles is that there are many ways to think of team outcomes, and even more ways to measure them. To focus only on one component of performance is to miss other, relevant outcomes (Beersma et al., 2003). Thus, in an effort to reflect the comprehensive nature of performance, we measure three team performance outcomes that vary along several dimensions, which will be labeled here as *short-term performance*, *long-term performance*, and *teamwork effectiveness*. By using these three specific measures, we will more accurately triangulate the broad construct of team performance. Thus, although we provide independent labels for each variable, we feel that it is most appro-

priate to conceptualize the variables as performance, rather than make specific distinctions between or hypotheses associated with each variable.

First, we measured short-term performance. During the second and third weeks of the first semester of graduate school, the MBA teams worked on a computer simulation as part of a teambuilding class. The task they performed was a modified version of the generic Distributed Dynamic Decision-making (DDD) simulation that was developed for the Department of Defense (Miller, Young, Kleinman, & Serfaty, 1998) for research and training purposes. The version of the simulation that was used in this class was developed for teams of 5 members with no military experience. As the task is described in greater detail in other sources (e.g., Beersma et al., 2003; Humphrey, Hollenbeck, Ilgen, & Moon, 2004), we only provide a brief description here.

The task the participants completed is essentially a computer game in which participants control the flow of resources through a geographic representation on one quarter of the computer screen. Of the team members, four were each assigned one quarter of the screen to defend, while a fifth team member was in charge of the entire screen. In monitoring the geographic space, each team member had the ability to see only a portion of the area that needed to be monitored, although the fifth team member had the ability to see any target that any other team member could see. Because of limited vision of any one member, each team member had to rely on his or her teammates to monitor regions of the space that were outside his or her own quadrant.

The teams played four games across the 2 weeks. Team performance was operationalized in terms of how long, on average, it took for the team to engage specific targets successfully. The score was averaged across the four games and then was rescaled such that higher scores represent faster speeds. The scale was then standardized. Because of the nature of the task, there was no variance on accuracy (cf. Beersma et al., 2003). All teams were able to engage the game accurately; therefore, performance in the task was operationalized as speed.

Second, long-term performance was measured as the level of the group's academic performance over the course of two semesters. Specifically, we measured the average GPA for the team at the end of the first year in the MBA program, and then converted it into a standardized score. Because this study was conducted over a 4-year period with some fluctuations in faculty, course content, and curriculum delivery, we were not able to obtain separate direct data from each course on performance on group versus individual graded events. However, this is an appropriate measure of performance, as the teams were highly interdependent with respect to this criterion for both direct and indirect reasons.

In terms of direct interdependence, much of each individual student's grade was based on group-based coursework for which all of the team

members received the same grade. That is, roughly 25% of their first-year course grade was based on group work. Moreover, even though some of the student's grade was based on events that might be considered to be individual performance events (e.g., tests taken alone), students worked in the same team as formal study groups. Thus, the team also had a strong indirect effect on the individual's performance on independent performance events.

Finally, we measured teamwork effectiveness after the teams had worked together for 5 weeks, using the following five questions that were created specifically for the present study: "The team has its priorities straight in terms of work versus non-work pursuits," "The team is well-structured in the sense that tasks are divided up effectively," "The team develops effective plans for tackling complex assignments," "We have regular team meetings that are efficient and do not waste people's time," and "The team effectively arrives at a consensus about what course of action to pursue." All team members responded to the questions on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

This scale demonstrated adequate reliability ($\alpha = .86$). We then tested the appropriateness of aggregation. The ICC(1,k) for this measure was .28, $F(55, 233) = 3.01$, $p < .01$; while the ICC(2,k) was .67; and the r_{wg} was .88. As the ICC was significant and the r_{wg} was high, we concluded that it was appropriate to aggregate the scale.

Control Variables

We included four control variables in our analyses. First, scholars have urged that the within-group mean on characteristics be controlled for before testing diversity relationships (Harrison & Klein, 2007). Although the teams were approximately equal on the mean levels of both extroversion and conscientiousness as a result of the MBA program procedures, we still wanted to control formally for the average level of these personality traits so as to eliminate alternative explanations. Thus, we operationalized extroversion mean and conscientiousness mean by taking the mean of each measure.

Second, we controlled for the cognitive ability of the team. It has been well documented that cognitive ability is a strong predictor of individual and team performance. Moreover, as our study takes place in a scholarly program, it would not be surprising to find that cognitive ability predicts performance in this context. We measured cognitive ability with the GMAT scores of the team members, which we averaged to create a team score.

Third, we controlled for class year. As the data were collected over a 4-year period, one may be concerned that any given class would behave

differently. We operationalized class year by creating three dummy codes representing Year 1, Year 2, and Year 3 (where zeros on all three variables represent Year 4).

Final Sample

One of the goals of this study was to study teams that were seeded in the manner discussed by Humphrey et al. (2007). However, because the MBA program was trying to match teams on nine characteristics, they did not perfectly emulate the seeding process. One implication is that there initially was a significant negative correlation between conscientiousness mean and conscientiousness variance at the team level. Essentially, as in most MBA programs, MBA students predominantly have high levels of conscientiousness, which resulted in a skewed dataset at the individual level.

Kerlinger (1986) noted that in situations in which variables are correlated .50 or higher, matching can be particularly beneficial. Matching is essentially trying to find two subjects (e.g., teams, individuals) that are the same level on one independent variable, but different on a second independent variable. Whenever a match is found, the two cases are included in the dataset. If a match cannot be found, the case is removed from the dataset. The advantage of this process is that it allows one to control for extraneous variance caused by a specific variable. Thus, in an effort to correct the initial concern (i.e., the large negative correlation between conscientiousness mean and conscientiousness variance), we applied a matching procedure to our dataset.

Following the guidelines set forth by Kerlinger (1986; Kerlinger & Lee, 2000), we enacted the matching procedure as follows. First, we sorted the dataset based on the mean level of conscientiousness. We then examined each case to see if we could find a matched case with the same mean level of conscientiousness, but a different level of conscientiousness variance. If we found a matched pair, the pair was included in the dataset. If we could not find a matched pair, the case was dropped from the dataset. This process resulted in us finding 27 matched pairs of cases, which meant that we were able to keep 54 teams in the dataset. However, we were not able to find matches for 23 teams. These unmatched cases were essentially the highest and lowest mean levels of conscientiousness.

The result of this process is that we approximated what would have occurred if the seeding procedure had initially been enacted perfectly. Because of the variance on mean levels caused by the skewed dataset, the only way to approximate the seeding process is to truncate the dataset based on the independent variable.

It is very important to note that the matching procedure does not involve the dependent variables at all. That is, we never looked at relationships between conscientiousness and any of the team performance variables when enacting the matching procedure. The teams removed from the dataset were removed solely because they could not be matched, not because of anything to do with their relationship with the dependent variables.

Results

Table 1 presents the means, standard deviations, and intercorrelations between all variables. All hypotheses are analyzed by performing a three-stage hierarchical ordinary least squares regression. On the first step of the regression, we entered our control variables (i.e., extroversion mean, conscientiousness mean, cognitive ability, class year). On the second step, we entered both extroversion variance and conscientiousness variance. Finally, on the third step, we entered the interaction between extroversion variance and conscientiousness variance.

Table 1

Means and Intercorrelations

Variable	M	SD	1	2	3	4	5	6	7
1. Cognitive ability	0.00	1.00	—						
2. Extroversion mean	15.87	2.22	−.15	—					
3. Conscientiousness mean	20.50	0.64	−.14	−.01	—				
4. Extroversion variance	4.15	1.86	.22	.00	−.14	—			
5. Conscientiousness variance	3.23	1.21	−.12	.01	−.22	.25	—		
6. Short-term performance	0.00	1.00	.15	−.25	.16	.12	.03	—	
7. Long-term performance	0.00	1.00	.51	−.05	.11	.21	.04	.26	—
8. Teamwork effectiveness	4.01	0.46	.03	.12	−.02	−.21	−.16	.18	.19

Note. $N = 54$. Correlations greater than .26 are significant at $p < .05$. Correlations greater than .34 are significant at $p < .01$.

We first examined our control variables. Because teams were essentially equated on the mean levels of extroversion, conscientiousness, and cognitive ability, we did expect to find significant results. As shown in Table 2, extroversion mean was not significantly related to short-term performance ($\beta = -.24$, *ns*), long-term performance ($\beta = .03$, *ns*), or team effectiveness ($\beta = .13$, *ns*). Conscientiousness mean did not significantly relate to short-term performance ($\beta = .21$, *ns*), long-term performance ($\beta = .19$, *ns*), or teamwork effectiveness ($\beta = -.01$, *ns*). Cognitive ability did not significantly relate to short-term performance ($\beta = .14$, *ns*) or team effectiveness ($\beta = .05$, *ns*); however, it significantly related to long-term performance ($\beta = .54$, $p < .01$). Finally, class year did not significantly enter in any of the equations.

Hypothesis 1 predicted that maximizing extroversion variance would increase team performance. As seen in Table 2, extroversion variance did not have a direct effect on short-term performance ($\beta = .10$, *ns*), long-term performance ($\beta = .09$, *ns*), or teamwork effectiveness ($\beta = -.19$, *ns*). Therefore, the data do not support Hypothesis 1 for any measure.

Hypothesis 2 predicted that minimizing conscientiousness variance would increase team performance. As seen in Table 2, conscientiousness variance did not have a direct effect on short-term performance ($\beta = .05$, *ns*), long-term performance ($\beta = .12$, *ns*), or teamwork effectiveness ($\beta = -.13$, *ns*). Therefore, the data do not support Hypothesis 2.

Our final hypothesis (Hypothesis 3) predicted that extroversion variance and conscientiousness variance would interact. We first examined whether the interaction influenced short-term performance. As seen in Table 2, the interaction between extroversion variance and conscientiousness variance significantly impacted short-term performance, $t(44) = -2.47$, $p < .05$ ($\Delta R^2 = .10$). We then plotted this interaction. As seen in Figure 1 and as predicted, the highest performing teams were those who had high extroversion variance and low conscientiousness variance.

We then examined the interaction with long-term performance. As can be seen in Table 2, the interaction between extroversion variance and conscientiousness variance significantly impacted long-term performance, $t(44) = -2.34$, $p < .05$ ($\Delta R^2 = .07$). We then plotted this interaction. As seen in Figure 2, the highest performing teams were those that had high extroversion variance and low conscientiousness variance.

Finally, we examined the interaction with teamwork effectiveness. As indicated in Table 2, the interaction between extroversion variance and conscientiousness variance did not significantly impact teamwork effectiveness, $t(44) = -1.42$, *ns* ($\Delta R^2 = .04$). Although the interaction is not significant for this performance metric, the pattern of results is fairly consistent with the other outcomes. Taken as a whole, the data provide support for Hypothesis 3.

Table 2

Regression Results

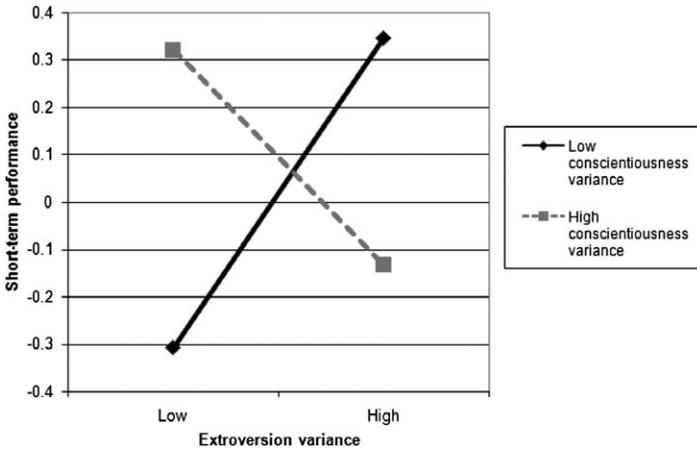|	Short-term performance				Long-term performance				Teamwork effectiveness			
	β	ΔR^2	ΔF	Total R^2	β	ΔR^2	ΔF	Total R^2	β	ΔR^2	ΔF	Total R^2
Step 1												
Extroversion mean	−.23	.11	1.97	.11	.03	.29**	6.93	.29	.13	.02	0.29	.02
Conscientiousness mean	.18				.19				−.01			
Cognitive ability	.14				.54**				.05			
Step 2												
Extroversion variance (EV)	.11	.02	0.51	.12	.09	.03	1.07	.32	−.21	.06	1.65	.08
Conscientiousness variance (CV)	.06				.14				−.11			
Step 3												
EV × CV	−.30*	.07*	4.23	.20	−.29**	.07*	5.39	.39	−.23	.04	2.35	.12

Note. $N = 54$.
*$p < .05$. **$p < .01$.

Figure 1. Interaction between extroversion variance and conscientiousness variance on short-term performance.
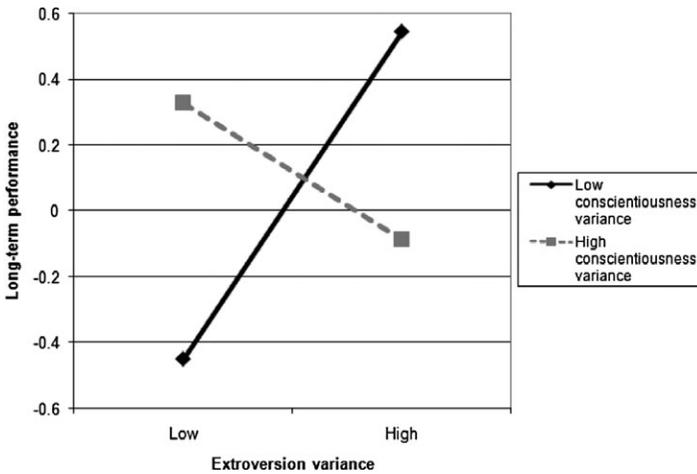

Figure 2. Interaction between extroversion variance and conscientiousness variance on long-term performance.

Discussion

Although there is considerable literature documenting the effects of personality on individual performance (Barrick, Mount, & Judge, 2001), research at the team level has developed less quickly. Empirical research has

documented that personality can impact team performance (Bell, 2007), however, researchers have not yet adequately examined how the variance on these traits (i.e., how diverse the teams are on the personality characteristics) influences team performance (Humphrey et al., 2007). Building off of the theoretical work of Humphrey et al., we used the theories of complementary and supplementary fit to study how variance on extroversion and conscientiousness individually and cooperatively impact team performance.

Study Contributions

The present study makes conceptual, methodological, and practical contributions to the literature on personality configurations in teams. Conceptually, we have provided the first empirical test of the interaction between complementary and supplementary fit. We drew from the concepts of role differentiation and goal congruence to suggest mechanisms through which extroversion variance and conscientiousness variance would impact team performance. Consistent with our predictions, the highest level of performance was found in teams that had both high extroversion variance (i.e., high complementary fit) and low conscientiousness variance (i.e., high supplementary fit). We speculated that this would be the best configuration because it promotes role differentiation in a context in which there is a high degree of goal congruence. That is, although role differentiation is generally a good practice in teams, this is especially the case when all members agree in terms of aspiration levels and expectations for effort.

The nature of this interaction effect between the two types of fit was so strong, however, that our predictions regarding the main effects for fit on either dimension were not substantiated. That is, the beneficial effects of a supplementary fit on extroversion were neutralized by a bad complementary fit on conscientiousness; and the beneficial effects of a complementary fit on conscientiousness were neutralized by a bad supplementary fit on extroversion. This crossed interaction was partially attributable to the positive performance exhibited by the groups that were low on both aspects of fit. Whereas the high-fit/high-fit teams were expected (and found) to perform at a high level because of the synergy created from the presence of fit on both dimensions, the low-fit/low-fit condition performed significantly better than expected. That is, we expected low role differentiation to offset the negative impact of low goal congruence, as low role differentiation allows for better monitoring of free riders (Hollenbeck et al., 2002). In addition, we expected a drop-off in performance because of the need to dedicate cognitive resources to monitoring team members. Yet, we were still surprised to see that the low-fit/low-fit configuration performed at an above average level (in comparison to all teams in the sample).

Methodologically, this study is the first to maximize variance systematically through an explicit seeding process (Humphrey et al., 2007). Several papers have studied the effect of variance on performance (e.g., Barrick et al., 1998; Barry & Stewart, 1997; Kichuk & Wiesner, 1997; Kristof-Brown, Barrick et al., 2005; Neuman et al., 1999); however, these studies had moderate levels of diversity (Harrison & Klein, 2007) because they did not maximize variance, resulting in suboptimal tests of the variance–performance relationship (McClelland, 1997). Given suboptimal tests, it is difficult to find consistent, strong results across studies (see Bell, 2007).

One challenge that organizations may face in implementing the seeding process is a restricted range on variance from which to staff teams. For example, organizations are likely to become more homogeneous over time as a result of the tendency of organizational members to attract and select individuals who are similar (Schneider, 1987). A restriction in range could limit the ability of the organization to create teams with extremely high levels of extroversion variance, which is likely to reduce the effectiveness of this intervention. However, even mature organizations are still likely to have a large variance on personality traits across members (Ployhart, Weekley, Baughman & 2006). Organizations that figure out how to leverage organizational diversity, in whatever form it exists, are likely to see the highest levels of performance (van Knippenberg & Schippers, 2007).

In terms of practical significance, we are among the first to use simultaneously the three different types of performance metrics that serve as the most commonly employed operationalizations in the research literature. This is unique, relative to most studies that examine only one of the three metrics. Moreover, in addition to these results conceptually extending the literature on complementary and supplementary fit, they provide empirical support documenting the importance of the seeding process for promoting both kinds of fit.

Limitations and Directions for Future Research

The results of our research suggest several future opportunities. First, although we examined a number of different team outcomes in this study, we did not directly assess any mediators. We were limited in this context by the number of teams we could obtain, which placed strict limitations on how many variables we could measure. We focused our limited resources on assessing a number of different performance outcomes because we believe that at this early stage of the research, it is most critical to establish whether or not effects exist at all, relative to an in-depth examination of the mediators of these effects. Clearly, in generating these predictions, we alluded to many potential mediators that were not assessed directly, including role differen-

tiation, goal congruence, communication efficiency, free riding, task conflict, helping behavior, emergent leadership, and cohesiveness. Now that we have demonstrated an interaction between extroversion variance and conscientiousness variance on different performance measures, the next step is to assess more fully the mediation (i.e., why) question to determine which of these many potential explanations most parsimoniously explains the robust effects documented here.

Second, all of the participants in this study were MBA students at a university. There could be concern that these participants (and this setting) were in some way different from both SMTs in general, and the performance context that SMTs generally work in within organizations. Because of this, there could be concern that the data from our studies would not generalize to these other populations. On the one hand, this is a valid criticism in the sense that we did not randomly select this group of participants from any meaningful population; hence, we cannot generalize these findings. However, we believe that because of the highly meaningful appraisals associated with performance in the program (i.e., grades); the large component of performance explicitly identified as being team-based; and the long-term, highly intensive nature of the teams at this university, the teams in our study were highly motivated to perform. Certainly, there was nothing inherent in the theories or literature reviewed to support the hypotheses that would have suggested the ideas would not hold in this context. So, at the very least, this was a valid context to test these ideas.

Third, this study was part of a natural experiment that occurred in a real-world context. Hence, the research team had a limited impact on the formal design of the study. On the one hand, from an experimental design perspective, this study possesses strong internal validity, as teams were approximately matched at the mean on nine different characteristics. This eliminated numerous alternative explanations (e.g., cognitive ability was removed as an explanation of inter-team variance on performance).

However, although we benefited from the MBA program's manipulation, we were constrained by these same factors. For example, because the teams were purposefully staffed so that each team had approximately the same mean level on a number of variables, we could not make predictions about the effects of the mean levels of traits on team outcomes. Moreover, because the MBA program chose the specific variables to be matched, we were constrained by only being able to study extroversion variance and conscientiousness variance. Finally, because the seeding process was utilized to maximize variance, we were only able to compare high-variance teams to low-variance teams with a moderate mean level of extroversion or conscientiousness. That is, we did not have access to teams with low variance and either high or low means on either extroversion or conscientiousness.

Fourth, our performance measures did not perfectly capture the constructs we were interested in measuring. More specifically, the long-term performance measure clearly had contamination in it, as only 25% of the performance was directly attributable to the team because of team assignments. Although the results and interaction plot for the long-term performance measure paralleled the short-term performance measure, it is important to interpret the specific results for this variable cautiously.

Fifth, we did not specifically examine the role of task type or interdependence in our study. This may be problematic, as past research has noted that task type can moderate the relationship between group inputs and outcomes (McGrath, 1984; Strauss & McGrath, 1994). For example, for teams that only perform simple disjunctive tasks (i.e., a problem-solving task with an objectively correct answer; Steiner, 1972), diversity may be less important than the maximum level of a specific characteristic in a team (Barrick et al., 1998; LePine et al., 1997). That is, because the smartest member can solve the problem alone, the characteristics of the rest of the team members are unimportant for this specific task.

However, we believe that because the teams performed numerous tasks over the course of our study, we cannot and should not utilize a task-based system for making composition and compilation decisions. Moreover, as our results were consistent across both the short- and long-term performance contexts, which had the teams performing highly different tasks, we feel mildly confident that our results will generalize to additional tasks. Nonetheless, we encourage researchers to examine task type further when studying P-T fit interactions.

Finally, our theoretical model was bounded in the domain of self-managed teams, specifically because role differentiation based on leadership emergence plays a critical part. Because of this, we felt that self-managed teams (i.e., teams without formal leaders) would be most likely to be affected by extroversion variance. However, extroversion and conscientiousness variance may be relevant to additional team types, and the theoretical rationale may remain appropriate in these other types of teams. For example, even teams with formal leaders have been known to produce additional leadership roles, depending on the specific task at hand or on the strength of the formalized leader. Future research is encouraged to examine the generalizability of our findings beyond self-managed teams.

In this study, we drew upon theories of complementary and supplementary fit to examine the relationship between extroversion variance, conscientiousness variance, and team performance. Our results suggest that the configuration of personality in the team can impact team performance in complex ways, such that neither extroversion variance nor conscientiousness variance exhibited a direct impact on team performance in our dataset. We

encourage other researchers to replicate and expand upon our findings. Although this is but one step in the process of examining team composition using personality, we believe that it provides a unique approach to this endeavor.

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