

1-1-2012

# Investigating a leadership fix for a suboptimal mix: a transformational leadership intervention for teams with incompatible personalities

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**INVESTIGATING A LEADERSHIP FIX FOR A SUBOPTIMAL MIX: A  
TRANSFORMATIONAL LEADERSHIP INTERVENTION FOR TEAMS WITH  
INCOMPATIBLE PERSONALITIES**

by

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**DISSERTATION**

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

**DOCTOR OF PHILOSOPHY**

2012

MAJOR: PSYCHOLOGY

(Industrial and Organizational)

Approved by:

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## ACKNOWLEDGMENTS

I would like to thank my advisor, Dr. Marcus Dickson, for his advice over the years and his support with my dissertation and professional endeavors. Over the last six years he has helped me to grow and to learn, and most importantly to take risks. He has led by example through his own growth and I am only beginning to realize how much I have learned from Dr. Dickson during my time at Wayne State. I am also grateful to my committee members, Dr. Boris Baltes, Dr. John Arnold, and Dr. Eric Kearney. Their guidance and support throughout the course of this journey has been wonderful.

I would also like to thank my Mother, Victoria Weller and my Grandmother, Janet Thompson. Together they worked tenderly and tirelessly to provide me with all of the love and support I could possibly need in this life.

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## Introduction

According to Kozlowski and Bell (2003), work teams are composed of two or more individuals who (a) assemble to accomplish tasks which are important to the organization in which they operate, (b) work towards a shared goal, (c) interact socially to coordinate effort, (d) have tasks which are to some extent dependent upon other group members' tasks, (e) establish and follow standards and conditions under which to operate, and (f) operate in a context which is broader than the team itself, which sets boundary conditions and standards for performance (Alderfer, 1977; Hackman, 1987; Hollenbeck, Ilgen, Sego, Hedlund, Major, & Phillips, 1995; Kozlowski, Gully, McHugh, Salas, & Cannon-Bowers, 1996; Guzzo & Dickson, 1996; Kozlowski, Gully, Nason, & Smith, 1999; Salas, Dickinson, Converse, & Tannenbaum, 1992). As Meyerson et al. (1996) argued, the success of both temporary groups or dyads, such as those under investigation in the current study, is dependent on the ability to engage in competent, cooperative, and coordinated activity.

In addition, studies have shown that conflict within both types of task-oriented groups (temporary groups as well as dyads) can inhibit trust, trigger negative emotion, increase uncertainty, personalize disagreements, and inhibit problem solving (De Dreu & Van Vianen, 2001; Jarboe & Witteman, 1996; Simons & Peterson, 2000). This fundamental stream is consistent across both the teams and dyads literature, and is the focus of the current study. To the first point regarding the team composition, the manner in which a team is assembled can and does affect performance. Discussion of team composition naturally warrants discussion of diversity, as teams are often composed of

people with a multitude of personal characteristics. Indeed, organizations continue to become more global, and as demographic change begins to alter workforce composition in virtually every developed country, diversity is likely to remain an important issue for researchers and practitioners for many years to come (e.g., Ilmarinen, 2006; Vaupel & Loichinger, 2006). However, to date the extant literature has been unable to pinpoint generalizable effects of diversity in teams that apply across contexts (Stewart, 2006; Van Knippenberg & Schippers, 2007). As Kearney and Gebert (2009) note, this has led some authors to purport that all forms of diversity are capable of causing both positive and negative effects on team performance (van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004). Kearney and Gebert (2009) also note that further research is needed to examine how variations in the configuration of worker characteristics can affect team outcomes.

Research on diversity has historically focused on personal characteristics that follow demography. However, more recently this research has also led to the development of theories that go beyond examining diversity in terms of age, race, and gender. Indeed diversity research of the last two decades has seen a shift toward including more latent constructs such as personality in order to examine their role in team performance (Barrick, Stewart, Neubert, & Mount, 1998; Harrison, Price, Gavin & Florey, 2002). With regard to personality, which is considered to be fundamental to effective collaboration in teams, the increased attention has not necessarily translated into a clear understanding of the ways in which personality diversity or similarity leads to high team performance.



Several models have touted the benefits of complementarity (heterogeneity) suggesting that diversity has a positive influence on team performance (e.g., Kristof-Brown, Barrick & Stevens, 2005), while other models have purported the benefits of supplementarity (homogeneity) within teams, suggesting that similarity may have a positive influence on team performance (see Barrick et al., 1998; Barry & Stewart, 1997; Neuman & Wright, 1999). Additionally, there are yet further perspectives, which demonstrate that both ends of the homogeneity-heterogeneity spectrum of team personality can be detrimental to performance depending on the conditions, or moderators involved (Steward & Barrick, 2004). This developing complexity has lead some researchers to begin reframing the diversity research question, focusing more specifically on particular levels of team composition variables (configurations) and their effects on team performance outcomes.

Indeed, as research on the team diversity issue has accumulated, it has become apparent that both diversity and similarity can be important factors in determining team based outcomes, and that these effects are strongly dependent upon several other variables such as the context of the team, the type of diversity involved, as well as the type of task performed (see van Knippenberg & Schippers, 2007). In recent years, there has been a shift toward determining the situational conditions or moderators that may contribute to positive effects for homogenous and heterogeneous teams.

Guzzo and Dickson's (1996) review focusing on work teams has also moved this discussion forward by clarifying some of the definitional difficulties that had slowed research and created confusion in past literature. Some of the more promising

moderators include the concept of diversity mindsets, which is how people view the potential benefits of diversity within the team (van Knippenberg, van Ginkel, Homan, Kooij-de Bode, 2005), shared mental models, which is how team members form a shared way of thinking about and solving problems (Cannon-Bowers & Salas, 1990), and task type, which is the nature of the work being performed (e.g., a highly collaborative task; De Dreu & Weingart, 2003). The latter is the focus of the current research. It is the proposition of the current study that the nature of the task is an important moderator of personality on team performance.

#### Personality and Teams in the Modern Workplace

Personality has long been considered a critically important construct in organizational research, consistently correlating with performance in a broad range of contexts (Schmidt & Hunter, 1998). However, personality diversity as it pertains to teamwork has seen particularly interesting developments in the work of the past several years as researchers have begun to realize that changing the levels of analysis from the individual to the group level also changes the proportion of performance variance accounted for by certain personality variables (Barrick, Stewart, Neubert and Mount, 1998). That is, personality variables that predict job performance at the individual level become more or less predictive when the level of analysis is changed to the group level, presumably due to the interpersonal skills requisite of team-based task work.

This is an important topic for researchers because teamwork in organizations is becoming more common than ever before as human resource specialists are increasingly turning to teams to accomplish important tasks (Ilgen, 1999). This comes

as little surprise with globalization and lightspeed information exchange defining 21st century commerce. These trends have resulted in a competitive marketplace that is becoming evermore interconnected and dynamic. The nature of tasks such as strategic planning, innovative product development, and production management have similarly adapted to become more dynamic and responsive. What this means for organizations is excellent cross-functional collaboration is required to arrive at solutions within a competitive timeframe.

To accomplish this, organizations are forced to assemble project teams with increasingly diverse membership (Lawler, Mohrman, & Ledford, 1995). What this often means is that teams of highly intelligent and qualified people are assembled based on knowledge, skills and abilities ('KSAs') that the members can contribute. Unfortunately, this can result in oversight of other ('O') characteristics that also contribute to effective team performance (e.g., personality). This notion is particularly relevant in innovation work teams that are most often composed of highly qualified and intelligent people, who may not necessarily possess the ideal personality profiles required of such collaborative work.

An increasingly dynamic professional landscape means that a growing number of workers are finding themselves in these innovation-related work groups (Kozlowski & Bell, 2003). Indeed, the demand for innovation on companies and their innovation teams is greater than ever before, and with the aforementioned rate of technological change and the forces of globalization, this trend is likely to continue (e.g., Anderson, De Dreu, & Nijstad, 2004; Brown & Eisenhardt, 1995). Thus, it is important that

organizations support these teams by providing the internal conditions necessary to remain competitive (Oldham, 2002).

This raises a number of closely related research questions. The first of which is, how does personality (namely problematic personality combinations) affect innovative team performance, i.e., behaviors that, through skilled and careful cross-functional collaboration, lead to the realization of new and improved products, practices, and/or services (Amabile, 1997). Second, what implications do problematic personality combinations in work teams have for leadership strategies? How can leaders support the collaboration and subsequent performance of these teams? Under what conditions does leadership positively influence effective team collaboration and performance when group members' personalities are dissonant? Most individuals who have collaborated in project teams or needed to work with a partner on some task within their employment capacity have had an experience where incompatible personalities within the group have negatively affected performance. What the current study intends to uncover is the effect that transformational leadership may have on reducing the negative impact that personality dissonance can have on highly collaborative task outcomes.

#### Innovation and Collaboration

Innovation as it occurs in organizations is inherently highly collaborative since cross-functional team members are required to share their unique knowledge with the group in a skilled and coherent manner. This allows teams to bring an idea from inception to fruition by identifying what each person knows, and where the gaps in knowledge are with each constituent member. Then group members can then move

beyond their shared knowledge to begin combining their unique knowledge to fill these gaps. In this sense, innovation can be conceived of as a conjunctive task as opposed to a disjunctive task (De Fruyt & Salgado, 2003; Steiner, 1972).

Disjunctive tasks require only one member to perform well in order to achieve the objective (e.g. solving a problem where everyone is privy to similar information), whereas conjunctive tasks require a base level of performance from each team member in order to accomplish the shared objective (e.g. each team member is privy to unique information and must make others aware of this information for the problem to be solvable). This distinction from disjunctive tasks is important because with disjunctive tasks, team members are all privy to the same information and are not required to parse apart what is known from what is not known by other team members. In this sense, disjunctive tasks require somewhat less skilled collaboration and communication than conjunctive tasks in order to achieve a common goal (Barrick et al., 1998; De Fruyt & Salgado, 2003).

Barrick, Stewart, Neubert and Mount (1998) have shown that Steiner's (1972) task taxonomy regarding conjunctive and disjunctive tasks has important implications for team composition in that the type of task required of the group should inform which personality traits are considered in the team construction process. They emphasize those personality variables, which are particularly predictive of performance at the individual level change when the level of analysis is changed to the group level and that this is related to the level of interdependence of the task work. Examples of this include conscientiousness being highly predictive at the individual level, but extraversion being

highly predictive at the group level (De Fruyt & Salgado, 2003). This is expected to be particularly true for conjunctive group-work such as occurs in innovation teams where performance outcomes are highly collaboration-dependent.

Personality has its implications for work in teams, especially when the tasks that are required of the teams are highly collaborative in nature. Never before have the social demands of the workplace been greater than following the recent sharp rise in the use of work teams to achieve organizational goals. This rapid increase in teamwork within organizations has led to renewed attention and research by psychologists on teams and groups (Guzzo & Dickson, 1996), and also renewed interest in the ways in which personality can affect these dynamics (see Schneider & Smith, 2004). Within this context, a theory known as the Big 5 factor model of personality (Costa & McCrae, 1992), has played a critical role in determining the correlates and antecedents to effective team performance.

### Personality and Team Configuration

The examination of personality diversity in groups and teams is not new. However, specifically examining conflicting personality combinations that are known to cause performance problems and reduce productivity is relatively new. Much of the research on team diversity has focused on demographic characteristics (Williams & O'Reilly, 1998; Pelled, 1996). However, there has been an emergence of a parallel stream of research, which examines group heterogeneity in constructs that are relatively less apparent such as ability, attitudes, values, and personality (e.g., Barrick et al., 1998; Harrison, Price, Gavin & Florey, 2002; Jackson & Ruderman, 1995; Jehn,

Chadwick & Thatcher, 1997). In comparison to diversity that is observable or based on surface characteristics, these are considered latent or 'deep-level' psychological diversity characteristics (Harrison et al., 2002, Jackson & Ruderman, 1995; Mohammed & Angell, 2004).

As research moves beyond studying diversity in terms of visible characteristics of group members, more attention is being paid to deep level psychological diversity characteristics. However, when entering this stream of research unguided it is easy to become lost in a sea of potential variables and constructs deserving of exploration. Pelled (1996) provides some structure to the search for relevant constructs by emphasizing the importance of job-relatedness. Pelled (1996) notes that the variable(s) under investigation should be essential to effective team performance in a given context. Following the logic of Pelled's (1996) propositions, the current study investigates extraversion since it is highly implicated in effective team performance (Barrick et al., 1998) due to the extensive and skilled communication required of team members. One of the aims of the current research is to evaluate this specific 'deep-level' construct, and how dissonant team composition based on this construct can affect team performance. Potential implications for leadership intervention are also addressed.

### *Extraversion*

Extraversion refers to a proclivity toward social interaction typified by behavior that is assertive, active, and talkative. In addition, this constellation of behaviors often translates into social dominance (Costa & McCrae, 1992; John & Srivastava, 1999). Furthermore, it is very likely that the configuration of extraversion (McCrae & Costa,

1997) within work teams plays a vital role in determining performance due to its inherently interpersonal nature. As Barrick and Mount (1991) note, extraversion has been found to be particularly relevant when a high degree of social interaction is required of a particular task or set of tasks within an organization. With regard to the study of personality constellations within work teams, extraversion has in recent years become one of the most well established constructs in terms of its effects on team performance (Barry & Stewart, 1997; Neuman et al., 1999; Humphrey, Hollenbeck, Meyer & Ilgen, 2007).

However, historically this trait has been examined at the aggregate mean level or group level (e.g., Neuman & Wright, 1999; Humphrey et al., 2007). Because extraversion is inherently an individual trait, one of the things that the current study intends to examine is how the arrangement of individual levels of this trait affect team performance. Although extraversion is quite clearly implicated in team performance, the next question is how homogeneity or heterogeneity within teams on this trait can affect team performance. Kristof-Brown et al. (2005) partially address this notion with the concept of complementary or supplementary fit (Humphrey et al., 2007). However, it is yet unclear how within team variance on this trait can affect collaborative outcomes. Interestingly there has been some evidence to suggest that when two members of a dyad are both highly extraverted this may inhibit performance (Barry and Stewart, 1997). It is possible that this may be caused by competing opportunities to speak and express opinion, relative to a complementary extraversion combination (high extraversion matched with low extra-version) where the verbal communication would



likely be dominated by the extraverted individual. Indeed extraverted people tend to be dominant and assertive (Costa & McCrae, 1992). For a team to function effectively on collaborative tasks this necessitates the complementary role of a less dominating and relatively more introverted team member. This notion is supported by social psychological research on status acquisition and power structure, which indicates that conflict can arise when there is an excess of dominant trait bearing individuals within a group (Mazur, 1973).

This raises an interesting point pertaining to team composition based on extraversion. By definition, extraverts are likely to be thoroughly engaged in work team discussions (Littlepage, Schmidt, Whisler, & Frost, 1995). Thus, one would assume that introverts might not perform as well if matched with other introverts, since this might result in limited information exchange. Similarly, extraverts matched with other extraverts might also be a less than optimal configuration since there may be (a) competition to remain socially dominant, and/or (b) verbose discussion of matters that are tangential to task performance (Mohammed & Angell, 2004). Supporting this notion, Barry and Stewart (1997) found a curvilinear relationship between extraversion within teams and team performance. Their study demonstrated that teams that were composed of 20-40 percent highly extraverted team members outperformed teams that had both fewer than 20 percent and greater than 40 percent highly extraverted members. What this study suggests is that there is an optimal number of extraverted team members of which a team can be composed. It also suggests that a team

composed solely of extraverts may be a problematic 'configuration' (Moynihan & Peterson, 2001), although this was not tested directly.

Moynihan and Peterson (2001) proposed the configuration approach to explain how certain arrangements of traits within a team can affect team outcomes. The configuration approach is consistent with the notion there are configurations or group composition combinations for certain traits that are more problematic than others are. It also assumes that this varies depending on the type of trait under consideration. This is also consistent with the Kristof-Brown et al. (2005) proposition that complementarity and supplementarity or 'fit' of a particular individual with similar others will depend on the trait. The current study intends to extend the reach of this theoretical framework by taking the configuration concept one step further in that it also examines how trait configurations interact with the nature of the task to affect team performance.

The aim of the present study is to examine extraversion in a non-compensatory fashion. That is, each member of the group met a prespecified level of extraversion (at least one SD above the mean). Thus, a high level of extraversion for one team member cannot compensate for another member's level in order for the group to be classified as highly extraverted. Rather, both members of the dyad must be high on levels of the trait for the team to be meet the requirements of a highly extraverted dyad (HED). Furthermore, individuals who were at least one standard deviation above the mean were matched (Humphrey, Hollenbeck, Meyer & Ilgen, 2007), thus ensuring maximum extraversion within teams. This approach to examining high trait extraversion and the impact it has on team performance represents an advancement over previous research

in that prior studies have implemented team composition processes that are problematic due to issues of range restriction associated with random sampling (Humphrey et al., 2007; McClelland, 1997). Furthermore, this is consistent with Chan (1998) who notes that in dispersion composition models such as the one used in the current research, within-group variance should be used as the operationalization of the purported group-level construct.

McClelland (1997) notes that extant research investigating personality effects on team performance has systematically underestimated effect sizes. When a researcher expects a linear relationship between personality and performance, it does not make sense to randomly select a sample from a population that is normally distributed on the personality variable of interest. This is because the shape of the distribution reduces the likelihood that individuals were selected from the tail ends (exceeding  $\pm 1SD$ ).

In other words, random sampling as has been systematically conducted in past literature results in a smaller number of participants being selected at the far ends of the scale. This results in the testing of relationships with a range-restricted sample (Humphrey et al., 2007). McClelland (1997) clearly outlines the mathematical basis for this series of propositions, showing exactly how research methods employing this methodology fail to capture the magnitude of effect sizes that would have been possible with methods allowing more control over within and across team variance. For a detailed description of this principle of controlled variance in team composition on the basis of personality, see Humphrey et al. (2007). In sum, the current study represents the first attempt of which the author is aware, to empirically test [via matching of

conflicting personality traits] whether matched high levels of extraversion play an important role in determining team performance, especially on collaborative or conjunctive tasks wherein extraverted behaviors are essential to task performance.

As previously noted, innovation teams are a situation where collaborative or conjunctive tasks must be undertaken to bring an idea from inception to fruition. That is, individuals in teams must take their ideas and combine their unique perspectives to bring an idea to the stage of implementation. They go through the process of idea generation and follow through to idea implementation with different group members coming from different business units bringing their own expertise (Janssen, Schoonebeek & van Looy, 1997). According to Steiner's (1972) taxonomy of organizational task work, innovation is very much a conjunctive task, and is the inspiration for the current study on how these types of conjunctive innovation teams are affected by variables such as team composition and leadership.

As Steiner (1972) notes, it is important to consider task type taxonomies such as conjunctive and disjunctive tasks. The current aim is to bring this a step further by investigating whether personality can affect performance on these various task types. That is, innovation teamwork may be a form of conjunctive collaboration that is affected by incompatible personality types due to the high level of interactive skill required. This would likely be relatively less of a problem for tasks that are not as dependent upon careful and skilled information exchange and simply require collaboration in a much less organized fashion (e.g., disjunctive tasks).

Furthermore, past studies have shown that the effects of team composition variables are more likely to surface when there are high levels of outcome interdependence (Schippers, Den Hartog, Koopman, & Wienk, 2003), task interdependence (Jehn, Northcraft, & Neale, 1999) and when tasks are complex rather than routine (Pelled, Eisenhardt, & Xin, 1999; Kearney & Gerbert, 2009).

*Hypothesis 1a:* Given no leadership intervention, there is a negative effect for extraversion such that high dyadic extraversion inhibits team performance. That is, highly extraverted dyads (HEDs) underperform relative to randomly assembled dyads on both disjunctive and conjunctive tasks.

*Hypothesis 1b:* Given no leadership intervention, the negative effect of high dyadic extraversion on performance is greater for conjunctive tasks than for disjunctive tasks.

#### Leadership and Team Composition

Extant research suggests that it is often important for leaders to pay special attention to team composition and how team members 'fit' together (Cable & Edwards, 2004; Kristof-Brown, Barrick & Stevens, 2005; Muchinsky & Monahan, 1987; Tsui & O'Reilly, 1989). Following from this logic, and with the knowledge one cannot control for all moderators of team performance in the team composition phase, it may similarly be wise to investigate potential tactics that leaders may employ to reduce the impact that team composition factors such as personality and demography have on team performance. In this way, leaders may be able to mitigate any negative performance effects due to conflicting personality characteristics before they have a chance to

significantly affect team performance. This is a research question that researchers and practitioners alike are aware may be useful in organizations.

However, to date relatively little attention has been paid to examining potential actionable solutions for the reduction of team performance inhibitors. Reduction of team performance inhibitors could be likened to that of a washing machine in one's home, which has too much vibration during operation due to poor fit between its constituent parts. One option would be to create a better fit between the parts by deconstructing the machine and reassembling it with new, better fitting parts. A second option would be to place a rubber buffer under its base that could simply absorb the machine's vibration resulting in smoother operation. In the case of the current research, leadership behavior could be conceived of as the buffer that causes the constituents of organizational teams to operate more smoothly together when their fit is less than ideal. The current investigation represents one method to measure the efficacy of such an approach by testing a specific set of leader behaviors against a specific driver of performance inhibition (in this case high extraversion).

As noted, the current study attempts a potentially new approach to considering personality as it pertains to team composition, which is to look directly at commonly occurring conflicting personality combinations assembled into dyads via statistical matching (Humphrey et al., 2007). In addition, it examines specific leadership solutions to overcome these performance-inhibiting effects. Most teams that are formed with the purpose of attaining a common goal in organizations experience some form of conflict at some point during their progress, irrespective of attention paid to team composition. By

focusing on conflicting personality combinations, the current research could contribute to this body of literature by showing how extraversion can negatively affect team performance and perhaps more importantly, what can be done about it. The question for the current study is whether it is possible to reduce this conflict directly through leadership.

### *Leadership Influence*

Fostering innovation through team collaboration is an increasingly important leadership function. There is an amplitude of evidence in the extant leadership literature that transformational leadership has a greater influence on employee motivation relative to other leadership styles (Bass & Avolio, 1993; House, 1977; Kark & Dijk, 2007; Lowe, Kroeck, & Sivasubramaniam, 1996). The conceptualizations put forth by House (1977), Bass (1985), Bennis and Nanus (1985), and Conger and Kanungo (1987) describe conveying vision, intellectual stimulation, empowerment of one's followers, role modeling, and image building as important constituents of transformational leadership. Originally proposed by Avolio and Bass (1991), the "Full-Range Leadership Theory" (FRLT) has nine constituent factors (Antonakis, & House, 2002). The most commonly used measure to assess the nine factors of the FRLT is called the Multifactor Leadership Questionnaire (MLQ; Hunt, 1999; Lowe et al., 1996 and Yukl, 1999).

According to FRLT, transformational leadership comprises five behavioral components, which are the dimensions of the transformational cluster of the MLQ, and of particular interest to the current study. These include: (1) charisma or idealized influence (attributed); (2) charisma or idealized influence (behavior); (3) inspirational

motivation; (4) intellectual stimulation; and (5) individualized consideration (Antonakis, Avolio & Sivasubramaniam, 2003; Antonakis & House, 2002). As opposed to the other leadership conceptualizations (e.g., House, 1977), charisma in this conceptualization is defined as being a function of both the leader's behavior and the followers' reactions, such as trust, respect, and admiration for the leader (Bass & Avolio, 1993; Eagly, & Karau, 1991; Hosoda, Stone, & Stone, 2003). Despite the fact that transformational leadership and its effects on various organizational outcomes has received a great deal of attention in the literature of last three decades (Antonakis & House, 2002; Bass, 1985; Bass & Avolio, 1994; Bass & Avolio, 1997; Conger & Kanungo, 1988, House & Shamir, 1993; Lowe & Gardner, 2000), the empirical evidence for the role of transformational leadership in helping teams achieve collaboration is scarce and mixed.

Recently, Kearney and Gebert (2009) demonstrated in their study of 62 research and development teams, transformational leadership moderated the relationship of age, nationality, and educational background diversity with team outcomes. When transformational leadership (TL) was high, nationality and educational diversity were positively related to performance. Furthermore, these relationships were not significant when TL was low. Perhaps most relevant to the current study was the finding that age diversity was detrimental to team performance when TL was low, but this negative effect was reduced to non-significant levels when TL was high (Kearney & Gebert, 2009). What this implies is that transformational leadership may serve to buffer the negative performance effects of team composition variables. Of the many leadership theories that have been proposed over the last several decades (see King, 1990),



transformational leadership seems to have the greatest potential to mitigate the deleterious effect that dissonant personality combinations can have on group-level outcomes.

The current study aims to take another step toward understanding this concept of transformational leadership as a buffering mechanism for negative diversity effects on team performance by examining negative team composition effects based on similarity, and more specifically at extraversion as an exemplar of this effect. Transformational leadership may have the potential to nullify performance-inhibiting dissonance resulting from high extraversion. Since transformational leadership is one of the few easily controllable moderators of team effectiveness, it could prove important in the maintenance of group-level performance and the prevention of productivity inhibiting factors that are a result of dissonant composition profiles in terms of team member personal characteristics.

### *Intellectual Stimulation*

Transformational leaders stimulate their followers to be open to new perspectives and to think about old problems in new ways. Transformational leaders also encourage followers to challenge their own values, traditions, and beliefs (Hater & Bass, 1988). In a study of 78 managers, (Howell & Avolio, 1993) found a positive relationship between the intellectual stimulation provided by the leader and performance when there was a climate of support for innovation provided by the leader. However, when support for innovation was absent, the positive relationship became insignificant. Furthermore, Jung, Chow and Wu (2003) showed that by providing intellectual stimulation (Bass &

Avolio, 1997), transformational leaders encourage lateral thinking of followers as well as generative and exploratory thinking processes (Sosik, Avolio, & Kahai, 1997). This highlights the need for transformational leadership influence that both intellectually stimulates followers and helps them understand the organizational importance of approaching problems in new ways by encouraging and modeling this behavior.

However, pressing questions remain with regard to leadership's impact in this context. Transformational leadership has received a great deal of attention in recent years as having promise, but under what conditions does it provide the most value? Perhaps its value not only lies in how it inspires employees to go above and beyond their required levels of performance, but also in how it reduces interpersonal friction that would otherwise ultimately limit team effectiveness. It may be that a transformational style of leadership directs attention away from interpersonal power dynamics within a group, and rather focuses this attention on goal pursuit.

The author proposes that transformational leadership has a two-pronged effect on team performance such that transformational leaders motivate followers to (a) focus endogenously, i.e. through intellectual challenge and inspiration they help individuals within the team internalize personal goals of excellence, and (b) motivate team members to focus exogenously, i.e. through emphasis on broader organizational goals that they hold in common they help the team see the bigger picture. In the first prong, leaders help team members to internalize objectives by tying team goals to personal goals (Kark & Dijk, 2007). This also clarifies how individuals are capable of contributing effectively the goals set forth. In the second prong, leaders help team members

appreciate the context in which the group exists. This clarifies why the work is important. Both prongs taken together serve to take the attention away from the immediate interpersonal situation and redirect attention to the self-concept and its relevance to broader goals.

### *Transformational Leadership and Self-Concept*

Within the framework of the self-concept-based motivational theories of transformational leadership (Shamir, House, & Arthur, 1993, Shamir, Zakay, Breinin, & Popper, 1998) and of self-concept theory based on followers upward perceptions of the leader (e.g., Kark & Shamir, 2002; Lord & Brown, 2004; van Knippenberg & Hogg, 2003), scholars have proposed that leaders exert their effects by connecting their vision to certain aspects of the followers' self-concept in the service of helping the follower internalize organizational goals (Kark & Dijk, 2007). This may be a critical mechanism by which transformational leaders are able to help team members look past their differences in the service of accomplishing the goals of the team or organization. Brockner and Higgins (2001) posited that leaders are "makers of meaning," and as such may influence followers' motivation through the use of language emphasizing symbolism and vision, which outline an ideal goal state. Transformational leaders often motivate their followers by conveying inspirational and visionary shared goals of an ideal goal state (Burns, 1978; Conger & Kanungo, 1988; Gardner & Avolio, 1998). One way they do so is by appealing to their followers' higher-order ideals and of how things could be (Kark & Dijk, 2007).

### *Transformational Leadership and Framing for Excellence*

When leader behavior focuses follower attention on the ideal self and draws clear linkages between this ideal self and the ideal goal state, followers are less likely to fixate on matters that are not relevant to the pursuit of the goal outlined in the mission. In other words, followers begin to internalize an ideal goal state, and in doing so attempt to bring their self-image in line with their idealized self-image via engaging in behaviors that the leader has modeled and explained as being relevant to reaching the ideal goal. As such, transformational leaders' high expectations may elicit a goal-oriented focus among teams (Eisenbess, van Knippenberg & Boerner, 2008).

A transcendent goal-oriented focus can be primed through the framing of the situation in terms of what can be gained by the organization if performance is high. Transformational leaders tend to articulate what the followers and the organization can gain and what they can become. Shamir et al. (1993) also discuss role modeling as one of the major processes by which transformational leaders communicate these messages.

The conceptualizations put forth by House (1977), Bass (1985), Bennis and Nanus (1985), and Conger and Kanungo (1987) describe conveying vision, empowerment of one's followers, role modeling, and image building as important constituents of transformational leadership. Role modeling is a technique of demonstrating through ones actions and words the values and subsequent behaviors that the leader would like to see from their subordinates. Thus, if the messages received from the transformational leadership align with pursuit of a higher order ideal as is proposed in the current study, transformational leadership should provide a model for

looking past the interpersonal dynamic within a team in the service of higher order goals. This should serve to elicit a greater team cohesion and performance.

*Hypothesis 2a:* There is a positive effect for transformational leadership (TL) such that TL obviates the performance inhibition of high dyadic extraversion. Specifically, transformationally led HEDs outperform non-leadership HEDs on both disjunctive and conjunctive tasks.

Furthermore, it is likely since conjunctive tasks require greater levels of skilled collaboration and communication than disjunctive tasks (Barrick et al., 1998; De Fruyt & Salgado, 2003) they are more likely to be affected by conflicting personality. However, this greater decrement may also be accompanied by greater potential for improvement resulting from a transformational leadership intervention.

*Hypothesis 2b:* When transformational leadership is provided, the positive effect of transformational leadership on HED performance is greater for conjunctive tasks than for disjunctive tasks.

## Method

### *Participants and Research Design*

The participants in this study consisted of approximately 118 university students comprising 59 dyadic teams. Participation was voluntary for all students; participants were notified that all responses are confidential. Those selected for participation were entered to win an iPad 3, and a series of smaller prizes including theatre tickets.

This study employed a 2 x 2 (transformational/non-leadership by extraversion) experimental design to determine the impact of transformational leadership on dyadic team performance when team members' personalities are incompatible. Leadership style was manipulated by having groups led by either an individual exhibiting transformational leadership or an individual exhibiting no overt leadership behavior (simply administering task instructions on a sheet of paper). Extraversion was manipulated in the experimental condition by assembling dyads along conflicting extraversion profiles (i.e., high extraversion matched with high extraversion). Task structure was evaluated by having all of the student dyads work on one conjunctive and one disjunctive task. The order in which the tasks were completed was counterbalanced to prevent any order effects.

### *Experimental Tasks, Procedures, and Leadership Manipulations*

Before the participants were invited to the lab to participate in the experimental sessions, an online survey was administered to undergraduate students to assess personality. Then teams were assembled into dyadic groups based on incompatible personality combinations (high extraversion matched with high extraversion) via

statistical matching. As opposed to prior studies on personality variance that have examined naturally occurring variance in teams (i.e., team placement decisions made either through random assignment or based on factors other than personality), the current study employs a statistical matching method, which is designed to minimize variance within teams to facilitate close examination of limited range of high extraversion.

When using this method, one determines a cut-off level whereby the researcher sets a criterion at which participants are no longer selected for team placement. The current study selected +1SD above the sample mean as the criteria by which to match team members. This cutoff provides a robust test of the conflicting personality hypothesis. According to this method, participants are grouped in terms of their levels of extraversion. Norms are based on the student population sampled, rather than norms based on previously collected participant data. Local sample norms were used as the sample was unique in a number of important ways. The student population was preselected from around the world on the basis of high GRE test scores. This resulted in a highly intelligent, and highly international sample of students. As such, the sample was unique and required its own norms. In this case based on a normal distribution, approximately 118 people from the sampled 673 student population scored at least +1SD above the mean on a measure of extraversion. Then to minimize variance within teams, these highly extraverted participants were matched based on their grouping, such that the highest-ranking participants were matched together to form the highly extraverted dyads. This served to minimize variance on the trait within the experimental

teams, thus ensuring highly matched, highly extraverted dyads. Individuals comprising the remaining control dyads were selected randomly from the student population pool, irrespective of their personality profiles. However, procedures were undertaken to ensure that no two high personality individuals were matched in the randomly assembled control dyads. Furthermore, procedures were undertaken to ensure that no two individuals were matched on the basis of high introversion (low extraversion), as this combination occupies the opposite end of the extraversion spectrum. This procedure was conducted to prevent any non-analogous effects of high introversion resulting from unintentional matching on this personality dimension.

Prior to actual experimental sessions, participants were given a short overview of the project during which time they received either transformational leadership or were simply read activity instructions. Participants then completed a short questionnaire measuring their demographic information. Each experimental session was approximately 1.5 hours and had three phases. Phase 1 involved a 10-minute orientation period in which the group leader, a male confederate, introduced himself and explained the purpose of the activities following a script. There were two scripts, one for transformational leadership and one for no leadership intervention.

Phase 2: Participants spent 10 minutes completing group member introductions. At this point the leader explained the nature of the conjunctive task, either using transformational leadership or reading the basic instructions. The conjunctive task performed by participants was to serve on a selection board for a university. In this task they are required to select a president for a fictitious college. Participants are asked to



assume there is a correct candidate to hire and told that the decision should be made by consensus. The leader then handed out an information packet related to the completion of the conjunctive presidential selection task, which included specific instructions and information for each member of the dyad. Participants then worked for a maximum of 30 minutes.

Phase 3 began with a 5-minute introduction of the disjunctive moon survival exercise (NASA rank-ordering task) to acquaint participants with the task. In the transformational leadership condition, participants were again exposed to a transformational leadership-style message about performance on the upcoming task. In the no leadership intervention condition, brief instructions were read by the confederate and then further written instructions were administered. The Moon Survival task requires subjects to imagine themselves crash-landed on the moon 200 miles from base. Fifteen pieces of equipment are available for use and are to be ranked in order of declining contribution to survival on the walk to safety. Participants worked on the moon survival task for a maximum of 30 minutes. At the end of phase 3, participants were instructed to complete a post-task questionnaire measuring the intended leadership manipulations. To prevent order effects, phases two and three were counterbalanced.

As noted above, leadership style was manipulated via a trained male confederate as the session leader. The leader was a typical male based upon geographic location with regard to personal characteristics. The leader was Caucasian, late 30's in appearance, and of average height and weight. During the introduction phase in the transformational condition, the leader gave verbal cues associated with transformational

leadership using scripts adapted from the Managerial Leadership Questionnaire (MLQ; Bass & Avolio, 1997), which measures a five-factor conceptualization of the transformational leadership construct. For example, in the transformational leadership condition, the leader emphasized the importance of the task and its potential to challenge past assumptions about how University leadership selection decisions are made. He also encouraged participants to consider how to move beyond what has been done in the past. For the no leadership intervention condition, the confederate briefly explained the nature of the task and handed out a sheet with more detailed instructions.

### *Measures and Coding*

20 items were adapted from the Multifactor Leadership Questionnaire (MLQ) Form 5X (Bass & Avolio, 1997) to measure transformational leadership. According to Bass and Avolio (1993), the MLQ comprises nine subscales, which assess the primary constituents of Multifactor Leadership Theory. All items of the MLQ use a five-point response scale ranging from not at all (1), to frequently, if not always (5). The MLQ (Form 5X-Rater) was used to sample the five transformational leadership behavioral components, which comprise the subscales of the transformational cluster of the MLQ. These include: (1) charisma or idealized influence (attributed); (2) charisma or idealized influence (behavior); (3) inspirational motivation; (4) intellectual stimulation; and (5) individualized consideration (Antonakis, Avolio & Sivasubramaniam, 2003; Antonakis & House, 2002; Bass & Avolio, 1993; Bass & Avolio, 1997). Responses were scored as suggested by the instrument developers. Permission from the MLQ developers to use their scale for the purpose of this research was obtained.

In order to assess extraversion, the NEO PI-R-short (Costa & McCrae, 1992) was used, which is an established and frequently used scale to measure the five-factor model of personality. This is the most widely used instrument for measuring the five-factor model, and Costa and McCrae (1992) have provided extensive data on the reliability and construct validity of the NEO PI-R. Many of the contemporary investigations into team composition and performance have utilized the five-factor model as it has been demonstrated to be a robust, structurally sound, and culturally generalizable assessment approach for conducting research on individual differences (McCrae & Costa, 1997).

In order to assess performance on the university president selection task, the activity was scored by assigning a number which corresponded to the rank-order location of the correct selection. For instance, if the correct presidential candidate was ranked as the number one choice, this corresponded to a score of '1'. If the correct presidential candidate was ranked as the second most preferable selection, this corresponded to a score of '2', etc. Thus, a low score indicates high performance.

Performance on the moon survival task was a simple inverse function of the unit-weighted sum of the absolute differences between the ranks assigned and the ranks preferred by the Crew Equipment Research Unit at the National Aeronautics and Space Administration (NASA). Thus, a low score again indicates high performance.

#### *Manipulation Checks*

After 5 hours of leadership training, the confederate leader's portrayal of transformational leadership and no leadership was videotaped without any participants

present. A group of graduate students unfamiliar with this study will evaluate the videotapes using the MLQ Form 5X items (Bass & Avolio, 1997) and by rating other basic items about the presence of leadership, dress, and appearance. Using the feedback provided by the graduate student raters, the confederate leader will then spend an additional 3 hours of training with the author to further refine his portrayal of transformational leadership and no leadership. After the second training session, a new panel of graduate students who are also unfamiliar with the study will rate a second videotape of the leader.

## Tests of Hypotheses

The current study aimed to investigate the potential effect of conflicting personality combinations (namely dyads paired on the basis of high extraversion) on the ability to perform disjunctive and conjunctive tasks, and the potential for transformational leadership to mitigate this effect. Disjunctive task work was operationalized as scores on a NASA rank-ordering task. Conjunctive task work was operationalized as scores on a Bewise College president selection task.

Hypothesis 1 states that given no leadership intervention, there is a main effect for extraversion on performance such that high dyadic extraversion inhibits team performance i.e., highly extraverted dyads (HEDs) underperform relative to randomly assembled dyads on both disjunctive and conjunctive tasks. Hypothesis 1 also states that there is a two-way interaction between personality and task type such that the negative effect of high dyadic extraversion on performance is greater for conjunctive tasks (Bewise President Selection task) than for disjunctive tasks (NASA rank-order task).

The second hypothesis states that there is a main effect for transformational leadership (TL) on performance such that TL will obviate the performance inhibition of high dyadic extraversion, i.e., transformationally led HEDs will outperform the non-leadership HEDs on both disjunctive and conjunctive tasks. It also states that when transformational leadership is provided, there is a two-way interaction between extraversion and type of task such that the positive effect of transformational leadership on HED performance is greater for conjunctive tasks than for disjunctive tasks.

In determining the analysis approach best suited to the current study, ANOVA and t-tests were considered. In the case of a two-way ANOVA for hypothesis 1, the first factor would be extraversion with two levels, high-dyadic extraversion and control (randomly assembled dyad based on personality with no leadership intervention); the second factor would be task type with two levels, disjunctive task work and conjunctive task work.

Because each team performed both tasks, NASA and President selection, the scores for the two tasks within the same respondent are not independent. The two-way ANOVA requires a mixed design, with one between-subjects factor (condition) and one within-subjects factor (in this case, type of task). The current investigation has the following properties: 1) there are only two possible values for the type of task (NASA and President selection); and 2) in each part of the analysis only two conditions are compared: Highly Extraverted Dyads vs. Control (Hypothesis 1), and transformationally led HEDs vs. HEDs (Hypothesis 2). Thus, the two-way ANOVA is equivalent to a series of t-tests.

In light of this, independent samples t-tests were performed to examine whether each factor had a significant effect. To assess the interaction between type of task and condition, the difference between the NASA and President selection scores for each team (standardized for comparison) were computed. Next, the variation of this difference across conditions was examined. Since the NASA and President selection scores are measured on different scales, scores were first standardized by computing corresponding z-scores. Next, differences were defined in the disjunctive and

conjunctive performance tasks by subtracting disjunctive scores (NASA Z-scores) from conjunctive scores (President selection Z-scores). In other words, the interaction between type of task and condition is equivalent to calculating the difference between the NASA and President Selection scores for each dyad. Thus, difference scores were calculated between conjunctive and disjunctive tasks for each dyad, and the mean difference between these tasks was compared across conditions via t-tests. Disjunctive and conjunctive scores were subtracted within each condition, and these computed difference scores were averaged. Then these averages were compared across conditions 1, 2, and 3 via t-tests to assess any interactions.

#### *Non-Leadership HED Condition vs. Control Group*

T-tests were conducted separately for comparison of the non-leadership HED condition vs. Control and comparison of the Transformational HED condition vs. non-leadership HED condition. When comparing each characteristic between the two compared conditions, Levene's test of the equality of variances across the groups was conducted. Because the variances were shown to be equal, the independent-samples t-test assuming equal variances was determined to be appropriate.

In comparing the non-leadership HED ( $N=13$ ) vs. control conditions ( $N=30$ ), no significant main effect for team personality composition was observed when analyzing NASA scores, ( $M = 38.46$ ,  $SD = 11.34$ ) and ( $M = 35.00$ ,  $SD = 10.47$ ),  $t(41) = 0.97$ ,  $p=.34$ , respectively. Across the two groups, results seem to indicate that HEDs and randomly assembled dyads exhibit similar levels of performance on disjunctive tasks (see Table 1,2).

In comparing the non-leadership HED ( $N=13$ ) vs. control conditions ( $N=13$ ), no significant main effect for team personality composition was observed when analyzing Bewise College president selection scores, ( $M = 2.00$ ,  $SD = 1.29$ ) and ( $M = 1.67$ ,  $SD = 1.03$ ),  $t(41) = 0.97$ ,  $p=.37$ , respectively. As in the previous analysis, results seem to indicate that HEDs and randomly assembled dyads exhibit similar levels of performance on conjunctive tasks. In other words, the putative performance decrement of competing high levels of extraversion among dyadic teams was not observed (see Table 1,2). Furthermore, no significant interaction was observed between team composition and type of task,  $t(41) = -0.1$ ,  $p=0.99$ . For both non-leadership HEDs and Control, performing the disjunctive task yielded a statistically similar level of performance as performing the conjunctive task. In other words, there was no material difference observed for task type or team personality composition (see Table 1,2).

#### *Transformational HED Condition vs. Non-Leadership HED Condition*

When comparing transformationally led HEDs ( $N=16$ ) vs. non-leadership HEDs ( $N=13$ ), no significant main effect for team personality composition was observed when analyzing NASA scores, ( $M = 37.13$ ,  $SD = 10.30$ ) and ( $M = 38.46$ ,  $SD = 11.34$ ),  $t(27) = -0.33$ ,  $p=.74$ . Again, across the two groups, results seem to indicate that transformationally led HEDs and non-leadership HEDs exhibit similar levels of performance on disjunctive tasks (see Table 1,2).

In comparing the transformationally led HEDs ( $N=16$ ) vs. non-leadership HEDs ( $N=13$ ) for conjunctive tasks, no significant main effect for team personality composition was observed when analyzing Bewise College president selection scores, ( $M = 1.31$ ,



SD = 0.70) and (M = 2.00, SD = 1.30),  $t(27) = -1.72$ ,  $p=.10$ , respectively. As in the previous analyses, results seem to indicate that transformationally led HEDs and non-leadership HEDs exhibit similar levels of performance on conjunctive tasks (see Table 1,2). In other words, transformational leadership did not seem to exert an effect on dyads composed of highly extraverted individuals. Furthermore, no significant interaction was observed between leadership style and type of task,  $t(27) = 0.96$ ,  $p=0.35$ . For both transformationally led HEDs and non-leadership HEDs, performing the disjunctive task yielded a statistically similar level of performance as performing the conjunctive task. In other words, there was no material difference observed for task type or leadership style for team performance (see Table 1,2). In short, no significant effects for leadership, team composition or task type were revealed in the current investigation. Finally, repeated measures ANOVA was conducted to determine if there were any main effects or interactions that could be uncovered with this analysis approach. As expected, this did not yield any significant effects.

## Discussion

There are a number of potential explanations for the conclusion that leadership, team composition and task type have no net effect on performance. First, it is possible that these variables indeed have no impact on team performance in any setting. An alternate possibility is that there are in fact differences, but the differences are too small to be revealed by the current analysis due to the limited data set. Finally, a third possibility is that the putative effect in organizational settings went undetected in the lab setting due to a lack of fidelity.

If differences in these phenomena are present, but in the current investigation went undetected as past literature would suggest (e.g., Barry & Stewart, 1997; Neuman et al., 1999; Humphrey, Hollenbeck, Meyer & Ilgen, 2007), future research would be well served to continue to examine personality and leadership considerations for team composition in organizations. When composing teams it is possible that team members have sub-optimal constellations of traits for effective collaboration. Incompatibility within work teams is an oft-cited source of contention in the workplace (particularly with regard to dissonant personality combinations). Furthermore, this observed incompatibility in the 'real world', although not represented by the current data, is unlikely to be solved merely by careful attention to team composition as leadership likely plays a role in how these differences are perceived and treated.

The current investigation did not support the conclusion that dissonant personality patterns exist when performing the NASA rank-ordering task or the Bewise College president selection task. This could indicate that extraversion is a non-factor in

determining team performance. However, it is also possible that these effects may indeed be present in actual work settings where the demands upon team members are more dynamic than the lab setting provided in the current study, or where extended time working together allows personality conflicts to arise in ways that are less likely in the limited time of the lab study (where people may be on their “best behavior”). To this end, continued investigation of extraversion as a collaboration variable of interest, as well as leadership strategies that can reduce dissonance and create harmony within teams seems a worthy pursuit. Indeed future research may help uncover ways to remove collaboration obstacles, allowing work teams to realize their performance potential.

The hypothesis that highly extraverted individuals do not work well together was also not supported by the data yielded in the current investigation. This seems to suggest that further investigation is needed to establish a pattern of effects for the conflicting personality hypothesis, as research in this domain seems to be relatively limited at this time. Intuitively it seems possible that certain personality combinations are capable of inhibiting performance in organizational teams. However, the extant literature seems far from a conclusion on the nature and pattern of effects that may result from teams with various personality constellations. Furthermore, the current investigation looked at matched pairs in a lab. In past examinations, such as Barry and Stewart (1997), teams were randomly composed and thus may have allowed for different phenomena or more dynamic phenomena unique to this kind of composition model to take place. For managers in practical organizational settings, personality may be a variable that managers can attend to more carefully if the intention is to reduce friction

in work teams. Extraversion will likely remain a theme in collaboration research for the near future. Clearly more research is needed to establish best practices for leaders in organizational settings to facilitate optimal team composition when it comes to personality.

Further analysis of the current data looking at the sub-facets of extraversion were not fruitful in unveiling a different pattern of effects for matched levels of extraversion. Future investigations may be well served however, by investigating the possibility of creating teams with high levels of social dominance across the members in order to assess whether this is a counterproductive source of friction in team-based collaboration. Although the current data do not support this notion, it is possible that setting this team composition decision-making rule a priori may produce a different pattern of effects than was observed in the current investigation.

Furthermore, the nature of work in organizations is changing and research should address these demands. An increasingly technological competitive environment means that a growing number of workers are finding themselves in innovation-related work groups (Kozlowski & Bell, 2003). Indeed, the demand for innovation on companies and their innovation teams is greater than ever before, and with the aforementioned rate of technological change and the forces of globalization, this trend is likely to continue (e.g., Anderson, De Dreu, & Nijstad, 2004; Brown & Eisenhardt, 1995). Thus, it is important that organizations support their teams by providing the internal conditions necessary to remain competitive (Oldham, 2002). It is possible that sub-optimal team composition could inhibit the collaboration and communication processes requisite of

innovation-related work, but these assertions require much deeper and broader investigation than is provided within the scope of the current analysis.

The current study also did not support the utility of statistically matching team members in lab experiments on the basis of personality to examine the impact that certain personality moderators have on performance outcomes. In this particular instance, the authors used a matching approach to minimize variance within the teams to ensure that the two individuals within the dyad were as similar as possible with regard to their high levels of extraversion. The aim in doing so was to be able to clearly examine how relatively homogeneously high levels on extraversion affected performance. This was a methodological advancement over previous studies in that prior research has implemented team composition processes that are problematic due to issues of range restriction associated with random sampling (McClelland, 1997). This did not yield results for the current study, but used in other research applications, this approach may provide additional depth in lab-based investigation.

The hypothesis that transformational leadership (TL) obviates the performance inhibition of high dyadic extraversion, was also not supported and thus further research, perhaps in research conditions with higher fidelity such as organizational settings, is needed to examine what, if any, implications exist for leaders of organizational teams, especially of innovation-oriented teams. The current findings would imply that transformational leadership does not comprise a framework of behaviors suited to improve teams performance outcomes.

If this were true, it would serve as an important contribution to the team diversity literature as it would begin to advance the knowledge on whether it is possible to reduce the negative effects of certain types of diversity through leadership intervention. What this would further demonstrate is that while there are important trends that are taking place in organizations such as demographic shift and the ever-increasing use of diverse project teams, it may not be possible for managers to obviate certain negative effects that these diversity variables produce by exhibiting transformational leadership behaviors. However, the current study may have lacked sufficient fidelity to real organizational settings to address the nuances of these fundamental questions. One particular aspect of fidelity may have been participant motivation. Participants in the current study were offered entry into a lottery for various prizes for participation. This is not consistent with how employees are motivated by their leaders in the workplace. Future investigations may be well served to reward participants on a merit basis to establish what if any leadership effects exist.

The latter part of the second hypothesis states that when transformational leadership is provided, there should be a two-way interaction between extraversion and task-type such that the positive effect of transformational leadership on highly extraverted dyad performance would be greater for conjunctive tasks than for disjunctive tasks. As this was not supported, it provides evidence that a transformational leadership intervention may not be relevant for innovation-type tasks, which are conjunctive by definition (Barrick et al., 1998). However, it is also possible that these variables are not easily captured and replicated in a lab setting whereby innovation and leadership are

constrained to a rigid set of boundaries not present in a more dynamic organizational setting. By using a transformational approach to leadership in motivating innovation teams in actual organizational settings, managers may indeed not only minimize the negative effects due to individual differences within teams, but they may also positively influence factors that are specific to innovation-related task-work such as engaging in goal-driven, skilled communication, and finding new ways to approach problems. As Jung, Chow and Wu (2003) noted, innovation teams may particularly benefit from the intellectual stimulation that transformational leadership provides. It may be that lab-based investigation of these highly dynamic and in the case of innovation, often spontaneous constructs is less than ideal.

### *Limitations*

Beyond the limitations mentioned heretofore, sample size was a factor which reduced the scope of the current study. Due to a limited pool from which to draw participants, the sample size was somewhat small. This required careful analysis of the ways in which the available participants could be used to evaluate the hypotheses. With regard to the conditions of the study, there was no cell that examined the effect of transformational leadership on the performance of randomly assembled teams. It was determined that this question of whether transformational leadership could increase performance of work teams was a research question that already had a clear answer in the extant literature (Bass & Avolio, 1993; House, 1976; Kark & Dijk, 2007; Lowe et al., 1996). Thus the current research focused its limited resources on those conditions under which transformational leadership had not been tested, namely when team

members have incompatible personalities. In this way, it was the intention of the current study to contribute something new to the growing body of literature on personality configurations within teams.

A second and important limitation of the current study was the narrow focus on high levels of extraversion. It was the intention of the current research to examine a particular personality variable that had in past studies been shown to be problematic. Using a statistical matching procedure to examine this phenomenon allowed for more control over within-team variance than had been achieved in previous research. Extraversion was chosen because as past research has indicated (Barrick et al., 1998), it is a clear exemplar of a single personality characteristic that when matched at high levels, could be problematic for collaborative teamwork. In doing so, the current study aimed to examine the effectiveness of potential leadership solutions on this specific variable. However, future investigations would be well served to include other traits for analysis to determine if configuration effects apply to other individual difference characteristics.

#### *Future Directions*

As for the leadership solutions examined, the current study only evaluated transformational leadership, comparing this to a non-leadership intervention condition. Future research studies could examine how other forms of leadership may influence dissonant team member dynamics and productivity. One potential leadership style that would be interesting would be autocratic leadership. It may be fruitful to examine whether autocratic leadership styles have similar or different effects on teams by



motivating them to look past their personal characteristics and to focus more on the goal set forth by the leader. One methodological approach to this end would be to replicate Lewin, Lippitt and White's (1939) study examining Autocratic leadership in learning groups using an organizational setting with teams of adults comprising dissonant personality combinations.

Another potential leadership manipulation that may be interesting to investigate under the current method is preferential treatment of team members by the leader. Research could examine personality traits and how they affect team member reactions to preferential treatment. Under the current method, one could examine reactions in terms of performance at the individual level and how these reactions influence performance at the group level. Additionally, research could measure justice perceptions following completion of the tasks and how preferential treatment is reflected in these measures when personality is considered. This may then help to further inform researchers about how leader-member exchange dynamics affect team performance on highly collaborative task work.

Additionally there are a number of further personal characteristics of team members that would be interesting to examine with regard to collaborative work. In the current study, the concept of conflicting or dissonant personality combinations was not supported nor were leadership solutions effective in moderating this performance. However, there may be a range of other personality characteristics that could prove problematic, particularly for innovation teams.

One such variable is need for cognition, which refers to the extent to which people have a propensity for effortful thinking. Need for cognition (NFC; Cacioppo & Petty, 1982) is a very well established individual difference variable. A person who is high on need for cognition was more likely to carefully consider all of the available options and systematically evaluate a problem (Cacioppo & Petty, 1982). Cacioppo, Petty, and Kao's (1984) need for cognition scale is an 18-item inventory used to assess individuals' tendency to engage in and enjoy thinking. Items for this measure include things like; "I really enjoy a task that involves coming up with new solutions to problems" and "Thinking is not my idea of fun" (reverse scored).

Implications within the framework of the current study for NFC may be that certain configurations of this trait within teams may be problematic. That is, if two individuals are placed together in a dyad via statistical matching to maximize variance (i.e., matching the lowest NFCs with the highest NFCs), this may create friction within the team as some low NFC team members could be more likely to try to solve the problem heuristically using simple rules of thumb or cognitive strategies requiring little effort, while team members with high NFC would be more likely to push for careful, effortful cognitive processing in order to systematically evaluate all available options. If this were the case, it would be interesting to see whether transformational leadership behaviors are able to alleviate this tension and improve performance by motivating the individuals to compromise on the level of systematic cognitive processing in which they are willing to engage.

Another such variable that may prove to be an interesting direction for future research is need for closure. The need for nonspecific cognitive closure has been defined as an aversion to sustained ambiguity or confusion accompanied by a desire to arrive at a clear and permanent answer (Kruglanski, 1989). The intensity of behavior related to this trait is directly tied to the value associated with arriving at a viable solution and the cost of not having a viable solution. A useful measure for need for closure was developed by Webster and Kruglanski (1994). The 42-item scale has been extensively used in research (see Webster & Kruglanski, 1998). Example items include “I dislike questions which could be answered many different ways” and “My personal space is usually messy and disorganized” (reverse coded). The five facets of the Need for Closure Scale are (1) preference for order, (2) preference for predictability, (3) decisiveness, (4) discomfort with ambiguity, (5) and close-mindedness. In addition, it is also affected by the type of task, which may result in interesting interactions with innovation style tasks that are often open-ended and uncertain.

Furthermore, need for closure is affected by the context in which the task is performed. Time pressure is one such contextual variable that could become an important factor under the current method. According to need for closure theory, this trait has been shown to be exacerbated in conditions that make problem solving difficult or unpleasant such as with time pressure (Kruglanski & Freund, 1983; Kruglanski & Webster, 1991), noise (Kruglanski, Webster & Klem, 1993), and mental fatigue (Webster, Richter & Kruglanski, 1996). All of aforementioned variables could be used under the current experimental method to induce presentation of the trait to determine

the robustness of leadership to alleviate resulting performance problems for collaborative task work.

In closing, the current study attempted to bring the discussion on team diversity one step further by using statistical matching for dyadic team composition to examine the effect of personality on performance outcomes, exercising greater control over within-team variance than had been done in previous research. Furthermore, it sought to evaluate the tools that managers have at their disposal to facilitate team performance when team composition is problematic. Specifically, transformational leadership was investigated to determine if engaging in behaviors typical of transformational leaders could reduce performance dissonance that is the result of incompatible personality combinations. These hypotheses were not supported, indicating that further research may be needed to determine whether a deeper understanding of diversity and leadership can provide a competitive advantage in innovation-oriented industries.

Table 1  
*Means and Standard Deviations across Variables (N=59)*

Task	Condition					
	Transformational		Non-Leadership HED		Control	
	M	SD	M	SD	M	SD
NASA Score	37.13	10.30	38.46	11.34	35.00	10.47
President Selection	1.31	0.70	2.00	1.29	1.67	1.03

Table 2

*Tests of Hypotheses (N=59)*

Condition	Hypothesis 1		Hypothesis 2	
	t	Sig. (p)	t	Sig. (p)
NASA Score	0.97	0.34	-0.33	0.74
President Selection	0.90	0.37	-1.83	0.08
Zscore Interaction	-0.01	0.99	-0.96	0.35

\*  $p < .05$ , \*\*  $p < .01$

## APPENDIX A

Transformational Script

Hi, I'm Dr. Thomas Schmidt [Smile warmly, shake hands]. Great to have you guys here. Thanks for making it today. Could we just start out by having you tell me your names and maybe your...umm favorite food? I'm a bit of a food lover. Its my favorite part of traveling; trying new foods. Lets start here [gestures with palm facing upward toward participant on left].

[John Participantname, says name and favorite food/s]

Oooooo. Thanks John Participantname. that sounds really good [smile]

And you must be Sally Participantname, what about you? Your favorite food? Ok that sounds really good too.

I think my favorite food is Paella. Its like a rice dish from Spain.

Ok lets get started. I think I'm getting hungry [smiles].

Just a little about myself. I am chair of the new Intercultural Understanding Committee at Jacobs. Today I'm gonna be helping guide you through our activity which looks at how we can chose the right leaders for Universities now and in the future. Our mission on this task is to pick the best President possible based on our values of integrity, intercultural respect, honor, and passion for doing good in the service of the students. In doing this, we will have the opportunity to change the shape of the University's future to ensure a place where there is warmth and respect for students of all nationalities and religions, a place where students can truly become whatever they want to be.

Although this task is hypothetical, it is critically important that we make the absolute best decisions that we are capable of making here today. We must challenge our own past assumptions of University leadership, and rethink what we know about intercultural exchange. We need to move beyond what has been done in the past, and this is why this study is so important. These findings will help us better understand how to chose university leaders in the future with the needs of a multicultural student body in mind. The better our decisions are here today, the more likely we was able to determine how we can do the best job to select future leaders who represent our goals like mutual respect and understanding of all cultures and backgrounds.... and academic excellence based on making sure all needs of students taken care of.

For our exercise each of you will have unique information about the leaders that we will have to chose from. It's extremely important that you work together and rely upon each other so that we chose the best person for the job based on the information that each of you has. I'm not kidding when I say that we have the opportunity here to change the way that things are done. We can make Universities a better place if we focus and work together. What I mean you guys, is that great cooperation here can help us truly get to the bottom of what we want to know, help us reach this goal.

John Participantname, Sally Participantname, is there anything that I can answer for you guys right off the bat? I don't wanna influence TOO much what you guys do because I want to make sure that its you guys doing the choosing, but once we finish up I am happy to chat with you about it all.



## APPENDIX B

Multifactor Leadership Questionnaire – Computer adaptation of transformational items  
*MLQ form 5X-Rater – (1 = not at all, 5 = frequently, if not always)*

1. values and beliefs
2. Instills pride
3. strong sense of purpose
4. Goes beyond self-interest
5. respect
6. ethical
7. power and confidence
8. mission
9. Talk optimistically
10. Talks enthusiastically
11. vision
12. Expresses confidence
13. Reexamines critical assumptions
14. solving problems
15. Gets me to look at problems
16. Suggests new ways
17. coaching
18. Treats me as an individual
19. Considers me as having different needs

20. develop my strengths

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**ABSTRACT****INVESTIGATING A LEADERSHIP FIX FOR A SUBOPTIMAL MIX: A  
TRANSFORMATIONAL LEADERSHIP INTERVENTION FOR TEAMS WITH  
INCOMPATIBLE PERSONALITIES**

by

**MARCUS WELLER****August 2012****Advisor:** Dr. Marcus W. Dickson**Major:** Psychology (Industrial and Organizational)**Degree:** Doctor of Philosophy

This study uses experimental methodology to examine transformational leadership as a buffering mechanism for problematic personality combinations. 118 German university students comprising 59 dyadic teams participated in a lab-based investigation to examine matched high levels of extraversion within dyadic teams. The presence of transformational leadership (TL) as opposed to a non-leadership intervention was investigated to examine the effects of TL on group members' task performance on both conjunctive and disjunctive tasks. To assess conjunctive task performance, participants performed an employee selection task, and to assess disjunctive task performance participants performed a NASA survival ranking task. Performance was measured against expert ratings on these tasks. Hypotheses were that dyadic teams based on the pairing of highly extraverted individuals in the TL condition would outperform their no leadership intervention condition counterparts. No

support for the proposed hypotheses was found. Limitations and future implications for research are discussed.

## AUTOBIOGRAPHICAL STATEMENT

### MARCUS WELLER

I was born in St. Paul, Minnesota where I was raised by my mother and grandmother from grade school through college. In high school, I enjoyed playing various sports including baseball, basketball and football. I also enjoyed business projects and working on cars. After high school I attended the University of Minnesota where I began to find my intellectual footing. During my undergraduate studies, I co-founded the Industrial-Organizational Psychology Club and was a research assistant in a number of psychology labs. While at University I was invited as a Phi Beta Kappa International Honor Society member. Beyond my formal studies I also discovered that I had a passion for other cultures and traveling. This set me on a course of exploration that I continue to this day.

After graduating college with a B.A. in Psychology, I accepted an offer to study Industrial/Organizational Psychology at Wayne State University's doctoral program. I conducted research in Dr. Marcus Dickson's research lab on leadership and in Dr. Boris Baltes' research lab on performance measurement. I worked in a variety of internships including TRW Automotive and Henry Ford Health System. Through these experiences I was reminded of my passion for business, which would later drive me toward the corporate world. During my doctoral studies I was elected as an executive board member of the Michigan Association of Industrial-Organizational Psychologists, which afforded valuable leadership experience. Later I was selected to receive the German Chancellor Fellowship for Prospective Leaders through the Alexander von Humboldt Foundation which again took me around the world, this time to Europe. My home away from home is now in Germany, where I conducted the research for this Dissertation.

More recently in 2011, I was offered a position with Maxim Integrated, a semiconductor company in Silicon Valley to do strategic HR. I accepted this offer and have since been immersed in learning about how the semiconductor industry operates and how to be a strategic partner to the business. I feel that I have found a path that affords great fulfillment and challenge. Being offered admission to attend Wayne State University's Industrial/Organizational Psychology doctoral program was a major turning point in my life. The professors of the program have provided me with many opportunities and challenges and have allowed me to take the risks I needed to grow. I can only hope the next six years are as enriching as the last.