

Project Narrative

Gender Diversity in Traditionally Male-dominated Teams: The Impact of Alternative Compositional Configurations over Time

Due to trends toward the use of team-based structures and increased demographic diversity in the workforce, more and more organizations are relying on teams of diverse individuals to achieve complex tasks (van Knippenberg & Schippers, 2007). With the dramatic influx of women in the labor force over the last half century (Hayghe, 1997) and likely continued growth into the future (Toossi, 2004), gender has become one of the most salient aspects of demographic diversity in modern organizations (Chattopadhyay, Tluchowska, & George, 2004). In recognition of this reality, management scholars and practitioners have sought to understand the implications of gender diversity in teams.

Theoretically, on the one hand, increased diversity is argued to bring forth new information, knowledge, and perspectives that enhance positive team outcomes like creativity and problem solving (Cox & Blake, 1991). On the other hand, diversity in member attributes that are readily observable – such as gender – can present unique challenges, including difficulties in coordination, increased tension, and conflict that result in suboptimal outcomes (Horwitz & Horwitz, 2007; Jehn, Chatwick, & Thatcher, 1997).

This theoretical discrepancy is mirrored empirically in the existing quantitative research conducted on gender diversity which has revealed inconsistent findings. In a review of the team diversity literature, Williams and O'Reilly (1998) cited studies that found mixed-gender groups to experience higher levels of conflict, tension, and other process losses (Alagna, Reddy, & Collins, 1982; Clement & Schiereck, 1973; Holahan, 1979; Pelled, 1996; Sackett, DuBois, & Noe, 1991), as well as studies that showed no effect of gender diversity on conflict (Pelled, Eisenhardt, & Xin, 1999; O'Reilly, Williams, & Barsade, 1997). Additionally, in a meta-analysis of 13 studies, Bower and colleagues (2000) found no reliable relationship between gender diversity and team performance. These discrepancies within the extant knowledge base and the lack of consensus in the scientific community fuels, rather than quells, often heated debates in the popular press about the wisdom of integrating women into traditionally male-dominated teams and organizations such as the military (Denn, 2014; Thompson, 2013).

In view of these mixed findings, diversity researchers have recommended that future work (a) advance new conceptualizations of gender diversity in groups, (b) clarify the mechanisms and processes underlying the effects of gender diversity, and (c) identify moderators that specify the conditions under which the gender diversity-team performance relationship will be positive or negative (van Knippenberg & Schippers, 2007). With these recommendations in mind, we advance a new theoretical model that we hope will clarify the link between gender diversity and team outcomes in traditionally male-dominated teams.

There are three distinct features of our approach. First, departing from prior research that has utilized continuous operationalizations of diversity, ranging from low to high, we propose a configural approach that distinguishes specific compositional configurations. Our decision is grounded in research suggesting that (a) having a single token female in a male-dominated group fails to improve team performance because the token is isolated and marginalized (Kanter, 1977), but also research showing that (b) equal proportions of men and women in groups also fails to improve team performance due to the creation of faultlines and non-collaborative subgroups (Lau & Murnighan, 2005). Rather, we propose and then test the benefits of a “paired minority” compositional scheme where the group contains two women. We believe a paired minority composition scheme avoids the problems attributable to token marginalization of single women configurations and subgrouping problems associated with equal proportion approaches. The potential virtues of this configural approach may have been obscured in past research that has relied on continuous dispersion indices that simply quantify along a single high versus low continuum (DeRue, Hollenbeck, Ilgen, & Feltz, 2010).

Second, we examine the behavioral and perceptual mechanisms underlying the gender diversity and team performance relationship. Deviating from prior research that has focused on collective perceptions of conflict or potency (Hirschfield, Jordan, Feild, Giles, & Armenakis, 2005; Pelled et al., 1999), we focus on the level of contribution to the team task that women can make in traditionally male-dominated teams. For example, at the highest level, women may emerge as team leaders (Eagly & Karau, 1991). At a moderate level, women may become members of a shared leadership core with pervasive influence in the group (Carson, Tesluk, & Marrone, 2007). At a slightly lower level, women may at least provide voice and effective dissent in contexts where the team leadership is taking the group in the wrong direction (Liang, Farh, & Farh, 2012; Van Dyne & LePine, 1998). Isolation and marginalization of women would be the lowest and least effective level of contribution in these types of groups. Failure to incorporate the contributions of women would lead to well-known problems associated with overly homogeneous groups, including (a) leadership over-emergence (Lanaj & Hollenbeck, in press), (b) group polarization and excessive levels of risk taking (Myers & Lamm, 1976), and (c) premature consensus and lack of reflection in decision making (e.g. groupthink) (Janis, 1972).

Third, we consider two moderators likely to strengthen or weaken the effects of gender diversity on team outcomes: (a) implicit beliefs about gender roles, at both the individual and collective level, and (b) the accumulation of interaction experience over time. Because the impact of gender diversity on individuals and teams depends on members’ pre-existing beliefs about appropriate behaviors and roles associated with women and men (Eagly, 1987), we expect these beliefs will not only shape the nature of women’s contributions but also how they are socially evaluated (Eagly, Karau, & Makhijani, 1995). Additionally, because gender-related stereotypes tend to be most salient during initial team interactions but have the potential to become less salient as initial impressions are replaced with more accurate interpersonal knowledge, we also expect that time and interaction experience will act as an important

moderator of how gender diversity influences team outcomes (Harrison, Price, & Bell, 1998; Harrison & Price, 2002). As prior research has tended to examine either cross-sectional or one-shot teams, understanding how the initial dynamics associated with gender diversity become neutralized or exacerbated over extended time provides important insights about when gender diverse teams are likely to be most effective.

In sum, the purpose of the proposed research is to extend both theory and empirical evidence of the effects of gender diversity on team outcomes in teams that have traditionally been male-dominated. We seek to clarify prior inconsistencies by (a) taking a configural approach to gender diversity, (b) assessing member contributions in terms of leader emergence, shared leadership, and voice behaviors as explanatory mechanisms linking gender diversity to both proximal outcomes (i.e., leadership over-emergence, group polarization, and premature consensus) as well as distal team outcomes (i.e., team performance, adaptability, and viability). This research holds important implications for organizations seeking to maximize value from gender-diverse teams in terms of (a) team staffing decisions, (b) diversity training and (c) leadership development programs. It will also inform the national debate regarding the virtues of inclusion of women into traditionally male-dominated teams, as well as the potential liabilities associated with improperly executed inclusion (e.g., programs that create lone token members or gender-based subgrouping). In the remainder of this proposal, we present a brief literature review and provide theoretical arguments underpinning the relationships in our theoretical model. We then describe a test of this model in a relevant context.

Conceptualizing gender diversity in teams

Diversity is defined as differences between individuals on any attribute that leads to the perception that another is different from the self (Triandis, Kurowski, & Gelfand, 1994; Williams & O'Reilly, 1998). In theory, diversity can encompass any imaginable attribute; however, the majority of past research has focused on readily observable attributes, such as age, gender, and ethnicity (Milliken & Martins, 1996). Prior research on demographic diversity – inclusive of gender diversity – has captured diversity using dispersion indices that reflect the extent to which members differ from each other (Blau, 1977; Teachman, 1980; Tsui, Egan, & O'Reilly, 1992). However, this approach has yielded largely inconsistent findings, leading scholars to recommend new conceptualizations of diversity beyond dispersion (Van Knippenberg & Schippers, 2007).

The relationship between gender diversity and team processes likely depends not simply on the group's general heterogeneity, but rather on the configuration of men and women present in the unit (Kanter, 1977). Research has shown that as the minority representation of individuals in a group decrease, such individuals become increasingly aware of their self-categorization (e.g., Ethier & Deaux, 1994; Mullen, 1983). Additionally, the experience of being a gender minority appears to have different effects on males versus females (e.g., Fairhurst & Snavely, 1983; South, Bonjean, Markham, & Corder, 1982; Spangler, Gordon, & Pipkin, 1978). Research shows that men in predominantly female jobs experienced almost no hostility from female co-

workers and were more socially integrated, whereas women in predominantly male settings were treated with hostility and less socially integrated by their male co-workers (Brass, 1985; Kanter, 1977; Ibarra, 1992; O'Farrell & Harlan, 1982). Additionally, sex-stereotyping was noted to be more pronounced in male-dominated groups compared to female-dominated groups (Konrad, Winter, & Gutek, 1992).

These findings clearly suggest that it is not only meaningful to go beyond dispersion indices, but also that there is a need to focus on the experience of female members in gender diverse teams in order to understand the effects of gender diversity on team outcomes. For this reason, we compare and contrast the following four conditions: *control* (composed entirely of males), *token* (one female), *paired minority* (two females), and *subgroup* (equal number of females and males). Below, we explain how the gender dynamics associated with each of the latter three conditions might unfold to affect team performance.

Social categorization processes, gender roles, and member contributions in gender diverse teams

Research on team effectiveness has generally shown that members can contribute to the team in several different ways. First, they can take a leadership role by advancing the execution of the task at hand, a process traditionally referred to as “initiating structure” (Stogdill & Coons, 1957). Second, they can take a leadership role by enhancing the social cohesion of the team, a process generally referred to as “showing consideration” (Stogdill & Coons, 1957). Finally, although not a form a leadership, an important aspect of followership is offering constructive criticism or principled dissent directed at altering the group’s course of actions or practices. This process is referred to as “offering voice” (Liang et al., 2012; Maynes & Podsakoff, 2014; Morrison, 2014). We focus on these three types of contributions because when minorities are effectively introduced into otherwise homogeneous groups, they help teams avoid well-known problems associated with homogeneous groups such as having the wrong person emerge as the leader (leadership over-emergence) (Lanaj & Hollenbeck, in press), group polarization (where initial stances toward risk shift in extreme directions) (Myers & Lamm, 1976), and premature consensus (such as lack of reflection or groupthink) (Janis, 1972). Diversity may be able to prevent these problems; however, this will only be the case when the inclusion process is properly managed.

Threats to this inclusion process can be understood from social categorization theory (Tajfel & Turner, 1986), which suggests that people have a tendency to categorize themselves and others according to salient social identities. Members belonging to the same social category perceive each other to be similar “in-group” members, whereas dissimilar others are perceived to be “out-group” members. According to similarity-attraction principles (Byrne, 1971), members form preferences to associate with in-group members as opposed to out-group members, and this preference holds important implications for how diverse groups function (Brewer, 1999; Brewer & Brown, 1998). Applied to the context to gender diverse groups, social categorization processes

have been thought to explain why such gender diversity can produce higher levels of interpersonal tension, conflict, and other process losses (for a review, see Williams & O'Reilly, 1998). Once evoked, stereotypes, biases, and prejudices based on gender differences have the potential to prevent female members in mixed gender groups from contributing in ways that could benefit the team.

Among these stereotypes are gender roles, defined as “shared expectations (about appropriate qualities and behaviors) that apply to individuals on the basis of their socially identified gender” (Eagly, 1987: 12). Gender roles describe – and ascribe – how men and women ought to behave in social situations and are anchored both in others’ expectations as well as in one’s own identity (Eagly, 2009). Beliefs about men and women can be summarized by two dimensions: communion and agency (Bakan, 1966; Eagly, 1987). Women, compared to men, are considered to be communal – that is, unselfish, concerned with others, and expressive. These qualities are meant to convey warmth, facilitate interpersonal relationships, and cooperative interdependence with others (Eagly, 2009; Fiske, Cuddy, Glick, & Xu, 2002). In contrast, men are more likely to be agentic – that is, masterful, dominant, and self-reliant. On account of these social roles, men are expected to engage in actions that improve their hierarchical position and influence, exert dominance, and demonstrate independent thought from others (Eagly, 2009; Moscovici & Nemeth, 1974), whereas women are expected to exhibit a higher level of positive interpersonal behaviors that promote a sense of interdependence and collaboration among members of the group (Fiske et al., 2002).

We argue that when social categorization processes are salient in different configurations of gender diverse contexts, females are more likely to act in ways that conform to gender role expectations. Specifically:

The *token* condition describes a situation where a single female resides in the team of males (Kanter, 1977). Because tokens are by definition a lone minority, they are frequently in the position of representing their ascribed social category to the group, whether or not they intend to. Social categorization processes are likely to be salient in such settings, and self-categorization can lead to self-fulfilling prophecies, causing individuals to act in ways that match their social category (Klayman & Ha, 1987; Snyder, Tanke, & Berscheid, 1977). Indeed, research suggests that token females are more visible in the group, their differences are exaggerated, and they tend to be isolated and marginalized (i.e., tokens are pushed to fit preexisting generalizations about their social type) (Kanter, 1977).

The *subgroup* condition describes a situation where there are equal number of females and males in the team. In such a situation, gender is bimodal in the team (DeRue et al., 2010). Although at first glance, one might think this configuration will elevate the influence of women, but in fact, research suggests that this configuration is highly susceptible to the creation of faultlines and subgroup formation (e.g., Lau & Murnighan, 1998, 2005; Li & Hambrick, 2005). Compared to the token configuration, the subgroup configuration not only produces strong social

categorization processes, but also poses a threat to the formerly dominant coalition that is not present in the token conditions (Hornsey & Hogg, 2000). Due to strong identification with fellow females but strong dis-identification with male members of the team, we expect females in this condition to increase their contributions directed toward members of their own subgroup but not their contributions toward the group as a whole (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Hogg & Terry, 2000).

Finally, we introduce here a configuration that we refer to as *paired minority*, a composition where there are two females in the team, allowing some degree of mutual identification and support between the females, but not to the extent that a competing female subgroup might form within the team. Research has suggested that having at least two members advocating for a minority view is often sufficiently influential to be taken into account by the majority (Laughlin, 1999). This can often prevent teams from making incorrect decisions via a process referred to as “truth supported wins.” Paired minority members can potentially become allies, form coalitions with non-minority members, and affect the culture and dynamics of the group (Kanter, 1977). They are also less likely to be treated as “symbols” or “tokens,” and more likely to be seen as individuals that can be differentiated from each other and from their “social category.” Asch’s (1951) laboratory experiments showed that one potential ally was enough to reduce the power of the majority; thus, having one other female in an otherwise male-dominated group may embolden female members to engage in behaviors that challenge gender-role stereotypes and the status quo of the team’s direction.

In view of the arguments above, we expect that compared to women in other conditions, female members in the token condition will exert fewer contributions overall as operationalized in terms of leadership emergence, shared leadership, or engaging in voicing behavior (e.g., actively registering dissent). This in turn will harm team outcomes. We expect that women in the subgroup condition are more likely to contribute a mix of communal (consideration) and agentic (initiating structure) contributions, but that these will be aimed toward other females, rather than the other subgroup of men or toward the team as a whole. Thus, this configuration will also harm team outcomes.

In contrast, we expect that women in the paired minority condition will be more likely to achieve a shared leadership level of contribution (e.g., perhaps engaging in consideration via communal behaviors, but not necessarily initiation structure via agentic behaviors) or at the very least, be more likely to actively provide voice, in both cases improving team outcomes. These predictions would generate a non-linear relationship between the number of females in the team and team outcomes that could never have been detected by traditional approaches to operationalizing diversity in continuous “high versus low” terms (such as the standard deviation).

Member gender role orientation as a moderator

Beyond gender composition conditions, we additionally expect that female members' personal gender-relevant beliefs will affect these relationships. Research has shown that men and women differ in their gender role orientation (e.g., Harris, Firestone, & Vega, 2005; Rhoden, 2003; Scherer & Petrick, 2001) – or beliefs about the proper roles for men and women at work and at home (Fortin, 2005). Individuals can be categorized as holding traditional versus egalitarian gender role orientations, where the former is aligned with gender and social role theories about both men and women, and the latter relaxes these expectations (Eagly, 1987; Gutek, Searle, & Klepa, 1991). Research has suggested that women holding more traditional gender role beliefs will be more likely to enact behaviors consistent with their beliefs. Thus, we expect that in mixed-gender situations and especially in configurations when women's social identity is most salient, the relationships we describe above will be strengthened for women holding traditional gender role orientations, and weakened for women holding egalitarian gender role orientations.

Collective gender role orientation as a moderator

In view of research suggesting that leadership emergence accrues to those who conform to beholders' pre-existing notions of prototypical leader behavior, we also expect that the gender role orientations of members in the team will influence the nature of female members' leadership emergence in the team (Eagly, Makhijani, & Klonsky, 1992). Both men and women can hold gender role beliefs, which not only affect their own behavior, but also how they perceive the value of others' contributions. Specifically, we expect that when the team collectively holds more traditional gender role beliefs, female members enacting agentic behaviors may be considered to violate expectations, resulting in potential backlash for women (Eagly & Carlie, 2007; Eagly & Karau, 2002; Koenig, Eagly, Mitchell, & Ristikari, 2011; Livingston, Rosette, & Washington, 2012). However, when the team holds more egalitarian gender role beliefs, female members enacting agentic behaviors may receive more credit for not conforming to stereotypical expectations. In such teams, female members' agentic contributions may be rewarded with higher leadership emergence.

Time as a moderator

We expect that the relationships we describe above may unfold differently as gender diverse teams interact and perform a series of tasks over time. Research has suggested that the effects of diversity may change over time as groups increase in familiarity and gain experience working together (Harrison et al., 1998; Harrison & Price, 2002). Specifically, over time, observable differences – such as gender – become less salient as groups find that their initial, stereotypic impressions of each other were wrong (cf. Pettigrew, 1998). Several studies have supported Harrison et al.'s (1998) proposition that demographic diversity and its negative influences on outcomes weaken over time (Chatman & Flynn, 2001; Pelled et al., 1999; Sacco & Schmidt, 2005; Watson, Kumar, & Michaelsen, 1993). Applying these arguments, we expect that in the *paired minority* condition, as social categorization processes fade with time, we expect

female members will become increasingly less conforming to gender role expectations, and more likely to enact agentic behaviors, leading to better team outcomes.

However, the general attenuation of social categorization processes over time is likely to occur only given sufficient interaction dispelling initial stereotypic impressions. In the *token* condition, because female members are likely to conform to gender role expectations, these roles may become imprinted and demonstrate persistence over time, reducing any attenuation of social categorization effects that might otherwise be expected. Additionally, in the *subgroup* condition, because stereotype-defying interactions are likely constrained to occur within subgroups rather than between subgroups, there is danger that initial social categorization processes that create a divide between the gender subgroups will become increasingly strong. A lack of effective communication between subgroups may lead to “growing discord” (DeRue et al., 2010), potentially exacerbating the effects of gender diversity in this condition over time.

Finally, we predict that over multiple iterations of tasks over time, high levels of team performance, adaptability, and viability over time that is attributable to effective composition of teams and inclusion of female members, can feed back into the model in a reciprocal fashion (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). That is, if it is true that *paired minority* configurations promote positive outcomes by preventing leadership over-emergence, group polarization, and premature consensus, then over time, women in traditionally male-dominated teams may be able to move from marginalized status to achieving voice status, to shared leadership status, and perhaps ultimately even leadership status. In addition, team level success may also feed back into the model by changing individual and collective beliefs about gender in a positive fashion, further accelerating the impact of properly composed teams. In contrast, improperly composed teams (i.e., those that generate tokens or promote gender-based subgrouping) and ineffective inclusion of female members will have the opposite effect over time, negating the potential value that might have been derived from gender diversity. This conceptual model is intended to shift the debate from “*whether*” diversity should be introduced into traditionally male-dominated teams to the issue of “*how*” diversity should be introduced so as to maximize positive outcomes.

An empirical test of this conceptual model

We plan to test this conceptual model in a field sample involving male and female individuals recruited from a military base. This context is appropriate given that “underlying stereotypical perceptions of leadership in the military are masculine in nature” (Boyce & Herd, 2003: 374) and some evidence that greater female presence in such contexts may impede group performance (Rosen, Bliese, Wright, & Gifford, 1999). Given the increasing presence of women in the military (Smith & Smith, 2013) and proposals to increase this even further, there is a clear urgency to understand the dynamics underlying performance outcomes of mixed gender teams within this context.

The overarching project timeline will involve four major parts: the initial baseline survey, observer training and team formation, team performance episodes, and a project closure survey.

- A. Subjects will be recruited from the military base for a teamwork and decision-making study. Their participation will be encouraged but not required. Therefore, research participation is voluntary. Subjects agreeing to participate will receive a link to the initial baseline survey. The goal of the initial baseline survey is to capture the demographics, personality, abilities, and gender role orientation beliefs of potential participants prior to the start of team formation and team performance tasks. We intend to utilize demographic, personality, and ability information as control variables, and gender role orientation beliefs as a substantive variable in our theoretical model.
- B. After the baseline survey is administered, observers will be trained, and teams will be composed. We intend to compose 30 four-person teams and 30 five-person teams, distributed across the following conditions: control, token, paired minority, and subgroup. The total number of participants needed is 270 individuals, among which 210 are male, and 60 are female. Aside from the compositional configuration of women to men in each of the conditions, members will be randomly assigned to teams.
- C. Once composed, teams will be asked to perform four to six tasks (each of which we refer to as a performance episode) over the course of a week-long period. The tasks will be comparable in terms of physical and cognitive demands, and are intended to mirror the types of tactical situations such teams might encounter in combat. Team dynamics will be captured through the observation of each performance episode. Each episode will be roughly 40 minutes in duration and consist of four sub-phases: preparation, execution, reflection, and survey. After teams learn about the task, they will be given 5 minutes to strategize, 15 minutes to execute the task, 5 minutes to reflect upon their experience, and 15 minutes to complete a survey assessing core variables of the study - i.e., each other's leadership emergence, shared leadership, and voice. The teams will then be dismissed, and then reconvened after a specified time period (e.g., the next day or the next week), when they would then perform the same set of procedures for the next task. Data on members' contributions will also be collected during the preparation, execution, and reflection phases via observation. Team performance will be rated by experts, based on how effectively and creatively the team was able to complete the task during the execution phase.
- D. After the four performance episodes have been completed, the teams will disband, and a project closure survey will be administered. This survey will involve all participants and assess their gender beliefs, as well as capture open-ended responses about their experiences working in their teams. Measuring gender beliefs in the initial baseline survey and again in the project closure survey allows us to examine whether, as a

function of their team experiences, members in various mixed-gender conditions might have evolved in their gender beliefs. Once the final survey data has been collected and data analysis is complete, the investigators will provide a summary of findings in the form of an executive report to project sponsors. Project sponsors may also receive a de-identified version of the dataset.

Research Team and Budget Explanation

The core research team from Michigan State University will include (b) (6) a current (b) (6) and former (b) (6) who served in (b) (6); (b) (6), currently an (b) (6) at (b) (6) who received her (b) (6) from the (b) (6), and (b) (6) at (b) (6) who received his (b) (6). Professional biographies and full Vitae for core members of the research team are attached to this proposal. Also supporting the research team is (b) (6) – all current doctoral students at (b) (6), who will assist in team observations.

The proposed budget factors in personnel costs associated with the research team (and student support), travel costs for the research team, and the standard Michigan State University rate for indirect costs.

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