Exploring the Presence and Impact of Variability in Team Conflict Management on Team Effectiveness

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Abstract

This paper investigates the presence of five proposed distinct configural patterns (or profiles) in cooperative and competitive conflict management within teams and their effects on team effectiveness. Data are collected from 79 undergraduate student teams in an online survey. The profiles are first identified using qualitative content coding analyses, then followed by quantitative latent class analyses. Planned comparison tests are then conducted to examine the profiles' relative impact on team effectiveness. All five proposed team conflict management profiles are found in the content coding analyses but only two of them are uncovered in the latent class analyses. Three new profiles are also revealed in the qualitative content coding analyses. The planned comparison tests indicate that teams with majority cooperative profiles outperform teams with majority competitive profiles; teams with all or majority cooperative profiles also outperform those with all competitive profiles. Study implications, limitations, and future research directions are also discussed.

Introduction

Research on how teams or work groups manage conflict, i.e., team conflict management, has proliferated over the past thirty years (e.g., Alper, Tjosvold, & Law, 2000; Baxter, 1982; DeChurch, Mesmer-Magnus, & Doty, 2013; Farmer & Roth, 1998). Arguably, this is due to an increasing emphasis on the use of teams and the need for effective teamwork in organizations today. In spite of this growing interest on team conflict management, much of this research tends to assume similar or converging individual members' conflict management approaches within their teams. This assumption is reflected by the common practice of aggregating individual team members' scores on conflict management measures, and in turn, using teams' means scores to assess the construct of team conflict management (e.g., Alper et al., 2000; Somech, Desivilya, & Lidogoster, 2008). Assessing team conflict management using teams' means scores suggests that the construct is treated as having shared properties (Kozlowski & Klein, 2000), i.e., teams are viewed as using singular approaches in handling team conflicts, e.g., a cooperative approach to conflict (e.g., Alper et al., 2000), or in fewer cases, as using a combination of different strategies, e.g., a combination of avoidant and dominating conflict approaches (e.g., Kuhn & Poole, 2000).

As a result of this assumption, existing team conflict management research has provided little insight into how variability in team members' conflict management approaches may exist within teams, and more importantly, how such variability may play a role in affecting important team outcomes. Relatedly, research from other small group domains, such as group dynamics (e.g., Moscovici, 1976; Nemeth, 1986), coalition formation (e.g., Lau & Murnighan, 1998, 2005), and group conflict asymmetry (e.g., Jehn, Rispens, & Thatcher, 2010), has also demonstrated that individuals can diverge from others in their perceptions, feelings and behaviors when in groups. Indeed, some team conflict management scholars have called for the need to refine and extend

our current understanding of conflict management at the team level (e.g., Behfar, Peterson, Mannix, & Trochim, 2008).

This paper begins to address the aforementioned limitations in existing team conflict management research. In this paper, I investigated a proposed group-level construct of team conflict management. This construct is called *variant conflict management (VCM)*, and it is defined as the manner in which team members differ in how they manage conflict cooperatively or competitively within their teams. Specifically, it is characterized in terms of distinct configural patterns of individual conflict management approaches within a team. These configural patterns are called *VCM profiles*. For example, a team may display a VCM profile where a majority of its members are highly cooperative in how they handle internal team conflicts, while the remaining minority prefers using highly antagonistic or competitive tactics in resolving the same conflict. By contrast, a team with another VCM profile may include a majority of members who are highly competitive in how they manage disagreements with one another while the remaining few members opt for more cooperative strategies in resolving the conflict at hand.

The research described in this paper was aimed at accomplishing two primary objectives. The first was to assess the presence of VCM profiles in student project teams, using a mixed methods approach, i.e., qualitative content coding and quantitative latent class analyses. By doing so, this research extends our current understanding of team conflict management and expands on our current approaches to studying the phenomenon, i.e., going beyond assuming shared properties of team conflict management. The second research objective was to investigate how various VCM profiles may be associated with an important team outcome, team effectiveness. Team effectiveness is defined here as the extent to which members perceive themselves as being satisfied with their work, committed to their work, and successful in their work as a team (Alper et al., 2000), and it is one of the most commonly studied outcomes in team conflict management research. By examining the relationship between VCM profiles and team effectiveness, this would also allow us to compare this study's findings with those of past studies that have examined team effectiveness as an outcome of shared team conflict management.

Conceptualizing Variant Conflict Management

As noted earlier, variant conflict management (VCM) is concerned with how individual members handle conflicts differently from others within a team, and how these differences constitute distinct configural patterns across teams. The conceptualization of VCM was based on relevant theories in the levels literature, specifically Kozlowski and Klein's (2000) concept of configural constructs and Harrison and Klein's (2007) framework of group diversity typologies. Kozlowski and Klein (2000) described configural constructs in group research as those that "capture patterns of individual perceptions or behavior within a unit" (p. 31). In other words, configural constructs are about how individual members' contributions in terms of differing cognition, affect or behavior may combine to represent a team-level phenomenon. This is consistent with the conceptualization of VCM as it, too, is concerned with differing contributions of individual members' behaviors (specifically, their individual conflict management approaches) toward a team's profile of managing conflict.

The concept of VCM was further specified by applying Harrison and Klein's (2007) framework of group diversity typologies, specifically, their notion of separation-based group diversity. According to Harrison and Klein (2007), they described separation-based group

diversity constructs as representing the distribution of specific attitudes, values or behaviors, in terms of similarity or dissimilarity, along a single continuum (p. 1200). Put simply, separation-based constructs describe how individuals' thoughts, emotions or behaviors may be more similar or less dissimilar to others with respect to a specific diversity attribute. In a similar vein, VCM represents a separation-based group diversity construct in conflict management; it describes how individual conflict management approaches are distributed to a lesser (more similar) or greater (more dissimilar) extent along a single continuum. Notably, individual members of a team are viewed as displaying more or less similar (or dissimilar) approaches to handling team conflicts along a one-dimensional cooperation-competition continuum. The nature of conflict management in the VCM construct is described using Deutsch's (1949, 1973) theory of cooperation and competition.

There are several reasons for applying Deutsch's (1949, 1973) theory in conceptualizing VCM. Unlike other existing two-dimensional conflict management theories and multi-modal typologies (e.g., Rahim & Bonoma, 1979; Thomas & Kilmann, 1974; Van de Vliert & Euwema, 1994), Deutsch's (1949, 1973) theory describes a one-dimensional framework that is compatible with the notion of separation-based constructs in Harrison and Klein's (2007) framework. This theory is also one of the most commonly used theoretical models in existing team conflict management research (e.g., Alper et al., 2000; Hempel, Zhang, & Tjosvold, 2008; Tjosvold, Law, & Sun, 2006). Accordingly, its application in the conceptualization of VCM helps contribute to our current knowledge of team conflict management by enhancing consistency and interpretability of VCM and its potential effects on important outcomes. Deutsch's (1949, 1973) propositions in this theory have also been tested extensively and received substantial support in the literature (for an extensive review, see Johnson & Johnson, 2005), thereby allowing the conceptualization of VCM to be based not just on sound theory but also on significant empirical research.

Variant Conflict Management Profiles

Variant conflict management is posited to consist of five configural patterns or profiles that are distinct from one another in terms of how cooperative and competitive behaviors are exhibited by members within teams. These profiles are termed *pure cooperative, pure competitive, majority cooperative, majority competitive,* and *balanced VCM profiles*.

Pure Cooperative VCM profiles

The pure cooperative VCM profile describes a team in which *every* member display highly cooperative behaviors when handling internal team conflicts. Consistent with existing concepts of cooperative team conflict management in past studies (e.g., Alper et al., 2000), this VCM profile reflects a low degree of distribution in members' cooperative behaviors; it is indicated by high or increasing levels of similar cooperative conflict management approaches among members of a team.

Pure Competitive VCM Profiles

In stark contrast to the earlier profile discussed, the pure competitive VCM profile described a team that consists of *all* highly competitive members. This profile is also consistent with

existing notions of competitive team conflict management in the literature (e.g., Alper et al., 2000) in that it reflects a low degree of distribution in members' competitive behaviors; it is indicated by high or increasing levels of similar competitive conflict management approaches among team members.

Majority Cooperative VCM Profiles

A team described as having a majority cooperative VCM profile would comprise a majority of cooperative members within the team. Research on coalition or subgroup formation has shown that it is possible for individuals within groups or teams to coalesce into smaller subgroups along one or more specific common attributes, e.g., gender, age, personality, cultural orientations (Lau & Murnighan, 2005; O'Leary & Mortensen, 2010). Similarly, studies on majority influence (e.g., Moscovici, 1976; Nemeth, 1986) and on emotional contagion (e.g., Barsade, 2002) have also indicated that individuals could be swayed to shift their perspectives, behaviors or emotions to align with those of the majority within their groups. More recently in the group conflict domain, researchers such as Jehn and her colleagues have also demonstrated the presence and effects of asymmetries (dissimilarities) in perceptions of conflict among members within teams (e.g., Jehn et al., 2010). Taken altogether, these research areas point to the possibility of dissimilar or divergent conflict management approaches used by members within a given team and that such dissimilarity or divergence could be reflected in a team profile that exhibits a moderate degree of distribution in members' conflict management behaviors. As far as cooperative conflict management is concerned, a moderate degree of distribution in cooperative conflict management approaches would therefore indicate a majority cooperative VCM profile.

Majority Competitive VCM Profiles

A majority competitive VCM profile is, in essence, the opposite of a majority cooperative VCM profile: it describes a team in which most of its members are competitive when managing internal team conflicts. Drawing from relevant research findings on majority influence, coalition formation, emotional contagion and group conflict asymmetry discussed earlier, it, too, is plausible that under certain circumstances, a moderate degree of distribution in competitive conflict management approaches among members within a given team, i.e., a majority competitive VCM profile, may emerge or form to depict the team-level approach toward managing conflicts.

Balanced VCM Profiles

A balanced VCM profile is posited to depict a team that is "split in the middle" in terms of how its members handle internal team conflicts. In other words, such a team would comprise one subgroup of cooperative members and another equally sized subgroup of competitive members. This VCM profile includes what group diversity scholars, Lau and Murnighan (1998), have described as a group "faultline," i.e., "a hypothetical line that may split[s] a group into subgroups based on one or more attributes (p. 328)." Indeed, some research on group faultlines has shown that groups or teams could form two smaller even-sized subgroups along one faultline with respect to specific diversity attributes (e.g., Thatcher, Jehn, & Zanutto, 2003). Since conflict management approaches could be deemed as one type of diversity attribute, the faultlines

research thus suggests that it, too, is possible for teams to break up into two balanced subgroups with respect to members' conflict management approaches.

Considering the discussion of the proposed VCM profiles above, this study therefore hypothesizes the following: All five proposed VCM profiles, i.e., pure cooperative, pure competitive, majority cooperative, majority competitive, and balanced VCM profiles, will be present in teams (Hypothesis 1).

Relative Effects of Variant Conflict Management Profiles on Team Effectiveness: Pure Cooperative VCM Versus Other VCM Profiles

Findings in the literature indicate that cooperative team conflict management is generally associated with positive team outcomes, such as increased team efficacy (Alper et al., 2000), higher levels of affect-based trust among team members (Hempel et al., 2008), and enhanced team performance (e.g., Behfar et al., 2008; Kuhn & Poole, 2000; Somech et al., 2008). Competitive team conflict management, on the other hand, has been typically linked to more detrimental effects on outcomes such as lower team efficacy (Alper et al., 2000), lower levels of cognition-based trust among members (Hempel et al., 2008), and reduced team performance (e.g., Behfar et al., 2008; Kuhn & Poole, 2000; Somech et al., 2008).

Given the conceptual similarities between the traditional notion of (shared) cooperative team conflict management and a pure cooperative VCM profile, it is therefore plausible that unlike teams with some or mostly competitive members, the cooperative approaches shared by *all* members in a team with a pure cooperative VCM profile would reinforce mutual active listening among members, the seeking of one another's ideas and concerns, and a shared motivation to identify and uncover important concerns that underlie the team's conflict (Deutsch, 1949, 1973). As a result, such open exchange of ideas and perspectives that is engaged in a supportive climate should lend itself to highly integrative solutions to the conflict at hand (Deutsch, Coleman, & Marcus, 2006), and in turn, produce most positive team outcomes, e.g., increased team effectiveness (Behfar et al., 2008).

Following the above reasoning, it is therefore postulated that relative to teams with all other VCM profiles (i.e., pure competitive, majority cooperative, majority competitive, and balanced VCM profiles), teams with the pure cooperative VCM profiles will be associated with the highest levels of team effectiveness (Hypothesis 2).

Pure Competitive VCM Versus Other VCM Profiles

In a team with pure competitive VCM profile, the competitive approaches shared by all members serve to reinforce a 'fixed-pie' or 'win-lose' mentality among members, and create a highly hostile and suspicious climate whereby members may view one another as barriers toward their individual goals and motives (Deutsch, 1949, 1973). Such competitive dynamics should in turn lead to reduced information sharing and decreased mutual understanding that could potentially result in conflict resolution (Deutsch et al., 2006); furthermore, levels of hostility may be maintained or even escalated in ways that will greatly hinder the team's ability to resolve conflict effectively or produce positive output (Behfar et al., 2008; Pruitt & Kim, 2004). Accordingly, this is thus posited that relative to teams with the other four proposed VCM

profiles, teams with pure competitive VCM profiles will be associated with the lowest levels of team effectiveness (Hypothesis 3).

Majority Cooperative VCM Versus Majority Competitive VCM Profiles

In a team where most of its members are cooperative (i.e., cooperative majority), it is likely that the cooperative majority will be able to exert its majority influence given its numerical advantage within the team, especially early on in the team's lifecycle (Moscovici, 1976; Nemeth, 1986). As such, this provides more structural stability for cooperative norms and standards to emerge and guide member perceptions and behavior within the team (Axelrod, 1984; Bettenhausen & Murnighan, 1991; Deutsch & Gerard, 1955). At the same time, the remaining competitive minority members within the team are likely to assert their positions and viewpoints during the team discussion and interactions as well. Considering the cooperative nature of the majority, it is likely that majority subgroup members will be inclined to integrate the competitive minority's concerns and perspectives, as part of their attempt to achieve integrative and mutually satisfying outcomes for all. Furthermore, assuming that the competitive minority members are consistent and confident in conveying their positions or differing perspectives, some degree of minority influence is likely to occur (Moscovici & Nemeth, 1974), and as a result, the integration of differing ideas into the overall team process should in turn lead to higher quality outcomes.

On the other hand, a team with a competitive majority (and a cooperative minority) is likely to experience relatively negative team outcomes. Here, the competitive majority is also likely to exert significant majority influence, given its larger numerical size and representation within the team (Moscovici, 1976; Nemeth, 1986). This influence exerted by the competitive majority is likely to create even more competitive dynamics within the team as a whole over time, as cooperative minorities are likely to adapt their cooperative approaches toward more competitive ones (Kelley & Stahelski, 1970). As competitive dynamics dominate the nature of member interactions within the team, the overall levels of team effectiveness are likely to suffer as a result. Taken altogether, it is thus reasonable to expect that teams with majority cooperative VCM profiles, when compared to those with majority competitive VCM profiles, will be associated with higher levels of team effectiveness (Hypothesis 4).

Balanced VCM Versus Majority Competitive VCM Profiles

Applying Lau and Murnighan's (1998) group faultline theory, a team with a balanced VCM profile would be described as having a strong faultline that separates its members into two evenly sized subgroups based on their conflict management approaches. A team with a majority competitive VCM profile, on the other hand, would be described as possessing a relatively weaker faultline given the uneven subgroup sizes of a competitive majority and one or more cooperative minorities. In an empirical test of their group faultline model, Lau and Murnighan (2005) found that contrary to their model predictions and to prior research (e.g., Molleman, 2005; Thatcher et al., 2003), groups with strong faultlines experienced less relationship conflict, more psychological safety and increased satisfaction with their groups, relative to groups with weak faultlines (pp. 653–654). They also found that cross-subgroup communications improved outcomes for groups with weak faultlines, but not those with strong faultlines (Lau & Murnighan, 2005).

In a related study, O'Leary and Mortensen (2010), who sampled 62 geographically dispersed teams and looked at how their different geographical configurations affected team dynamics, noted that teams with subgroups reported less identification with the whole team, lower transactive memory, increased conflict, and greater coordination problems, when compared to teams without subgroups. Additionally, they also observed that these negative effects were exacerbated for teams with minority subgroups (i.e., subgroups of uneven sizes) as compared to those with non-minority subgroups (i.e., subgroups of comparable sizes).

Taken altogether, these research findings suggest that compared to teams with majority competitive VCM profiles, members in teams with balanced VCM profiles are likely to experience more positive interactions with others in their own subgroups, and at the same time, to interact less with members of other subgroups within the broader team. When dealing with conflict situations, members in these teams may choose to minimize or avoid overt cross-subgroup disagreements or contentions, and instead, prefer to handle the conflicts constructively within the psychologically safe boundaries of their own subgroups. Teams with majority competitive profiles, by contrast, are likely to experience more detrimental interactions between the competitive majority and cooperative minority (Kelley & Stahelski, 1970; O'Leary & Mortensen, 2010), which are in turn likely to contribute to decreased team effectiveness. As such, I hypothesize that teams with balanced VCM profiles, relative to teams with majority competitive VCM profiles, will be associated with higher levels of team effectiveness (Hypothesis 5).

Balanced VCM Versus Majority Cooperative VCM Profiles

As reasoned earlier, teams with balanced VCM profiles are likely to interact less and experience more negative exchanges across their evenly sized subgroups. Teams with majority cooperative VCM profiles, by contrast, are likely to establish cooperative norms and dynamics early whereby the cooperative majority actively considers and integrates alternative input from the competitive minority in order to reach shared agreement or to address mutual concerns for all. From an information elaboration perspective, it may also be argued that teams with majority cooperative VCM profiles, relative to those with balanced VCM profiles, are more likely to share pertinent and distinct pieces of information across factions within them, that may, in turn, lead to improved team functioning and higher quality output. Indeed, recent research has found that when teams are able to share and integrate disparate sources of information or knowledge across subgroups within them, such integration are likely to be beneficial for team performance (Carton & Cummings, 2013). As such, it is predicted that relative to teams with majority cooperative VCM profiles, teams with balanced VCM profiles will likely experience lower levels of team effectiveness (Hypothesis 6).

Method

Participants

884 undergraduate students majoring in business administration were recruited for voluntary participation. A total of 417 students participated in this study, constituting a 47% response rate. The participants' ages ranged from 17 to 27 (M = 21.7, SD = 1.65, S^2 = 2.71). 53.9% of the participants were female (n = 179), 45% were male (n = 151), and 0.6% identified with "other,

e.g., transgender" (n = 2). On average, participants had 1.5 years of prior and current work experience.

Participating students were required to work in the same teams and each team had to work on a final team project throughout the academic semester. Each individual participant was matched with his or her respective team, based on the team information he or she provided in the study. As this study was concerned with within-team variance, it was also important to have teams that were numerically large enough for member variability to emerge. Therefore, at least three members from a given team were deemed to constitute one team unit. Researchers who study groups have found that dyads possess different dynamics when compared to teams that comprise of three or more members (Levine & Moreland, 1990). A total of 104 teams were identified from the participating students.

After screening all 104 teams based on the team size selection criterion described earlier, a total of 79 teams were identified and included in the final analyses. These teams ranged from three to eight members, with an average of four members per team (SD = 1.09, S^2 = 1.19).

Design and Procedures

This study was conducted using an online survey design. To recruit participants, the study description was posted in the university's subject pool system so that students could sign up for voluntary participation in the second half of the academic semester. This posting included general survey instructions, deadline for participation, and a direct link to the online survey for this study.

I also contacted course instructors, via email, for their assistance to recruit student teams from their courses for voluntary participation in this study. The course instructors were asked to forward an email invitation to their students, informing them of this research participation opportunity. Included in the email was a link that would direct each participant to a set of online survey questionnaires via a secure electronic survey hosting software program. Participants were then asked to complete the questionnaires and to return their responses online.

Measures: Variant Conflict Management Profiles

To assess the VCM profiles, I first gathered individual-level data on how members manage conflict within their teams. To do so, I measured individual members' conflict management approaches within their teams, based on adapted items from Chen, Liu and Tjosvold's (2005) measure for cooperative and competitive conflict management approaches in teams. This measure consisted of two sub-scales: cooperative conflict management and competitive conflict management. Both sub-scales were scored on a scale of 1 to 5 (1 = *never*; 3 = *sometimes*; 5 = *always*). The cooperative conflict management sub-scale comprised of five items (e.g., "I work with my teammates to find a solution that will be good for all of us."), while the competitive conflict management sub-scale comprised of four reverse-coded items (e.g., "I tend to overstate my position to get my way."). One item from the cooperative sub-scale and two items from the competitive sub-scale were omitted from the final analyses, due to low item-total correlations. These omitted items were "I treat conflict as a mutual problem to solve with my teammates," "I try to get my teammates to agree with my position (reverse coded)," and "I tend to view conflict as a win-lose contest (reverse coded)." The Cronbach's alphas based on individual ratings for the adapted cooperative sub-scale, competitive sub-scale, and overall scale were .67, .65 and .60

respectively. Since VCM profiles were construed at the team level, it was important to assess the group-level reliability of the construct as well (Snijders & Bosker, 1999, p. 26). While the Cronbach's alphas based on individual ratings for both subscales and the overall scale were all below .70, the Cronbach's alphas based on the teams' mean scores for the adapted cooperative sub-scale, competitive sub-scale, and overall scale were .70 and higher (see Table 2). These suggest that reasonable levels of internal consistency were met at the team level. As such, the overall conflict management scale was used in the final analyses.

Team Effectiveness

Team members' perceptions of their teams' effectiveness were measured using an existing five-item measure derived from prior studies (Alper, Tjosvold, & Law, 1998; Barker, Tjosvold, & Andrews, 1988; Tjosvold et al., 2006). This measure was rated on a five-point scale (1 = *strongly disagree*; 5 = *strongly agree*). The measure also exhibited very high levels of internal consistency reliability based on individual ratings, with a Cronbach's alpha of .90. The group means-based internal consistency reliability and the r_{wg} for the team effectiveness measure were also acceptable (α_{group} = .94, r_{wg} = .95), therefore, it was determined that data aggregation for the team effectiveness variable was justified.

Results

Hypothesis 1 stated that the five proposed VCM profiles, i.e., pure cooperative, pure competitive, majority cooperative, majority competitive, and balanced VCM profiles, will be present in the student project teams. To test this hypothesis, I used an exploratory sequential mixed methods approach (Creswell, 2014) by first conducting a qualitative content coding analysis, followed by a quantitative latent class analysis.

Content Coding Analysis of VCM Profiles

To conduct the content coding analysis, the individual-level responses to all items in the overall conflict management scale were first aggregated for each member within a team. Then, the aggregated conflict management score for each individual member was plotted along a one-dimensional continuum for all members in each team. A Microsoft Excel worksheet was created to visually plot the distribution of individual conflict management scores for each team along a single row. Since 79 teams were included in the analyses, 79 rows were created, with each row representing the spread of individual scores per team.

Using the VCM profile descriptions as a coding scheme, three trained coders who were blind to the study questions and hypotheses reviewed these rows for all teams, and were instructed to classify each team into one of five proposed VCM profiles: pure cooperative VCM, majority cooperative VCM, balanced VCM, majority competitive VCM, and pure competitive VCM. If the team's row of scores did not characterize any one of the five VCM profiles, coders were instructed to classify the team under a sixth category labeled as "other". Whenever a team was classified as "other", the coder also provided detailed comments to describe the specific distribution of individual scores for that team. The specific definitions of the coding categories are provided in Table 1.

Table 1: Coding definitions of variant conflict management profiles for the content coding analysis

Coding category	Variant conflict management profile	Definition
1	Pure cooperative	When all scores are clustered between the midpoint and the high end of the cooperative conflict management continuum.
2	Majority cooperative	When a majority cluster of scores is observed between the midpoint and the high end of the cooperative conflict management continuum.
3	Balanced	When two distinct and evenly sized clusters are observed along the continuum.
4	Majority competitive	When a majority cluster of scores is observed between the midpoint and the low end of the cooperative conflict management continuum.
5	Pure competitive	When all scores are clustered between the midpoint and the low end of the cooperative conflict management continuum.
6	Other	When the distribution of individual scores for the team does not fall into any of the above five categories. (If a team falls under this category, each coder also provides detailed comments describing the specific nature of the score distribution for the given team.)

In cases where coding discrepancies among coders occurred, the majority rule was applied. For example, if two of the three coders rated a "3" and the remaining coder rated a "1", the former was applied as the coding category for the given team. Once the coding from all three coders has been completed, Cohen's Kappas were calculated between pairs of coders to determine the level of inter-rater agreement on the coding. The Cohen's Kappas were .96, .96 and .96, thus indicating high levels of consistency across coders' ratings.

Table 2 shows the final counts of teams that were classified across the six coding categories. Based on these counts, it was observed that in this sample, most teams exhibited majority cooperative VCM profiles, followed by majority competitive, pure cooperative, balanced, and pure competitive VCM profiles. As for the teams that were classified under the "other" category, a closer examination of the comments provided by coders suggested that these teams may be further organized into three new profiles: '*distributed*,' '*multiple clusters*,' and '*midpoint cluster*.' Teams that were described as 'distributed' contained individual scores that were relatively spread out throughout the entire conflict management continuum; in other words, no discernible clusters of scores were observed along the continuum for such teams. Teams described as 'multiple clusters' contained score distributions where there was an absence of a majority cluster; instead, multiple small clusters were observed along the conflict management continuum. Finally, for teams that may be described as 'midpoint cluster', these contained score distributions where all scores were co-located around the midpoint of the continuum.

Table 2: Classification of teams based on the content coding analysis

Coding category	Variant conflict management profile	*N*
1	Pure cooperative	6
2	Majority cooperative	38
3	Balanced	5
4	Majority competitive	10
5	Pure competitive	3
6	Other	17
	'Distributed'	10
	'Multiple clusters'	4
	'Midpoint cluster'	3

Note. The Cohen's Kappas for the coders' ratings were .96, .96, and .96.

Latent Class Analysis of VCM Profiles

A series of latent class analyses (LCA) was also conducted to test Hypothesis 1. Lawrence and Zyphur (2011) recently argued and demonstrated the utility of using LCA for identifying and measuring organizational faultlines in work groups. More importantly, they reasoned that LCA may be particularly useful when "the central concept involves a profile, such as a profile of individuals' personality traits, a profile of high- versus low-performing groups or a profile of the network attributes of industries" (p. 52). LCA can be used as a measurement model to uncover latent clusters or distinct subgroups that may exist in teams (Lawrence & Zyphur, 2011). As such, it is expected that the LCA technique should be a useful analytical tool for uncovering the presence of different VCM profiles in teams.

To conduct the LCAs, I first created eight binary indicators or items (with values of "0" and "1"), based on all the VCM profile categories identified in the content coding analysis. For example, one of the eight items would represent the pure cooperative VCM profile, with teams characterizing this profile coded as "1" and teams that do not coded as "0". When it comes to the "other" VCM profile category, three items were created, with each representing one of the three types identified in the content coding analysis: 'distributed,' 'multiple clusters,' and 'midpoint cluster.'

A series of LCAs were then conducted to compare models with two- through eight-class solutions using the software, Mplus Version 6.1 (Muthén & Muthén, 1998-2010). The two-class solution represents the simplest possible solution that aligns with Deutsch's (1949, 1973) one-dimensional conceptual framework of cooperative and competitive conflict management, while the eight-class solution represents the maximum possible number of latent classes identified in the content coding analysis.

Overall, the LCA literature recommends using a combination of information criteria and fit indexes (or likelihood-based tests) in determining the most appropriate number of latent classes in LCA modeling (Finch & Bronk, 2011; Nylund, Asparouhov, & Muthén, 2007). Statistical Information Criteria (IC), such as the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC) and the Sample-size Adjusted Bayesian Information Criterion (aBIC), are typical indices used to guide the decision on the number of latent classes identified in LCA modeling (Nylund et al., 2007). Generally, the lower the value of these indices, the better

the model fit. Of the three, aBIC has been found to be superior to the other two ICs in LCA modeling simulation studies (Yang, 2006).

The Lo-Mendell-Rubin adjusted Likelihood Test (LMRT) and the Bootstrap Likelihood Ratio Test (BLRT) are two recommended fit indexes used to perform significance testing in evaluating model fit (Nylund et al., 2007). The LMRT compares two neighboring class models and determines whether there is improvement in model fit with the addition of one more class. When the test value for LMRT is significant at the *p*-value of .05, this indicates that the model with *k* classes fits the data better than the model with *k* – 1 classes. As for the BLRT, this test uses bootstrap samples to estimate log likelihood difference distribution between the *k* – 1 and *k* class models (Nylund et al., 2007). Similar to the LMRT, when the test value for the BLRT is significant at *p*-value of .05, this also suggests that the *k* class model is sufficient in fitting the observed data compared to the *k* – 1 class model.

Table 3 shows the fit statistics for the various model comparisons in the LCAs. Based on the fit statistics, the model with a four-class solution appears to fit the data best. The four-class model solution has the second lowest aBIC value, coupled with both significant LMRT and BLRT results. Both the significant LMRT and BLRT results suggest that four (*k*) classes fit the observed data better than three (*k* - 1) classes.

Table 3: Model fit statistics for the latent class analyses

Model	AIC	BIC	aBIC	LMRT	BLRT
8-class	401.944	570.175	346.308	$p < .05$	$p < .05$
7-class	392.262	539.168	343.678	$p < .05$	$p > .05$
6-class	382.061	507.642	340.530	$p < .05$	$p > .05$
5-class	373.588	477.843	339.109	$p < .05$	$p > .05$
4-class	**367.023**	**449.954**	**339.597**	$\mathbf{p < .05}$	$\mathbf{p < .05}$
3-class	367.063	428.669	346.689	$p < .05$	$p < .05$
2-class	368.198	408.479	354.877	$p < .05$	$p < .05$

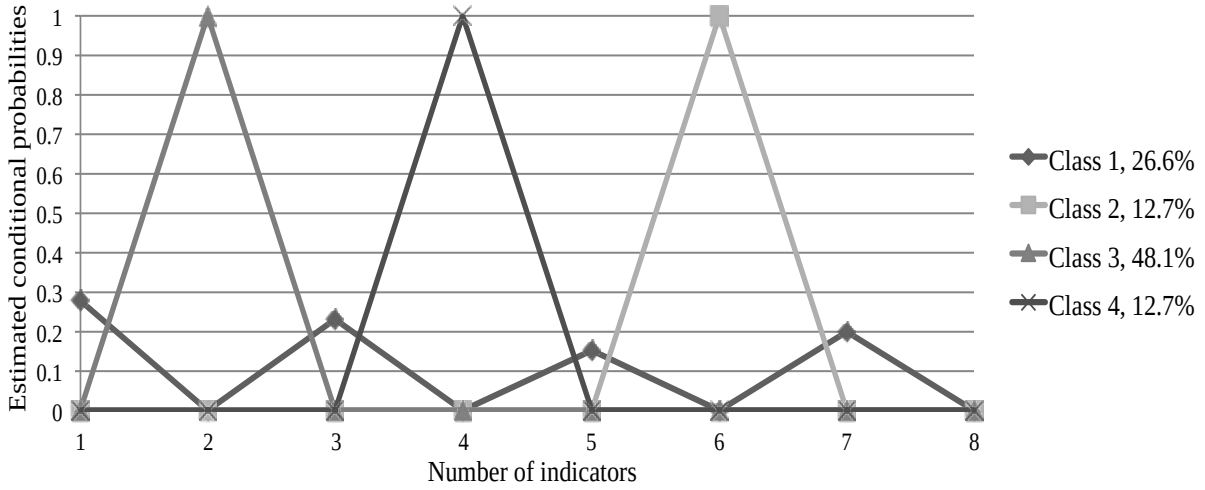
Note. The LCAs were conducted with 100 random starts and 100 optimizations.

Figure 1 shows a graph depicting the estimated conditional probabilities for the four-class solution. The x-axis represents the eight binary items, while the y-axis represents the range of conditional probabilities for each class. Each line on the graph represents a distinct latent class identified in the analysis. The estimated conditional probabilities are specific to each class and provide information on the probability of each team as belonging in that class. For example, the conditional probability for Class 1 is 26.6%, and this indicates that 26.6% of all the teams are most likely to belong to Class 1 rather than to the other three classes.

Table 4 shows how the various VCM profiles corresponded with the four distinct latent classes identified in the analysis. The 'Count' and 'Proportions' columns refer to the number and percentage of teams that are classified into each latent class respectively. This four-class model solution identified four distinct latent classes or categories, three of which aligned with the VCM profiles identified in the content coding analysis. These three categories were majority cooperative VCM, majority competitive VCM, and 'distributed' profiles. Consistent with earlier observations in the content coding analysis, the highest number of teams also had majority cooperative VCM profiles. The next most prevalent profiles were majority competitive VCM and 'distributed' profiles. The last latent class identified in the analysis consisted of all the teams

that were described as having pure cooperative VCM, balanced VCM, pure competitive VCM, 'multiple clusters,' or 'midpoint cluster' profiles (for simplicity, I refer to this class as the 'combination' category). There were 17 such teams in this category, and together, they made up 26.6% of all the teams examined.

Figure 1: Graph showing the estimated conditional probabilities for the four-class model solution



The 'Threshold estimate' column in Table 4 refers to the threshold values of teams belonging to the binary items for the four-class model. Larger positive threshold values indicate a lower likelihood of teams belonging to a given item (i.e., having a value of "1" instead of "0" for that item), while large negative values indicate the opposite (Finch & Bronk, 2011). Three of the four latent classes each had threshold estimates of -15.000. These estimates indicated the highest possible likelihood of teams belonging to each class or VCM profile.

Table 4: Classification of variant conflict management profiles based on latent class memberships (N = 79)

Latent class	Variant conflict management profile[a]	Count	Proportion	Threshold estimate
1	Pure cooperative	6	7.6%	0.916
	Balanced	5	6.3%	1.163
	Pure competitive	3	3.8%	1.792
	'Multiple clusters'	4	5.1%	1.447
	'Midpoint cluster'	3	3.8%	1.792
2	'Distributed'	10	12.7%	-15.000
3	Majority cooperative	38	48.1%	-15.000
4	Majority competitive	10	12.7%	-15.000

Note. [a] These profiles were identified in the content coding analysis.

In summary, based on findings from both the content coding and latent class analyses, it was concluded that Hypothesis 1 was partially supported: the qualitative content coding analysis indicated that all five proposed VCM profiles were present in the teams sampled. However,

subsequent latent class analyses revealed that only two of the five proposed VCM profiles, i.e., majority cooperative and majority competitive VCM profiles, emerged as distinct classes from the data. Furthermore, the content coding analysis revealed additional types of profiles that were tentatively labeled as 'distributed,' 'multiple clusters,' and 'midpoint cluster.' The latent class analyses identified the 'distributed' profiles as a third distinct class and combined the remaining three proposed VCM profiles, 'multiple clusters' and 'midpoint cluster' profiles into a fourth class.

Hypothesis 2 stated that relative to teams with all other VCM profiles, teams with the pure cooperative VCM profiles will be associated with the highest levels of team effectiveness. Planned comparisons were used to test this hypothesis and the remaining four hypotheses. The VCM profiles identified in the content coding analysis were entered as a grouping variable of five levels, with each level representing one VCM profile. The planned comparison test contrasting pure cooperative VCM against the other four VCM profiles was significant: t (57) = 2.47, $p < .05$, $r = .31$. Further post-hoc comparisons, using a Bonferroni's correction, indicated that the mean team effectiveness scores for teams with pure cooperative VCM profiles (M = 19.80, SD = 1.15) were significantly higher than those for teams with pure competitive VCM profiles only (M = 15.47, SD = 1.53). Overall, this suggests that Hypothesis 2 was also partially supported.

Hypothesis 3 stated that relative to teams with all other VCM profiles, teams with the pure competitive VCM profiles will be associated with the lowest levels of team effectiveness. The planned comparison test contrasting pure competitive VCM against the other four VCM profiles was also significant: t (57) = -3.44, $p < .01$, $r = .41$. Specifically, the mean team effectiveness scores for teams with pure competitive VCM profiles (M = 15.47, SD = 1.53) were only significantly lower than those for teams with pure cooperative VCM (M = 19.80, SD = 1.15), and than those for teams with majority cooperative VCM profiles (M = 19.04, SD = 1.75). Accordingly, this suggests that Hypothesis 3 was partially supported.

When it comes to Hypothesis 4, it was posited that relative to teams with majority competitive VCM profiles, teams with majority cooperative VCM profiles are likely to report higher levels of team effectiveness. Results of the planned comparison test contrasting majority cooperative VCM profiles against majority competitive VCM profiles on team effectiveness was significant: t (57) = 2.02, $p < .05$, $r = .26$. The mean team effectiveness scores for teams with majority cooperative VCM profiles (M = 19.04, SD = 1.75) were thus significantly higher than those for teams with majority competitive VCM profiles (M = 17.83, SD = 1.29). As such, Hypothesis 4 was supported.

As for Hypothesis 5, it was postulated that relative to teams with majority competitive VCM profiles, teams with balanced VCM profiles are likely to report higher levels of team effectiveness. Results of the planned comparison test contrasting teams with balanced VCM profiles against teams with majority competitive VCM profiles on team effectiveness were also non-significant: t (57) = -1.54, *ns*. The mean team effectiveness scores for teams with balanced VCM profiles (M = 19.25, SD = 2.38) were not significantly higher than those for teams with majority competitive VCM profiles (M = 17.83, SD = 1.29). Therefore, Hypothesis 5 was not supported.

Finally, Hypothesis 6 predicted that teams with balanced VCM profiles, relative to majority cooperative VCM profiles, will likely report lower levels of team effectiveness. Contract to expectations, the planned comparison test contrasting teams with balanced VCM profiles against teams with majority cooperative VCM profiles on team effectiveness did not reach significance:

t (57) = -.26, *ns*. The mean team effectiveness scores for teams with balanced VCM profiles (*M* = 19.25, *SD* = 2.38) were not significantly lower than those for teams with majority cooperative VCM profiles (*M* = 19.04, *SD* = 1.75).

Supplementary Analyses: Relative Effects of Latent VCM Classes on Team Effectiveness

Using the four VCM classes or categories identified in the LCAs, I also assessed possible group differences among these categories in terms of their effects on team effectiveness. A one-way between-groups ANOVA procedure was used. The ANOVA findings showed that there was no significant overall group difference in team effectiveness scores across all four VCM categories as well, *F* (3, 75) = 1.03, *ns* (see Table 5).

Table 5.

Means and standard deviations for the effects of variant conflict management categories (identified in the latent class analyses) on team effectiveness (*N* = 79)

	Variant conflict management categories							
	'Combination'		Majority cooperative		'Distributed'		Majority competitive	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Team effectiveness	18.69	2.04	19.04	1.75	18.63	2.92	17.83	1.29

Discussion

There were two primary research objectives associated with this study. The first objective was to assess whether the five proposed VCM profiles (pure cooperative, pure competitive, majority cooperative, majority competitive and balanced VCM profiles) are evident in the student project teams sampled. Based on findings from the qualitative content coding analyses, it was observed that within-team differences in members' conflict management approaches could indeed be organized into distinct configurations aligned with the five VCM profile types. Moreover, it was noted that among the teams sampled, a majority of them exhibited majority cooperative VCM profiles, followed by majority competitive, pure cooperative, balanced, and pure competitive VCM profiles. Such frequency distributions of VCM profiles are understandable given the nature of the sampled teams. Since this study involved teams comprised of students who needed to rely on one another in order to complete their team projects, it is reasonable to expect that team members would be relatively cooperative with one another when handling team conflict situations in the process of working on their projects. Additionally, the interdependent nature of the team task would also preclude most teams from developing pure competitive VCM profiles, since it would be challenging for highly competitive members to work together effectively toward their team goals.

Aside from the five proposed VCM profiles, the content coding analyses also revealed other distributional patterns among members' conflict management approaches within teams. These

new patterns or profiles were described as 'distributed,' 'multiple clusters,' and 'midpoint cluster.' One possible explanation for the presence of the 'distributed' and 'multiple clusters' profiles could be that team members were not subject to relatively strong situational or team-level pressures that would sway them to act more similarly with most of their teammates (Meyer, Dalal, & Hermida, 2010; Mischel, 1977). As a result, members in such teams may be free to rely on their own natural proclivities in conflict management when conflict situations arise in their teams, thus leading to more diversity or spreading out of individual conflict approaches within the teams.

Further, the presence of 'midpoint cluster' profiles among some of the teams observed suggests that individual members may not always veer toward the cooperative or competitive end of the one-dimensional conflict management continuum. Rather, it is possible for teams to comprise of all members whose preferences involve using conflict management strategies that lie somewhere in between cooperative and competitive conflict management. Such conflict management strategies also seem to parallel the concepts of compromising, accommodating or obliging styles of conflict management, as discussed in other existing conflict management theories or typologies (e.g., Rahim & Bonoma, 1979; Thomas & Kilmann, 1974).

From an empirical standpoint, the latent class analyses (LCAs) provided further validation to some of the VCM profiles proposed in the model, and reinforced the need to consider additional profiles in the model. Specifically, the LCAs identified two of the proposed VCM profiles, i.e., majority cooperative and majority competitive VCM profiles, as distinct latent classes in the data. The new 'distributed' profile was also identified as a distinct latent class in the LCAs, thus supporting the discovery of this profile in the content coding analyses. The LCA results were also consistent with those from the content coding analyses in noting that the majority cooperative VCM profiles were most prevalent in the teams sampled.

The LCA findings also revealed a 'combination' category that encompasses three of the proposed VCM profiles (i.e., pure cooperative, balanced and pure competitive VCM profiles) and two of the new profiles (i.e., 'multiple clusters' and 'midpoint cluster') identified in the content coding. While these findings may, in part, be due to the small sample sizes associated with these profiles, they may also suggest a dynamical nature of team conflict management. Using the dynamical systems perspective (cf. Holland, 1995; Schuster, 1984; Strogatz, 2003), it may be reasoned that a team's conflict management profile can change over time, and that some profiles (e.g., balanced, 'midpoint cluster' and 'majority cluster' profiles) may be more transitory than others. In other words, it is possible for a team's conflict management profile to change and shift over time, and eventually stabilizes into a profile that stays relatively consistent. The majority cooperative, majority competitive, and distributed profiles, as identified in the LCAs, may represent such stable states or "attractors" (Vallacher, Coleman, Nowak, & Bui-Wrzosinska, 2010) that teams' conflict management profiles eventually evolve into.

The second research objective of this study was to compare the effects of the five proposed VCM profiles on team effectiveness. Results from the study revealed that teams with pure cooperative VCM profiles were found to be more effective than those with pure competitive VCM profiles. Teams with pure cooperative or majority cooperative profiles were also more effective than those with pure competitive or majority competitive VCM profiles. As for comparisons between teams with balanced and majority competitive or majority cooperative VCM profiles, no significant effects were observed among these team profiles on team effectiveness.

Taken altogether, it may be concluded that these findings on various VCM profiles' impact on team effectiveness also paralleled prior research on the effects of cooperative and competitive team conflict management on team effectiveness (e.g., Alper et al., 2000; Tjosvold et al., 2006). Overall, teams with VCM profiles that are more cooperative in nature (i.e., pure cooperative and majority cooperative VCM profiles) are more likely to experience higher levels of team effectiveness, when compared to those with VCM profiles that are more competitive in nature (i.e., pure competitive and majority competitive VCM profiles).

As for the absence of effects comparing balanced and majority competitive or majority cooperative VCM profiles, this may be due to the relatively limited variance observed in teams with balanced VCM profiles. Based on the qualitative content coding analyses, some of the teams that were coded as having balanced VCM profiles may not have had enough 'distance' between the two opposing subgroups within them. In other words, the two subgroups in these teams may not have been far apart enough for opposing cooperative and competitive dynamics to truly emerge and to significantly influence team outcomes. Future investigations should attempt to identify large enough samples of teams with 'true' balanced VCM profiles and to replicate the comparison study of how these teams may differ from those with majority competitive or majority cooperative VCM profiles in affecting team outcomes.

Implications for Research, Theory and Practice

This study contributed to existing theory on conflict management by testing one of the first theoretical models formulated to describe and explain within-team variability in conflict management among members. Study results also provided initial support for the presence of distinct configural profiles, corroborated prior research on team conflict management and on existing conflict management theories, as well as provided insights into possible extensions or refinements of the VCM model with the discovery of 'new' VCM profiles.

Findings from this study also offered preliminary support to the argument that the present study of team conflict management based on teams' means scores limits our understanding of the phenomenon. While some of the findings did support prior research regarding the impact of mean cooperative and competitive team conflict management on team effectiveness (e.g., Alper et al., 2000; Tjosvold et al., 2006), it was also observed that individual members do not always converge or share similar conflict management approaches within their teams. This divergence or diversity of individual differences in conflict management approaches was evidenced by the presence of distinct VCM profiles uncovered in both the content coding and latent class analyses in this study. This study's findings also indicated that different VCM profiles could exert differential effects on important outcomes, such as team effectiveness.

In terms of practical implications, findings from this study may be able to help managers, team leaders or self-managed teams better understand how differences in the ways their team members handle conflict situations can significantly impact effective team processes and outcomes. For example, a team may recognize that when a cooperative majority subgroup exists among its members, this configuration may actually facilitate its performance compared to when all its members are highly competitive in handling conflict situations.

Furthermore, by identifying specific VCM profiles that are likely to enhance rather than undermine effectiveness or team functioning, managers, team leaders or self-managed teams may also be better able to steer their teams away from more 'detrimental' VCM profiles or promote the development of more 'productive' ones in their teams. Encouraging a team to shift

from a majority competitive VCM profile to a pure cooperative or majority cooperative VCM profile by providing opportunities for team members to learn and apply more cooperative conflict management skills, for instance, may in turn help increase the team's effectiveness.

Study Limitations and Future Research Directions

As with all research, this study was also subject to a number of limitations. The teams sampled in this study comprised student project teams with relatively young members, and with clear team goals that existed for a relatively short period of time (i.e., an academic semester). Although such a sample may suggest limited generalizability of the results, prior research has shown that studies using student teams often found comparable findings to those using organizational teams (Van Vianen & De Dreu, 2001).

Since the teams involved in this study were identified based on available member responses, and that a considerable number of the teams included in the analyses were not complete teams, the variance of scores within the teams may have been restricted, and thereby reducing the likelihood of detecting more significant effects. The sizes of teams sampled were also relatively small (i.e., 3 to 8). Future investigations should attempt to use complete intact teams and with larger team samples.

New measures or methods to assess VCM profiles could also be developed. For example, using objective measures, such as behavioral observations of participants' conflict management approaches in teams over time, may help reduce potential self-report biases and better assess the presence and nature of VCM profiles formed within teams. The use of other research designs, such as experiments and longitudinal surveys, may also help better establish the validity and causality of relationships among the VCM profiles, with potential antecedents and outcomes.

Conclusion

With an ever-growing emphasis on collaborative teams and effective teamwork in modern organizations, the value placed on 'conflict competent' teams (Runde & Flanagan, 2008) in the workplace will no doubt continue to increase. The research discussed here provides further testament that more work needs to be done in advancing our understanding and knowledge of team conflict management. As researchers, scholars and practitioners in this area, it is thus imperative that we continue to advance our investigation and discovery of critical conditions and dynamics that enable teams to manage or resolve conflicts productively, as well as important consequences resulting from such team processes.

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