A new approach to studying collective orientation in team contexts

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Abstract

We have proposed a new conceptual framework of collective orientation in team contexts with regard to vertical and horizontal dimensions of individualism and collectivism at the individual level. It has been argued that people may activate these schemas differently for different team contexts. An empirical longitudinal study of 270 students engaged in 82 academic teams confirmed the conceptualization by identifying four interpretable factors: vertical and horizontal idiocentrism and allocentrism. This new conceptual framework may have significant implications for studies of some aspects of team processes in organizational contexts.

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Introduction

Team members' collective orientation has been considered to be an important factor for effective team performance in many studies (Driskell & Salas, 1992; Earley, 1993; Eby & Dobbins, 1997; Miles, 2000; Stout, Driskell & Salas, 1997; Wagner, 1995). The term collective orientation has been conceptualized from different perspectives. Three approaches have been identified in the literature: behavioral approach, preference approach, and individualism/collectivism approach. Behavioral approach refers to identifying team-oriented behaviors such as working together, sharing common goals, and having high team standards (Driskell & Salas, 1992; Watson, Johnson, & Merritt, 1998; Watson, Johnson, & Zgourides, 2002). The behavioral approach does not seem to be appropriate for collective orientation, because the term 'orientation' generally refers to basic beliefs, preferences, or tendencies, rather than behaviors. A team member's behavior may not necessarily be consistent with her/his collective orientation. Team members' collective orientation has been also considered a preference for working in a team, rather than alone (Driskell, & Salas, 1992). Team members' collective orientation may be multi-dimensional and more complex than a preference.

The notions of individualism and collectivism as individual beliefs have also been used to conceptualize team members' collective orientation (Earley, 1993; Eby & Dobbins, 1997; Wagner, 1995; Workman, 2001). According to Triandis (1995, p. 2), collectivism is "a social pattern consisting of closely linked individuals who see themselves as parts of one or more collectives (family, co-worker, tribe, nations)" and,

individualism is “a social pattern that consists of loosely linked individuals who view themselves as independent of collectives”. Although individualism and collectivism are dimensions of culture, they have also been conceptualized as sets of individual beliefs and values. Study of individualism and collectivism at the individual level is concerned with psychological and individual differences. On the other hand, study at the cultural level is concerned with differences between societies or nations regardless of individual differences within each society (Hofstede, 2001; Leung & Bond, 1989; Probst et al., 1999). Triandis (1995) proposed “allocentrism” and “idiocentrism” as equivalent terms for collectivism and individualism at the individual level. From this perspective, idiocentrics may exist in collectivistic cultures, and allocentrics may live in individualistic cultures (Gudykunst, 1988; Triandis, 1995).

Alavi and McCormick (2004) argued that despite extensive past studies of collective orientation in team contexts (Driskell, & Salas, 1992; Earley, 1993; Eby & Dobbins, 1997; Miles, 2000; Stout, Driskell, & Salas, 1997; Wagner, 1995), conceptualization of team members’ collective orientation can be improved. It has been suggested (Alavi & McCormick, 2004) that collective orientation in team contexts may be more complex than has been conceptualized in past studies (e.g., Driskell & Salas, 1994; Eby & Dobbins, 1997; Stout, Driskell, & Salas, 1997; Wagner, 1995). There seem to be few studies, which have conceptualized collective orientation as a contextualized multi-dimensional construct. Different dimensions of collective orientation may be activated for different types of teams and tasks (Alavi & McCormick, 2004).

In this paper, first, the new conceptualization of team members' collective orientation is explained, then, the results of an empirical study of team members' collective orientation in a university student context are presented and discussed. Finally, the implications of this new framework are proposed for further research.

Conceptual framework

Alavi & McCormick (2004) adapted the frameworks of Triandis (1995, 1996) and Markus & Kitayama (1991), originally developed for study of self-construals in individualistic and collectivistic cultures, for conceptualization of team members' collective orientation. Although Triandis and Gelfand (1998) suggested applying vertical and horizontal dimensions of individualism and collectivism to group studies (Triandis & Gelfand, 1998), we have not identified a study that used this framework thus far. From this perspective, a team member's collective orientation can arguably be conceptualized in terms of vertical and horizontal dimensions of allocentrism and idiocentrism (see Figure 1). Team members may have varying sets of self-beliefs concerning their independence from and interdependence with other team members (Alavi & McCormick, 2004). Horizontal idiocentrics may believe themselves to be independent from but similar to other team members. Vertical idiocentrics may emphasize being different from other members. A vertical idiocentric team member may perceive her/himself to be superior to other members and may consequently try to become dominant and win in team discussions, or benefit from a limited resource. Horizontal allocentrics may perceive themselves to be interdependent with other team

members and consequently exhibit cooperative behaviors. However, they may not be likely to sacrifice their self-interests for their teams if required. However, vertical allocentric members may do so because of their subordinative perceptions of self to the teams. We have argued that individuals may differently activate these dimensions for different types of teams and tasks (Alavi & McCormick, 2004)

	interdependent self	**independent self**
vertical self	**vertical allocentrism:** perception of 'self' as interdependent with other team members and subordinate to the team.	**vertical idiocentrism:** perception of 'self' as independent from and superior to other team members.
horizontal self	**horizontal allocentrism:** perception of 'self' as interdependent with and similar to other team members.	**horizontal idiocentrism:** perception of 'self' as independent from and similar to other team members.

Figure 1: Different dimensions of collective orientation in team contexts (Alavi & McCormick, 2004: 117)

Empirical study

Method

Participants

The potential participants of this study were 895 students who had enrolled in seven courses of Local Planning, Health Promotion, Physics Laboratory Research Projects, Fundamentals of Physics, Physics for Building and Civil Engineering, Physics for Industrial Design, and Health Services Development and Implementation in

semester 2, 2003 in a university in Sydney, Australia. These students were required to work in teams to carry out team assignments or projects during the session.

Procedure

A two-phase longitudinal study was used. In week two of the courses, the first phase was conducted. Given the lecturers' permission to collect data in the classes, the first questionnaire and the consent form were given to every student and all were requested to participate in the study. The second phase was conducted two weeks before completion of teamwork exercise.

Demographic information

Two hundred and seventy students participated in both phases of this study (respond rate of 30%), and formed the effective sample of the data analysis. Fifty seven percent of 270 participants were male, and 42.3% were female. The average age was 21 years with a standard deviation of 4.86. Seventy five percent of the participants were studying at the undergraduate and 29% at the postgraduate level. Table 1 shows the courses breakdown of the effective sample. Most participants were in the Physics Laboratory course (53.1%). English was the first language of 31.9% of participants (see Table 2). Table 3 shows that the most common ethnic backgrounds were Chinese and Australian. Other Asian backgrounds were Malaysian, Indonesian, Bengali, Filipino, Vietnamese, and Korean.

Table 1: Courses breakdown of the effective sample

Course	Physics 1*	Physics 2**	Physics 3***	Physics Lab	Local Planning	Health Promotion	Health Services development and implementation
%	2.5%	11.1%	4.3%	53.1%	11.1%	14.0%	3.9%

* Physics for Building and Civil

** Fundamental of Physics

*** Physics for Industrial Design

Table 2: First languages

First Language	English	Chinese	Indonesian	Korean	Others
%	31.9%	28.4%	6.3%	1.6%	31.8%

Table 3: family's ethnic backgrounds

Ethnic Background	Chinese	Australian	Other Asian Countries*	European**	Indian	Others
%	30.8%	16.1%	15.6%	7.5%	3.8%	26.2%

* Including Taiwanese, Malaysian, Indonesian, Bengali, Hong Kong, Filipino, Vietnamese, and Korean

** Including English, French, German, Italian, Polish, and Irish

Instrument

Twenty four collective orientation items were developed after considering items used in some other studies (e.g., Earley, 1993; Eby & Dobbins, 1997; Triandis, 1988, 1995; Triandis, & Gelfand, 1998; Wagner, 1995) with reference to vertical and horizontal dimensions of allocentrism and idiocentrism in the context of student teams.

A 9-point scale ranging from 1 (Strongly disagree) to 9 (Strongly agree) was used (Triandis, 1988, 1995; Triandis, & Gelfand, 1998).

Exploratory factor analysis

Principal axis factoring and direct oblimin rotation revealed a four-factor solution with no substantial cross-loadings (see Table 4). Factor one was named *vertical idiocentrism* because of the emphasis of the items on a team member's differences from other members and perception of being better than other members in teamwork. Factor two was named *horizontal allocentrism*, because of the emphasis of the items on harmony and interdependence with other team members. Factor three was labeled *horizontal idiocentrism*, because of the emphasis of the items on uniqueness and independence. Factor four was labeled *avoiding arguments* which refers to avoiding arguments when other team members are in agreement. The *avoiding arguments* items were among those, which had originally developed for vertical allocentrism. Some other items such as "I should give priority to the group rather than myself" and "I should sacrifice my opinion for the unity of the group" which were also developed for vertical allocentrism did not have any significant correlation with the factors, and were eliminated during the analysis. This suggests that vertical allocentrism may not be as meaningful as other dimensions of collective orientation in this student team context.

The factors explained 50.5% of the total variance. The eigenvalues were 3.54, 3.13, 1.8, and 1.13, respectively, and the factors explained 18.6%, 16.5%, 9.5%, and 5.9% of the total variance, respectively. Cronbach's alphas were 0.73, 0.76, 0.72, and 0.52 respectively.

Table 4: Final principal axis with oblimin rotation of phase one collective orientation

Factors and items of collective orientation	Factor loadings
Factor 1: Vertical idiocentrism Cronbach's alpha=0.73	
5. It is important to me that I do my job better than other group members.	0.68
11. It annoys me when other group members perform a task better than I do.	0.62
1. I like to be the best in the group in performing our tasks.	0.54
9. Winning in discussions with other group members is important to me.	0.53
14. I like it if other group members know me as a student who can perform my group tasks better than others.	0.53
Factor 2: Horizontal allocentrism Cronbach's alpha=0.76	
23. I feel good about being a member of the group.	0.68
3. It is important to me to maintain harmony within the group.	0.60
20. It is important to me to consult other group members and get their ideas before making a decision about my tasks.	0.57
17. I like to help other group members if they have some problems performing their tasks.	0.55
15. I respect the majority's opinions in the group.	0.49
4. I like to work interdependently with other group members.	0.46
Factor 3: Horizontal idiocentrism Cronbach's alpha=0.72	
19. I am a unique person, different from other group members.	-0.74
22. My personal identity is very important to me.	-0.63
12. It is very important to me to be known as a unique person different from other group members.	-0.57
13. I would rather depend on myself than on ther group members.	-0.46
16. Performing my own tasks independently from other group members is very important for me.	-0.42
Factor 4: avoiding arguments Cronbach's alpha=0.52	
21. Even when I strongly disagree with group members, I should avoid an argument.	0.76
18. In the group's discussion, I should not disagree with ideas, which other group members agree on.	0.49

Measurement models

The final exploratory factor analysis solution of collective orientation in phase one (see Table 5) was used as the initial model in development of the measurement model of collective orientation. Polychoric and asymptotic matrices were generated, as the scales were ordinal (Jöreskog & Sörbom, 1996; Kelloway, 1998), and Weighted Least Square (WLS) method used for estimation.

Seven goodness of fit measures are reported: $\chi 2$, Normed Chi-square ($\chi 2/df$), goodness-of-fit index (GFI), adjusted goodness-of-fit (AGFI), root mean square residual (RMR), root mean square error of approximation (RMSEA), and comparative fit index (CFI). In order to calculate the reliabilities of a latent variable, Equation 1, has been used to compute scale reliability ($\rho_{vc(\eta)}$).

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \varepsilon_i} \qquad \text{Equation 1}$$

where λ_i are the partial correlations between the latent variable and the indicators, and ε_i are the variances of measurement errors.

The initial measurement model had some observed variables with large standardized residuals. These items were mainly those which referred to the affective aspects of vertical idiocentrism, for example, "11. It annoys me when other group members perform a task better than I do", or emphasized other members' perceptions, for example, "I like it if other group members know me as a student who can perform my group tasks better than others". Although a team member may perceive her/himself to be better than others, he/she may not like to be consistently perceived to be by other team members, for reasons such as cultural values. These items were eliminated to

make the latent variables more interpretable, and improve the measures of fit of the measurement model. Figure 2 and Table 5 shows the model and the measures of fit.

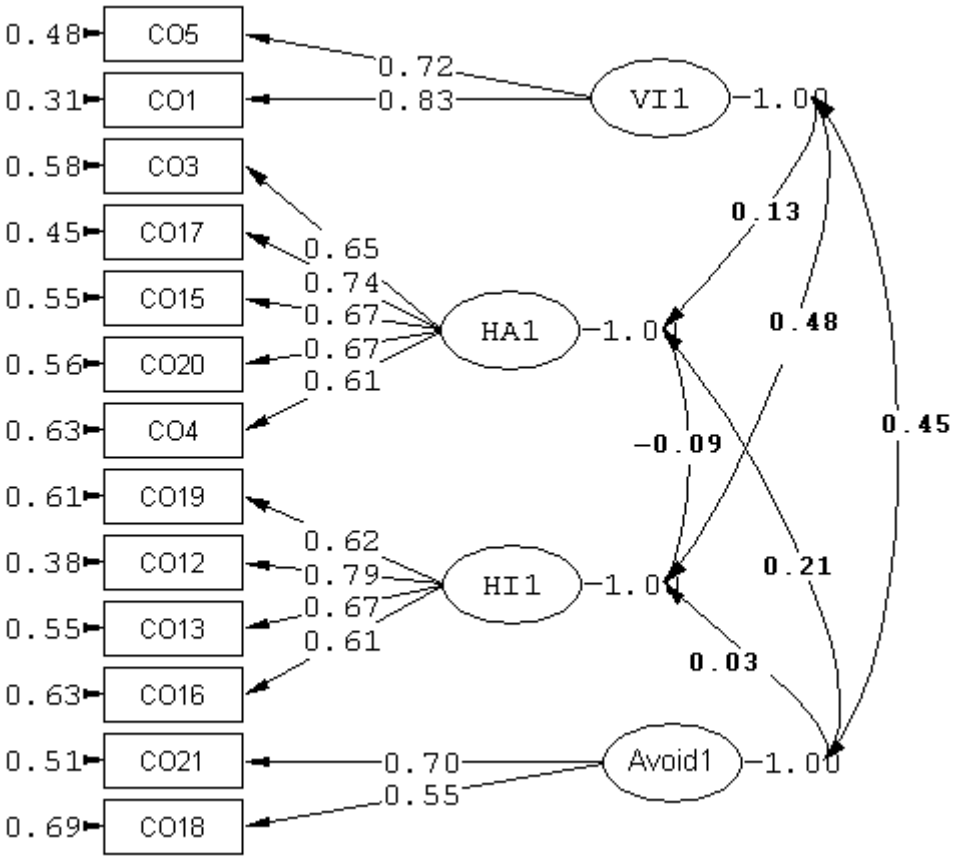

Figure 2: The measurement model of collective orientation for phase one

Table 5: Measures of fit for the measurement model of collective orientation in phase one

Phase	χ^2	***df***	χ^2/df	***p***	**GFI**	**AGFI**	**RMR**	**RMSEA**	**CFI**
1	102.95	59	1.75	0.00	0.98	0.96	0.07	0.05	0.94

The measurement model in phase one was used to confirm the model for the second phase. Figure 2 and Table 6 shows the confirmatory model and the measures of fit. The model was considered acceptable.

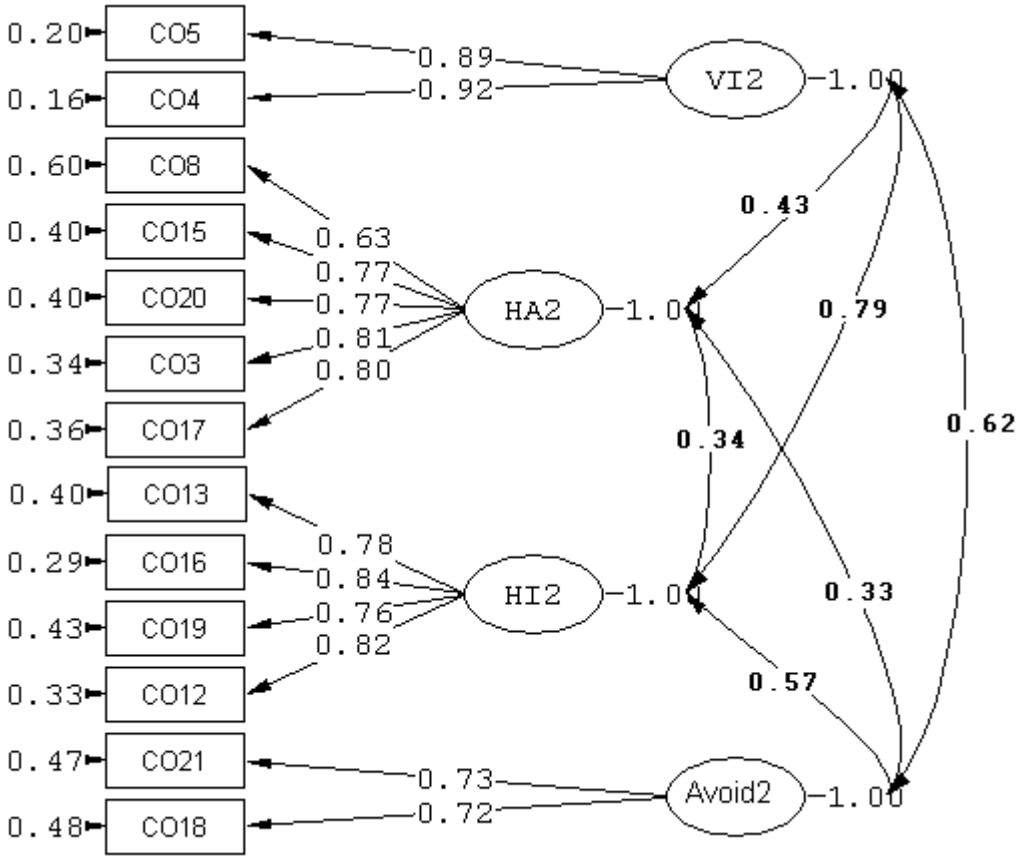

Figure 2: The confirmatory model of collective orientation for phase two

Table 6: Measures of fit for the confirmatory model of collective orientation in phase two

Phase	χ^2	***df***	χ^2/df	***p***	**GFI**	**AGFI**	**RMR**	**RMSEA**	**CFI**
2	159.84	59	2.71	0.00	0.97	0.96	0.15	0.07	0.95

Although *vertical idiocentrism* and *horizontal idiocentrism* in the confirmatory model were conceptually distinct, they had a large correlation (0.79). In order to test the discriminant validity of these two construct, the second model was compared to another competing three latent variable model in which *horizontal* and *vertical idiocentrism* were integrated. Table 7 shows the measures of fit for both models. The model with

distinct latent variables for *horizontal* and *vertical idiocentrism* had better measures of fit. In addition, following the method proposed by Anderson and Gerbing (1988), the difference between the Chi-squares of these models (40.3) was calculated and found to be highly significant (df=3, p<0.01). Therefore, the model with four latent variables in the second phase was accepted as the final solution.

Table 7: Testing the discriminant validity of collective orientation in the second phase for vertical and horizontal idiocentrism

Model	χ^2	***df***	χ^2/df	***p***	**GFI**	**AGFI**	**RMR**	**RMSEA**	**CFI**
four latent variable	159.84	59	2.71	0.00	0.97	0.96	0.15	0.07	0.95
three latent variable	200.14	62	3.23	0.00	0.97	0.95	0.19	0.09	0.93

Table 8 shows the matching structures for both phases. The latent variables had larger reliabilities in phase two than in phase one. It is possible that some students may have clarified their perceptions of self in relation to other team members during teamwork.

Table 8: Reliabilities and the collective orientation identical items for both phases

Dimensions of collective orientation	$\rho_{vc(\eta)}$ Phase 1	$\rho_{vc(\eta)}$ Phase 2	**Items**
Vertical idiocentrism	0.60	0.82	5. It is important to me that I do my job better than other group members. 1. I like to be the best in the group in performing our tasks. (Item 4 in the second questionnaire)
Horizontal allocentrism	0.45	0.58	3. It is important to me to maintain harmony within the group. 17. I like to help other group members if they have some problems performing their tasks. 20. It is important to me to consult other group members and get their ideas before making a decision about my tasks. 15. I respect the majority's opinions in the group. 4. I like to work interdependently with other group members. (Item 8 in the second questionnaire)
Horizontal idiocentrism	0.46	0.64	16. Performing my own tasks independently from other group members is very important for me. 12. It is very important to me to be known as a unique person different from other group members. 13. I would rather depend on myself than on other group members. 19. I am a unique person, different from other group members.
avoiding arguments	0.43	0.52	21. Even when I strongly disagree with group members, I should avoid an argument. 18. In the group's discussion, I <u>should not</u> disagree with ideas, which other group members agree on.

The final model was also used to confirm the factor structure of collective orientation for those students who participated only in the first or the second phases. The final measurement model was tested for students who participated only in phase one. The model had large RMSEA (0.10) and unacceptable negative error variance for the item "Even when I strongly agree with group members, I should avoid an argument". In addition, the partial correlation between the item "In the group discussion, I should not disagree with ideas, which other group members agree on" and *avoiding arguments* was not significant. A possible explanation is that students who participated in both phases

might have possessed clearer perceptions of self in relation to other team members than students who participated only in phase one. The model was also tested for students who participated in only phase two. The model had acceptable measures of fit (normed-Chi square=2.74, RMSEA=0.06, GFI=0.98, AGFI=0.97, and CFI=0.95). In addition, the reliabilities of the latent variables using $\rho_{vc(\eta)}$ formula were 0.77, 0.50, 0.57, and 0.50 respectively.

Implications for further studies

We propose conducting studies on vertical and horizontal idiocentrism and allocentrism in other team contexts. Although some items were developed in this study to identify vertical allocentrism, the factor *avoiding arguments* emerged instead. It is suggested that vertical allocentrism may develop in organizational contexts when team members are required to obey some team rules and standards. Team members may activate vertical allocentrism schemas if they perceive that they are expected to give greater priority to their organizational and team goals and rules than their personal goals.

Team members may activate differently their collective orientation at different stages of teamwork. This can be investigated in future studies by following up team members' collective orientations over time. It is suggested that over time team members may gradually develop clearer perceptions of self in relation to other team members than at the start of teamwork. In addition, team members may differently activate schemas consistent with the dimensions of collective orientation as a consequence of different requirements of different stages of teamwork.

Summary

In this paper, first, a new conceptualization of team members' collective orientation concerning team members' perceptions of self in relation to other team members was explained. Then, the results of an empirical study including exploratory factor analysis and measurement models for the dimensions of collective orientation were discussed. A four-latent variable measurement model with acceptable measures of fit was confirmed. Finally, some implications for further research using the model in other team contexts and measuring team members' collective orientations at the stages of teamwork were proposed.

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