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Ajay Vinze  
*Texas A&M University*

Maha El-Shinnawy  
*Texas A&M University*

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# A Cross-Cultural Study of the Group Polarization Phenomenon<sup>1</sup>

*Ajay S. Vinze and Maha El-Shinnawy*  
*Department of Business Analysis and Research*  
*Texas A&M University*  
*College Station, TX 77843-4217*  
*Telephone: (409) 845-1616*  
*Fax: (409) 845-5653*  
*Email: Vinze@TAMU.EDU or El-Shinnawy@TAMU.EDU*

## **Executive Summary**

This study focuses on group polarization, a phenomenon that has been studied extensively by social psychologists for the North American region. Group polarization is an outcome of group decision making which results in a collective attitude change for the individuals that make up the group. A dominant explanation of group polarization and the focus of this paper is the theory of Persuasive Arguments. While there has been extensive work over the last three decades that affirms the existence of the group polarization phenomenon and the importance of persuasiveness of arguments in determining the extent of decision choice shift, most of these studies have been conducted in a North American context and in a traditional face-to-face setting. There has been only limited attention to studying this phenomenon for computer-assisted group work and almost no studies, that we know of, that address this concern in a cross-cultural setting. In this paper we examine the impact of technology and culture on group decision shifts. Furthermore, we also examine how both of these factors (technology and culture) affect the group process by measuring the persuasiveness in arguments exchanged as part of the group discussion. In terms of technology, we focus our attention on computer-mediated settings (Group Support Systems - GSS) and non-computer mediated settings (Face to Face - FTF). The experiment was conducted simultaneously in the US and in Singapore. These two countries have been shown in a study by Hofstede (1991) to be diametrically opposite in terms of five different scales of cultural characteristics.

Our preliminary results indicate main effects for both medium and culture when studying group polarization. We are also evidencing a strong interaction between medium and culture when studying the process of decision making in terms of persuasive arguments being exchanged. We feel the results have both theoretical and practical implications, and are very encouraging to those interested in studying culture as a potential determinant of GSS effects.

## **Introduction**

In this paper we examine Group Support Systems (GSS) in the context of team-based decision making. In particular, we center our attention on the phenomenon of group polarization. While there has been extensive work over the last three decades that affirms the existence of the group polarization phenomenon, most of these studies have been conducted in a North American context and in a traditional face-to-face setting. Numerous theories have been proposed and a large body of literature (Pruitt, 1971; Lamm and Myers, 1978) that indicates that group interaction frequently results in members changing and enhancing their prior beliefs in a certain direction has been established. There has however been only limited attention to studying this phenomenon for computer-assisted group work (Siegel et al., 1991, McGuire et al., 1987 and Kiesler et al., 1984) and almost no studies, that we know of, that address this concern in a cross-cultural setting.

Robichaux and Cooper (1994) have noted that most GSS research is US-based and as a result does not take into account the impact of culture in group decision making. Tan et al. (1993, p. 132) have echoed a similar sentiment by stating that "though culture is a potential determinant of GSS effect, it has not featured prominently in GSS research in the past decade." Prior work on cultural examination of group activities indicates that participation in a group situation depends on the social norms of the group

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[Hofstede, 1981]. Social norms may differ across various cultural settings [Shaw 1981] such as group membership, organizational identity, nationality, ethnicity or religion. These differences may impact the process and outcomes of meetings in general and those supported by GSS in particular [Robichaux and Cooper, 1994, Blascovich et al. 1975].

A dominant explanation of group polarization, and the focus of this research effort is, *Persuasive Arguments Theory* (PAT) [Pruitt, 1971; Lamm and Myers, 1978; Isenberg, 1986; Heath and Gonzalez, 1995]. PAT asserts that informational influence is a strong determinant of polarization. This view emphasizes that "group influence resides in the substance of what other people have to say" [Lamm and Myers 1978, p. 169]. The perspective of PAT researchers is that the source of the arguments is not as important as the message characteristics [Isenberg, 1986].

In this study we document the role of persuasive arguments in computer mediated, culturally varied settings. Tan et al. (1993) argue that GSS impact group activities by promoting more equal participation in North American groups. However, they also claim that the same effect may not be seen in a culture where the norm dictates inequality of participation. There are reasons to believe that group polarization is culturally determined. There are numerous studies documenting polarization in North American settings. In one of the few studies conducted in an international setting, Williams and Taormina [1991] observed polarization for business decisions in Singapore.

In this study we work with the belief that the effects of technology do not occur in a vacuum. Technology impacts occur in social organizations that are composed of individuals governed by social, institutional and cultural norms (Kling, 1987; Pfeffer and Salancik, 1978). This leads us to the expectation that the effects of technology on the process and outcomes of group decision making will vary as a function of the social environment and culture within which groups interact. It is our contention therefore that in a global business environment, organizational managers need to ask the question: "Why does group polarization occur?, What are the mechanisms that underlie this phenomenon? and do the reasons for group polarization (persuasive arguments in particular) hold in a cross-cultural setting?"

#### **Research Method**

In this study we examine the role of PAT in explaining group polarization in both face-to-face and computer-mediated meetings in a cross-cultural setting. In order to accomplish this, a quasi-experiment was conducted. Because of the nature of the data, a content analytic approach (protocol analysis) was followed. Subjects for this experiment were executives from mid to large size corporations from Singapore and the US. A total of 144 subjects participated in this study.

As part of this study, the subjects completed tasks in either a face-to-face (FTF) meeting or in a GSS meeting. In a repeated measures design, the groups used both GSS and FTF communication to reach consensus on a task related to the problems that Intel faced with the flaws in the design of their Pentium chip. The participants were directed to discuss the issues underlying the tasks and to reach consensus. Meetings for both these setting were captured in their entirety on either video-tape or as GSS transcripts.

The experiment was designed as a 2 x 2 (Medium x Culture) factorial. Two dependent variables were used: polarization, persuasive arguments. These dependent measures address the two aspects of the group decision making process being studied, namely, the "decision outcome" and the "decision making process." The independent variables were the communication medium (GSS or FTF) and culture (US or Singapore).

Polarization in this study was measured by taking the differences between the mean of the initial individual preferences before discussion and the group decision (Zuber et al, 1992; Lamm and Myers 1978). We averaged for each group, members' initial stance on a given task and compared that with the group decision for both the FTF or the GSS setting. The polarization was measured by taking the difference between the consensus arrived at in a group decision and the average of initial individual decision that participants reported prior to the start of the study. Two sets of figures resulted, one for polarization in the FTF setting and another for polarization in the GSS setting. The numeric value arrived at represented the magnitude of polarization. The direction of polarization was indicated by the sign (positive or negative) that accompanied the value for the magnitude of polarization. Given the scale

provided to participants, a negative value indicated polarization in the direction of risk, while a positive value indicated a shift in the cautious direction.

In documenting persuasiveness in arguments, we followed three steps: defining "arguments" as the unit of analysis; classifying the arguments into different types of statements, and; labeling the arguments by attributes of persuasiveness. In the GSS sessions, each separate remark was defined as an argument, and used as a unit of analysis. In the face-to-face settings, an argument was defined as each uninterrupted statement/remark by a participant.

As a first step, we identified all the arguments that would be included from both the GSS and the FTF sessions. We next classified the argument labeling them as: Question; Main idea; Idea supporting main idea; Counter argument to the main idea; Supporting question; Example; Explanation for the main or supporting idea; or, Miscellaneous. Classifying the arguments as such allowed us to examine the nature of arguments that were exchanged as part of the group activity. The final step was to label each argument on the basis of its persuasive content. Labeling rules we developed for encoding transcripts based on the concepts of validity and novelty to get at the persuasive content in a discussion. Two coders are being used to codify the FTF and GSS transcripts using these rules. The initial set of coding resulted in an Inter-rater reliability rating of 78% using the very conservative Kappa-Coefficient. Researchers have indicated that Kappa-Coefficient above 70% is quite robust for protocol analytic studies (Sen et al., 1994; Van Someren et al., 1994)

### Preliminary Results

The analysis of the data is still underway, and it should be completed by the time of the conference. Analysis related to decision outcomes is now complete, but the encoding of transcripts for the FTF and GSS sessions is still in process. Table 1 presents the significance of the overall model fit for polarization ( $F=3.94$ ,  $p<0.01$ ). Table 2 presents the results of the planned contrasts for the dependent variable polarization.

**Table 1 Overall Model Fit**  
Dependent Variable: Polarization

Source	Sum of Squares	Mean Square	F Value	Pr > F	Significant?
Model	19.23	6.41	3.94	0.0142	YES
Error	71.58	1.63			
Corrected Total	90.81				

**Table 2 Results Of Anova's And Planned Contrasts**  
Dependent Variable: Polarization

Source	Sum of Squares	F Value	Pr > F	Significant?
Medium	11.02	6.77	0.012	YES
Culture	4.69	2.88	0.096	YES
Med*Cult	3.52	2.16	0.15	NO

Our initial results suggests main effects for culture and communication on polarization. Our primary interest in this effort is to study group decision making processes using two different communication medium, for groups governed by two dissimilar cultural norms. Building on prior work in GSS, our results confirm that technology does indeed have an impact on group decision outcomes such as polarization. However, preliminary findings from the protocol analysis suggest that GSS technology might have a more interesting and revealing effect on the process of group decision making. Our initial results suggest that while GSS resulted in a more extensive discussion between the group members, the persuasiveness of the arguments was lower than in a more traditional FTF setting. This was due to a reduction in valid arguments made by group members with no compensating increase in novel ideas being generated.

## Conclusion

An important contribution of this research effort is the inclusion of culture in the study of group decision making. Our findings confirm the importance of including culture when studying a group process. In this study we illustrate that technology impacts group decision making, and that the extent of the impact is quite different depending on the culture that dictates the norms under which a group operates. Contrary to our expectations, we found that GSS dramatically reduced persuasive arguments in the US setting and had very little impact in the Singaporean setting. Another contribution of this study is the creation and validation of labeling rules to determine the persuasive contents of arguments made in a group setting.

This research effort is an initial step in documenting the role of GSS and the importance of culture in group decision making. Future research efforts need to consider the different dimensions of culture, other theories describing group interactions and different tasks to more fully understand the group decision process.

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