

Cultural Variations in Collaborative Decision Making: Driven by Beliefs or Social Norms?

Winston R. Sieck

Shane T. Mueller

Applied Research Associates, Inc.

1750 Commerce Center Blvd

Fairborn, OH 45324 USA

+1 937 873 8166

wsieck@ara.com

smueller@ara.com

ABSTRACT

We describe a study intended to determine whether cultural variations in collaborative decision making are due to differences in beliefs about ideal collaboration processes, or are a reflection of distinct social norms. The results of a web-based survey study that included respondents from India, S. Korea, Turkey, and the U.S. were obtained using a recent statistical technique, Cultural Mixture Modeling that treats culture as an outcome of the analysis based on patterns of consensus in belief. The findings suggested that beliefs about effective collaborative decision processes have spread fairly widely among business professionals, but that typical practice rarely matches the ideal in some countries. Theoretical and practical implications are discussed.

Keywords

Multicultural, cross-national, collaboration, mixture models

ACM Classification Keywords

A.0. General Literature: General.

INTRODUCTION

Cultural differences in collaborative decision making are increasingly recognized as essential areas of investigation [1]. This interest is due at least in part to corporate and government trends toward increasing reliance on multinational teams to handle all manner of tasks, such as a multinational marketing team responsible for developing products for multiple-country markets or a team of coalition planners developing options for coordinating humanitarian assistance in response to a natural disaster [2].

Before addressing culture in decision-making teams, we first need to define “culture.” As expected in any highly interdisciplinary field, there exist a variety of conceptions of culture. Our conception is distinctly cognitive in nature,

following an epidemiological perspective. A fundamental assumption about culture is that members of geographically proximal groups share experiences growing up in similar, but not identical, ecological and social contexts. These shared developmental experiences lead to reliable distributions of individuals’ mental representations, such as concepts, values, and schemata. Such representational distributions, in turn, ground the distribution of behavioral norms, expectations, interpretations, and affective reactions in a population. Two important properties of these mental representations are that they are domain-specific and dynamic. That is, social activities, such as “collaborative decision making” or “teamwork,” are supported by representations that are tailored to those specific activities and susceptible to change. The result of many individuals altering their representations that pertain to particular contexts is adjustment in the overall distribution of representations. This is how we conceive of cultural change in specific contexts, and this conception implies that beliefs can diverge from typical practice during periods of rapid cultural transmission and change.

Multicultural decision making is often expected to provide benefits associated with having a variety of world views that can enhance creativity, reduce groupthink, and lead to a wider range of solutions than would be possible in a culturally homogenous team. Yet, in many cases, the decisions and other collaboration outcomes fall far below expectations [3]. One possible explanation for this state of affairs is that there are distinct kinds of cultural knowledge that affect different aspects of multicultural collaborative decision making performance.

In research on group decision making, heterogeneity in task related knowledge has been associated with improved decision quality due to an increased variety of perspectives and facts about the world that can be brought to bear on the problem [4]. On the other hand, research on “shared schemata” has tended to find that greater commonalities in process-oriented knowledge are associated with improved collaborative performance [5]. For example, a decision making team whose members possess similar ideas about how decisions should be made and implemented, should work together well.

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This view of shared ideas about collaborative decision processes is closely related to the notion of a “hybrid culture” [6]. A hybrid culture is a shared and emergent culture that occurs when highly diverse teams develop and enact a new set of patterns, shared meanings, norms for operations, and expectations about team processes. The assumption is that members of a newly-formed multinational team determine their own set of patterns and processes for accomplishing tasks within the specific context in which they are working. The newly created “hybrid” culture serves as a basis for facilitating team member interaction and communication that should lead to improved collaborative decision making performance.

The development of a hybrid culture depends, at least in part, on team members resolving discrepancies in their collaborative decision making processes. A first step towards promoting the development of hybrid cultures is to understand what the source of those discrepancies might be. One potential source of the discrepant processes is that cultural groups hold different beliefs about what constitutes good collaboration. Another possibility is that professionals in different cultures hold similar beliefs about such ideal collaboration processes, and yet social norms influence typical practices to diverge from these beliefs in some cultures. We explore this latter possibility in more detail.

First, trends in business education that are following globalization do provide some level of convergence in beliefs about ideal decision processes among professionals. Specifically, business education may be contributing to the proliferation of Western conceptions of management and organizational behavior throughout the world. For example, 34% of the MBA students at the top five U. S. business schools are international students [7]. Also, management scholarship and education as practiced in non-Western countries are also strongly influenced by Western ideas through publications and the importation of professors. Furthermore, the diffusion of Western management scholarship very likely includes many of the ideas on what constitutes competent collaborative decision making processes, such as ensuring open discussion and debate of ideas [8]. If cultural transmission and change in beliefs about ideal collaborative decision processes are indeed happening as described above, then we would expect a convergence of beliefs pertaining to this specific domain of knowledge.

Secondly, in order to understand how norms might influence behavior to depart from such beliefs, we first distinguish between descriptive and social norms [9]. Descriptive norms are behaviors like fashions and fads that a group happens to usually follow (e.g., the typical length of a hem). In contrast, social norms are likely to be more entrenched, requiring the person to believe that others will approve or disapprove of the behavior. Game theory accounts of social behavior have demonstrated that social

norms may form that are disliked by the very people whose behavior propagates them [9]. The formation of such norms relies on the notion of pluralistic ignorance, in which members of a society might believe that a norm they personally dislike is approved of by the rest of the society. Because norms can influence social behavior, often inducing people to behave counter to their own narrow best interests, pluralistic ignorance can lead to situations in which an individual’s behavior no longer signals his or her true beliefs. Then, the norm can become entrenched, not because many believe it is right, but because people think that others believe it to be right [9].

The aim of the present study was to provide an initial investigation of the relationship between beliefs about collaboration and their typical practice across cultures. Specifically, we sought to determine whether differences in typical collaborative practices are associated with culturally varying beliefs about ideal collaboration processes, or whether there is some level of convergence across cultures for beliefs about collaboration.

METHOD

A total of 163 business professionals (89 males and 74 females) completed a web-based survey designed to elicit beliefs and typical practice related to collaboration processes. Participants were recruited from the following nations: India ($N = 41$), South Korea ($N = 40$), Turkey ($N = 42$), and the U.S. ($N = 40$). We recruited individuals from India, S. Korea, and Turkey to ensure that we sampled a wide span of global cultural groups. For example, these countries provide a spread of rankings on Hofstede’s [10] dimensions of Power Distance, Uncertainty Avoidance, and Individualism/Collectivism, as shown in Table 1.

	India	S. Korea	Turkey	U.S.
	rank	rank	rank	rank
Power Distance	10-11	27-28	18-19	38
Uncertainty Avoidance	45	16-17	16-17	43
Individualism/Collectivism	21	43	28	1

Table 1. Ranking on cultural value dimensions

A set of items was developed to assess beliefs about ideal collaborative decision processes, as well as typical practice for each of these cultural groups. The items were constructed based on the findings from a qualitative interview study of multicultural collaborative decision making [11]. Participants read statements, such as “To

make a decision, the team discusses and debates different ideas and votes to make the final decision.” The items were then presented to participants in two sections of a survey corresponding to beliefs and typical practices. In the ideal belief section, participants made a *prescriptive judgment* as to whether the item was an example of good collaboration practice. In the typical practice section, participants made *descriptive judgments* as to whether the items reflected typical practice in their own countries. In both sections, participants rated their level of agreement with the items on a 7-point Likert-type scale anchored at Strongly Disagree (1) and Strongly Agree (7).

ANALYSIS

In order to address our research questions, we use a relatively new technique, cultural mixture modeling (CMM) to analyze the survey data [13]. In this section, we first describe two alternative data analysis approaches (ANOVA and Cultural Consensus Theory), and their limitations so as to motivate our choice of analysis strategy. Then we provide a brief overview of CMM.

Recall that our primary research question is to determine whether beliefs about good collaborative decision making are tending to converge across several national groups. A very standard approach to analyzing the data we have collected is ANOVA. However, standard ANOVAs are limited in that they are designed to detect mean differences. When no differences are found, it is unclear as to whether the countries are actually similar or whether the within-country variance is too high to detect differences for the given sample size. Hence, ANOVA is not useful for concluding that a consensus of ideas exists across several national groups.

An alternative that does directly address the question of interest here is Cultural Consensus Theory (CCT). CCT is a collection of formal statistical models designed to assess concordance in knowledge and beliefs among a set of respondents. When a cultural consensus is found, it provides the consensual responses that indicate culturally shared knowledge and estimates of the strength of consensus for those responses. Individuals will also vary in the extent to which their responses agree with the consensus, and that variation is captured explicitly for each individual as “cultural competence.” Technically, the consensus model can be thought of as a factor analysis with the roles of the respondents and items interchanged. In sum, CCT allows one to determine whether the data fit a shared cultural model, and provides measures of individual fit to that cultural model [12].

Although CCT has proven useful in understanding the typical consensus beliefs of members of a culture, it is not without its limitations. The most central limitation is that the model only determines whether or not an overall consensus exists, but not whether there are multiple subcultures. If a consensus does not exist, there are several plausible explanations that CCT cannot distinguish

between. For example, there may be no consensus because each respondent is essentially unique, or alternatively, there may be no consensus because a small set of inconsistent opinions is held.

Cultural Mixture Models (CMMs) presents an alternative data analysis approach that overcomes these various limitations with ANOVA and CCT [13]. CMM begins by defining a statistical likelihood model by which we assume data and errors arise. It then asks the question, “How many groups of people with shared beliefs generated the observed data?” Along with the ability to test whether a consensus exists among a set of respondents, the procedure can also determine if multiple sets of beliefs exist, and identify the different groups or clusters of respondents.

Traditional approaches use country of origin as an independent factor, performing comparisons (such as an ANOVA) across cultures and determine whether the cultures differ along the measured variables. In contrast, CMM treats culture as an outcome of the analysis, and does not need to use country-of-origin as an input. Once groups of common belief (i.e., cultural groups) have been identified, these can be compared to country affiliation or other demographics to determine whether shared belief truly depends upon national origin, etc.

To provide a more technical overview, CMM begins by identifying a probabilistic model that generated the responses. Once a probabilistic generative model has been specified, the application of CMM is fairly straightforward, using the E-M algorithm in a process known as finite mixture modeling. We first specify a fixed number of groups to consider (usually starting at 1, and then increasing to a number fewer than the number of respondents). The E-M algorithm begins by randomly assigning persons to groups, computing the most likely responses according to those assignments, then re-assigning members to the group they were most likely to have come from. The value of a model-dependent consensus parameter is computed for each question and each group. After multiple cycles of this process, the algorithm converges to a local likelihood maxima, and by starting from multiple initial configurations fairly stable solutions can be obtained. Models with more groups have more parameters, which tends to improve the ability to account for data. We use the Bayesian Information Criterion metric to optimally counteract increases in goodness-of-fit with increases in model complexity.

CMM is rooted in the statistical method of finite mixture modeling, but incorporates novel generative models developed specifically to address consensus in cultural data. The statistical theory involved in finite mixture modeling is fairly well-developed and understood, and multiple free and commercial software packages exist that allow fairly complex models to be developed and applied. We used the flexmix package in the R statistical computing

language, which handles much of this process automatically [14].

RESULTS

We describe the CMM results in the following three subsections: Model Fit, Cultural Groups, and Culture by Country comparisons.

Model Fit

There are several measures CMM can offer to assess whether a specified model adequately captures the data. First, is the number of groups identified by the analysis. In the present analysis, 3 cultural groups were found from the responses across the four countries. The next measures address whether the model really provides a good account of the complete belief system. The Scaled BIC metric and the percent variance accounted for are the measures used. The scaled BIC metric uses the BIC score that determined the least complex most adequate model, and scales it by the number of responses and respondents to allow easier comparison across models. Smaller values of scaled BIC are better. For the current survey data, the scaled BIC was 3.7. In other cases scaled BIC has been lower than 1.0, suggesting that the fit of the groups here could be better [13]. However, the other data contained binary responses, so a more broadly comparable measure, such as percentage of variance accounted for, may give greater insight into the overall fit. In the present case, the three cultural groups accounted for 30% of the variance in survey responses, a respectable amount by most social survey standards.

The final measure helps determine whether the groups differ substantially, or just on a minimal set of responses. To evaluate this measure, one computes the correlation coefficient of the different group mean responses. Highly similar responses will have high correlations, whereas lower correlations imply greater between-group differences. In the present case, the correlations of means were .73, .54, and .54 respectively. In the following section, we examine the results for each cultural group in greater detail, including their points of correspondence and difference.

Cultural Groups

We determined that three cultural groups existed, across the four countries. We then examined the average responses to the items for each of the groups in order to determine the cultural beliefs for which there was strongest agreement. In examining these responses, we found that the most strongly agreed upon “prescriptive belief” items were virtually identical for Groups 1 and 3.

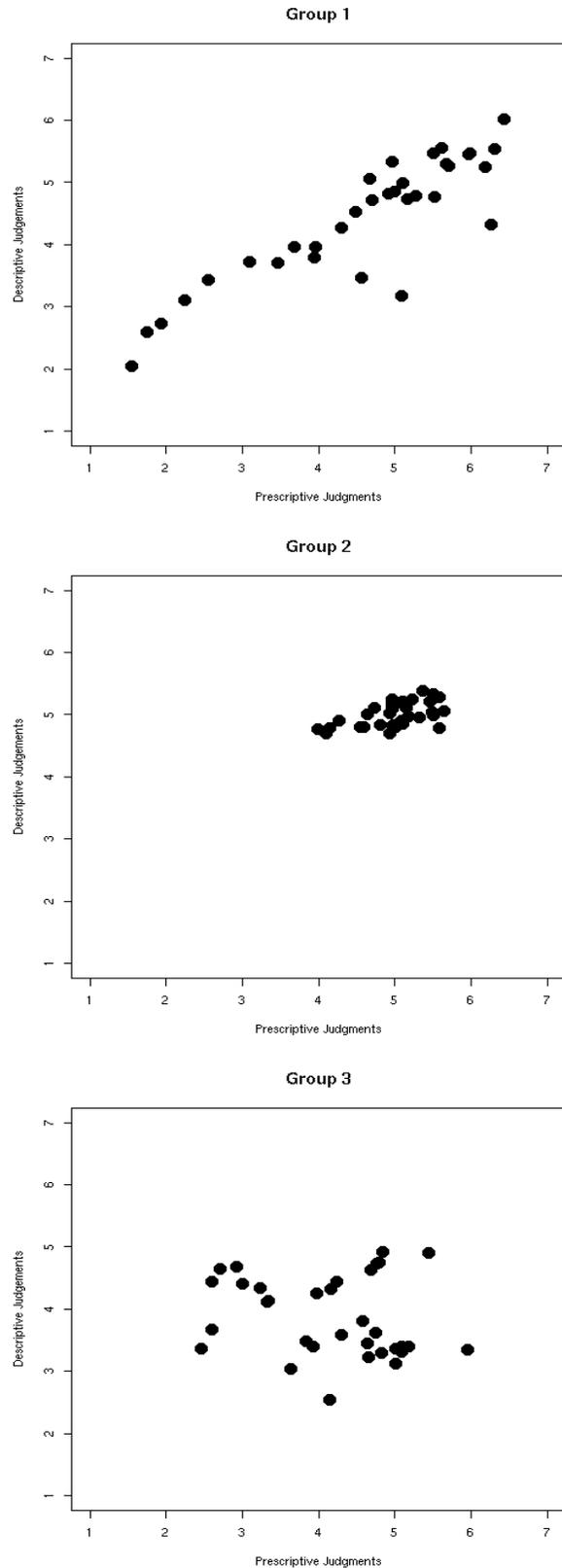


Figure 1. Prescriptive judgments of beliefs about good collaboration by descriptive judgment of typical practice for each cultural group.

Specifically, the most strongly agreed upon beliefs about collaborative decision making for these two cultural groups included:

- Ideas are discussed and debated openly in team meetings ($M_1=6.4, M_2=6.0$)
- To make a decision, the team discusses and debates different ideas and votes to make the final decision ($M_1=6.0, M_2=6.0$)
- To make a decision, the team debates the various ideas, weighs the pros and cons of each, and ultimately votes about which strategy to adopt ($M_1=6.0, M_2=6.0$)

In addition, both groups were less enthusiastic about other decision processes, including deciding by consensus or the following lengthy strategy that is intended to preserve face:

- To make a decision, the team leader talks with each member in private, reflects on those discussions, and then makes the final decision ($M_1=4.0, M_2=4.0$)

Finally, both groups also agreed in their opposition to the following ideas about collaborative decisions:

- The purpose of team meetings is to publicly endorse the leader's decisions ($M_1=3.1, M_2=2.6$)
- The team leader makes a decision without asking for team member input ($M_1=1.8, M_2=1.8$)

Next, we plotted the mean responses to the questions for each group in Figure 1. The three panels show how responses on the prescriptive items relate to the corresponding response on the descriptive items. In these cases if there is a correlation, it means that people's beliefs about how collaboration should be done correspond to their responses regarding typical collaboration practices.

Our analyses revealed interesting cultural group differences regarding correspondence between ideal team performance and typical team performance. For people classified in Group 1, their prescriptive responses tended to correspond highly to their descriptive responses: they believed that there was a proper way for collaboration to function, and that teams from their own country functioned this way.

Group 2 respondents tended to give tightly-clustered ratings (around 5) to all responses; their prescriptive and descriptive responses were not highly correlated, and they did not discriminate between the various collaborative decision making ideas discussed above for Groups 1 and 3.

Finally, Group 3 tended to give prescriptive responses similar to those given by Group 1, but their descriptive responses were negatively correlated with the prescriptive responses. These people apparently agreed that there was a proper way collaboration should function, but tended to believe that teams in their country *did not* function that way.

Culture by Country Comparisons

The distributions of these groups across the four different countries of origin are shown in Figure 2. Group 2 came

primarily from India, while the remaining countries were each split between Group 1 and Group 3. Roughly half of the U.S. respondents fell into Group 1, and a smaller proportion of each remaining country. Most of the members of Group 2 were from India, and most Indians were in this group. Respondents from Korea and Turkey had the majority of Group 3 responses.

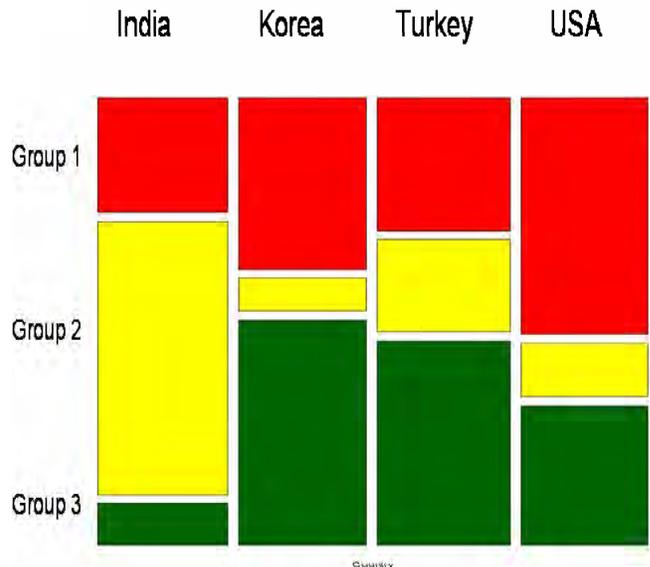


Figure 2. Percentages of cultural group membership by country.

Thus, there was a strong agreement among two of the groups (1 and 3) about how good teams should work. The main difference between them is that one believed groups from their culture did behave that way, while the other did not believe groups from their culture behaved that way. This suggests that, for members of Groups 1 and 3, a consensus belief does exist about good teamwork. Further analysis showed that the ideal beliefs tended to correspond to Western scholarship on teamwork competencies.

DISCUSSION

The study reported in this article used a recent statistical technique, CMM, to analyze survey data about beliefs and typical practice concerning collaborative decision processes. CMM is useful in that it treats culture as an outcome of the analysis, and does not need to use country-of-origin as an input. In the current study, three cultural groups defined by patterns of consensus in beliefs were identified using CMM. These shared beliefs within each of the cultural groups were then examined, and finally compared to country affiliation to determine how the culturally-shared beliefs depend upon national origin.

The results provided initial evidence that beliefs about effective collaborative decision making processes are shared across a diverse set of countries. Respondents from four culturally distinct countries expressed beliefs about

collaboration in a general direction that is consistent with Western scholarship; in particular, emphasizing open discussion and debate of ideas among team members prior to arriving at a decision. Other decision processes that are less transparent were not endorsed by many respondents, including practices such as team leaders holding private discussions with individual team members to gather all the relevant considerations. Interestingly, the major cultural groups differed in terms of the extent to which patterns of typical collaboration practices corresponded to beliefs about effective collaboration. Specifically, Cultural Group 1 reported that their prescribed beliefs about collaboration were typically put into practice in their experiences on decision making teams in their respective countries. Cultural Group 3, on the other hand, shared the prescriptive beliefs with Cultural Group 1, but did not feel it represented typical practice on their teams. Cultural Group 3 was essentially non-committal about either beliefs or typical practice. Finally, membership in these cultural groups varied by country of origin. Specifically, the U. S. had the highest percentage of participants in Cultural Group 1, followed by Korea. Cultural Group 2 was mostly represented by Indian participants, and Korea had the fewest members in that group. Korea had the highest percentage of respondents in Cultural Group 3, with Turkey following at a close second.

Implications

From a theoretical perspective, how can we understand why there appears to be a convergence of beliefs about ideal collaborative decision making processes across cultures? One explanation is that the convergence of these particular ideas stressing open discussion of ideas and participative decision processes is due to the cultural transmission of ideas about good collaboration through business education, perhaps supported by the wider spread of democratic ideas in contexts of civil governance. It is also worth considering what role cultural dimensions might play within that transmission process. In the present case, the degree of consensus for each country of these collaboration beliefs in the context of work teams roughly corresponds with the cultural dimension of power distance. However the relationship is not perfect. For example, Korea has the highest prevalence of endorsement of these collaboration ideas (determined by combined percentage membership in Groups 1 and 3), though has a higher power distance than the U. S. (see Table 1). This discrepancy may be due to a clash between professional culture and national culture, though further research is required to understand the disconnect between Hofstede's cultural dimensions and the present data.

From a practical standpoint, what do the findings say about how to promote the development of hybrid team cultures in multinational collaborative decision making teams? The general consensus of beliefs about good collaboration, but varied levels of typical practice found across countries here suggest that attempts to highlight differences on cultural

values may not provide much impact. They may even prove counterproductive by highlighting differences in values that are not pertinent in the specific context of collaborative decision making. Instead, sharing thoughts among the team may reveal a greater consensus about collaboration processes than expected, thus serving to dismantle unpopular norms associated with current typical practices [9]. Another important implication of the findings is that distributed collaboration technologies may directly benefit multicultural collaboration. Technologies that structure the collaboration process in a way that promotes open information sharing along relatively anonymous channels could be an effective means to guide practice to be more in line with beliefs about collaborative decision processes across cultural groups. Further research should be conducted to determine the veracity of these implications.

Future Directions

It seems likely that cultural differences in beliefs about collaboration do exist at a more fine-grained level than are captured in typical surveys, as well as that other important knowledge associated with the processes of decision making teams. Further research is needed to measure and model such cultural differences. In particular, one potential approach that might prove fruitful is to explicitly elicit and characterize the full set of precise causal beliefs between ideas about collaboration and their associated outcomes. Such an analysis would simultaneously examine the values placed on the relevant outcomes, as well as contextual factors that affect the perceived causal relations or subjective values. Techniques for investigating culture in this manner are being developed under the rubric of "Cultural Network Analysis" within the International Technology Alliance for Network and Information Sciences [15]. As an example, such an approach could be used to determine whether there are cultural differences in the causal belief that open debate leads to loss of face (among other possible collaboration outcomes). Or, is there a growing consensus about that specific causal belief, but culturally divergent value differences in the extent to which face should be considered an important outcome of a collaborative decision making process. Such research, may well reconcile apparent anomalies in the current findings. For example, it may be taken for granted that non-Westerners often do not voice disagreement, or have a difficult time doing so. However, it is quite possible that the issues of open conflict are more subtle, and that non-Westerners favor open discussion and debate, consistent with the current findings on open decision making [16]. Instead of being "anti-debate," it might be better to think of non-Westerners as balancing debate with another critical factor, that of maintaining "face" of themselves and their teammates.

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