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7: Individual participants and national power distance. Perceived effects of Group Model Building in intercultural perspective

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Introduction

In the application of Group Model Building (GMB) as an intervention, the input of the participants in structuring a complex problem is crucial. There is a large level of participant interaction and involvement. Facilitators of GMB interventions focus on open communication between participants in order to help them gain insight in the complex problem, to foster consensus, and to create commitment to the results of the intervention and to proposed leverages for change. However, GMB was developed in the Netherlands and the United States, and therefore also mainly implemented there. These countries are characterized by a small national cultural power distance and a general acceptance of participative ways of working. The question is whether the GMB method also works in contexts with large power distance in which participative ways of working are less common. This paper aims to contribute to knowledge about the role of power distance as cultural context in the perceived effects of GMB, by comparing the perceived effects of GMB interventions in various countries differing in power distance. Our results show that perceived effects of GMB on communication, insight, learning and consensus are comparable in different cultural contexts, though there are gender differences on insight, and an interaction effect: women in large power distance countries report higher scores on commitment than women in small power distance countries. We offer some tentative explanations and suggestions for further research.

Group Model Building (GMB) is a method of facilitated system dynamic model building, in which stakeholders from different positions inside and outside an organization, collaborate in order to structure a complex problem and to foster group decision making on this problem (Vennix, 1996). Stakeholder participation is characteristic of this method, which is mainly used for so called ‘messy problems’, complex dynamic problems on which stakeholders’ opinions vary as to the nature, causes of and solutions to these problems (Vennix, 1996). These are circumstances in which miscommunication and conflict easily arise, just like a lack of support for the outcomes of group decision making (Rouwette, Bleijenbergh, & Vennix, 2016). The method of GMB therefore not only aims to support stakeholders in increasing their

insight in the complex problem, but also to strengthen process related outcomes involving quality of communication, consensus and commitment (Rouwette, 2011; Vennix, Scheper, & Willems, 1993).

There are indications that GMB indeed positively influences the experienced quality of communication, the consensus reached and the commitment of the participants to the outcomes of the intervention (Rouwette, 2011; Rouwette et al., 2016). Meta research by Scott, Cavana, and Cameron (2016, p. 8) states that GMB can especially lead to increased consensus and commitment. Also, Scott et al. (2016) conclude that more research on the effects of GMB is necessary, particularly on the effects in multiple cases and in applied environments, in which stakeholders know their input to have significant influence within the organization. More research is also needed on the settings in which GMB can be effective. This paper focuses on multiple cases in applied environments, in a particular setting, i.e. academic institutions in various countries. Using a post intervention questionnaire to assess perceived effectiveness of GMB (Vennix et al., 1993), we contribute to a more systematic assessment of real life projects (Rouwette, 2011) in intercultural perspective. In the following, we will further explain our focus on national culture.

Participatory working methods and power distance

First we address our considerations on the relevance to study the effects of GMB from the perspective of national culture. We consider the national culture as a set of relatively stable values, beliefs and assumptions, which people acquire in their early childhood. Research shows that these affect the effectiveness of management practices (Newman & Nollen, 1996).

“National culture is a central organizing principle of employees’ understanding of work, their approach to it, and the way in which they expect to be treated. National culture implies that one way of acting or one set of outcomes is preferable to another. When management practices are inconsistent with these deeply held values, employees are likely to feel dissatisfied, distracted, uncomfortable, and uncommitted.” (Newman & Nollen, 1996, p. 755).

Newman and Nollen (1996) show that congruence between national culture and management practices improves the performance of organizations. Their claim is based on the five dimensions of national culture proposed by Hofstede (1991): power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and

long term versus short term orientation. Newman and Nollen (1996) claim that in Western countries the popular participatory management practices are effective, because these countries are characterized by a small power distance. Power distance is the extent to which the less powerful members of institutions and organizations within a country expect and accept power to be divided unequally (Hofstede, Hofstede, & Minkov, 2010). In countries with large power distance, employees from various organizational levels would not feel comfortable to work together face-to-face. They would also have an anxious and suspicious approach towards participatory management, as “participation is not consistent with the national culture” (Newman & Nollen, 1996, p. 756). In addition it is claimed that in countries with small power distance, participatory methods are more established (Fagenson-Eland, Ensher, & Burke, 2004), better achievable and supported more naturally than in countries with large power distance (Hofstede et al., 2010).

The participatory character of GMB feeds the expectation that the cultural dimension of power distance affects the participants’ experience of the method. However, so far no information on the results of GMB in various cultural contexts has been systematically collected. Two meta studies on the effects of GMB (Rouwette, Vennix, & Mullekom, 2002; Scott et al., 2016) do not specifically report on the location of the interventions, though Rouwette et al. (2002) did collect the geographical data of the organizations included in his review. Their database¹⁰ shows that the organizations were located in the Netherlands and Anglo-Saxon countries like the United States and Australia. Scott et al. (2016) do not report anything related to geographical location, countries or cultures of the cases they described. The affiliation of the authors who were cited, indicate that the meta research predominantly involved studies in Anglo-Saxon countries like the United States (Anderson & Richardson, 1997), Australia and New Zealand (Scott et al., 2014), in addition to a series of studies on the effects of GMB in the Netherlands (Fokkinga, Bleijenbergh, & Vennix, 2009; McCardle-Keurentjes, Rouwette, Vennix, & Jacobs, 2009; Van Nistelrooij, Rouwette, Verstijnen, & Vennix, 2012). This geographical concentration suggests that the effectiveness of GMB is mainly studied in specific cultural contexts in which power distance according to Hofstede et al. (2010) is relatively small.

In this study we compare GMB interventions in four countries that vary on the cultural dimension of power distance. The central research question of this study is whether there are

¹⁰ Made available by Rouwette

differences in the GMB effects reported by participants in countries characterized by small and relatively large power distance. Based on literature on the role of power distance in the national culture and the way power distance coheres with management practices (Fagenson-Eland, 2004; Hofstede et al., 2010; Newman & Nollen, 1996), we expect that there is a difference. We expect that participants in large power distance countries will report to a lesser extent that the intervention has contributed to improving open communication, insight, consensus and commitment, than participants in small power distance countries.

Participants, design and procedure

Fifty participants (38% male) from four different universities in four different countries participated in four separate GMB interventions. In all cases, the participants were employed by the university or the research institute that hosted the intervention. Participants were members of scientific, supportive and administrative staff, often placed at management positions. The groups varied in size between 9 and 16 participants.

Table 1. *Characteristics of participants to Group Model Building cases*

	<i>France</i>	<i>Germany</i>	<i>the Netherlands</i>	<i>Turkey</i>
Number of participants	14	9	11	16
Organizational position of participants	Director, secretary general, associate professor, policy advisor, HRM, postdoc	Board member, full professor, head of department, policy officer, staff officer	Dean, chair, full professor, assistant professor, postdoc	Dean, vice dean, president advisor, chair, full professor, associate professor
Gender balance (m/f)	8/6	2/7	5/6	4/12
Language	English (sometimes French)	English (sometimes German)	Dutch (sometimes English)	English

The four cases in this study are part of the European FP7-funded research project EGERA (Effective Gender Equality in Research and the Academia). The study concerns qualitative GMB interventions aimed at gender equality in science, that have been implemented at universities and research institutes in France, Germany, the Netherlands, and Turkey. The authors of this paper, in varying combinations, formed the facilitation team in each of the interventions. All interventions made use of the same design and GMB scripts (Andersen & Richardson, 1997): discussion of data over time, definition of the problem, nominal group technique, modeling, and identification of leverages for change (Vennix, 1996). Each intervention consisted of two sessions of four hours, with some time in between the sessions, varying from a couple of days to two weeks. Between sessions, participants received a workbook with the report of the first session and some questions to be answered in preparation to the second session.

For this study we grouped the four cases into two clusters of power distance: small and high. The most recent Power Distance Index (PDI) (Hofstede et al., 2010) ranks 76 countries, and gives them an index between 11 and 104¹¹. To give an idea: most Eastern European countries have a large power distance, with indices of 70 or more, while the Scandinavian countries show the smallest power distance (PDI 18-33). Germany and the Netherlands have relatively small power distance, with PDI's of respectively 35 and 38. France and Turkey have a relatively large power distance, with PDI's of 68 and 66 respectively. In each separate case, at the end of the second GMB session, participants were asked to fill out a questionnaire with nineteen closed questions.

Measures

A written questionnaire with closed questions (Vennix, 1993) was deployed to measure to what extent the participants experienced that the GMB intervention in which they participated, contributed to Communication, Insight, Consensus and Commitment: the CICC questionnaire. Meta research comparing the effects of GMB in various countries (Rouwette et al., 2002; Scott et al., 2016) problematizes the use of self-reports as a measure for the effectiveness of GMB interventions. However, the systematic use of questionnaires, such as the CICC questionnaire in this paper, can be a valuable tool to support scientific evaluation of GMB results (Rouwette, 2011).

¹¹ The index rises above 100 because new countries are added to the countries Hofstede originally used to make the index, and Hofstede et al. (2010) chose not to adapt the indexing.

The CICC questionnaire has nineteen questions, measured with a 5-point Likert scale (from *strongly agree* to *strongly disagree*). A score of 3 represents a neutral assessment by the participant on the contribution the intervention has to communication, insight, consensus and commitment, whereas a score of less than 3 means that the participant feels the intervention contributed positively. The questions are divided in four scales with all a moderate internal consistency¹²: *communication* (four items, Cronbach's $\alpha = .48$), *insight* (five items, Cronbach's $\alpha = .51$), *consensus* (four items, Cronbach's $\alpha = .57$) and *commitment* (four items, Cronbach's $\alpha = .58$). In addition, the questionnaire contains two items on the *efficiency* (*using modelling in approaching the problem is efficient*) and *general success* (*all in all I think these meetings were successful*) of the intervention.

Research on the validity of the questionnaire (Rouwette, 2011), has shown that participants understand communication to involve the quality of the discussion between different participants, e.g. the extent to which participants in GMB think there was openness and equal exchange of ideas during the intervention. Consensus refers to agreement on the model, the assumptions in the model, and the conclusions. Commitment relates primarily to the willingness to work with the results of the project. To a large extent, the CICC questionnaire measures dimensions for communication, consensus and commitment that match concepts described in literature (Rouwette, 2011). The scale for insight was meant to measure the increase in the amount of learning that participants experienced (Vennix et al., 1993), although research shows that participants have difficulty evaluating what they have learned (Rouwette, Korzilius, Vennix, & Jacobs, 2011). Rouwette (2011) did not try to validate this scale. As this paper studies the effects of GMB as perceived by the participants, we see discussion on the validity of insight and the other effects as outside the scope of this paper.

All in all, 29 of 50 participants (58%) filled out the questionnaire: 8 in France, 6 in Germany, 8 in the Netherlands, and 7 in Turkey).¹³ We compare the answers to the questionnaires of participants to the interventions in Germany and the Netherlands (small power distance) to those of participants from France and Turkey (large power distance). These two groups vary little in size: 14 participants in the group with small power distance, 15 in the large power distance group.

¹² The moderate internal consistency as reflected in the Cronbach's alpha's of .50 - .60 could indicate that the items are interpreted in a conceptual different way by respondents representing different cultural backgrounds. This should be further analyzed, for example by testing the measurements invariance by conducting confirmatory factor analyses.

¹³ Not all participants attended both sessions and a number of participants had to leave before the end of the session because of other obligations, and as a consequence did not fill out the questionnaire.

Results

The Shapiro-Wilk test shows that the scores on the four scales are normally distributed (Table 2). The average for the four scales has been calculated for the group of participants that is characterized by a small power distance and for the group that is characterized by a large power distance (Table 3).

Table 2. *Shapiro-Wilk Test of normality for small and large power distance groups*

<i>Scale</i>	<i>Power distance</i>	<i>Statistic</i>	<i>df</i>	<i>Sig.</i>
Communication	Small	.918	14	.208
	Large	.927	15	.244
Insight	Small	.971	14	.887
	Large	.937	15	.343
Consensus	Small	.896	14	.099
	Large	.957	15	.641
Commitment	Small	.926	14	.267
	Large	.963	15	.751

First we tested if the participants perceived the intervention to have had a positive effect at all. For each scale, the averages differ significantly from a neutral score of 3 (t-test for one mean, two-sided significance $p < .001$), meaning that participants from countries with large as well as small power distance believe that the GMB intervention has contributed to the creation of communication, insight, consensus and commitment. Next, we tested whether the average scores for the small and large power distance groups differ. A t-test for two independent samples shows no significant differences between the two groups on the four scales ($p > .05$).

Table 3. Mean scores on communication, insight, consensus and commitment (CICC) for participants in small compared to large power distance countries, including t-test results

	Power distance	n	M	SD	t (df)
Communication	Small	14	1.86	0.41	-0.83 (27)
	Large	15	2.02	0.60	
Insight	Small	14	1.84	0.42	-1.21 (27)
	Large	15	2.03	0.40	
Consensus	Small	14	1.68	0.49	-0.24 (27)
	Large	15	1.72	0.38	
Commitment	Small	14	1.96	0.47	0.67 (27)
	Large	15	1.84	0.49	

The central topic of the interventions in all four cases was gender equality in science, and typical of all cases was an under-representation of women in senior scientific and management positions. Given the central role of gender in the interventions, we looked for gender differences in the experience of the Group Model Building method.

Table 4. Shapiro-Wilk Test of normality for women and men

Scale	Gender	Statistic	df	Sig.
Communication	Women	.940	22	.197
	Men	.960	7	.819
Insight	Women	.959	22	.472
	Men	.933	7	.573
Consensus	Women	.949	22	.305
	Men	.980	7	.958
Commitment	Women	.952	22	.353
	Men	.960	7	.570

The Shapiro-Wilk test shows that the scores on the four scales are normally distributed for women and men (Table 4). A t-test showed that the scores of both women and men differ significantly from neutral (two-sided significance $p < .001$) and thus both women and men find that the intervention contributed to communication, insight, consensus and commitment (see Table 5). A comparison between women and men shows that their scores are significantly different on the scale insight (t -test, $p = .05$). Women find the intervention has

contributed more to insight into ($M = 1.85$; $SD = 0.41$) the problem than men ($M = 2.20$; $SD = 0.33$ or $M = 2.21$; $SD = 0.39$). For the scale of commitment, there is an interaction effect of power distance and gender. The difference in assessment of commitment occurs only for participants from countries with large power distance ($F(1,25) = 4.19$; $p = .05$): here women experience a greater contribution to commitment ($M = 1.68$; $SD = 0.39$) than men ($M = 2.50$; $SD = 0.25$). There appears to be no difference in commitment between men and women from countries with small power distance.

Table 5. Mean scores on communication, insight, consensus and commitment (CICC) for females and males including t-test results

	Gender	n	M	SD	t(df)
Communication	Women	22	1.92	0.57	-0.35 (27)
	Men	7	2.00	0.32	
Insight	Women	22	1.85	0.41	-2.04 (27)*
	Men	7	2.20	0.33	
Consensus	Women	22	1.65	0.42	-1.14 (27)
	Men	7	1.86	0.43	
Commitment	Women	22	1.80	0.46	-2.11 (27)**
	Men	7	2.21	0.39	

Note. * $p = .05$, ** $p = .04$

Conclusion and discussion

The intervention method Group Model Building aims to enlarge open communication between participants and to increase their insight in a specific complex problem, to create consensus about the problem, and commitment to the outcomes. Because of the strong participatory character of the method, we expected that the effects of the intervention would be experienced differently for participants in countries characterized by varying degrees of power distance as a dimension of national culture. More specifically we expected participants in countries with a large power distance (France and Turkey) to indicate smaller contributions of the intervention than participants in countries characterized by a small power distance (the Netherlands and Germany). Therefore we examined whether there are differences in the results of GMB that participants report in countries with small and large power distance. We did not find such a difference: this study shows that both participants in countries with a large power distance as well as participants in countries with a small power distance perceived the intervention as effective. The fact that we did not find these differences indicates that the effectiveness of the intervention method is not restricted to countries with small power

distances, nor to participants that are more familiar with participatory methods. It could also be that the influence of national culture on interventions like GMB is smaller than the influence of organizational culture. Further research could look into the importance of organizational culture.

However, there were differences in the evaluation of two out of four intervention results. In the first place, women, more strongly than men, indicated that the intervention contributed to more insight into the problem. An explanation of this gender difference in the perception of commitment effects might be that women are more strongly involved in the specific subject of the interventions in the four cases, gender equality in science. In all cases women were underrepresented in higher academic and management positions. Also there was an interaction effect regarding commitment to the results: in countries with a large power distance, women gave higher scores to commitment than men did. In countries with small power distance, there was no such difference. We cannot explain this difference. Extended research is needed to gain more insight in possible gender differences in the perception of GMB effects, for instance through international comparative research into interventions with a more gender neutral subject.

In this study, the focus is on the perception of the participants. Extended research, for instance into the extent to which the outcomes of GMB interventions percolate into the organization, is necessary to find out whether the method has differential results in organizations stationed in countries that differ on the cultural dimension of power distance. In addition, the influence of other national cultural dimensions, such as femininity/masculinity, could have effects on perceived effects of GMB, either direct or in interaction with the power distance of the country, or the gender of participants. An additional suggestion for further research is to take into account personal attributes of individual stakeholders, e.g. on their openness to change, which appears to be an important explanatory variable for the perceived success of participatory methods (McCartt & Rohrbaugh, 1995).

A final suggestion for further research is related to power, e.g. regarding intergroup differences of participants' material power positions within the organization. In this study, we specifically looked at power distance as a national cultural dimension of the entire group of participants. What is the role of relative power differences between the group of participants? Does GMB have different perceived results in groups with little power distance between participants compared to groups with participants that differ substantially in power distance?

Also it would be interesting to involve the amount of power-leveling in these groups (Van Nistelrooij et al., 2012) in the analysis.

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