

Interim Report

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The Effects of Culture in Anonymous Negotiations: A Four Countries Experiment

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Abstract

Experimental research on cross-cultural negotiations typically involves subjects negotiating in a classroom or laboratory setting. Such negotiations are brief, with a strictly imposed deadline and face-to-face. Further, the negotiations typically involve dyads from the same country. The comparisons are done on the basis of experiments replicated in several countries. Internet technologies allow for communication across the cultural frontiers. While the communication is not as rich as in the case of face-to-face discussions, it allows subjects to negotiate in an asynchronous mode and at their own pace. It is also possible to conduct anonymous negotiations for several weeks. This paper explores the implications of culture on anonymous negotiations conducted via the Web with the use of INSPIRE, a Web-based negotiation support system. The negotiations involved 166 subjects from Austria, Ecuador, Finland, and Switzerland. A model to study cross-cultural negotiations is proposed and assessed based on the statistical analysis of negotiations.

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1. Introduction

Many comparative studies on culture and negotiations have been undertaken, the majority of which have focussed on comparisons of negotiations conducted within different cultures or classroom experiments (Graham, 1985; Adler and Graham, 1989; Graham, Mintu et al., 1994; Roth, 1995). The experiments were brief and the subjects were exposed to a highly simplified negotiation case. Furthermore, the negotiations were face-to-face. Although such a setting allows for natural and rich communication it also introduces a natural bias since the subjects know the culture of their partners. In contrast, our research uses a Web-based negotiation support system that allows for anonymous negotiations between members of different cultures.

In the academic year 1997/98 we organized cross-cultural negotiations between students from four countries and seven universities. The data obtained from these negotiations has been used to analyze the similarities and differences within and between countries. There are several differences between our study and other studies including:

- the use of computer and communication technologies to observe the process of negotiation in a controlled setting,
- negotiations can be conducted anonymously thus the cultural attunement and bias are reduced,
- timing of offers and other information exchange solely depends on the negotiators,
- negotiators have access to decision and negotiation support tools,
- the negotiation case allows for specification of subjective preferences among issues and options, and
- negotiations may be conducted over several weeks, with or without an imposed deadline, that can be extended upon the users request.

1.1 Studies of cross-cultural negotiations

There are four main types of studies of negotiation and culture: questionnaires, experiments, case studies, and experts' opinions (Kersten and Noronha, 1999a). The first type of study involves the analysis of usually a large number of questionnaires asking people about their perceptions, and reactions to simple situations, values, and opinions. The best known study has been done by Hofstede and included 116,000 questionnaires focusing on the set of values of IBM employees in 72 countries (Hofstede, 1989). The second type involves the conduct of the same experiments in several countries, typically among university students and participants of executive courses (Adler, Brahm et al., 1992; Graham, Mintu et al., 1994).

Case studies involve the observation and analysis of real-life international negotiations (Gulliver, 1979; Walker, 1990). The fourth type involves professional negotiators and diplomats retrospection, information and experiences contained in their own writings (Fisher, 1980; Cohen, 1991).

Most studies compare negotiations conducted in culture *X* with those conducted in culture *Y* (Graham, Mintu et al., 1994). Thus, very little can be said about international and cross-cultural negotiations. Exceptions are studies in which the intra-cultural negotiations are compared with cross-cultural ones. For example, one cross-cultural experiment involved 30 face-to-face negotiations between Americans and Japanese and 26 between Anglophone and Francophone Canadians (Adler and Graham, 1989). While experimental studies allow for the analysis and assessment methods used in the process and attitudes and perceptions of the subjects, this is achieved at a cost of highly stylized and unrealistic negotiations and their setting.

In face-to-face negotiations subjects know (or assume) their opponents' culture and may modify their behavior and try to attune to the perceptions of the counterparts. Numerous popular articles, handbooks and courses are dedicated to "how to behave and negotiate" in different cultures. One may be aware of the prescriptions given in these materials and courses and this also may impact negotiator behavior and negotiation activities.

We try to avoid these problems by using a Web-based negotiation system, INSPIRE. Communication via INSPIRE is conducted with pre-formatted offers and with free-text messages (Kersten and Noronha, 1999b). Negotiations undertaken with the use of INSPIRE allows one to observe what cultural differences emerge, and under which circumstances. They may also provide information as to whether negotiators significantly change their behavior when moving from intra- to cross-cultural negotiations when they are not aware of the culture of their counterpart.

The results presented in this paper not only confirm that "culture influences negotiation through its effects on communication" (Elgstrom, 1990), but also suggest a broader scope of these influences. Further, our study confirms findings that while electronic communication decreases the communication richness, it allows for a much richer medium than commonly believed (Lee, 1994).

1.2 Previous results

A significant influence of culture on the process and outcome of face-to-face intra- and inter-cultural negotiations was found in many studies. A study of the bargaining behavior between children in India, Argentina and the US (Druckman, Benton et al., 1976) found that Indian bargainers were more competitive than Americans and Argentineans. An intra-cultural study involved a series of experiments with students from Israel, Japan, former Yugoslavia, and the US (Roth, Prasnikar et al., 1991). The results suggest that there are statistically significant cultural differences in the height of offers, percentage of rejected offers and in inefficient (not Pareto optimal) compromises.

Graham observed that negotiators change their behavior depending on whether they are engaged in cross-cultural or intra-cultural negotiations (Graham, 1985). Another study reported that Americans were more satisfied, Japanese achieved lower profits and higher interpersonal attraction, French Canadians were more cooperative, and English Canadians achieved lower profit and spent more time negotiating in cross-cultural rather than intra-cultural negotiations (Adler and Graham, 1989).

Communication patterns were studied in experiments with Taiwanese and American subjects and a significant difference between negotiators' perceptions and actual interaction patterns was found (Drake, 1995). In some previous studies the focus was on the perception of negotiation processes rather than on the role of communication (Graham, 1985; Adler, Brahm et al., 1992; Graham, Mintu et al., 1994). This may be the result of face-to-face negotiations over highly simplified problems, with strict time limitation, conducted in a classroom setting where external influence was allowed. These restrictions impose severe constraints on the subjects and their ability to conduct negotiations resembling the ones conducted in real-life.

In the next section we propose a model to study cultural differences in both inter- and intra-cultural negotiations. Twelve hypotheses derived from the model are presented in Section 3. In Section 4 we describe negotiations conducted via the INSPIRE system and the participants. The analysis of the empirical data is provided in Section 5. Conclusions and suggestions for further research are presented in Section 6.

2. Framework

According to many studies, the *negotiator characteristics*, *situational constraints* and the *negotiation process* influence the outcomes of business negotiations (see, for example, Sayer and Guetzkow, 1965; Rubin and Brown, 1975; Adler and Graham, 1989). Negotiator characteristics and situational constraints are exogenous. Process measures are endogenous and may be influenced by the first two characteristics. In turn, all of them may influence the outcomes.

These four constructs are often difficult to categorize and measure. They incorporate individual, group and social characteristics as well as subjective and objective features. Outcomes in some cultures may be limited to the compromise and its characteristics, but they also may include the process and the relationship with the opponent. Therefore, we propose an extended framework comprising seven rather than four constructs.

2.1 Model overview

The constructs we use to formulate a model to study cross-cultural negotiations are based on three bipolar characteristics: exogenous vs. endogenous, subjective vs. objective, and individual vs. group. The constructs are:

1. Culture and other characteristics of the negotiator (exogenous, objective, individual);
2. Situational constraints of the negotiator (exogenous, objective, individual);
3. Negotiator expectations prior to negotiations (endogenous, subjective, individual);
4. Atmosphere during negotiations (endogenous, subjective, group);
5. Negotiation process (endogenous, objective, group);
6. Results of negotiations (endogenous, objective, group); and
7. Negotiator's assessment of the process, results, opponent and oneself (endogenous, subjective, individual).

The relationships between the seven constructs are presented in Figure 1.

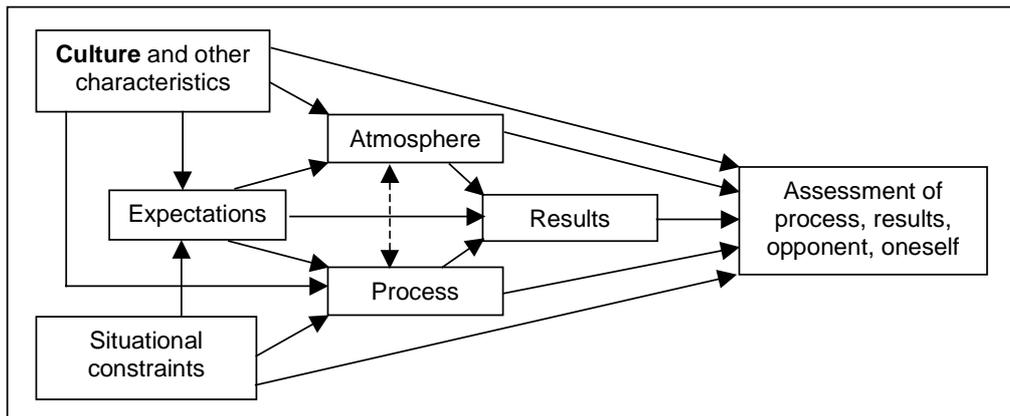


Figure 1. Schematic representation for the study of cross-cultural negotiations.

2.2 Culture and other characteristics

Culture is a difficult and an ill-defined concept. According to (Faure, 1993) there are over 160 definitions of culture. We believe that the continuation of our experiments and analyses will eventually contribute to a better understanding of culture. At this stage, however, we are less concerned as to what culture is but in the ability to differentiate between INSPIRE negotiators. To do so we follow the negotiation literature and equate culture with the country.

The literature offers different cultural dimensions from which we suggest the following to be relevant for the analysis of negotiators' behavior. Graham and Mintu-Wimsat (1997) offered a similar suggestion.

2.2.1 Individualistic and collectivist cultures

This dimension distinguishes whether or not the common values and beliefs of the community emphasize the needs of an individual or the needs of the group (Hofstede, 1980). In collectivist cultures the goals are aligned with those of the in-group (Triandis, 1972); people tend to show more empathy towards members of the in-group (Lituchy, 1997). In individualistic cultures there is an emphasis on personal needs and independent goals of the group, irrespective of whether they negotiate with in-group or out-group members (Lituchy, 1997). According to (Hofstede, 1980; Hofstede, 1991) Austria, Finland and Switzerland are more individualistic cultures, whereas Ecuador is a highly collectivist culture.

2.2.2 Power distance

Power distance measures the differences of cultures regarding how people perceive and deal with authority and power (Hofstede, 1980). One pole of the continuum represents a high power distance culture characterized by a strong sense of hierarchy and a preference for differentiated status. Communication across levels is restricted. At the other end of the continuum, social status differences exist as well, but people are less receptive to power differences. In negotiations, power and social status is considered less important (Brett, Adair et al., 1998a).

In high power distance cultures, negotiations may be dominated by discussions on social norms and standards, as negotiators attempt to determine social status (Graham, Mintu et al., 1994; Brett, Adair et al., 1998a). Ecuador has a relatively high Power Distance Index (PDI) whereas Austria has one of the lowest of the cultures examined by Hofstede (1980); Finland and Switzerland are in-between.

2.2.3 Masculinity-femininity

This dimension reflects the degree to which masculine norms such as achievement, material orientation etc. or feminine norms like relationship and people orientation, quality of life etc. are important in a culture (Hofstede 1980; p 205). An alternative label to this dimension is achievement (for high masculinity) and 'nurturance' (for low masculinity) cultures (Chesebro, 1998). Austria and Switzerland are two of the five most masculine cultures, whereas Finland is one of the five most feminine cultures. Ecuador has rather a masculine culture according to Hofstede (1980, 1991).

2.2.4 Context

Hall (1976) distinguishes between high and low context cultures based on the importance of contextual factors in communication processes. According to him the content of a message could only be fully understood in the context of its transmission, i.e. nonverbal aspects of communication, physical environment, social status and power relationships, roles etc. In high context cultures, information is either in the physical context or internalized in the person and therefore an explicit coding is often not necessary, whereas in low context cultures messages are transmitted explicitly and directly (Ting-Toomey and Gao, 1991).

According to Hall (1976; p. 91) Germans, Swiss and Scandinavians need a very high amount of explicit information transmission, i.e. are low-context cultures. Latin-American countries tend to be high-context cultures (Volkema, 1998).

2.2.5 Time: Monochronicity vs. Polychronicity

The orientation of a culture towards time is linked with the context dimension. High-context cultures tend to be polychronic, which means that people are involved in many different activities with different people at the same time (Hall, 1976; p 150). Additionally, this rather circular time perspective stresses high involvement of people (which produces a greater degree of context) and completion of transactions rather than adherence to a predetermined schedule. Contrarily, monochronic cultures with the linear time perspective prefer the completion of one activity at a time and therefore emphasize priority setting, schedules, segmentation, and promptness (Mayfield, Mayfield et al., 1997).

Table 1 summarizes the cultural differences of the four countries.

Table 1.

Selected dimensions of culture for four countries.

Dimension	Austria (AT)	Switzerland (CH)	Finland (FI)	Ecuador (EC)
Individualism	high (55)	high (68)	high (63)	very low (8)
Power distance	very low (11)	moderate (34)	moderate (33)	high (78)
Masculinity	high (79)	high (70)	low (26)	high (63)
Context	low	low	low	high
Time	monochronic	monochronic	monochronic	polychronic

2.3 Situational constraints and expectations

Situational constraints refer to the circumstances of the negotiators and the constraints imposed on the process. They include the specifics of the negotiation problem, organization(s) within which the negotiation is conducted, and means and technologies of communication. The type of negotiations, for example, intra-cultural versus cross-cultural negotiations is also a situational constraint (Adler and Graham, 1989).

In our experiments these contextual factors were kept constant. All subjects had to deal with the same bargaining problem, which was administered to them in the same way. At the outset of each experiment, negotiators were not informed as to whether they were bargaining with someone from their own country or from a different country, although they could exchange this information during the bargaining process. Therefore, at least ex ante, the difference between inter- and cross-cultural negotiations was not noticeable to them.

2.4 Process and atmosphere

Characteristics of the negotiation process and the atmosphere of negotiations play an important role in the literature on negotiations.

The concept of 'atmosphere' includes variables describing the personal attitudes of the negotiators during the process. Graham and others (Graham, Mintu et al., 1994; Graham and Mintu-Wimsat, 1997; Calantone, Graham et al., 1998; Chan, 1998) use the following concepts:

- *Problem solving attitude*: this variable indicates whether negotiators view the other negotiator as a strict opponent and only try to maximize their own utilities, or consider the negotiation as a way of solving a common problem to the satisfaction of both sides.
- *Attractiveness*: this variable describes the personal "chemistry" between the negotiators.

Both factors can be observed only during the bargaining process. Nevertheless, they are commonly referred to in the literature as *ex ante* characteristics and not as process characteristics.

Process characteristics, on the other hand, involve the timing of offers, the amount of concessions made and other dynamic issues of negotiations.

2.5 Results and post-negotiation assessments

Much of the literature differentiates between task-related and satisfaction-related outcome dimensions. In a similar manner, we propose to distinguish the objective outcomes, i.e., what has been achieved and the subjective evaluation of the negotiation and the counterpart.

In the proposed model the influence between culture and negotiation results is indirect (see Figure1). If negotiators from different countries obtain different results, it is not because they are from different countries but because they have different expectations and behave differently during negotiations. These differences should be captured by variables describing the negotiation process or atmosphere. Eventually, this can lead to different outcomes for negotiators from different cultures.

3. Hypotheses

Following the framework presented in Section 2 we formulate several hypotheses. They are used to test the relationships between six constructs presented in Figure1 (situational constraints are not considered as they are assumed constant).

Culture attributes proposed by Hofstede (1989) and Hall (1976) directly relate to expectations that negotiators hold prior to the bargaining process (Tung, 1988). For example, expectations regarding outcomes should be related to the degree of achievement-orientation. It is expected that members of highly masculine cultures have higher expectations concerning outcome (goal-orientation) and expect a less friendly

atmosphere (i.e. a less nurturing behavior of the opponent). Additionally, expectations concerning the atmosphere may be related to individualism and the *problem solving attitude* (PSA). According to (Graham, Mintu et al., 1994; Graham and Mintu-Wimsat, 1997), negotiators from highly individualistic cultures expect higher profits, are less cooperative and the effect of PSA on profit is stronger.

With regard to the power distance dimension (Graham and Mintu-Wimsat, 1997) suggest that the social status and roles (i.e. buyer or seller) are more important for members of high power distance cultures. Based on this we formulate the following two hypothesis.

H1: Expectations of negotiators are dependent on their culture.

H2: The negotiation atmosphere is dependent on the negotiators' culture.

Cultural norms and values provide not only schemas for the interpretation of the situation and behavior of others but also scripts for appropriate social action (Brett, 1998b). We therefore expect different cultural scripts for negotiation processes.

The time orientation of culture may play an important role in the process (Mayfield, Mayfield et al., 1997). In monochronic cultures, priority setting and time schedules are frequently used instruments. For this reason we expect that time constraints of this experiment will result in more agreements for dyads from monochronic cultures, and less if at least one of the negotiators is from a polychronic culture. In addition, we expect members of polychronic cultures to be more long-term- and relationship-oriented than monochronic cultures (Mayfield, Mayfield et al., 1997). Since they are interested in the establishment of a relationship they should exchange more and longer messages.

The differences in information exchange during communication between high- and low-context cultures may also have a direct impact on information sharing and the process (Brett, 1998b). High-context cultures tend to use indirect information sharing, whereas low-context cultures tend to use direct information sharing. In Graham's research (1985) the Japanese, as a high-context culture, shared much less information directly (e.g., answers to questions and direct negative reactions) than other negotiators. Instead, they shared information through the use of a relatively large number of offers and counteroffers (Brett, 1998b). This leads us to the third hypothesis.

H3: The negotiation process will be dependent on the culture of the negotiators.

In addition to the direct influences of culture on negotiations, our model suggests several indirect influences. In general, the literature suggests a strong influence of goal-setting and aspiration levels on negotiation process and outcomes (White and Neale, 1994). Higher goals lead to higher outcomes (Brett, 1996) and produce higher demands, greater resistance to concession making and prolong negotiation processes (Chan, 1998). Concerning the negotiation atmosphere, Chan (1998) found that negotiators who set their initial goals at high levels were less conciliatory and less likely to adopt a PSA strategy.

The expected influence of negotiators' expectations on the negotiation atmosphere, process and outcomes are summarized in four hypotheses:

H4: The negotiation atmosphere will be dependent on the negotiators' expectations.

H5: The negotiation process will be dependent on the negotiators' expectations.

H6: Results of negotiations will be dependent on the negotiators' expectations.

H7: The negotiator's ex post assessment will be dependent on the negotiators' expectations.

Graham and his colleagues examine the role of PSA and attractiveness in both inter- and intracultural negotiations (Graham, Evenko et al., 1992; Graham, Mintu et al., 1994; Mintu-Wimsatt and Calantone, 1995; Graham and Mintu-Wimsat, 1997; Calantone, Graham et al., 1998). Their results are inconclusive. Support for the hypothesis that the level of PSA of one negotiator is inversely related to that negotiator's profit is found by (Campell, Graham et al., 1988) for German and U.K negotiators, by (Graham, Mintu et al., 1994) for Mexican negotiators and by (Graham and Mintu-Wimsat, 1997) for Spanish negotiators. The antithesis that PSA is positively related to negotiators' own results (profits), is found true for American, Korean and Taiwanese negotiators (Graham, Mintu et al., 1994).

A strong positive relation was found between negotiators' satisfaction and perception of partners' PSA by (Calantone, Graham et al., 1998), but the same hypotheses was not supported by (Graham and Mintu-Wimsat, 1997). Taking these contradictions into account we suggest a positive relationship between both the negotiators PSA and negotiators profits, and negotiators PSA and partners profits given the integrative rather than distributive negotiating-setting of our experiment.

H8: Results of negotiations will be dependent on the atmosphere.

H9: Negotiators ex post assessment will be dependent on the atmosphere.

Process characteristics measured in our experiment concentrate on time aspects and exchange of offers and additional messages during the negotiation process. Prior research on information exchange found that negotiators who share truthful information about their priorities and preferences reach higher joint outcomes than those who do not (Pruitt, Carnevale et al. 1983). By honestly discussing their priorities, negotiators can recognize opportunities for joint gains (O'Connor, 1997). We therefore expect a positive relationship between both the number and length of messages exchanged and the outcome. Similarly, we assume, that more information about priorities and preferences or restrictions of the negotiation partner allows for better understanding of the behavior of the partner during negotiation and leads to greater satisfaction with results and ones own performance. Hence, we hypothesize:

H10: Results of negotiations will be dependent on the negotiation process.

H11: Negotiators' ex post assessment will be dependent on the negotiation process.

Negotiators' assessment will not only be dependent on expectations, the negotiation atmosphere and process but also on the results. We therefore add an additional hypothesis.

H12: Negotiators ex post assessment will be dependent on results.

4. Negotiators and negotiations

4.1 The case

Negotiations are being conducted between representatives of two companies: Itex Manufacturing, a producer of bicycle parts and Cypress Cycles, a manufacturer of bicycles. In writing the case an effort has been made to make it as much as possible 'culture neutral'¹, which means that we have tried to exclude any names that are indicative to a specific culture.

The case describes a negotiation problem that users from almost any country are familiar with and therefore no additional explanations are necessary. As the users' language proficiency might be low the case is fairly simple and well structured. In order to verify the case it was presented to a group of students taking their first ESL course. The case description fits one and a half pages.

INSPIRE users are asked to negotiate on behalf of the company rather than for themselves. There are *four issues* that both sides have to discuss: the price of the components, delivery times, payment arrangements and terms for the return of defective parts. The negotiators are not given the issue priorities thus they have to decide if, for example, the price is more important than the delivery time. They also have to determine the specific trade-off values between issues.

For each issue there is a given set of options, i.e., issue values. Altogether, there are 180 complete and different potential offers (alternatives) that contain all four issues. All the issues and their options are given in Figure 2. This figure depicts one of the Web pages that are used to elicit negotiator's preferences.

¹ The Itex-Cypress case was written by Dr. David Cray, School of Business, Carleton University.

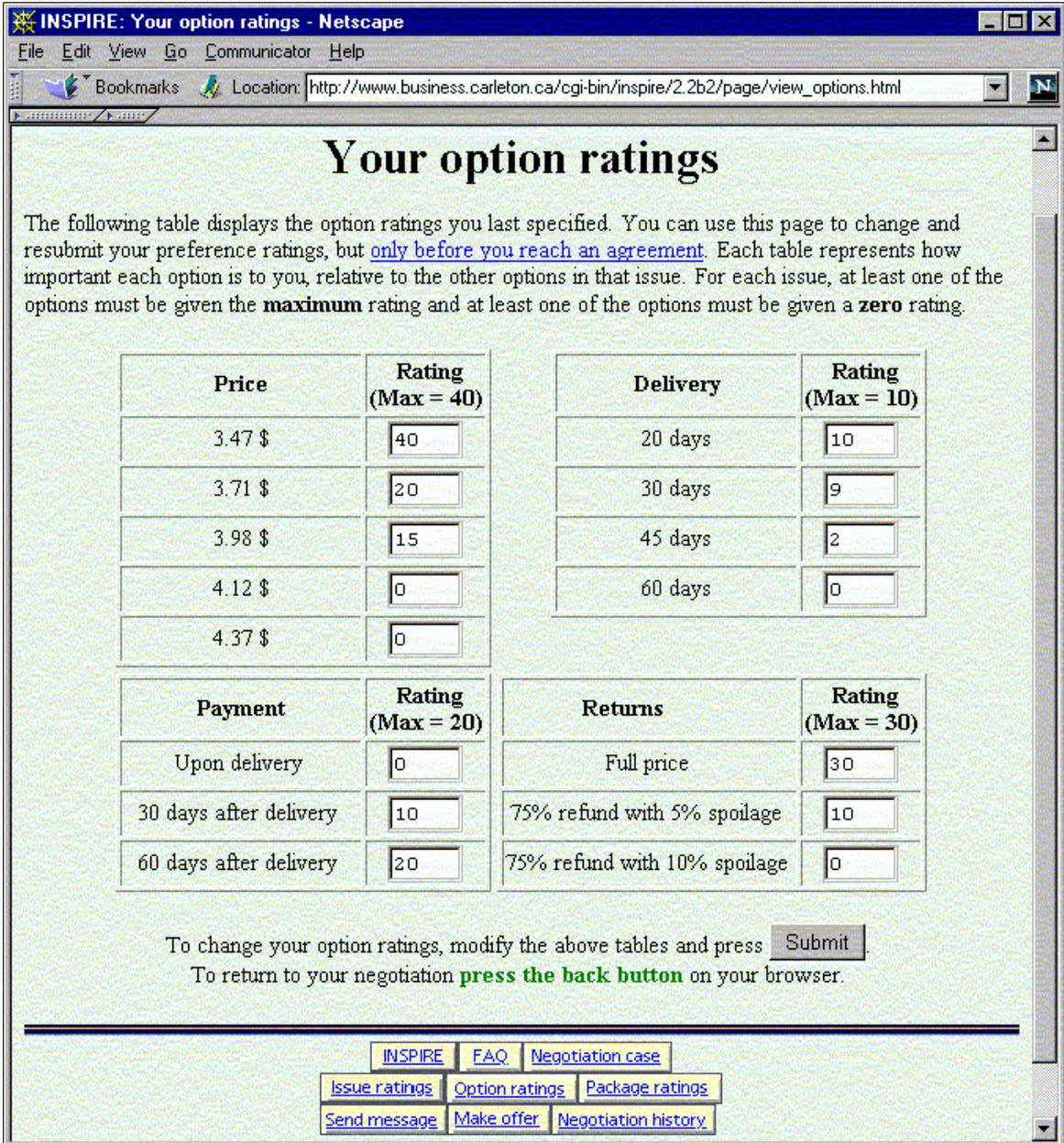


Figure 2. Issues and options in Cypress-Itex negotiations.

Both parties are presented with their side of the case, told that they are to represent Itex and Cypress respectively, and that their companies are interested in achieving a compromise. However, they are also informed that there are other suppliers and buyers so that a breakdown in negotiations is possible if they cannot reach a good deal. There is no further specification as to what indicates a good deal.

Each side is given a clear indication as to the desirability of the options (issue values) but only in terms of the direction and not specific trade-off values. An example of the indication given for the issue *Returns*, which describes the return policy of defective parts, is given in Table 2.

Table 2.

Options for the Returns issue.

Returns
1. Full price on all returned parts.
2. Five percent spoilage allowed. If more than five percent of a shipment is unacceptable the whole shipment is returned for a 75% refund.
3. Ten percent spoilage allowed. If more than 10% of a shipment is unacceptable the whole shipment is returned for a 75% refund.
Number 1 is the <i>most preferred</i> and number 3 the <i>least preferred</i> by Cypress.

By avoiding the specification of preference values negotiators are able to establish their own priorities within each issue. Furthermore, the negotiators' partial utilities (part-worths) may be linear as well as non-linear. In Figure 2, the non-linear case is indicated with respect to *Price* and *Delivery*; user's preferences are identical for the price of \$4.37 and \$4.12.

There is no mechanism enforcing the preference direction and therefore some negotiators did not follow the preference direction literally. Rather, they assigned the maximum partial utility to one of the intermediate and not extreme options. For example, a Cypress representative might have assigned a higher partial utility to the second option of the *Return* issue than to the first option.

4.2 Negotiations via INSPIRE

Graham, Mintu et al. (1994) suggest that three phases be considered when studying business negotiations: an *antecedent phase*, a *concurrent phase*, and a *consequent phase*. These three phases roughly correspond to three phases of the negotiation via the INSPIRE system: *analysis*, *conduct of negotiation*, and *post-settlement* (Kersten and Noronha, 1999b).

4.2.1 Analysis phase

The pre-negotiation phase involves an analysis of the situation, problem and opponent, formulation of preferences, reservation levels, BATNA, and strategy. Data on the negotiation problem, negotiators' characteristics, including their preferences, and situational constraints are considered within this phase (Rubin and Brown, 1975). In the INSPIRE negotiation two main instruments are used to collect the data:

1. forms used to elicit preferences and construct a negotiator's utility function, and
2. a pre-negotiation questionnaire which every negotiator has to fill in after her/his utility function has been constructed and before the negotiation can begin.

4.2.2 Conduct of negotiations

The negotiation phase involves exchanges of messages and offers. Offers comprise the negotiated issues and their values, e.g., one of the three values of the returns policy given in Table 2. The negotiation is parallel on all issues. Participants may submit the same offer many times, or keep the option of an issue unchanged, but each submitted offer contains a value for each issue.

The negotiation ends when a compromise has been achieved, one of the parties terminates the process, or at a predetermined deadline. The concurrent research phase corresponds to the conduct of the negotiation and it comprises process-related variables, such as the strategy and behavior used by negotiators (Graham, 1985), changes in the negotiation problem and negotiators' perceptions, and the dynamics of negotiations (Kersten, 1985; Graham, Mintu et al., 1994).

4.2.3 Post-settlement

The post-settlement analysis phase may be static and involve only the evaluation of the negotiation outcomes generated by, and after, the negotiation activity (Tung, 1988). These outcomes include the information about the compromise and the negotiators' satisfaction. The analysis thus focuses on the evaluation of variables describing outcomes. Furthermore, INSPIRE users have the possibility to improve inefficient compromises.

The post-settlement phase ends with filling in the post-negotiation questionnaire which, however, is not mandatory. A user may log out from the system or--upon filling in the questionnaire--is directed to multiple negotiation resources, handouts, systems which are available on the InterNeg site, but about which users are not informed during negotiation.

4.3 Participants

For the present study 166 participants were recruited from classes held at seven participating universities for the total of 83 dyads. The distribution of participants is given in Table 3. To achieve comparability and disallow for communication other than electronic, intra-cultural negotiations were conducted by subjects from different universities in the same country. Because in Ecuador and Switzerland students from only one university participated in the experiment, intra-cultural negotiations were conducted only by Austrians and Finns.

Table 3.

Negotiating dyads.

	Austria (AT)	Switzerland (CH)	Finland (FI)	Ecuador (EC)
Austria (AT)	9	--	--	--
Switzerland (CH)	14	--	--	--
Finland (FI)	13	14	13	--
Ecuador (EC)	4	--	16	--

All participants from Ecuador and Finland were also born in these countries, for the Austrian participants the corresponding rate was 95%. The only large difference between country of birth and country of residence showed up among Swiss subjects, but even there the rate of native subjects was well over 60% (16 out of 25). A similar homogeneity could be observed with respect to native languages. 90% of the participants from Austria and Ecuador and over 80% of the participants from Finland can be considered as homogenous. Swiss participants are about evenly divided into German-speaking and French-speaking. Therefore, in this study the country of residence is considered an adequate indicator of culture.

The participants did not receive any financial reward. They used INSPIRE as a course assignment, however, the assignments were not evaluated on the basis of their performance. Students knew that experimenters did not inform instructors about the compromise or the score the participants achieved.

4.4 Variables

Complete INSPIRE negotiations are automatically recorded and each activity is time-stamped. The retrieval of data, however, requires a significant amount of programming and at present only 35 variables are retrieved and used in this study. The list of variables and their short descriptions are given in Table 4.

The composite representation of the model depicted in Figure 2, together with the list of variables describing each category and hypotheses, is presented in Figure 3.

In addition to the variables listed in Table 4, two additional variables, OPPPSA and OWNPSA, are introduced in Figure 3, describing respectively the opponent's and the negotiator's problem solving attitude. These are composite variables and their values are computed using variables OPPCOOP, OPPEXPLO, OPPHONES, OPPINFOR and OPPERSU using factor analysis further described in Section 5.1.2.

Table 4.

Description of variables.

Category	Variable	Explanation	Type, Value	
Culture	CRESIDE	Negotiator's Residence		
	OPRESIDE	Opponent's Residence		
Expectations	ESCORE	Expected compromise ¹	Derived, Real	
	RSCORE	Reservation levels ¹	Derived, Real	
	EFRNDLY	Expected process friendliness	5-point scale	
Atmosphere	OPPCOOP	Opponent found cooperative	5-point scale	
	OPPEXPLO	Opponent found exploitative	5-point scale	
	OPPHONES	Opponent found honest	5-point scale	
	OPPINFOR	Opponent found informative	5-point scale	
	OPPPERSU	Opponent found persuasive	5-point scale	
	FRNDLY	Friendliness of the negotiator's opponent	5-point scale	
	SEEOPP	Interested to meet the opponent	Yes/No	
	WORKWOPP	Interested to work with the opponent	Yes/No	
	DISCLC	Disclosure of partners' country	Yes/No	
	DISCLID	Disclosure of partners' identity	Yes/No	
	Process	OFR	Number of offers	Integer
		OFRWMSG	Number of offers with messages	Integer
MSG		Number of messages	Integer	
NEGO_LEN		Length of negotiation	Integer	
MNOFR_LN		Mean time between offers	Integer	
MNMSG_LN		Length of messages	Integer	
LATE_4		No. of offers made 4 days before deadline	Integer	
LATE_2		No. of offers made 2 days before deadline	Integer	
LATE_1		No. of offers made 1 day before deadline	Integer	
TIME_DS		Time between the end of negotiation and deadline	Real	
AGR		Agreement reached	Yes/No	
Results		SCORE	Compromise utility	Real
	OPT	Agreement's efficiency (Pareto-optimality)	Yes/No	
	RELTOEXP	Ratio of achieved to expected utility	Real	
	AGR	Phase when agreement reached (0-no agreement)	Integer	
Assessment	AGRSAT	Satisfaction with agreement	7-point scale	
	CONTROL	Perceived level of control	7-point scale	
	SETTLEME	Acceptance of the settlement in real-life situation	Yes/No	
	METE	Negotiation met expectations	7-point scale	
	PERF	Satisfaction with own performance	7-point scale	

¹ Subjects formulated the expected compromise and the reservation levels in terms of issues. After the utility functions were computed, the utility values of these two alternatives were obtained.

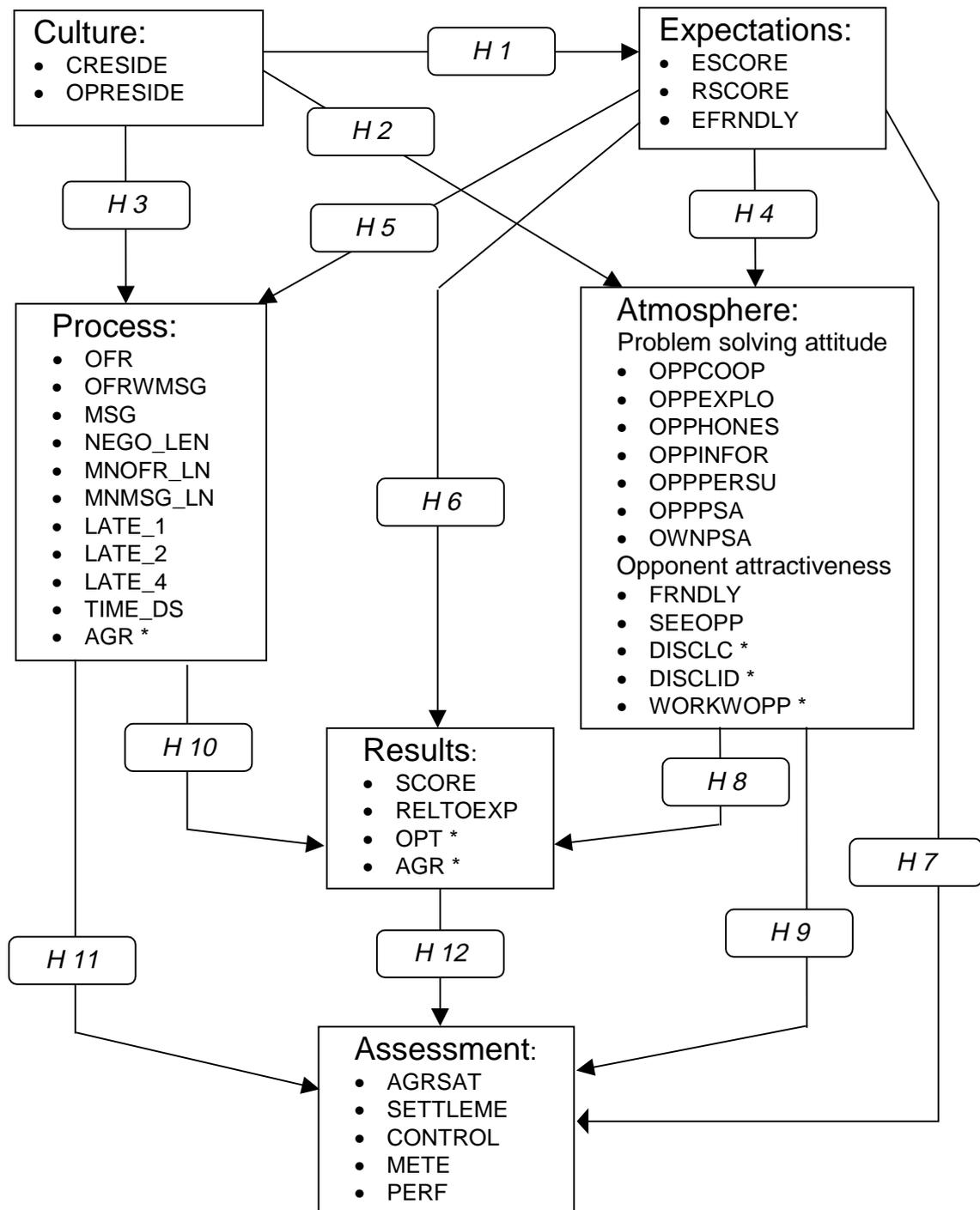


Figure 3. Negotiation model, variables and hypotheses.

5. Analysis

In the following sections separately we review results for each hypothesis (*H1 – H12*) formulated in Section 3. The main focus is on the direct impact of culture, but other factors are also considered to show how culture may have an indirect influence on other variables.

5.1 Direct implications of culture

5.1.1 Influence of culture on expectations (*H1*)

Our results indicate a strong influence of culture on negotiators' expectations. Table 5 shows the average utility values of the compromises that the negotiators expected to achieve.

The expected compromise (ESCORE) yielding high utility is indicative of orientation on direct results of negotiations. This is typical for masculine orientation. However, although both Austria and Switzerland have a higher masculinity index than Ecuador (see Table 1), Ecuadorians had significantly higher expectations than the negotiators from other countries. The ANOVA test indicates that culture has a significant effect on the utility value of the expected compromise at the 0,05 level.

Table 5.

Negotiators expectations (ESCORE, EFRNDLY).

Expected score of a compromise				Expected friendliness of negotiations			
Country	Case	Mean	SD	Country	Case	Mean	SD
AT	Cypress	64.86	23.74	AT	Cypress	2.50	0.75
AT	Itex	62.78	8.89		Itex	2.56	0.73
CH	Itex	67.20	17.98	CH	Itex	2.64	0.79
EC	Itex	87.40	11.68	EC	Itex	1.95	0.69
FI	Cypress	67.77	17.18	FI	Cypress	2.26	0.88
FI	Itex	71.95	15.75		Itex	2.55	0.83

Ecuador has an extreme position compared to the other three countries on the dimensions of power distance and individualism (see Table 1). The very strong collectivist attitude of Ecuadorians could be an explanation for their different expectations concerning the friendliness of negotiations. Subjects' expectations regarding friendliness of negotiations (EFRNDLY) are culturally motivated with the significance level of 0,017.

No significant difference could be found for the utility values of alternatives defined by reservation levels (RSCORE).

5.1.2 Influence of culture on the atmosphere (H2)

Following Calantone, Graham et al. (1998) we use factor analysis to compare the problem solving attitude (PSA) defined by five variables: cooperation, exploitation, honesty, informativeness and persuasiveness. The factor loadings obtained for the first two principal factors (F1 and F2) are listed in Table 6.

Table 6.

Factor loadings (PSA).

Opponent	F1	F2
Cooperative (OPPCOOP)	0.34482	-0.23239
Exploitative (OPPEXPLO)	- 0.10318	0.84860
Honest (OPPHONES)	0.34733	0.00204
Informative (OPPINFOR)	0.30366	0.29680
Persuasive (OPPPERSU)	0.27938	0.27509

The first factor appears to be a good representation of the PSA. Opponents considered to be exploitative have the opposite sign as the other variables, because this characteristic describes a negative attitude. Persuasiveness may be interpreted in both directions. It is positively correlated with the other characteristics, indicating perhaps that an opponent with positive characteristics is also more persuasive than one with negative characteristics.

Interpretation of the second factor is more difficult. Given the orthogonality property of factor analysis, it encompasses effects not explained by the first factor. It should be noted that factor loadings for this factor are particularly high for the question describing a negative characteristic of the opponent. An opponent with a high score on the second factor could probably be described as a "tough" negotiator. Toughness in that sense would not be a contradiction to problem orientation, but rather an independent, orthogonal dimension.

Factor loadings are very close for the individual countries, as shown in Table 7. This result confirms recent results obtained by Calantone, Graham et al. (1998) for face-to-face negotiations. They found that culture has little influence on negotiators' PSA. It should be noted that, due to the scaling of variables used in the questionnaire, high values imply a low degree of problem solving attitude.

As could be expected in view of these results no significant influence of culture was detected in the analysis of variance on the PSA score, nor on its individual components. In contrast, two effects of culture on negotiator attractiveness were found to be significant, namely friendliness of negotiations (FRNDLY) and the willingness to see the opponent (SEEOPP).

Table 7.

Factor loadings for individual countries (PSA).

Variable	AT		CH		EC		FI	
	F1	F2	F1	F2	F1	F2	F1	F2
OPPCOOP	0.39312	-0.18813	0.28228	-0.26854	0.23152	-0.59366	0.39569	-0.15993
OPPEXPLO	-0.13855	0.68184	-0.26954	0.34359	-0.24585	0.40234	-0.13042	0.88752
OPPHONES	0.35499	-0.05708	0.25653	-0.25983	0.25480	0.35253	0.40400	0.17963
OPPINFOR	0.29115	0.43655	0.25762	0.41467	0.21924	0.67909	0.28307	0.36905
OPPPERSU	0.23963	0.25703	0.18578	0.69028	0.30301	-0.00775	0.25300	0.00787

The variable FRNDLY significantly depends on the opponent's country of residence. Having an opponent from Ecuador makes for a less friendly atmosphere than from another country at the significance level of 0.1 (Table 8).

Table 8.

Perceived friendliness of negotiations (FRNDLY*)

Country of opponent	Mean	SD
AT	2.81	1.39
CH	2.54	1.39
EC	3.20	1.01
FI	2.49	1.38

* 1 = Completely, 7 = Not at all

The willingness to see one's opponent was significantly influenced (at the level of 0.068) by the interaction term between the two countries of negotiators (Table 9). However, interestingly enough, both the highest (3.25 FI-FI) and lowest (1.33 AT-AT) values occur in intra-cultural negotiations in countries that are similar on the individualism-collectivism dimension (see Table 1).

Table 9.

Willingness to see opponent (SEEOPP*)

Own Country		Opponent's country			
		AT	CH	EC	FI
AT	Mean	1.33	2.88	2.50	2.25
	Std.	0.82	1.89	1.91	1.49
CH	Mean	2.50	.	.	1.71
	Std.	1.38			1.11
EC	Mean	1.75	.	.	1.94
	Std.	0.50			0.93
FI	Mean	3.00	2.40	2.18	3.25
	Std.	1.05	1.34	0.87	1.06

* 1 = Extremely interested, 5 = Not at all interested.

5.1.3 Influence of culture on the process (H3)

Several effects of culture on the communication behavior and on the time dimension of the process were found to be significant. The mean number of offers accompanied by messages for each country is presented in Table 10. While there are no significant differences in the number of offers or the number of messages exchanged, significant differences were observed in the number of offers accompanied by messages and the total length of messages.

Table 10

Number of offers accompanied by messages (OFRWMSG).

Country	Mean	Std. Deviation
AT	3.43	1.64
CH	3.91	1.87
EC	4.70	1.34
FI	3.90	1.81

The number of offers accompanied by messages was higher for Ecuadorians. This difference, however, was significant only at the 15% level.

Differences also occurred in the size of messages. In contrast to the number of messages, the size also strongly depended on the composition of the dyad, and not only on the country of the negotiator sending the message. In Table 11 the corresponding results are presented.

Table 11

Length of messages (MNMSG_LN).

Country of Residence		Opponent's country			
		AT	CH	EC	FI
AT	MEAN	355.17	445.00	807.00	607.71
	STD	254.80	200.69	476.59	690.36
CH	MEAN	726.86	.	.	878.25
	STD	395.96	.	.	631.56
EC	MEAN	972.33	.	.	529.77
	STD	1146.15	.	.	423.37
FI	MEAN	558.71	1166.00	472.73	246.64
	STD	594.17	1358.34	236.52	142.66

The average length of a message sent by the Finns to the Swiss was more than four times the length of messages sent to fellow Finns. It is interesting to see that the two lowest values occur in intra-cultural negotiations. This effect was significant at the 8% level.

Intra-cultural negotiations exhibited significantly more interactions during the last days of negotiation than inter-cultural negotiations (at the 3.7% and 5% significance levels). Table 12 shows the fraction of offers made on the last day (LATE_1) and the last 2 days (LATE_2) for the various types of dyads. Again, intra-cultural negotiations are different from inter-cultural negotiations by exhibiting a much higher level of activity during the last days.

Table 12

Fraction of offers exchanged during last day (LATE_1) and 2 days (LATE_2).

		Opponent's country							
		AT		CH		EC		FI	
Country		LATE_1	LATE_2	LATE_1	LATE_2	LATE_1	LATE_2	LATE_1	LATE_2
AT	MEAN	0.083	0.083	0.017	0.017	0.000	0.000	0.000	0.000
	STD	0.142	0.142	0.053	0.053	0.000	0.000	0.000	0.000
CH	MEAN	0.013	0.013	.	.	.	.	0.015	0.015
	STD	0.043	0.043	.	.	.	.	0.050	0.050
EC	MEAN	0.000	0.000	.	.	.	.	0.000	0.000
	STD	0.000	0.000	.	.	.	.	0.000	0.000
FI	MEAN	0.000	0.000	0.018	0.018	0.000	0.013	0.034	0.045
	STD	0.000	0.000	0.060	0.060	0.000	0.050	0.095	0.114

5.2 Direct implications of expectations

5.2.1 Effects of expectations on the atmosphere (H4)

No significant effects were found at the 5% level.

5.2.2 Effects of expectations on the process (H5)

Expectations had a fairly strong effect on process characteristics. The results of a regression analysis between communication structure and expectation variables are given in Table 13. In this and the following tables the numbers in bold indicate results that are significant at the 5% or lower levels and the italicized numbers – results significant at the level between 5% and 10%

Table 13

Influence of expectations on communication behavior.

Dependent variable	Statistic	Intercept	Expected Score (ESCORE)	Reservation score (RSCORE)	Expected friendliness (EFRNDLY)
Offers (OFR)	Parameter	3.2496	0.02196	-0.00892	-0.06634
	t-value	4.12	2.52	-1.41	-0.35
	p >|t|	0.0001	0.0129	0.1614	0.7239
Offers with messages (OFRWMSG)	Parameter	3.2913	0.01808	-0.00580	0.17034
	t-value	4.33	2.15	-0.95	-0.94
	p >|t|	0.0001	0.0331	0.3440	0.3472
Messages (MSG)	Parameter	1.2498	0.00675	<i>-0.00767</i>	-0.07667
	t-value	2.18	1.07	<i>-1.67</i>	-0.56
	p >|t|	0.0306	0.2875	<i>0.0973</i>	0.5736

A consistent pattern emerges. Subjects with a higher expected utility value tend to communicate more intensively. On the other hand, a higher utility value of the reservation levels reduces communication activities, although not as significantly. Expectations concerning friendliness do not significantly influence communication patterns

5.2.3 Effects of expectations on results (H6)

At the individual level, expectations had a strong influence on outcomes. The summary of the results of regressions of utility values achieved on the expectation variables is given in Table 14.

Table 14

Regression analysis for the compromise utility value (SCORE).

Dependent variable	Statistic	Intercept	Expected Score (ESCORE)	Reservation score (RSCORE)	Expected friendliness (EFRNDLY)
Score (SCORE)	Parameter	31.4668	0.40325	0.07980	1.08188
	t-value	3.48	3.94	1.17	0.53
	p > |t|	0.0007	0.0001	0.2458	0.5998

The utility value of the expected compromise (SCORE) had a strong positive impact on the utility value of the negotiated settlement. To test whether expectations are actually a transmission mechanism by which culture influences outcomes, or whether both expected and actual utility values are influenced by some other variable, the same regression was performed within the groups of subjects from different countries. If both expected and actual scores are jointly influenced by another cultural variable, then both values should be homogenous within groups and no significant influence of expected scores on actual scores should be observable within groups. If, however, expected scores have an influence on actual scores that goes beyond the variation caused by the country, this should also be observable within countries. Table 15 shows the results of the corresponding regressions.

Table 15

Regression analysis for the compromise utility value per country (SCORE).

Country	Statistic	Intercept	Expected Score (ESCORE)	Reservation score (RSCORE)	Expected friendliness (EFRNDLY)
AT	Parameter	36.5736	0.34883	0.27677	-6.64050
	t-value	2.42	2.06	2.26	-1.59
	p > |t|	0.0242	0.0512	0.0339	0.1266
CH	Parameter	19.5145	0.37851	0.04126	10.44009
	t-value	1.03	1.79	0.32	2.73
	p > |t|	0.3224	0.0984	0.7530	0.0181
EC	Parameter	64.9616	0.10078	0.21521	0.44368
	t-value	2.30	0.39	3.04	0.11
	p > |t|	0.0402	0.7063	0.0102	0.9154
FI	Parameter	45.0780	0.18500	-0.05404	3.64958
	t-value	3.81	1.10	-0.43	1.30
	p > |t|	0.0004	0.2775	0.6664	0.2011

The relationship between expected and actual scores remains significant for Austria and Switzerland, but not for Ecuador and Finland. If we compare the four countries using five dimensions listed in Table 1, we see that there is no dimension that can be used to

differentiate the two pairs of countries (e.g., although individualism is high for both Austria and Switzerland, it is also high for Finland and low for Ecuador). This may suggest another dimension on which the two groups differ and which links expectations and results for one group and has no effect for another.

At the negotiation dyad level, no significant influences of expectations on the outcome variables were found.

5.2.4 Effects of expectations on the assessment (H7)

The results of the regression analysis for various assessment variables on the negotiators' expectations are given in Table 16. As postulated in hypothesis H7, an influence of reservation scores on the assessment variables can be observed, which is significant for two variables (and close to significant for the other two).

Table 16

Regression analysis for the assessment variables.

Dependent Variable	Statistic	Intercept	Expected score (ESCORE)	Reservation score (RSCORE)	Expected friendliness (EFRNDLY)
Satisfaction with agreement (AGRSAT)	Parameter	3.867975	-0.005326	-0.011608	0.008223
	t-value	4.22	-0.54	-1.94	0.04
	p > |t|	0.0001	0.5915	0.0552	0.9672
Control (CONTROL)	Parameter	3.222201	-0.003290	-0.0082861	0.221602
	t-value	4.50	-0.42	-1.74	1.44
	p > |t|	0.0001	0.6742	0.0850	0.1527
Met expectations (METE)	Parameter	4.191485	-0.011802	-0.009555	0.172758
	t-value	4.53	-1.17	-1.55	0.87
	p > |t|	0.0001	0.2443	0.1234	0.3863
Satisfied with performance (PERF)	Parameter	3.451353	-0.013699	-0.006753	0.351888
	t-value	5.06	-1.84	-1.49	2.40
	p > |t|	0.0001	0.0684	0.1398	0.0182

In interpreting Table 16, it should be noted that high values in the dependent variables indicate low levels of satisfaction. Thus high reservation levels *increase* both the satisfaction with the agreement and the perceived level of control. Since the same scaling was used for variable EFRNDLY, high levels of expected friendliness *increase* satisfaction with performance. This last influence suggests that a positive attitude prior to the negotiation has a positive impact on one's satisfaction with his/her own performance.

5.3 Direct implications of atmosphere

5.3.1 Effects of the atmosphere on the results (H8)

The results of a regression of individual utility values on variables characterizing the negotiation atmosphere are given in Table 17.

Table 17

Regression analysis for the compromise utility value (SCORE).

Independent Variable	Parameter estimate	t value	P > |t|
Intercept	68.61223	9.77	0.0001
Opponent's PSA	-1.93384	-0.58	0.5634
Opponents Factor 2	-0.37642	-0.13	0.8945
Own PSA	-1.10200	-0.35	0.7284
Own Factor 2	-0.16488	-0.06	0.9538
See opponent (SEEOPP)	-4.85582	-2.20	0.0323
Disclosed ID (DISCLID)	-3.89786	-0.35	0.7305
Disclosed Country (DISCLC)	2.63348	0.22	0.8250
Work with opp. (WORKWOPP)	9.35614	1.62	0.1107

Contrary to our expectations, the problem solving atmosphere (PSA) did not have a significant impact on the compromise utility values. The only variables that did have some impact are willingness to see the opponent and to work with the opponent. Both variables have similar effects, although, due to different scaling of variables, the regression coefficients have different signs. Both willingness to see the opponent and willingness to work with the opponent increase the compromise utility value. This result is consistent with results reported by Rubin and Brown (1975).

If, however, we take into account individual components of problem solving attitude rather than the aggregate construct, further relationships can be identified. This is presented in Table 18.

There is a strong impact of both one's own and perceived honesty of the opponent on the utility value of the negotiated agreement. The directions of the influences are, however, opposite. The negotiator's perception of the opponent being an honest partner increases his/her utility of the compromise (the significance level is 2.59%). However, if a negotiator himself/herself is seen by the opponent as being honest then this has a negative impact on the negotiator's utility value (with the significance level of 9.25%). The implication may be that honesty is considered a weakness on the part of the negotiator but it is viewed as a competitive advantage if the opponent is honest.

Persuasiveness has also a significant impact on the negotiator's utility value of the compromise. However, in this case it is only the negotiator's ability to be persuasive. The perception of the opponent being persuasive does not have such an impact. A

positive impact on the negotiator's utility value of the achieved compromise (SCORE) results from his/her willingness to work with the opponent in future.

We have found no significant differences for these four variables in the analysis between the four countries. The two effects identified before remain significant, however the significance is weak.

Table 18

Regression of scores on PSA components.

	Independent Variable	Parameter estimate	t value	p > |t|
	Intercept	61.18158	2.29	0.0267
Opponent	Cooperative	3.38091	1.10	0.2762
	Exploitative	4.19121	0.99	0.3288
	Honest	-8.26277	-2.30	0.0259
	Informative	1.42750	0.37	0.9599
	Persuasive	1.27781	0.33	0.7108
Negotiator	Cooperative	-1.39458	-0.43	0.6710
	Exploitative	3.13231	0.75	0.4546
	Honest	<i>6.02181</i>	<i>1.72</i>	<i>0.0925</i>
	Informative	-1.87575	-0.68	0.4992
	Persuasive	-8.76915	-2.27	0.0279
Negotiator	Opponent friendly	<i>4.35561</i>	<i>1.71</i>	<i>0.0935</i>
	See Opponent	-3.49042	-0.56	0.5771
	Disclose ID	-6.01970	-0.58	0.5621
	Disclosed country	3.51880	0.30	0.7633
	Work with opponent	<i>11.08480</i>	<i>1.91</i>	<i>0.0619</i>

The atmosphere under which a negotiation was conducted also had significant influences on the results at the group level. Table 19 lists the results of probit analysis, in which the probability of obtaining a Pareto-optimal compromise was regressed on the variables describing the atmosphere. Parameter estimates given in Table 19 indicate the likelihood of obtaining an inefficient outcome and high factor values indicate the absence of problem solving attitude.

Problem solving attitude (PSA) positively influences the probability of achieving a Pareto-optimal compromise. The influence is stronger if the negotiator has a high PSA value than if their opponents have a high value.

In Table 19 five variables describing the opponent's attractiveness are also included. Only the willingness to work with the opponent has an impact on the compromise; it increases the probability of achieving a compromise that is Pareto-optimal.

Table 19

Probit analysis of Pareto efficient outcomes on PSA.

Independent variables	Parameter estimate	Chi Square	Pr > Chi Square
Intercept	0.62017	0.48758	0.4850
Opponent's PSA	0.58757	3.72226	0.0537
Opponent's Factor 2	0.15450	3.72226	0.5829
Own PSA	0.77297	6.00608	0.0143
Own Factor 2	0.22647	0.71649	0.3973
Opponent's friendliness (FRNDLY)	-0.07970	0.13445	0.7139
See opponent (SEEOPP)	0.10278	0.31462	0.5749
Disclosed ID (DISCLID)	-0.05298	0.00320	0.9549
Disclosed country (DISCLC)	0.89098	0.71046	0.3993
Work with opponent (WORKWOPP)	-1.09860	5.47732	0.0193

5.3.2 Effects of the atmosphere on the assessment (H9)

Tables 20-23 present the results of regression analysis of the variables that describe the subjects assessment (satisfaction with the agreement, perceived control, meeting expectations, and satisfactions with one's own performance) on the variables describing atmosphere.

Hypothesis *H9* was formulated mainly with reference to PSA (as measured by the first factor). We expected a friendlier atmosphere to increase satisfaction with the negotiation process and its outcomes. This relationship is not reflected in the empirical data. However, these results are in accordance with the interpretation of the second PSA factor as "negotiator toughness". Having a tough opponent significantly decreases overall satisfaction with the agreement as well as performance.

Table 20

Regression of atmosphere on satisfaction with the agreement (AGRSAT).

Independent variable	Parameter estimate	t value	p>|t|
Intercept	2.652915582	5.14	0.0001
Opponent's PSA	0.358570142	1.44	0.1554
Opponents Factor 2	-0.528216742	-2.64	0.0105
<i>Own PSA</i>	<i>0.422045474</i>	<i>1.84</i>	<i>0.0711</i>
Own Factor 2	-0.047066368	-0.23	0.8160
See opponent	<i>0.286128311</i>	<i>1.84</i>	<i>0.0707</i>
Disclose ID	0.669603363	0.79	0.4321
Disclose country	-0.178306561	-0.20	0.8421
Work with opponent	-0.548877067	-1.33	0.1880

Table 21

Regression of atmosphere on perceived control (CONTROL).

Independent variable	Parameter estimate	t value	p>|t|
Intercept	2.620732803	6.37	0.0001
Opponent's PSA	0.246389251	1.20	0.2342
Opponents Factor 2	-0.123741912	-0.78	0.4408
Own PSA	-0.017554911	-0.09	0.9263
Own Factor 2	<i>-0.276312174</i>	<i>-1.70</i>	<i>0.0933</i>
See opponent	0.108690700	0.89	0.3754
Disclose ID	-0.246472392	-0.34	0.7320
Disclose country	0.359584640	0.48	0.6348
Work with opponent	0.070257253	0.21	0.8344

Table 22

Regression of atmosphere on MET EXPECTATIONS.

Independent variable	Parameter estimate	t value	p>|t|
Intercept	2.715489878	5.29	0.0001
Opponent's PSA	-0.029619800	-0.12	0.9083
Opponents Factor 2	-0.066753398	-0.34	0.7386
Own PSA	-0.109430947	-0.46	0.6445
Own Factor 2	-0.189278355	-0.94	0.3533
See opponent	0.384538225	2.53	0.0140
Disclose ID	0.023426019	0.03	0.9792
Disclose Country	-0.121580138	-0.13	0.8976
Work with opponent	-0.686461564	-1.64	0.1055

Table 23

Regression of atmosphere on satisfaction with performance (PERF).

Independent variable	Parameter estimate	t value	p>|t|
Intercept	2.740439889	6.86	0.0001
Opponent's PSA	0.190250976	0.95	0.3433
Opponents Factor 2	-0.281986169	-1.82	0.0736
Own PSA	0.000110291	0.00	0.9995
Own Factor 2	0.044670596	0.28	0.7776
See opponent	0.027287767	0.23	0.8182
Disclose ID	0.456409897	0.66	0.5143
Desclose Country	-0.537162868	-0.73	0.4656
Work with opponent	-0.057151459	-0.18	0.8610

The relationship between one's toughness (as perceived by the opponent) and perceived control of the negotiation process is negative: negotiators who are perceived as tough, do not feel themselves to be in control during the negotiation. The only other significant relationship is the positive relationship between meeting the expectations and willingness to see the opponent.

5.4 Direct implications of process

5.4.1 Effects of the process on the results (H10)

Effects of process variables on outcomes were found not significant.

5.4.2 Effects of the process on assessment (H11)

According to hypothesis *H11*, there should be a positive relationship between communication and satisfaction. The results of the regression analysis of process variables on the satisfaction with the agreement are given in Table 24. We found that while the influence of the number of offers accompanied by messages on aggregate satisfaction is indeed positive, the total number of offers had the converse effect, and the number of messages had no significant effect. The positive effect of offers with messages can be explained by the fact that messages are verbal and in free format, while offers have a rigid structure. Verbal messages that accompany offers thus seem important in building a positive attitude towards the negotiations. This may be because they provide justification for the offers while messages that not accompany offers may be sent to remind or push the opponent. A large fraction of activities taking place during the last day of negotiations decreases satisfaction significantly.

Table 24

Regression of process variables on satisfaction with agreement (AGRSAT*).

Independent variable	Parameter estimate	t value	p>|t|
Intercept	6.43375791	0.76	0.4597
Number of offers	1.09996564	2.68	0.0153
Offers with messages	-1.26802214	-2.94	0.0087
Number of messages	-0.27550510	-0.81	0.4291
Duration of negotiation	-0.00000023	-0.40	0.6964
Time between offers	-0.00000108	-1.18	0.2540
Length of messages	0.00062025	0.69	0.5005
Activity during last day	47.34292147	2.41	0.0269
Activity during last 2 days	-16.35483594	-1.29	0.2125
Activity during last 4 days	0.84905529	0.32	0.7559
Time difference between agreement and deadline	-0.00091075	-0.20	0.8436

* 1=Extremely satisfied, 7=Extremely dissatisfied

An ambivalent picture emerges with respect to perceived control by negotiators (CONTROL), see Table 25. According to *H11*, we expected a positive influence of communication on control. But on the other hand, message length has a negative effect. No significant effects of process variables were found on meeting a negotiator's expectations.

Similar results hold for satisfaction with performance presented in Table 26. While barely significant (around the 11% level), the influence of the number of messages is again negative. On the other hand, message frequency (the inverse of time between messages) has a positive effect.

Table 25

Regression of process on perceived control (CONTROL).

Independent variable	Parameter estimate	t value	p>|t|
Intercept	4.62047361	0.83	0.4190
Number of offers	-0.07534542	-0.28	0.7829
Offers with messages	-0.24354509	-0.86	0.4005
Number of messages	-0.46446940	-2.08	0.0522
Duration of negotiation	0.00000004	0.11	0.9144
Time between offers	-0.00000093	-1.55	0.1386
Length of messages	0.00116281	1.96	0.0651
Activity during last day	-3.09508613	-0.24	0.8130
Activity during last 2 days	12.26568812	1.48	0.1567
Activity during last 4 days	1.54933944	0.88	0.3914
Time difference between agreement and deadline	-0.00380662	-1.28	0.2185

* 1=Very much in control, 7=Not in control

Table 26

Regression of process on satisfaction with performance (PERF *)

Independent variable	Parameter estimate	t value	p>|t|
Intercept	2.11156745	0.27	0.7882
Number of offers	-0.56363953	-1.51	0.1485
Offers with messages	0.08513560	0.22	0.8305
Number of messages	-0.52771580	-1.70	0.1055
Duration of negotiation	0.00000030	0.57	0.5737
Time between offers	-0.00000248	-2.98	0.0080
Length of messages	0.00083072	1.01	0.3246
Activity during last day	-6.76726976	-0.38	0.7093
Activity during last 2 days	12.25991158	1.07	0.3006
<i>Activity during last 4 days</i>	<i>4.29576127</i>	<i>1.76</i>	<i>0.0959</i>
Time difference between agreement and deadline	-0.00001776	-0.00	0.9966

* 1=Completely, 7= Not at all

5.5 Direct implications of results

Our last hypothesis (*H12*) refers to the impact of the direct results of negotiations, that is the agreement and its characteristics on the negotiators' assessment of the process and their performance. Results of the regression analysis are presented in Tables 27-30.

Table 27

Regression of result variables on satisfaction with agreement (AGGRSAT).

Independent variable	Parameter estimate	t value	p > |t|
Intercept	4.933463	6.77	0.0001
Agreement's utility (SCORE)	-0.029625	-3.77	0.0003
SCORE relative to expectations	-0.305490	-0.69	0.4941
Pareto agreement	-0.474179	-1.70	0.0927
Agreement reached	0.370256	0.80	0.4236

1=Extremely satisfied, 7=Extremely dissatisfied

Table 28

Regression of result variables on perceived control (CONTROL).

Independent variable	Parameter estimate	t value	p > |t|
Intercept	3.649675067	5.63	0.0001
Agreement's utility (SCORE)	-0.019004	-2.72	0.0082
SCORE relative to expectations	0.2346411	0.59	0.5548
Pareto agreement	0.0193151	0.08	0.9381
Agreement reached	0.2569035	0.63	0.5323

1=Very much in control, 7=Not in control

Table 29

Regression of result variables on meeting expectation (METE*).

Independent variable	Parameter estimate	t value	p >|t|
Intercept	3.707607670	4.53	0.0001
Agreement's utility (SCORE)	-0.025979895	-2.94	0.0043
SCORE relative to expectations	0.084913716	0.17	0.8654
Pareto agreement	0.028849039	0.09	0.9268
Agreement reached	0.815908473	1.58	0.1186

* 1= Completely, 7=Not at all

Table 30

Regression of result variables on satisfaction with performance (PERF*).

	Parameter estimate	t value	p >|T
Intercept	3.342871	4.55	0.0001
Agreement's utility (SCORE)	-0.023549	-2.97	0.0040
SCORE relative to expectations	0.600739	1.34	0.1840
Pareto agreement	0.118853	0.42	0.6733
Agreement reached	0.391276	0.84	0.4016

* 1= Completely, 7=Not at all

Hypothesis *H12* specified a general relationship between outcome and assessment. This is confirmed by the empirical results. As could be expected, the effect of the utility values of the achieved agreements on assessment is positive.

5.6 Summary of hypotheses

The following table summarizes the twelve hypotheses formulated in Section 4 and presents the results that were obtained.

Table 31

Summary of hypotheses and results.

Hypothesis	Dependent variable(s)	Independent variable(s)	Results
<i>H1</i>	Expectations	Culture	confirmed, significant influence on expected score and expected friendliness of negotiations
<i>H2</i>	Atmosphere	Culture	not confirmed with respect to problem solving atmosphere, confirmed with respect to negotiator attractiveness
<i>H3</i>	Process	Culture	confirmed, significant differences in the number of offers accompanied by messages and message length.
<i>H4</i>	Atmosphere	Expectations	not confirmed
<i>H5</i>	Process	Expectations	confirmed, higher expectations increase communication, higher reservation reduces communication
<i>H6</i>	Outcomes	Expectations	confirmed, strong positive influence of expectations on actual score
<i>H7</i>	Assessment	Expectations	confirmed, significant positive influence of reservation score on assessment
<i>H8</i>	Outcomes	Atmosphere	not confirmed, with respect to problem solving attitude, partially confirmed for negotiator attractiveness and some PSA components
<i>H9</i>	Assessment	Atmosphere	confirmed, willingness to see opponent has positive influence on assessment
<i>H10</i>	Outcomes	Process	not confirmed
<i>H11</i>	Assessment	Process	confirmed, but no clear pattern
<i>H12</i>	Assessment	Outcomes	confirmed, significant positive influence of score on assessment

6. Conclusions and future research

6.1 Images of cultures

The main aim of our research is to study the effects of cultural traits in anonymous negotiations carried out via a technical medium. We can use our findings to compose a comprehensive picture as to how negotiators originating from different cultures behave during negotiations. To form this image we go beyond the framework proposed in Figure 1 and also discuss differences in outcomes and assessments, which according to our framework are only indirect effects of culture.

Negotiators from *Austria* entered the negotiation with a rather pessimistic attitude with respect to the results and with respect to friendliness (see Table 5). In contrast to their expectations, Austrians perceived their negotiation partners as friendlier than others, while they were perceived as less friendly themselves as indicated in Figure 4. While communication behavior depends on the composition of the negotiating dyad, Austrians also take an extreme position in sending the least number of offers accompanied by messages (see Table 10).

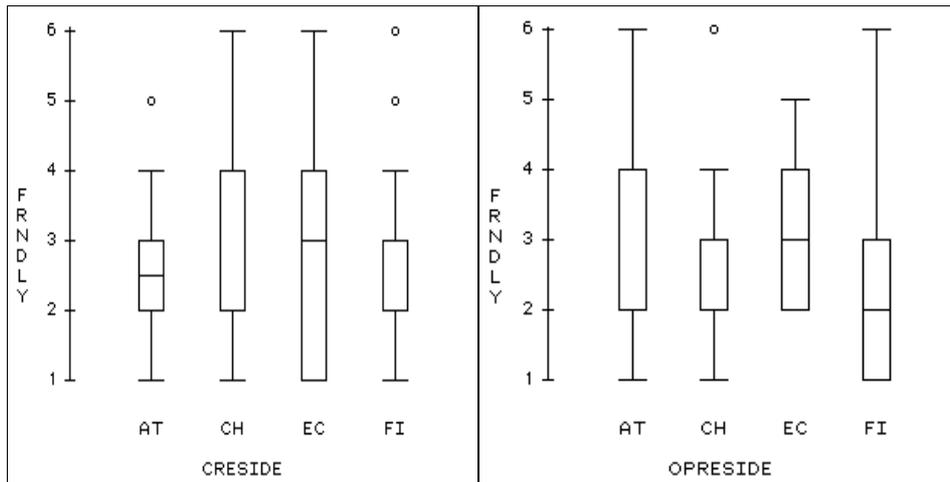


Figure 4. Boxplot of perceived friendliness of negotiators

The low expectations of the Austrians with respect to results are confirmed by the actual outcomes, as indicated in Figure 5. They have also obtained significantly lower scores than negotiators from other countries. Consequently, they were least satisfied with their performance (see Figure 6).

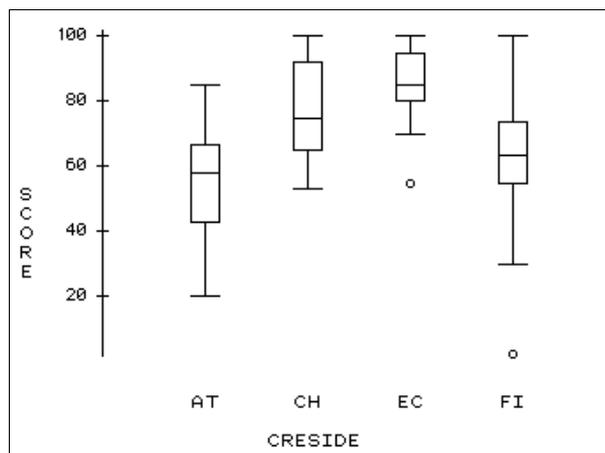


Figure 5. Box plot for scores.

In many ways negotiators from *Ecuador* were exactly the opposite of Austrians. They expected (and achieved) the highest outcomes, and were most optimistic in their expectations about the friendliness of negotiations. Their expectations of friendly negotiations were not fulfilled, they perceived their negotiation partners as not so friendly and were also perceived as least friendly themselves. Another specific trait is the significantly higher amount of communication, as indicated in Table 10. They had the best performance and were also most satisfied with their performance in the negotiations.

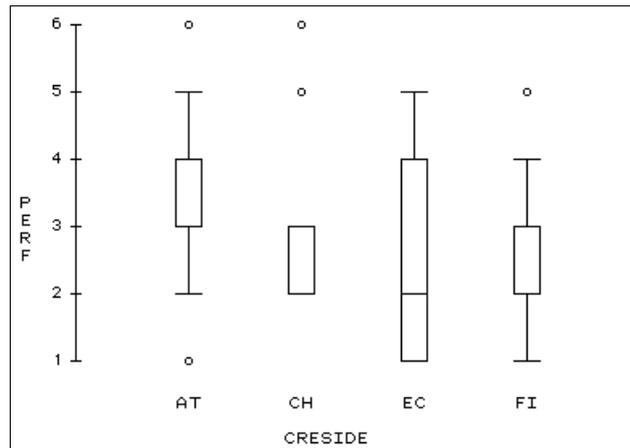


Figure 6. Boxplots of satisfaction with performance

Finland and *Switzerland* are rather close in most of Hofstede's cultural dimensions, except in masculinity. This closeness is also reflected in our data, where negotiators from those two countries often have strikingly similar values. Their expectations concerning results were somewhat higher than those of the Austrians, but much lower than those of the Ecuadorians, while expectations concerning friendliness were similar to those of the Austrians. Negotiators from Finland and Switzerland were perceived friendlier than participants from Austria and Ecuador, but they did not differ from others in their own perceptions. Their communication behavior is also similar to each other and between the two other countries. Their results are also in between the high achievements of the Ecuadorians and the low ones of the Austrians, but they are quite satisfied with their performance.

6.2 Evaluation of the conceptual model

The summary of the results is depicted in Figure 7 in which the influences that were not analyzed are also indicated.

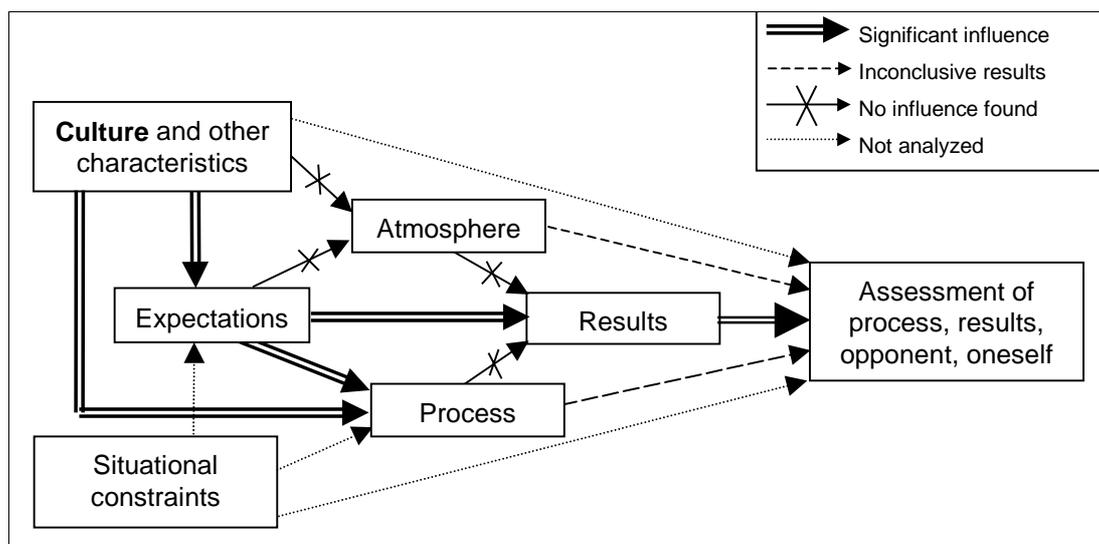


Figure 7. Summary of results

Our results indicate that significant direct influences of culture exist on a negotiator's expectations and the negotiation process, especially on the communication patterns of negotiators. These results confirm our hypotheses that negotiators' expectations (*H1*) and the negotiation process (*H3*) are culture dependent. Via expectations, culture also has a significant influence on the process and its results, confirming our hypotheses that the expectations (*H5*) and assessment of the process (*H7*) depend on culture. These results are indicated in Figure 7 by a double line.

The strong chain of relationships is not continued in the right-hand side of Figure 7. The negative results concerning the relationship between the atmosphere under which the negotiation is conducted and results (hypothesis *H8*) add to the already conflicting evidence found in the literature. Although the theoretical arguments for a relationship between negotiation process and outcomes are rather convincing, hypothesis *H10* that postulated this influence, is not supported.

A similarly ambivalent pattern emerges with respect to a negotiator's assessment. A problem solving attitude failed to play a significant role, while the second factor, which we labeled "negotiator toughness" and which was not earlier studied, was identified as a significant influence. On the other hand, the relationship between results and assessment is plausible.

One can think of several explanations for these results. One possibility is that there simply is no such relationship. Under this framework, culture has an impact just on expectations and process variables. However, none of them has sufficient influence on the negotiation results and assessment, so the initial influence of culture is diluted. However, this hypothesis must be rejected in view of the fact that significant differences in results of negotiations do exist for negotiators from different countries as shown in Figure 5 above.

The differences between the average utilities and the 75% intervals are clearly visible. The utilities achieved by Ecuadorians are significantly higher than those achieved by negotiators from Austria and Finland. According to the model proposed in this paper, the relationship between culture and the results is indirect. If these differences caused the differences in negotiation behavior identified in the previous sections, then those behavioral differences must also be related to outcomes. One possible explanation is that significant process variables were not taken into account; we plan to address this issue when additional variables are available.

6.3 Conclusions

In earlier discussions on Web-based cross-cultural negotiations the following reservations were formulated.

1. We study the effects of culture after the obvious sensory cultural cues are removed. One line of reservation is that after these cues are removed, the study of what is "left over" makes little sense.
2. Communication is central to negotiations. Therefore, studying negotiations with the use of a narrow communication channel is rather vacuous.

3. The rationale for our study includes our belief about increasing the role of the Web for the conduct of negotiations. However, it has been stated that there is little evidence that Web-based negotiations are going to become a frequent form of negotiation, except perhaps for very simple transactions.

On the surface culture exhibits itself with visible behavioral patterns just like a physical distance people try to keep, their facial expressions, manners, etc. These and obvious other artifacts are present at the surface level and are seen, heard and possibly sensed but they are the result of cultural traits present at the level of values, norms, traditions, rituals and so on. The literature on cross-cultural negotiations concentrates on studying more complex cultural constructs than the superficial ones. They include problem solving attitude, attractiveness, development of relationship, competitiveness.

Face-to-face negotiations introduce bias because the subjects may modify their behavior and attitudes according to their perceptions of the counterparts' culture. Anonymous negotiations remove this bias. In fact and contrary to the first criticism, their effect may be that the subjects have to base their strategies and tactics on culture even stronger than in the face-to-face negotiations. The fact that there is less information available (especially implicit information about cultural norms and values of the other) causes higher social uncertainty which ties behavior even stronger to own cultural scripts for such situations. We know of no comparative studies regarding this issue. A simple experiment that we plan to conduct is the comparison of the expected compromise, BATNA and reservation levels when the negotiators know their negotiation partners prior to the negotiation and when they must establish these values without prior knowledge of their counterparts.

Web-based anonymous negotiations allow study issues that could not be studied before and in settings previously not possible. This includes a case that is more realistic, a negotiation pace controlled by the subjects, and the subjects' ability to prepare for negotiations and analysis and submissions of offers and messages. The current limitation of the INSPIRE system is the narrow communication channel; the subjects can communicate only via structured offers and unstructured written messages. Our experiences indicate that this limitation allows for fairly expressive communication and exchange of information.

INSPIRE users, especially those from non-English countries, find positive aspects to this mode of communication because it allows them to analyze offers and messages and reply to them without pressures present in face-to-face communication. Also, a number of users established two-layered communication. They exchanged offers and messages pertaining to negotiations and separate messages about themselves, their interests, etc. Several reports written by the INSPIRE users are available on the Web at <http://interneg.org/interneg/training/inspire/reports/>. An example of the content rich and two-layered communication can be found in the report by Margarita Nikitina from Russia who negotiated with a counterpart from Canada.

Some scientists may dispute the increasing role of the Web in communications between people and organizations. While most of the Web-based commerce, business-to-business transactions take place in North America, there is no reason to assume that the use of Web technologies will not reach other countries to an extent much greater than today. The use of these technologies includes virtual collaboration, cooperation between

organizations, commerce negotiations and decision making. Virtual markets have already been established in which people engage in negotiations.

All these developments take place not only on a national, but also on a global scale. Cross-cultural negotiations via the Internet will therefore, in our view, become a regular phenomenon in the near future and aspects of culture in such negotiations therefore need to be taken into account. While this provides a motivation for our study, the primary one was to study the impact of culture and different constructs in a situation when the obvious visible cultural artifacts are removed. Overt behavior alone cannot be used to decipher culture because it manifests itself at the levels of deep tacit assumptions, espoused values and day to day behavior. This behavior represents a compromise between the values and assumption and the requirements of the situation at hand.

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