Understanding Misunderstanding in Intra- and Intercultural Communication. Findings of a Sino-German Experiment

Markus G. Kittler
Dirk Holtbrügge
Yaling Pan


Prof. Dr. Dirk Holtbrügge, Lehrstuhl für Internationales Management, Universität Erlangen-Nürnberg, Lange Gasse 20, 90403 Nürnberg, Tel.: (0911) 5302-452, E-mail: internationales.management@wiso.uni-erlangen.de, http://www.im-fau.de
Abstract

Effective and efficient communication can be regarded as a major source of competitive advantage in international business. It is not only a prerequisite of successful marketing and human resources strategies but also of importance for the internal coordination of multinational corporations (MNCs). Different communication styles and their influence on intracultural as well as intercultural interaction is therefore a topic of growing relevance. In this article, Hall’s (1976) communication-oriented concept of High- and Low-Context-Cultures and Krippendorff’s (1986) information theory are combined to an experiment to assess communication effectiveness and efficiency based on different degrees of context-orientation. Furthermore, the existence of archetypical interferences as hindrances to effectiveness and efficiency on the process of communication is scrutinized. The experiment was conducted among German and Chinese students at Tongji University in Shanghai. The results of an analysis of 1132 intracultural and 312 intercultural communication processes partially support our hypotheses about the influence of culture on communication effectiveness and efficiency.
The role of communication in international business

As multinational corporations (MNCs) globalize their operations, they do not only have to deal with a world-wide and culturally diverse array of stakeholders but also with a growing degree of internal multiculturalism. For years, they are experiencing “a rapid transition due to increasing cultural diversity” (Ady, 1994: 30). As a consequence, the number of intercultural interactions between and within MNCs increases and the role of intercultural communication becomes more and more important (Scudder, 2004).

The need for successful, i.e. effective and efficient intercultural communication in a Sino-German context may be demonstrated by the example of the Shanghai Volkswagen Company Ltd. (SVW). In a case-study of this Sino-German joint venture, Holtbrügge and Puck (2005) report of ongoing efforts to implement an organizational form which is oriented towards a consensus of its members. At the forefront, a number of misunderstandings between the German and the Chinese staff have emerged, caused by a “lack of communication” (Hoon-Halbauer, 2001: 94), in particular as a result of problems in direct and translated communication. As most of the Chinese staff could not speak German and not all expatriates were able to speak Chinese, the communication between them mainly passed through a third party, the interpreter. Hoon-Halbauer (2001: 95) gives a concrete example of how this way of indirect communication led to misunderstanding: “A proposal backed by adequate reasons and arguments was put forward by a meeting where both foreign and Chinese managers were in attendance. To the other Chinese [..] it sounded strong enough for support and acceptance. However, [..] only 30-40% of the actual content was conveyed to their expatriate colleagues.” As a result of misunderstanding, the proposal was considered not good enough and was hence discarded. Also in direct communication between Chinese and Germans misunderstandings seemed to be a quite common phenomenon. In consequence, the Chinese staff members would rather communicate among themselves than involve the foreign colleagues or their German superiors. The fact that SVW is facing seri-
ous internal difficulties might be an aftermath of these and other communication problems and misunderstandings between individuals of different cultures.

As a consequence of this and other examples of communication divergences and differences in Sino-German communication (e.g. Klein, 1986, Rost-Roth, 1995, Saito, 2003, Tan, 2004), the consideration of different communication styles in international business is a topic of growing relevance. However, communication theory is just at the dawn of responding to the global imperative (Monge, 1998), and little research attention on MNCs has focused on communication and especially on intercultural communication inside MNCs and the role of language (Charles and Marschan-Piekkari, 2002, Marschan-Piekkari, Welch, and Welch, 1999, Shuter and Wise-man, 1994). Also, to many business professionals especially language is not considered to be an important managerial issue (Welch, Welch, and Piekkari, 2005). Therefore, “there is much room for speculation about how culture might affect communication in the multinational organization” (Teboul, Chen, and Fritz, 1994: 15).

The objective of this article is to empirically assess how cultural differences affect communication effectiveness and efficiency. The remaining part of this article is structured as follows. In the next paragraph, the theory and hypotheses of the study are explained. We start with Edward T. Hall’s (1976) concept of High- and Low-Context-Cultures (HC/LC), which is strongly focused on communication and argues that any culture is primarily a system for creating, sending, storing, and processing information. However, to be used as a theoretical framework for further analysis, Hall’s concept lacks an adequate inclusion of the process of communication. Therefore, it is combined with Klaus Krippendorff’s (1986) information theory which allows a deeper insight into this aspect. In the third paragraph, the hypotheses are deduced. Afterwards, the methods and measures of an experiment with 24 German and Chinese participants are explained. The main results are described and discussed in the fifth and sixth paragraph. The paper ends with a short summary of its main contributions as well as with some limitations and implications for further research.
Theory and hypothesis

Theoretical foundations

Communication, intercultural communication, effectiveness, and efficiency

In this article, communication is defined as the interaction of two individuals in order to exchange messages and to create meaning (e.g. Adler, 2000). Communication includes any behavior that intends to indicate something to someone with another human being perceiving and interpreting it (Burkart, 2003, Keller, 1994). Moreover communication is considered a complex interpersonal process that uses any combination of speech, writing and other signals as a basis for the exchange of thoughts, opinions, or information.

Intercultural communication can be seen as the intention to transmit meaning from one individual to another with each individual embedded in or socialized by different cultural contexts. Communication is always intercultural to some extent since individuals are influenced by different cultures and hardly share an identical cultural background. As in intracultural communication, sharing a common code is a necessary but not a sufficient condition for communication to occur (Sarbaugh, 1988). In this article, a distinction is drawn between the two poles intracultural and intercultural communication with the latter being conceived primarily as direct, face-to-face communication between individuals with different cultural backgrounds.

The effort to exchange meaning does not imply the intended outcome. As Adler (2003) argues, communication does not necessarily lead to understanding but may have different results and therefore different degrees of effectiveness and efficiency. Communication is successful to the extent it achieves its intended purpose. According to Gudykunst and Nishida (2001), successful communication depends on “the degree of congruence between the cognitions of two or more individuals following a communication event. [...] Stated differently, communication is effective to the extent that we are able to minimize misunderstandings.” Therefore, effective communication is information that is disseminated and understood by the receiver. The degree of effectiveness can be measured by the congruence between the intended and the perceived meaning.

1 Since, according to the Watzlawick-Axiom, it is not possible not to communicate (Watzlawick 1967), unintended elements are also part of the communication process and are referred to in the following as interferences.
Complete congruence indicates perfect, i.e. highly effective communication; divergences indicate the presence of interferences. Effective communication, however, is not necessarily efficient. Efficiency in communication “refers to the extent to which skills are used to achieve some outcome with a minimum of effort, time, complexity, and investment of resources. [...]
Interpersonal skills are efficient if they accomplish their intended function in a parsimonious manner” (Spitzberg and Cupach, 2002: 579).

**Hall’s (1976) concept of High- and Low-Context Cultures**

Hall (1976) proposed the concept of High- vs. Low-Context as a way to understand different cultural orientations focussing especially on communication and language use. Looking back, Hall (1992) explains this focus: “We believed that culture is communication and no communication by humans can be divorced from culture.” Already in 1973 Hall stated: “The system I have in mind is one that relates *information* in a *context* to produce something man calls *meaning*” (Hall, 1973: 18). According to Hall, any transaction can be characterized somewhere on the high-low-continuum. In his more polished concept illustrated by cross-national examples, Hall (1976: 101) defines the terms “high-context culture” (HC) and “low context culture” (LC):²

“HC transactions feature preprogrammed information that is in the receiver and in the setting, with only minimal information in the transmitted message. LC transactions are the reverse.”

**Figure 1 about here**

Regarding communication, HC and LC are illustrated as two poles in a continuous scale of meaning with nearly all possible combinations of these two items but without the both extremes themselves (see figure 1). Hall (1976: 91) classifies national cultures on the HC-LC continuum: “Although no culture exists exclusively at the one end of the scale, some are high, while others are low. American culture, while not on the bottom, is toward the lower end of the scale. We are

---

² Hall (1976) also introduced the term “middle context” which did not find much acceptance in further studies building on this concept.
still considerably above the German-Swiss, the Germans, and the Scandinavians in the amount of contexting needed in everyday life. [...] China, the possessor of a great and complex culture, is on the high-context end of the scale.” As the relationship of context and information in order to create meaning is inversely proportional and HC-members therefore appear to have difficulties in communicating with LC-members and vice versa (Hall, 1973), interferences on communication processes between Chinese and Germans are to be expected.

Although widely used as an underlying framework in intercultural research, Hall’s (1976) concept has been object to criticisms like bipolarisation, overgeneralization or lack of a solid empirical foundation, to name just some major points (Chuang, 2003, Holden, 2002, Starosta and Chen, 2003). Few authors have hitherto challenged the frequently used classification of countries – with different results: While Kim, Pan, and Park (1998) find empirical support for Hall’s model comparing Korea, China and the USA, Thomas (1998), also comparing Koreans and Americans, comes to opposite results and questions its usefulness to describe the communication styles in these countries. Moreover, intracultural studies generally criticise the approach to use nationality as a proxy for culture and point to the inherent heterogeneity of many countries as a result of different sub-cultures, etc. (Ting-Toomey, 1988)

Despite these critiques, Hall’s (1976) dichotomy provides a useful way to understand culture and its influence on communication. The context-model can help to gain a better understanding of how members of different cultures might perceive similar messages in a different way. As this necessity of understanding affects several areas of international business, Hall’s (1976) concept remains widely accepted and used as a underlying framework in intercultural research, e.g. in the fields of intercultural communication (e.g. Kitayama and Ishii, 2002, Knutson, Komolsevin, Chatiketu, and Smith, 2003, Koeszegi, Vetschera, and Kersten, 2004, Okazaki, 2004, Simintiras and Thomas, 1998, e.g. Ulijn and St. Amant, 2000) or marketing and sales (e.g. Biswas, Olsen, and Carlet, 1992, Callow and Schiffman, 2002, Larsen, Rosenbloom, and Smith, 2002, e.g. Mintu-Wimsatt and Gassenheimer, 2000, Miracle, Chang, and Taylor, 1992, Rosenbloom and Larsen, 2003, Taylor, Franke, and Maynard, 2000). Even critics acknowledge the concept as a doorway to enter the room of intercultural understanding (Starosta and Chen,
Yet, in order to better understand how cultural differences affect intercultural communication the HC/LC-concept has to be sophisticated towards the process of communication itself.

**Krippendorff’s (1986) information theory**

Information is the key to Klaus Krippendorff’s (1986) approach to communication. His concept builds on the classic Shannon/Weaver model, which considers communication as a chain of processes. The target of communication is to transport an intended meaning from a sender to a receiver. The sender’s entropy can be compared to the meaning of the message and therefore consists of information (as understood in Hall’s terminology) and context. The message sent and the message received do not have to be identical but should correspond to one another. In this ideal case, Krippendorff (1986) speaks of a perfect channel where encoding and decoding are considered to be inverses of each other. In the process of communication interferences are likely to occur which lower the quality, i.e. effectiveness and efficiency of communication. Krippendorff (1986) identifies two basic categories of interferences: equivocation and noise. Figure 2 shows the flow of information through a communication chain and visualizes these two interferences: “Equivocation subtracts from the sender’s entropy, yielding the quantity of information actually transmitted, and noise adds unrelated variation to this transmitted quality, yielding the entropy at the receiver. The amount of information transmitted is the entropy shared by both – input and output, sender and receiver, and so on” (Krippendorff, 1986: 24). A way to increase the amount of information transmitted and therefore to improve the communication quality is to add correction channels or to enter redundancy into the channel. E.g. Shannon and Weaver (1963) observed that the English language is about 50 percent redundant while other researchers have even found a ratio of up to 70 percent. Therefore redundancy seems necessary in the communication process in order to improve understanding. A non-redundant language would be a more efficient means of communication but totally insensitive to transmission errors of any kind.

*Figure 2 about here*
**Synthesis: Archetypes of communication**

Individually, the models of Hall and Krippendorff reveal several weaknesses with regard to intra- and intercultural communication. Hall (1976), though presenting a number of observations on intercultural interactions, does not systematically approach the communication process. He focuses more on the specific features of different cultures regarding communication but less on the communication process of members of different cultures itself. However, by solely comparing cultures we can only find that they differ from another but not what happens if members of different cultures interact (Bolten, 1999). Krippendorff’s information processing approach, on the other hand, tends to ignore the cultural context and provides no way of observing that an individual processing information is embedded in a highly structured and meaningful constituted environment. “It gives no way of permitting us to see that the individual is the recipient not just of information but also of meaning” (McCracken, 1987). Therefore, both approaches do not offer a systematic exploration of what happens when, for instance, members of two cultures communicate.

In this paper, an integrated model of intercultural communication is proposed. Regarding communication as a process with a flow of information from one individual sending a message to another individual receiving it, and combining Hall’s (1976, 1973) notion of HC/LC and Krippendorff’s (1986) model, a number of modifications is necessary. First of all, the notion of information in both concepts differs significantly. Hall considers information as a part of the meaning of a message which also consists of context. Krippendorff’s (1986) notion of information therefore corresponds more to Hall’s (1976) notion of meaning as part of the message sent. For a better understanding, information in this article is defined according to Hall as **context-free information**; context is defined as **context-bound information**. Both elements are part of the message sent between sender and receiver.

As argued above, equivocal elements are unclear or non-straightforward parts of a message that is ambiguous in meaning. Equivocation “measures the average uncertainty in the message when the signal is known” (Shannon and Weaver, 1963). On an intercultural level, there is often no mutual agreement about which meaning should be attributed to a message. This can not only
lead to different conceptions of the message, it can also cause a loss of parts of the message sent, since the receiver does not even perceive them as part of it. This unintended loss subtracts from the intended meaning sent and therefore reduces the sender’s entropy. It can be argued that this loss affects the context-bound information in particular since context-free information, i.e. the information part of meaning according to Hall’s (1976) notion, does not require (culture-specific) preprogramming to the extent of context-bound information. In the following, this interference is referred to as contextual loss. The opposite is contextual noise. Here interference occurs when the receiver adds sender-unintended parts to the message. This alters the sender-intended meaning of the message sent. As a consequence, the receiver’s entropy differs from the sender’s entropy to the extent of both contextual loss and contextual noise.

Despite the justified concern about the dualities in intercultural research as presented by Hall and other scholars, this perspective still gives the opportunity to illustrate complex communication interactions. Based on Hall’s (1976) HC/LC-concept and a process-view of communication, six archetypes of communication can be identified: Communication from LC to the same LC and HC to the same HC are two forms of intracultural communication. In intercultural communication, four configurations are possible: Intercultural communication can take place from LC to another LC (1), from LC to HC (2), from HC to LC (3), and from HC to another HC (4). It can be argued that while in intracultural communication both sender and receiver share a similar cultural background, this is not the case for the other four archetypes of intercultural communication for which contextual noise and contextual loss appear as a result of different frames of reference and affect effectiveness and efficiency of communication. In the case of Sino-German communication, archetypes 2 and 3 have to be employed. The assumed appearance of contextual noise or loss for each of these two archetypes of intercultural communication as a result of our theoretical considerations is presented in figure 3.

In the case of a German sender communicating with a Chinese receiver information flows from a LC-sender to a HC-receiver. While the German LC-sender tends to emphasize the information content of the message sent, the Chinese HC-receiver will assume that the message received contains cultural context beyond “pure” information. The message received is distorted by addi-
tional interpretations and assumptions of the receiver which are not intended by the sender. Sender’s and receiver’s entropy do not correspond as the sender’s entropy is mainly distorted by additional unintended meaning (contextual noise).

In the case of a Chinese sender communicating with a German receiver information is transmitted from a HC-sender to a LC-receiver. While the Chinese HC-sender tends to emphasize on context-bound information when sending a message, the German LC-receiver will tend to focus on the context-free information contained in the message. The message received is reduced to its context-free core. Messages “between the lines” intended by the sender might not be recognized by the receiver. Sender’s and receiver’s entropy do not correspond as contextual parts of the sender’s entropy are lost on the way to the receiver (contextual loss).

*Figure 3 about here*

**Hypotheses**

**Intracultural communication**

According to Hall, HC-communication in contrast to LC-communication “is economical, fast, efficient, and satisfying; however, time must be devoted to programming. If this programming does not take place, the communication is incomplete.” Therefore, a “common sense” is necessary for successful communication. In consequence, a higher amount of ambiguity of the message sent in HC involves a greater possibility of misinterpretation. As Daft and Lengel (1986: 560) argue for media-richness, “media of low richness are effective for processing well understood messages and standard data”. A similar argument may be valid when focusing on the role of context on communication effectiveness: Low context cultures communicate in more explicit ways and therefore are less dependent on contextual clues (Clampitt, 2005). The result might be a better understanding, i.e. a higher degree of effectiveness. Hall (1976) further argues that communication in HC needs a more extensive preprogramming than LC-communication but that this preprogramming (HC) cannot possibly cover all conceivable subjects whereas pure information (LC) is more universal.
However, HC-individuals are argued to be more efficient (Hall, 1976). A HC-individual will tend to expect the listener to know what he means. In this case, the communication will be brief and (when effective) also efficient. In LC, the burden appears to fall on the sender to accurately and thoroughly convey the meaning in his spoken or written message (Zaharna, 1995). This will lead to a more extensive explanation of the sender’s intention which extends the duration of the communication process. Therefore, our first two hypotheses are:

**Hypothesis 1:** HC-communication (Chinese) will be less effective than LC-communication (German).

**Hypothesis 2:** HC-communication (Chinese) will be more efficient than LC-communication (German).

**Intercultural communication**

As shown above, if the sender and the receiver share the same context, then this context can be used as a source of knowledge in determining the meaning of an utterance (Nilsson, 1998). If this is not the case, different cultural contexts cause additional intercultural interferences which are added to or subtracted from the meaning sent (sender’s entropy) and therefore change the meaning received (receiver’s entropy). The two basic interferences resulting from differences in the context are described as contextual noise, i.e. additions to the meaning that are not intended by the sender, and contextual loss, i.e. reductions of the original meaning sent. The presence of these additional interferences impedes the flow of meaning from sender to receiver and may have negative consequences on effectiveness and efficiency. A lower degree of effectiveness can be caused by different cultural contexts. If the contexts were less different the sender would know that a receiver can figure out what the sender means. As a consequence, the sender can send shorter messages (Nilsson, 1998). Another, previously neglected factor (Piek-kari and Zander, 2005, Welch, Welch, and Piekkari, 2005) is the language employed in the process of communication. Furthermore, since in most cases of intercultural communication a language understood by sender and receiver has to be employed as a prerequisite for communi-

---

3 Interferences in addition to the interferences of intracultural communication. The latter are not object of further consideration within the focus of this analysis.
cation to take place, communicators often have to switch to a second, foreign language. As native fluency in this language is not to expect (McDaniel, Samovar, and Porter, 2005), a possible consequence of second language use is that the communicators’ task-related communication skills might be reduced. This would also lead to a lower degree of communication effectiveness and efficiency. Therefore:

**Hypothesis 3a:** Intracultural communication will be more effective than intercultural communication.

**Hypothesis 3b:** Communication in a second/foreign language will be less effective than native language communication.

**Hypothesis 4a:** Intracultural communication will be more efficient than intercultural communication.

**Hypothesis 4b:** Communication in a second/foreign language will be less efficient than native language communication.

Comparing the particular differences of culture, as mentioned above, Hall argued that HC-individuals are more efficient in intracultural communication than LC-individuals, but that more time and effort is needed to create a common background. However, this preprogramming is to a high degree culture-specific and presumably incompatible with the preprogramming of other cultures. Therefore, a HC-orientation of communication impedes the exchange of meaning on a cultural level. Considering the archetypes above and the two basic intercultural interferences contextual loss and contextual noise, it can be argued, that a HC-orientation of the sender will cause a higher amount of cultural loss in the process of intercultural communication than a LC-orientation of the sender. A HC-orientation of the receiver will cause a higher amount of contextual noise than a LC-oriented receiver. This leads to hypotheses 5 and 6:

**Hypothesis 5:** HC-senders (Chinese) will cause a higher amount of contextual loss in intercultural communication than LC-senders (Germans).
Hypothesis 6: HC-receivers (Chinese) will experience a higher degree of contextual noise in intercultural communication than LC-receivers (Germans).

Method and experimental design

Communication is a concept difficult to assess and to measure. A basic challenge is to classify sender and receiver according to Hall (1976) by a systematical identification of contextual noise and loss. As Hall (1976) argues, “in real life the code, the context, and the meaning can only be seen as different aspects of a single event. What is unfeasible is to measure one side of the equation and not the others.” A “powerful tool” (Leung, Bhagat, Buchan, Erez, and Gibson, 2005) to meet this challenge is experimentation which provides the opportunity to observe indications of behavior under controlled conditions (Bredenkamp, 1980, Hussy and Jain, 2002, Muthig, 1981).

Participants

As Germany and China are identified as cultures close to the poles in the HC/LC-continuum, individuals of these two cultures seem to be adequate participants for an experiment focusing on communication on an intercultural level. As the role of a second language is also subject of the present experiment, the country selection seems appropriate as the languages of both countries differ from each other to a major extent (Günthner and Rothenhäusler, 1986, Klein, 1986, Rost-Roth, 1995). In order to realize the experiment with direct, interpersonal communication and still avoid interfering cultural assimilation or adjustment - a basic challenge to experiments on intercultural communication (Byram, 1997) - the experiment was conducted in the course of a short visit of students of the University of Nuremberg, Germany, at the Tongji University in Shanghai, China. The participants were 24 German and Chinese full-time graduate students.

Procedures

The graduate business students were introduced in the rules of the game in form of a short briefing. The rules were also handed out in a Chinese and a German version. The equivalence of the two handouts was guaranteed by retranslation. To ensure the understanding of the rules of the game, supervisors offered the opportunity to ask questions before the game started. The experiment has three stages. In the first stage the game was played in national groups with all players
using their native language to communicate. In the second stage, the Chinese groups were opened to a second language and all terms had to be explained in German. In the third stage, international groups with an equal number of German and Chinese participants (three each) were formed and again all explanations were restricted to German. In all three stages, the participants of both nationalities have been randomly assigned to the four groups. The only restriction to randomization was the level of internationality of the groups in the different stages of the game (1 and 2 national, 3 international). A debriefing at the end of the game included a discussion of the participants’ experiences, especially focusing on their perceived differences between intra- and intercultural interactions.

In order to model a unidirectional process of communication with a clear role distinction (sender, receiver), the following experimental design “EXPLANATORIUS!” was created: A unidirectional communication process with a clear role distinction appears when a sender A tries to transmit a message (meaning) to receiver B. E.g., this is the case when A tries to explain a certain term to B without mentioning the term itself. The communication is effective when B recognizes the term, i.e. when sender’s and receiver’s entropy match. Efficiency can be measured by the time needed for the communication to be effective. When A tries to explain the term also to other receivers B₂ to Bₙ with one of the receivers recognizing the term, one effective and n-1 less effective communication processes take place. Since the meaning sent was sufficient for one of the receivers, interferences may be assumed in the various communication processes between the sender and the other receivers. It is possible that less successful receivers have (a) not received enough information and/or (b) have misinterpreted the message received with the cognition of different meaning. In the case of (a) it can be assumed that parts of the message sent where not recognized by the receiver, which indicates the existence of contextual loss. In the case of (b), misinterpretations, i.e. sender-unintended meaning added to the sender’s entropy, are the reason for misunderstanding and indicate the existence of contextual noise. The extent of contextual noise and loss can be measured by self assessment of the less-successful receivers after each communication process.
To allow for measuring these effects, the following game design was created: The participants of the experiment are split into different groups with a similar number of players and are seated at the tables assigned to them according to the following seat arrangement: A supervisor is seated at the end of the table, next to him the player sending the messages. The designated sender attempts to explain a randomly chosen term that he receives on a gamecard to the other players of his group (receivers). Each sender receives 4 gamecards one after each other. The sender has a maximum of 30 seconds for each gamecard in order to explain the term to the receivers. Restrictions to the explanation are (1) zero to six forbidden terms that must not be used by the sender, and (2) the use of a specific language according to a specification on the game card. The restrictions are presented on the gamecard in figure 4. The receivers call their suggested solutions towards the sender. False suggestions do not have any consequences. Violations of the rules mentioned above, however, are endorsed by the supervisor and the term to be guessed is evaluated with 0 credits. The time until this violation took place, however, is considered in the game evaluation. There is also no credit if the defaulted time (30 seconds) elapsed without the term being guessed by the receivers. If the term is guessed by one of the receivers, this player and the sender receive one credit each. If several receivers are successful simultaneously, all winners and the sender will receive a credit. The extent of the two interferences contextual noise and contextual loss for the less successful communication participants is measured by self assessment after each communication process. After having explained 4 terms, the sender changes his role with one of the previous receivers who takes over the role of the sender and begins with the procedure explained above. This alternation occurs until all participants held the role of the sender once and the communication group takes over the tasks of the monitoring group and vice versa. All in all, 1132 intracultural and 312 intercultural communication processes took place.

*Figure 4 about here*
**Measures**

Effectiveness can be seen as a single and simple outcome by the result of matching (Walther and Parks, 2002). According to Daft and Lengel (1984), efficiency, in turn, is seen as the effective accomplishment of understanding within a specific time interval. From a sender perspective, the term is not efficiently explained when either the term is not guessed in the given time period (STOPTIME, 0;1) or when the rules of the game are violated (STOPRULE, 0;1). In this case the senders effort to communicate did not have the intended effect (NOT_SUCC, 0;1) and therefore was not effective. A more elaborated measure is offered from the receivers’ perspective. Communication effectiveness again is measured by a dichotomous item (SUCCESS, 0;1), with 1 = effective communication (i.e. the term is guessed by the receivers) and 0 = non-effective communication (the term is not guessed by the receivers). In the case of successful communication (NOT_SUCC = 0), the communication did reach its intended goal for at least one receiver who mentioned the explained term first (SUCCESS, 0;1). For the other receivers, the communication was not as effective as for the winning receiver(s) but still effective to a certain degree. This was measured through self-evaluation on two items after each term. The two questions (a) “How much more information would you have needed to find out the term explained?” (C_LOSS) and (b) “How much additional (afterward recognized as unrelated and wrong) associations did you make?” (C_NOISE) where asked on a 7-point Likert scale (0 = strongly disagree, 6 = strongly agree). Based on these perceptions, the extent of receivers’ perceived effectiveness (P_EFFECT; [0;1]) is measured as follows:

\[
P_{\text{EFFECT}} = \min \left[ 1 - \left( \frac{C_{\text{LOSS}}}{6} \right), 1 - \left( \frac{C_{\text{NOISE}}}{6} \right) \right]
\]

In the case of efficient communication, efficiency suggests to make the message sent as short as possible, i.e. the shorter the time needed to guess the term will be, the more efficient it is. Efficiency therefore was measured for successful communication interactions by the time needed. The time needed (TIME) was measured in seconds in an interval of [0s;30s].
Results

Descriptive statistics are shown in table 1. Regarding the results for the perceived effectiveness of communication, Germans reveal a higher means on comparable levels of P_EFFECT. E.g., for intracultural communication in a native language as simulated in round 1 the mean for Germans (0.68) is higher than for Chinese (0.52). In the case of communication across cultural borders the means of P_EFFECT for intercultural communication (0.29) and intracultural communication (0.51) show the anticipated effect that communication is less effective when sender and receiver come from different cultural contexts. The largest differences can be observed when comparing the perceived effectiveness of communication in a foreign versus communication in a native language. In the course of the experiment, the Chinese had to switch from their native to a foreign language. A comparison of communication processes in their native Chinese language (0.52) and the second language German (0.22) reveals differences, too. Concerning efficiency, the most significant correlation was found for language. On average, the Chinese participants needed 11.7 seconds to guess a term in their native language compared to 17.7 seconds when communicating in a second language. In accordance with our hypothesis, Chinese show a higher efficiency (11.7 seconds) compared to Germans (13.0 seconds) when communicating in their native language. Surprisingly, the means for intracultural communication in German (17.7 seconds) is higher than that for intercultural communication (15.4 seconds).

In order to test the hypotheses generated above, ANOVA-models for effectiveness and efficiency were applied for further analysis. The results for the ANOVA of the independent variables nationality, language and interculturality on the dependent variable effectiveness are presented in table 2. For each successfully explained term by a sender (NOT_SUCC = 0) one of the five communication processes was randomly chosen for evaluation.
As the difference for nationality is significant (p < 0.05) hypothesis 1 is supported by our data.

In the case of communication across cultural borders, the means of perceived effectiveness also vary significant (p < 0.05). Therefore hypothesis 3a is supported by the data. The most significant influence on effective communication was calculated for language. A comparison of communication processes for the Chinese participants show differences for native- and foreign-language-communication processes on a highly significant level (p < 0.001). This result supports the expected effect postulated in hypothesis 3b. R² indicates that the independent variables nationality, language and interculturality explain 21% of the variability of P_EFFECT in our experiment.

Similarly to factors influencing the effectiveness the efficiency of successful communication processes using the dependent variable TIME was computed. The ANOVA results for the independent variables nationality, language and interculturality on TIME are shown in table 3

Table 3 about here

Our data reveal only a significant difference for the influence of language. The variance between the Chinese HC-communication and German LC-communication does not show a significant level when considering efficiency (p = 0.322). Hypothesis 2 therefore is not supported by our data. In the case of intercultural communication, the means also do not vary significantly (p = 0.593), so hypothesis 4a cannot be supported by the data. As for effectiveness, a highly significant influence (p < 0.01) on efficient communication was found for differences between native- and foreign-language-communication. This result supports the anticipated effect in hypothesis 4b. However, R² indicates that only 7.5% of the variability of TIME in our experiment can be explained.

In order to test hypotheses 5 and 6 against the data for round 3, the less effective communication processes for sender-effective turns were taken into consideration for analysis. Table 4 shows that the means differ significantly only for the dimension of cultural loss. However, the results are opposite to our expectations. For intercultural communication processes with a German
sender, Chinese receivers experience a higher degree of C_LOSS than German receivers addressed by Chinese senders. For C_NOISE no significant differences between Germans and Chinese could be found. Therefore, both hypotheses 5 and 6 are not supported.

\textit{Table 4 about here}

\section*{Discussion}

The results reveal influences of nationality, language and interculturality on communication and point out the outstanding role of language. This underpins the expected assumption that it is easier to communicate in its own, native language than in a second, foreign language. A good command of languages is a prerequisite for effective and efficient communication – inside and across cultural borders. Despite the existence of other independent variables, knowledge of language(s) remains a major reason for variances in communication effectiveness (Liu, 2004). Often, at least one of the communication-partners has to switch to a second language in which he/she is less fluent (McDaniel, Samovar, and Porter, 2005). In the present experiment, the Chinese had to switch to German from round 2 on. In the intercultural round 3, the Chinese receivers almost did not have any success. The Germans took profit of their native language advantage. Therefore, as mentioned above, language competency appears to be of greater importance to effective communication than cultural differences. The impact of the use of a native versus a second language can also be found taking a closer look at round 1 and 2. Whereas the Germans were allowed to use their native language during all the three rounds, the Chinese had to switch from their native language into German in rounds 2 and 3 with the expected effect of a significant decrease in effectiveness.

Whereas effectiveness is also significantly affected by nationality and interculturality of communication, efficiency seems not to be influenced. As mentioned above, expected advantages for Chinese regarding efficiency were found, even though not on a significant level. One explanation is that the game design allows employing context only to a limited degree. The participants are forced to concentrate on the factual content with the intention to explain. Contextual
aspects concerning the relationship between the communication partners remain excluded. For the case of interculturality, one explanation is that the more effective pre-programmed information of the Chinese HC can not be easily transferred across cultures. Therefore, to be effective, the communication style has to be adapted to a more information-oriented LC style, which is less efficient according to Hall (1973, 1976). Unexpected results may also be impacted by pushing the Chinese to communicate, even though the Chinese are historically seen not to be considered the most loquacious culture and do not verbalize all information they want to transmit. As the Chinese philosopher Lao Zi states “Zhi zhe bu yan, yan zhe bu zhi - Those who know do not speak, those who speak do not know” (Jia 1998: 229). It still is a widespread Chinese custom to speak with deliberation and regard the context of the situation (Liang 1996: 254).

A surprising result of the present study is the different extent of contextual loss in intercultural communication. When a German sends information to Chinese receivers the contextual loss is greater as if a Chinese sends information to German receivers. The Chinese receivers obviously miss some of the German’s major points, but not vice versa. As contextual loss is only measured for receivers who where less successful in sender-successful turns, the sender has sent enough information for at least one of the players to understand. A part of the information sent is lost on the way to the less successful receivers. Considering the LC-orientation of the Germans, they should tend to send less contextual clues and more pure information according to the archetypes presented above. A first explanation for this finding is that the Chinese – explaining in German – refrain from using context. Another explanation could be that Hall’s (1976) country classification is not valid anymore.

**Contributions, limitations and implications for further research**

The experimental design and the results gave an interesting insight in intercultural communication between Chinese and Germans. The interactive perspective on Hall’s (1976) framework utilizing Krippendorff’s (1986) process view of communication provides a wide variety of possible applications. It offers a powerful insight on how cultural differences influence communication in various situations. For business professionals, the systematic approach to the understanding of misunderstanding offers the possibility to be aware of the pitfalls in intercultural commu-
nication and therefore make their communication more effective. For example, they might benefit when negotiating with business partners from different cultures, e.g. in Euro-Asian Joint Ventures (Mohr, 2002). According to Bing (2004), the awareness of cultural differences is also important for other business practices such as managing cross-border mergers and acquisitions. A better understanding between the individuals concerned offers solutions to speed business transactions through higher communication effectiveness and efficiency. The experimental design presented can also be employed in relocation or intercultural training. Understanding one’s own cultural communication characteristics and those of the host country nationals is a necessary prerequisite for translation and communication both within and between foreign subsidiaries and the headquarters. Communication with host nationals is also a main factor influencing the cultural adjustment of expatriates abroad (Holtbrügge, Kittler, and Ungar, 2005). A training based on the previous considerations could furthermore offer a valid, reliable and low-cost possibility to assess individuals’ communication skills in order to identify the right potentials for communication-intensive tasks.

The experimental design presented may also affect future empirical studies of Hall’s communication model. This article, like most empirical studies based on Hall’s concept is limited to a comparison of one Western with one Asian country. As our conceptual and experimental design also allows comparing communication processes between individuals from different cultures on similar context-levels, further studies could be undertaken to empirically test Hall’s concept and classification far less polarizing. The results could provide validity to the existing body of literature that is based on Hall’s concept (e.g. Callow and Schiffman, 2002, Kitayama and Ishii, 2002, Knutson, Komolsevin, Chatiketu, and Smith, 2003, Koeszegi, Vetschera, and Kersten, 2004, Larsen, Rosenbloom, and Smith, 2002, Mintu-Wimsatt and Gassenheimer, 2000, Okazaki, 2004, Rosenbloom and Larsen, 2003, e.g. Ulijn and St. Amant, 2000)

In spite of its contributions the experimental design still discloses some restrictions. A possible limitation is the static nature of the experiment. As it takes time and patience to adapt to different communication styles and conditions (Grosse, 2002), the style of intercultural communication may change and effectiveness and efficiency could be improved by more frequent encoun-
ters. This aspect was not measured in the present experiment. The experiment would also deliver even more interesting results if the participants had all participated in a second language. But this was not possible as the Chinese participants only were capable of German as second language and the German participants only had fluent knowledge of English but not of Chinese. Even though this seems to be a limitation of the present study it reflects a situation close to the reality of international business. Only few western business professional are able to negotiate in Asian languages, whereas a large degree of their Asian counterparts is capable of the western business partner’s native langue, e.g. English or German. Nevertheless further experiments which force both nationalities to switch to a second language should be conducted. As learning a foreign language also has the effect that the learners assimilate with the corresponding culture, the Chinese participants of our study could already have been assimilated to the German culture to a certain degree, which also might distort the results. Despite these limitations, the results point at a fundamental challenge individuals have to face in intra- as well as in intercultural communication: In order to understand, communicators have to empathize with the position of the vis-à-vis. The latter appears to be a giant leap to higher effectiveness and efficiency: “If we endeavour to make this imaginative leap, then we are much more likely to communicate effectively than if we simply assume the recipient will understand” (Sagan and Drake, 2004: 122).

References


Appendix

Figure 1: High and Low Context

Source: Hall (1976, 102)

Figure 2: Krippendorff’s process-model of communication

Source: Krippendorff (1986, 25)
Figure 3: Archetypes of intercultural communication

**LC$_1$→HC$_2$:** Information flow from Low-Context Culture$_1$ to High-Context Culture$_2$

**HC$_1$→LC$_2$:** Information flow from High-Context Culture$_1$ to Low-Context Culture$_2$
Figure 4: Gamecards of “EXPLANATORIUS!”

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>NAT_REC</th>
<th>LANG_REC</th>
<th>INTERCUL</th>
<th>P_EFFECT Mean</th>
<th>Std. Deviation</th>
<th>TIME Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>native (Total)</td>
<td>intracultural</td>
<td>.6771</td>
<td>.34098</td>
<td>13.01</td>
<td>6.808</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.4394</td>
<td>.41323</td>
<td>16.92</td>
<td>7.847</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.6328</td>
<td>.36564</td>
<td>13.51</td>
<td>7.030</td>
</tr>
<tr>
<td>Chinese</td>
<td>native</td>
<td>intracultural</td>
<td>.5238</td>
<td>.59420</td>
<td>11.66</td>
<td>6.540</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.5238</td>
<td>.59420</td>
<td>11.66</td>
<td>6.540</td>
</tr>
<tr>
<td></td>
<td>foreign</td>
<td>intracultural</td>
<td>.2262</td>
<td>.32478</td>
<td>17.70</td>
<td>7.685</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.1991</td>
<td>.31828</td>
<td>15.36</td>
<td>7.494</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.2156</td>
<td>.32077</td>
<td>16.33</td>
<td>7.583</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intracultural</td>
<td>.3537</td>
<td>.48059</td>
<td>13.74</td>
<td>7.473</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.1991</td>
<td>.31828</td>
<td>15.36</td>
<td>7.494</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.3122</td>
<td>.44704</td>
<td>14.27</td>
<td>7.475</td>
</tr>
<tr>
<td>Total</td>
<td>native</td>
<td>intracultural</td>
<td>.6042</td>
<td>.5137</td>
<td>12.61</td>
<td>6.732</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.4394</td>
<td>.43738</td>
<td>16.92</td>
<td>7.847</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.6042</td>
<td>.43788</td>
<td>13.01</td>
<td>6.927</td>
</tr>
<tr>
<td></td>
<td>foreign</td>
<td>intracultural</td>
<td>.2262</td>
<td>.32478</td>
<td>17.70</td>
<td>7.685</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.1991</td>
<td>.31828</td>
<td>15.36</td>
<td>7.494</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.2156</td>
<td>.32077</td>
<td>16.33</td>
<td>7.583</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intracultural</td>
<td>.5137</td>
<td>.44674</td>
<td>13.30</td>
<td>7.062</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intercultural</td>
<td>.2902</td>
<td>.37276</td>
<td>15.85</td>
<td>7.545</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>.4623</td>
<td>.44034</td>
<td>13.86</td>
<td>7.227</td>
</tr>
</tbody>
</table>
Table 2: Tests of Between-Subjects-Effects for P_EFFECT

<table>
<thead>
<tr>
<th>Source (a)</th>
<th>Typ III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>10.215(b)</td>
<td>4</td>
<td>2.554</td>
<td>16.404</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>27.433</td>
<td>1</td>
<td>27.433</td>
<td>176.210</td>
<td>.000</td>
</tr>
<tr>
<td>NAT_REC</td>
<td>.686</td>
<td>1</td>
<td>.686</td>
<td>4.409</td>
<td>.037</td>
</tr>
<tr>
<td>LANG_REC</td>
<td>2.126</td>
<td>1</td>
<td>2.126</td>
<td>13.655</td>
<td>.000</td>
</tr>
<tr>
<td>INTERCUL</td>
<td>.691</td>
<td>1</td>
<td>.691</td>
<td>4.437</td>
<td>.036</td>
</tr>
<tr>
<td>Error</td>
<td>38.454</td>
<td>247</td>
<td>.156</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>102.528</td>
<td>252</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>48.670</td>
<td>251</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a The results for combined factors were all 0 and therefore left out for better clarity
b $R^2 = .210$ (Adjusted $R^2 = .197$)

Table 3: Tests of Between-Subjects-Effects for TIME

<table>
<thead>
<tr>
<th>Source (a)</th>
<th>Typ III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>728.029(b)</td>
<td>4</td>
<td>182.007</td>
<td>3.685</td>
<td>.007</td>
</tr>
<tr>
<td>Intercept</td>
<td>24902.671</td>
<td>1</td>
<td>24902.671</td>
<td>504.164</td>
<td>.000</td>
</tr>
<tr>
<td>NAT_REC</td>
<td>48.774</td>
<td>1</td>
<td>48.774</td>
<td>.987</td>
<td>.322</td>
</tr>
<tr>
<td>LANG_REC</td>
<td>478.368</td>
<td>1</td>
<td>478.368</td>
<td>9.685</td>
<td>.002</td>
</tr>
<tr>
<td>INTERCUL</td>
<td>14.158</td>
<td>1</td>
<td>14.158</td>
<td>.287</td>
<td>.593</td>
</tr>
<tr>
<td>Error</td>
<td>9039.093</td>
<td>183</td>
<td>49.394</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>45863.000</td>
<td>188</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>9767.122</td>
<td>187</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a The results for combined factors were all 0 and therefore left out for better clarity
b $R^2 = .075$ (Adjusted $R^2 = .054$)

Table 4: Contextual noise and loss in intercultural communication

<table>
<thead>
<tr>
<th>Variable</th>
<th>NAT_SEND</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>C_NOISE</td>
<td>German</td>
<td>70</td>
<td>2.13</td>
<td>2.153</td>
<td>0.491</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>29</td>
<td>1.90</td>
<td>2.110</td>
<td></td>
</tr>
<tr>
<td>C_LOSS</td>
<td>German</td>
<td>90</td>
<td>5.10</td>
<td>1.307</td>
<td>3.851**</td>
</tr>
<tr>
<td></td>
<td>Chinese</td>
<td>32</td>
<td>3.78</td>
<td>1.773</td>
<td></td>
</tr>
</tbody>
</table>

** significance for t; p<0.01