INTRODUCTION

Small Decisions and Big Decisions
Making decisions is a universal process. Human beings in all ages and cultures constantly find themselves in a position where they have a choice between two or more alternatives. Whether you try to attack the mammoth from the left or the right side, whether you order pizza or pasta at a restaurant, or whether you continue to read this chapter or not means making a decision. Cognitive psychology has developed quite complicated models to describe human decision making. Although these models do differ in many respects, they are often variations of the "expectation-times-value - principle". This means that humans usually select the one alternative that has both a high subjective value and a high likelihood of success. For instance, you are only supposed to continue reading this chapter if you value the topic and if you expect a fair chance that you understand the text. If one of both conditions is not met, you should by now be thinking of doing something else.

However, different observers have remarked that many of the more important decisions in real do not fit such simple models. For instance, there might be no common "yardstick" against which to measure different alternatives (there is, for instance, no common value involved in spending the same amount of time with a textbook or in a movie). Furthermore, real life decision making is usually more like a series of decisions than a single "one-shot-decision". If you, for instance, decide to make your room more comfortable, you usually don't develop three or four alternatives and then decide among these according to some rational criterion. Rather, you may start by deciding to move your desk from one wall to another. Looking around, you feel that the cupboard also needs a new place, then the bed and so on until you room looks in a way that is well beyond what you imagined when you moved the desk. And finally, the likelihood of success is often not known to the decision maker. If one, for instance, is wondering whether to enroll in Psychology or Medicine, the estimate of one's own liking of and success in these subjects is at best vague. Moreover, other important aspects like job prospects may also be quite unclear.

Therefore, making decisions on issues of importance and with far-reaching consequences is much more difficult than doing simple multiplications of values and likelihood of outcomes. This probably is one of the reasons why many of the "big decisions" are regulated by cultural norms. In many cultures decisions on how to view the world, which gods to believe in, which profession to learn, where to live and whom to marry are, in fact, more influenced by the social and cultural context than by individual decisions. Certainly, this limits individual freedom. On the other side, this also alleviates the burden of constantly making decisions whose consequences can barely be overseen.

Within cognitive psychology, the last two decades have witnessed an increasing interest in studying these "big" decisions. This has to do with the enormous consequences of many technological, ecological and economic decisions. It is generally felt that never before in the history of mankind were decisions made by individuals so potentially harmful (or beneficial) to so many other individuals (the reader may think of, for instance, nuclear power, carbo-monoxide emissions, international trade regulations, or bio-technology). It is quite natural that there is an increasing interest in the nature of these decisions, the psychological mechanisms that regulate them and typical errors that are committed in making them (see Frensch & Funke, 1995; Klein, 1997).

This reading, then, attempts to introduce more formally the concept of "complex decision making", to look at cultural factors that might be important in influencing this form of decisions, and to discuss the results of some empirical studies that have investigated this topic cross-culturally. This is done in the context of observing participants from India and Germany.

A Primer on Complex Decision Making (CDD)
Most "big" decisions share some features that distinguish them from other, more easily tractable problems. These features include:

a) Complexity. In our context, "complexity" means (a) that the decision making situation consists of a large number of variables (or factors) that need to be taken into account and (b) that these variables are highly
interrelated. The factors influence each other, they cannot be dealt with independently but form a tight network.

b) **Multiple goals.** The decision maker(s) usually has (have) not one, well-defined goal. Often there exists only a vague dissatisfaction with the present situation. Sometimes the degree of improvement is open, sometimes possible goals contradict each other.

c) **Dynamics.** The decision making situation does not remain constant, it does not "wait" for the decision maker to finally come up with something. Rather, it develops independently of the actions of the decision maker. The different variables that make up the situation are subject to trends which, unfortunately, tend to deteriorate rather than improve.

d) **Opaqueness.** The decision making situation is not obvious. Some of the important variables may be not known, mutual influences may be unclear or hidden, and the current situation of some of these variables may be difficult to assert.

Of course, these features of complex decision making situations have psychological consequences for the decision maker. He or she will usually experience a fair degree of time pressure and there are multiple uncertainties. Knowledge is insufficient and it can be quite unclear what to do at all. Well known solutions may not work and decisions do not only have the intended main effect but also (often detrimental) long-term- and side-effects. The following example may help to further clarify this notion of complex decision making:

In many countries colleges and universities have student bodies that participate (to a larger or smaller extent) in organizing and managing the university. Imagine that at your university the group of people that represents the student population is highly ineffective and even acts against clearly voiced student interests. You, being a politically aware person, are extremely dissatisfied with the situation. You feel that the student representatives only promote their own interests and that important issues get procrastinated or torpedoed.

For you, this situation has all the features of a complex decision-making problem. There are numerous "variables" involved, the variables here being the foul student representatives, the other students, the faculty, the administration. All these "players" are not independent from each other. Any action on the side of one group of players influences the position of other players; there may be factions, temporary coalitions, and animosities. Then, you are dissatisfied with the present situation, but what is your goal? Do you want to influence the present representative's political position? Do you want to "straighten" them? Do you yourself want to become a representative? Are you interested in improving campus policies or do you aim at personal power or do you want to impress parents or friends or do you actually want to compensate for poor academic achievements? While reflecting on this question of multiple goals, you probably don't have too much time. There might be other, equally dissatisfied students that could leave you sidelined. The present representatives might get hunches that you plan something and could take some quick action against you. But the situation not only develops dynamically, it will also be, in some important aspects, opaque to you. You may have a rough idea of who the important players are. But you will not know in sufficient detail what their individual goals are, what their relationships look like and how they really think about issues that are important to you.

As has been mentioned before, making decisions in such complex and dynamic situations requires a mixture of different cognitive and behavioral activities such as:

* Clarification of goals, setting priorities, resolving conflicts between incompatible sub-goals;
* Collection of information and acquisition of knowledge about the variables involved, their interrelations and current status;
* Analysis of developmental trends of critical variables;
* Deciding on a general strategy or "game plan";
* Development of possible measures to influence the situation, analysis of their probable main-, long-term-, and side-effects;
* Planning and actually implementing a sequence of steps;
* Effect control, monitoring of results of one's actions;
* If necessary, revision of one's goals and general strategy, acquisition of additional knowledge, and improving on further plans.
And, what is more, these different processes need to be organized in a way that fits the features of the situation at hand.

If we now change the perspective and look at CDD from a more descriptive angle, we find that humans appear not to be very well equipped to meet all these demands. Case studies as well as laboratory experiments have repeatedly pointed to several typical error tendencies (see Dörner, 1996; Reason, 1990; for more details). To mention just a few: CDD requires strategic flexibility, that is, the constant adaptation of the organization of thought. Humans often lack this flexibility, they, instead, resort to "methodism". They tend to establish methods quickly for arriving at decisions and transport these to new situations without checking their applicability. This error tendency is related to another potential error, lack of exploration. Exploration means gaining a broad overview over the variables involved. Instead, decision makers tend towards what has been called "central reduction" - the tendency to pick just one factor, use it as basis for decision making and forget about the rest of them.

"Central reduction", of course, implies ignoring the long-term consequences and side-effects of decisions, which is probably one of the major reasons for so many faulty decisions in the area of ecology, politics, and economy. In general, when planning for a sequence of decisions, humans are usually preoccupied with the dominant motive. They make decisions with the aim of removing the most prominent shortcomings, regardless of whether the prominent ones are also the important ones, or not. On the strategic level, this often causes an insufficient adaptation of decisions to changing circumstances and it also gives rise to a typical feedback-orientation: Decision makers react to what the situation appears to demand from them and do not, by themselves, attempt to change the situation in a direction that satisfies their intentions.

**Complex Decision Making in the Cultural Context**

It is now about time to turn to the question of cultural influences on CDD. In what way would cultural factors influence the process of complex decision making? Would it be possible to distinguish different ways of CDD that are related to cultural differences? Would it even be possible to extend the cross-cultural research program others have successfully completed for the notion of "cognitive styles" (Berry, 1976) to something like "styles of complex decision making"?

- As usual, ongoing research is far away from being able to answer these questions conclusively. There are, however, some culture-theoretical as well as some empirical results available that allow for some preliminary insights. On the culture-theoretical side three factors need to be discussed (see also Badke-Schaub & Strohschneider, 1998; Strohschneider & Gss, 1999):

1. **Predictability and "planability" of the environment.** It is well known that cultures differ in the extent to which public life, economic affairs, and the private and social life of people are predictable. This predictability of different spheres of the environment should influence the development of problem solving styles: If an environment is completely predictable, there is not much complex decision making required because there will be routinized solutions available for all kinds of choices. Only when there is development (and therefore limited predictability), CDD becomes necessary. However, the dynamics of change should influence the strategies used. Slow rates of change may allow for knowledge based, analytic and long term oriented strategies to develop whereas an environment in a constant state of flux (like in situations of social unrest or rapid economical change) requires ad hoc and short term oriented strategies.

2. **Exposure,** that is, the degree to which a culture requires and promotes experiences in different areas of problem solving. Exposure may be related to the accountability of the environment but it may also be a function of dominant value systems or the availability of resources necessary to promote exposure. For instance, highly individualist cultures promote independence and self-reliance. Therefore, children, juveniles and adolescents will be likely to be confronted with different kinds of decision problems, they will be expected to make these decisions on their own and have to bear the consequences. In growing up they will collect experiences with different types of decisions, different strategic approaches and with the consequences of poor decisions. They are likely to develop at least some kind of expertise in this area of decision making. In highly collectivist cultures, on the other hand, the value system promotes obedience and conformity to the norms of the in-group. In situations of choice, individuals will be given advice on what to do or there will be role models to follow. Therefore, exposure to and individual experience with this type of decision making will be limited.

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Differences in individualism and collectivism are likely to also influence the style of decision making. It has often been described how individualistic cultures reinforce risk taking and confrontational approaches aimed at increasing personal benefits even at the cost of others (e.g., Ohbuchi, Fukushima, & Tedeschi, 1999). In collectivist cultures personal benefits are less valued if other members of the group suffer or if group oriented values (like harmony) are endangered. Therefore, in collectivist cultures decision makers should proceed more carefully and should pay greater attention to the social implications of decisions.

With respect to exposure, the amount of schooling could also be an important factor. However, the ways of teaching are critical. If learning at school is equated to digestion and repetition of prefabricated solutions there will be only limited development of problem solving expertise (see Rogoff, 1981; Gauvain, 2000).

### 3. Power distance and social hierarchy.
These well known cultural dimensions could also be influential in shaping the ways of decision making. Attempts to solve a problem only make sense when one is given sufficient leeway not only to make a series of decisions but also to bring them to work. The notion of "control span" captures this idea. High power distance cultures are more likely to limit the control span of individuals not on top of the hierarchy and thus hamper individual decision making rather than promoting it. This is not to mean that high power distance necessarily results in poor decision making, however, the strategies will be different. Decision makers will pay greater attention to possibly adverse social implications of decisions and will therefore be rather conservative, or risk avoidant (see Sinha, 1997). Under conditions of low power distance assertive and control-oriented strategies are more likely to be functional. It is not the purpose of this discussion to develop a fully evolved model of cultural influences on complex decision making. It attempts to argue that decision making, being universally required, is nevertheless likely to vary cross-culturally. Psychological theories on decision making should acknowledge this possibility and pay attention to cultural influences on and cultural variation in decision making.

### DECISION MAKING IN INDIVIDUALISTIC AND COLLECTIVISTIC CULTURES
How do cultural values influence individuals' decision making? One would expect answers to this question either from cognitive psychology or from cross-cultural psychology. Cognitive theories on decision making, however, rarely consider the factor of culture, and research in cross-cultural psychology deals only to a small extent with decision making. Therefore the study of culture and decision making is a relatively new and unexplored field. In this paper normative and descriptive approaches to decision making are discussed and three cross-cultural studies on decision making in individualistic and collectivist cultures using different methodologies are described. The results are integrated into a model that can be helpful to derive specific hypotheses for further studies in this field.

### INTRODUCTION

**Decision Making According to Normative Models and Descriptive Models**

Decision making is the selection between several options. We make many decisions a day (e.g., when we go to the grocery store and choose a bottle of milk, when we select a TV channel, when we decide what to prepare and eat for breakfast, whether we buy a new DVD-player or save the money for our next holiday trip). Most of our decisions might occur unconsciously, but often we have to consciously decide among several options.

Imagine a student, called John, who finishes high school. John has to decide whether to study psychology, accounting or art. In Figure 1, psychology is choice 1, accounting is choice 2 and art is choice 3. Which subject will the student choose?

Figure 1: Abstract schema of a simple decision task.
Using normative models of decision making, we try to explain which is the best choice from among several choices. In effort to explain the decision making process, von Neumann and Morgenstern (1944) utilized a normative model that they called the expected utility model. According to this model, John will make the decision that maximizes an expected utility. The expected utility of an alternative is the sum of the product of its probabilities of success and its utilities as demonstrated in the following formula:

\[ \text{Expected utility} = (\text{probability of a given outcome}) \times (\text{utility of the outcome}) \]

Although this formula may look difficult, it is easy to understand with a concrete, simplified example. According to the formula, the student evaluates each option: psychology, accounting, and art. John estimates the probability of success in each subject. Perhaps John thinks that the success rate is highest in art (art .80, psychology .70, and accounting .50). Then the personal value of success (i.e., the utility) will be evaluated. Let's assume John's favorite subject is psychology, followed by art and then accounting (psychology 20, art 15, and accounting 10). Finally, John would choose the alternative with the highest expected utility, in our case psychology (psychology 14, accounting 5, and art 12).

Does John really make a decision following the rational of expected utility theory? First of all, the decision problem is more complex. As Figure 2 shows, the number of courses is not limited to two or three, but a lot more (e.g., languages, law, medicine, education, computer science, business administration, communication). First, decision making involves not only the choice of one alternative, but is related to the generation of possibly relevant alternatives.

Second, what is the success criterion? Is the success criterion only to get a good degree? Isn't the reputation of the university also important? Is a bad degree from Harvard better than a good degree from a not so known university? Another success criterion might be the chance to get a well-paid job after finishing college.
Third, how does John assign numeric values to the probabilities and utilities of each alternative? Why does the utility of psychology get a value of 20 and not of 17 or 23? If psychology would get the value 17 then the expected utility would be .70 * 17 = 11.9. Then art would have the higher expected utility with 12 and would be the best choice. It does not seem easy to assign a specific value for each probability and utility. The artificiality of such reasoning is clear in the example described above. Real-life is more complex since it is never possible to evaluate every option much less to evaluate it exhaustively. Furthermore, possible short-term and long-term consequences are hard to predict, making it difficult to assign such numeric values.

Fourth in real life, choices with the highest expected value often are not taken. Other aspects might lead John to choose a specific course: "Are my friends also studying the same course? What does my best friend suggest? I know one teacher who is great, so I will study what he teaches."

A fifth criticism of normative models is that they explain which of several given alternatives the best choice is, but they do not deal with the process of decision. Descriptive theories of decision making deal with this topic and describe the process of decision making. John would probably not sit down and say: "Now I will choose what I want to study." He might think about this problem for several months, searching for information that might be helpful for the decision (e.g., talking with people). Thus, many descriptive decision making models (see Lipshitz, 1993) describe the decision-making process not as a single act but as a process that is embedded in other cognitive processes. John first has to recognize that choosing a subject is a problem. If he does not worry about it, then he will not deal with this problem. If John views the selection of a subject as a problem, he will think about possible effects such as "If I study art, I might have fun, but it will be difficult for me to earn money and I do not want always to worry about my finances." Suppose that John already thought about his goals -- earning money and having fun. He prioritized the goals and mentioned that earning money is more important to him. John might ask his parents and friends about their experiences at college and at work to get a broader view and a better understanding of the problem. Step-by-step he will develop a mental model of possible courses, advantages, disadvantages, consequences, etc. With this knowledge, he will develop some plans about what to study. He will evaluate the different alternatives, compare them with each other, reject bad alternatives, and finally make a decision about what to study -- probably even up to the day he has to register for his first class. After some weeks John hopefully thinks: "Yes, that is the right choice!" All these steps of decision making are summarized in the following list:

1. Recognize that a decision problem exists
2. Investigate the causes and possible effects of the problem
3. Define and prioritize goals
4. Gather relevant and necessary information
5. Evaluate and organize the information into a mental model
6. Plan alternative solutions
7. Anticipate consequences of possible decisions
8. Select a reference alternative (preliminary choice) as an anchor to compare the other alternatives with
9. Select and reject bad alternatives
10. Select the best solution and make a decision
11. Inform others of decision and rationale
12. Evaluate outcome

Culture: Individualism-Collectivism and Power-Distance

Imagine that John lives in the United States, Roberto lives in Venezuela, Frida in Germany and Sheena in India. Imagine all are about the age of 16 or 17 and all have a financial background in which they can afford college. All have to decide what course to take. Do you think that their decision making will be similar or do you think it will be different because of their cultural background?

The cultural background of John, Roberto, Frida and Sheena is different in many ways: their plans for their future; their experiences; their values; their family size; the role and influence of mother, father, siblings and friends on their decision etc.; Culture is a very heterogeneous term and a generally accepted definition does not exist. Depending on the specific area of interest of the researcher he or she focuses on a specific aspect of culture. In this paper, the focus will lie on value orientations in different cultures and their relation to decision making. When you hear the word value you might think of the example: "Do not kill! Or: Make a lot of
A value can be either terminal (Rokeach, 1973), saying what we have to do. In this case it is similar to a goal: "Do not kill!" A value can be also instrumental telling how we should do something, for example: "Think a lot before you make a decision! Or: Talk to others before you decide!"

In cross-cultural psychology, the most popular and widely analyzed dimension of cultural values is individualism and collectivism (e.g., Hofstede, 2000; Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994). Individualistic cultures are defined by detachment from relationships and community. The individual views himself or herself as relatively independent from others. In contrast, collectivist cultures stress the importance of relationships, roles and status within the social system. Individualism-collectivism is a very broad dimension used to differentiate cultures. In recent years, different aspects of individualism and collectivism have been treated more specifically (Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, Chen, & Chan, 1998).

Individualistic values and collectivist values influence individuals' decision making in three ways. These values can influence the perception of the problem, the generation of strategies and alternatives, and the selection of one alternative (see Figure 3).

Figure 3: Cultural influences on decision making.

The decision maker perceives and assesses critical aspects of a problem. Cultural expectations and values are represented in the individual's mind and may act as guiding principles for the selection of specific dynamic decision-making strategies. Values tell us what broad decision-making strategy we should follow, and why we should follow it.

According to several cross-cultural studies on individualism and collectivism, the United States and Germany are countries with more individualistic value orientations and Venezuela and India are countries with predominantly collectivist value orientations. Thus using an oversimplified explanation, John and Frida (who live in the United States and Germany) will focus on the task itself and Roberto and Sheena (who live in Venezuela and India) will rely strongly on the opinions of their family and friends. Cultural values will also influence the generation and selection of specific goals and decision-making strategies to solve the problem. Roberto and Sheena might think: "Deal with the social aspects of the problem! Proceed carefully and involve others." John and Frida, on the other hand, might think: "Focus on the task! Quickly find a good solution!"

The success of their decision making depends on what is appropriate and expected in their cultural environments. These expectations might be quite different. If Sheena does not talk to her parents about the problem and she tells her father, that she wants to study art, her father will be very surprised and he might get angry with her. If John does the same thing, his parent might not find this strange at all. Culture-specific expectations and values are transmitted from generation to generation and indicate which decision-making strategies are good or effective and which are not appropriate.

Individualism-Collectivism and Decision Making: Some Empirical Results
In the following part, three exemplary studies on decision making in individualistic and collectivist cultures are presented. These studies highlight different methodologies that can be used to study culture and decision making.

Dealing with Conflicts (Ohbuchi, Fukushima, & Tedeschi, 1999)
Ohbuchi, Fukushima, and Tedeschi (1999) studied the influence of cultural values on how people make decisions. They asked American (more individualistic) and Japanese (more collectivist) students to recall a conflict experience and to describe it. You might want to take a minute to think of a possible conflict that you faced recently. When recalling this situation, remember what you did and what you wanted to achieve. This is what the participants did in this study. Participants rated the episode on several scales measuring for example goals and tactics. The authors differentiate four major tactics, each one consisting of several sub-tactics: conciliation, assertion, third-party intervention, and avoidance. A conciliation-tactic is defined as the consolidation of one's and the other's goals or to indirectly communicate one's expectations. Assertion is defined as the act of strongly asserting one's request. Third-party intervention is defined as an attempt to seek help or advice and avoidance is seen as a passive tactic in order to avoid confrontation. Conciliation and assertion are direct tactics to deal with conflicts. Third-party intervention and avoidance are indirect strategies. Before we discuss the results, think back to your conflict: Which tactic best describes your procedure? What was your goal in this situation?

Results show that students in the individualistic Western countries were more confident of their decision-making ability than students in the collectivist eastern Asian countries. Asian students score higher on the last three dimensions (buck-passing, avoiding, and hyper vigilance) than Western students. An interesting result of this study was not the difference but the similarity in the ratings of participants in all six countries. Interestingly, no cross-cultural differences were found in vigilance. In addition, in all countries the relationship between decision-making self-esteem was negatively correlated with maladaptive coping patterns (buck-passing, avoiding, and hypervigilance) and positively related to vigilance. This means that if you think you are a bad decision-maker, you are more likely to follow maladaptive coping patterns.

A strength of this study is that it measures decision-making in six different cultures and that it shows the relationship between culture, self-esteem and decision-making strategies. However, in reading the items, someone might be tempted to say, "It depends. I follow different strategies in different situations, for example when I go shopping or when I plan my holidays. When I go shopping, I don't compare the prices of ten possible products before I buy one. I make more impulsive and non-vigilant decisions. But when I plan my holiday, I follow more vigilant strategies."

Another critical point might be social desirability, as the authors mention. In many Asian cultures, it is not common to brag about oneself or one's decision-making. A third critique refers to the measure of decision making. The data reflect how one thinks about his or her decision-making. Often self-descriptions of psychological phenomena do not correspond with the actual behavior. Brehmer (1999) notes that decision-making research has diverted psychologists' attention away from what is important (i.e., studying what people really do when confronted with decision problems).


The third study analyzes what people do when they are confronted with a dynamic situation. Students of business administration in India (more collectivist) and Germany (more individualistic) participated in this study. They had to imagine that they were the director of a company that produces textiles in Kuala Lumpur, Malaysia (an equally unknown place for most of the Indian and German students). Take a minute and imagine this situation: You have a distant uncle in Kuala Lumpur who passed away. According to his last will, the whole company shall be given to you. You have the chance to go there and manage this company. Isn't this a fascinating adventure? What would you do? What would you like to know? What would be your goals?

This company, called Manutex, with its departments was simulated on the computer. Such computer simulations, also called microworlds, are dynamic tasks that require a series of interdependent decisions by the decision-maker (Brehmer & D"rner, 1993). They allow a rigorous experimental approach simulating decision problems that have similar characteristics to complex life problems (Putz-Osterloh, 1993). The data allow the comparison not only of the outcome of the decision but also of the process of dynamic decision-making. In this Manutex study, decision-making behavior, errors, and success are measured (D"rner, & Schaub, 1994). Examples for general decision-making behavior are how long the participant takes to complete the first three months, the number of decisions and questions and the intensity of marketing and production decisions. For example, does the participant produce 50 or 500 trousers and spend $10,000 or $50,000 for the advertisement? Tactical errors are incoherent information collection or lack of effect control. Incoherent information collection means that participants collect the same piece of information repeatedly in a short amount of time;
lack of effect control means that participants plan actions implement them, but do not check the effects. Successful decision-making results in high total property, high salaries, and in a small number of alarm messages. The program shows an alarm message if, for example, the machines in the production area can not work because of lack of diesel. A low number of alarms indicates good decision making.

Table 1 shows differences in the means and the standard deviations in the German and the Indian group. A high standard deviation indicated that the members of the group behave quite differently. A low standard deviation indicated a more homogeneous behavior in the group. The German group showed more heterogeneous behaviors, but this point is not discussed in this paper. In the Manutex game, no differences were found in the strategic and tactical errors committed by the Indian and German students (Table 1, 2a-c). Also in the general decision-making behavior (Table 1, 1a-e), we did not find significant differences (exemption: number of questions). These results were surprising, but could be due to the fact that participants in both countries were students of business administration at modern institutions who were quite familiar with this kind of economic-management problem. However, an important cross-cultural difference was found: The German participants were more successful -- they had more total property after the 20 years (Table 1, 3a).

As German and Indian participants show no differences in decision-making errors, the difference in success can not be explained by committing fewer or more errors. Why were the German participants more successful? Figure 4 sheds light on this question. German participants produced and sold more products than the Indian participants. But Figure 4 also shows that Indian participants slightly increased production numbers and managed better to coordinate production numbers and sales than the German participants. The German decision-making strategy could be described as expansive-risky, whereas the Indian strategy was a defensive-incremental one. This difference in approach between Indian and German students could be explained by the different markets in both countries. In a relatively unstable market, such as that in India, one must always be prepared for minor frictions. Therefore, it makes sense to proceed more carefully in India compared to dealing with a more stable and transparent market such as that in Germany.

Figure 4: Development of the production and sales figures: Mean values of 24 months.
Another interesting question in decision making is related to the adaptivity of decisions. Do people adjust their decision making to the different demands of situations? Do we find decision-making styles that show the same decision-making pattern in different situations or do we find flexible, situation dependent decision making? Of course this study can not answer this question thoroughly, but some data show interesting differences between Indian and German students. The numbers of questions and the numbers of decisions of the participants in certain periods of the game were compared. A high correlation of decisions and questions would indicate a similar decision-making procedure, a low correlation would show a change in the decision-making behavior.

Table 2: Stability of Number of Questions and Number of Decisions over Time: Autocorrelations for Six Parts of the Simulation Process (Indian Sample: N=25; German Sample: N=25)
As shown in Table 2, overall high correlations were found in the German group. This indicates a relatively stable decision-making behavior. In the Indian group, however, the correlations were mostly not significant, indicating a flexible decision-making approach. This result can be attributed to the collectivist and individualistic background of the participants. Persons with individualistic values view themselves as relatively independent and responsible for their decisions. Persons with collectivist values see themselves as a part of a group and are more sensitive to social consequences of their decisions. Therefore, it is more likely that they want to take decisions in congruence with the expectations of the others and that they follow a more cautious approach always adjusting to the current demands of the situation.

The advantage of studying decision making with computer simulations is that people have to really make decisions. They do not describe what they would do, but they actually do something. Furthermore, they see the results of their decisions and take further decisions. Thus decision making is seen as a process and not as a static one-time activity. However, this study was only conducted in India and Germany. Other countries should be included into such a comparison. Second, India is not a "typical" collectivist country. It is often described as both an individualistic and collectivist culture (Sinha, & Tripathi, 1994). Three studies were discussed using different methodologies to study decision-making in individualistic and collectivist cultures. In the first study, American and Japanese students were asked to think of a conflict situation and to give ratings to certain questions on tactics and goals (Ohbuchi, Fukushima, & Tedeschi, 1999). In the second study students from six countries answered a questionnaire on their decision-making style and confidence (Mann, Radford, Burnett, Ford, Bond, Leung, Nakamura, Vaughan, & Yang, 1998). In the third study, German and Indian students were dealing with a computer simulated game and took the role of a business director. Each study shows interesting differences between decision-makers in individualistic and collectivist cultures. To summarize, these and many other studies show that individualistic values are related to active, and assertive decisions-making strategies, whereas collectivist values are related to and more passive, cautious, collaborative, and avoiding strategies.

** p < .01; * p < .05; + p < .10**

As shown in Table 2, overall high correlations were found in the German group. This indicates a relatively stable decision-making behavior. In the Indian group, however, the correlations were mostly not significant, indicating a flexible decision-making approach. This result can be attributed to the collectivist and individualistic background of the participants. Persons with individualistic values view themselves as relatively independent and responsible for their decisions. Persons with collectivist values see themselves as a part of a group and are more sensitive to social consequences of their decisions. Therefore, it is more likely that they want to take decisions in congruence with the expectations of the others and that they follow a more cautious approach always adjusting to the current demands of the situation.

The advantage of studying decision making with computer simulations is that people have to really make decisions. They do not describe what they would do, but they actually do something. Furthermore, they see the results of their decisions and take further decisions. Thus decision making is seen as a process and not as a static one-time activity. However, this study was only conducted in India and Germany. Other countries should be included into such a comparison. Second, India is not a "typical" collectivist country. It is often described as both an individualistic and collectivist culture (Sinha, & Tripathi, 1994). Three studies were discussed using different methodologies to study decision-making in individualistic and collectivist cultures. In the first study, American and Japanese students were asked to think of a conflict situation and to give ratings to certain questions on tactics and goals (Ohbuchi, Fukushima, & Tedeschi, 1999). In the second study students from six countries answered a questionnaire on their decision-making style and confidence (Mann, Radford, Burnett, Ford, Bond, Leung, Nakamura, Vaughan, & Yang, 1998). In the third study, German and Indian students were dealing with a computer simulated game and took the role of a business director. Each study shows interesting differences between decision-makers in individualistic and collectivist cultures. To summarize, these and many other studies show that individualistic values are related to active, and assertive decisions-making strategies, whereas collectivist values are related to and more passive, cautious, collaborative, and avoiding strategies.