Learning environment and moral development: How university education fosters moral judgment competence in Brazil and two German–speaking countries

Dissertation
zur Erlangung des akademischen Grades
des Doktors der Naturwissenschaften (Dr. rer. nat.)

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Fachbereich Psychologie

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Mai 2006

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List of Abbreviations

comp.	competitive university
C-score	Competence score from the Moral Judgment Test
DIT	Defining Issues Test (Rest)
ES	extra-syllabus
German-sp.	German-speaking
GR	guided reflection
KMDD	Konstanz method of dilemma discussion
LE	learning environment
MJI	Moral Judgment Interview (Kohlberg)
MJT	Moral Judgment Test (Lind)
non-comp.	non-competitive university
NS	non-syllabus
ORIGIN/u	Questionnaire for assessing opportunities for role-taking and guided reflection at university
r	relative effect-size correlation measure
RT	role-taking
RTGR	role-taking and guided reflection
S	syllabus
SS	semi-syllabus

Summary

The aim of the present research is to investigate the relationship between learning environment opportunities — particularly role-taking and guided reflection — and moral judgment competence development in higher education students in Brazil and German-speaking countries. This is a cross-cultural and cross-sectional study. The sample consists of 1149 participants from three areas of study (psychology, business administration and medical school) in their first and final years of study. There are 618 participants from Brazil and 531 participants from two German-speaking countries. The instruments used are: a) Lind's Moral Judgment Test (MJT) and b) ORIGIN/u questionnaire. The main results from this research are the following: 1a) Moral development is possible through higher education. 1b) Higher education per se, or years of education alone, are a necessary, although not a sufficient, condition to foster moral judgment competence. 1c) Moral judgment competence levels increase in groups where students are highly involved in integrated, not isolated, role-taking and guided reflection activities (a *favorable* learning environment). 1d) In opposition, an *unfavorable* learning environment leads to regression or stagnation of moral judgment competence. 2a) The hierarchical preference of moral stages (affective aspect of moral behavior) does not depend on culture or education. 2b) The cognitive aspect (moral judgment competence) reflects cultural as well as cognitive structural differences irrespective of culture. 3a) Moral judgment competence does not correlate with age and does not correlate with years of study when the variable learning environment is not controlled. 3b) It cannot be expected that high-competitive institutions per se stimulate moral judgment competence. 3c) Medical students present a regression and psychology students an increase of moral competence levels over their years of studies. 4) Moral judgment competence regression is possible: moral development does not follow an invariant upward and forward process as defended by Kohlberg (1984). 5) No gender differences are found when the variable education is controlled. This author suggests that educators consider two levels of intervention for the development of moral judgment competence — first, at a teacher professional development level and second, at the students' level. The role-taking and guided reflection framework offers useful constructs for students' and teacher education. However, it needs to be adapted and differentiated to respect the context of each area of study as well as individual and cultural differences.

Zusammenfassung

In der vorliegenden Arbeit wird der Zusammenhang zwischen der Lernumgebung — insbesondere der Möglichkeiten zu Verantwortungsübernahme und angeleiteter Reflexion — und der Entwicklung der moralischen Urteilsfähigkeit bei Studenten in Brasilien und in zwei deutschsprachigen Ländern untersucht. Dies ist eine interkulturelle Querschnittsstudie. An der Studie haben 1149 Studenten (618 aus Brasilien und 531 aus zwei deutschsprachigen Ländern) der Fachrichtungen Psychologie, Betriebswirtschaft und Medizin in ihrem ersten bzw. letzten Studienjahr teilgenommen. Zur Untersuchung wurden der Moralisches Urteil Test (MUT) und der ORIGIN/u-Fragebogen eingesetzt. Die wesentlichen Ergebnisse dieser Studie sind: 1a) Moralische Fähigkeiten können sich in Folge von höherer Bildung weiter entwickeln. 1b) Für die Entwicklung der moralischen Urteilsfähigkeit ist höhere Bildung eine notwendige, jedoch nicht eine hinreichende Voraussetzung. 1c) Die stärkste Zunahme der moralischen Urteilsfähigkeit wird bei Studenten festgestellt, die in Aktivitäten mit der Möglichkeit zu Verantwortungsübernahme und angeleiteter Reflexion eingebunden sind. Dies wird in dieser Arbeit als günstige Lernumgebung (*favorable* learning environment) bezeichnet. 1d) Im Kontrast hierzu kann eine ungünstige Lernumgebung (*unfavorable* learning environment) zu einer Stagnation oder sogar Regression der moralischen Urteilsfähigkeit führen. 2a) Die Präferenzhirarchie der moralischen Stufen (affektiver Aspekt des moralischen Verhaltens) ist unabhängig von Kultur und Bildung. 2b) Der kognitive Aspekt (moralische Urteilsfähigkeit) spiegelt sowohl kulturelle Unterschiede, als auch kognitive strukturelle Unterschiede unabhängig von der Kultur wieder. 3a) Ohne Berücksichtigung der Variablen Lernumgebung korreliert die moralische Urteilsfähigkeit nicht mit dem Alter und der Zahl der Studienjahre. 3b) Allein der Besuch einer zulassungsbeschränkten Bildungseinrichtung fördert nicht die moralische Urteilsfähigkeit. 3c) Bei Medizinstudenten wird über den Studienverlauf eine Regression, bei Psychologiestudenten eine Zunahme der moralischen Urteilsfähigkeit beobachtet. 4) Eine Regresion der moralischen Urteilsfähigkeit ist möglich. Anders als von Kohlberg (1984) vertreten, folgt die moralische Entwicklung nicht einen zwangsläufigen stetigen Aufwärtstrend. 5) Unter Berücksichtigung der Variablen Lernumgebung gibt es keine geschlechtsspezifischen Unterschiede. Aus den Ergebnissen dieser Studie lassen sich zwei Ansätze zur Förderung der moralischen Entwicklung auf Basis des Konzepts von Verantwortungsübernahme und angeleitete Reflexion ableiten — erstens über die Aus- und Fortbildung von Lehrern und zweitens durch die direkte Förderung der Studenten. Dieses Konzept sollte jedoch unter Berücksichtigung sowohl von Studienrichtung, als auch von kulturellen Unterschieden individuell angepasst werden.

Chapter 1

Introduction

> "transformar a experiência educativa em puro treinamento técnico é amesquinhar o que há de fundamentalmente humano no exercício educativo: o seu caráter formador" ["to transform the educational experience into pure technical training is to reduce to insignificant what is fundamentally human in the educative exercise: its formative character"] (Freire, 1999, p. 37).

The development of moral judgment competence is considered to be one of the general goals of higher education. In a democratic society, education must reach beyond transmitting or acquiring of specific knowledge by including the development of other general but equally important competencies such as moral, social and communication competencies.

The primary goal of a broad moral democratic education has been mostly neglected or insufficiently pursued by education policy makers. It is observed that in most contexts of formal education, the transmission of specific knowledge is emphasized to the detriment of moral and emotional questions and problems. Moral issues are mostly traditionally addressed by specific disciplines, such as Ethics and Religion, making it difficult to create programs that really help students to develop their moral, social, emotional abilities in order to be prepared to deal with moral conflict situations in their social and professional lives. It is also observed that teachers in general realize the importance of incorporating specific and general knowledge, but they do not feel they are prepared to do so. University students in Germany, in particular, report that critical abilities, social responsibility and autonomy are only partially fostered during their studies (Simeaner, Röhl, Bargel, 2004). The situation seems not to have been improved in the last years. The fact that university programs deal too little with ethical and political issues and implications for the future profession was pointed out some time ago by Dippelhofer-Stiem (1983).

Two of the dominant theories in the study of moral development before the cognitive shift of the 1960's, the "identification-internalization" approach derived from Psychoanalysis,

and the "social-learning" approach (derived from Behavioral theories), understand moral as a question of affection, values and attitudes. They assume that children's morality is either a question of learning by direct teaching, or through internal mechanisms of identification with socializers. The former theory considers the identification of children with their parents and the internalization of parental values and behaviors as important mechanisms for moral development. Freud (1900/1976) considered moral judgments as driven by unconscious mechanisms and feelings which are rationalized to be socially accepted. The emphasis is clearly on the affective aspect, focusing on the emotional consequences that result from adhering or deviating from the internalized values. The social-learning approach emphasizes the behavior and explains the moral development according to behaviorist learning concepts such as punishment, reinforcement and modeling (Skinner, 1971).

The understanding of morality through the affective approaches implies a limitation to the role of education. Accordingly, moral values and attitudes are brought about through social pressure and values transmission. Morality is not considered a competence and thus, cannot be learned. It is questionable whether those beliefs are in agreement with a democratic society. It is also questionable whether people who have higher levels of moral orientations, ideals or values would know how to react to moral conflict and dilemma situations.

A controversy originated by the cognitive-developmental approach (Piaget, Kohlberg, Lind) reflects a shift in this field, formerly dominated by the affective theories. The cognitive-developmental approach defends the idea that morality is not only a matter of emotions and attitude preferences, but also, a question of competencies and cognitions. Nevertheless, research in the cognitive-developmental approach had failed to produce a measure to differentiate the affective and cognitive aspects of moral development. The body of research in this area had been mostly limited to the use of instruments — such as Kohlberg's Moral Judgment Interview (MJI), and Rest's Defining Issues Test (DIT) — that were not able to measure the affective and cognitive (competence) aspects of moral separate. A new instrument had to be developed to attend to those demands.

Lind's (1985, 2000) dual-aspect-theory, a further development of the cognitive-development approach, proposes an alternative to these problems. The controversies originated by his work paved the ground for the present investigation. Lind defends a cognitive-affective approach that originated from his critics on the empirical work of Kohlberg. His critics focus the following aspects: a) moral affect and cognition can be measured as two different aspects of the same behavior and b) the role of education for the moral development should be adequately acknowledged. As a consequence, it is not recognized that education can foster or hamper moral competence progress. According to

Lind, a regression in moral development in its cognitive aspect (moral competence) can occur as a result of lack of educational opportunities.

Lind claims that moral competence and moral orientations need to be understood as aspects of moral judgment and not as separate components. Affection and cognition are both aspects of moral behavior and as such, can be differentiated and measured in this same behavior. He created an instrument, the Moral Judgment Test (MJT) which represents an attempt to achieve a coherence between theory and psychometrics. Furthermore, Lind defends the position that a mature moral democratic behavior depends not only on the moral ideals or orientations, but also and mostly, on moral competence, which is defined as the competence to apply consistently those ideals in real-life situations. According to this point of view, the solution of moral conflicts depends not only on values, but also on abilities (moral competence) which can be learned.

The present investigation was originally motivated by the controversial findings from the cognitive-affective research in which the Moral Judgment Test (MJT) was used. It aims to contribute to the discussion of still unsettled questions, especially the following:

1. Is moral learning through higher education possible? The dual-aspect theory defends the idea that moral learning in adulthood is possible through higher education. Research results suggest that moral competence can be fostered in an indirect way. Lind's "Bildungstheorie" (education theory) considers the learning environment, in particular, students' opportunities of role-taking and guided reflection in higher education (Sprinthall & Thies-Sprinthall, 1993), as a powerful factor for promoting moral judgment and discourse competencies. This position is contrary to the affective approaches, in particular, to Haidt's (2001) social intuitionist approach.

2. Is morality a question of affection, cognition or both? Can the MJT really detect differences between affective (moral orientations) and cognitive aspects (moral competence) in the same behavior, as it is claimed by the dual-aspect theory? Are those aspects predictable? Lind defends the idea that moral development, in its cognitive aspect, is influenced by educational and cultural factors whereas only moral orientations seem to follow the universal hierarchical preference defended by Kohlberg (1976) and Rest (1973). Lind's findings challenge theories that either deny that the two developmental dimensions can be distinguished, or view those dimensions as components and not aspects of moral behavior (Rest, 1999).

3. If moral orientations (affective aspect) have a universal character, are cultural differences reflected by moral judgment competence (cognitive aspect)? Are differences in culture, area of study, years of education and type of institution reflected through the cognitive aspect of morality? Are findings regarding differences in moral competence levels confined only to a particular culture, or do they reflect also an aspect of moral behavior

factor that can be fostered (moral judgment competence) regardless of culture?

4. Is moral judgment competence regression possible? It was observed in previous studies (Lind, 2000) that moral competence development can stagnate or even present a regression when individuals leave high school and do not continue their education. This runs counter Kohlberg's position that defended that moral development regression was not possible (1969). A particular relevant phenomenon to be investigated refers to an observed decrease in the moral competence levels of medical students, found in a longitudinal study in Germany (Lind, 2000). Their moral competence levels, reflected by the MJT C-score, decreased along the student's years. Could it be said that not only the absence of further education, but mostly, particular characteristics in the learning environment could also prevent moral competence from further developing?

5. Are there gender differences in moral competence development when the variable education is controlled? Lind defends the idea that gender differences reported in previous studies were due to the fact that the variable education was not taken into account.

The purpose of the present study is to investigate more deeply the controversies derived from Lind's dual-aspect theory and find out whether and in which way moral competence development can be fostered by the learning environment in higher education and in particular, by the opportunities of role-taking and guided reflection.

Chapter 2

The importance of higher education learning environment for the development of moral competencies

In this chapter, a research review on moral development and higher education describes the progressively shift from the affective to the cognitive-affective approach including culturally-specific and non-specific findings, pointing the gaps that intend to be closed by the present investigation. The cognitive-structural approach from Piaget, the cognitive moral development theory from Kohlberg and the four-component model from Rest are briefly explored serving as a basis for the dual-aspect theory and the "Bildungstheorie" (Lind), the framework for the present study. It is shown that research in higher education based on affective approaches reported initially a skeptical view about the influence of higher education on moral development. However, studies in cognitive-developmental psychology, mostly using the DIT brought progressive evidence about the impact of higher education on development towards higher stages of moral principled reasoning (Kohlberg). In addition, research results with the MJT suggested that not only principled reasoning (that Lind understands as an affective aspect), but also and mostly cognitive aspects, namely moral judgment competencies, are fostered by higher education (cognitive-affective approach). This chapter describes also the main research constructs, moral judgment competence and role-taking and guided reflection opportunities in the learning environment. According to Lind, students' moral competencies can be fostered by opportunities of role-taking and guided reflection (Sprinthall & Thies-Sprinthall, 1993) in different realms of the learning environment. As opposed to Kohlberg's position (1969), lack of educational opportunities can result in a regression of moral competence levels. Aspects from the educational system in Brazil and in Germany are described in order to

understand the learning environment's cultural contexts.

2.1 Moral development: affective, cognitive, or both? Foundations of the dual-aspect theory

The present research uses the "dual-aspect theory" as a theoretical framework of moral development as proposed by Lind (1985) based on the cognitive-developmental approach in psychology. Lind's theory results particularly from his criticisms of the work of Kohlberg and Rest. He proposes a theory of an integral moral-cognitive development. In this way, affective and cognitive are considered as being two aspects and not components of the moral behavior. Contrary to Kohlberg and Rest, Lind claims that both aspects are distinct but not separable and can be distinctly measured. It inaugurates a controversy which added important contributions, particularly to the empirical validity of the cognitive-developmental theory.

The purpose of this section is to offer an overview of the core conceptions of the cognitive-developmental theory, which served as a basis for the dual-aspect theory development. The cognitive-developmental theory derives primarily from the work of Kant, Baldwin (1906), Janet and Dewey (1930) and was further developed by Piaget (1896–1980) and later and mostly by Kohlberg (1924–1984). Piaget's basic concepts about moral development are introduced and followed by a summary of the main concepts of the Kohlberg's theory. Some of the important contributions by Rest are briefly explored before Lind's "dual-aspect theory" is presented.

The meaning of "cognitive" The main concept of the cognitive approach is that the moral behavior cannot be explained without taking the cognitive-structural aspect of the human behavior into account. By contrast, the behaviorist approach understands morality as a question of whether the individual's behavior responds positively or negatively to socio-moral norms, and the affective approach defends the view that behavior and, particularly moral behavior, depends on inner dispositions or affects. The cognitive-developmental approach presents an interactionist, "social-moral perspective" (Kohlberg, 1976). It does not deny the importance of the social rules and norms as well as of the affective domain to the understanding of the human behavior. It defends the idea, however, that everyone is active through the interaction with others in constructing his/her world.

The term "cognitive" has been defined in different ways by different authors. Perhaps the first attempt was connected with a research orientation (cognitive psychology) that

opposes behavioral theory that did not accept cognition as being scientifically relevant (Miller, Galanter & Pribram, 1960). An example of a more specific definition is given by Neisser (1974), who emphasizes mental processes without being clear about the role of emotion or motivation. One may have the idea that the cognitive theory would only consider cognitive processes and leave the affective and emotions aside. Although any precise relationship between affection and cognition is difficult to establish, it seems to be accepted that one aspect cannot be considered without the other.

It is important to point out that Kohlberg's moral development theory is a cognitive developmental theory. Cognitive development is, thus, understood as being a necessary requirement for the moral development. Kohlberg (1974) defends the position that cognitive and affective development represent different perspectives of the same structure and that they develop parallel to each other. However, he was much criticized for having given greater emphasis to the cognitive perspective to the detriment of the affective (Haidt, 2001; Heidbrink, 1991).

The cognitive perspective is concerned with the way thought processes develop and considers the individual as being active, not merely reactive, in the environment. In addition, it emphasizes qualitative changes in the way a person thinks. Those changes can be observed in behavior, but they represent a change in the thinking processes that take place through affective (interest) and cognitive aspects (understanding) (Piaget, 1981).

The meaning of "cognitive" in the cognitive-structural approach of Kohlberg was directly addressed by Kohlberg, Lewine & Hewer (1984) when reviewing and reformulating the moral development theory: "The first meaning of cognitive for us is that observations of others are made phenomenologically, that is, by attempting to take the role of the other, to see things from his or her conscious viewpoint. Second, we mean by cognitive that interviewing and scoring are acts of "interpreting a text" around some shared philosophic categories of meaning" (p. 219). In addition, the authors clarify that "cognitive", then, means not only (1) phenomenological or imaginative role-taking activity and (2) the search for logical or inferential relations and transformations, but also (3) the definition of the subject's structure in terms of the *meanings he or she finds in the world.* We describe the subject in terms of his or her perceptions of the *world* and its *meanings* for him or her, *not* in terms of words which refer to hypothetical entities "inside" the subject's head, such as the "superego". For us, moral judgments refer to *moral meanings in the world.* (i.e., to rules, laws, states of justice), and to grasp this fact our discussion of interviews has stressed the point that the interview is a dialog, a communication between two people" (p. 219). This attempt to define the concept was a response to Habermas' criticism (1985) of the Kohlbergian theory, related to the discussion on the hermeneutic enterprise in social sciences. This conceptualization particularly refers to Kohlberg's theory and to

his methods of interpreting and scoring the research interviews from a hermeneutic point of view. At the same time, it expresses Kohlberg's disagreement with a psychometric approach for this purpose. For this reason, it is especially relevant for the contextualization of the present study that uses Lind's (2004) theory as a framework. It is derived from Kohlberg's work, but introduces the question of psychometrics in the investigation of moral judgment competence. Lind's theory will be addressed in a later chapter.

The research paradigms, which for decades dominated moral development research in psychology, emphasized the "external effect". They were challenged by the cognitive-developmental theory and culminated with a research paradigm change based on an "internal structure" point of view (Allport, 1961). As a result, the terms "moral judgment" or "moral judgment competence" are preferred to "moral behavior". However, the concept of behavior or performance is not eliminated. As Habermas (1985) states, "competence by itself cannot be shown to exist except in its concrete manifestations, that is, through phenomena of performance" (p. 17). However, the two different terms: "moral behavior" and "moral judgment" do represent different ways of viewing and understanding human behavior. In the interactionist perspective, neither the purely external nor the internal aspects should be isolated. Personality is considered as being a result of the relationship or interaction between the internal and external, individual and social environment. As Lind (1985) states: "On the one hand, moral behavior presupposes a cognitive structure: moral principles, norms and values have to be balanced off against each other and in the light of the specific circumstances of a decision situation. On the other hand, competence in moral judgment — that is, the ability to integrate and differentiate moral principles and apply them to everyday decisions — has a developmental character and so must be placed in reference to the individual's life experience (ontogenesis) and to the state of the socially developed strategies for solving problems (phylogenesis) (p. 27).

2.1.1 Jean Piaget: cognitive-structural approach

The cognitive development The work of the Swiss psychologist Jean Piaget (1896–1980) represents the first important systematic contribution to the development of the cognitive-structural approach in psychology and is particularly relevant to contemporary theories of moral development. In his early writings, Piaget presented investigations on the moral judgment in children (1954, original 1932). However, those studies were not a focus of attention again until Kohlberg took up the theory and further developed Piaget's original conception of moral development.

Piaget can be considered the forerunner of the "cognitive revolution" in psychology. His theory emphasizes internal cognitive processes, as opposed to outside influences and observable behavior. Human development occurs as a result of action and interaction of the

individual with the environment. Cognitive development was described by Piaget as occurring in a series of four stages. They show the "changes in children's thought processes that result in a growing ability to acquire and use knowledge about the world" (Papalia & Olds, 1995). The characteristics of the stages of the developmental process are: a) at each stage, a new way of thinking and reacting to the world develops; b) each stage represents a qualitative change regarding types of behavior or thinking; c) one stage depends on the previous one and prepares the foundation for the next one; and d) everyone goes through the same stages in the same order. Individual differences have to be observed in regard to timing.

The four stages as proposed by Piaget for the cognitive development are: sensorimotor, preoperational, concrete operations and formal operations. Each stage is divided in substages. The sensorimotor, in particular, is divided into six developmental substages. It is beyond the scope of this chapter to go into details of Piaget's cognitive development theory. Therefore, a very short summary of those four stages is presented, so that the connection with the further work of Kohlberg on moral development is easier to make.

Sensorimotor stage: (birth to 2 years). An infant begins responding primarily to reflexes and develop more complex ways to relate to the environment through sensory and motor activities.

Preoperational (2 to 7 years). A child is able to develop a representational system, using symbols or words to represent people, situations or places.

Concrete operations (7 to 12 years). A child is able to logically solve here-and-now problems.

Formal operations (12 years to adulthood). An adolescent achieves abstract thinking and can deal with hypotheses and different possibilities.

The inborn ability of adapting to the environment was considered by Piaget as the most important factor in promoting the intelligent behavior. Children learn from their interaction and experiences with the world. As a consequence, they develop more complex cognitive structures which constitute in each stage a personal way of viewing this same world. Cognitive structures or schemes are patterns of behavior that direct our thoughts and actions in a concrete situation. They not only influence the information received, but also change themselves under that influence. The developmental process begins as early as motor actions — for example, when a baby sucks and bites. They are little by little being differentiated and become patterns of more complex thoughts, developing from concrete thinking to abstract thought.

Cognitive behavior develops according to three interrelated inherited principles: organization, adaptation (assimilation and accommodation) and equilibration. Cognitive organi-

zation is the way a person organizes his/her knowledge and creates systems to enable him/her to understand the environment. This process begins with simple structures and develops through the continuous flow of new information to more complex structures. A child takes in information about the environment (assimilation) using the structures he/she already has. There is no qualitative or structural change. Following this, a more complex process-accommodation occurs in which a child changes his/her own cognitive structures. A higher level of cognitive growth is then reached. Internal schemes are modified in order to adjust to reality (Piaget, 1969).

Assimilation and accommodation are, thus, both aspects of adaptation and there is no clear dissociation between cognitive and affective factors: the first conserves form or organization and the second (accommodation) modifies form as a result of the external situation. In an attempt to better explain how those aspects interact, Piaget (1981) claims that "interest" constitutes the affective aspect of assimilation whereas "understanding" constitutes the cognitive aspect. As far as accommodation is concerned, the interest in a new object is considered an affective aspect and the adjustment of schemes to the situation is considered as being part of the cognitive aspect.

Accommodation depends on assimilation and vice-versa. They are parts of the individual's active adaptation process to the world which aims at equilibrium not only between child and environment, but also inside the child's own cognitive structures. When children face a new experience and realize that the existing structures are not enough to handle it, they shift from assimilation to accommodation in such a way that they may organize new mental schemes in order to regain a state of mental balance (Piaget, 1969).

The development of social-moral knowledge In his *Moral Judgment of the Child*, Piaget (1954) considered morality as being a matter of justice. Morality was defined as an attitude having two dimensions: conformity with rules and the fair application of them. The latter demands respect for persons and this entails fairness towards the persons constructing the rules and also to the persons to whom the rules were applied. In this sense, Piaget followed Kant (1949), whose notion of morality involves respect for persons, is grounded in the categorical imperative to treat a person as an end and not simply as a means.

In order to examine how children's thoughts evolve, Piaget observed closely how children play, and particularly, how they deal with the rules of a game. He concluded that morality is also to be considered as a developmental process that coincides with cognitive growth. According to him but unlike Kant, there were two moralities of justice. Morality would develop in two major stages that are approximately parallel to the preoperational and concrete operational stages: morality of constraint or heteronomous morality and morality

of cooperation or autonomous morality (Piaget, 1954; Heidbrink, 1996).

The characteristics of the first "heteronomous" stage (between 3 and 8 years old) are a strict adherence to rules and duties as well as obedience to authority, in addition to rigid and simplistic judgments. One of the reasons for the heteronomy can be explained by egocentrism, a characteristic of the young child's cognitive structure. Egocentric thinking does not enable a child to conceive of more than one (generally his/her own) way of viewing a moral problem. As a consequence, children project their own thoughts onto others and believe that a behavior is either entirely right or wrong. Thus, they expect automatic punishment following any offense. Another reason for the heteronomy is the inherent authority in the children-adult relationship. The powerlessness experienced by the children, combined with his/her egocentric thinking, encourage heteronomous morality.

The continued maturational development through interaction with other children and adults provides basis for less egocentric thinking and leads to the second stage of moral development — the morality of cooperation or autonomous morality (8–10 years old). The increasing contact with different points of view and contradictions helps the move from an egocentric to a perspectivistic view, characterized by the ability to critically evaluate rules and its applications, based on respect, reciprocity and cooperation. An immature egocentric moral judgment would concentrate on the magnitude of the offense; mature judgments instead, takes intention into consideration.

One of the implications of Piaget's theory is his proposal for a new dimension regarding the school responsibility for fostering and supporting moral development. According to him, teachers should provide students with opportunities for cooperative decision-making, problem solving and attempts to achieve fair solutions in a group, rather than insisting on norming indoctrination (Piaget, 1954).

2.1.2 Lawrence Kohlberg: cognitive moral development theory

A brief introduction to the work of the North-American psychologist Lawrence Kohlberg (1924–1984) is necessary in order to understand the foundations of the dual-aspect theory (Lind). This section presents a summary of Kohlberg's cognitive moral developmental theory, the stages of moral development and some of the critical reviews in Kohlberg's theory.

Kohlberg's doctoral dissertation (1958) was an extension of Piaget's work on moral development by including adolescents and young adults in his longitudinal studies. As Kohlberg (1984) explained, it was an "effort to replicate Piaget's description of moral judgment stages, to extend them to adolescence and to examine the relation of stage growth to opportunities to take the role of others in the social environment" (p. xix).

It was also his purpose to "provide an account of moral behavior" in which "choice and intention" are at the core of moral action. (Nucci & Pascarella, 1987). According to Kohlberg, moral judgment development occurs beyond the ages proposed by Piaget and the process of achieving moral maturity takes longer and is more gradual than Piaget originally proposed (Kohlberg, 1969).

In research conducted in Chicago, he investigated the way 72 males, plus an additional group of 12 delinquent males, distributed in three age groups of 10, 13 and 16 years old (at the beginning of the research) reasoned about ten hypothetical moral dilemmas. One example is the well-known Heinz-dilemma which brings out the conflict over whether a medicine should be stolen or not by Heinz in order to save the life of his own wife. The results showed that arguments presented to justify their moral positions would fit six different patterns of moral judgment. These patterns were characterized as levels of moral judgment (Power, Higgins, Kohlberg, 1989).

The delineation of moral judgment stages, the main characteristic of Kohlberg's developmental approach, offers a systematic description of developmental processes that occur as a result of an interaction of environmental and maturational factors. He defends the view that those processes are age-related but not age-dependent and take place with children in all cultures, thus emphasizing a maturational aspect. On the other hand, in later writings, he emphasizes a social perspective stressing the importance and possibility of fostering moral development through different forms of role-taking and democratic education. The stage schema of moral development in addition to the cognitive-structural aspect of the moral development are the core concepts of the cognitive development theory.

Stages of moral development Kohlberg's doctoral research (1958, 1995) inaugurated a series of twenty-year longitudinal studies. On the basis of the boy's responses that reflected different thought processes, he concluded that levels of moral reasoning are related to levels of cognitive development. Thus, he claimed an association between cognitive maturity and moral maturity.

Kohlberg (1976) identified six stages of moral reasoning grouped into three major levels: preconventional (stages 1 and 2), conventional (stages 3 and 4) and postconventional morality (stages 5 and 6). The central feature of each stage development is the concern for justice and fairness. Following, a short description of the six stages derived from Hartmann (1995).

Preconventional level

Stage 1. Orientation toward punishment and obedience. (Maxim: what does not harm me is permitted.)

Stage 2. Hedonistic, instrumental-relativistic orientation. (Maxim: What is useful to me and does not necessarily harm others is permitted.)

Conventional level

Stage 3. Good-boy-nice-girl orientation. (Maxim: The approval of people whose opinion I value determines what is permitted.)

Stage 4. Law-and-order orientation. (Maxim: What is expected of a good citizen determines what is permitted.)

Transitional stage to the postconventional level

Stage 4 ½. Orientation toward collective utility. (Maxim: What brings the greatest happiness for the greatest number is permitted or even imperative.)

Postconventional level

Stage 5. Orientation toward legalistic social contracts. (Maxim: It is imperative to hold to agreements which protect individual rights and which serve the common good.)

Stage 6. Orientation toward universal ethical principles. (Maxim: It is imperative to work for freedom, equality and justice and to preserve respect for man's dignity as an individual. A conscience trained in such principles stands above existing laws.)

At the preconventional level are children up to 9 years old, some teenagers and many offenders (teenagers and adults). At the conventional level are most of the young people and adults. The postconventional level, on the other hand, is achieved only by a minority of adults and, in most cases, only after they are 20 years old (Kohlberg, 1976).

The moral development as proposed by Kohlberg should be understood as taking into consideration human development as a whole. Moral stages are in complex ways connected with cognitive development. Moral development occurs step by step, beginning with stage 1 following in an invariable sequence towards stage 6. In an attempt to make a parallel with other developmental aspects, Kohlberg (1976) describes how moral development progress depends on the development of intelligence as presented by Piaget. As far as intelligence is concerned, it is generally expected that most individuals would reach stages beyond the concrete operations stage. Many of them grasp the formal operations stage and, within this group, most would reach even higher levels. An advanced moral thinking or reasoning depends on an advanced logical thinking. The logical stages develop, thus, parallel to the moral stages. As an example, a person who did not develop further than the concrete operations stage would not be able to develop further than the preconventional-conventional moral stages 1 and 2. However intelligence development is not a sufficient condition for the moral development. It is also possible that persons who achieved a high level in logical thinking are not able to achieve the equivalent moral stage.

The differences among the stages of moral development are related to qualitative changes in the thought processes when one reasons about moral issues. The stages were conceived as being stages of justice and social perspective taking. The stages of moral development present some important structural maturational characteristics, and, at the same time indicate how an individual develops through the interaction with the environment. First, all children develop progressively through an invariant sequence of stages. Each stage depends on the previous one and prepares the individual for the next one. There are individual differences among children, but they develop within structural parameters. Consequently, one child can develop faster than another, with difficulties, or never reach the last stages, and so on. Second, the concept of stage development implies a sequence of development that occurs independently from culture and constitutes a universal structural dimension.

In order to explore the relations between the Kohlbergian and Piagetian approach, two important aspects need to be stressed. According to Kohlberg, moral judgment development occurs beyond the ages proposed by Piaget and the achievement of moral maturity demands a longer and more gradual process than Piaget originally proposed (Kohlberg, 1969). In fact, Kohlberg stated that his model of moral cognitive development supplants that of Piaget. In this sense, one had to assume that Piaget's phases of heteronomy and autonomy would be equivalent to his stages 1 and 2. Stages 3 to 6 would then go beyond the scale proposed by Piaget. Lind (1985) criticizes the way this particular issue was approached by both theories and questions its validity. According to Lind, the conclusion is based on two inaccurate assumptions: a) the moral judgment competence would manifest itself simultaneously in all areas of life; and b) the age groups mentioned by Piaget in the two phases and by Kohlberg in stages 1 and 2 would be the same. Neither assumption seems to be valid. As a consequence, Lind defends the idea that the "Kohlberg's stage schema of moral development does not include and replace that of Piaget, but rather succeeds in supplementing and extending it in regard to the social dimension of individual development" (p. 29). This view was already defended by Weinreich (1975). On the other hand, Kohlberg was consistent with Piaget when he stated that children develop their ways of thinking through their experiences and depend on the way they are able to understand moral concepts like rights, justice, equality and human welfare.

Revisions in the Kohlberg's Theory The Dual-Aspect Theory concepts derive from critical revisions in the Kohlberg's theory. During the last several decades, many variations in the publications by Kohlberg and his colleagues have taken place. Kohlberg, Levine & Hewer (1984), and others (Nucci & Pascarella, 1987; Lind, 1985) offered a detailed systematization of the modifications required by the theory. Some of the important issues are briefly addressed.

Structure and content of moral behavior One important point is that Kohlberg's approach, different from traditional approaches in psychology, refers to the structure and not to the contents of moral behavior (Lind, 1985). Due to the longitudinal studies conducted by Kohlberg, the formal characteristics of the stages could be better differentiated from normative contents. Normative contents were previously used to define stages. Later, Kohlberg, Lewine & Hewer (1984) proposed that they related to differences in individual and cultural norms and that they were defined independently from the stages formal characteristics (p. 221). Depending on the situation, reasoning about moral conflicts implying capacities of lower stages could be as moral as reasoning implying capacities of upper stages. In this way, in order to define a moral judgment as being "moral", one does not need to consider its content. One does not need to think whether this judgment is or is not in agreement with our own judgment about the situation.

Lind criticizes the way the cognitive developmental theory deals with the concepts of cognitive-structure or affective content. Affect and cognition are considered by Lind (1985), as opposed to Kohlberg, not as juxtaposed concepts but rather as inseparable aspects of human behavior.

The stage 4 ½ The stages hierarchy was a target for a revision and some points were added or changed. However, according to Heidbrink (1996), it is difficult to know whether this was helpful for his theory or not. One of the changes refers to the addition of an intermediary stage, the so-called stage 4 ½ in order to deal with unexpected cases of moral judgment regression that emerged in going from stage 4 into stage 5. By analyzing data from Kohlberg's longitudinal study, Kohlberg and Kramer (1969) found out that boys, after leaving high school, would increasingly use the thought structures of stage 2. This phenomenon was first interpreted as accepting the stage scoring system as valid. The anomalies were interpreted at the light of Erikson's theory as expressing a developmental crisis and being a genuine retrogression in the college years. However, this challenged one of the basic concepts of the stage development as proposed by Kohlberg — the invariable sequence. Later, Kohlberg (1979) proposed that the apparent regression was an expression of "weakness of our clinical method" (p. 177), that he had been unable to do justice to people who were in a transitional phase. The adolescents were thought to be in stage 2 (Preconventional) as a result of a mistake in the interpretation of the interviews regarding content and structure of moral reasoning. They used arguments that were similar to those from stage 2 in content, but they would actually structurally belong to stage 4 (Conventional). They were relativistic judgments and were, thus, situated between conventional and post-conventional levels. The stage 4 ½ represented, in fact, a stage 4 reasoning that at the same time was challenging this same stage. Conventional morality was being rejected without consolidation of a more principled morality. Haber-

mas (1985) criticizes Kohlberg's decision to create a transitional stage that "calls less for structural description than for psychodynamic explanation (...)" (p. 15). The criticism revealed that Kohlberg had not given an structural description of stage 4 ½ as he had for the classification of the other stages: "Kohlberg should not rest content with inserting a transitional stage on his overall scheme and without providing a psychodynamic explanation of it" (p. 15). In addition, Kohlberg's explanation would not explain how this level of reasoning can become stable. Habermas (1985) defends the idea that those subjects have only "partly completed the transition to the postconventional level" (p. 16). An adolescent can, however, successfully reach the next stage or else, "extricate himself from conventional thought without being able to pass to postconventional thought" (p. 17).

A and B Substages After reviewing his theory, Kohlberg proposed a very important change in the original stage model — the introduction of the A and B substages for the stages 2 to 5. The criterion for the attribution of stage A or B helps to define more precisely the ontogenesis of justice reasoning. Through the division into A and B substages, it is possible to understand the normative contents of moral judgment in one separated category, something that had been impossible when it was mixed with the structural definition. Furthermore, it is a determining factor for the passage from moral judgment to moral action (Kohlberg, Levine & Hewer, 1984). The B substages represent a higher level of maturity than A substages. After a series of theoretical discussions they were understood in comparison with the stages of moral development proposed by Piaget: heteronomy and autonomy would then, respectively, correspond to substages A and B (Kohlberg & Candee, 1984). According to the authors, persons belonging to substage B would feel that they must reason/handle more in agreement with their own moral principles than persons that belong to substage A. Nucci & Pascarella (1987) point out that by differentiating stages A and B, Kohlberg claims "an intuitive basis for moral (justice) decision making at all levels of development" (p. 277).

Stage 6 Another substantial revision was proposed for stage 6. This stage could not be empirically demonstrated (Kohlberg, 1984). According to the current scoring criteria, very few people would be classified as showing stage 6 reasoning, and so, it remains a theoretical construct.

2.1.3 James Rest: moral judgment hierarchical nature and the four-component model

James Rest (1973, 1999) plays an important role in the development of the dual-aspect theory. Lind criticizes Rest's four component model by saying that affect and cognition

are aspects and not components of moral behavior. On the other hand, Rest's conceptualization of the hierarchical preference of moral stages is a central issue in Lind's theory.

Rest characterizes moral development as increasing complexity in the understanding and application of moral principles. As a result of his research with the Defining Issues Test (DIT), he presents a neo-Kohlbergian approach with a reformulation of the postconventionality definition. The concept of postconventional schema is redefined, suggesting a new distinction between content and structure. The purpose of the *four component model* (1999) is to address the multiple facets and processes that are involved in the moral psychology. Basically, Rest defends the idea that moral behavior would originate from four inner psychological processes: a) moral sensitivity; b) moral judgment; c) moral motivation and d) moral character. In this way, if it is considered that the DIT measures moral judgment specifically, it can be explained why the correlation of moral judgment-behavioral measures is consistent but not valid enough. The other aspects cannot be ignored and are considered as behavior co-determinants. It is assumed that a more precise prediction of behavior can be achieved when information from all four components are combined.

The four component model makes a claim for a greater complexity in the understanding of morality that goes beyond the view that considers morality as consisting of three parts (emotion, cognition and behavior). Rest's approach differs from Kohlberg's structure-content view and emphasizes, for example, the reciprocal dynamics of culture and cognitive development. Moral judgment and cultural ideology influence each other in the formation of moral thinking. He recognizes Kohlberg's moral judgment as being only a part of the morality psychology. Rest suggests that educational programs include systematic research on the variables characterized by the *four component model.* In order to differentiate his formulations from Kohlberg's, the cognitive structures measured by the DIT are referred to as *schemas* rather than *stages.* The DIT, as defended by Rest, enables the activation of moral schemas.

In order to test Kohlberg's cognitive developmental theory from stage hierarchy, an empirical study was conducted (Rest, 1973), whose results show clear evidence of internal order supporting the hypothesis that the stages are hierarchically related. The cumulative order of difficulty encountered in this study proved that each stage is cognitively more complex and integrated when compared to the previous one. It represents, thus, a conceptually upper limit on a person's moral judgment possibilities. Furthermore, findings regarding an order of preference supported the claim that each succeeding stage is for the subject the most adequate. He found that subjects' preferences towards arguments of someone else did not tend to their own spontaneous predominant stage, but tended to the highest stage they could comprehend, independent of the subject's actual stage. The production

of moral judgments as well as the assimilation of arguments presented to a subject are, in this way, related to "comprehension" and "preference".

2.1.4 Georg Lind's dual-aspect theory

The recent work of Georg Lind in Germany constitutes an important addition to previous research about moral judgment conducted in America and England. The background for the development of a *dual-aspect theory of moral behavior and development* rests on the growing awareness that Kohlberg's theory presented some contradictions concerning the relation between his theoretical model and his measurement method (MJI).

According to Lind, the MJI revealed limitations in the empirical verification of central aspects of his theory — for instance, the invariant sequence of stages and the affective-cognitive parallelism. The fact that the MJI does not allow the direct assessment of both aspects (cognitive and affective) separately, makes it difficult to detect the impacts of education or socialization on moral development. In addition, Lind criticizes the MJI scoring system saying that it favors the invariance postulate. The DIT (Rest) is, on the other hand, neutral in regard to the invariance postulate. It has, however, one disadvantage: because both aspects are mixed up they cannot be separately analyzed. The P-value (moral development indicator) reflects how consistently (cognitive aspect) a person prefers (affective aspect) postconventional arguments. This means, according to the dual-aspect theory, that the P-value expresses a change in moral attitudes and not moral competence. As a result, a clear differentiation between education and socialization theories is not possible.

Lind's theory differs from theories that either deny that the two developmental dimensions (affective and cognitive) can be distinguished, or propose the conceptualization of two or more ontologically separate components or factors of moral development. Lind's theory contradicts also a more recent approach to moral judgment — the social intuitionist model (Haidt, 2001). Haidt defends the idea that intuitions, motivations and emotions are the main source of moral judgments. In this way, moral reasoning is produced after a judgment has been made and it is a result of "quick moral intuitions" (p. 817). Accordingly, Haidt does not seem to accept the influence of thought processes and competencies to produce moral behavior. Haidt and Lind have, however, a different conceptualization of moral judgment. Haidt defines moral judgment as "evaluations (good versus bad) of the actions or character of a person that are made with respect to a set of virtues held to be obligatory by a culture or subculture" (p. 817). Some questions that are relevant for the dual-aspect theory are not considered in this definition. For instance, whether those decisions are based on moral principles or not; whether moral judgments can be more or less competent and whether it is possible to verify structural differences.

The core concept of the dual-aspect theory derives from Piaget's (1976) conclusion that each behavior has an affective and a cognitive aspect. The affective aspect depends on energy and the cognitive, on structure. Lind (2000) claims that they are inseparable — as they are at the same time both equally important, but distinct, aspects of the same behavior and, as such, need to be investigated. This statement contradicts Rest's (1986) previously presented four-component model of moral behavior, that recognizes four separate components but does not acknowledge that they can be separated in the same behavior. The dual-aspect theory offers, thus, an alternative to the component model.

Rest et al. (1997) criticized Lind's stage consistency score and defended the superiority of the DIT in empirical demonstrations of the stage preference score. This is still an open controversy in which Lind defends his view that the DIT does not confront individuals with a moral task to oppose counter-arguments in relation to a dilemma situation. According to Lind, moral competence can only be measured by using such a moral task.

As Kohlberg (1985) himself acknowledged, Lind's theory differs from the research undertaken in North America in three respects: the methodology employed, the subjects investigated and the social political dimensions. With respect to methodology, Lind developed the *dual-aspect theory of moral behavior and development* and a new instrument, the Moral Judgment Test (MJT). The MJT was created, as Kohlberg (1985) explained, "in order to systematically differentiate and integrate the assessment of the cognitive structure or stage of moral judgment and its content, that is, the attitudinal, affective, or normative content of moral judgment" (xv). However, Brugman (2003) criticizes Lind's thesis claiming that he substitutes moral feeling for moral attitude with the result that typical moral affects (shame, guilt, anger) are not addressed.

Furthermore, research conducted by Lind and colleagues in Germany and Switzerland focuses on adolescents and adults in several educational and professional contexts, that until that time, was little investigated in the United States (Lind et al., 1985).

The dual-aspect theory constitutes the basis for Lind's empirical research as well as for its pedagogical, educational applications. This model defends the role of moral competencies for the individual. Moral competencies, here understood as the ability of solving moral conflicts (Kohlberg, 1964), are needed in order to make possible the application of one's own moral principles or ideas (the affective aspect) in a moral behavior.

As the dual-aspect model is relatively new in the history of empirical investigations, the cognitive-developmental theory of moral development still dominates with its view that the affective and the cognitive are related but clearly separated and, therefore, only observable in different behavioral situations. The four-component model from Rest (1986) is still preferred in research in psychology and education.

In Lind's dual-aspect theory, the definition of affective and cognitive aspects of the moral

behavior is in agreement with the work of Piaget and Kohlberg. The affective aspect of the moral behavior incorporates feelings that are related to moral principles or norms, behavior orientations, feelings, motives and justice ideals. Kohlberg's (1964) six stages of moral development are characterized by moral affect or motives. The cognitive aspect of the moral behavior is, according to Kohlberg (1977), understood as the structure of the moral behavior in relation to particular moral motives or principles. It is the structure of the judgment process, which is defined by Lind as moral judgment competence.

2.2 Moral judgment competence

The concept of moral judgment competence is the main construct for the present research. It is also the core concept in Lind's work. Lind developed his theoretical and empirical research based on a review of Kohlberg's conceptualization of the relationship between moral ideals and moral action, as proposed in his definition of "moral judgment competence" and in his attempts to measure it. Kohlberg (1964) defined moral judgment competence as "the capacity to make decisions and judgments which are moral (i.e., based on internal principles) and to act in accordance to such judgments" (p. 425). According to Lind (2004), this was a real "paradigm shift" in moral development. For the first time morality is considered in terms of competence and not in terms of attitudes or values: "To be moral, a behavior needs to be guided by moral principles, yet in order to be morally *mature* a behavior must also be informed by developed reasoning competencies" (p. 10).

The concept of moral judgment competence, as Lind (1985) states, "points out that moral behavior also depends on the individual's ability to see the moral implications of a situation and to organize and consistently apply moral rules and principles to concrete situations" (p. 21). Moral behavior is, thus, understood in terms of a subject's *internal, accepted* moral principles rather than in terms of external standards and social norms. The affective, cognitive and behavioral aspects are integrated into the definition. Moral competence embraces, in addition, the ability of reflective thinking and of producing rational discourse. Lind (1985) claims that moral principles and competencies are not separate components, but different aspects of behavior.

The author stresses the importance of attending to methodological implications due to the conceptual nature of the innovations in the domain of the cognitive-development theory. According to the author, there was a need of a new psychometrics that would take into consideration both affective and cognitive aspects of behavior. The MJT was developed to be consistent with the theory. As well, it has to be objective and, thus, replicable as well as achievement oriented (Brugman, 2003).

2.2.1 The measure of the moral judgment competence

The measurement of the moral judgment competence through the Moral Judgment Test (MJT), as defended by Lind (2004) in the *dual-aspect theory*, is based on the following main postulates:

1. Inseparability: "Affective and cognitive mechanisms are inseparable, although distinct. Moral affects (values, ideals) are exhibited in moral behavior in various ways, depending on the individual's cognitive structures and competencies (...) an adequate measurement must be designed to assess both aspects of a person's judgment behavior as distinct aspects of the same pattern of behavior" (p. 15).

2. Moral task: A moral task which demands deliberation on moral dilemmas through analysis of arguments that are in agreement, as well as in disagreement with one's own opinion, is required to the measurement of moral competence.

3. "Non-fakeability": The instrument has to be constructed in a way that individuals are unable to fake showing higher competence scores than the actual ones (Emler, Renwick and Malone, 1983; Lind, 2002).

4. Sensitivity to change: As opposed to Kohlberg's (1984) instrument, Lind's has to be sensitive to both upward and downward changes either due to the effect of interventions or due to competence erosion.

5. Internal moral principles: In contrast to imposed moral expectations, the individual's own moral principles are considered for the scoring of the moral competence level.

6. Quasi-simplex: If the test dilemmas demand principled moral judgment, the acceptability ratings of each stage should support the notion of an ordered sequence — that is, the correlations among the stage ratings should form a quasi-simplex structure.

7. Parallelism: Affective and cognitive aspects should correlate highly with each other, although they are independently scored.

8. Equivalence of pro- and con-arguments: A subject's moral competencies are assessed according to their internal position referring to the dilemma in question. Arguments that are in agreement or in disagreement with the subject's own opinion should be analyzed equivalently.

2.3 Moral development in adulthood

Moral development was initially described as occurring during childhood (Piaget) and only later, in adolescence and adulthood (Kohlberg, Lind). Earlier development theories supported the idea that cognitive skills would develop progressively along the life span to the end of adolescence. More recent studies suggest a different framework for the understanding of this development process. In spite of the great development observed up to adolescence, it is now acknowledged that this process continues into adult years. The same process is valid for the moral learning competencies. According to Lind (1999) and Kohlberg & Higgins (1984), strong evidence supports the theory of an inborn component in interaction with the environment influencing the processes of development even into adulthood.

The research findings about moral development in adulthood go back to the longitudinal study conducted by Perry (1970), who showed how development continues during the college years. In his study of value development, he observed three major stages. Students shifted from an early belief in authority's omniscience (modifying of dualism) to relativism and, finally, to committed involvement. Perry defended the idea that the observed development process represents an intellectual and moral advancement.

Further findings were introduced by Kohlberg (Kohlberg and Higgins, 1984) and colleagues (Rest, 1979; Rest and Thoma, 1985; Rest and Navaez, 1991) with studies in the United States and later, confirmed by others (including Lind, 1985; 2000a; Bargel, 1982; Dippelhofer-Stiem, 1987 and Sandberger, 1982) in Europe. Their studies showed that moral development continues after completion of high school, college and professional education.

2.4 The education theory ("Bildungstheorie") emerging from the dual-aspect theory

Lind's "Bildungstheorie" plays a central role in the present investigation. Years of research within the framework of the dual-aspect theory have shown that moral development and moral behavior are highly influenced by educational processes (Lind, 2000, 2002, 2004). The dual-aspect model emphasizes the role of various forms of education (parents, school and higher education) in fostering moral competencies. In addition to the dual-aspect theory, Lind proposes a "Bildungstheorie" of moral development, as opposed to the socialization and maturation theory, and sees it as a further development of the cognitive development theory from Piaget and Kohlberg. The latter defends the interaction between individual and environmental structures. At the same time, Kohlberg emphasizes

the genetic, maturational character of development expressed for instance, by the invariable sequence of development and by not accepting a regression within the development process. Those points are reviewed in Lind's "Bildungstheorie".

The "Bildungstheorie" proposes that moral development requires much more than the individual's understanding and adaptation to social norms. Consistent with Kohlberg and Piaget's ideas, it stresses the importance of the development of moral cognitive competence which means the ability to apply moral principles in a concrete situation and to solve moral conflicts when contrary positions are in play (Lind, 2002).

Those moral cognitive competencies, based on empirical research results that are discussed later in this study, are more efficiently fostered through education, rather than through professional life. In cases where subjects were not stimulated enough through education, a stagnation or even regression of the moral development was observed. The "Bildungstheorie" calls for a discussion about the important role of education in all levels in fostering moral competencies and moral development.

2.4.1 Educational applications of the theory: the Konstanz method of dilemma discussion (KMDD)

Based on the Blatt-Kohlberg method of dilemma discussion, Lind (2003) has developed the "Konstanz method" of dilemma discussion (KMDD), that has been widely used in recent years in Germany as well in other countries. The KMDD can be used by certified teachers with the goal of improving moral competence and discourse levels among students in different age levels. The efficacy of the KMDD has been systematically evaluated and shows large lasting effects on the cognitive-moral development of students. In this section, the KMDD theoretical background is presented.

In the late 1960s, Kohlberg began a different phase in his researches. He was concerned with the application of his theory in education. Moshe Blatt, one of his graduate students, was the precursor of a process that would lead to the application of the moral development theory in the classroom practice. Based on the work of Turiel (1966) and Rest (1968), Blatt (1969) developed his research hypothesis.

Blatt's hypothesis was that a child's development toward a higher stage of moral development could be predicted through systematic exposure to moral reasoning. Children would try in this way to appropriate the reasoning as their own. His project included group discussion of moral dilemmas in two experiments. As a conclusion, the "Blatt-effect" was encountered: one-fourth to one-half of the students moved to the next stage up after a semester of group discussion (Blatt & Kohlberg, 1975).

Kohlberg rejected traditional character education practices that were based on the teaching of virtues. His research findings led him to believe that moral education would be more effective by focusing on stages of moral development. According to him, moral education would have as its goal, to encourage individuals to attain higher stages of moral reasoning. The earlier attempts to employ Kohlberg's theory in education were based on Piaget's concepts of cognitive development through interaction and the search for equilibrium. Those processes seem to be fostered by the dilemma discussion technique. Kohlberg's proposal tries to promote moral development without imposing moral values to children. Rather, teachers would promote the development of the students' native sense of fairness, preparing them to better understand the principle of justice (Power, Higgins & Kohlberg, 1989).

By analyzing educational ideologies that could serve as a basis for educators who seek a deliberate approach to moral education, Kohlberg (1972) describes three different approaches: "romantic", "cultural transmission" and "developmental or progressive". The "romantic" approach's goal is to provide students with values and clarification skills in order to achieve a self-fulfilling life-style. The "cultural transmission" approach emphasizes teaching students skills that would help them live successfully in the society (for example, group leadership), as well as behaviors and attitudes based on societal values. Kohlberg has chosen the developmental approach, having as a goal to promote students' cognitive, social, moral and emotional development. The first two approaches should be also incorporated into a program that aims at moral development. The objective of the moral judgment developmental program is to change a structural capacity and not only to provide a behavior change.

Later, Kohlberg realizes that both his and Blatt's thoughts about moral education should take into consideration the problems posed by the "hidden curriculum". He incorporated ideas of Durkheim and Dewey in an attempt to transform the hidden curriculum into a curriculum of justice through educational democracy. In this way, Kohlberg (1989) proposes a "way of addressing the hidden curriculum while still promoting both individual moral development and a progressive view of the schools as serving the cause of justice" (p. 26).

The aim of developmental education is however, not stage acceleration but rather, to prevent stage retardation. Kohlberg and Mayer (1972) defend that speeding up the natural course of development has no educational value. An important aim is to foster the extension of the cognitive capacities both in breadth and depth.

Regarding the importance of the moral dilemma discussion for the moral development, De Vries & Zan (1994) wrote: "Kohlberg and numerous other researchers have demonstrated in research with older children that over time, dilemma discussions can foster

stage-wise development. When children are exposed to one stage above their current stage of development, they tend to prefer the higher level reasoning to their own. When dilemma discussion occurs in context emphasizing community, individual moral growth occurs as well as growth in the moral culture of the community" (p. 166).

The Konstanz method of dilemma discussion (KMDD) was developed based on the Blatt-Kohlberg method, but has gone through modifications and improvements which resulted in an independent method. As opposed to Kohlberg, the KMDD considers the discussion on contra-arguments as the most important tool for fostering moral competence. According to Lind, it is not necessary to work with arguments one stage above students' development. Students are, thus, challenged with arguments that oppose their own opinion about a particular dilemma. The KMDD uses for the discussion, as in the Blatt-Kohlberg method, semi-real dilemmas.

The goal of moral dilemma discussion according to the KMDD is to foster not only thinking processes, but also and mainly, moral and democratic competences, considered as an important tool to the maintenance of a democratic society. Moral competence implies in acting based on shared moral principles even in situations where one is under pressure. It demands the ability of making judgments based on moral principles and entering in a moral discourse with others, especially those who have opposed opinions. Students learn how to handle emotions that arise in those conflict situations in order to effectively act according to moral principles.

2.5 Role-taking and guided reflection opportunities in the learning environment

In addition to moral judgment competence, role-taking and guided reflection are the constructs for the present study. Its purpose is to investigate whether and how moral judgment competence development is influenced by the learning environment in higher education. The learning environment is assessed by the opportunities it offers for role-taking and guided reflection. This conceptualization derives from Sprinthall's work and is based on Kohlberg's and Selman's considerations about the importance of role-taking for moral development.

2.5.1 The social-moral perspective: role-taking

In a more recent formulation of Kohlberg's theory (1984), the focus was placed on the "sociomoral perspective", a theme that leads us to the concept of "role-taking". The

definition of moral stage implies relations with the stages of role-taking development as proposed by Selman (1976). It describes how a person realizes another person, how he/she interprets his/her thoughts and feelings as well as how he/she understands his/her own role in the society. There are strong connections between the role-taking stages by Selman and Kohlberg's moral stages.

Kohlberg defends the view that the moral stages are the result of the interaction of a child with the social environment. They are not solely biologically or neurologically determined. A parent's influence on the moral development is, however, considered as only one aspect of the whole social interaction. One of the criticisms directed at Kohlberg and Piaget was related to the minimally important role attributed to parents on a child's moral development. Later research found that parents can make a major contribution regarding this aspect. Walker and Taylor (1991), for example, found that parents had an important role in helping the child's reasoning to reach higher levels. The opportunity to talk about, interpret and enact moral dilemmas as well as providing the child with contact with people of an even slightly higher level of moral development, seem to be very effective in achieving those goals. Considering moral development as a result of cognitive and affective basis, the authors showed that parents who used warmth, encouragement, clarification and ways of checking to be sure that children understood the issues involved were more effective in promoting moral development than those who lectured about their own opinions or provoked children's defensive behavior by questioning and confrontation.

Considering that the moral stage hierarchy is connected to the way an individual perceives his/her environment, one should be able — from the point of view of the shift from a egoistic perspective (Piaget) to a more decentralized perspective — to develop competency of role-taking. This implies not only the ability to understand from the perspective of another person, but also, to see ourselves from another person's perspective.

Social perspective in psychology considers the opportunity of role-taking as being a central aspect of the moral development. According to Piaget (1932), a child would have opportunities for role-taking when he/she is part of a group and assumes a role in this group. Mead (1934) stressed the participation in secondary institutions as well as family life as important sources of moral role-taking. Based on research results, Kohlberg (1968) defends the position that any form of role taking opportunity is important and fosters the development of moral judgment competence. The author stresses the role of the intellectual development and social participation — including role-taking opportunities in the family, same age groups, or secondary institutions — in the development of the moral judgment. The social perspectives develop in breadth and depth as well, constituting qualitative differences in the role-taking opportunities, which is consistent with Piaget's concepts of decentralization, differentiation and reintegration. Kohlberg

defends, however, a rather more direct relationship which accounts for the importance of the social perspective in the development of structural characteristic of the moral stages (Heidbrink, 1996). In his opinion, the existence of a general structural construct, the concept of "socio-moral perspective", is the basis of role-taking and moral judgment. Three different levels of social perspective are associated with the three levels of moral judgment. They are, respectively: 1. Preconventional level and concrete individualistic perspective; 2. Conventional level and perspective of an individual in relationship to others in the society and 3. Postconventional level and perspective derived from social arrangements (Kohlberg, 1976).

Kohlberg (1968) presents results from research with different cultures showing that the progress in moral judgment development in children was connected to different opportunities of role-taking in the family such as " (...) communication, emotional warmth, participation on decisions and responsibilities given to the child, explanations about which consequences the own behavior can have on others" (p. 34) (my translation). Selman's (1971) results corroborate Kohlberg's assumptions and "indicate that the reciprocal role taking is a necessary condition for the development of conventional moral thought" (p. 90).

According to Selman (1976), the development of social perspectives (role-taking) is so important that it should be understood as a requirement or pre-requisite for the moral development. He defended the view that the development of the social perspective-taking competence occurs in a series of stages. Those stages would form an ontogenetic stage hierarchy similar to Piaget's stages of logical thinking (Selman, 1984). At the same time, those stages would run parallel to the moral stages of Kohlberg (Kohlberg, 1976). Selman's definition of role-taking encompasses the way a person differentiates his/her own perspective from the perspective from others and how they relate to each other.

2.5.2 Norman Sprinthall and the concept of role-taking and guided reflection

The importance of social role-taking, based on the definitions of Mead (1934), Kohlberg (1984) and Selman (1980) provided the foundation for the work of Sprinthall and colleagues with teacher education. Role-taking and guided reflection were found in previous studies to be a necessary condition for promoting moral development (Reiman & Thies-Sprinthall, 1993).

Role-taking has been defined differently by different authors. For the purpose of the present research, the conception of role-taking derives from the dual-factor model of stimulating the learning environment adapted to teacher development programs (Sprinthall,

Reiman & Thies-Sprinthall, 1996). Based on previous studies they proposed five elements for educational programming towards moral stage growth: 1. role-taking (not role-playing); 2. reflection; 3. balance between action (role-taking) and reflection; 4. continuous process of role-taking and guided reflection rather than isolated attempts; 5. support and challenge: giving support and feedback during the challenge of involving in more responsibility.

2.5.3 Role-taking and guided reflection as fostering self-sustaining moral-cognitive development

The cognitive-developmental approach claims that development and learning continue in the adulthood, along the life-span and is not arrested at the end of the adolescence. Students who end their education prematurely experience a gradual loss of their moral judgment competence, in opposition to their peers who show significant gains even after graduation. This regression in moral judgment competence levels is related, among other reasons, to the fact that those students had not yet achieved a level of moral cognitive development that would remain stable or increase independently of a learning process. Actually, the self-sustaining moral-cognitive development has been encountered so far only in subjects who are in "high track" educational careers.

Lind (1999) defends the idea that, in order to achieve the self-sustaining moral development level, the individual has to acquire a critical level of moral judgment competence called 'moral autonomy" by Piaget (1965). Individuals who reached moral autonomy have skills and competences to cope well with moral conflict and learn through that situation. They do not need additional and continuous external stimulation to keep or to improve their moral competence levels. Individuals, on the other hand, who did not achieve this critical point, tend to avoid moral conflicts and are not able to develop further. In fact, their moral competence levels often decline.

Based on the definition of moral judgment competence by Kohlberg (1964), Lind (1999) explains that individuals are morally competent "to the degree to which they base their judgments on their moral values rather than on other considerations. Moral autonomy is more than just an orientation or an attitude, but it is a cognitive competence that develops and requires sophisticated instruction and long practice" (p. 5).

Nevertheless, the achievement of moral autonomy seems to be closely related to the quality of education received. Particularly in the learning process, moral autonomy is related to the opportunities of role-taking combined with guided reflection (Sprinthall & Thies-Sprinthall, 1993, Reiman, 2000; Lind, 1996 and Herberich, 1996). In German, the terms used for role-taking and guided reflection are "Verantwortungsübernahme" and "angeleit-

ete Reflexion" which explicitly implies students taking responsibilities through active participation in different experimental and real-life settings, directly related to the syllabus content or not, along with a supportive and challenging process of reflection about those activities.

2.5.4 Role-taking and guided reflection as research constructs.

For the purposes of this study, opportunities for role-taking are those in which students have "to test new knowledge in experimental and real-life settings" (Lind, 2001). This idea involves creating situations where students take responsibilities which involve moral-cognitive demands. This definition should not be confused with "role-playing". Role-taking means more than being able to see the perspective of the other person. It entails active participating, making decisions and carrying out responsibility in opportunities created in the learning environment. Activities such as tutoring, mentoring, action research or community internship are examples of that. As Reiman (2000) states: "The role-taking (action) precedes and shapes the intellectual consciousness (reflection) that grows out of it. In the absence of social interaction within a complex new role, the person is unlikely to initiate the actions required to change (accommodate) new ideas" (Reiman, 2000).

A *favorable* learning environment The challenge provided by the opportunities of role-taking in itself seems not to be enough to stimulate moral-cognitive development. Students need also guided reflection described as requiring adequate advice and help provided by professors, other more experienced students, peers, tutors or alike, to discuss the new role-taking experiences. In other words, feedback regarding students' role-taking processes, discussions and reflections about successes and failures. In a way, it could be said that challenge should be followed by, or be side-by-side with "support", in the form of competent advice and opportunities for reflection about problems related to the decision-making and learning process.

In the present study the term *favorable* learning environment is used to refer to the combination of opportunities for role-taking and guided reflection.

Opportunities for role-taking and guided reflection imply a non-traditional approach to education. Characteristics of a traditional approach with its emphasis on the teacher as the one that transmits knowledge and on the student as the one who receives it, the use of lectures without discussion and heavy use of content memorization seem to be ineffective in promoting cognitive development (Sprinthall & Scott, 1989; Rest, 1986).

2.6 Research in higher education: from the affective to the cognitive-affective

This section presents a research review of moral development in higher education. The history of research on higher education reflects a progressive shift, moving from an initial skeptical view towards an increasing awareness about the impact of post-secondary education on moral development. Research in the affective approach, limited to investigating changes of attitudes in students, failed to show the effects from university socialization on critical thinking, judgment ability and social responsibility. The cognitive-developmental approach was able to see beyond the affective changes to demonstrate that higher education experience fosters student's moral judgment competence. Methodological limitations of both methods are addressed justifying the need for a new investigation using the MJT.

According to Lind (2000), up to the mid-seventies no consistent evidence pointing out to the role of education in fostering moral judgment development could be found. This was due, among other reasons, to the fact that the "affective" paradigm was still too dominant. This situation was not favorable to the acceptance of alternatives for addressing moral issues as, for example, the one proposed by the cognitive developmental theory. Consequently, the role of school and other forms of formal education should be limited to the transmission of knowledge and should not be responsible for other forms of social competence. As Lind (1985) points out, it is greatly expected, based on the common sense, that the role of the university regarding students is to develop "critical thinking, judgment ability and social responsibility" and contribute to the improvement of professional skills. However, there seemed to be up to that time an incongruence between what was expected in terms of socialization effects of higher education and empirical findings. Lind summarizes these research finding: "Contrary to this normatively charged expectation, however, some researchers have concluded that university socialization has no effect on such skills, or at least no general and lasting effect" (p. 173).

After decades of research, it is not only expected that the university experience can foster cognitive development, but also the ability to apply reasoning in discussing social, political and ethical questions. Pascarella and Terenzini (2005) in a more recent review of researches over the last decade present accumulated evidence supporting the impact of higher education on moral development.

According to the reported research (among others, Jakob, 1957; Feldman & Newcomb, 1970 and Newcomb, 1974), in earlier decades university education was based on core concepts such as "attitude" and "attitude change". Lind (1985) argues that the classical concept and method of attitude change research impose great limitations on the investigation of the socialization effects because they do not take into consideration a central

aspect of the moral development and educational outcomes — the cognitive aspect of attitudes and its structural transformation (p. 174). Furthermore, the "classical attitude concept" is based on assumptions that pose several problems of interpretation and confronts us with paradoxes and ambiguities [1].

Pascarella (1991) seems to share Lind's criticism of the problems with the research in higher education focusing on changes occurring among students. In an article about important methodological issues concerning the nature of the higher education research, he also questions the efficiency of the "change" approach. According to him, "Disaggregating the maturation effects from those of college attendance is almost impossible in the literature of hundreds of studies focusing on change (. . .)" (p. 455). He calls the attention to the limitations of this approach, that either ignores other important factors that would affect students or does not detect them.

The paradigm change in cognitive psychology brought about different ways of understanding morality by introducing the assessment of both affective and cognitive aspects of personality. They are able to distinguish more than the affective changes, showing that university experience fosters students' moral competencies.

Piaget's and Kohlberg's theories have an approach which is different from those just mentioned regarding the meaning of the concept "development". They include in the concept, besides its affective aspect, a dimension of a cognitive, structural change. For moral research from the cognitive point of view, development refers to affective and cognitive aspects of personality and changes are understood as changes in the structure of a person's moral-cognitive system. As a consequence, the research based on cognitive psychology provides a more suitable framework for the investigation of socialization aspects that were earlier ignored or impossible to detect. This happened in spite of the fact that the cognitive approach made use of classical attitude regarding research methods. For Lind (1985), "socialization is not, as the theories of adaptation assume, simply a change in behavior due to altered environmental conditions, but a differentiation and integration of attitudes and norms (. . .)" (p. 181). According to Kohlberg (1969), the organism's interaction with the environment structure leads to this differentiation.

Some methodological limitations of both the cognitive and the attitude change approaches need to be pointed out. Previous investigations about attitude change represented important contributions to the research in education, such as the ones about attitude tests with suitable methods for large-scale research. However, as Lind (1985) showed, student development or attitudes should not be assessed only by focusing on the affective aspect of attitudes. From Lind's point of view, the affective and cognitive aspects belong to the same behavior or attitudes and, as such, could be separately investigated but understood

[1] More about this topic can be found in Lind, 1985; and Pascarella & Terenzini, 1991).

as a whole.

The cognitive-structural theory has contributed to providing more comprehensive methods for assessing the changes and for reordering them in the attitude systems. But, their methods, particularly the clinical and experimental interview, are not suitable for large-scale research as the classical attitudes tests were. This problem is intensively addressed by Lind (1985), who developed the Moral Judgment Test (MJT) as a measurement of both affective and cognitive aspects of moral judgment competence. The MJT, as a quantitative measure is, in addition, suitable for large scale research: "As our own research demonstrates the assessment of structural change is not bound exclusively to interview methods but can also make use of attitude measurement, provided that it has been revised in such a way as to render the assessment of the cognitive aspect possible" (p. 191).

2.6.1 The interaction of environment and maturational aspects

Considering the research context presented in the previous section, Lind (2000) states that the connection between education and moral development was, in fact, first pointed out by Piaget and Kohlberg. However, in their writings, they were not explicit about the role of education in the moral development. The cognitive theory emphasized moral behavior and cognitive process, and, in particular, Kohlberg defended the thesis of the importance of education programs for moral development. However, the maturational approach of Kohlberg and Piaget, conceiving development as having a logical, invariant sequence, underestimated the importance of education which aims fostering moral development. This question was also addressed by Rest (1988). According to him, "Cognitive development theory does not emphasize the impact of formal education nor lead us to look for a strong relationship between education and moral judgment". Piaget (1970) emphasized cognitive disequilibrium as the major condition for structural change, and Kohlberg (1969) emphasized role taking as the major condition for change in moral judgment" (p. 185). Although Kohlberg and colleagues collected additional data in their studies about educational characteristics, those were analyzed only later. It was then that they pointed out to the direction of the importance of education.

Indicators of a consistent correlation between higher education and student's changes can be found already in works published in the late seventies, as reported in Nucci and Pascarella's review (1987). Pascarella (1989) conducted a longitudinal study assessing the effects of higher education on the development of critical thinking comparing groups of high-school seniors who, later, attended or did not attend college. Results suggest that extension and quality of student engagement in social and intellectual experiences are, as a whole, the main determinants of the impact of the university on the moral development of students. Critical reviews comparing research on moral development and

higher education during the last decade have been presented by, among others, Pascarella & Terenzini (1991, 2005), Nucci & Pascarella (1987), Lind (2000, 2003) and King & Mayhew (2002).

The two most significant longitudinal studies in detecting the effects of college particularly on moral reasoning are undertaken by Lind (2000a) who studied university students in Europe and by Rest (1986) and Rest & Thoma (1985) in the United States.

Rest and Thoma's (1985) longitudinal study investigated the relationship of moral judgment development to formal education. They used a same-age, non-college comparison group, a research pattern adequate to address the maturation/education influence on moral development. King and Mayhew (2003) especially take this study as a turning point in this area of investigation in the United States: "From this study, we can conclude that participation in higher education makes a substantial contribution to development in moral judgment beyond that attributable to age alone" (p. 250). This finding is even more emphasized in Rest's later studies (1986). He considers years of formal education as being "one of the most consistent correlates of development in moral judgment" (p. 106). Bok (1988) supported this correlation and concludes that "young people (...) usually cease to develop their powers of moral reasoning when their formal education comes to an end" (p. 44).

In their recent review, Pascarella and Terenzini (2005) concluded that student participation in college and university environments are, indeed, associated with increases in moral development levels. The higher levels of moral development observed in college, which include a shift from conventional to postconventional thinking, is shown to be more than the result of a maturational effect. This correlation persisted in a context of statistical variables such as level of pre-college moral reasoning, intelligence, maturation, social status and occupational level. Effect sizes of about 0,77 of a standard deviation (28 percentile points) were found when comparing the average advantage of higher semester students to first semester ones, in a meta-analysis conducted by Pascarella and Terenzini, based on data from McNeel (1994a). They analyzed thirteen cross-sectional and nine longitudinal studies on moral development using the Defining Issues Test.

Gielen & Markoulis (1994) presented an extensive review of cross-cultural research using the DIT with age/education reports. They investigated fifteen studies in fourteen different countries, and found support for the universality of the Kohlbergian stages. In particular, the postconventional morality was found to be the "underlying archetype" common to people from different cultures and times. In addition, the authors found that higher education is associated with higher moral judgment.

Most American researchers used the Defining Issues Test (DIT, Rest, 1975) for assessing moral judgment. The DIT (Rest) is a widely used instrument, but, in contrast to the

Moral Judgment Test (MJT, Lind, 1985), it does not assess the affective and cognitive aspects separately. As seen in previous sections, Lind (2000) criticizes the efficacy of the DIT and other methods that do not allow one to look separately at both aspects as a measure to differentiate education and socialization effects.

It is noted by Nucci and Pascarella (1987) and Lind himself, however, that studies using different measuring instruments (even in cross-national research including Australia, Iceland, the Philippine Islands, Hong Kong, Korea and Germany) resulted in the same evidence about the impact of higher education on moral development.

2.6.2 Which features of higher education facilitate moral development?

Affective aspect Pascarella and Terenzini (2005) concluded that after decades of research, this question is still not satisfactorily explained. Studies by Rest and Narvaez (1991) and Mason and Gibbs (1993) suggest that a learning environment that offers challenge, stimulation and perspective taking is strongly connected with higher moral development levels among students. However, the research conducted in Germany seems to be a step ahead as compared to studies mostly conducted in the United States. Studies conducted by Lind and colleagues based on the work of Sprinthall (1993) present more evidence about the importance of the learning environment characteristics for moral development. Other considerations on this topic will be made in the following sections. Some other findings from Pascarella and Terenzini (2005) can be summarized as follows:

1. As far as the institution type is concerned, public universities showed a more modest growth compared to the higher gains from small, private liberal arts colleges. The least growth was observed at bible colleges. As for the relationship between major fields of study and moral development, little consistent evidence was found. In the following section using the MJT, however, it will be shown that medical students score lower levels of moral competence at the end of their study than students from other areas (Lind, 2000).

2. Development in principled reasoning is more effective when dilemma discussion and personal development are combined with "direct instruction in philosophical methods of ethical analysis". Ethics courses showed a very modest positive effect, but not sufficient to permit any final conclusions. More positive and consistent correlations were found by integrating moral and ethical decision making (dilemma discussion) in a general education curriculum.

3. In general, it was found that role-taking opportunities in extra-curricular/peer involvement have positive impacts on moral development. However, diverse intellectual and social environment exposure (low-density peer networks) fosters greater growth than high-density, more homogeneous networks (fraternities and sororities). Additional evidence suggests that fraternity or sorority membership may, in fact, inhibit growth in moral development and produce a negative correlation between moral and ethical behavior. Off-campus learning programs (e.g., studying abroad) offer more growth whereas off-campus employment has a negative influence. Students with service-learning experiences (e.g., practical, community projects) integrated into course content providing opportunities for reflection (discussion and writing) show, on the other hand, more cognitive gains, more civic responsibility and less social prejudice than students without opportunities for reflection.

Cognitive-affective aspects: Empirical findings using the Moral Judgment Test (MJT, Lind) In Europe, a particularly important study brought consistency to previous American findings about the role of education in moral development. An international longitudinal study of university students' socialization and personality development — the so-called FORM project ("Diplomés de l'Université: leur *Form*ation et leur Conception de la Vie") — was conducted in five European countries (Austria, Germany, the Netherlands, Poland and Yugoslavia) during the years 1972 to 1985. Approximately 5000 university students from different areas of study and from the first to the thirteenth semesters took part in this investigation, a cooperative project that was conducted in Germany by Peisert, Bargel, Dippelhofer-Stiem, Framhein, Lind, Sandberger and Walter (Bargel & Peisert, 1982).

In Germany, 844 subjects participated in the longitudinal study. They were students from first and fifth semesters studying in the following areas: medical school, German languages, economics, natural sciences, technical sciences and social work. Results (Lind, 1986) show, among other things, that: a) the indicator of the affective aspect, which is the preference hierarchy for the six Kohlberg stages, is found to be the same as found in the original studies conducted in the United States; b) the cognitive aspect of the moral judgment detected by the MJT showed a development over the years, demonstrating a positive correlation with years of education.

Focusing on German studies, Lind (2000) presents a comparison among different investigations using the MJT, with a total of around 2000 subjects ordered according to their education level. Results derive from Wischka (1982), Heidbrink (1985), Oser (see Lind, 1989b) with students from vocational schools, and Lind (1987 and 1978) with high school and university students. In spite of the limitations of comparing studies that were done

in different circumstances and times, the results pointed a clear correlation between years of formal education and moral competence as measured by the MJT.

Another study in Germany tried to find which elements of the learning environment would be responsible for the effect of education on moral judgment competency. Based on the concepts of role-taking and guided reflection, Herberich (1996) conducted an investigation with 271 university students. She reported on the role-taking and guided reflection opportunities inside and outside the university and divided them in four different categories (the instrument will be explained in detail in the methodology section). The instruments were: a) a questionnaire of opportunities for role-taking and guided reflection at the university constructed for this purpose (Lind, 2000b) and b) the Moral Judgment Test (MJT). Results support the "Bildungstheorie": students at higher semesters present higher levels of moral competence when compared to students at first semesters. The role-taking opportunities such as conducting an autonomous seminar, and being a research/teacher assistant or a tutor in combination with guided reflection opportunities, presented a higher correlation with levels of moral judgment competence (Herberich, 1996).

However, the correlation between role-taking and guided reflection opportunities with moral competence was not effective (and also not statistically significant), although a positive tendency was found. Two aspects are relevant in the understanding of those results. First, the instrument design. It might be that relevant opportunities of role-taking and guided reflection were not assessed by the questionnaire. Second, the scoring system using median dichotomy has to be reviewed. It allows a symmetric distribution of scale values, but on the other hand, it makes it difficult to interpret the results. They cannot be replicated as they depend on that particular sample. In addition, it is difficult to understand the meaning of the resulting categories, as they differ from item to item.

For those reasons, further studies are necessary. Results point to the direction that moral judgment competence is not directly related to a particular learning content, but rather to the possibility of offering students combined opportunities for taking responsibility (role-taking), along with reflection, feedback and discussion (guided reflection) (Lind, 2003).

2.7 Cultural issues and moral competence

Does moral judgment have a universal cognitive basis? This is a highly controversial question in developmental theory. Kohlberg defends a universalistic basis for the moral cognitive structure. As mentioned before, this position is supported by Snarey and Keljo (1991) provided that some reformulation of Kohlberg's stages is undertaken. Snarey and Walker (Walker et al., 1995) who have worked with cross-cultural research, defend other ways of thinking about morality, and go beyond Kohlberg's scheme to include

religious and communitarian aspects. In any case, Kohlberg's theory has been criticized for containing possible cultural biases. It is argued that the theory originated from a specific cultural background which leads to ideologically-biased assumptions about moral cognitive development in other cultures.

According to Lind (1986), those biases could be related to the way moral judgment competence was measured (particularly with Rest's DIT) before the introduction of the Moral Judgment Test. The MJT, as opposed to other instruments to assess moral judgment development, "was designed to assess individual's preferences for moral principles independent of their competence to apply those principles. In addition, the MJT measures judgment competence in relationship to the subject's own moral principles" (p. 220).

Rest himself (1999) admitted that "there are immense problems with cross-cultural research using the original DIT and the DIT in translation" (p. 129) and was "surprised" by the consistent results supporting the universal claim. Those problems are related to the DIT's nature and should be further investigated.

Lind (2003, 2005) reported rigorous validation studies undertaken in order to secure the cross-cultural validity of the MJT, which had been translated into more than twenty languages. Cross-cultural validity was defined and evaluated in accordance with the following three scientific requirements applied to the psychological research in the moral area: quasi-simplex structure, hierarchical preference order and affective-cognitive parallelism. (For details, see Lind 1985, 1986, 2003). The studies present data supporting the cross-cultural validity of the MJT. Findings support the underlying theory for the universality of moral judgment and behavior (Lind 2002b) and show evidence of a preference for post-conventional moral reasoning independent of culture. In addition, moral competence was positively correlated with level of education. The translated versions, including the Portuguese/Brazilian version used in this study (Bataglia, 2001), proved to be highly consistent with the four above mentioned criteria.

The cultural differences found in the studies using the MJT should be examined focusing on cultural contexts. Although it seems unlikely that they would be connected to instrument measurement errors or lack of semiotic equivalence, this hypothesis has also to be considered. University students, in particular, assessed by the MJT in a longitudinal study in five East and West European countries (Lind, 1986) show remarkable differences in their moral competence — the ability to apply moral principles to their judgment behavior. Moral orientations, on the other hand, seem to have a universal cognitive basis. Lind describes his findings as follows: "Although there are great differences between these cultures in regard to the student's choice of the right course of action in a given dilemma, there is an astonishing universal consensus about the moral principles that should be applied to the behavioral dilemma" (p. 230). More studies in this area are needed to

address national differences in moral judgment competence.

2.7.1 Pseudo-regression and regression in students moral competence levels

Is a regression in moral development possible? So far, regression has been found only among students who left high school and did not go further with their education, or else, among medical students at the end of their studies. Would this particular finding be confirmed in a cross-cultural study in three different fields of study? This section contextualizes the regression phenomenon according to Kohlberg (pseudo-regression) and Lind.

Previous results from studies in Germany were also very useful in understanding what Kohlberg called "pseudo-regression" in moral judgment levels. According to the longitudinal study conducted by Lind (1985a) and colleagues with university students, no regression in the cognitive structure of moral competence was found. Actually, moral competence progressively increased with the years of study for all students with exception of the medical students.

It was confirmed, however, what had been already observed by Kohlberg and Kramer (1969) with the MJI (Moral Judgment Interview) and interpreted as being a *pseudo-regression*. In some students, a minor regression was detected that related only to the affective aspect of the moral judgment. As data from Kohlberg also showed, this regression was limited to students who presented higher levels of moral judgment competence and was interpreted by Lind (2000) as being a result of a methodological problem. Studies conducted by Kohlberg and colleagues using the MJI led to the conclusion that it was impossible to consider the affective and the cognitive components separately from the moral judgment. With the MJT (Lind), it was possible to conclude that this was not a real regression. As showed in the MJT results, the moral judgment competence in university students progressively develops.

Results of this study were compared to those of other investigations using the MJI, (Colby & Kohlberg, 1987) and the DIT (Rest, 1979) instruments [2]. It is interesting to observe a continuously progressive development of moral judgment competence with students over their university years in all areas except for the medical students in Germany. Those data will be reviewed in more detail in a later section.

Lind criticizes Kohlberg's genetic/maturational developmental theory and, particularly, the assumptions (Kohlberg, 1984; Rest, 1986) that moral development occurs in an invariable progressive sequence and is age related. If this hypothesis were true, it would mean

[2]For methodological details, see Lind, 2000.

that the progressive levels of moral competence maturationally achieved by a child would always be held in the internal repertoire and could not be lost. Longitudinal studies by Kohlberg (Colby & Kohlberg, 1987), Rest (1979) and Lind (1993) supported this idea. However, a more detailed analysis of those three studies showed a methodological problem: the subject sample was limited to persons who succeeded in finishing high school or entering college.

Therefore, the question remained open as whether the progressive process of moral development reported in the studies was really due to maturation processes (an inborn component) as Kohlberg stated, or due to the effects of continuing in education.

Lind (2000a) conducted a cross-sectional survey with adolescents in Germany who graduated in what could be called middle school (in German, "Hauptschule" or "Realschule"). The subjects were 780 students, whose ages ranged from 14 to 21 years, who, instead of continuing high school and going to university, applied for vocational schools where they had the option, for example, of working four days and going to school one day a week. The results of this investigation clearly show that the tendencies encountered in previously mentioned studies could not be interpreted as being an effect of maturation only (age). Levels of moral judgment competence of subjects investigated gradually decreased after completing their reduced form of education. Their peers, who continued their studies, showed important gains even after graduation.

According to Pascarella (1991), "Cognitive development is directly influenced by the intellectual stimulation of your work and also by college attendance. The research has had a hard time showing the net long-term, direct impact of college attendance on measures of cognitive development. However, we do know that young people who graduate from college, compared to those whose education ends with high school, tend to enter jobs with higher levels of ideational content and social interaction. So, high school graduates not only miss the direct intellectual stimulation of college but also tend to hold less intellectually stimulating jobs" (p. 457).

In these and in other studies presented by Lind, moral competence was measured by the Moral Judgment Test (MJT, Lind, 1985). A small increase of the C-score (Competence score) up to the age 15 and up to the last year of study was detected, followed by a continual decrease in those levels. In the ages between 19 and 21, dramatic regressions in moral competence levels were detected.

A study by Niemczynski et al. (1988) with the MJI, compared subjects from Poland, from several age levels (20 up to 80 years old), different education levels and both genders. Results confirmed Lind's findings. The study showed that age alone has no impact on moral development. In addition, even in male subjects between 70 and 80 years of age the correlation between education and moral development was found. This finding, according to

Lind (2000) represents an indirect education effect, influencing the professional and social life of a person which, at the same time, demands and fosters moral judgment competence. In the female groups, ages 20 up to 35 years, the same education effect was found. However, women of higher ages showed a regression in their moral judgment competence levels. Lind (2000) proposes that in further studies the hypothesis be tested that those women probably gave up their careers in favor of the family life and, therefore had fewer chances of engaging in activities that would offer opportunities for discursive processes. A study conducted by Plitzko-Gries (2002) seems to partially support this hypothesis. She investigated the impact of professional life and education on moral competence and compared her data with Niemczynski's. She concluded that both factors seem to interact. Professional life seems to foster moral competence in subjects with higher educational levels. No effect from professional life on moral competence was found among subjects without higher education. In particular, she found that women in the older group (40–65 years old) showed a decrease in their moral competence levels, independent from their status, either professionals or housewives. According to Plitzko-Gries, a possible explanation would be that the decreasing levels of moral competence among housewives were a result of a lack of discursive processes, whereas the professional women were negatively influenced by their working atmosphere.

Summarizing, several studies have shown that moral competence followed an upward tendency in its development among higher education students. Contrarily, a regression of moral development was found in subjects that interrupted their formal education earlier, and/or went to vocational schools or joined the work force. Those findings reinforce the education theory proposed by Lind (2000a) and run counter to Kohlberg's and Piaget's postulates of an invariant forward and upward development. Their claims about the impossibility of a regression (Kohlberg, 1984) were not scientifically supported.

According to Lind, environmental stimulation through educational processes are necessary for the development of a consistent moral competence level. We should expect a decrease in the moral competence levels in cases where subjects do not have such stimulation and they do not have the opportunities of engaging in discussion and reflection.

2.7.2 Higher education systems in different cultures: Brazil and Germany

The aim of this section is to offer an overview of the Brazilian and German higher education systems in order to better situate their most significant differences and particularities. The heterogeneous character of the Brazilian higher education system is particularly relevant for this investigation. Competitiveness of a higher education institution in Brazil is

an important variable to be controlled when moral judgment competence is analyzed. Universities in German-speaking countries seem, on the other hand, to be more homogeneous when compared to Brazilian ones. Additional information about educational politics in Brazil is offered based on the researcher's personal experience with the Brazilian system.

2.7.2.1 Higher education in Brazil

Higher education in Brazil has a very short history (Schwartzman, 2003). Until the early 19th century, there were no higher education institutions. They began to be established after the Portuguese king moved to Brazil in 1808 and Rio de Janeiro became capital of the Portuguese empire. Until the late 19th and early 20th century, there were few institutions (a school of engineering, two medical schools and two law schools), and these were controlled by the national government. After the founding of the Brazilian Republic (1889), other institutions were created, particularly at the state of São Paulo, where private institutions began to appear and where the first university, the University of São Paulo, was established (1934). The Federal University of Rio de Janeiro (then the University of Brazil) was established in 1939 and, in the early 1940s the Catholic Church began to create its own private universities, the first of which was in Rio de Janeiro.

In the 1940s and 1950s, federal universities were created by the government on the basis of political considerations. At that time, the number of private institutions began to grow, making a shift from the initial religious and community character-based institutions into profit-oriented institutions. The private institutions responded to an increasing demand for higher education, but were seldom controlled for quality.

The higher education system in Brazil, which was originally based on European models, underwent a major transformation after important university reforms in 1968, when modifications coming from the American higher education system were incorporated.

Mostly as a result of the continuing growth of the private institutions, the Brazilian higher education doubled its size in the 1990s (Schwartzman, 2004). During that decade, the number of students rose from 1.5 million to more than 3 million. According to the latest survey report from the Ministry of Education, the number of students had risen to almost 3,9 million by 2003 (Inep, MEC, 2005). Two thirds of these students attended private institutions. Some institutions tried to adapt to innovations resulting from the university reforms, but most of them fell far below the reform ideals of university models based on academic research and full-time academic profession. They generally concentrate only on teaching, not research, and hire only part-time, not full-time, tenure track teachers or professionals.

Competitiveness in the Brazilian higher education system

As a result of this reform process, the higher education system in Brazil is very heterogeneous. The higher education institutions are divided not only into public and private sectors but fall into different categories: universities, university centers (where no research is done), as well as isolated or integrated faculties. Each type of institution has a different degree of autonomy. Public universities have, however, full academic autonomy. The degrees the different institutions offer are legally equivalent and the duration of programs is similar. As an example, psychology takes 4 to 5 years; business administration 4 years and medicine 6 years. Nevertheless, there are significant differences in the quality and quantity of the programs offered.

The public universities, as well as the competitive private ones, established the "numerus clausus" as a criterion for enrollment. In order to be admitted in a public higher education institution, students need to complete an eleven-year secondary education, and also to pass competitive entrance examinations. It is observed that students from privileged families who attended better private secondary schools have a greater chance of being admitted than those coming from public secondary schools.

Brazilian public universities are acknowledged as having one of the most respected and the largest post-graduate programs in Latin America. They are responsible for more than 90% of the research done in the whole country and responsible for the docent academic qualification with masters, doctoral and post-doctoral programs (Neves, 2004; Schwartzman, 2004).

As an example of the competitiveness in the public and some private universities, in 2001 there were more than 50 applicants per place for medical school. For other areas, the number of applicants varied from 10 to 35 per place. In the private institutions for areas other than medicine, and in some cases, journalism and psychology, there are about 1.7 applicants per place. In most instances, it might be enough to have a secondary school degree and pay fees and tuitions to be admitted (Schwartzman, 2004). Based on this information, it seems that a better way to understand the differences among institutions would be to know whether they are competitive or not.

Higher education in Brazil reaches 9,8% of the population in the 18–24 age group. Independent of age, this number rises to 16,6% (Schwartzman, 2004).

Transformations in the Brazilian higher education in the last decade

Almost thirty years after the 1968 university reforms in Brazil, the country continues to go through a series of reflections and discussions about the higher education system. Authors

like Cunha (1998), Favaro (1999), Mancebo (2004), Marcovitch (1998), Schwartzman (2004) and Trindade (1999) all call for a discussion on the future of the Brazilian university.

Over the past few years and particularly at the present moment, there is a great debate about education and scientific politics in the country. In the beginning, this debate seemed to be proposed by the government, more specifically by the National Institute of Education Research (INEP), an organ of the Ministry of Education (MEC).

In 1996, a National Assessment of Courses for Brazilian higher education (Exame Nacional de Cursos, known as "Provao") was introduced. The objective was to assess the quality of higher education programs through questionnaires and tests applied to students. This was part of a comprehensive system of assessment of higher education, which was comprised also of an assessment of institutional resources, including among other items infrastructure, mission, pedagogical projects and academic personnel. This assessment was performed by the National Commissions of Specialists during institutional visits. In this way, the Ministry of Education had information to support decisions about renewal or denial of accreditation of higher education institutions.

The annual assessment was heavily criticized by teachers' unions, students' associations and many institutions. Criticism was chiefly directed at the way tests were elaborated. In particular, the fact that the standards were the same for the whole country was severely criticized. Other criticisms were more general, like, for example, those directed at the concept of evaluation measures in education.

Those criticisms must, of course, be understood within the political context of Brazil during the years of the presidency of Fernando Henrique Cardoso (1994–2002). Cardoso was a former sociology professor at the University of São Paulo who had strongly opposed the Brazilian military regime that ended in 1985. As Minister of Economics, he was able to bring inflation under control and implement important fiscal adjustments. However, during his eight-year presidency, he was accused of following the neoliberal orientations from the International Monetary Fund and was heavily criticized by the Higher Education Teachers' Association, the National Student Union and organizations of public universities employees. According to Mancebo (2004), in the 1990s, the neoliberal political and economical reformulations lead to fiscal adjustments, progressive privatization of public services and companies in general, and the diminishing of state control. As a consequence, there was a decrease in public investments in health, culture and education generally and higher education in particular.

In spite of those criticisms, some direct consequences of those assessments began to be observed. Members of the public became more informed about the quality of the institutions, and provided with this information, they could decide which institution would be best to attend. Private institutions used the results for marketing strategies and even

aimed at higher levels of quality. Apart from the severe critics, the annual assessment helped to foster the discussion about the quality of Brazilian higher education through various academic levels.

Schwartzman (2004) has analyzed statistical information about higher education in Brazil, resulting from the Ministry of Education (Inep, 2002) and Brazilian Institute for Geography and Statistics, and offers a reinterpretation of the common assumptions about its expansion. This has an important implication for higher education policies. Schwartzman explains first the conventional view, which claimed that the expansion of the higher education in Brazil represented a broadening of its social basis. Consequently, students from lower backgrounds would have access to the university. This would lead initially to a decrease in quality.

Nevertheless, according to Schwartzman, a direct relation between the expansion of the last decade and the broadening of the social basis was not observed. Referring particularly to the question of public versus private universities, the opposite of the conventional assumption was observed. There are great similarities between public and private institutions, although the public ones tend to have higher proportion of better quality programs. Both offer good and bad quality programs. In addition, they show a similar student social profile. The private sector, contrary to the previous assumptions, tend to have more students from the upper income segments.

Still, according to him, "any compensatory policy in higher education should be balanced with the observation that the most important problems of inequity are in basic education, where a large proportion of students never complete their degrees, and remain functionally illiterate (OECD 2001, 2003)" (p. 186). He defends the view that "higher education grew by incorporating persons from the same pool of candidates as before, instead of opening to other social sectors" (p. 175). The "cultural capital" (here defined as the years of education of family members older than 18 years old) "of students in the public and private sectors is rigorously the same" (p. 176). New information on enrollments showed, thus, a more complicated picture than expected. The privatization of the university system did not contribute to reach students from less privileged families.

Schwartzman (2004) offers possible explanations for this phenomenon. First, only a small number of students finish secondary education. In 2002, only about 40% of the 15–17 age cohort was enrolled in secondary education. Second, the "numerus clausus" for enrollment in higher education institutions, which results in competitive entrance tests.

In 2002, the Labour Party's Luis Ignacio "Lula" da Silva, won the presidential elections. He criticized the educational politics of the former government harshly. A new approach to education policies and higher education assessment was announced in December 2003, as well as new university reforms.

The new higher education assessment was legally created in April 2004. A comprehensive approach known as "Sinaes" (National System of Higher Education Assessment) replaced the former methods and is based on three categories: institutional evaluation; program/courses evaluation and students performance (Enade). The "Sinaes" aims to assess all aspects that permeate those three categories. These include teaching, research, continuing education, institutional administration and social responsibility among others. The assessment is also performed by the INEP (National Institute of Education Research).

Seven topics are addressed in the ongoing discussion of university reform: the role of the public versus private institutions; university autonomy; management; structure and functioning; access and permanency at the university; programs and contents and assessment and evaluation.

The fact that the higher education system in Brazil promotes a process of social exclusion is at the core of the discussions in the present government. One of the aims is the democratization of the access to higher education. Among the suggestions for opening the universities to the minorities is the creation of quotas for citizens of African descent who are less economically privileged.

In October 2004, the Ministry of Education (MEC, Inep) made public the first statistical results of an assessment, part of the National System of Higher Education Assessment ("Sinaes"). From the total number of students, 3.887.771, 29,2% are enrolled in public and 70,8% in private institutions. There are 1.859 higher education institutions, 11,1% public and 88,9% private. The number of students who begin a higher education program is 1.539.859, but only 528.102 completed their education. Still, this represents an increase of 13,3% in relation to the previous year. The southeast region, which is the sample area of the present research, enrolls 49% of the total number of students in the country and is home for 42% of the country's population.

According to the former Minister of Education, Tarso Genro (2005), the data collected help to support the higher education policy of expanding the state/public universities. It confirms, also, the unbalanced distribution of institutions in the country, which are concentrated in the industrial, more developed areas. These results also highlighted the need to implement evening programs in public universities as well as the need to reassign student places that are not being currently occupied.

Significant results of the ongoing discussions and recent changes can at the present (2006) only be partially observed.

2.7.2.2 The university system in Germany

Germany has a complex education system. This section provides brief and general information with the purpose of situating higher education in the context of the present research. The German higher education system varies from practice-focused universities of applied sciences (Fachhochschule) to classical university training and vocational academies. The traditional core of higher education institutions is however, the university. Universities try to follow Humboldt's principles of "indivisibility of research and teaching". In this way, students are supposed to engage in strict academic work which makes the length of undergraduate studies higher than in other countries (the length is similar in Brazil though). Traditionally, students achieve a "Diplom" degree after five years of study (for Psychology and Business Administration), or the "Staatsprüfung" after six and a half years (Medical school). Since 1998, as a result of the Bologna-Processes, students have the option of dividing their studies into "Bachelor" and "Masters" aiming at an international equivalence.

A particular characteristic in German universities is that students should work more independently in the organization of their courses. They are expected to have more flexibility and to be able to pursue independent and individual research interests.

There are different requirements for being admitted into higher education institutions. In order to be eligible for a place at a university in the areas of study focused in the present research, it is theoretically required a twelve to thirtheen-year school system (Gymnasium) plus concluded final exams (Abitur). However, due to the growing expansion of applicants, specific requirements were introduced (numerus clausus) in areas with more competition. Students applying for medical schools, in particular, go through special selection processes and the places are distributed according to a quote system.

Since the beginning of the seventies', students do not have to pay tuition at the universities in Germany. The other costs related to the study years are financed through different sources (private, state). Students are supposed to be available full-time for their studies, having small jobs during breaks and vacation periods. Several discussions are, at the present moment, going on about the implementation of a tuition politics for the universities. It seems that discussions are going in the direction of increasing the competition among different institutions, and that would indirectly contribute to improving university levels of efficiency. The question seems to be how those changes would influence moral judgment competence development.

2.8 Gender differences in moral development

This issue provoked a major controversy in developmental psychology. In spite of some studies having shown differences in the moral reasoning levels achieved by men and women (Gilligan, 1982, 1984), reviews presented by Walker (1984), Snarey (1985) and Thoma (1986) found no significant gender differences in moral reasoning levels across the life span. The small differences encountered favoring men were interpreted as not being related to gender, but rather, to education level and occupation. Walker (1984) concluded from his review that "the moral reasoning of males and females is more similar than different" (p. 687). A study from Gielen and Miao (2000) with students in Taiwan also contradicted Gilligan's claims. However, men and women seem to have a different way of approaching moral issues and making their decisions. Carol Gilligan's research focuses on gender differences and provided a major critique of Kohlberg's work.

Kohlberg's theory of moral reasoning was heavily criticized as being based on "male" values. According to Gilligan (1982), Kohlberg's studies were biased against women. He had, in fact, conducted his studies with male subjects only. She argues that the moral experiences of men and women are radically different. Morality can be considered as having two major dimensions: justice, related to human rights, and care, related to a sense of responsibility in relationships. Kohlberg's theory focuses on morality of justice and, according to Gilligan, is more prevalent among boys, who tend to think more in terms of abstract justice and fairness.

Gilligan argues that sex differences are a result of different experiences men and women have in their childhood. As part of the identity process development, boys would individuate from the mother, separating themselves from the original attachment relation with her. This process would bring up concerns about inequalities, power relations and fairness. Girls, on the other hand, have a distinctive developmental process, experiencing a continuous attachment to their mothers. Inequality issues do not seem to be of much importance when compared to issues of care and responsibility to specific people.

Gilligan's studies with women suggested that a morality of care and responsibility could take the place of the morality of justice as Kohlberg proposed. From her point of view, while a morality of justice and rights is based on equality, a morality of care is premised in nonviolence. Those two types of morality would demand two distinct approaches that could be potentially connected. Men would view moral conflicts as a question of rights and justice (not to be unfair with others). Women, on the other hand, would view contextual considerations-relationships and attachments in a social situation — as central issues in their moral reasoning.

Kohlberg (1986) defended himself from those critics stating that "Gilligan's (1982) thesis

of the gender relativism of our justice stages, as well as the assumptions of anthropological relativists, cannot be said to falsify our thesis of the universality of our moral stages and our moral categories" (p. 511). Further research has shown evidence that moral reasoning does not occur following Gilligan's gender lines, but rather, males and females reason based on both aspects, justice and care. However, her work has made an enormous contribution because it added another component (care) to the studies on moral reasoning. Until then, most researchers were concentrated on a morality of justice (Kohlberg, 1984; Haste, 1986).

The Moral Judgment Test (MJT) is said to distinguish affective aspects (moral orientations) from cognitive aspects and, as such, can be useful in contributing to this discussion by investigating gender differences in those two aspects.

Chapter 3

Research questions and hypotheses

3.1 Research questions

The present research aims to answer to the following question of a general nature which will be at a later stage operationally specified: What is the influence of the independent variable learning environment on the development of moral judgment competence in higher education students in Brazil and in German-speaking countries? The variable learning environment will be defined in the line of the following sub-variables: role-taking and guided reflection (defined in section 2.5). The researcher proposes for this investigation, that learning environment be distinguished into *favorable* (some opportunities of role-taking and guided reflection) and *unfavorable* (no or insufficient opportunities).

In order to conduct this investigation, the following specific questions are considered relevant:

1. Is moral learning in adulthood, in general and specifically, through higher education, possible at all?

2. Is it possible — through the Moral Judgment Test (MJT) — to distinguish and measure affective and cognitive aspects of moral in the same behavior as the dual-aspect theory claims? If this possibility exists, are those aspects (affective and cognitive) predictable? Does moral development have a universal basis as Kohlberg (1976) proposed? Or else, according to the prognoses from the dual-aspect theory, is moral development in its cognitive aspect (moral judgment competence) influenced by cultural factors, while the affective aspect only (moral orientations) follows the universal hierarchical preference defended by Kohlberg (1976) and Rest (1973)?

3. The education theory ("Bildungstheorie") suggests that moral judgment competence is affected by the education system in each culture. This position claims

that cognitive differences relate more to the quality of education and learning environment than to specific culture characteristics. Do particular factors such as type of institution and area of study play a role in moral competence development? Pascarella and Terenzini (2005) found little consistent evidence for a correlation between area of study and moral development. Herberich (1996) found that the interaction between area and year of study with moral judgment competence was not statistically significant. The effect area of study for moral judgment competence was statistically significant. Lind (2000) suggests that area of study has almost no impact on moral judgment competence.

4. Is moral development regression possible? How does this relate to learning environment? Regression in moral competence levels is recognized by the dual-aspect theory (Lind), contradicting Kohlberg's position about this issue (1969). The earlier findings with medical students in Germany (Lind, 2000) need further investigation. This is one of the leitmotives of the present work.

5. Are there gender differences in moral judgment competence levels when the variable education is controlled? Lind (2000) suggests that gender has no impact on moral judgment competence.

3.2 Hypotheses

The following five hypotheses were formulated to investigate the previously proposed questions:

Hypothesis 1: Moral learning in adulthood is possible. More specifically, a *favorable* learning environment in higher education fosters the development of moral judgment competence

According to the dual-aspect theory and in opposition to the affective approaches, years of education associated with students activities involving role-taking and guided reflection (*favorable* learning environment, defined in section 1.1.5) foster the development of moral cognitive competence. It is the implicit assumption that moral development continues in the adulthood and can be further fostered through education. The indirect learning of moral competences defended by Lind's theory contradicts, in particular, the social intuitionist approach (Haidt, 2001) which defends the idea that moral judgment is caused by moral intuitions (affections) and not by moral reasoning (cognition).

In order to accept the mentioned hypothesis, the competence to apply moral principles consistently when judging arguments (moral competence) should be higher[1] among students who report a *favorable* learning environment (i.e. an environment which affords role-taking and guided reflection opportunities). According to this hypothesis, students who report an *unfavorable* learning environment (neither opportunities for role-taking nor for guided reflection) should present no increases in their moral competence levels over the years (C-scores should remain stable or decrease).

Hypothesis 2: The affective and cognitive are both aspects of moral behavior and can be measured simultaneously, although independently from each other

Lind (1985) claims that the MJT detects differences between moral competencies (cognitive aspect) and moral orientations (affective aspect). The dual-aspect theory proposes that affective and cognitive aspects of moral judgment should be researched as a whole. They can be measured simultaneously, yet independently through the use of the Moral Judgment Test (MJT). As Lind states: "Affective attitudes have their own cognitive structure which is distinguishable but not separable from their affective contents (p. 190). This claim contradicts affective approaches in which no difference between affective and cognitive aspects are made, and the component model (Rest), which considers affection and cognition as components that cannot be distinguished.

Kohlberg's (1969) parallelism thesis defended the idea that affective and cognitive developments do not configure distinct realms. They would develop, thus, in parallel. According to the dual-aspect theory, the fact that they correlate does not indicate that both are inborn components or that both are socially determined. Also, it does not indicate that a parallel development necessarily occurs. Instead, it considers both the affective and the cognitive as the basis for moral development and it suggests that one aspect can help the other to develop. The affective relation to moral principles is necessary for the development of the cognitive structure of moral behavior. It is suggested that adolescents need to reach a preference level for higher moral stages before they are able to apply them consistently in moral discussion and dilemma resolution. This means, the moral-affective development is a requirement for the moral-cognitive development, or moral judgment competence.

In the MJT, the affective aspect is defined as moral principles or orientations according to the six moral stages as defined by Kohlberg (1984). The cognitive aspect (moral competence) reflected by the C-score relates to the ability to make moral judgments

[1] See item 2.4: in this case, difference between C-scores is higher than 5 points.

taking into consideration the moral quality of the arguments instead of other factors, such as opinion conformity.

Based on the previous premises, the hypotheses regarding affective-cognitive parallelism to be tested in this section of the present study are the following:

Hypothesis 2a: Affective-cognitive parallelism

There is a positive correlation between affective and cognitive aspects of moral judgment.

According to this hypothesis, the MJT index for moral judgment competence (C-score) has a statistically significant correlation with subject's attitudes towards each of the six moral stages. The more consistent students are in using moral principles in their judgments, the more positive is their orientation towards higher moral development stages.

Hypothesis 2b in regard to the affective aspect

There is a positive correlation between the affective aspect of moral development and the hierarchical preference of moral stages.

The moral attitude towards the Kohlbergian stages is defined as the subject's mean acceptability of the arguments of a specific stage. Higher stages should be preferred comparatively to lower stages. It is expected that the hierarchical preference remains the same irrespective of culture.

Hypothesis 2c in regard to the cognitive aspect:

The measure of the cognitive aspects reflected by the MJT C-score is independent from the affective aspect.

The cognitive aspect accounts for the different structures used to produce moral judgment. The C-score reflects how consistently a person makes use of moral principles to judge arguments that are in agreement and in disagreement with his/her own opinion. The degree to which a person is moved by the moral quality of the arguments evaluated reflects the degree of moral competence. Individual consistency in making judgments reflects a structural characteristic.

Hypothesis 3: Cultural differences influence moral judgment competence

More specifically, the hypothesis to be tested is that findings regarding differences in moral judgment competence levels are not only confined to a particular culture, but also, reflect

an aspect of moral behavior involving a cognitive structure that can be fostered (moral judgment competence) regardless of culture.

The following variables are controlled to test this hypothesis: a) culture, b) year of study, c) area of study and d) type of institution (Brazil). Participants with similar education characteristics are compared in different cultures.

It was observed in previous studies that individuals from different cultures showed the same preference order of moral stages. However, most studies were concentrated on the sequence of moral stages and did not focus on conditions of development. Different levels of development were not the center of the investigations (Lind, 2000). In addition, research was conducted with a limited number of participants. Previous studies using interview methods were sometimes not conducted by the researcher him/herself, but by a translator. As a consequence, scoring errors would be expected. Finally, it has to be mentioned that those studies made use of methods in which affective and cognitive aspects were assessed together in a scale. This makes it difficult to differentiate possible cultural effects. One cannot say whether the difference found was due to a difference in competence levels or to specific cultural values. The present investigation will take into consideration those methodological difficulties.

According to the dual-aspect theory, different cultures show the same stage preference order but they present different levels of moral judgment competence. One may thus conclude that moral ideas and principles are important but not decisive to produce mature moral behavior. Lind's (2000) criticism on Kohlberg's method refers to the fact that in order to achieve higher levels on Kohlberg's moral scale, a person has to use higher stages to solve the dilemma. One cannot say that higher stages are most adequate to solve a moral dilemma without considering cultural particularities. Kohlberg attempted to address this problem by using a universalist moral philosophy. However, Lind claims that the MJT is an alternative to measure moral judgment competence that presupposes internal criteria for the solution of a moral conflict. These criteria are defined as not being conventionally and as being culturally neutral. Thus, the MJT measures moral judgment competence independent from the moral orientation (stage) preference.

It is, thus, expected that the MJT C-score varies between the cultures which will be here investigated. However, as moral judgment competence has a cognitive foundation which reflects a structural similarity (measured by the MJT), results from different cultures can be compared. Lind (2005) defends the position that the differences encountered seem to be more attributable to the quality of education than to the quantity (years) or to the culture itself.

Hypothesis 3a regarding years of education

Moral judgment competence is not fostered simply by years of higher education, but rather, by years of education in a *favorable* learning environment.

In previous studies, years of education were associated with increases in moral development levels (Pascarella, 2005; Rest, 1986). Rest considered years of formal education as being "one of the most consistent correlates of development in moral judgment" (p. 106). This suggests that maturational theories cannot explain moral development. Impacts on moral development were found to be the effect of other variables than age. This reinforces the educational theory but does not respond to the question about whether years of higher education alone could be responsible for those gains in moral development.

In the present investigation, we test the hypothesis that, in order to foster moral competence development, education has to present certain qualities and characteristics no matter which culture is involved. It is expected that MJT C-scores of students in the final years are not higher than the C-scores from students in the first years, if the effect of the learning environment is not controlled. This means that no correlation between C-scores and year of study is expected to be found. Rather, it is expected that there will be a correlation between C-scores in higher semesters in students who report opportunities of role-taking and guided reflection.

Hypothesis 3b regarding areas of study

Moral judgment competence scores from undergraduates differ by area of study at the beginning of their studies. Students from different areas present different patterns of moral judgment competence development along the years.

Different areas of study represent also different learning environments. It is expected that the MJT C-scores reflect differences in moral competence levels related to areas of study and to learning environment characteristics and qualities.

Hypothesis 3c regarding competitiveness of the institution

Students from competitive institutions have in general higher moral judgment competence levels than students from non-competitive ones.

Due to the already mentioned heterogeneous characteristic of the education system in Brazil, the variable of competitive and non-competitive higher education institutions was controlled in this investigation. As one consequence of the heterogeneity, it is expected that competitive institutions offer more opportunities of role-taking and guided reflection

than the non-competitive ones. Another consequence, students from competitive universities would have more chances to be encouraged in their moral competence development.

Hypothesis 4: Regression in moral judgment competence levels is possible

Lind's "Bildungstheorie" (2000a) runs counter Kohlberg and Piaget's postulates of invariant forward and upward development. In Kohlberg's view, regression is not possible except in specific situations such as mental deterioration, for example. Lind's theory, in contrast to the socialization and maturation theories, claims that regression in moral competence levels can occur when individuals are not stimulated enough by education. This hypothesis is investigated in the present study, considering the following variables: culture, year and field of study and type of institution.

The dual-aspect model emphasizes the role of various factors present in the education process (parents, school, higher education) fostering moral competencies. Kohlberg's theory defends the interaction between individual and environmental structures, but at the same time, emphasizes the genetic, maturational characters of development expressed, for instance, by the invariant sequence of moral stage development and by his rejection of an eventual regression within the development process. Those points are reviewed in Lind's "Bildungstheorie". According to this theory, the development of moral competence progresses as long as it is fostered by systematic and coherent forms of education. It is expected that moral competence levels stagnate or even decrease (regression) when individuals are not stimulated in their discourse processes by the educational and by the social context.

Hypothesis 5: There are no gender differences in moral judgment competence and moral orientations when the variable education is controlled

Former studies reporting gender differences (Gilligan, 1982) were criticized because the variable education was not controlled (Walker, 1984, Lind et. al., 1987). Gilligan's thesis of gender relativism in Kohlberg's moral stages focusing on morality of justice is rejected by Kohlberg (1986). Kohlberg defends the universality of moral stages and categories, irrespective of gender.

With the MJT, it is possible to analyze affective and cognitive aspects separately and in this way, through the control of the variable education, investigate whether there are gender differences regarding both aspects: moral orientations and moral judgment

competence. According to hypothesis 5, there are no statistically significant differences between men and women in the moral judgment competence levels and in the patterns of hierarchical preference of moral stages (moral orientations) when the variable education is controlled.

3.2.1 Hypotheses overview

Table 3.1 presents the hypotheses for the present study testing the controversial assumptions of the dual-aspect theory (Lind 2000) in relation to other affective or cognitive theories.

Hypotheses	Other theories	Dual-aspect theory
H1: Moral learning in adulthood (higher education) is possible.	Learning is not possible; change as a result of social pressure.	Moral learning is possible: learning environment fosters moral judgment competence
H2: Affect versus cognitive versus dual-aspect (cognitive-affective)	No differentiation can be made between affection and cognition.	Affective and cognitive as aspects of moral behavior: simultaneously but independently measured.
H3: Cultural factors on moral judgment competence	Attitudes (fundamental moral principles) are different between cultures.	Different cultures show the same preference order for moral stages, but differ on moral judgment competence.
H4: Regression in moral development	No regression is possible unless under specific circumstances. Kohlberg and Piaget: invariant forward and upward development.	Regression in moral judgment competence results as a lack of adequate educational stimulation.
H5: Gender differences in moral development.	Gilligan: gender relativism in Kohlberg's moral stages.	No gender differences when variable education is controlled.

Table 3.1: Hypotheses overview.

Chapter 4

Methodology

4.1 Research design

First-year students were compared to those in their final year, in competitive and non-competitive higher education institutions in São Paulo and Rio de Janeiro, Brazil and in universities in Germany and Switzerland. The students were drawn from three different fields of studies: psychology, business administration and medical school.

4.1.1 Dependent variables

a) Cognitive aspect: Moral judgment competence was measured by the Moral Judgment Test (MJT) and expressed by the C-score, as proposed in Lind's dual-aspect theory (2000). The MJT was used in its original German version for the German speaking subjects. The MJT version used in Brazil was translated into Brazilian Portuguese using the back-translation method (Bataglia, 1998). The validation study with the Brazilian sample was designed and evaluated in accordance with the following four scientific criteria applied to the psychological research in the moral area (Lind, 2003): quasi-simplex structure, hierarchical preference order, affective-cognitive parallelism and correlation with education. The translated and validated version used in this study (Bataglia, 2001) proved to be highly equivalent as far as the four above mentioned criteria are concerned [1].

b) Affective aspect: The Kohlbergian six stages of moral orientation were also measured by the Moral Judgment Test (MJT).

[1] For details see Lind 1985, 1986, 2003.

4.1.2 Independent variables

1. Learning environment: This variable was measured by the questionnaire for assessing opportunities for role-taking and guided reflection in the university (ORIGIN/u, Lind & Schillinger-Agati, 2002). The ORIGIN/u was developed in Germany, adapted to Switzerland as well as translated and adapted to the Brazilian higher education reality (see pilot study section) [2].

2. Culture: Brazilian ($n = 618$) and two German-speaking countries ($n = 531$).

3. Field of Study: Psychology ($n = 362$), business administration ($n = 383$) and medical school ($n = 404$).

4. Type of institution: Competitive and non-competitive institutions (for Brazil only). Competitive institutions are those which have more than ten applicants (students) per place for the entrance tests. Non-competitive ones have less than 1,7 applicants per place (Schwartzman, 2004).

5. Time for learning: Changes between the first and final year (eighth to eleventh semesters) of study.

6. Gender: The sample of undergraduates included 679 women and 469 men.

This research design aimed to achieve as much variance in the independent variable learning environment as possible. The following elements were considered relevant: a) to compare Brazilian and German cultures through the choice of three areas of study; b) to be able to attend to the diversity of higher education institutions in Brazil (competitive and non-competitive); c) to include medical students to verify whether previous findings with moral competence regression still take place, and d) to verify the impact of the learning environment on moral competence through a cross-sectional study (first and final years).

The option for a cross-sectional study was based on the assumption that a comparison of the results between the first and final year students would be more suitable to test the study hypotheses. The present researcher is aware of the limitations and disadvantages of a cross-sectional study when compared to a longitudinal one. However, a longitudinal study would not be feasible in a context of a dissertation research. In addition, previous longitudinal studies (Lind, 2001; Schwartzman, 2004) have shown difficulty in controlling possible selection mechanisms responsible for students' drop-out rate. Experience shows that the number of students who participate in the investigation decreases in the final years. A longitudinal study would be more efficient if a follow up with drop-out students could be made (Pascarella, 2001). That would also be extremely difficult in this case. Results from this study should, then, be interpreted within the limitative dimensions of this context.

[2] For a questionnaire sample see Appendix.

4.1.3 Instruments

A) Moral judgment Test (MJT)

As seen in previous sections, the Moral Judgment Test (MJT) was created by Lind for the purpose of assessing simultaneously moral judgment competence and moral attitudes. It derives from his dual-aspect theory of moral judgment and it is based on cognitive-structural and experimental approaches to psychological measure (Lind, 2004).

The MJT is an instrument that can be scored by computer and can be used for large scale research and evaluation studies. The MJT is an N = 1 multivariate behavioral experiment which means that the measurement of the moral judgment competence is based on the assessment of individual pattern of behavior rather than on the sample pattern. The cognitive aspect is measured through the MJT C-score (competence score) and the affective aspect through the persons' moral attitudes towards the six stages of moral development (Kohlberg). More details are offered in the data analysis section.

The concept of moral judgment competence, as previously introduced, is considered to be one of the core moral abilities. It incorporates the ability to solve moral problems or dilemmas by using ethical discourse and demands the ability to consider and evaluate arguments presented by a person independent of whether those arguments are in agreement or not with someones' own opinion.

In order to assess this ability, the MJT confronts the subject with two moral dilemmas: the mercy-killing dilemma from Kohlberg's MJI (Colby et al., 1987) and the worker's dilemma from the theater play and novel "Stellenweise Glatteis" (Max von der Grün, 1975). The MJT assesses the ability of a subject to judge the arguments pro and con the decision made from the protagonist, irrespective of the subject's own opinion about that dilemma. In addition, it provides measures of the subject's attitudes in regard to the six Kohlbergian stages of moral development.

Both dilemmas were chosen because they were found to confront subjects with highly demanding moral principles. In fact, findings from previous research show that subjects prefer a stage 5 moral reasoning for the worker's dilemma and a stage 6 for the one dealing with mercy killing (Lind, 2000a).

Subjects have to first make a decision about the dilemma in question. However, the decision made is not used for scoring. Actually, it prepares the subject for the *moral task* which is the particular feature of the MJT: the subject has to be confronted with counter-arguments. They have to judge six arguments in favor and six against the protagonist's decision. As Lind (1998) explains: "While subjects' reactions to arguments that favor their own opinion indicate the preferred level of moral reasoning for solving

the dilemma, their reactions to counter-arguments tell us something about their ability to use a particular moral level consistency when judging other peoples behavior" (p. 5).

B) ORIGIN/u questionnaire: Opportunities for role-taking and guided reflection in college and university students

Focusing on the importance of role-taking and guided reflection opportunities for the development of moral competence at the university level, the first version of the ORIGIN/u was created (Lind, 1996). The ORIGIN/u as an instrument was developed based on the work of Dippenhofer-Stiem (1983) and on cross-national longitudinal research into higher education by Bargel and colleagues (Bargel, T. et al., 1982). In the past few years, the ORIGIN/u has been used in many research projects about learning environment and moral development. (Patino, 1999; Hernandez & Moreno, 2001 and Herberich, 1996). The instrument involves the learner as a source of information. At the same time, it has an "objective" component: "The learning environment is assessed through the individual learner but focuses on objectively assessable attributes of the learning environment" (Lind, 2000, p. 14).

The questionnaire was originally created to assess the learning environment (role-taking and guided reflection) in four domains, including curricular and non-curricular activities considered as important to the moral competence development (syllabus-bound activities, semi-syllabus activities, extra-syllabus activities and non-syllabus activities). Table 4.1 describes examples of the inquired role-taking and guided reflection activities in each of the four domains of the learning environment. In addition to those items, some other information was gathered in order to gain a better picture about the students' background. Since the present investigation concentrates on learning environment experiences, a detailed comparison between learning and working environments is beyond the scope of this study. However, undergraduate students in Brazil, particular those from non-competitive institutions, might have a professional experience before and during their studies. As explained previously, their age group is, therefore, expected to be higher than those from competitive university students. For those reasons, the variables age, working experience, as well as role-taking and guided reflection at the work place were thought to be important for this research. Furthermore, students informed their parents' level of education and nationality as well as the type of high school attended in Brazil.

Considering the importance of religion in the understanding of moral judgment competence, particularly after the pilot study in Brazil, the questions: a) How religious you consider yourself to be? and b) Which is your Religion? were included in the ORIGIN/u questionnaire with the objective of gathering information that could be useful for future studies in this area.

Domains of learning environment	Role-taking opportunities - examples	Guided reflection opportunities - examples
1. Syllabus-bond	Institutional assessment, syllabi suggestions, discussion chairing, research on self-chosen topic, elaboration and implementation of practical projects, paper presentation.	Professors, instructors, experienced students available for support, discussion, feedback and advice.
2. Semi-syllabus	Research assistant and tutor for basic and advanced courses: self-defined work, problem-solving.	Professors, instructors, experienced students available for support, discussion, feedback and advice. Other information sources available.
3. Extra-syllabus	Active membership or position in university council, student organization, religious, political, cultural and sports groups at the university.	Professors, instructors, experienced students available for support, discussion, feedback and advice. Other information sources available.
4. Non-syllabus	Active member or position in political, religious, sports and cultural groups outside the university.	Experienced members, friends or other information sources available for problem discussions.

Table 4.1: Design of the ORIGIN/u questionnaire for assessing role-taking and guided reflection opportunities in the higher education environment.

4.1.4 Instrument development: Pilot study in Brazil

Considering that the instruments were created and developed in Germany, the present author defended the idea that a pilot study with Brazilian university students should be conducted. Through the pilot study, a more consistent basis for the main research development was achieved. The cross-cultural characteristic of this research is a topic that deserves special attention. The main question in the elaboration of the pilot study was: Can the European and American previous findings about the connection between moral competence development and education be generalized to developing countries like Brazil? More specifically, are the research instruments, originally developed in Germany, also adequate to the Brazilian reality?

Goals

One purpose of the pilot study was to develop a valid cross-cultural Portuguese version of the ORIGIN/u questionnaire based on the original German version. In addition, it was necessary to verify the adequacy of using the MJT combined with the ORIGIN/u with a Brazilian sample. Furthermore, the pilot study should bring more information helping to define the main study research sample.

Pilot study participants and procedure

The total number of participants was 58. After the first data collection, some modifications were made and the modified instrument was administered to the second sample a couple of months later. The participants were (in part one of the pilot study) 41 university students from human sciences (psychology, law, physical education, education) in their first and final year, from public and private institutions in São Paulo and Rio de Janeiro. In the second part, participants were a group of 17 psychology students who were enrolled in the final year at a private institution in São Paulo. The instruments were administered in the classrooms. Students filled out the MJT and the ORIGIN/u questionnaire in the Portuguese version. This procedure was followed by a discussion which resulted in instrument improvement.

Cultural characteristics observed in the pilot study

After the translation and adaptation, the ORIGIN/u was submitted to the judgment of seven Brazilian researchers who offered valuable suggestions for its improvement. In addition, the discussions about possibilities for the Brazilian data collection resulted in a procedure that was also used in the German-speaking countries: the classroom administration method. Sending questionnaires by mail or distributing them to be filled out later, as is commonly done in Germany (Herberich, 1996 and Bühn, 1995) was not recommended. Lakatos & Marconi (1991) state that the questionnaire return rate is not more than 25% in Brazil. This presented severe implications for our research design. This process is much more time and money consuming. On the other hand, it has the advantage of providing a degree of control over the test situation and setting and so avoid factors that could interfere with the results, such as time-pressure, misunderstanding about the objectives of the research, and so on.

The MJT C-scores for the pilot study group was 15,6 (standard deviation = 11,6). At first view, those results seemed to be very low if compared to the former results from Bataglia (1998), who also used undergraduates in Brazil (C-score = 40,6). After controlling for possibilities such as test instruction comprehension, motivation or fatigue, it was concluded that new written instructions for the MJT were necessary, although test administration or motivation did not seem to have influenced the performance in those cases. Different groups had similar C-scores before and after the instructions modifications.

By calculating C-scores for each dilemma of the MJT (an alternative from the usual C-score calculation), it was observed that the C-scores from the euthanasia dilemma were much lower than those from the workers dilemma. In all previous studies in Europe, the C-scores were similar for both dilemmas. The hypothesis is that this would reflect

a cultural characteristic from Catholic countries interfering with moral competence in topics where the Church takes a strong instance. The approach of this question deserves, however, a further investigation.

Results from the pilot study were also useful to detect an important variable to be controlled in the main study: competitiveness of the institution, a result of social differences and politics of education in Brazil. The results from Bataglia reflected a competitive university reality and the pilot study low MJT-C-scores were related to a non-competitive one.

As a consequence, one of the questions to be answered with the present study is whether students from competitive institutions maintain their higher levels of moral judgment competence over the course of their studies and whether non-competitive institutions contribute to improve the moral judgment competence level of their students. The following sections report about the main study procedure, participants and analysis.

4.2 Procedure

The participants filled out both questionnaires, the Moral Judgment Test (MJT) and the ORIGIN/u, in the classrooms. The appointments for the data collection were previously scheduled with the instructors, in order to avoid situations that could interfere in the test performance — for instance, filling out questionnaires before or after an examination, or else, under time pressure. The present author was herself in charge of the data collection in the three countries without needing the help of a translator, which is commonly one of the difficulties in a cross-cultural research. Due to the large number of groups involved, help from research assistants and colleagues was also necessary.

Students were given a brief oral explanation about the research and were asked for their collaboration (see cover letter). The return rate was around 90%. The decision about not using the mail system in all countries had the advantage that the data collection followed a uniform procedure which represented an important variable in the context of a cross-cultural research.

Numerous personal contacts with university directors and instructors were made, during which occasions the nature, the purposes of the research were clarified and more information about bureaucratic procedures including appointments for the questionnaire administration were exchanged. Thanks to those contacts, the data collection was successfully concluded.

4.3 Participants

The sample consisted of 1149 participants from three areas of study: psychology ($n = 362$), business administration ($n = 383$) and medical school ($n = 404$), in the first ($n = 719$) and final ($n = 430$) years of their study. There were 618 participants from Brazil and 531 participants from two German-speaking countries (Germany and Switzerland); 679 women and 469 men. Tables showing detailed sample distributions are presented in the following sections.

4.3.1 Brazil

The participants in Brazil consisted of 618 higher education students, from seven different institutions in São Paulo and Rio de Janeiro. Table 4.2 shows the participants distribution in the three areas of study, in their first and final years.

Brazil	Psychology		Business administration		Medical School	Total
	comp	non comp	comp	non comp		
First year	84	67	47	77	66	341
Final year	75	64	40	64	34	277
Total	159	131	87	141	100	618

Table 4.2: Participants in Brazil, according to area, year of study and type of institution: competitive (comp.) and non competitive (non-comp.).

Due to the heterogeneity of the Brazilian higher education system, three procedures were adopted in an effort to achieve a representative sample: 1) Higher education institutions should be located in São Paulo or Rio de Janeiro, two of the largest cities in south-eastern Brazil; 2) Institutions are categorized into competitive and non-competitive ones for the psychology and business administration programs. All medical schools are considered competitive, and therefore, in this sense homogeneous in comparison to the other programs; 3) In order to balance possible disadvantages of a cross-cultural research and to better account for institutional differences, the study with psychology and business administration was subjected to exact replications (Triandis, 2000).

4.3.2 German-speaking countries

The German-speaking participants consisted of 531 students from five universities in Germany and Switzerland. The original plan for the data collection included only universities in Germany. The idea of including a German-speaking university in Switzerland, located at the border between those two countries, was extensively discussed with other

researchers who are familiar with both higher education contexts. The decision was based on the assumption of existing similarities among German-speaking universities. Those similarities would overcome the differences, which, in the opinion of this group, were not larger than the differences found between two German universities or between two universities in Brazil. In this way, the denomination "German-speaking" is used in this investigation and there is no mention of a particular university, whether in Germany or in Switzerland.

German-speaking	Psychology	Business Administration	Medical School	Total
First year	31	116	231	378
Final year	41	39	73	153
Total	72	155	304	531

Table 4.3: German-speaking participants according to area and year of study.

4.4 Data analysis

The data were analyzed according to a quantitative approach as follows:

4.4.1 The Moral Judgment Test (MJT)

The MJT scores, in agreement with the dual-aspect theory of moral behavior (Lind, 2000), are classified in two categories: cognitive and affective.

The cognitive aspect: the MJT C-score The C-score (competence score) obtained from the MJT scoring in its cognitive aspect reflects the participant's ability to judge arguments according to their moral quality rather than whether or not they are simply in agreement with the arguments. The C-score ranges from 1 to 100. A score 1–9 is considered to be low, 10–29 medium, 30–49 high and above 50 very high. Those categories are based on Cohen's proposal (1988). The MJT is conceived as a multi-variate experiment with a 6x2x2 dependent, orthogonal design. The C-score is computed based on a multivariate analysis of variance (see Appendix).

The affective aspect: moral attitudes Another feature of the MJT is the assessment of the affective aspect which is reflected through a person's attitudes toward each of the six levels of moral reasoning (Kohlberg, 1984). The preference for the six stages is scored in order to test the criteria of hierarchical order of stages and affective-cognitive parallelism (Lind, 2004). The affective aspect is, therefore, not reflected by the C-score. The cognitive aspect as measured by the MJT is independent of a person's moral attitudes.

4.4.2 The ORIGIN/u Questionnaire

The ORIGIN/u questionnaire aims to assess reported levels of opportunities for role-taking (RT) and guided reflection (GR) in four different domains of learning environment: syllabus (S), semi-syllabus (SS), extra-syllabus (ES) and non-syllabus (NS). The scoring procedure [3] created categories indicating the mean of opportunities in each of the four role-taking and guided reflection domains: RTS; RTSS; RTES; RTNS; GRS; GRSS; GRES and GRNS. Further categories were therefore created using as criteria a minimum of role-taking and guided reflection opportunities. These criteria are based on the work of Sprinthall, Reiman & Thies-Sprinthall (1993) who defend the position that isolated, not balanced, attempts at action (RT) and reflection (GR) are inefficient.

For the purposes of data analysis, the present author suggests that the learning environment be classified as *favorable* or *unfavorable*. A person who reported less than 25% of the total opportunities for each level is interpreted as having "no" opportunities and, thus, considered as having an *unfavorable* learning environment. The category *favorable* learning environment, which means some opportunity of role-taking and guided reflection, supposes the minimum of 25% of participation in each level from the total number of possibilities contemplated by the ORIGIN/u (see Appendix). Table 4.4 presents the categories derived from this procedure. In addition, a "high-involvement" with the *favorable* learning environment is achieved when students report a mean of participation higher than 80% (RTGR $>$ 1,6). A "low involvement" is, thus, represented by RTGR $<$ 1,6.

ORIGIN/u — Categories for reported opportunities for role-taking and guided reflection	
Unfavorable learning environment (noRTGR)	Neither role-taking (RT) nor guided reflection (GR)
Favorable learning environment (RTGR)	Minimum 25% role-taking and minimum 25% guided reflection

Table 4.4: *Favorable* and *unfavorable* learning environments.

4.4.3 Determining effect-sizes

In order to compute statistical significance, one and two-way analysis of variance were performed. As required by the *Publication Manual of the American Psychological Association* (2001), in addition to probability levels, effect-size information is reported. An alpha level of 0,05 was used for all statistical analysis.

Effect-sizes measure the magnitude of a treatment effect independent of sample sizes. In this way, an attempt is made to overcome disadvantages from the statistic significance

[3] See Appendix for scoring algorithms.

tests. The difficulties in dealing with and interpreting statistical results remain, however, a challenge for the social sciences.

There is a wide range of formulae to measure effect-sizes. In this study, the relative and absolute effect-sizes are calculated according to Lind (2004). The relative effect-size correlation measure is the coefficient r. It is calculated from a single degree of freedom F test value or from Cohen's *"d"* (Cohen, 1988). The coefficient *"d"* is defined as the difference between means, $M_1 - M_2$, divided by standard deviation of either group when the variances of the two groups are homogeneous. The d value does not present an upper or lower limit and, for this reason, the correlation coefficient r is preferred to make the effect-size interpretation more precise. The r varies from $-1{,}0$ to $+1{,}0$. The maximum effect-size is at $+1{,}0$ and a maximum negative effect is at $-1{,}0$.

The relative effect-sizes r are interpreted as being small ($> 0{,}1$), medium ($> 0{,}2$) and large ($> 0{,}3$).

Those measures however, depend on an assumption of homogeneous variances. There are different opinions about cases where the variance is not homogeneous. According to Lind, the absolute effect-size can be calculated to overcome those problems if: a) no measurement or sample errors are observed; b) the observable characteristic presents no short-timing alterations. The absolute effect-size for the purposes of this investigation is the difference between the means of two measures. For the MJT, which has a 100 point broad scale, the following interpretation is recommended: Effect $> 10\%$ of scale = very significant; effect $> 5\%$ from scale = significant.

As advocated by some statistics publications, a test for homogeneous variances on the sample data (Levene-test) was carried out before each individual analysis was performed. If results from the Levene-test were not significant, they confirm the assumption of variance homogeneity in the samples analyzed. Those results are not reported, except for a few significant analyzes that could bring eventually doubts about the legitimacy of the analysis of variance performed. The present author is aware, however, about the limitations of such procedures. One inference about the variances requires a normal distribution of errors which presupposes a normal distribution of scores. The fact that this investigation deals with relatively large samples help to deal with cases where those assumptions are not true. As Hays (1963) states, standard tests for variance homogeneity are "extremely sensitive to any departure from normality in the population" . In this way, "inferences made about means that are valid in the case of normal populations are also valid even when the forms of the population distributions depart considerably from normal, provided that the n in each sample is relatively large" (p. 381).

4.5 Methodology and Ethics

The methodology for research conduction and data handling fully respects the Ethic Guidelines for Research in Social and Educational Contexts (Bassey, 1995) and is in accordance with the ethical standards of the American Psychological Association.

Chapter 5

Results

The main research question of this study was: "What is the relationship between learning environment opportunities-particularly role-taking and guided reflection — and moral competence development among Brazilian and German-speaking higher education students"? Results are presented according to the specific questions and hypotheses formulated for this investigation.

5.1 Hypothesis 1: Moral learning in adulthood is possible through a *favorable* learning environment in higher education

Results from the analysis of the interaction between learning environment and moral judgment competence — as measured by the ORIGIN/u and by the MJT respectively — are presented in this section.

In order to accept hypothesis 1, moral judgment competence (C-score) should be in the final years higher (absolute effect-size > 5 points) among students who report a *favorable* learning environment. Students who report an *unfavorable* learning environment should present no increase at their moral judgment competence level over the course of the years.

Regarding the test of this hypothesis, at first, the independent variables learning environment and years of study are controlled irrespective of culture. Second, the variable culture is included, followed by the variables areas of study and type of institution. Finally, the correlation between role-taking and guided reflection opportunities with moral judgment competence in each of the four domains of the learning environment is presented.

Results confirm hypothesis 1 for both cultures. Although they support the assumptions of the dual-aspect theory, they bring new aspects to be considered. They confirm the

importance of a *favorable* learning environment for the development of the moral judgment competence. Furthermore, findings reveal that the degree of involvement with the learning environment is an important factor to be considered. Only high-involvement in role-taking and guided reflection activities during the study years influences moral judgment competence. Groups which presented a positive correlation between learning environment and moral judgment competence are the ones with a mean of participation (RTGR) higher than 1,6 ($> 80\%$). There is, in addition, a statistically significant interaction between opportunities for role-taking and guided reflection and years of study with moral judgment competence in both cultures analyzed. Students from an *unfavorable* learning environment not only do not increase their moral judgment competence levels as predicted, but in most cases decrease them. Not enough opportunities for role-taking and guided reflection lead to regression of the moral competence levels in almost all groups investigated in both cultures. A particular situation among medical students is detected. Regression in their moral competence levels occur dramatically in *unfavorable* learning environments. In addition, no increase in moral competence is observed among medical students who report *favorable* learning environment.

5.1.1 Moral judgment competence by learning environment and year of study irrespective of culture

Length of study in itself does not seem to explain increase in moral judgment competence. On the contrary, a regression in moral judgment competence levels at the final years of study was observed in some groups of students, suggesting that the quality of learning environment is more important for moral development.

Students who report a *favorable* learning environment have higher moral judgment competence. Figure 5.1 depicts moral judgment competence levels from all participants in both cultures by years of study and quality of learning environment (*favorable and unfavorable*). Moral judgment competence levels from students who report a *favorable* learning environment are higher than those from students who report an *unfavorable* one. Undergraduates from a *favorable* learning environment present at the end of their studies, rather significant gains in their C-scores. They score 15,2 points higher than their peers who report an *unfavorable* environment.

Years of study in *unfavorable* learning environments leads to regression of moral judgment competence levels. Undergraduates who report a *favorable* learning environment show higher moral competence levels (C-score) in their final study years.

However, the absolute effect-size[1] = 1,7 indicates a tendency and cannot be considered significant. On the other hand, students who report an *unfavorable* learning environment showed significant decreased moral judgment competence levels in the final years: absolute effect-size = 11,8.

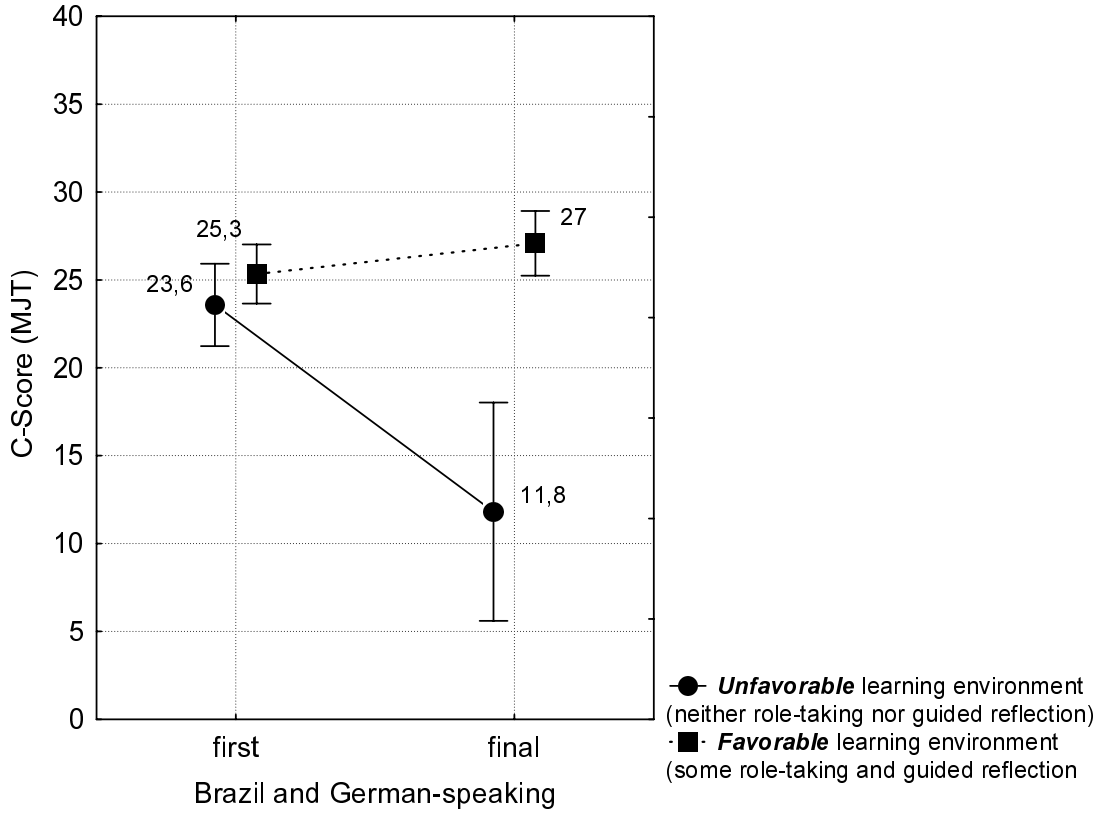


Figure 5.1: Moral judgment competence by year of study and learning environment.

Results from a two-factor analysis of variance show that the interaction between the variables years of study and learning environment is statistically significant ($F(1,908) = 14{,}73$, $p = 0{,}00$) with a moderate effect-size ($r = 0{,}22$). This means, there is a positive correlation between years of study and learning environment with moral judgment competence.

A Levene-test was performed in order to test for homogeneity of variances on the sample data in question. At first view, its significant result brings doubts about the legitimacy of the analysis of variance for this particular situation. However, as pointed by Hays (1963), the practical efficiency of those standard tests is questionable. Hays advocates that the analysis of variance should be performed without a preliminary test of variances, as long as the sample size is not too small. The significant results from the Levene-test in this case seem to be originated by the large n in each sample of this investigation, which on the other hand, reassure the robust character of the analysis of variance. In spite of that,

[1] Absolute and relative effect-size measurement is reported in the data analysis section.

a Levene-test is performed before each analysis of variance in this section. The cases with significant results are discussed.

5.1.2 Moral judgment competence by culture, learning environment and years of study

Hypothesis 1 is also confirmed when cultures are separately analyzed. The quality of the learning environment is more important than the length of study in Brazil and in German-speaking countries. In order to test a correlation between moral judgment competence with the variables learning environment and years of study, a two-factor analysis of variance for each culture in separate was conducted. Results show that the interaction between the variables learning environment and years of study are, in both cultures, statistically significant with a moderate effect-size. In Brazil: $F(1,492) = 6{,}12$, $p = 0{,}01$, $r = 0{,}19$. In German-speaking countries: $F(1,412) = 7{,}44$, $p = 0{,}01$, $r = 0{,}23$. These correlations can be interpreted as follows:

Students in *unfavorable* learning environments show decreased moral judgment competence levels in their final years of study in each culture investigated. Figure 5.2 shows a significant regression in moral judgment competence levels in the final years of study among students who reported an *unfavorable* learning environment. The absolute effect-sizes are very significant: 13 for German-speaking countries and 10,5 for Brazil. These findings confirm and complement those reported on item 5.1.1.

Would *favorable* learning environments over the course of the years prevent regression of moral judgment competence? Figure 5.2 shows no regression in moral judgment competence among students who reported a favorable learning environment. It seems that opportunities of role-taking and guided reflection could whether foster the development of moral judgment competence (as seen in German-speaking countries) or prevent the regression from taking place (as seen in Brazil). In other words, they would make moral competence levels remain constant.

5.1.3 Area of study does make a difference

Psychology students in both cultures share similar characteristics in regard to moral development and learning environment. They show higher moral judgment competence levels in association with higher involvement with role-taking and guided reflection opportunities. Medical students' learning environment seem to be related whether to a regression or to a stagnation of moral judgment competence.

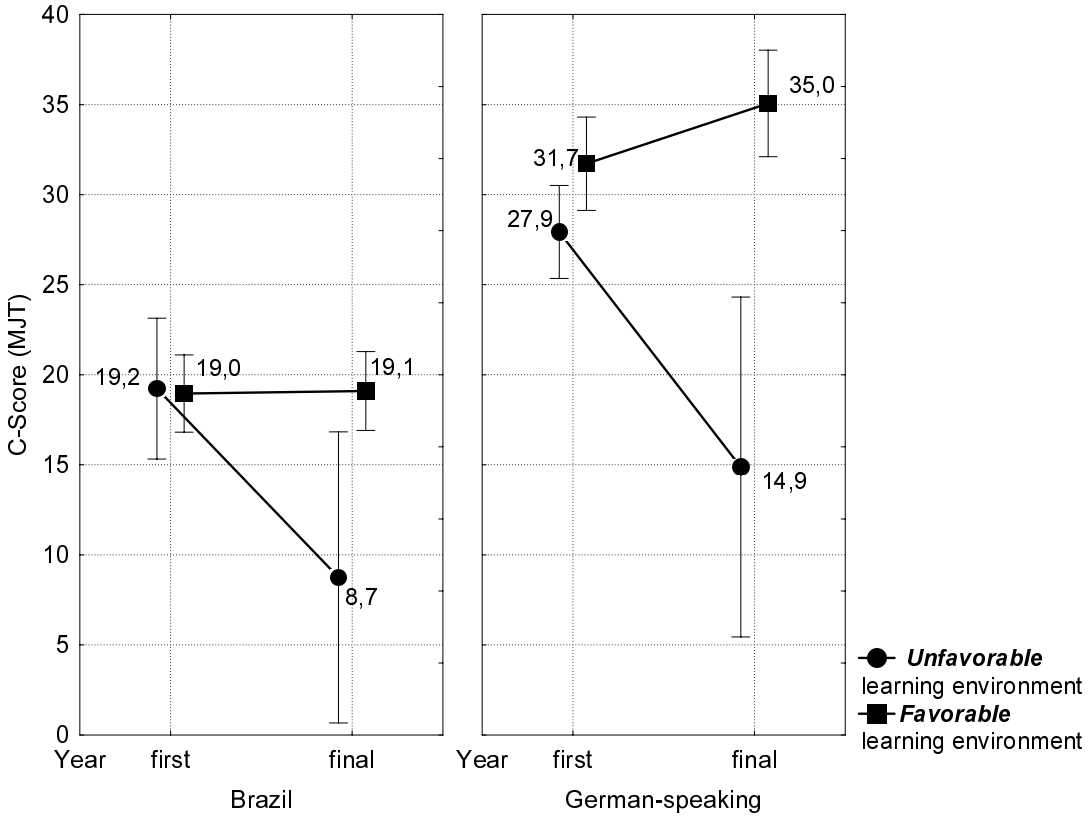


Figure 5.2: Moral judgment competence by culture, learning environment and year of study.

In this sub-section, moral judgment competence and learning environment are analyzed according to the three areas of study and year of study for each culture in separate. Figure 5.3 reflects the situation with Brazilian students and Figure 5.4 with German-speaking students.

Results seems to confirm that the variable learning environment, more than years of study, is related to higher or lower levels of moral judgment competence. However, specific characteristics in each area of study, particularly among medical students have to be considered. The effect of the variable learning environment on moral judgment competence was found to be statistically significant among German-speaking medical students and among Brazilian psychology students. Among Brazilian medical students, German-speaking psychology and business administration students the sample size n is too small for the group *unfavorable* learning environment, which made the comparison between learning environments impossible.

5.1.3.1 Medical (Brazil)

No inferences about the relation between moral competence and learning environment by years of study can be made starting from this particular group. As Figure 5.3 shows, medical students in Brazil show decreased moral competence levels in their final years by *unfavorable* learning environment. These results with medical students should be, however, careful analyzed since the number of cases in the cells: *unfavorable* learning environment is too small. Most students (78%) reported a *favorable* learning environment. An *unfavorable* learning environment was instead, reported only by $n = 7$ in the first year and $n = 1$ in the final year. An absolute effect-size of 33,1 cannot be considered when $n = 1$. In this particular case, the assumption of homogeneity of variance is not confirmed and an analysis of variance should not be performed.

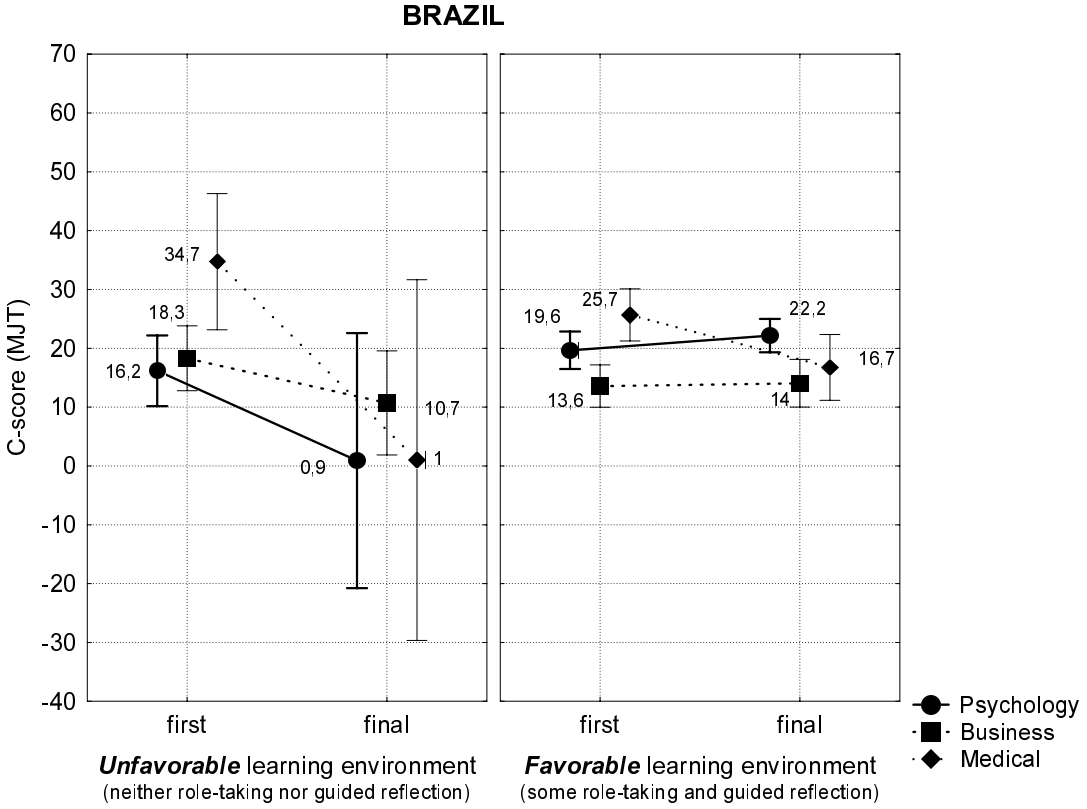


Figure 5.3: Moral judgment competence by learning environment, year and area of study in Brazil.

5.1.3.2 Psychology (Brazil)

A one-factor analysis of variance of data regarding psychology students in Brazil reveals that the interaction between the variable learning environment with moral competence is statistically significant with a small effect-size (r): F(1,234) = 5,00, p = 0,03, r = 0,14.

Indeed, it is observed that students who report an *unfavorable* learning environment have much lower C-scores (C-score = 8,5) than students who report a *favorable* one (C-score = 20,9); absolute effect-sizes = 15,3. A two-factor analysis of variance show that the combination of the variables years of study with learning environment is not statistically significant: F (1,234) = 2,59, p = 0,11, r = 0,1.

5.1.3.3 Business administration (Brazil)

Business administration undergraduates who report an *unfavorable* learning environment show a regression in their moral judgment competence in the final years. Students who report a *favorable* learning environment maintain their moral competence levels. However, this should be observed as a tendency. A one-factor analysis of variance shows that the effect of the variable learning environment on moral judgment competence is not statistically significant: F(1,168) = 0,95, p = 0,76, r = 0,07. The effect years of study and learning environment did not appear to be statistically significant either: F(1,168) = 3,34, p = 0,07, r = 0,14. However, the absolute effect-size = 7,6 when comparing C-scores from students in *unfavorable* learning environments in their first and final years should also be considered.

Figure 5.4 analyzes moral judgment competence of German-speaking undergraduates by learning environment in the three different areas of study in their first and final years. The Levene-test confirmed the assumption of variance homogeneity for the analysis of variance with the German-speaking sample. Specifications follow.

5.1.3.4 Medical (German-speaking)

Medical students' moral judgment competence is strongly impacted by *unfavorable* learning environments. They present a regression of −15,5 points (absolute effect-size) in their moral competence, comparing first and final years of study. In a *favorable* learning environment among medical students, though, moral competence levels do not increase in the final years, but remain almost the same (absolute effect-size = 0,2).

A two-factor analysis of variance shows that the interaction between the variables year of study and learning environment with moral judgment competence is statistically significant with a small effect-size: F(1,215) = 5,04, p = 0,02, r = 0,15. The factor learning environment alone is also statistically significant with a small effect-size: F(1,215) = 8,34, p = 0,00, r = 0,19. Undergraduates who report an *unfavorable* learning environment have much lower levels of moral judgment competence than those who report a *favorable* one (absolute effect-size −10).

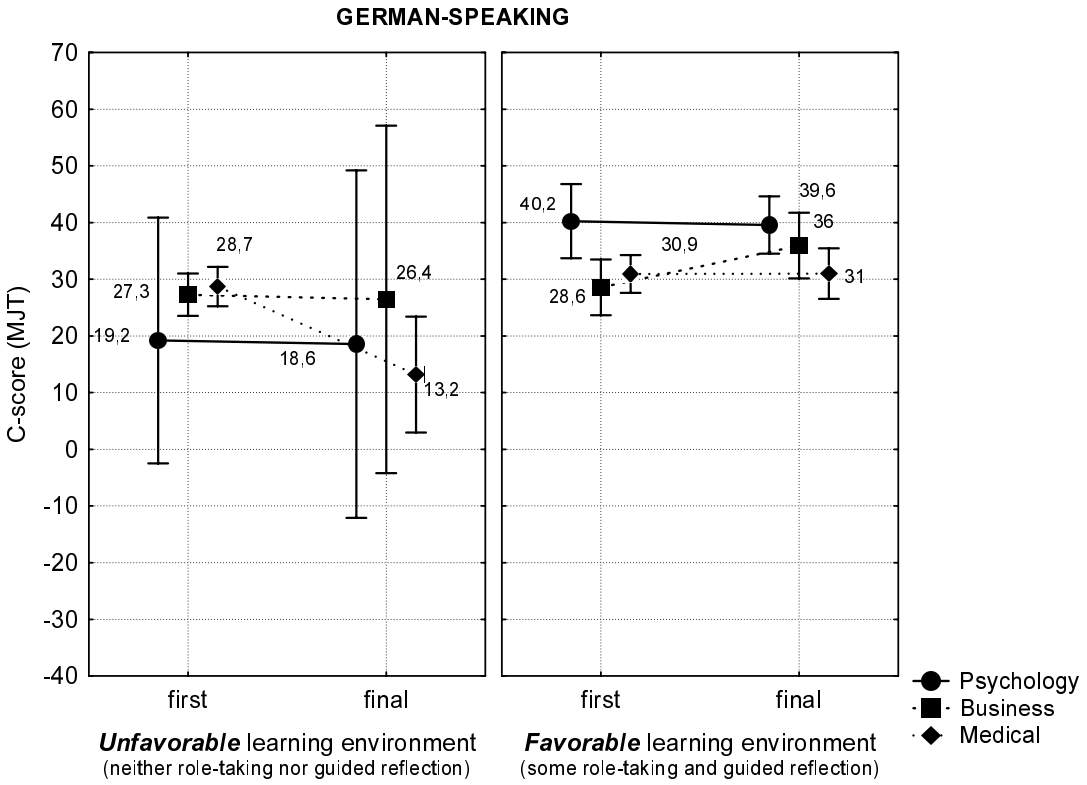


Figure 5.4: Moral judgment competence by learning environment, year and area of study in German-speaking countries.

5.1.3.5 Psychology (German-speaking)

Psychology students who have a *favorable* learning environment present higher moral judgment competence than those who do not have such an environment. However, the sample size for the variable *unfavorable* environment is too small ($n = 3$) and an analysis of variance is in this case inappropriate. Most German-speaking psychology students (82%) report a *favorable* learning environment since the first years of study. This might be a reason why their moral judgment competence levels in their first years are higher than those of students from other areas.

5.1.3.6 Business administration (German-speaking)

Business administration students who reported a *favorable* learning environment show a significant increase on their moral judgment competence in the final year (absolute effect-size = 7,4). Here again, the sample size for the group *unfavorable* final year is too small (n = 1) and allows no conclusions. One and two-factor analysis of variance shows no statistically significant results.

Data are analyzed in detail in the following sections.

5.1.4 Differences in moral judgment competence levels between *unfavorable* and *favorable* learning environments

Table 5.1 presents a detailed analysis comparing C-scores from *unfavorable* and *favorable* learning environments in those groups where such an analysis was possible (as seen in the previous section). In Brazil, the analysis is refined by including the category "competitive and non-competitive universities" for the psychology and business administration programs. In German-speaking countries, the medical schools are divided into university I and II as they presented significant differences in the development of moral judgment competence. This table is organized according to areas of study as in the previous section.

Area	Culture		C-score					
			unfav	fav	diff	F	p	r
Psychology	Brazil	comp.	16,5	25,4	+8,9	$(1, 136)=3, 12$	$< 0{,}08$	0,15 (+)
		non comp.	14,3	14,3	0,0	$(1, 98)=0, 00$	$< 0{,}99$	0,00
Business Adm.	Brazil	comp.	21,9	17,9	−4,0	$(1, 64)=1, 54$	$< 0{,}22$	0,15 (−)
		non comp.	11,2	11,5	+0,3	$(1, 104)=0, 01$	$< 0{,}91$	0,01
Medical	German sp. I		27,4	30,0	+2,6	$(1, 179)=0, 94$	$< 0{,}33$	0,00
	German sp. II		21,7	33,8	+12,1	$(1, 36)=2, 23$	$< 0{,}14$	0,24 (++)

Table 5.1: MJT C-score differences between *unfavorable* (neither role-taking nor guided reflection) and *favorable* learning environments (role-taking and guided reflection); one-factor (effect RTGR) analysis of variance results with effect-sizes (r), by area, type of institution (Brazil) and culture.

For the purposes of this research, a higher education institution is considered of a higher level in the domain of learning environment (*favorable* learning environment) when participants report more than 25% from the inquired role-taking and guided reflection opportunities in each of the four domains of the learning environment (syllabus, semi-syllabus, extra-syllabus and non-syllabus, Table 5.2 depicts the reported frequency of participation in opportunities of role-taking and guided reflection — defined as *favorable* learning environment — in the groups investigated. In each group it is analyzed the percentage of students who reported having *favorable* learning environment and in addition, the degree of involvement with role-taking and guided reflection. The degree of involvement is characterized as being "high" (mean of RTGR $>$ 1,6; $>$ 80%) or "low" (mean of RTGR $<$ 1,6 or $<$ 80%).

5.1.4.1 Medical students (Brazil)

In spite of the fact that no inferences can be made about the relationship between moral judgment competence and learning environment for this particular group (see previous section), Brazilian medical students' moral judgment competence level in the final years

Area	Culture		*Favorable* learning environment		
			n	Frequency	Degree of involvement
Psychology	Brazil	comp.	159	81 %	high
		non comp.	131	63 %	low
	German sp.		59	82 %	high
Business Adm.	Brazil	comp.	87	53 %	low
		non comp.	141	59 %	low
	German sp.		68	44 %	low
Medical	German sp. I		99	38 %	low
	German sp. II		33	66 %	high

Table 5.2: Frequency of students who report role-taking and guided reflection opportunities and degree of involvement by country, field of study and type of institution.

is significant lower than that at the first year (table 5.5). A dramatic regression in moral judgment competence (absolute effect-size = −12,1) is detected also when the variable learning environment is not controlled.

5.1.4.2 Medical students (German-speaking)

There is a correlation between higher moral judgment competence levels and degree of involvement with role-taking and guided reflection opportunities. Medical students in German-speaking countries are divided into university I and university II. Only 38% of the students from university I report a *favorable* learning environment and they show a low-involvement with opportunities for role-taking and guided reflection (table 5.2). On the other hand, 66% of the university II students report a *favorable* learning environment with a high-involvement with role-taking and guided reflection. The *favorable* learning environment reported by students from university I does not have any influence on moral judgment competence. As seen in table 5.1, there is no significant increase in their MJT C-scores. The *favorable* learning environment reported by university II students, on the other hand, shows a rather high correlation with the MJT C-scores (absolute effect-size = 12; r = 0,24). In addition, medical students from university I present a significant regression in their moral competence levels over the years (table 5.5) when the variable learning environment is not controlled. Students from university II maintain their levels.

5.1.4.3 Psychology students

Psychology students in Brazil (competitive institutions) and in Germany seem to have relatively similar profiles in regard to role-taking and guided reflection opportunities (RTGR). In both countries, more than 80% of the participants report high-involvement with role-taking and guided reflection. In fact, more than 70% of the students report RTGR already in the first years. There is a statistically significant correlation between

moral judgment competence and learning environment among psychology students in Brazil. In the German-speaking sample, due to the small n in the category *unfavorable* learning environment, the analysis of variance was not performed. As seen in a further section, those findings relate to higher levels of moral judgment competence.

5.1.4.4 Business Administration students

A small negative correlation (r = −0,15) between moral judgment competence and learning environment among business administration students from competitive institutions in Brazil might indicate that this type of institution is not a predictor of a *favorable* learning environment. Only 53% of the students report role-taking and guided reflection with a low degree of involvement.

5.1.5 Types of role-taking and moral judgment competence

Psychology students in both cultures investigated show that the interaction between specific types of role-taking and guided reflection (semi- and extra-syllabus) and moral judgment competence is statistically significant with moderate to large effect-sizes (r > 0,17 and r < 0,60).

5.1.5.1 Psychology in Brazil

Psychology students in Brazil show a positive correlation between moral judgment competence and role-taking activities semi-syllabus, with moderate effect-sizes (r). Students with higher levels of moral judgment competence are those who are research assistants (r = 0,18) and tutors (r = 0,22) with the opportunity of solving problems (r = 0,22) related to those activities. Opportunities for guided reflection which enable discussion of suggestions for work improvement (r = 0,28), as well as autonomous solution of problems (r = 0,25) were also related to higher levels of moral development.

5.1.5.2 Psychology in German-speaking countries

German-speaking psychology students show positive correlations with large effect-sizes (r) between role-taking and guided reflection activities extra-syllabus and moral judgment competence. Participation in groups in the university, such as university council, different students' committees and students' organizations, correlate with higher levels of moral judgment competence (r > 0,40). Having a position or a special function in one of those groups which requires intensive commitment and responsibility is also related to higher

moral judgment competence (r = 0,59). Students who are involved in those activities have MJT C-scores 20 up to 28,2 points higher than the students who are not involved. Support from other experienced students, from library resources (own search for solutions), as well as being able to discuss and make decisions concerning those positions assumed were found also to be relevant to moral development (r = > 0,40).

5.2 Hypothesis 2: Affection and cognition as independent and parallel aspects of the same moral behavior

The Moral Judgment Test (MJT) was developed to measure simultaneously affective aspects independent from cognitive aspects of moral behavior. The affective aspect is reflected by the preference towards the six Kohlbergian stages of moral orientation. Lind (2000) defends the position that the MJT measures moral judgment competence from individuals independent from their moral orientations. Moral judgment competence reflects, thus, in which way (consistent or not) personal moral principles (which are cognitively organized) are applied in moral judgment situations.

Hypothesis 2 is confirmed in its three sub-hypotheses (a, b and c). Affection and cognition are independent and parallel aspects of the same behavior. Through the use of the MJT these aspects can be separately analyzed and the results are in agreement with the predictions of the dual-aspect theory and the "Bildungstheorie". The affective aspect can be separately measured through the MJT and the hierarchical preference of moral stages does not depend on culture or education.

5.2.1 Hypothesis 2a: Affective-cognitive parallelism

Hypothesis 2a refers to the assumption that there is a positive correlation between cognitive and affective aspects of moral judgment (Lind, 2000). The MJT index for moral judgment competence (C-score) should correlate with subject's attitudes towards each of the Kohlbergian six moral stages. The more consistent students are in using moral principles in their judgments, the more positive is their orientation towards higher moral development stages.

As expected, the MJT's index for moral judgment competence (C-scores) correlates with the subject's attitudes towards each of the six stages of moral orientation: it correlates highly negatively with attitudes towards lower stages and highly positively with the higher stages (figure 5.5). This means, students who have higher levels of competence in moral

judgment (cognitive aspect) are the ones who prefer higher stages of moral development (affective aspect) for the solution of moral conflicts. In other words, the higher the student's consistency in applying moral principles in dilemma situations is, the higher is the preference for higher stages of moral development and the lower is their preference for the lower ones.

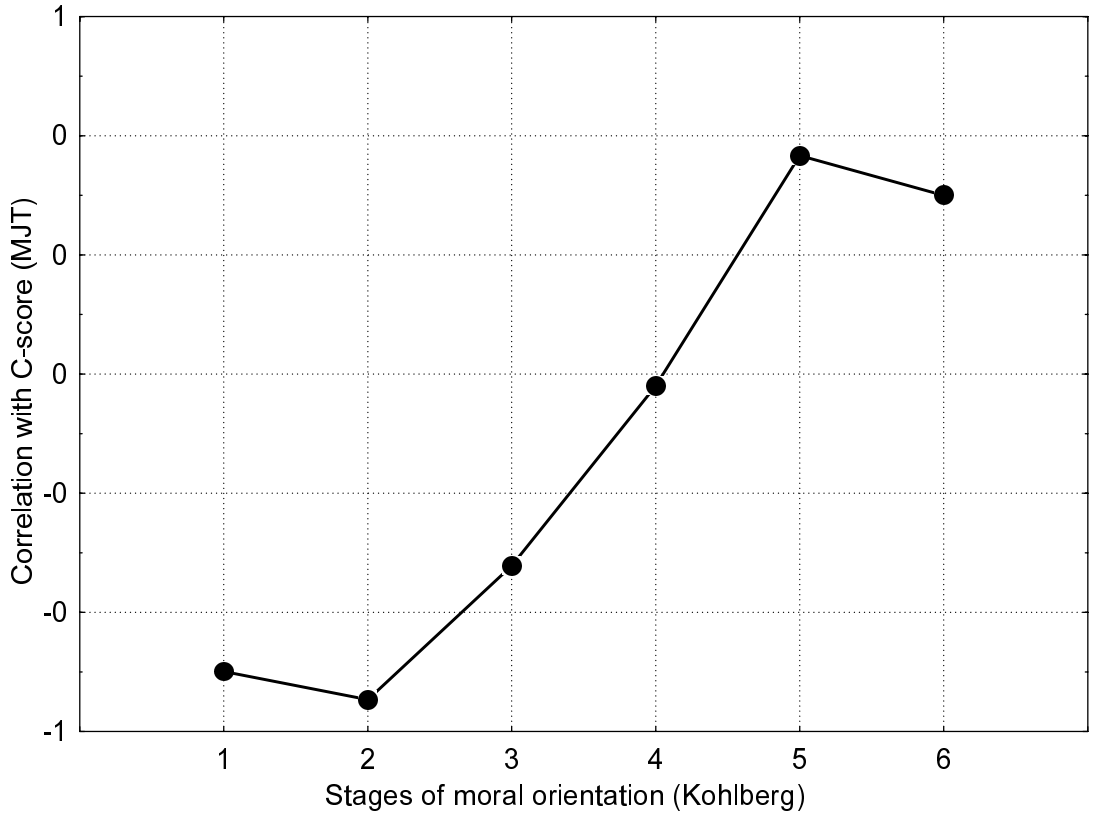


Figure 5.5: Correlation between moral judgment competence and stages of moral orientation (N=1149).

5.2.2 Hypothesis 2b: Affective aspect

Hypothesis 2b refers to the question whether there is a positive correlation between the affective aspect of moral development and the hierarchical preference for moral stages.

In Lind's (2000) theory, the hierarchical preference for moral stages as defined by Rest (1973) is (in the MJT) the indicator for the affective aspect of moral behavior. The moral attitudes towards the Kohlbergian stages are defined as the subject's mean acceptance of all arguments of a specific stage. Higher stages should be more preferred than the lower ones. It is expected that the hierarchical preference remains the same irrespective of culture.

Figure 5.6 depicts the hierarchical preference order for the Kohlbergian stages. It confirms the preference hierarchy postulate. The MJT has two dilemmas, and, for each dilemma, arguments in favor and against the respondent's decision are presented. Each of the six Kohlbergian stage arguments (six pro and six con in each dilemma) should be rated in a -4 (I completely reject it) to 4 (I completely accept it) scale. Figure 5.7 shows that the attitudes are ordered in a way where higher stages (5 and 6) are most and lower stages are least preferred.

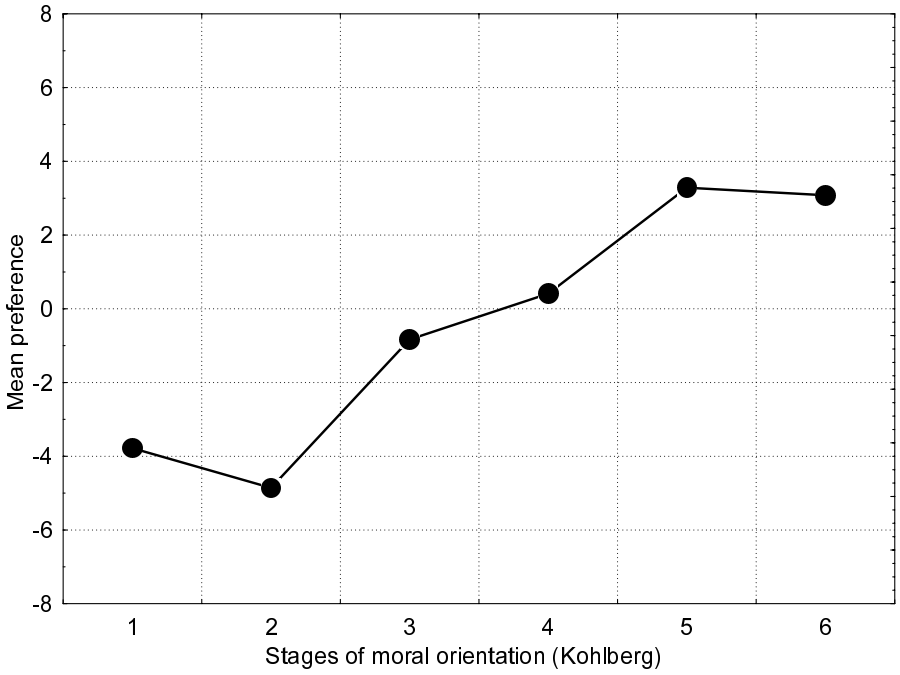


Figure 5.6: Means of preference for the Kohlbergian stages of moral orientation in the MJT (N=1149).

In addition, the cognitive-development theory postulates that the preference order of stages of moral development should form a matrix of correlation in a quasi-simplex-structure (Kohlberg, 1963). This means, stage preference in each level correlates most highly with its neighbor levels. The correlation decreases as the levels are increasingly distant.

Figure 5.7 demonstrates that this criterion is fulfilled through the use of the MJT. For instance, the correlation between stages 2 and 3 is the highest found whereas the correlation between stages 2 and 5 is the lowest. The stage order is in agreement with previous findings from Kohlberg and Lind (Lind, 2000).

Figure 5.8 shows that the pattern of hierarchical preference of moral stages is similar for both cultures, in the way that higher, more complex stages (5 and 6) are most, and lower stages (1 and 2) are least preferred. However, some differences can be observed

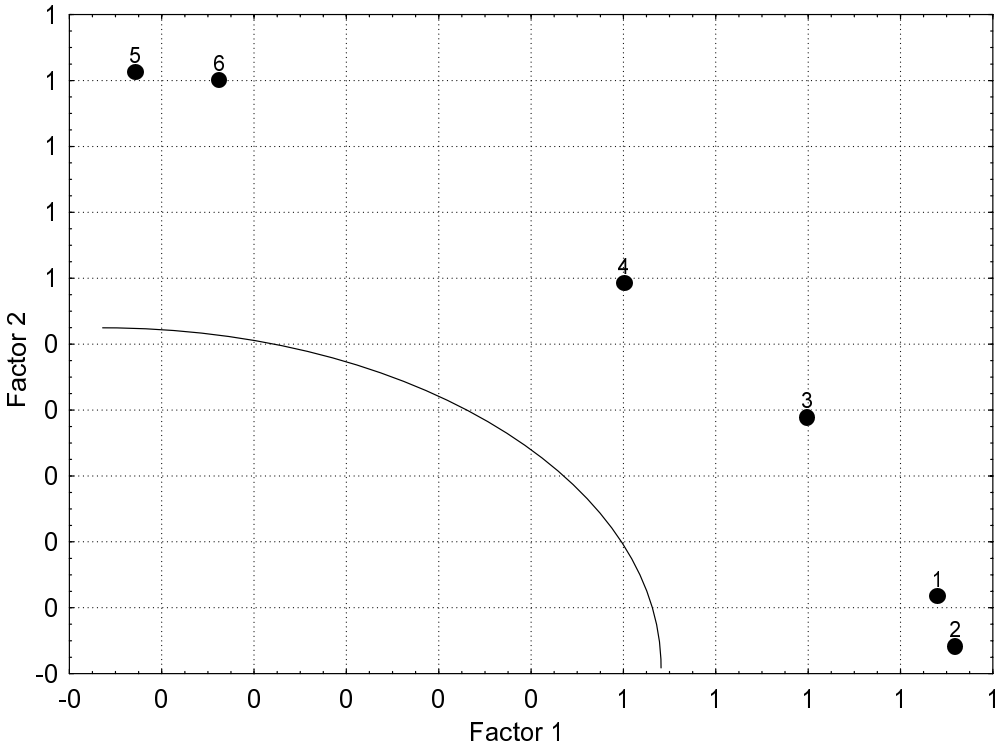


Figure 5.7: Factor loadings of the six moral orientations, principled component analysis, varimax rotation (quasi-simplex-structure).

between both cultures: Brazilian students tend to accept stage 3 arguments, which are rejected by German-speaking subjects. In addition, Brazilian students tend to prefer stage 3 over stage 4 arguments. German-speaking students on the other hand, prefer stage 5 arguments over stage 6 ones. The large difference regarding particularly stage 3 preference could indicate cultural or social factors interfering with patterns of hierarchical preference and preference order as proposed by Rest (1973).

The present findings support the claim that the six Kohlbergian stages of moral orientation are not culture related. They reveal a general agreement among different cultures about a preference for cognitively higher moral principles, but show particular exceptions which should be further investigated. These results confirm the prognoses from the dual-aspect theory and the "Bildungstheorie", that the affective aspect can be separately measured through the MJT.

5.2.3 Hypothesis 2c: Cognitive aspect

Hypothesis 2c deals with the assumption that the MJT C-score, or competence score, is a measure independent from the affective aspect.

Results reflect different structural characteristics used to produce moral judgment. They

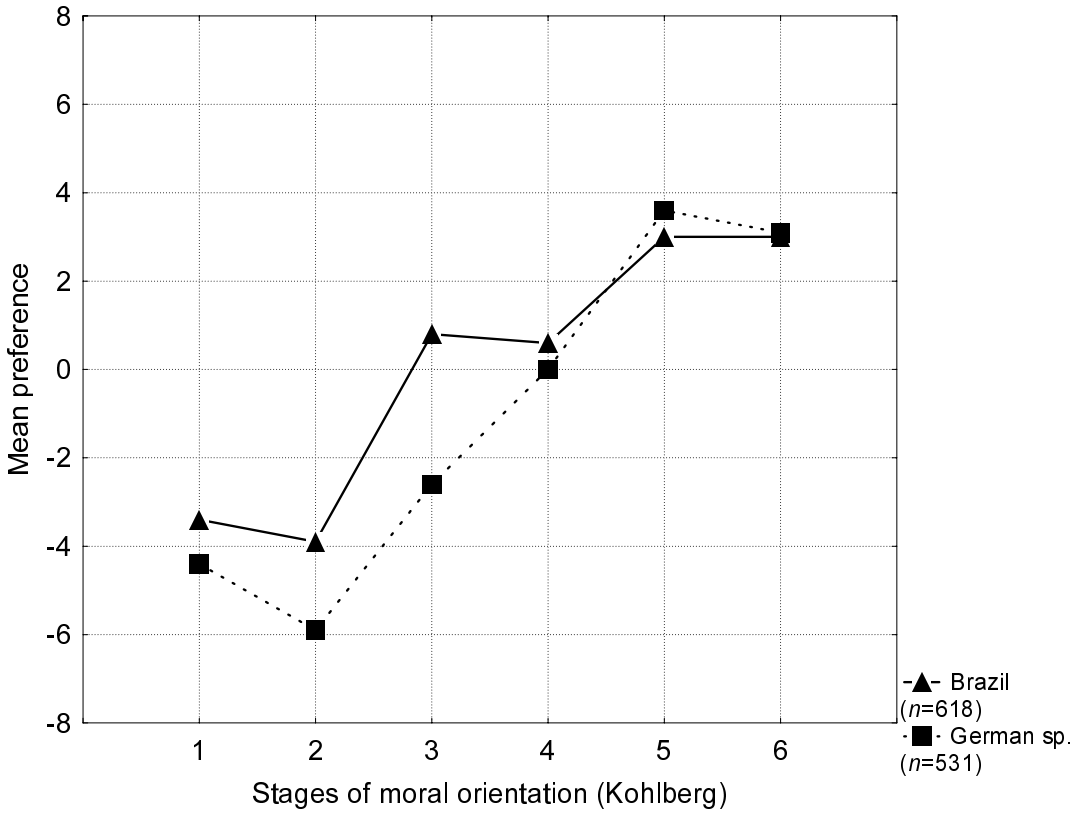


Figure 5.8: MJT affective aspect: means of preference for the Kohlbergian stages of moral orientation by culture.

reflect different degrees of moral judgment competence levels and, thus, confirms the predictions of the dual-aspect theory. The C-scores (table 5.3) from Brazilian students (C-score = 18,7; $n = 618$) are different to those from German-speaking students (C-score = 30,1; $n = 531$). As seen previously, the affective aspect given by moral orientations (Kohlbergian stages) follows a similar pattern for both cultures, with only few variations in regard to mean values for the hierarchical stage preference. The cognitive aspect seems, on the contrary, to be influenced by cultural differences.

A preliminary analysis shows that students in German-speaking countries are more consistent in applying moral principles in solving moral conflicts than Brazilian students. This means, they seem more able to consider the quality of each argument in a moral judgment. Brazilian students seem to be less consistent in applying moral principles to the judgment of moral arguments. The reason could be that factors other than the quality of arguments are taken into consideration when producing a moral judgment. In particular, subjects tend to avoid arguments that are against their own opinion towards a specific dilemma. A deeper analysis in a further section shows that the Brazilian data should be understood respecting its cultural characteristics and in this particular case, the different profile from students attending competitive and non-competitive universities. A comparison between

those cultures is possible only when those factors are considered.

The interaction between the variables culture and moral judgment competence can be analyzed through an analysis of variance. Results show that the effect of culture on moral judgment competence is statistically significant with large effect-sizes: $F(1,1146) = 148{,}47$, $p = 0{,}0000$, $r = 0{,}34$.

Considering that the participants in both cultures had the same level of education, those results seem to point to the direction of cultural aspects affecting the development of moral competence. This does not mean, however, that the correlation found reflects only characteristics of different cultural or social systems. The question seems more related to which factors are responsible for the development of new competencies and whether this effect works independent from culture.

5.3 Hypothesis 3: Cultural influences and moral judgment competence

Results so far show that moral judgment competence seems to be more influenced by educational and cultural characteristics than by years of study. Hypothesis 3 refers to the relation between cultural differences and moral judgment competence levels. Regarding the investigation of this hypothesis, the following variables were controlled in each culture: a) year of study, b) area of study and, in Brazil, c) type of institution.

5.3.1 Hypothesis 3a: Moral Judgment Test (MJT) C-scores by culture and years of study

It is expected that moral judgment competence is not simply fostered through years of education. There should be no correlation between moral judgment competence and years of study when the variable learning environment is not controlled.

The MJT C-scores from undergraduates according to culture and year of study are portrayed in table 5.3 and support hypothesis 3a.

A Levene-Test for the variance homogeneity in the groups analyzed showed no statistical significance, $F(1,615) = 3{,}65$; $p < 0{,}56$ (Brazil) and $F(1,529) = 1{,}20$; $p < 0{,}27$ (German-speaking countries).

As predicted by hypothesis 3a in regard to the variable year of study, moral judgment competence levels remain almost unaltered when comparing students at the beginning and at the end of their studies. A one-factor analysis of variance showed that the interaction

		C-score		n
		mean	SD	
Brazil	First year	19,6	14,7	355
	Final year	18,0	13,4	262
	Total of students	18,7	14,2	617
German sp.	First year	29,8	17,4	378
	Final year	30,9	18,0	153
	Total of students	30,1	17,6	531

Table 5.3: MJT C-scores (means and standard deviation) by year of study and country, $n = 1148$.

of the variable years of study with moral judgment competence was not statistically significant among Brazilian (F(1615) = 1,14, p < 0,29, r = 0,04) and German-speaking students (F(1,529) = 0,38, p < 0,54, r = 0,03). No correlation between moral competence and year of study was found when all participants from a country are assessed irrespective of area of study and learning environment. This confirms that not only the length, but quality of education (as tested in Hypothesis 1) influence moral development.

5.3.2 Hypothesis 3b: MJT C-scores by culture and area of study

According to hypothesis 3b, it was expected that MJT C-scores are different in the three areas of study. In addition, patterns of moral judgment competence development are also different over the years. A one-factor analysis of variance shows that the effect areas of study is statistically significant for each culture with moderate and small effect-sizes; Brazil: F(2, 614) = 16,14, p=0,00, r = 0,22; German-speaking: F(2, 528) = 7,85, p = 0,00, r = 0,17.

Culture	Area of study	C-score		n
		mean	SD	
Brazil	Psychology	19,9	0,8	290
	Business adm.	14,9	0,9	257
	Medical school	23,7	1,4	100
German sp.	Psychology	37,7	2,0	72
	Business adm.	29,0	1,4	155
	Medical school	28,9	1,0	304

Table 5.4: MJT C-score (means), standard deviation and sample size (n) by culture and area of study.

A two-factor analysis of variance (interaction of the variables year and area of study with moral judgment competence) shows statistically significant results only for the Brazilian sample (Brazil: F(2,611) = 10,12, p = 0,00, r = 0,18) and indicates that moral judgment competence moves towards a regression among medical and business adminis-

tration students. No significant correlation was found in the German-speaking sample: F(2,525) = 1,8424, p = 0,159, r = 0,08.

Figure 5.9 shows different moral judgment competence levels (C-scores) from undergraduates from three areas of study, at the beginning and at the end of their studies according to each culture and confirms hypothesis 3b. As shown in table 5.4, there are also similar tendencies to be observed among undergraduates from two areas of study: medical students in both cultures seem to move towards regression and psychology students to an increase of moral competence levels.

5.3.2.1 Medical

The fact that medical students in Brazil had at their first years similar moral judgment competence levels as their German-speaking peers could indicate that a specific culture is not in itself a significant factor as far as moral judgment competence is concerned. However, over the course of the years, moral judgment competence among Brazilian medical students decrease dramatically (absolute effect-size = −12,4). The same type of regression, but not so dramatic is observed among German medical students (absolute effect-size = 3,6). In a further section this is analyzed in detail, observing institutions separately. A more significant regression (absolute effect-size = −4,8) is found among German-speaking medical students from university I. Students from university II remain constant in their moral judgment competence levels. This was analyzed in Hypothesis 1.

5.3.2.2 Psychology

Psychology students show in both cultures a similar tendency to increase their moral judgment competence levels. The absolute effect-sizes are 1,6 (German-speaking) and 2,6 (Brazil). As seen in table 5.5, psychology students results in Brazil can be analyzed according to institution type. Students from high-competitive universities show statistically significant gains in their moral judgment competence levels in the final years. These findings relate to those presented in an earlier section, indicating a correlation with a *favorable* learning environment.

5.3.2.3 Business administration

Business administration students in Brazil show that the regression phenomenon regarding moral judgment competence is not limited to medical students. The tendency to regression (absolute effect-size = −1,96) observed in figure 5.9 is found to be statistically significant among students from competitive institutions in Brazil (table 5.5). In

addition, this suggests that competitive institutions do not necessarily offer a *favorable* learning environment that fosters moral judgment competence.

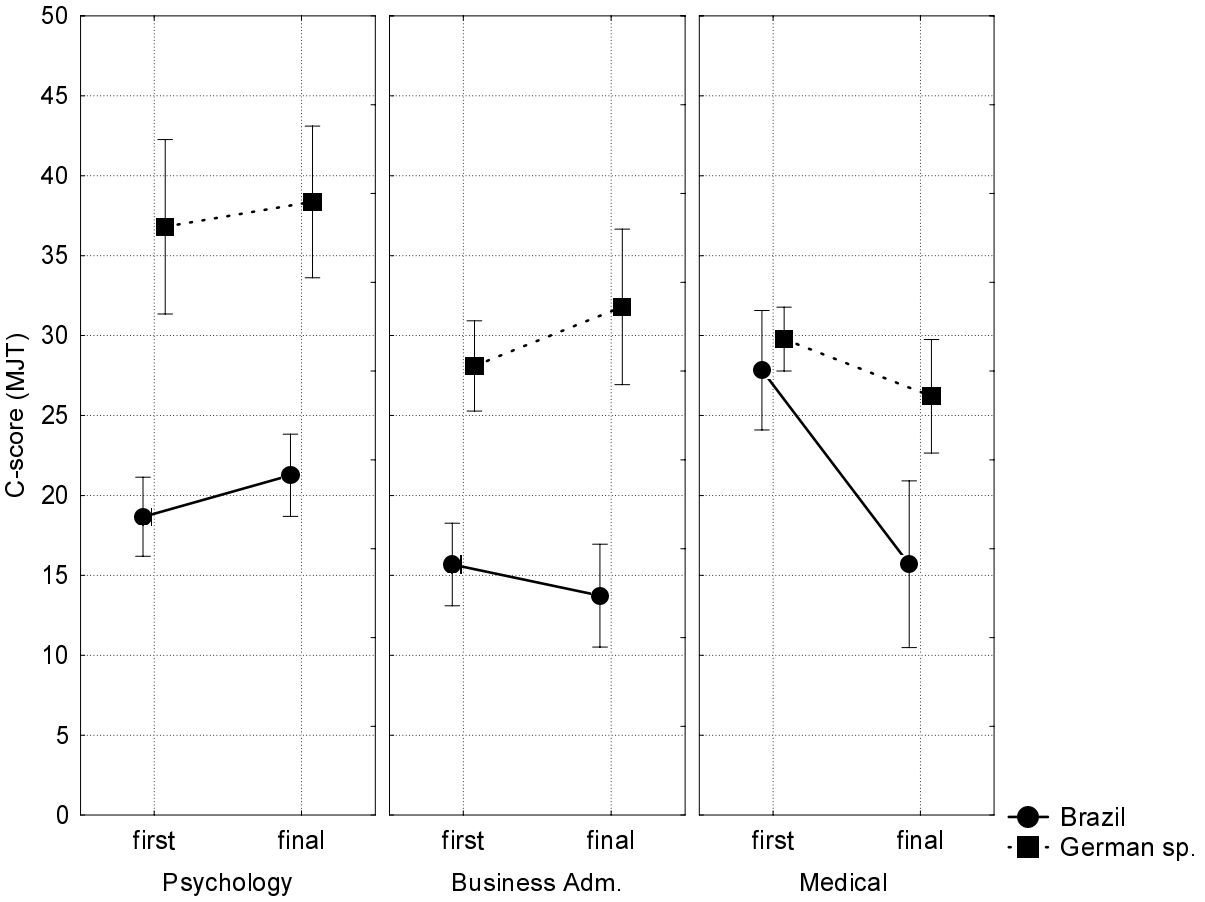


Figure 5.9: Moral judgment competence by area, year of study and culture. Sample sizes: Brazil $n = 617$, including 290 psychology, 257 business administration and 100 medical students. In German-speaking countries, $n = 531$, including 72 psychology, 155 business administration and 304 medical students.

5.3.3 Hypothesis 3c: MJT C-scores by type of institution in Brazil: competitive and non-competitive

This hypothesis referred to the possibility of generalization of previous findings from the pilot study and from Bataglia's study (2001) in which students from competitive institutions had higher moral judgment competence levels. Results confirm hypothesis 3c. Brazilian students from competitive institutions have in general, significant higher moral judgment competence levels (MJT C-score = 23) than students from non-competitive ones (C-score = 13,3). The effect competitiveness is statistically significant with a large effect-size: F = (1,615) 0,79, p = 0,00, r = 0,34.

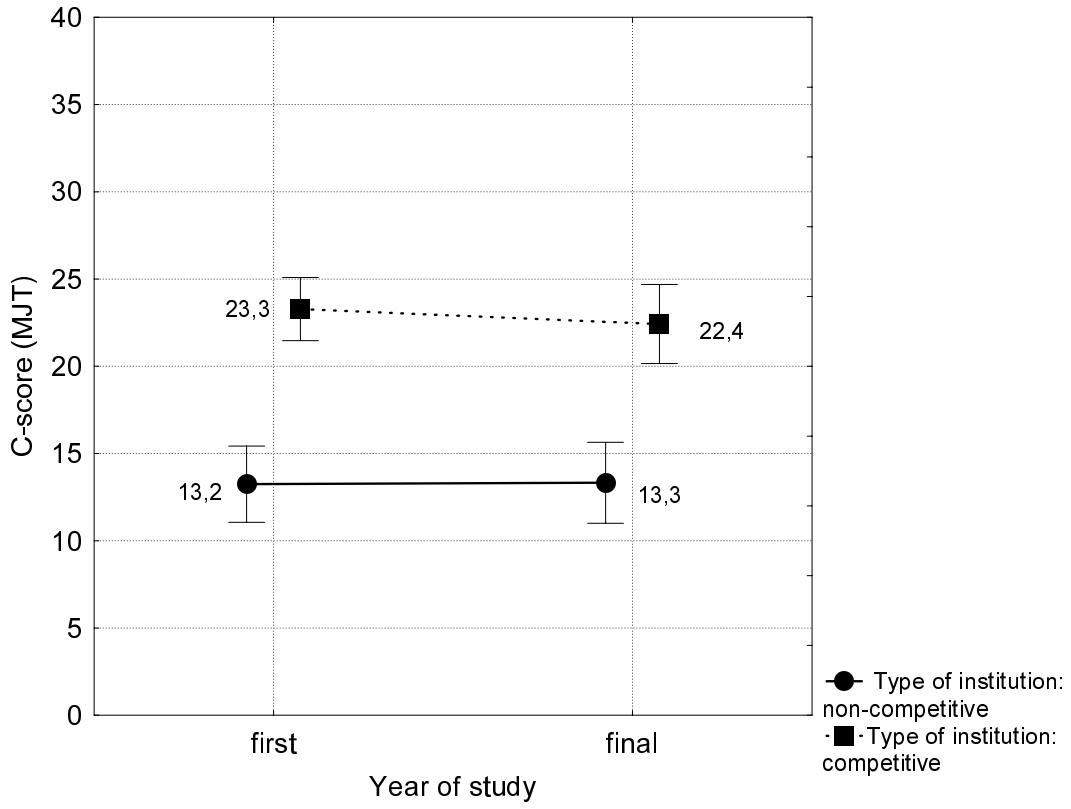


Figure 5.10: Moral judgment competence by year of study and type of institution in Brazil: competitive and non-competitive.

Students from non-competitive institutions present lower moral judgment competence levels, but those are maintained during the study years (figure 5.10). Figure 5.10 shows that students from competitive institutions do not increase their moral competence levels over the course of the years. Rather, they suggest the possibility of a regression in those levels. When the areas of study are closely analyzed, it becomes clear that this announces a dramatic regression among medical students in Brazil and a less dramatic regression among business administration students from competitive universities.

5.4 Hypothesis 4: Regression in moral judgment competence is possible

Results from the previous sections allow the conclusion that regression in moral judgment competence is possible. A regression is observed among medical students in both cultures and business administration ones from competitive universities in Brazil (table 5.5). These groups have lower moral judgment competence in the final years of study. This confirms hypothesis 4 and supports the "Bildungstheorie" that runs counter to Kohlberg's and

Piaget's postulates of an invariant forward and upward development. According to the "Bildungstheorie", the development of moral judgment competence progresses as long as they are adequately fostered by institutionalized forms of education. It was expected that regression could occur when individuals are not stimulated in their discourse processes by the social context. The results presented in this section should, then, be understood in connection with those from hypothesis 1. Regression of moral judgment development among medical and also among business administration students is related to *unfavorable* learning environments, which means, to insufficient involvement with role-taking and guided reflection opportunities. At this point, it is important to remember that this is a cross-sectional and not a longitudinal study.

Area	Culture		C-score					
			first	final	diff	F	p	r
Psychology	Brazil	comp.	21,4	28,0	+6,6	$(1, 157)=7, 80$	$< 0{,}00$	0,22 (++)
		non comp.	15,3	13,6	−1,5	$(1, 129)=0, 58$	$< 0{,}45$	0,07
	German sp.		36,8	38,4	+1,6	$(1, 70)=0, 12$	$< 0{,}72$	0,04
Business Adm.	Brazil	comp.	21,0	15,5	−5,5	$(1, 84)=4, 02$	$< 0{,}05$	0,21 (−−)
		non comp.	11,5	13,0	+1,5	$(1, 139)=0, 66$	$< 0{,}42$	0,07
	German sp.		28,0	31,8	+3,8	$(1, 153)=1, 37$	$< 0{,}24$	0,09
Medical school	Brazil		27,8	15,7	−12,1	$(1, 98)=14, 5$	$< 0{,}00$	0,36 (−−)
	German sp. I		29,5	24,7	−4,8	$(1, 252)=3, 27$	$< 0{,}07$	0,11 (−)
	German sp. II		31,7	31,1	−0,6	$(1, 48)=0, 01$	$< 0{,}90$	0,01

Table 5.5: Regression or gain in moral development. MJT C-scores differences comparing first and final years of study by type of institution and area of study; effect of years of study (one-factor analysis of variance) with effect-sizes (r). +/− = pos./neg. correlation r > 0,10; ++/−− = pos./neg. correlation r > 0,20.

Results from the one-factor analysis of variance (factor year of study) for each area of study (Psychology, Business Administration and Medicine) and type of institution are:

5.4.1 Medical

Moral judgment competence decreases with year of study among Brazilian (r = −0,36) and among German students (r = −0,11). There is a decrease of −12,4 MJT C-score points among Brazilian medical students and of −4,8 points among German-speaking students from university I. Those values represent, respectively, very significant and significant absolute effect-sizes (Lind, 2004). As students from university II did not present regression in their moral competence levels over the years, on the opinion of this researcher other investigations should be conducted in order to investigate which aspects could be related to that phenomenon.

5.4.2 Psychology

Moral judgment competence increases (r = 0,22) with year of study only among Brazilian psychology participants from high competitive institutions. The variable years of study among Psychology students in Germany was not statistically significant (p > 0,05). No correlation between year of study and moral judgment competence (r = 0,04) was found in Germany. A possible explanation could be that German-speaking psychology students report a *favorable* learning environment and high-involvement (table 5.2) with role-taking and guided reflection opportunities since the first year of study.

5.4.3 Business Administration

Moral judgment competence of Brazilian students from competitive institutions decreases in the final year of study. Those students had a low degree of involvement with role-taking and guided reflection opportunities.

5.5 Hypothesis 5: There are no gender differences regarding moral development

There is no statistically significant difference between gender and moral development, neither in its affective nor in its cognitive aspect. Moral judgment competence levels are similar for men and women (MJT C-score = 24 and 23 respectively). Results from a one-factor analysis of variance and effect size are: F(1,1142) = 2,109, p = 0,15, r = 0,04.

No significant gender differences were found regarding subject's preferences for the moral stages either (affective aspect of moral behavior). Table 5.11 shows similar patterns of moral orientation stage preference among men and women.

5.6 The meaning of age, work experience and religiosity for moral development

5.6.1 Age

There is no statistically significant correlation between moral judgment competence and participant's age. Table 5.6 shows participant's age according to culture and year of study. In addition, it shows the results from the analysis of variance, testing the effect of age on moral judgment competence.

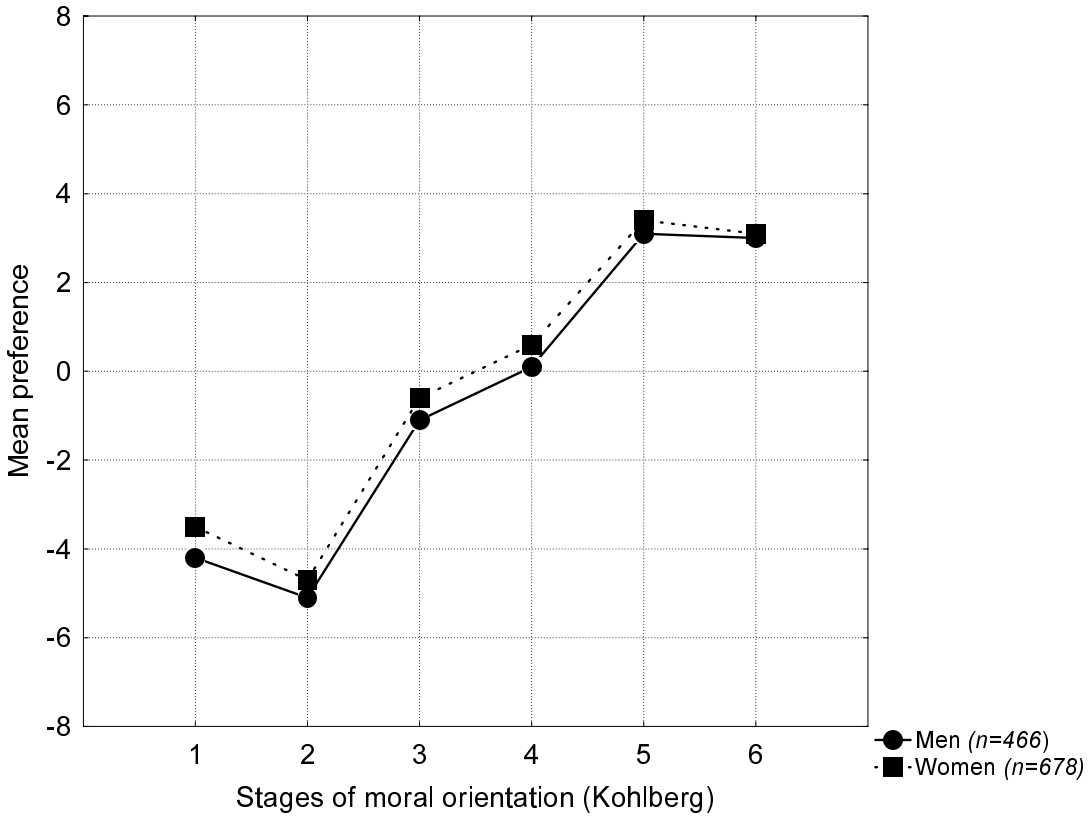


Figure 5.11: MJT affective aspect: means of preference for the Kohlbergian stages of moral orientation by gender.

Students from competitive institutions in Brazil are about the same age as those in German-speaking countries. Participants from non-competitive institutions in Brazil are in average more than five years older than those from competitive ones. After finishing high school, most of them join the work force before continuing with their studies in a combination of full-time jobs with part-time study. In Brazil, the undergraduate students are between the ages of 17 to 59. The mean age is 24,7. In German-speaking countries, the participants aged 18 to 35 and the mean age is 22,2.

Culture		age (mean)		F	p	r
		first year	final year			
Brazil	comp.	20,3	24,3	(22,309) = 1,22	0,23	0,06
	non comp.	26,9	30,3	(33,213) = 0,87	0,67	0,06
German sp.		21,1	24,7	(16,491) = 0,98	0,48	0,04

Table 5.6: Participants age (means) by year of study, type of institution and culture. Results from one-factor (age) analysis of variance: effect of age on moral judgment competence (F, p and r).

5.6.2 Moral judgment competence and work experience

A detailed comparison between learning and working environments is beyond the scope of this study. However, undergraduate students in Brazil, in particular those from non-competitive institutions, might already have a professional experience before and during their studies. This is a particular characteristic in that country. For this reason, some questions regarding working activities were added to the ORIGIN/u questionnaire. The analysis of variance shows that the interaction between the variables work and moral judgment competence is not statistically significant. The variables type of institution and country were analyzed in previous sections.

There is a clear distinction between Brazilian students from competitive and non-competitive institutions regarding working experience. Almost 80% from the participants enrolled in non-competitive institutions work during the day and attend evening programs at the university. The situation of competitive institutions in Brazil is similar to that in German-speaking countries: Approximately one-third of the students (respectively 36% and 31%) hold part-time jobs. All participants from competitive institutions in this sample attend full-time programs.

With the purpose of investigating whether the working environment plays a role in moral judgment competence, participants were asked whether they had opportunities of role-taking and guided reflection at the work place. In average, 18% of the students reported participation and 42% reported no participation in role-taking and guided reflection opportunities at their jobs. A two-factor analysis of variance showed that role-taking and guided reflection at work as measured in the ORIGIN/u questionnaire is not a statistically significant effect for the moral judgment competence development. No correlation was found. It suggests that students hold low challenging jobs and in this way do not have many opportunities of engagement in more demanding intellectual activities of taking responsibility and participating in discussions and decisions.

5.6.3 Religiosity and religious confession

The interaction between the variable religiosity and moral judgment competence was statistically significant ($F(1,259) = 5{,}55$, $p < 0{,}02$) among Brazilian participants, with a small effect-size ($r = 0{,}14$). Participants who reported being very religious in Brazil had lower levels of moral judgment competence than those who reported being non-religious (absolute effect-size $= -4{,}1$). In Europe, such a correlation was not found.

The interaction between the variable religious confession and moral judgment competence was not statistically significant among the two cultures investigated and showed no correlation: a) In Brazil, $F(4,600) = 0{,}92$, $p < 0{,}45$, $r = 0{,}08$; b) In German-speaking countries:

F (6,501) = 0,82, p < 0,55, r = 0,10. The categories considered for analysis ($n > 20$) were: no-Religion, Roman-Catholic and Protestant.

5.7 Correlation between moral judgment competence and dilemma opinion

Before beginning the task of evaluating each argument of the MJT, participants were told to read the workers dilemma and to give their opinion (-3 to 3 scale) about the solution presented to it. The same procedure was used for the second dilemma (doctors). As previously explained, participants opinions were, however, not used for computing moral judgment competence (C-score).

A one-factor analysis of variance showed that the effect of opinion on moral judgment competence was statistically significant, F (6, 1092) = 5,07, p < 0,00, r = 0,16. There is a correlation between participants' opinion about a dilemma and their C-scores. Participants with low moral judgment competence levels are the ones who evaluate arguments according to their opinion conformity and not according to the quality of argument itself. For example, a person who has a strong position against euthanasia would reject even higher moral stage arguments in favor of it. Persons who are able to evaluate the quality of each argument irrespective of their own opinion show, thus, higher moral judgment competence and achieve higher C-scores in the MJT.

This is however, a non-linear correlation which forms a so-called "dove-curve" (Lind, 2006, personal communication). Participants with lower moral judgment competence have either a total rejection or a total acceptance towards the dilemma solution. Participants with higher moral judgment competence show, on the other hand, either a moderate rejection or a moderate acceptance. This might reflect an ability of seeing the perspective of the other and considering eventually a change of mind after analyzing arguments pro and contra, rather than having an extreme, or inflexible mind.

5.8 Other student's background information

5.8.1 Parents level of education

The interaction between the variable parents' level of education with moral judgment competence is statistically significant among Brazilian students with moderate effect-sizes. Effect father: F(3,600) = 9,32, p = 0,00, r = 0,21; effect mother: F(3,601) = 11,58, p = 0,00, r 0,23. Higher moral competence levels correlate with higher parents'

level of education and vice-versa. In Brazil, 61% of the parents of students who attend competitive institutions completed higher education, while only 15% of the parents of students enrolled at non-competitive institutions did so. No significant correlation is found in German-speaking countries, where 43% of the parents had higher education degrees.

5.8.2 High school in Brazil: public and private

Students who came from private high-schools have higher moral judgment competence levels (absolute effect-size = +4,8) than those who attended public schools. The interaction between the variable type of high-school and moral judgment competence is statistically significant ($F(1,611 = 17,0$, $p < 0,00$) with a small effect-size ($r = 0,16$). Considering all participants in Brazil, irrespective from area of study and type of institution, it is observed that 64% of the students come from private high schools and 36% from public ones. Most (77%) of the students from competitive institutions come from private high-schools while 53% of the students from non-competitive institutions attended private high schools.

5.8.3 Nationality

Undergraduates were also asked about their nationality. Among the higher education students in Brazil, 99% are Brazilians. In Germany, 97,5% from the students were German and only 0,6% had a nationality other than European. In Switzerland, 78% of the students are Swiss, 11% are German, 9,4% are European (other than German), 2,5% other nationalities. Parents nationality was almost identical with students' nationality, in all cases.

5.9 Results overview

Hypotheses	Other Affective / Cognitive theories	Dual-aspect theory	Results
H1: Moral learning in adulthood (higher education) is possible.	Learning is not possible; change as a result of social pressure.	Moral learning is possible: learning environment fosters moral judgment competence	*Favorable* learning environment (LE), with high-involvement with role-taking and guided reflection fosters moral judgment competence. *Unfavorable* LE leads to stagnation or decrease of moral judgment competence. Years of education, age or gender isolated from learning environment do not correlate with higher levels of moral judgment competence in higher education.
H2: Affect versus cognitive versus dual-aspect (cognitive-affective)	No differentiation can be made between affection and cognition.	Affective and cognitive as aspects of moral behavior: simultaneously but independently measured.	a) affective and cognitive aspects correlate and are parallel; b) the affective aspect follows the hierarchical preference of moral stages (Rest) in both cultures, but reflects some cultural particularities; c) the cognitive aspect is independently measured (MJT C-score) and reflects cultural and educational differences.
H3: Cultural factors on moral judgment competence	Attitudes (fundamental moral principles) are different between cultures.	Different cultures show the same preference order for moral stages, but differ on moral judgment competence.	Moral judgment competence is assessed (MJT) through internal, no conventional criteria. Differences found cannot only be attributed to cultural factors, but also and mostly, to differences in moral competence *maturity* levels that are influenced by education in both cultures.
H4: Regression in moral development	No regression is possible unless under specific circumstances. Kohlberg and Piaget: invariant forward and upward development.	Regression in moral judgment competence results as a lack of adequate educational stimulation.	*Unfavorable* learning environments leads to moral judgment competence regression.
H5: Gender differences in moral development.	Gilligan: gender relativism in Kohlberg's moral stages.	No gender differences when variable education is controlled.	No differences between men and women were found in both affective and cognitive aspects of moral development when participants have the same level of education.

Table 5.8: Results overview.

Chapter 6

Discussion

The importance of higher education in promoting moral development has been a focus of controversies for several decades. Research based on affective approaches, which understands morality as a question of affection, values and attitudes, initially reported a skeptical attitude towards the influence of post-secondary education on moral development. This approach of morality holds that education plays a limited role in moral development. Accordingly, moral values and attitudes are brought about through social pressure and values transmission.

The contributions from the cognitive-developmental psychology (Piaget, Kohlberg) reflect a shift in this field: morality is not only a matter of attitudes and preferences, but also a question of competencies and cognition. This approach rejects traditional character education practices that are based on the teaching of virtues. Rather, moral cognitive development is achieved through interaction and a search of equilibrium, through fostering thinking processes and democratic competencies. Moral behavior is based on moral principles, but the degree of its maturity depends also on the development of cognitive competencies.

Research in higher education developed from an initial skeptical view towards an increasingly awareness about the impact of higher education on moral development. The cognitive-developmental approach in psychology was able to see beyond affective changes to suggest positive effects from university socialization on moral development from affect and cognition. Participation of higher education as an important factor contributing to moral development was previously reported by Rest (1988) and more recently by King and Mayhew's (2003) and Pascarella and Terenzini's review (2005). Students participation in university environment activities was associated with increases in moral development. However, those results referred mostly to studies using Rest's DIT (Defining Issues Test) and concentrated on the shifts from conventional to post-conventional thinking (Kohlberg). The assessment of affect and cognition were, thus, not separate, which made

it difficult to differentiate possible educational and social effects on moral development.

Lind's dual-aspect theory is a further development of the cognitive-development approach and proposes an alternative to those methodological problems. Studies in Germany using the MJT (Moral Judgment Test, Lind) based on the dual-aspect theory pointed to the importance of education and particularly to the quality of the learning environment in the development of moral judgment competence. Herberich (1996) suggested a relation between learning environment and moral judgment competence, but in her study she found very small effect-sizes.

The present investigation of the relationship between learning environment and moral judgment competence development among higher education students was originally motivated by the controversial findings from the dual-aspect theory in its cognitive-affective research with the Moral Judgment Test (MJT). The aim of this study was to contribute to some still unsettled questions considered important to further develop the research in this field: 1) Contrary to the affective approaches, is moral learning in adulthood possible, specifically through higher education? 2) Contrary to Rest's assumptions, is it possible to distinguish and measure through the MJT affective and cognitive aspects of morality in the same behavior and are those aspects predictable? 3) Does moral judgment competence reflect cultural and structural differences irrespective of culture? 4) Is moral competence regression possible, in opposition to Kohlberg's statement? and 5) Are there gender differences in moral development when the variable education is controlled?

Results from the present study confirm and go beyond the predictions of the dual-aspect theory and reject maturational and affective theories in regard to moral development. Moral development is possible through higher education. However, higher education per se, or years of education alone, are necessary although not sufficient to foster moral judgment competence. Moral judgment competence levels have increased in groups where students were highly involved in role-taking and guided reflection activities. Moral judgment competence does not correlate with age nor does it correlate with years of study when the variable learning environment is not controlled. No gender differences were found. A *favorable* learning environment with high involvement in role-taking and guided reflection opportunities promotes moral cognitive development. In opposition, an *unfavorable* learning environment leads to regression or stagnation of moral judgment competence. Therefore, results confirm that moral development does not follow an invariant upward and forward process as defended by Kohlberg (1984). An upward and forward development is possible under specific circumstances and with support from a *favorable* learning environment. Not only the general involvement in role-taking and guided reflection opportunities, but the continuity and intensity of those experiences seem to play an important role in fostering moral development.

In the later sections, the discussion is organized according to each of the five hypotheses formulated for this study.

6.1 Moral cognitive development over the years: *favorable* learning environment versus maturational factors

The first hypothesis of this study refers to the assumption that moral development in adulthood is possible through a *favorable* learning environment. According to the results of this research, the quality of the learning environment is very important for the development of student's moral judgment competence. Irrespective of culture, students who report a *favorable* learning environment have higher moral judgment competence levels and those who report an *unfavorable* environment (too few opportunities for role-taking and guided reflection) show stagnation or regression of those competencies. The interaction of the variables learning environment and years of study with moral judgment competence are in both cultures statistically significant with moderate effect-sizes (r = 0,19 and r = 0,23 for Brazilian-Portuguese and German-speaking participants respectively).

By contrast, the variable of years of education is not statistically significant and does not show any correlation with moral judgment competence (Effect-sizes r = 0,04 and r = 0,03). This means that older students do not have higher levels of moral judgment competence if the variable learning environment is not controlled. Furthermore, no correlation was found between age and moral judgment competence.

This supports the idea that the learning environment in the understanding of the moral judgment competence development is important and Sprinthall's (1986) theory about the significance of role-taking and guided reflection for the moral development. It opposes maturational theories that defend the view that moral development is related to age, and consequently, to years of study. The observation of regression in moral judgment competence levels when students report an *unfavorable* learning environment contradicts the assumptions of Kohlberg (1984) about invariant and upward moral development. Students who had more gains on moral judgment competence are the ones who reported intensive involvement in role-taking and guided reflection opportunities. Groups that have reported isolated attempts at role-taking and guided reflection activities which were in addition not shared by most student peers, showed no gains or regression of moral judgment competence levels, as seen among German-speaking medical students from university I.

6.1.1 Moral judgment competence and the learning environment in different areas of study

Medical students Students from the three different areas of study showed, as expected, different levels of moral judgment competence. However, medical students seem to move towards a regression and psychology students to an increase in levels of moral competence. This suggests that learning environment characteristics influence moral judgment competence irrespective of culture.

In their first years, medical students in Brazil had similar moral judgment competence levels as the German-speaking peers. This could indicate that a specific culture is not in itself a determinant of moral judgment competence differences. Most medical students in Brazil (78%) reported a *favorable* learning environment. In spite of that, a regression (absolute effect-size = −9) was observed (Figure 5.3). However, no statistically-based conclusions could be made between results of groups of students who reported *favorable* and *unfavorable* learning environments. The reason is the extremely low number of subjects *(n)* in the second category. However, as presented in figure 5.9, moral judgment competence levels of medical students also decrease over the years of study when the variable learning environment is not controlled. The MJT C-scores among Brazilian medical students is dramatically lower in their final years. Moral judgment competence correlates negatively with years of study (r = −0,36; absolute effect-size = −12,4).

German-speaking medical students also show a decrease, though less dramatic, in their moral competence levels (absolute effect-size = −3,6). In addition, the interaction between the variables learning environment and years of study with moral judgment competence is statistically significant and shows a moderate effect size (r = 0,19). Undergraduates who report an *unfavorable* learning environment have much lower moral judgment competence levels (C-score) than those who report a *favorable* one (absolute effect-size = −10). On the other hand, a *favorable* learning environment seems to be able to curtail this tendency towards lower scores. Moral judgment competence does not increase but remains stable when comparing first with final-years students.

There is a correlation between higher moral judgment competence levels and the degree of involvement with role-taking and guided reflection opportunities. At first, two German-speaking medical schools are analyzed separately. A more significant regression (r = −0,11; absolute effect-size = −4,8) is found among students from university I, while those from university II remain constant in their moral judgment competence levels (r = 0,01; absolute effect size = −0,6). This could be explained by the fact that only 38% from university I students report a *favorable* learning environment which is characterized by a low-involvement with role-taking and guided reflection opportunities. On the other hand, 66% from the university II students report a *favorable* learning environment with

high-involvement with role-taking and guided reflection. The correlation found between moral judgment competence and *favorable* learning environment in that institution is r = 0,24 (table 5.5).

This suggests that a high involvement in activities shared by most students have an influence on moral judgment competence development. A low-involvement could indicate that moral cognitive development is not fostered. In addition, psychology students show that the higher the involvement with opportunities for role-taking and guided reflection, the higher the gains in moral competence. These results are in line with results presented by Rest & Novaez (1991) with the DIT, when discussing the relation of students' engagement at college and its impact on moral development: "The highly involved students gained more on the DIT than students with low involvement" (p. 236). High involvement is described as follows: "Students high on education orientation were those who worked hard at their studies, enjoyed academic life, the world of ideas and the activities of reading and discussing, and who chose friends who were similarly serious students" (p. 236). High involvement is therefore related to real intellectual stimulation through discussion and responsibility taking.

The disappointing results with medical students indicate that medical education must be object of reflection. The concern about medical education has been consistently pointed out in previous studies. The present study contributes with one more piece in a mosaic suggesting that much more than technical competence is necessary to deal with the challenges of the medical profession.

These findings contradict several studies conducted previously which pointed to the general influence of higher education in the realm of moral judgment. Rest (1986) concluded that years of formal education, more than age alone, were the best moral development predictor. Pascarella & Terenzini (2005), in a recent review, confirmed the importance of higher education in fostering moral judgment: the increased levels of moral development observed among higher education students in different studies in the last decades — particularly a shift from conventional to postconventional levels (Kohlberg) — are more than simply the result of a maturation effect. After decades of research, there seemed to be no doubt that moral judgment can be fostered by education.

Results from the present study are in agreement with one by Lind (2000) and a review by Self & Baldwin (1994) which show that medical students, in contrast with students from most other areas, did not show increases in their moral development. Self & Baldwin (1994) analyzed different cross-sectional and longitudinal studies on the influence of medical education on moral judgment. They compared first-year with fourth-year students or first- with third- and fifth-year ones. The reviewed studies were conducted in the USA and Mexico and used the following instruments: the MJI (Moral Judgment Interview,

Kohlberg); DIT (Defining Issues Test, Rest); or Gibb's Social Moral Measure (SRM). The majority of those investigations showed no gains in moral judgment levels. Self & Baldwin concluded that medical education does not foster moral judgment competence. In addition, previous studies in Finland and Canada with medical students concluded that moral development is not fostered during medical education (Helkama, 2003).

DuBois (1997) conducted a cross-cultural study on moral reasoning about brain death and organ transplantation with physicians and nurses in Austria and Saudi Arabia. One of the instruments he used was the MJT (Lind). The C-scores obtained by physicians and nurses in Austria (C-score = 25,8 and 26,6) are similar to those obtained in this study: in Brazil, the C-score from medical students was 23,7 and in German speaking countries 28,9. In Saudi Arabia, C-scores are lower: C-score = 11,7 (physicians) and 11 (nurses). It has to be acknowledged, however, that the participants in Saudi Arabia took the test in a foreign language (English) and this might be a reason for the lower results.

Lind (2000) reviewed data from a previous longitudinal study conducted in Germany with students from different areas (FORM study). Students were tested four times, in their 1st, 5th, 9th and 13th semesters (N = 746). In this sample, 105 were medical students. C-scores from Germany students were higher in Lind's study. It might be that the "volunteer effect" could be responsible for selecting students with higher levels of moral judgment competence. In fact, participants with a volunteer philosophy agreed to participate in the research. In addition, it was observed that the decrease in the moral judgment competence scores among medical students appeared only in the longitudinal sample. According to Lind, if the German data with all subjects are analyzed including those participants who did not respond to all four tests in the longitudinal study, a slight increase on medical students' C-scores can be observed. It seems that a negative selection effect is working on top of the negative education effect found in medical schools. This indicates that the "drop-out" works in favor of moral development.

One could also argue that the lower C-scores detected in the present research as well as in DuBois' study could indicate a tendency in the medical schools regarding students' moral judgment competence in the last two decades (data from Lind were collected in 1987): their moral judgment competence levels did not improve, but rather, became worse.

Medical education deserves more detailed studies. However, some aspects could be considered in relation to the results of the present study. One factor that could be influencing the low performance of the students in regard to moral cognitive competence is a change in the criteria for choosing a medical career, particularly in Germany. The "numerus clausus" criterion enables students who have good notes to get a place in a medical school. This is not always associated with a genuine desire to become a physician. It seems that this criterion leaves behind students who had sense of a professional vocation and accepts stu-

dents who were high achievers in the high schools — ones who did not necessarily have the personal, social requirements for the helping profession. Lind (1981) defended a contrary position in regard to this issue. A follow-up study in Germany with high-school seniors who later entered university showed that the students who were accepted for the medical school were highly interested and motivated to study medicine. The selection through the notes (numerus clausus) which was already in function at that time (1976–1977), did not lead to a deformation of interests. Medical students showed high motivation and skills for the helping profession. The question seems to be how this situation develops in the course of their studies.

In fact, medical students have to deal with a lot of stress related to the vast quantity of information they have to learn. They have an extremely heavy workload and little or no time for active work, reflection, discussions, and even leisure activities. Students are overwhelmed also by the increasing number of examinations they are subjected to. This is confirmed by the present study in which they report low involvement with the role-taking and guided reflection activities.

The fact that 76% of the Brazilian-Portuguese and German-speaking medical students report that teachers give priority to memorization and reproduction of the learning content adds more evidence to the fact that they are under the influence of a traditional curriculum, where they have mostly a passive role. In addition, only 16% of the medical undergraduates report that their teachers' methods foster communication, discussion and critical abilities. Such a teacher-centered environment with few role-taking and guided reflection opportunities is reported also by Helkama (2003) in Finland, by Rego (2004) in Brazil, and is thought to be applicable to other medical schools.

Our finding that medical education fails to promote moral competencies that future medical doctors need for coping with moral dilemmas in their professional life is supported by Rego (2004) who affirms that this deficiency is particularly important in the fields of relationship competencies, communication and ethics. In an investigation with medical students, Rego (1997) found that students seek non-curricular opportunities for traineeships with the objective of improving and complementing their education. Students start as trainees when they are already in their seventh semester of study. Most of them however, report they are not prepared to assume all responsibilities (role-taking) that may be imposed: diagnosis and treatment of patients, without adequate supervision (guided reflection). On the other hand, most students complain that curricular opportunities for practical activities during their studies do not require active participation. They are generally only spectators. By observing those students, Rego concluded that the so-called "practical" activities could be better defined as demonstration activities. At the higher semesters when they are more involved with clinical cases, he observed a growing pas-

sivity. Rego (2004) concluded that students enter professional morality in an uncritical way. They stop behaving critically and adapt to what could be called the "professional conformity". His hypothesis is that the regression phenomenon reflects young students' hearts and minds oppressed by the medical corporation.

Psychology students In both cultures, psychology students show a similar tendency to increase their moral judgment competence levels over the course of their studies. The results in Brazil should be analyzed according to a particular variable called "institution type". Students from competitive universities show statistically significant gains in their moral judgment competence levels over the years. These findings relate to those presented in section 3.1, indicating a correlation with a *favorable* learning environment.

As far as psychology programs are concerned, it seems that students from competitive universities in Brazil and German-speaking students share some characteristics in spite of the cultural differences: more than 80% of the students from both programs reported a high involvement with a *favorable* learning environment since the first years of study. This seems to indicate that the psychology program is organized in a way that provides students with opportunities for role-taking and guided reflection in different domains of the learning environment which are distributed over their whole program and not only concentrated in their final years of study.

Brazilian students show that the effects of the interaction of moral judgment competence and learning environment are statistically significant (Effect size r = 0,14). The analysis of variance was not performed with the German-speaking sample, because the number of subjects in the group with an *unfavorable* learning environment was too small n ($n = 1$). Psychology students from non-competitive institutions in Brazil did not show any change in their initial low C-scores. It seems to confirm that when opportunities are not shared by most students and not distributed along the years of study, they are not efficient in promoting moral judgment competence growth. Non-competitive programs in psychology are mostly evening programs. Almost 80% of the students work full time and go to school in the evening. In the present study, the effect of work on moral judgment competence was not statistically significant. This variable, however, was reported by Pascarella (2001) as having a correlation with learning abilities. Part-time jobs on or off campus had a positive influence on learning, but working more than twenty hours a week off campus had a negative influence.

Psychology students in Brazil presented a positive correlation between moral judgment competence and role-taking and guided reflection opportunities that are semi-syllabus related. Tutor and research activities correlated (effect sizes, r = 0,22 up to 0,28) with higher levels of moral judgment competence. In addition, those activities were connected

to respective guided reflection opportunities such as discussing suggestions to improve the work, autonomous ways of solving problems or the use of library and information resources.

German-speaking students showed a high correlation between extra-syllabus activities of role-taking and guided reflection with moral judgment competence. Activities such as participating or having a position at the university council, different students committees and organizations associated with the respective guided reflection opportunities are related with higher moral judgment levels.

Business administration students Moral judgment competence correlates negatively with years of study among business administration students from competitive institutions in Brazil. Their moral judgment competence levels in their final years are lower than the ones in the first years: absolute effect-size = $-5{,}5$; r = $0{,}21$. This indicates that regression is not only a phenomenon among medical students and that competitive universities are not a guarantee of offering a *favorable* learning environment, as one may think. In addition, a small negative correlation (r = $-0{,}15$) between moral judgment competence and learning environment was found among those students. The C-scores from students who report a *favorable* learning environment is lower than those who report an *unfavorable* one. A low involvement (53%) in role-taking and guided reflection opportunities might explain this situation. It seems that a positive correlation demands a higher level of involvement in those activities. No other correlations were found in both cultures.

6.2 Affect and cognition as parallel aspects of moral behavior

Because affective and cognitive aspects can be measured independently using the MJT, it was able to test the hypothesis whether there is a systematic empirical relationship between those two aspects, as predicted by Piaget and by the dual-aspect theory. Indeed, both aspects correlate very high with one another. The more students are consistent in their ability of using moral principles in their judgments (cognition), the more they prefer higher moral developmental stages (affect).

The hierarchical preference of moral stages as defended by Rest (1973) is supported by the present study, but some particularities need to be mentioned. Indeed, higher stages (5 and 6) are preferred comparatively to lower ones (1 and 2), but stage preference order does not remain exactly the same in both cultures which were the object of this research. In particular, there is a great difference between attitudes related to stage 3 between

Brazilian and German-speaking students. Brazilian students tend to accept stage 3 arguments, which are rejected by German-speaking subjects. In addition, Brazilian students tend to prefer stage 3 over stage 4 arguments. German-speaking students on the other hand, prefer stage 5 arguments over stage 6 ones. Those particularities could be either methodologically explained or they could reveal indeed the influence of social and education factors on the Kohlbergian stages of moral orientation. They reveal a general agreement between different cultures in regard to preference for cognitively higher moral principles, but show particular exceptions which should be further investigated.

As verified in hypothesis 2, moral judgment competence can be separately analyzed and reflects cultural and educational differences. The MJT provides a measurement of a cognitive structure, independently from conventional and cultural criteria. The moral cognitive aspect is measured independently of moral attitudes and values. Moral judgment competence takes into consideration how consistently a person applies internal, accepted, cognitive organized moral principles when judging moral issues. It reveals the competence of relying on moral principles on the judgment of arguments that are in agreement and particularly in disagreement with one's own opinion. In other words, what is assessed is the core of a democratic, conflict-solution competence. Taking into account that a cognitive structure is focused, it is possible to detect significant differences between moral judgment competence levels in the countries investigated in this study.

6.3 Moral judgment competence and culture: particularities in the Brazilian education system

The differences in moral judgment competence found in the different cultures permeate this discussion as a whole. However, more detailed considerations are important at this point. According to hypothesis 3a, moral judgment competence would not correlate with years of study if the variable learning environment is not controlled. A one-factor analysis of variance shows that the effect of year of study is not statistically significant. MJT C-scores from students in their first and final years remain almost at the same level at the beginning and at the end of their studies in both cultures. This supports the idea that quality of education is a more important factor in students' moral cognitive development than years of education.

According to hypothesis 3b, a statistically significant correlation in regard to differences among areas of study was expected. The hypothesis is confirmed and was extensively discussed in a previous item of this section. This confirmation is in agreement with the information from hypothesis 3 and 1.

With regard to hypothesis 3c, a statistically significant correlation between moral judgment competence and type of institution in Brazil was expected. Students from competitive institutions in Brazil were expected to have higher C-scores than students from non-competitive ones. Results regarding cultural and educational particularities in Brazil that might interfere with moral judgment competence are discussed in this section. It was expected that the MJT C-score varies between the cultures here investigated. However, considering that moral judgment competence has a cognitive foundation which reflects a structural similarity by the moral competence measure, results from different cultures can be compared. Lind (2005) defends the position that the differences encountered seem to be rather attributable to the quality of education than to the quantity (years) or to the culture itself. The present author suggests that differences found relate to an effect of the learning environment in each culture and they reflect, in addition, different levels of *maturity* regarding moral judgment competence.

Moral judgment competence correlates with institution type: participants from high competitive institutions have higher C-scores (C-score difference = 10 points). The correlation between moral competence and type of institution confirms data from Bataglia (1998 and 2001) with small samples. In her first study, participants were psychology students from a high competitive university (C-score 40,7). In her second, participants were psychology students from a low competitive institution (C-score 14,8). At this point, the following questions should be asked:

- Do students from competitive institutions maintain their higher moral judgment competence levels during the time of their study?

Results from this study show that students who maintain or increase those levels are the ones who present a correlation between moral competence with role-taking and guided reflection opportunities. In Brazil, this correlation was found only among psychology students from competitive institutions. In the German-speaking sample, this correlation was found among psychology students and also in one group of medical students. High competitive institutions per se are not responsible for fomenting higher C-scores. In Brazil, medical schools are very competitive, with a mean of 35 candidates per place. However, moral judgment competence levels from Brazilian-Portuguese and German-speaking medical students present a regression when comparing first and final years of study. A small regression was also found among Brazilian business administration students from high competitive universities, where the involvement with opportunities for role-taking and guided reflection was low at the beginning and continued low to end of the program. They are, however, mostly part-time students who work full-time. The possibilities for such programs to implement more activities where students take real responsibilities are

more limited compared to the medical school in all different countries, where students attend real full-time programs.

- Do non-competitive institutions contribute to the moral development of their students?

Students in psychology and business administration from non-competitive institutions in Brazil did not change significantly their moral judgment competence levels by the end of their programs. Effect sizes of 0,07 for both cases show no correlation, which indicates perhaps that the decrease of 1,5 points in the C-scores, while not great enough to be statistically significant, should be studied further. These results could be compared with the ones from business administration students from high competitive universities in which C-scores decreased in 5,5 points (effect size = 0,21). This could add evidence to the statement supporting the idea that the quality of the program is not necessarily related to the structure of the higher education system. Lower competitive institutions did not contribute to improvement in the moral judgment competence for psychology and business administration students; as well, high competitive institutions did not contribute to fostering moral competence among medical and business administration students.

Our finding, that the specific learning environment rather than the educational institution per se is accountable for the learning outcome (i.e. moral judgment competence) agrees well with the observation by Pascarella and Terenzini (1991): "The traditional and publicly accepted indicators of college 'quality' (e.g., student body selectivity, prestige measures, educational resources, large libraries and scholarly faculty) tell us little about the quality and impact of the undergraduate education a student receives" (p. 458). What is called "quality" could also be understood as "measures of institutional advantage". This can be demonstrated when data about social characteristics from Brazilian students enrolled in both types of institutions — high and low competitive — are interpreted. Real quality seems to reside in what is done programmatically more than in what resources an institution has. Pascarella & Terenzini's review showed that students from small private liberal arts colleges in the USA had higher gains in moral judgment than students from large public universities.

The participating students from competitive universities achieved higher moral judgment competence scores. They have more opportunities for role-taking and guided reflection. They are enrolled mostly in full-time programs (medical school and psychology). From those, 35% work, holding mostly part-times jobs. Almost 80% from the non-competitive institutions students (psychology and business administration) work full-time and study in the evening. There is a considerable difference in regard to their parents' level of education: 61% of the parents of students in competitive universities completed higher

education, whereas only 15,1% of the parents of students from low competitive universities did. The background considering secondary education is also remarkable: 23% from high competitive universities students come from the public secondary system, as opposed to 47% in the lower competitive ones. This confirms the traditional tendency in Brazil, where students who had access to better secondary education (private) are most prepared to succeed in the entrance examinations for the competitive institutions. In addition, students from high competitive institutions are younger (by an average of 6 years) than the other ones, which means, students from low competitive institutions tend to join the work force before beginning a higher education program.

It seems that a private high school can better prepare students for entrance examinations at the universities, but though not better in moral competencies. A very recent report from the Ministry of Education (Inep: MEC, 2006) about high school national annual examinations reveals that in the whole range of the competencies tested, students from both private and public high schools scored the lowest in the ethical/moral category. Results show that students are not prepared to deal with ethical and moral issues involving citizenship. Projects are being implemented with the purpose of improving those competencies.

Those results have led to the discussion in Brazil about the higher education system. Private higher education institutions in Brazil have grown enormously in the last decade. They account for almost 70% of the students enrollment. The number of students have doubled, reaching more than 3 million in 2002 (Schwartzmann, 2004). Schwartzman defends the idea that higher education in Brazil "grew by incorporating persons from the same pool of candidates as before, instead of opening up to other social sectors" (p. 76). The Brazilian higher education system reaches only 9,8% of the 18–24 age group. This problem is related to other ones such as the reduced number of students who finish secondary education. The present study's findings seem to be in agreement with Schwartzman's analysis. In spite of the fact that this study brought directly no information about family income levels, other information regarding social status was gathered and a clear distinction between students from competitive and non-competitive institutions is shown in several aspects. In spite of the huge expansion in the higher education system, it nevertheless reproduces old tendencies, particularly in the south-east area of the country, where the data was collected.

6.4 Regression in moral judgment competence

In this study it was found relatively large decreases of moral judgment competence supporting Lind's (1985;2003) findings of moral regressions in other samples. It can no

longer be denied that moral development can also move downward and does not always, as Kohlberg assumed, move upward.

A decrease in the moral judgment competence levels is observed among medical students in both cultures and among business administration students from competitive institutions in Brazil. Brazilian medical students in their final years have much lower moral judgment competence levels (absolute effect size = −12,4, r = −0,36) than their peers in the first years. German-speaking students from university I decrease −4,8 points in their C-scores (r = −0,11). Business administration students decrease −5,5 points (r = −0,21). According to Lind (2004), these values represent very significant effect-sizes. The other groups investigated increased or maintained their C-scores.

Results from the present study support the "Bildungstheorie" and run counter to Kohlberg's and Piaget's postulates of an invariant forward and upward development. In contrast to maturational and socialization theories, Lind's theory claims that regression in moral competence levels can occur as a result of lack of stimulation through education. Kohlberg's (1969) theory defends the interaction between individual and environmental structures, but at the same time emphasizes genetic, maturational aspects of development, rejecting consequently an eventual regression within the developmental process.

In the present study, there were no changes regarding stage preferences in the groups where regression was detected, either in Brazil or in German-speaking countries. The pattern of hierarchical preference remained very similar for each group. Regression refers to the cognitive aspect of moral development-judgment competence. Results of this investigation are in agreement with Lind (2000) when reporting from the FORM longitudinal study: "Attitudes towards each of the six Kohlbergian stages of reasoning remained very stable over the five years in which they were observed. Neither medical nor other students change their preferences for stages 5 and 6 over all stages" (p. 27).

This is a very important point in the discussion about the meaning of the moral judgment competence regression found among medical students. As already mentioned, in the review conducted by Self and Baldwin (1994) other instruments of investigation were used. The MJI is, according to Lind (2002), also an instrument to measure moral competence, but due to its nature, provides mixed indices for affective and cognitive aspects of the moral judgment behavior. The DIT "seems to be sensitive only to changes in the adult age from conventional to postconventional stages" (p. 24) . If a regression were found, it would mean that the expected preference for the Kohlbergian moral higher stages would have been affected.

On the other hand, the MJT measures moral judgment development in its cognitive aspect-moral judgment competence — and in its affective aspect-moral attitudes. The MJT measures both aspects of moral judgment but independently. Therefore, a regression

or stagnation of moral development assessed by the MJT can be detected. The regression or stagnation found among medical students, as Lind (2000) explains, "is not attributable to a fixation of moral attitudes but pertains indeed to a stagnation, or even regression of moral judgment competence" (p. 27).

The detected phenomenon of moral judgment competence regression is not, as previously detected, limited to medical students. The tendency to regression (absolute effect-size $= -1{,}96$) first observed among Brazilian business administration students is also found to be statistically significant among participants from competitive institutions in Brazil. Regression of moral judgment development among medical and business administration students is related to *unfavorable* learning environments over the course of the years or with an insufficient involvement with role-taking and guided reflection opportunities. This suggests, in addition, that competitive institutions do not necessarily offer a *favorable* learning environment that fosters moral judgment competence.

The cognitive score of the MJT is the C-score, which reflects the subject's moral judgment competence. As Lind (2004) explains: "With the MJT, moral judgment competence is operationally defined *as the ability of a subject to accept or reject arguments on a particular moral issue consistently in regard to their moral quality even though they oppose the subject's stance on that issue.* Only the fact that they have to cope with the emotionally difficult task to accept moral arguments that oppose their opinions makes this a competence index. Mere preference for certain stages of moral reasoning would indicate their moral attitudes" (p. 16). In other words, the C-score indexes the degree to which a person is able to judge different arguments in a moral discussion "in regard to their moral quality rather than in regard to their agreement with his or her opinion (. . .)" (p. 16). A consistency of a person in judging only the quality of arguments that are in favor of his/her opinion are seen as not a valid indicator of moral judgment competence but rather, moral rigidity. The lowest C-score would be attained when a person judges highly all arguments in favor of his/her opinion and lowly all arguments against his/her opinion.

Low C-scores mean low levels of moral judgment competence, inability in judging arguments irrespective of one's own opinion, difficulties in engaging in moral and ethical discussions and recognizing the perspective of others. In a way, it means a decrease in his/her flexibility and ability of hearing and arguing, of critically discussing and other similar tasks.

This study also sheds lights on the controversy between Lind and DuBois (1997). DuBois defends the view that a lowest conceivable C-score would "reveal a certain kind of pragmatic attitude towards moral reasoning" which combined with an "ethical objectivism" result in degrees of moral immaturity. "However, Lind's test penalizes not only the combination of ethical objectivism with a pragmatic attitude, it penalizes ethical objectivism

insofar as it leads one not to esteem counter-arguments which one believes fail to substantiate the position argued for" (p. 140). He suggests that the C-score could be theoretically reduced to a measure of "value neutrality". The author of the present investigation argues that a person does not need to give up his/her opinion about an issue and adopt a position of neutrality in order to have a high moral competence level. On the contrary, the ability to hold an opinion and, in spite of that, remain open to evaluate the opinion of others and recognize its moral principles, reveals high moral competence levels.

Rego's (2004) review on Lind's study with medical students offers a different understanding of the regression phenomenon. Rego defends the idea that the decreases in the MJT C-scores express rather the consequences and impacts of medical education: it leads individuals (future physicians) to neglect others (patients). He does not accept that a regression in cognitive abilities could occur. According to him, this would be possible only in some clinical cases like "Alzheimer" for example. It seems that what Rego calls "cognitive abilities", Lind considers as affective/attitude aspects of moral behavior or moral orientations (Kohlberg's moral stages). In fact, a regression as observed among the medical students does not indicate that students suffered cognitive losses in their moral development levels in the sense of the moral stages proposed by Kohlberg. As shown in the investigation of hypothesis 2 of this study, regression on the C-scores was not associated with changes in the hierarchical preference of moral reasoning, but to lower levels of moral judgment competence.

6.5 Gender and moral judgment competence

No gender differences were found in regard to moral development in both affective and cognitive aspects. This confirms the dual-aspect theory and "Bildungstheorie" hypothesis that the hierarchical preference of moral stages and moral judgment competence do not depend on gender, if the variable education is controlled. The present investigation shows that both men and women prefer post-conventional moral principles to solve moral conflicts (affective aspect) and that they are able to apply them in concrete situations (moral judgment competence).

6.6 Conclusions

The present study suggests that students' moral judgment competence does not simply unfold as a result of maturational processes alone. Moral development can be stimulated by higher education if educators know how to provide a *favorable* learning environment for it. This requires integration of academic and experiential learning achieved through high

and consistent involvement with opportunities for role-taking and guided reflection at the university. This study relates evidence that moral development is a real and possible goal of higher education and that moral judgment competence should be considered as one of the core competencies to be developed among the students.

Results from the present research confirm that cognitive-structured interventions based on opportunities for role-taking and guided reflection in the university promote moral growth. This is in agreement with Paulo Freire's (1999) ideas about education: only the praxis of action and reflection can stimulate development. Results suggest also that the use of institutional types as a measure for quality of education is inadequate. Moral cognitive development is more related to a *favorable* learning environment, than to other institutional characteristics such as competitiveness, size, facilities or resources. A *favorable* learning environment should be achievable in any type of university, provided that educators are engaged on that.

One of the implications of this study relates, therefore, to the potential of role-taking and guided reflection (RTGR) constructs as a conceptual model for facilitating a *favorable* learning environment. This involves also the development of independent and critical thinking, creativity and social responsibility. This author proposes that the RTGR model has a general and a transversal character. This means, providing students with high and consistent involvement with those activities in different academic disciplines in a semester, from first until final years, represents a powerful basis to moral development. In this way, the RTGR model is not limited to ethic, Religion or character education contexts. Rather, its efficiency seems to be related to its magnitude and adaptation to different curricula.

According to this model, moral judgment competence development occurs as a result of action and interaction of the individual with the learning environment in a process similar to that described by Piaget (see introductory chapter). Students learn from interactions and experiences with the world (role-taking and guided reflection) and as a consequence develop more complex cognitive structures which constitute a more mature way of experiencing morality, characterized by a perspectivistic view. This process can be observed already during the childhood years, but needs to receive constant stimulation, particularly in the adulthood, in higher education years.

Based on the results of this study it is suggested that educators who are interested in the development of moral judgment competence consider two possible levels of intervention. First, at a teacher professional development level and second, at the students' level.

According to Reiman & Johnson (2003), there are "important relationships between moral/ethical judgment and professional action" (p. 11). Teachers who have higher levels of moral judgment are more able to encourage discussion, foster more active and critically participation in the classrooms and are more learner centered. However, it can-

not be expected that educators are in fact already prepared for this complex task of providing students with action-learning and complementary support and reflection about their experiences. This can also be learned. As Reiman (2000) states: "Educators cannot assume a sophisticated capacity for reflection. Rather, reflection requires educating" (p. 514). Reiman & Johnson describe a theoretical and conceptual model of intervention for teacher education and professional development program based on seven essential elements: "contextualized learning and development, new role-taking, guided inquiry, balance, continuity, support and challenge and reflective coaching" (p. 12). These interventions encourage teacher reflection about their own experiences, beliefs and goals, and supports fundamental changes in the teacher roles. This enables the creation of more favorable learning environments for the students. The combination of teacher professional development programs with curriculum changes based on the constructs of role-taking and guided reflection as defended by the present study should offer a balanced, *favorable* environment for learning in general, and particularly, for the development of moral cognitive competencies.

Lind's (2003) "Konstanz method of dilemma discussion" (KMDD) offers another possibility for a complementary intervention for both teacher and students. This method has been widely used in recent years in Germany as well as in other countries. As reported previously in this study, the KMDD can be used by certified teachers with the goal of improving moral competence and discourse levels among students at different age levels. The efficacy of the KMDD has been systematically evaluated and shows significant lasting effects on the cognitive-moral development of students. The "Konstanz method" of the dilemma discussion offers teachers the possibility of increasing their own levels of moral judgment competence at the same time that they learn about a method that can be in a later phase, offered to the students. The KMDD method is in agreement with the concepts of role-taking and guided reflection, providing students with shifts between challenging and supportive situations regarding moral judgment.

The KMDD seems also to be an alternative to develop moral judgment competence among medical students in particular. Recent unpublished research reports show first promising results using moral dilemma techniques in the tradition of the Blatt & Kohlberg method and the Konstanz method particularly, in the development of moral judgment competence of medical students. At this point it is suggested to conduct a longitudinal investigation with medical students, controlling the effect of the interventions proposed by the present study.

Providing students with role-taking activities (for instance, traineeships) without opportunities for reflection can bring negative results for the students, as previously discussed in this section. As Reiman (2000) states: "New experiences that are devoid of reflection

make no impact on the cognitive-structural level of the adult learner" (p. 514). The author of the present research defends the idea that the lack of opportunities for reflecting upon and making meaning from those experiences do not contribute to moral cognitive development and in addition, can have negative influences on the students' developmental process.

However, how does this fit in cross-cultural research? The role-taking and guided reflection framework seems to offer useful constructs for students and teacher education. It needs to be adapted and differentiated. As Reiman (2000) states, "[It] requires commitment of time and continuity, and careful attention to how a person's reflections are guided. The 'one size fits all' approach to guided reflection ignores the unique needs of the adult learner, and it underestimates the sophisticated and subtle change of how to assist others in extracting complex meaning from experience" (p. 524).

The present work sustains the idea that morality is more than an affective disposition. Moral cognitive competence, as another aspect of morality, cannot be considered as an isolated aspect either. Following the parallelism hypothesis confirmed in this study, affective aspects correlate with cognitive aspects of the moral. The more students are stimulated in their moral cognitive competences, the more they accept higher moral principles when reflecting on moral decisions. In the same way that morality has to be understood as a whole, moral education based on cognitive-developmental approaches should not be limited to some specific units in a curriculum. Rather, it should permeate the whole curriculum of undergraduate students, fostering conflict resolution, decision-making, critical thinking, autonomy and responsibility in participating in a democratic society.

Appendix A

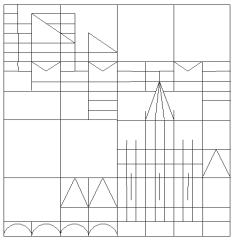
Instruments for data collection

Research participants received: a) cover pages, b) the MJT and c) the ORIGIN/u questionnaire. Those items are presented in the following pages (excepted for the MJT) in the Brazilian-Portuguese and German versions. For the ORIGIN/u used in Switzerland please contact the authors.

For the MJT and its rationale see Lind (1985). For an updated version, permission for use and scoring algorithm please contact the author (G. Lind) at
http://democracy-education.net/

A.1 Portuguese version

A.1.1 Cover pages with instructions



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Prezado aluno,

Você esta recebendo dois questionários a serem respondidos. O primeiro, o MJT, apresenta dois dilemas de natureza ética. O segundo permitir-nos-á obter importantes informações sobre o ambiente educacional no ensino superior. Ambos referem-se a estudo conduzido por pesquisadores da área de Desenvolvimento Moral e Educação do departamento de Psicologia da Universidade de Konstanz, na Alemanha, coordenado pelo renomado pesquisador Prof. Dr. Georg Lind. Essa pesquisa tem por objetivo estudar a realidade universitária e suas relações com a ética ou moral e está sendo desenvolvida em vários países, entre eles a Alemanha, a Itália, outros países da Europa, assim como no México e na Colômbia. A coordenação do presente estudo no Brasil está a cargo da psicóloga brasileira Marcia M. Agati.

Solicitamos a gentileza de sua colaboração, fundamental para que possamos incluir o Brasil nesta investigação científica. As informações por você fornecidas nos auxiliarão no conhecimento de aspectos da realidade universitária brasileira referentes aos temas centrais da presente pesquisa e, estamos certos, representam relevante contribuição para reflexões e críticas acerca do ensino superior no Brasil e em outros países.

Salientamos que os dados resultantes de suas respostas aos dois citados instrumentos de pesquisa serão tratados com sigilo dentro dos padrões da ética científica.

Agradecemos-lhe muito pela sua colaboração.
Atenciosamente,

Marcia M. Agati

MJT

Instruções

Você esta recebendo dois dilemas éticos para serem analisados: I) Dilema dos operários e II) Dilema do médico. Inicie com o dilema dos operários (I). Leia atentamente a descrição do dilema e a solução para ele apresentada.

Você deve então, em primeiro lugar, julgar o comportamento dos operários. O que você acha da atitude tomada? Por favor, responda no item A, na escala de -3, -2, -1, 0, 1, 2, 3 o quanto você concorda ou discorda com o comportamento dos operários.

Em seguida, na parte B encontram-se 6 argumentos A FAVOR da atitude dos operários e na parte C, 6 argumentos CONTRA essa mesma atitude. A sua tarefa é decidir, em uma escala de -4, -3, -2, -1, 0, 1, 2, 3, 4 o quanto você aceita ou não, cada um dos argumentos oferecidos em ambas as partes. Assim que terminar, siga as mesmas instruções para o dilema do médico que se encontra no verso.

Note que as escalas que você encontrará devem ser interpretadas da seguinte forma:

-4 discordo completamente
-3 discordo fortemente
-2 discordo parcialmente
-1 tendo a discordar
0 indeciso ou impossível decidir
1 tendo a concordar
2 concordo parcialmente
3 concordo fortemente
4 concordo absolutamente

A.1.2 ORIGIN/U questionnaire

QUESTIONÁRIO
ENSINO SUPERIOR: AMBIENTE EDUCACIONAL

ORIGIN/u[1]

Nr.	**Perguntas**	**Por favor, responda sempre nesta coluna.**			
2	Nome da Instituição de Ensino Superior na qual estuda:				
3	Tipo de instituição:	1. Pública ( ) 2. Particular ( )			
4	Qual o grau que pretende obter?	1. Graduação: (Bacharel, Licenciado, etc.) ( ) 2. Mestrado ( ) 3. Doutorado ( ) 4. Outro ( ) Especifique:			
5	Curso:	1. Administração ( ) 2. Medicina ( ) 3. Psicologia ( )			
6	Qual semestre cursa atualmente?	1°. ( ) 2°. ( ) 3°. ( )	4°. ( ) 5°. ( ) 6°. ( )	7°. ( ) 8°. ( ) 9°. ( )	10°. ( ) 11°. ( ) 12°. ( )
7	Período:	1. Integral ( ) 2. Noturno ( )		3. Matutino ( ) 4. Vespertino ( )	
8	Idade:				
9	Sexo:	1. Feminino ( )		2. Masculino ( )	
	Escolaridade:	Favor completar abaixo:			
10	Em que ano concluiu o segundo grau?	Ano de conclusão: _____			
(91)	Em qual tipo de escola?	1. Pública ( ) 2. Particular ( )			
11	Frequentou outro curso superior anteriormente ao atual programa?	1. Sim ( ) a. Incompleto ( ) b. Completo ( )		2. Não ( )	
12	Você trabalha atualmente? (caso não trabalhe, vá direto à questão 17)	1. Sim ( )		2. Não ( )	
13	Há quanto tempo?	1. até 2 anos ( ) 2. 3-5 anos ( ) 3. 6-9 anos ( )		4. 10-15 anos ( ) 5. 16-20 anos ( ) 6. há mais de 20 anos ( )	
14	Função atual:				
	No seu trabalho, você tem a oportunidade de:	**Muitas vezes (3)**	**Várias vezes (2)**	**Rarament-e (1)**	**Nunca (0)**
15	a) discutir em grupo questões importantes que impliquem em considerar diferentes pontos de vista antes de chegar a decisões?				
16	b) definir sua própria forma de trabalho para atingir os objetivos estabelecidos?				
17	Qual atividade você deseja exercer após a conclusão do curso:				
18	Participou de algum programa de intercâmbio ou residiu no exterior por mais de dois meses?	Sim ( )		Não ( )	

[1] Questionnaire for assessing opportunities for role-taking and guided reflection in the University ORIGIN/u (c) 2002 Georg Lind.& Marcia Agati.

19	Qual o grau de escolaridade do seu pai?	1. até 4. serie ( ) 2. até 8 serie ( )		3. 2. grau ( ) 4. Superior ( )	
20	Qual o grau de escolaridade da sua mãe?	1. até 4. serie ( ) 2. até 8 serie ( )		3. 2. grau ( ) 4. Superior ( )	
21p 22m	Qual a nacionalidade de seus pais?	1. Brasileiros ( ) 2. Outra (favor especificar)			
23	Qual a sua nacionalidade?	1. Brasileiro ( ) 2. Outra (favor especificar)			
	No curso atual, com qual freqüência você desenvolveu as seguintes atividades:	**Muitas vezes**	**Várias vezes**	**Raramente**	**Nunca**
24	Participou do processo de avaliação institucional realizado pela sua Instituição de Ensino Superior				
25	Teve oportunidade de discutir os resultados dessas avaliações				
26	Apresentou sugestões relativas aos programas das disciplinas				
27	Apresentou trabalhos ou seminários em classe				
28	Participou ou conduziu discussões ou debates em classe				
29	Realizou algum tipo de pesquisa sobre tema de escolha própria				
30	Teve oportunidade de discutir a articulação entre teoria e prática				
31	Elaborou projetos práticos para aplicação na comunidade				
32	Efetivamente pôde experimentar ou aplicar o projeto em atividades práticas ou estágios na comunidade				
	Caso você tenha realizado alguma das atividades descritas nos itens 24 a 32, responda às questões 33 a 35:	**Muitas vezes**	**Várias vezes**	**Raramente**	**Nunca**
33	Discutiu com seus professores os problemas e dúvidas que surgiram				
34	Discutiu com colegas os problemas e dúvidas que surgiram				
35	Eu trabalhei sozinho, sem assistência				
	De uma forma geral, qual a característica do ensino no seu curso?	**Muitas vezes**	**Várias vezes**	**Raramente**	**Nunca**
36	Os **professores**, em sua maioria, incentivam os alunos a comunicação e a uma postura crítica em sala de aula, isto é, motivam-nos para fazerem perguntas, debates ou discussões?				
	As **tarefas e trabalhos** solicitados pelos professores:				
37	exigem discussão de pontos de vista diferentes?				
38	exigem solução de problemas de natureza prática ou teórica?				
39	pressupõem que você forneça sugestões quanto a melhor forma de conduzir o trabalho?				
40	exigem que você defina sua própria forma de trabalho visando atingir os objetivos estabelecidos?				

41	Os professores, em sua maioria, não incentivam os alunos a fazerem perguntas e não incentivam discussões				
42	As tarefas e trabalhos solicitados reduzem-se à memorização e reprodução de textos indicados				
	Enquanto aluno, você exerce (ou exerceu) algumas das seguintes atividades?	**SIM**		**NÃO**	
43	Auxílio de professores em atividades de pesquisa?				
44	Monitoria para disciplinas básicas?				
45	Monitoria para disciplinas mais específicas, ou supervisor de alunos em trabalhos em laboratórios etc?				
	Caso você tenha realizado alguma das atividades descritas nos itens 43 a 45, com que freqüência as seguintes pessoas ou recursos estiveram disponíveis para a discussão de problemas?				
		Muitas vezes	**Várias vezes**	**Raramente**	**Nunca**
46	Professores				
47	Outros alunos com mais experiência em tais atividades				
48	Biblioteca e recursos de informática				
49	Eu trabalhei sozinho, sem assistência				
	Por favor, caso você realize atividades de monitoria e\ ou auxiliar de pesquisa, responda às questões abaixo . Caso contrario, vá direto à questão 60 .				
	As suas atividades de **monitoria** oferecem oportunidade para:	**Muitas vezes**	**Várias vezes**	**Raramente**	**Nunca**
50	discussão de pontos de vista diferentes?				
51	solução de problemas de natureza prática ou teórica?				
52	que você forneça sugestões quanto a melhor forma de conduzir o trabalho?				
53	que você defina sua própria forma de trabalho visando atingir os objetivos estabelecidos?				
54	Nenhuma das anteriores. As atividades envolvem na maioria das vezes tarefas rotineiras ou repetitivas.				
	As suas atividades de **auxiliar de pesquisa** oferecem oportunidade para:				
55	discussão de pontos de vista diferentes?				
56	solução de problemas de natureza prática ou teórica?				
57	que você forneça sugestões quanto a melhor forma de conduzir o trabalho?				
58	que você defina sua própria forma de trabalho visando atingir os objetivos estabelecidos?				
59	Nenhuma das anteriores. As atividades envolvem na maioria das vezes tarefas rotineiras ou repetitivas.				
	***DENTRO* da sua Instituição de Ensino Superior, como você avaliaria sua participação nas atividades dos seguintes grupos**	**Participação ativa**	**Pouca participação**	**Interessado mas não ativo**	**Nenhum**
60	Partidos políticos				
61	Conselho universitário				
62	Conselho de curso ou departamento (ou equivalente)				

63	Representantes de classe ou comissões de alunos para eventos especiais (Organização de conferências, seminários, debates etc				
64	Algum grupo de caráter político ou social (ecológico, sem-terra, etc)				
65	Organização de alunos universitários em geral (ex: UNE ou outra)				
66	Organização de alunos de determinada área ou curso (Centro ou diretório acadêmico etc)				
67	Repúblicas ou residências universitárias				
68	Grupos universitários religiosos ou de apoio à comunidade				
69	Grupos ou organizações de fins culturais (teatro, música, dança, esporte etc)				
70	Você exerceu alguma função especial ou assumiu algum cargo ou posição em algum dos grupos anteriormente mencionados?	SIM ( )		NÃO ( )	
	Caso você tenha realizado alguma das atividades descritas nos itens 60 a 69, com que freqüência as seguintes pessoas ou recursos estiveram disponíveis para a discussão de problemas?				
		Muitas vezes	**Várias vezes**	**Raramente**	**Nunca**
71	Professores				
72	Alunos que realizam atividades semelhantes				
73	Biblioteca e recursos de informática				
74	Eu trabalhei sozinho, sem assistência				
75	Em relação as atividades descritas nos itens 60 a 69: você diria que suas atividades oferecem oportunidade para discussões e decisões próprias quanto ao andamento do trabalho?				
	***FORA* da sua Instituição de Ensino Superior, como você avaliaria sua participação nas atividades dos seguintes grupos (sem vínculo empregatício)**	**Muitas vezes**	**Várias vezes**	**Raramente**	**Nunca**
76	Atividades esportivas				
77	Instituições de assistência social ou ONGs				
78	Partidos ou campanhas políticas				
79	Organizações para fins ecológicos ou de proteção ambiental				
80	Grupos culturais ou de atividades tais como: teatro, música, grupo de estudos				
81	Grupos religiosos				
82	Qual a sua religião? (Por favor especifique ao lado)				
83	Quão religioso você se considera?	a) Absolutamente não religioso ( ) b) Um pouco religioso ( ) c) Muito religioso ( )			
84	Você exerceu alguma função especial ou assumiu algum cargo ou posição em algum dos grupos anteriormente mencionados?	SIM ( )		NÃO ( )	
	Caso você tenha realizado alguma das atividades descritas nos itens 76 a 81, com que freqüência as seguintes pessoas ou recursos estiveram disponíveis para a discussão de problemas?				

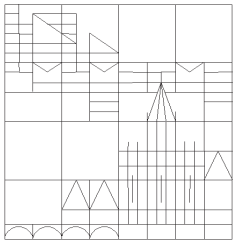
		Muitas vezes	**Várias vezes**	**Raramente**	**Nunca**
85	Pessoas mais experientes				
86	Colegas ou amigos				
87	Biblioteca e recursos de informática				
88	Nenhuma das anteriores. Eu trabalhei sozinho, sem assistência				
89	Em relação as atividades descritas nos itens 76 a 81: você diria que suas atividades oferecem oportunidade para discussões e decisões próprias quanto ao andamento do trabalho?				

90. Para finalizar, é muito importante saber seu ponto de vista a respeito da questão que se segue: além das atividades mencionadas nas diversas secções deste questionário, haveria ainda outras nas quais você tenha oportunidade de trabalhar de forma mais independente, ou seja, definir sua própria forma de trabalho, encontrar soluções e responsabilizar-se por atingir os objetivos estabelecidos ou criar e implantar projetos? (Por ex. na universidade, na comunidade ou em outras instituições) Por favor, descreva abaixo.

Muito obrigada pela sua colaboração!

A.2 German version

A.2.1 Cover pages with instructions



Universität Konstanz

FB Psychologie

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Sehr geehrter Student,
Sehr geehrte Studentin,

wir würden uns freuen, wenn Sie unser Forschungsprojekt durch Ihre Teilnahme unterstützen würden. Wir möchten Sie bitten, die folgenden zwei Fragebögen sorgfältig zu lesen und auszufüllen. Im ersten Fragebogen (MUT) werden Sie mit zwei Dilemmata konfrontiert, im zweiten (ORIGIN/U) werden Sie nach Ihren Lernbedingungen an der Universität befragt.

Diese Befragung ist Teil einer großen internationalen Studie über den Einfluss der Lernumgebung auf die moralische Urteilsfähigkeit. Die Studie wird vom Fachbereich Psychologie der Universität Konstanz in Zusammenarbeit mit Universitäten in Europa, Nordamerika und Lateinamerika durchgeführt. Weitere Informationen finden Sie im Internet unter

http://www.uni-konstanz.de/ag-moral

Alle Daten werden anonym erhoben und streng vertraulich behandelt.

Vielen Dank für Ihre Mithilfe!

Marcia Schillinger-Agati, M.A. & Prof. Dr. Georg Lind

MUT

Sie sollen zwei schwierige Situationen beurteilen: **1. Arbeiter** Dilemma und **2. Arzt** Dilemma. Beginnen Sie mit dem Arbeiter Dilemma. Lesen Sie zunächst die Situationsbeschreibung sorgfältig durch und geben Sie dann auf einer Skala von -3 bis 3 an, inwiefern Sie das Verhalten der Arbeiter für richtig oder für falsch halten.

Anschließend werden Ihnen Argumente für und gegen das Verhalten der Arbeiter präsentiert. Bitte, kreuzen Sie wieder auf einer Skala an, ob Sie mit dem Argument übereinstimmen oder es ablehnen.

Verfahren Sie anschließend mit dem Arzt Dilemma genauso.

Vielen Dank!

A.2.2 ORIGIN/U questionnaire

1.#_____ ( )

Fragebogen zur Hochschulbildung

Nr.	Frage	Antwort			
2.	Name der Institution, an der Sie im Momenteingeschrieben sind:				
3.	Art der Institution	( ) Öffentlich 1 ( ) Privat 2			
4.	Welchen Abschluss streben Sie an?	( ) Diplom 1 ( ) Magister 2 ( ) Doktor 3 ( ) einen anderen Abschluss. Welchen? _____			
5.	Ihr Studienfach				
6.	Wie viele Semester haben Sie bereits absolviert?	_____ Semester			
7.	Handelt es sich um ein Voll− oder ein Teilzeitstudium?	( ) Teilzeit 1 ( ) Vollzeit 2			
8.	Alter				
9.	Geschlecht	( ) Weiblich 1		( ) Männlich 2	
	Bildungshintergrund				
10.	Wann haben Sie Ihr Abitur gemacht?	_____ Abschlussjahr			
11.	Welche Abschlüsse haben Sie? (Bitte markieren Sie das Zutreffende)	( ) Abitur 1 ( ) Magister 2		( ) Diplom 3 ( ) Doktor 4	
12.	Arbeiten Sie zur Zeit gegen Entgeld?	( ) Ja 1		( ) Nein 2	
13.	Wenn ja, wie lange arbeiten Sie schon?	( ) Weniger als 2 Jahre 1 ( ) 3 − 5 Jahre 2 ( ) 6 − 9 Jahre 3		( ) 10 − 15 Jahre 4 ( ) 16 − 20 Jahre 5 ( ) mehr als 20 Jahre 6	
14.	Was ist Ihre derzeitige Position?				
	Haben Sie am Arbeitsplatz die Möglichkeit, ...	Oft	Manchmal	Selten	Nie
15.	An Diskussionen teilzunehmen bei denen alle Teilnehmer ihre Standpunkte äußern können, bevor eine endgültige Entscheidung getroffen wird?	**( ) 3**	**( ) 2**	**( ) 1**	**( ) 0**
16.	Ihren eigenen Arbeitsstil zu verfolgen, um ihre Ziele zu erreichen?	**( )**	**( )**	**( )**	**( )**
17.	Welchen Beruf streben Sie nach Abschluss Ihres Studiums an?	**( )**	**( )**	**( )**	**( )**
18.	Sind Sie jemals länger als 2 Monate allein auf Reisen gewesen (ohne ihre Eltern oder andere Verwandte)	( ) Ja		( ) Nein	
19.	Welchen Bildungshintergrund hat Ihr *Vater*? Bitte den höchsten Bildungsabschluss angeben.	( ) Hochschulabschluss ( ) Gymnasium (Abitur) ohne Hochschulstudium ( ) Mittlere Reife, Realschule ( ) Hauptschule ( ) Anderer _____			
20.	Welchen Bildungshintergrund hat Ihre *Mutter*?	( ) Hochschulabschluss ( ) Gymnasium (Abitur) ohne Hochschulstudium ( ) Mittlere Reife, Realschule ( ) Hauptschule ( ) Anderer _____			

	Welche Nationalität haben Ihre Eltern?				
21.	− Vater	( ) deutsch 1 ( ) Wenn andere, welche: _____			
22.	− Mutter	( ) deutsch ( ) Wenn andere, welche: _____			
23.	Welche Nationalität haben Sie?	( ) deutsch ( ) Wenn andere, welche: _____			
	Wie oft haben Sie in Ihrem Studium folgende Dinge getan?	Oft	Manchmal	Selten	Nie
24.	− An Lehrevaluationen Ihrer Universität mitgewirkt	( )	( )	( )	( )
25.	− Die Ergebnisse dieser Evaluationen diskutiert	**( )**	**( )**	**( )**	**( )**
26.	− Eigene Vorschläge zu den Kursinhalten gemacht	**( )**	**( )**	**( )**	**( )**
27.	− Referate im Seminar gehalten	**( )**	**( )**	**( )**	**( )**
28.	− Eine Diskussion im Seminar moderiert	**( )**	**( )**	**( )**	**( )**
29.	− Eine kleine Studie zu einem selbstgewählten Thema durchgeführt	**( )**	**( )**	**( )**	**( )**
30.	− Das Verhältnis von Theorie und Praxis diskutiert	**( )**	**( )**	**( )**	**( )**
31.	− Praktische Projekte ausgearbeitet	**( )**	**( )**	**( )**	**( )**
32.	− An praktischen Übungen und Praktika teilgenommen	**( )**	**( )**	**( )**	**( )**
	Falls Sie einige der Dinge ausprobiert haben, die in den Nummern 24 bis 32 beschrieben sind, wie oft hatten Sie Gelegenheit, Probleme zu diskutieren?				
33.	Mit ihren Dozenten oder Professoren	**( )**	**( )**	**( )**	**( )**
34.	Mit anderen Studenten	**( )**	**( )**	**( )**	**( )**
35.	Mit niemanden. Ich war ganz auf mich allein gestellt	**( )**	**( )**	**( )**	**( )**
	Wie oft trifft folgende Aussage zu?	Oft	Manchmal	Selten	Nie
36.	Lehrende fördern die Kommunikation und Kritikfähigkeit im Seminar, z.B. motivieren Sie Studenten, Fragen zu stellen und Diskussionen zu führen	**( )**	**( )**	**( )**	**( )**
	Aufgaben und Hausarbeiten, die sie erhalten haben...				
37.	− erfordern Diskussionen über verschiedene Standpunkte	**( )**	**( )**	**( )**	**( )**
38.	− erfordern Problemlösetechniken (theoretische und praktische)	**( )**	**( )**	**( )**	**( )**
39.	− erfordern, dass Sie Vorschläge zur Vorgehensweise machen	**( )**	**( )**	**( )**	**( )**
40.	− erfordern, dass sie ihren Arbeitsstil selbst bestimmen, um ihre Ziele zu erreichen	**( )**	**( )**	**( )**	**( )**
41.	Die meisten Lehrenden motivieren Studenten nicht, Fragen zu stellen oder zu diskutieren	**( )**	**( )**	**( )**	**( )**
42.	Die Lehrenden schätzen das Auswendiglernen und die Widergabe von Gelesenem am höchsten ein	**( )**	**( )**	**( )**	**( )**
	Haben oder hatten Sie eine der folgenden Positionen?	Ja		Nein	
43.	− Studentische Hilfskraft (Hiwi) an der Universität	**( )**		**( )**	
44.	− Tutor für Einführungskurse	**( )**		**( )**	
45.	− Tutor für Fortgeschrittenenkurse, z.B. Statistik oder Beaufsichtigung von Studenten, die im Labor arbeiten	**( )**		**( )**	

	Wenn Sie jemals Hiwi oder Tutor waren, wie oft standen Ihnen die folgenden Personen oder Quellen für Problemdiskussionen zur Verfügung?				
		Oft	Manchmal	Selten	Nie
46.	Professoren oder Instruktoren	( )	( )	( )	( )
47.	Andere Studenten, die Erfahrungen in ihrem Arbeitsgebiet haben	( )	( )	( )	( )
48.	Bibliothek oder andere Informationsnetze	( )	( )	( )	( )
49.	Nichts von alledem. Ich war auf mich allein gestellt	( )	( )	( )	( )

	Wenn Sie Tutor oder Hiwi sind, dann beantworten Sie bitte die Fragen **50** bis **59** . Wenn nicht, gehen Sie zu Frage **60** über.				
	Wie oft hatten Sie in ihrer Zeit als ***Tutor*** Gelegenheit, ...	Oft	Manchmal	Selten	Nie
50.	verschiedene Standpunkte zu diskutieren?	( )	( )	( )	( )
51.	Probleme zu lösen?	( )	( )	( )	( )
52.	Vorschläge zur bestmöglichen Arbeitsweise zu machen?	( )	( )	( )	( )
53.	für sich allein zu arbeiten?	( )	( )	( )	( )
54.	Nichts von alledem. Die Tätigkeiten wiederholten sich und waren stereotyp.	( )	( )	( )	( )
	Wie oft hatten Sie in ihrer Zeit als ***Hiwi*** Gelegenheit, ...	Oft	Manchmal	Selten	Nie
55.	verschiedene Standpunkte zu diskutieren?	( )	( )	( )	( )
56.	Probleme zu lösen?	( )	( )	( )	( )
57.	Vorschläge zur bestmöglichen Arbeitsweise zu machen?	( )	( )	( )	( )
58.	für sich allein zu arbeiten?	( )	( )	( )	( )
59.	Nichts von alledem. Die Tätigkeiten wiederholten sich und waren stereotyp.	( )	( )	( )	( )
	Wie aktiv haben Sie sich an folgenden Dingen ***an Ihrer*** *Hochschule oder Universität* beteiligt?	Aktive Beteiligung	Teilweise Beteiligung	Interessiert, aber nicht aktiv beteiligt	Keine Beteiligung
60.	Eine politische Partei oder Interessenvertretung	( )	( )	( )	( )
61.	Senat, Hochschulrat	( )	( )	( )	( )
62.	Fachbereichsrat, Fakultätsrat, Sektionsrat	( )	( )	( )	( )
63.	Spezielle universitäre Gremien, z.B. Frauenrat, Bibliotheksrat oder Forschungsausschuss u.ä.	( )	( )	( )	( )
64.	Politische oder soziale Hochschulgruppen	( )	( )	( )	( )
65.	ASTA	( )	( )	( )	( )
66.	Fachschaft	( )	( )	( )	( )
67.	Studentische Verbindungen	( )	( )	( )	( )
68.	Religiöse Gruppen oder Gemeinschaften	( )	( )	( )	( )
69.	Kulturelle Gruppen oder Organisationen, z.B. Theatergruppe, Universitätschor, Sport− und Tanz AG	( )	( )	( )	( )

70.	Hatten Sie eine bestimmte Position oder Funktion in einer der oben genannten Gruppen inne?	**( ) Ja**	**( ) Nein**		
	Wenn Sie ein Amt bekleidet haben oder eine spezielle Funktion in einer der oben genannten Gruppen an ihrer Universität hatten, wie oft standen Ihnen die folgenden Personen oder Quellen als *Unterstützung* zur Verfügung?				
		Oft	Manchmal	Selten	Nie
71.	Professoren oder Instruktoren	**( )**	**( )**	**( )**	**( )**
72.	Andere Studenten, die Erfahrungen in ihrem Arbeitsgebiet haben	**( )**	**( )**	**( )**	**( )**
73.	Bibliothek oder andere Informationsnetze	**( )**	**( )**	**( )**	**( )**
74.	Nichts von alledem. Ich war auf mich allein gestellt	**( )**	**( )**	**( )**	**( )**
75.	Was die Tätigkeiten in Nr. **60** bis **69** betrifft: Würden Sie sagen, dass diese Dinge Ihnen Gelegenheit boten, Diskussionen zu führen oder eigene Entscheidungen zu treffen?	**( )**	**( )**	**( )**	**( )**

	Wie häufig haben sie sich ***außerhalb*** *der Universität* an einer der folgenden Gruppen oder Organisationen beteiligt?				
		Oft	Manchmal	Selten	Nie
76.	Sport, Leichtathletik, Fitness	**( )**	**( )**	**( )**	**( )**
77.	Kirchliche oder andere religiöse Gruppen?	**( )**	**( )**	**( )**	**( )**
78.	Wohltätigkeitsorganisationen oder andere soziale Organisationen	**( )**	**( )**	**( )**	**( )**
79.	Politische Parteien, Wahlkämpfe	**( )**	**( )**	**( )**	**( )**
80.	Umweltschutzorganisationen	**( )**	**( )**	**( )**	**( )**
81.	Kulturelle Gruppen oder Aktivitäten, z.B. Theater, Musik, Lesen, Radfahren	**( )**	**( )**	**( )**	**( )**
82.	Welcher Religion gehören Sie an?	( ) keiner Religion ( ) Römisch−katholisch ( ) Orthodox ( ) Protestantisch − Landeskirche		( ) Freikirchlich ( ) Islam ( ) Jüdisch ( ) Einer anderen Religion	
83.	Für wie religiös halten Sie sich selbst?	( ) Überhaupt nicht religiös ( ) Ein bisschen religiös ( ) Religiös			
84.	Hatten Sie eine bestimmte Position oder Funktion in einer der oben genannten Gruppen inne?	( ) Ja		( ) Nein	
	Wenn Sie ein Amt bekleidet haben oder eine spezielle Funktion in einer der oben genannten Gruppen hatten, wie oft standen Ihnen die folgenden Personen oder Quellen für Problemdiskussionen zur Verfügung?				
		Oft	Manchmal	Selten	Nie
85.	Erfahrene Fachleute, z.B. Vorgänger, Vorstandsmitglieder	**( )**	**( )**	**( )**	**( )**
86.	Freunde	**( )**	**( )**	**( )**	**( )**
87.	Bibliothek oder andere Informationsnetzwerke	**( )**	**( )**	**( )**	**( )**
88.	Nichts von alledem. Ich war auf mich allein gestellt	**( )**	**( )**	**( )**	**( )**
89.	Was die Tätigkeiten in Nr. **76** bis **81** betrifft: Würden Sie sagen, dass diese Dinge Ihnen Gelegenheit boten, Diskussionen zu führen oder eigene Entscheidungen zu treffen?	**( )** **3**	**( )** **2**	**( )** **1**	**( )** **0**
90.	Haben Sie während Ihrem Studium (in der Hochschule oder auch außerhalb) noch andere Gelegenheiten, für sich selbst zu entscheiden, z.B. ihren eigenen Arbeitsstil zu bestimmen, Probleme zu lösen, verantwortlich für die Erreichung bestimmter Ziele zu sein, Projekte zu entwerfen und umzusetzen? Welche? Bitte beschreiben Sie dies hier kurz.				

Vielen Dank!
Vergessen Sie bitte nicht, den Fragebogen abzugeben oder an die Adresse zu schiken, die im Begleitschreiben gennant wurde.

A.3 Scoring algorithms for the ORIGIN/u questionnaire

{1. Role-taking opportunities: Syllabus-bound}
RTS:=(v26+v27+v28+v29+v30+v31+v32)/7;

{2. Role-taking:Semi-syllabus-bound}
RTSS:=(v43+v44+v45+v46+v53+v56+v58)/7;

{3. Role-taking:Extra-syllabus}
RTES:=(v24+v60+v61+v62+v63+v64+v65+v66+v67+v68+v69+v70)/12;

{4. Role-taking: Non syllabus}
RTNS:=(v76+v77+v78+v79+v80+v81+v84)/7;

{5. Guided-reflection: syllabus bound}
GRS:=0;
for i:=33 to 34 do
if valid(v(i))then GRS:=GRS+v(i);
if valid (v(35))then GRS:=GRS −(v(35))+3;
{v35 =GRSOWN; 3 added to make GRSOWN positive}
GRS:=GRS/3; {standardization}

{6. Guided-reflection:semi-syllabus bound}
GRSS:=0;
for i:=46 to 48 do if valid (v(i))then GRSS:=GRSS+v(i);
if valid (v(50)) then GRSS:=GRSS+v(50);
if valid (v(52)) then GRSS:=GRSS+v(52);
if valid (v(55)) then GRSS:=GRSS+v(55);
if valid (v(57)) then GRSS:=GRSS+v(57);
if valid(v(49)) then GRSS:=GRSS −(v(49))+3; {v49=GRSSOW)}
GRSS:=GRSS/8;

{7. Guided reflection:extra-syllabus}
GRES:=0;
for i:= 71 to 73 do
if valid (v(i))then GRES:=GRES+v(i);
if valid (v(75)) then GRES:=GRES+v(75);
if valid (v(25)) then GRES:=GRES+v(25);

```
if valid (v(74)) then GRES:=GRES −(v(74))+3;
GRES:=GRES/6;


{8. Guided reflection: Non-syllabus}
GRNS:=0;
for i:=85 to 87 do
if valid (v(i)) then GRNS:= GRNS+v(i);
if valid (v(89)) then GRES:=GRES+v(89);


if valid (v(88)) then GRNS:= GRNS −(v(88))+3;
GRNS:=GRNS/5;


{9. Opportunities for Role-Taking Scale}
RTALL:= (RTS+RTSS+RTES+RTNS) / 4;


{10. Opportunities for Guided Reflection Scale}
GRALL:= (GRS+GRSS+GRES+GRNS) / 4;


{11. Configurations of opportunities for Role-Taking and Guided Reflection}
RTGR:=0; {RT GR}
if (RTALL>=0.4) and (GRALL<0.9) then RTGR:=1; {yes no}
if (RTALL>=0.4) and (GRALL>=0.9) then RTGR:=2; {yes yes}
if (RTALL<0.4) and (GRALL<0.9) then RTGR:=0; {no no}
```

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