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DISSERTATION

Psychosocial risk factors and behavioral problems at preschool age in CBCL. A comparison between German and Brazilian preschoolers

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Abstract

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The main aim of this study is to describe and compare the influence of several psychosocial risk factors on preschoolers' behavioral problems, assessed with the Child Behavior Checklist (CBCL), within German (developed country) and Brazilian (developing country) clinical and community samples.

We analyzed four different 4-years-old-children's samples. First, we compared a German inpatient sample from Berlin (N=152) with a Brazilian clinical subsample of a regional community sample from Pelotas (N=163, defined by a clinical range of CBCL-*Total-Problems*-Scale scores). Next the entire Brazilian regional community sample of Pelotas (N=633) was compared with an independent German national community sample (N=214).

To collect the psychosocial data the *Frankfurter Basisdokumentation* and other structured questionnaires were applied. CBCL was applied to assess the behavioral problems.

The comparison of the German inpatient sample and the Brazilian clinical sample showed that the prevalence of psychosocial risk factors is higher in the Brazilian sample, but not the prevalence of behavioral problems. The comparison of both community samples shows that the prevalence of both psychosocial risk factors and behavioral problems is higher in the Brazilian sample. It is important to emphasize the significant high scores of the Brazilian girls on the CBCL *Aggressive Behavior* scale. Furthermore the study shows that the association of psychosocial determinants with behavioral problems is different within every sample. The psychosocial factors which can be considered predictors of childhood behavioral problems in the German samples are "gender", "maternal occupation" and "family income", while "gender", "number of younger siblings", "maternal and paternal age" are the ones in the Brazilian samples.

The systematic application of validated questionnaires by the pediatric healthcare system in developing countries and the understanding of the meaning of the psychosocial risk and its association with the child's behavioral and emotional problems across the cultures are keys to finding significant targets for intervention and prevention in infant mental health.

Keywords: Psychosocial factors, behavioral problems, preschool age, Child Behavior Checklist, Brazil, Germany, multicultural.

Zusammenfassung

Hauptziel der Studie ist die Erfassung psychosozialer Risikofaktoren und deren Einfluss auf Verhaltensauffälligkeiten von Vorschülern, gemessen mit der Child Behavior Checklist (CBCL) in klinischen und Screening-Stichproben aus Deutschland (Industrienation) und Brasilien (Entwicklungsland).

Ausgewertet wurden vier verschiedene Stichproben. Zunächst wurde eine Inanspruchnahmepopulation aus Berlin (N=152) mit einer brasilianischen klinischen Stichprobe aus Pelotas (N=163) (klinisch auffällige Werte in der CBCL-*Gesamtwertskala* einer Screening-Stichprobe) verglichen. Außerdem wurde eine bundesweit repräsentative deutsche Screening-Stichprobe (N=214) mit der gesamten brasilianischen Screening-Stichprobe aus Pelotas (N=633) verglichen. Für die Erhebung psychosozialer Risikofaktoren wurden die *Frankfurter Basisdokumentation* und andere strukturierte Fragebögen eingesetzt. Zur Erfassung von Verhaltensauffälligkeiten kam die CBCL zum Einsatz.

Der Vergleich der deutschen Inanspruchnahmepopulation und der brasilianischen klinischen Stichproben zeigt höhere Prävalenzen der psychosozialen Risikofaktoren in der brasilianischen Stichprobe und der Verhaltensauffälligkeiten in der deutschen Stichprobe. Der Vergleich der Screening-Stichproben zeigt höhere Prävalenzen der psychosozialen Risikofaktoren und der Verhaltensauffälligkeiten in der brasilianischen Stichprobe. Besonders bedeutsam sind die höheren Werte der brasilianischen Mädchen in der CBCL Skala *Aggressives Verhalten.* Weiterhin zeigt die Studie, dass in Brasilien und Deutschland die psychosozialen Faktoren unterschiedlich mit Verhaltensauffälligkeiten assoziiert sind. In den deutschen Stichproben gelten die psychosozialen Faktoren „Geschlecht“, „Arbeit der Mutter“ und „familiäres Einkommen“ als Prädiktoren. In den brasilianischen Stichproben sind es „Geschlecht“, „Anzahl jüngerer Geschwister“ und „Alter der Eltern“.

Die systematische Anwendung validierter Fragebögen in der pädiatrischen Grundversorgung in Entwicklungsländern und das Verständnis der Bedeutung psychosozialer Faktoren und ihre Assoziation mit Verhaltensauffälligkeiten sind notwendig, um individuell Prävention- und Interventionsziele zur Versorgung psychisch auffälliger Kleinkinder in verschiedenen Kulturen zu finden.

Schlüsselwörter: Psychosoziale Faktoren, Verhaltensauffälligkeiten, Vorschulalter, Child Behavior Checklist, Brasilien, Deutschland, multikulturell.

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1. Introduction

1.1 History of child psychiatry and the significance of culture and society

The penultimate decade of the 19th century has a great significance in the history of childhood and its place in society, in general, and in the history of child psychiatry, in particular. Two events, at first not related, but which happened in two close moments and places, played a crucial role in it.

In chronological order, on 16th June 1881, by order of the Minister of Education Jules Ferry at the beginning of the Third Republic, it was established that primary education in France must be provided free of charge, compulsory and secular. Both history and the state, predominantly adult domains, dealt with childhood and took total responsibility for it. Children not only had to be protected and taken care of, they also had to be educated. Thus those children would grow up to be good citizens and would carry out their duty with the state in a virtuous way. Although infanticide, neglect and child labor remain to this day, a big step forwards had been taken, and Mount Taygetus and the Tarpeian Rock finally became history.

The second important event, which took place in 1887, was the publication in Tübingen of the first book completely dedicated to childhood mental illness: *Die psychische Störungen des Kindesalters* by Hermann Emminghaus. Unlike previous works, like those from Griesinger or Maudsley, Emminghaus made a rapprochement with child mental pathology, leaving adult psychiatry aside. The previous works were characterized by an “adult-centric” conception of child psychiatry, using adult psychiatry criteria and classifications in a clear procrustean fashion. However, it can be said that Emminghaus’s work is the first “puerocentric” one in the field of child psychiatry, representing a sort of Copernican revolution in the discipline. The adult is not the focus of attention anymore, but the child himself. Unfortunately, in their later classifications, both Kraepelin and Bleuler forgot to include the child, also forgetting child psychiatry (Alexander & Selesnik, 1966).

These two aspects show how the history of child psychiatry goes hand in hand with the recognition of the child’s rights. Children, like women, have been marginalized in the course of a mainly adult and androcentric history. This has been the way since

the beginning of our civilization, with Greeks regarding children as incomplete beings in the process of formation to be human beings and citizens or as simple objects of desire. There is an ambivalent affection about childhood: on the one hand the most beloved and desired, but on the other, the most rejected and useless. Childhood is seen as possibility, inferiority, contempt and politic material (Platón, 2001).

It was not until the adult world acknowledged the needs and rights of the infants that child psychiatry made its first steps. Freud conceived later with his psychoanalytic theory a new way to understand the mental disorders of children. Besides the elaboration of a consistent and coherent system to understand the human *psyché* and a therapeutic tackling of pathology, the importance of Freud‘s theory for child psychiatry is found in the significance of understanding childhood for adult pathology. It was necessary to develop an understanding of the child’s psychic world and its problems, turning child psychiatry into an understandable and therapeutic instrument of a great and incalculable value in our present-day psychiatry (Alexander & Selesnik, 1966). Later Erikson made an important contribution to the Freudian view: the major role of psychosocial factors in the development of any child (Wolman, 1972).

In this developmental process of child psychiatry, other names like Hermine von Hug-Hellmuth (the first child psychoanalyst), Melanie Klein, Anna Freud, René Spitz, Donald Winnicott, Leo Kanner, Hans Asperger, John Bowlby, Michael Rutter and many others have been fundamental to its progress and current situation. Kanner himself synthesized the first four decades of the 20th century, in which child psychiatry begins and reaches its maturity (Alexander & Selesnik, 1966). These four decades, could be portrayed as follows:

- The first decade was characterized by *thinking about children*
- The second by *doing things to children*
- The third by *doing things for children*
- The fourth one by *working with children*

Apart from this internal evolution of child psychiatry, its development depended also on the recognition of children’s rights, which culminate, at least institutionally, structurally and formally, in the creation of UNICEF (The United Nations Children's Fund) on 11th December 1946 and the Declaration of the Rights of the Child on 20th

November 1959 (U.N., 1959).

To sum up, the advance of child psychiatry and psychology depended a great deal on the development of several different fields. To quote Kanner once more: "The greatest hope for the future is that this multidisciplinary approach will not only lead to more effective treatment of psychological disorders in children, but also will open up the way to successful preventive child psychiatry for all economic and cultural groups" (Kanner, 1957). In this area, as it will be soon explained, both the multicultural approach and the epidemiological research have a fundamental role.

1.2. Multicultural approach of child psychiatry

1.2.1 Multicultural approach of science and the human sciences

Nobody doubts that we live in a globalized world that has made its way into multiculturalism. First of all, multiculturalism gathers numerous different cultures, which have followed very different paths through history and currently they have interweaved and formed plural societies, to which we all belong. Moreover, massive processes like immigration and the entrance of more countries into the European Union during the final decades of the 20th century have produced a change in international and global politics. Furthermore, we can realize how national political systems have major difficulties in confronting issues that affect not only their own countries. Currently it is very difficult to define the social processes as national processes (cultural, political and economic). The conception of national boundaries as involving a political, social, cultural and economic unity, separated from other nations, is an illusion. It is then necessary for multinational institutions to take charge of those matters.

The last Climate Change reunion in Copenhagen in December 2009 would be a clear example. After all, the ecologic issue cannot be treated like a national issue, because it is not just a national problem. This means that we do not only pollute our nation; our companies do not only pollute our countries. Ecology is a world issue because it affects not only our neighboring countries, but we can also perceive how our multinational companies work in every corner of the world, promote the industrialization process and finally produce unavoidable residues and wastes. Child psychiatry is a world issue as well and its investigation which must follow, in the same way, is a

multicultural approach. The main aim of this thesis is to emphasize the influence of both society and culture on child psychiatric disorders, child psychiatry and science.

It is thus necessary to explain, at least roughly, how this change of direction in politics has also had an effect on the scientific field. Scientific activity is a social subsystem that takes place in a particular space and time in history. It has its norms (universal validation norms to legitimate the scientific activity all over the world): universalism, organized skepticism, disinterestedness, communalism, rationality and emotive neutrality (Merton & Barber, 2004); and like social phenomena, it can be approached from different perspectives (Storer, 1966):

- Science as a social institution
- Scientists as members of concrete groups
- Scientists as members of a profession
- Scientists as creative agents whose psychological and vocational features are studied
- Scientists as members of specific disciplines
- Science as a participative factor in the national discussions
- Science as a communication system

Science is a cultural aspect of mankind which has its origins in the history of Western Europe. Its wish for universalism makes it take the present multicultural process into consideration. We think our science is the best and the most objective way to study and analyze nature, but the knowledge, and especially, the recognition of other cultures, has shown us that it is not the only way and that furthermore, that it might be even too *eurocentrist*. That is, if we want our science to be a universal one, it has to be applicable to other cultures, to other ways of facing nature. At a natural science level, it is not a really problematic question. Yet it is a real and important one in the human sciences and in this case, referring to psychiatry, the human science of medicine, because the validity of our assessment instruments depends on the theoretical and empirical construct of the international psychological and psychiatric establishment.

Inevitably, the first human science to confront this problem was anthropology, because it lacked a solid approach towards the study of different cultures. Marvin Harris, an important anthropologist of the 20th century defended in his theory two ways

to approach other cultures, the thoughts and behavior of their particular members: *emic* and *etic* studies, terms created by the linguist Kenneth Lee Pike, which come from the words “phonemic” and “phonetic”. He used the terms *etic* and *emic* to describe objective and subjective units of meaning, respectively (Pike, 1967). The *emic* perspective shows us the viewpoint of the world, which the native members of different cultures accept as real, significant or suitable. Scientists try to understand the categories and rules used by the natives to both think and act. However, the *etic* perspective tries to generate scientific theories about the causes of the sociocultural similarities and differences. The scientist, in this case, uses scientific categories and rules which are not familiar to the natives (Harris, 2000).

How then can multicultural studies be made in the field of child psychiatry? Must we use our own instruments and diagnostic classifications or do we study the meaning of the disorder in each culture and then change our theoretical approach? Although *emic* perspectives yield important pictures of individual cultures, comparisons of findings from multiple cultures require methods that can be used in all cultures to be compared (Achenbach & Rescorla, 2007). That is, to make multicultural research available, a combination of both methods is required: *the etic* viewpoint (the analysis of psychic functions) and the *etic* use of standardized multicultural assessments are required for a multicultural approach of psychopathology to reveal differences between cultural groups; the *emic* perspectives (the cultural dimension of the disorder), to understand and identify differences in the etiologies and meanings of particular characteristics found in particular groups and to understand the cultural variations in children’s problems (Achenbach, et al., 2008)

International studies have provided a useful approach for determining culturally specific aspects of behavioral problems in childhood. Nevertheless we must not forget that the *etic* tendency has an important influence from the western psychiatric establishment, which we can control and reduce if we try not to use simplified category labels to define and characterize cultures.

1.2.2 Child development as common element between the cultures

We have already discussed that the multicultural perspective is a way to approach the product resulted of the combination between different cultures.

Overcoming our *eurocentrist* position, we can tolerate, understand and accept different cultural topics, which are not accepted in the heart of our culture, and create bridges between different worlds. This is because the cultural product is additive, it is the result of a sum, an addition, in spite of the differences, there are a lot of similarities between every human being, and one of them is their own development.

After all, different cultures develop basic aspects concerning the human being in different ways. The influence of cultural differences on child psychiatry is the same as the influence of different internal factors which take place within a given culture. That is, for example, the socioeconomic status influences general conventions and how they change if that differs much among people of the same culture. Some of these aspects concern us in the field of child psychiatry, for instance the birth and the development of children, and the channeling of intense emotions such as anger and sadness.

As a result of all of the above, the complete understanding of the emotional and behavioral problems requires investigation and studies which include every kind of culture. The multicultural investigation will then contribute to our understanding of the child's psychopathology because we will be able to identify the similarities and differences of the manifestations of a child's problems across the various cultures and help us improve our ways of taking care of children from different backgrounds (Achenbach & Rescorla, 2007).

1.2.3 Excursus: Germany and Brazil

Germany and Brazil are the countries chosen in this study as examples of developed and developing countries, respectively, based on my personal work experience in both countries.

Briefly I would like to comment on an aspect about the relationship between these two countries, which is hardly known in Germany. This relationship will be however commented only in one direction because of the sparse Brazilian immigration and influence on Germany. The connections between the countries began in the 19th Century with the emigration from Germany to Brazil. Because of the new independency of Brazil, the need for production and industrialization and the enthusiasm of the emperor Pedro II about science and technology, "*os trabalhadores alemãos"* (the German workers) were always very well received, with the idea that they could help to

improve and modernize this new country. Many Germans took this opportunity and left the German states after the impoverishment of craftsmen and workers brought on by European industrialization and after the failed revolutions of 1848, and then because of the recession and crisis after World War I. In addition, the new railroad and telegraph industry encouraged German craftsmen and engineers to migrate to Brazil. These Germans settled especially in Southern Brazil, which had a visible and important influence in the region and a notable impact on the ethnic composition of the country. It is currently estimated that 10% of Brazilians have a German ancestor (more than 35% in the Southern Region; 600,000 with German as first language) and Southern Brazil is one of the most industrialized regions of the country. Brazil is home to the strongest cluster of the German industry in Latin America (reaching a pike during the German *Wirtschaftswunder* in the fifties) and even in the world (in no city, not even in Germany, are there more German companies with as many employees as in São Paulo), of which BASF, Bayer, Daimler AG and Volkswagen are the most representative companies (Lateinamerika Verein e.V., 2009).

In spite of this important economic relationship, to our knowledge there is only one study in the child psychiatry literature which compares the two countries. The study of Roessner et al. (2007) assessed cross-cultural similarities and differences in two clinical German and Brazilian samples of children diagnosed with ADHD using CBCL. It found similar profiles of parental ratings of behavioral and emotional problems in children in both countries. In this way, our study is the first one to compare the preschool behavioral and emotional problems between children in these countries as a multicultural study between developed and developing countries.

1.3 Prevalence and epidemiology of preschool child psychiatric disorders

1.3.1 Epidemiology and child psychiatry

Towards the end of the seventies, Earls defined epidemiology as “an exact and basic science of social medicine and public health” (Earls, 1979). Epidemiology is the population-wide study of problems as they occur in groups of people and it is intimately linked to classifying childhood behavioral disorders (Ollendick & Hersen, 1984). Epidemiological research in the field of child psychiatry has produced a wealth of useful

findings over the last quarter of the last century and the first decade of the current one. It has increased without a doubt our understanding of psychiatric disorders during childhood (Costello, Egger & Angold, 2005).

At the same time epidemiological data are important for the development of public policies and programs to improve mental health in children and adolescents. Epidemiological research can provide answers that can be used as a strong basis for the planning and implementation of services (Remschmidt & Belfer, 2005). Earls defined epidemiology as a basic science with two rather distinct functions: the first one would be to document the patterns of disorder in the community as a means of planning services (Public Health Epidemiology) and, secondly, to study the causes of disorder (Scientific epidemiology) (Costello, 2008). In this way, in our study we want to describe the association between the psychosocial factors and the behavioral problems, which can help achieve the second goal of epidemiological studies.

1.3.2 From the Isle of Wight study until today

Child psychiatric epidemiology has made considerable progress in the last 40 years since the landmark Isle of Wight studies began (Roberts, Attkisson & Rosenblatt, 1998). The Isle of Wight studies during the sixties were the first large-scale epidemiological investigation with a child psychiatry focus, which showed how epidemiology could be useful for both testing causal hypotheses and planning services. However, these studies did not cover preschool children and this gap was first filled by Richman, Stevenson and Graham's London study and Earl's Martha's Vineyard Child Health survey (among others) in the eighties. The first one noted that psychopathological problems during the preschool period were often precursors of later psychiatric disorders. It showed that around three fifths of disorders at three years of age persisted over the next five years, proving that many disorders in preschool children were not transient and benign as hitherto commonly supposed. These longitudinal data were also essential in demonstrating that psychosocial adversity at three years old predicted the development of disorder by the age of eight in children without any kind of disorder when they were three years old. The prospective predictive association provided strong support for the hypothesis that some aspect of the adversity was influential in the development of psychiatric disorders. The second one confirmed the

tendency of preschool problems to persist (54% over a period of 3 years) (Rutter, 1989).

Currently the epidemiological research dealing with children 0-3 years of age is limited and there are considerably fewer studies of prevalence, distribution and course of psychopathology in this age group than studies with older children: Verhulst in 1995, Zeanah, Boris & Scheeringa in 1997, Del Carmen-Wiggins & Carter in 2001, Fombonne in 2002 and Skovgaard, et al. in 2007 (Skovgaard, et al. in 2007). In the latter, from the Copenhagen Child Cohort, 211-1½-year old children were investigated and 16-18% diagnoses were found (ICD-10 and DC:0-3) (Skovgaard, et al., 2007). These studies point to the significance of psychosocial adversities and parent-child relationship disturbances in the risk mechanisms of children's psychopathology.

Moreover there is still a lack of epidemiological data on infancy predictors of child psychopathology in general and preschool-age children in particular (Skovgaard, et al., 2008). Effective public health prevention of externalizing and internalizing problems early in childhood requires a strong understanding of their etiological mechanisms but our understanding of the nosology of preschool mental health disorders is still in its infancy (Bayer, et al., 2008). We are late in recognizing the distress and impairment of preschool children and their families. Nevertheless, despite this relative lack of research on preschool psychopathology compared with studies of the epidemiology of psychiatric disorders in older children, current evidence now shows quite convincingly that the rates of common child psychiatric disorders and patterns of comorbidity among them in preschoolers are similar to those seen in later childhood.

The first reasonably large-scale epidemiologic diagnostic intervention of preschoolers has been reported in a series of papers beginning in 1996 by Lavigne and his colleagues (Egger & Angold, 2006). The first Lavigne study was a descriptive, cross-sectional study with a population of 3,860 children aged 2-5, and it showed the following results: The overall prevalence is 21.4 % of any DSM III R Axis I disorders, 16% for single "pure" diagnosis and 5.4% for co-morbidity (Lavigne, et al., 1996). The second one, a longitudinal study with a population of 510 children aged 2-5 years, found 19.2% of the children with an emotional disorder (Lavigne, et al., 1998). They reported that a substantial number of preschool-age children who receive a diagnosis will continue to exhibit symptomatology from 42 to 48 months later. This is contrary to the widespread belief that young children will grow out of their problems. Early diagnosis and treatment may prevent the progression and development of further psychopathology; therefore, it

is essential to understand the importance of early diagnosis and treatment. A substantial number of children are exhibiting symptomatology without a diagnosis.

We can see that few studies specifically address preschool-age children and how the different prevalence is motivated because of the differences between the design, population and methods used in the different studies. Moreover, little is known about the predictors of poor mental health in preschool ages, above all in low- and middle-income countries. However, an understanding of the developmental origins of later psychopathology can be gained through research into the early signs of social and emotion dysfunction. Therefore, in spite of the different designs and samplings, these studies are a useful benchmark from which to attempt to understand problematic behavior among preschool children. The study of the psychosocial determinants is essential, because of the demonstrated tendency of persistence of these early disorders. Further study of psychopathology in preschool-age children is necessary to understand this prevalence and to encourage prevention, diagnosis, treatment and positive outcomes in this population.

1.3.3 Child Behavior Checklist (CBCL) as epidemiological and screening instrument

Categorical and dimensional approach to the psychopathology

Science proceeds in endless cycles of observation and measurement, hypothesis testing, and the development of theory, a process dependent on a valid system of classification or taxonomy.

With the advent of the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Statistical Classification of Diseases (ICD) systems, psychiatry entered the epoch of diagnostic classification. The diagnostically based approach, which stems from nosological (from Latin *nosos, "*disease") models of psychopathology, describes children's behavioral and emotional problems as symptoms of disorders. From the diagnostic perspective, taxonomies should consist of categories (from Greek κατηγορία, applied by Aristotle to his 10 classes of things that can be named) of disorders, whereas assessment should determine whether children meet sufficient criteria for particular disorders in order to be classified as having those

disorders. The goal of diagnostically based assessment and taxonomy is thus to classify individuals according to specific categories of disorders. In the USA, the fourth edition of the "Text Revision" of the DSM (DSM-IV-TR) (APA, 2000) and in Europe, the tenth edition of the ICD (ICD-10) (WHO, 1992), are currently the dominant nosologies for child psychopathology (Achenbach & Rescorla, 2007). Besides these two classification systems, the Diagnostic Classification: 0-3 (DC:0-3) (Zero to Three, 2005), a new nosology for infant and toddlers, which takes a different approach and whose primary goal is to classify the disorders in infants and toddlers that are not covered in the DSM or ICD. Despite its name, the DC:0-3 has commonly been used with children up to the age of 5 years (Egger & Angold, 2009).

However, in a reverse of the logical sequence, the diagnostic categories were developed before the tools that could measure the key defining features (primarily symptoms) (McClellan & Werry, 2000). That is, that the diagnostically based approach to psychopathology ("Top-down") preceded the empirically- and dimensionally-based approach ("Bottom-up") (Achenbach & Rescorla, 2007). Only recently has interest turned to creating measures that assessed symptomatology. The dimensionally- based approach uses data from multiple informants to derive syndromes from statistical analyses of problems. The data can be obtained from parents, teachers and from children themselves, but also from clinical interviewers, psychological examiners, observers who record children's behaviors in group settings such as classrooms, etc… Parent- and other adult-informant rating scales and questionnaires are commonly employed to research applications because they are inexpensive as well as quick and easy to administer to a large number of individuals in a flexible manner. Parents or primary caregivers are the most frequent responders on questionnaires about young children's development, particularly to gain an understanding of the pervasiveness of problems and competencies across care giving relationships and contexts. With advances in the psychometric properties of existing measurements of infants' social and emotional adjustment, their use in clinical settings is on the increase (Carter, et al., 2009). Figure 1 exemplifies this approach.

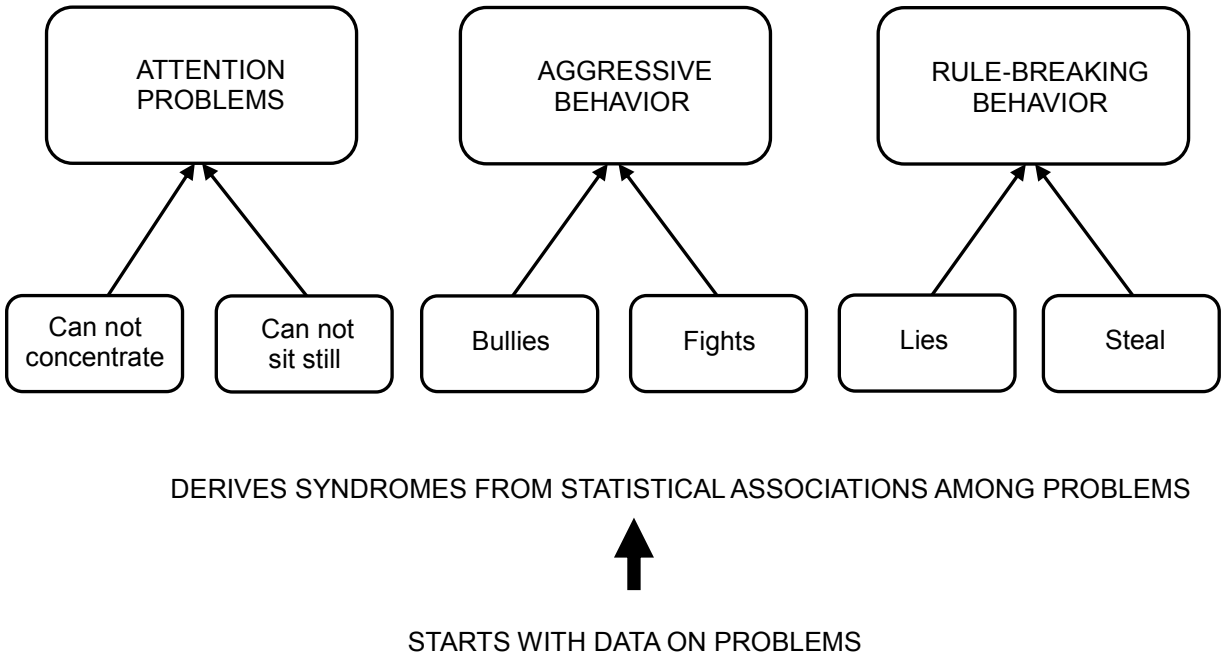


Figure 1: The bottom-up approach to deriving syndromes via statistical analyses of associations among problem items (Achenbach & Rescorla, 2007).

However, because no method (neither categorical nor dimensional) provides the ideal solution and both are complementary and have a good convergence, both must be combined in the approach (Bird, 1996).

In this section, the dimensional measurement tool used in our study will be briefly described: the Child Behavior Check List (CBCL)

Child Behavior Checklist (CBCL)

The Child Behavior Checklist (CBCL) (Achenbach, 1991) is one of the most commonly and internationally used measures of child psychopathology and the first of what has become a multiaxial empirically based set of measures for assessing children from parent-, teacher-, and self-reports. It is among the instruments that best represent the dimensional diagnosis and one of the most internationally used instruments. The CBCL is one part of the ASEBA-Institute (Achenbach System of Empirically Based Assessment) system of questionnaires, developed by Thomas M. Achenbach, psychologist and psychiatrist since 1980 in the University of Vermont in Burlington, USA. It was initially designed to evaluate the most common psychopathology in children

from 4 to 18 years of age and it is designed to be completed independently by the caregiver. It requires only fifth grade reading ability and it can also be administered orally by an interviewer who records the caregivers' answers. The following facts show that multicultural comparisons with the CBCL are possible (Achenbach & Rescorla, 2007; Achenbach, et al. 2008):

- CBCL is translated into more than 70 languages
- Many epidemiological studies have been conducted in different cultural groups (more than 80)
- It has been able to establish comparisons and document their transcultural viability (Crijnen, Achenbach & Verhulst, 1997, 1999; Verhulst, et al., 2003 and Rescorla, et al.,2007)
- People from diverse backgrounds understand the format and the contents of the questionnaire.

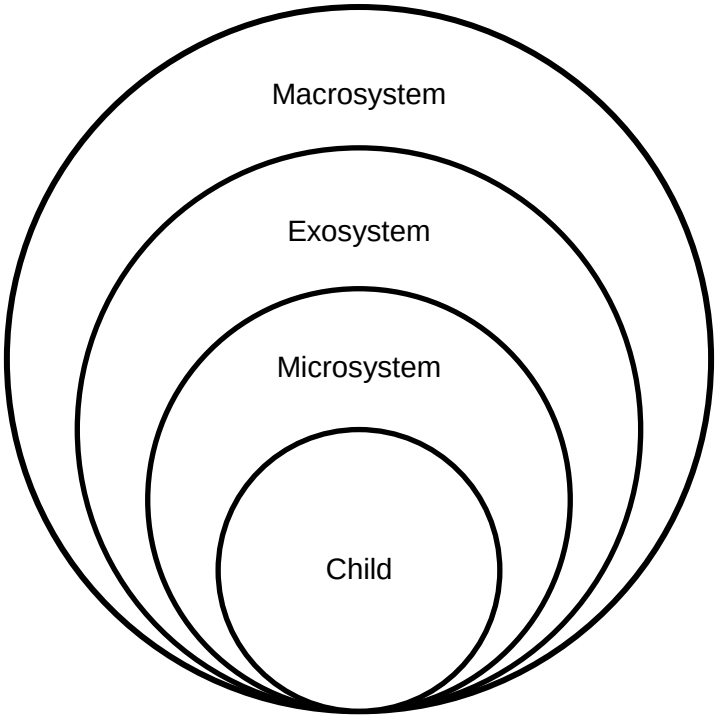
As the assessment instrument of our study, the two versions used in it, CBCL/4-18 and CBCL/1½-5, will be described in detail in the "Methods" section.

1.4 Psychosocial risk of preschooler psychiatric disorders

Our study takes the tenets of the biopsychosocial framework as its departure point, which asserts that a model for medicine and especially for psychiatry must include the psychosocial dimensions (personal, emotional, family, community) in addition to the biological aspects (diseases) of all patients. Biological, psychological and social factors all play a significant role in human functioning in the context of a disease or disorder. This model was theorized by the American psychiatrist George L. Engel at the University of Rochester, and putatively discussed in an article in 1977 in *Science* (Engel, 1977), where he posited "the need for a new medical model"; however no single definitive, irreducible model has ever been published.

Two years later, Bronfenbrenner (1979) used this new theoretical perspective for research in human development and to develop his bioecological model. As explained by him, human development takes place (especially in its early phases) through processes of progressively more complex reciprocal interactions between active,

evolving biopsychosocial human beings, and people, objects and symbols in its immediate external environment (Lerner, 2002). Childhood outcomes would be the result of an interaction between the person and the environment. According to this model, the child is not only affected by his or her own characteristics (the individual level) but also by the interrelationship among the various settings of his or her immediate social and physical environment (the microsystem level). The child is further influenced by the broader social setting, such as economic processes (the exosystem level), which are, in turn, influenced by cultural attitudes and ideologies (the macrosystem level). This external (ecological) environment is conceived as a set of nested structures, each inside the next, as figure 2 shows:



MACROSYSTEM:	Attitudes, mores, beliefs, ideologies of a culture
EXOSYSTEM:	Social settings that affect the child but do not directly influence him or her
MICROSYSTEM:	Relations and settings in which the child takes part
CHILD:	Age, sex, health, competences…

Figure 2: Ecological system (Kopp & McIntosh, 1997).

There are four of these structures (or levels):

- Immediate setting containing the developing person (home, classroom…).
- Relations and interconnections between them or “microsystem”.
- Events occurring in settings in which the person is not even present (e.g. conditions of parental employment) or “exosystem”.
- The culture or subculture or “macrosystem”.

Every level has its own risks. For example macrosystem risks can stem from cultural and social disasters (war, famine, political upheavals and strife…); data on exosystem would be for example long-standing family poverty; microsystems risks often arise because of abuse, insensitive and inadequate parenting and the child’s own competencies (e.g. temperament, intelligence, language skills…) as well as the vulnerabilities (e.g. poor health) of the child which would be found on an individual level (Kopp & McIntosh, 1997).

Research and the understanding of the biological, psychological and social structures and processes operating in individual life courses constitutes therefore a central concern in its own right in this field, child psychiatry, especially for infants and toddlers (Rutter, 1988). Human development is the process of individual adaptation to a complex and ever-changing environment, which can provide, apart from support, challenges to the child (Jenkins, 2008). Ascertaining these risk factors for psychiatric disorders is fundamental to understanding the etiology of childhood psychopathology and identifying potential targets for prevention and intervention (Goodman, et al., 2007). Children’s life circumstances, a multi-factorial background, are therefore inevitably related to their mental health.

1.5 Influence of the psychosocial determinants on child behavioral and emotional problems

From the above theoretical models we assess the impact of the environmental factors on the child’s behavior and emotions. We decided to divide these factors in three different groups (individual, family and socio-demographic) in which we classified every environmental element capable of affecting the child’s psychological world. We ordered the risk domains from more proximal to distal, starting with characteristics of the individual, followed by the family and finally the broader socio-demographic ecology.

In this section we offer one theoretical approach and a brief introduction to the influence of every factor which later will be evaluated in the study, based on a research of current literature.

1.5.1 Individual factors

Sex

In spite of the poor understanding of the gender difference in child psychiatric disorders, some sex findings are quite consistent. For example, boys have higher morbidity than girls, especially externalizing disorders in the early years of their lives (Crijnen, Achenbach & Verhulst, 1997). Most early-onset neuro-developmental disorders (such as attention-deficit/hyperactivity disorder [ADHD] and dyslexia), disruptive behavior disorders and autism spectrum disorders (ASD) are more frequent in boys, but internalizing disorders in girls, especially with increasing age (Crijnen, Achenbach & Verhulst, 1997; Rescorla, et al. 2007).

Low birth weight

Advances in perinatal care have led to an increase in the survival rates of very preterm children, but they have also increased the risk of long-term effects, such as neurodevelopmental impairment, but also behavioral or emotional disturbance. Fetal growth restriction seems to represent a modest but fairly consistent environmental influence on the development of these disturbances. A large body of evidence has shown that children with low birth weight manifest behavioral problems mainly in an increased risk for attention problems (Hultman, et al., 2007).

Intelligence Quotient

Recent literature indicates that children with intellectual disability are a group at risk for psychopathology, with higher CBCL scores compared with the general population (Dekker, et al., 2002). Current studies, using the general population instruments developed by Achenbach and applying standardized criteria for psychopathology, report prevalence between 35 and 49%. This prevalence can be compared with the 10 to 15 % commonly reported for the general population of children (Wallander, et al., 2006).

1.5.2 Family factors

Maternal psychiatric disorder

Research evidence indicates that psychiatric disorders of parents are closely associated with an increased risk of psychological and developmental problems and psychological disturbances in their children (Stein, Ramchandani & Murray, 2008).

Because mothers play a critical role in the development of their children, a great deal of research has focused on maternal psychiatric disorders and especially on the early years of children's lives, a time of enormous cognitive and emotional development. Several reasons exist for this focus on mothers. In many societies, women are the primary care givers for children, and thus have a greater role than men in their children's early development and socialization. Furthermore, several influential theories of child development—including psychodynamic theories and, recently, attachment theories—emphasize the key role of mothers. Practical reasons could also exist for research to focus on mothers, because they might be more readily available than fathers and more willing to participate in research (Ramchandani & Psychogiou, 2009). The nature of transmission of this increased risk is clearly complex and multifactorial and there would be three mechanisms of transmission: genetic, environmental and above all the gene-environment interplay.

Depression is the most common psychiatric condition amongst women of childbearing age and has a point prevalence of over 8%. In addition, the postpartum depression (PPD) has become one of the most studied psychiatric phenomena, because of the well-established relationship between untreated maternal depression and impaired child development (Pearlstein, et al., 2009). Besides depression, other frequent psychiatric disorders in women and mothers like anxiety disorders and potential eating disorders involve psychopathological risks for the offspring, particularly during infancy and adolescence (Stein, Ramchandani & Murray, 2008).

Parents' absence

Regarding family structure, the presence of two biological parents positively affects the material resources, time and quality that parents can provide their children. Studies show that children in single-parent or father absent households exhibit lower ability in motor and manipulative tasks than children in households where a father or a

father surrogate is present, without any difference between them. Lower levels of aggression and depression were observed for children if an adult male in some form of father-like relationship was present in the child's life (Marshall, English & Stewart, 2001).

Number of siblings

Siblings play an important role in children's day-to-day well-being, simply by virtue of the vast quantity of time brothers and sisters spend with one another. The quality of sibling relationships differs markedly across and within families, and individual differences in early childhood have been found to relate to children's concurrent and later adjustment, and to the development of social understanding. Positive cooperative experiences with siblings in early childhood have been shown to be linked to individual differences in understanding other minds and feelings (Dunn, et al., 1999). Beyond this, sibling conflict is not harmless, but children experiencing high levels of sibling negativity are at much greater risk of behavior problems (Kretschmer & Pike, 2009).

Number of younger siblings

The birth of a sibling is a difficult transition in a child's development and has also been considered a stressful event for the child, who usually reacts with anxiety, feelings of abandonment and anger. These reactions have been observed, together with a reduction of attention and of maternal individual care, an increase in negative and controlling interactions directed towards the child and a decrease in the quality of attachment to the child who has gained a brother or sister. Concern with the new baby has been frequently associated with a decrease in attachment behavior towards the other children (Anselmi et al., 2004).

1.5.3 Socio-demographic factors

Family income

Poverty influences major aspects of development, including brain development, intellectual and academic functioning, and physical and mental health. This can be explained because a higher purchasing power means parents will be able to afford more stimulating, a higher-quality child care, a home in a safe neighborhood and more

leisure time to engage in activities with their children (Knitzer & Perry, 2009).

Prevalence of psychopathology in child populations in slum areas is extraordinary high because there is no access to any kind of mental health services (Ezpeleta, et al., 2007; Mullick & Goodman, 2005). It is proved that the effect of milieu on child psychopathology operated via the socioeconomic characteristics of the child's family. Family income independently and significantly predicted child psychopathology, which highlights the importance of considering it when modeling the effect of family contextual risk on child psychopathology (Flouri, Tzavidis & Kallis, 2010). It is also possible that socially disadvantaged children are particularly vulnerable to adverse events and prone to react with problematic behaviors in the face of extra stressors (Knitzer & Perry 2009).

Parental age

Maternal and paternal ages have been associated typically with neurodevelopmental disorders like the risk of chromosomal abnormalities such as Down syndrome, with the risk of brain damage during pregnancy and with several other congenital disorders (Reichenberg, et al., 2006). Advanced father's age and advanced mother's age at birth has also been associated with increased risk of schizophrenia and autism.

It is also supposed that advanced as well as early parental age might not be a risk factor for a specific mental disorder as a biological factor but rather as psychosocial factor, decreasing for example social abilities, reflected by decreased social functioning, across the entire range of social functioning levels in the general population (Weiser, et al., 2008).

Parental education

Although parental mental health and age are important and have been extensively studied, parental education is a vital confounding factor. Parental education may play a role as an indicator of human capital: investment in education usually yields returns in terms of earnings, but education is also a reflection of a parent's cognitive abilities and personal strivings that may benefit a child, for instance in helping him or her to develop language, academic and social skills. Additionally, parental education has been found to be a stronger predictor for child well-being than family income, single parenthood, or family size (Lung, et al., 2009).

Lower level of education is a risk factor for worse post-partum mental health. This can be understood, since mothers with higher levels of education will make better use of existing family and community resources and obtain more up-to-date information regarding childcare, as has been found in developing countries. Researchers have found a relationship between maternal age and their level of education, with mothers who have less than high school education generally giving birth earlier than more educated mothers and more educated mothers being better able to maximize the utilization of family and community resources (Rydell, 2010).

Maternal occupation

With the increasing number of dual-career families, men and women nowadays lead very full lives combining their social roles as gainfully employed workers, spouses, and parents. Therefore currently there is a strong association between socio-economic status and maternal occupation (see above). Table 1 summarizes the psychosocial factors analyzed in the study:

Table 1: Summary of the psychosocial factors of the study. *Note: IQ = Intelligence Quotient.*

PSYCHOSOCIAL FACTORS		
Individual	**Familial**	**Social-demographic**
Sex	Maternal psychiatric disorder	Family income
Birth weight	Parental absence	Parental age
IQ	Number of siblings	Parental education
	Number of younger siblings	Maternal occupation

2. Main research question and objectives

The main objective of this study was to investigate, describe and compare the influence of several psychosocial factors on the preschoolers' behavior from two different societies, based on the following arguments:

- On the knowledge of the psychosocial risk factors as early predictors of pre-school psychiatric disorders, which is important for understanding the etiology of childhood psychopathology and for identifying potential targets for prevention and intervention.
- On the well-known association between CBCL Syndrome scales and clinical-diagnostic approach of different disorders (Kasius, et al., 1997), basis of the child psychopathology and treatment research literature.
- On the importance of multicultural studies to understand the child psychic unity.

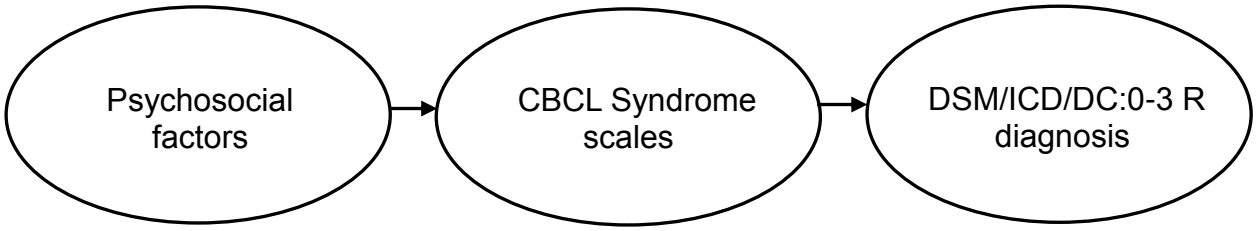


Figure 3: Prediction of preschool behavioral and emotional problems through the knowledge of the influence of the psychosocial determinants.

In line with previous findings and through the cooperation with our Brazilian colleagues, we explored these fields. We assumed this knowledge as coordinated axes to examine the large number of psychosocial factors of the study and the differences between the societies to generate specific hypotheses. That is, we made a descriptive and explorative study to generate specific hypotheses, assuming this more generic knowledge as a reference framework. Therefore the three aims of our study were basically to determine:

1. The prevalence and distribution of psychosocial variables within Brazilian and German populations, assuming that the psychosocial risk is higher in developing countries than in developed ones.

2. The prevalence of behavioral problems among 4-years-old children within both populations. Despite the lack of studies which compare Brazil and Germany, we know general cultural differences between Germany and other developing countries like Ethiopia, Iran, Jamaica, Lithuania, Poland, Romania or Turkey and we can apply this evidence to our study. The CBCL *Internalizing Problems* scores as well as the *Externalizing Problems* scores in developing cultures are higher than the scores in developed cultures (Achenbach & Rescorla, 2007).

3. Associations between the psychosocial variables and problematic child behavior. Based on previous findings and on the textbooks of Rutter et al. (2008) and Zeanah et al. (2009), well-documented factors, such as gender, IQ, poverty, mother's depression, prematurity, low birth weight and parenting, must have a clear association with the CBCL *Syndromes* scales scores in developed countries and possibly also in developing countries. Other less documented factors like paternal age, maternal occupation and maternal absence or number of siblings in the family could also have an influence on the subscales within both populations.

3. Methods

3.1 Design

The study covers two different aspects:

- A descriptive aspect, where the prevalence of behavioral and emotional disorders, the profile of psychosocial factors and the relationship between both factors are analyzed within a Brazilian and two German samples of 4 years-old children.
- A comparative aspect, where the results of both societies are compared. On the one hand, the comparison between a German community sample (GCom) and a Brazilian community sample (BCom). On the other hand, between a German inpatient sample (GInp) and a Brazilian clinical sample (BCln), that is the borderline and clinical range CBCL-*Total-Problems*-scale scores within the Brazilian community sample. This Brazilian population was selected because of the lack of a study of a Brazilian preschool inpatient sample and because of the similarity of the assessment methods used within both populations. As frame of reference, the clinical range CBCL-*Total-Problems*-scale scores within the German community sample (GCln) were also with the BCln compared.

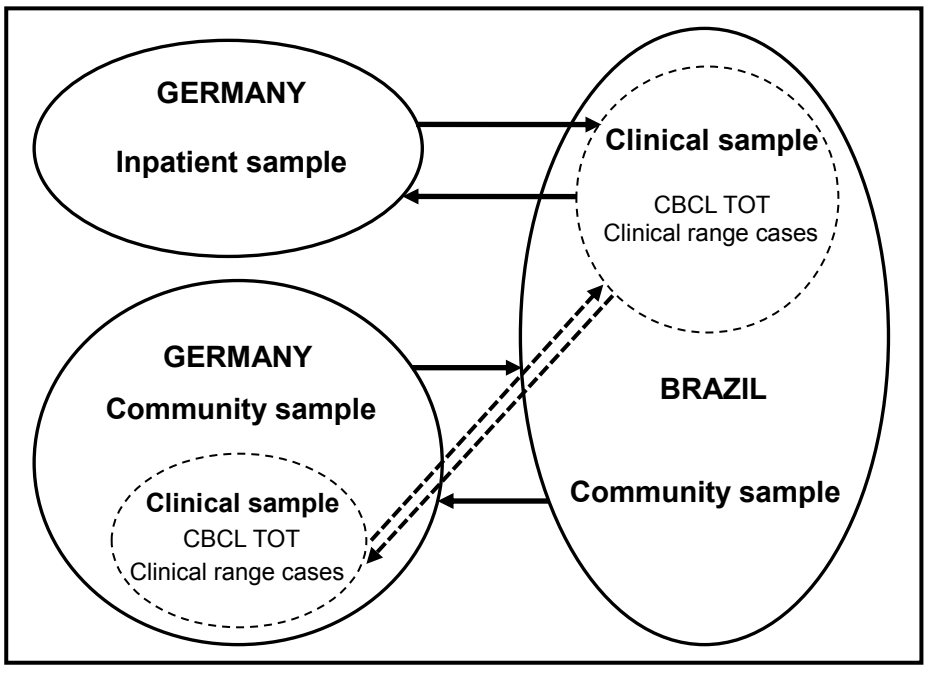


Figure 4: Study design. *Note: CBCL TOT = Child Behavior Checklist Total Problems scale.*

3.2 Samples and procedures

3.2.1 German samples

a) Inpatient sample

The basis of this study is the German inpatient sample, a regional inpatient sample of Berlin and Brandenburg, constituted by all the four-years-old children (N = 152) who came to the “Baby and Toddlers Consultation” of the Department of Infant psychiatry from the Charité-Universitätsmedizin Berlin (Germany) from 01.01.2001 to 31.10.2009. It was the clinic where I collaborated as a resident child psychiatrist from 01.09.08 to 01.04.2010.

The „Baby and Toddlers Consultation” is part of the Social-Pediatric Centre for Chronically Ill Children at the Otto-Heubner-Pediatrics Centre at Charité-Universitätsmedizin Berlin. The consultation is addressed to families with 0 to 5 years aged children, who because of behavioral, emotional or psychic problems are recommended to come from physicians, psychologists or from other professionals like educators. The concept of the consultation is based on an attachment theoretical orientation, combined with systemic approaches, to identify the family’s resources and generate individual solutions to develop self-regulation steps. Children with a varied spectrum of psychosomatic disturbances like regulation disorders (eating, crying and sleeping disorders), hyperactive behavior, mood disorders, autistic syndromes and behavioral or interaction problems come to this consultation. The figure 5 shows the distribution of the disorders of the sample. They are children whose disorder is due to risky psychosocial factors of their environment, for instance parental psychiatric disorders, parents’ negligence or maltreatment and who need a family assistance to get over the problem. We can mention here as disorder’s patterns the attachment disorders or the artificial disorders (Münchausen by proxy).

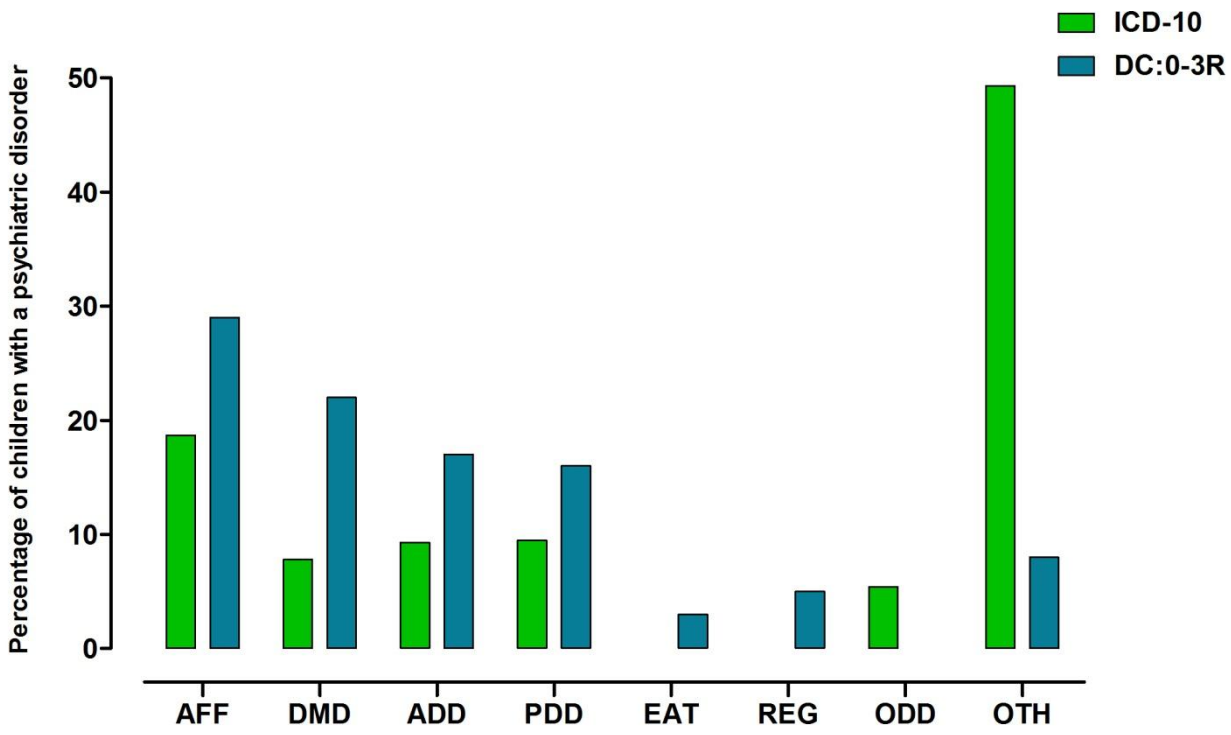


Figure 5: Comparison of distribution of diagnostic group per ICD-10 and per DC:0-3R by percentage of cases. *Note: AFF = Affective Disorder, DMD = Deprivation/Maltreatment Disorder, ADD = Attention Deficit Hyperactivity Disorder-related-Complex, PDD = Disorder of Relating and Communicating, EAT = Eating Behavior Disorder, REG = Regulation Disorder, ODD = Oppositional Defiant Disorder, OTH = Other Disorder, ICD-10 = International Classification of Disorders 10th Edition, DC:0-3R = Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, Revised Edition.*

There are cases where forceful measures must be taken to secure the protection of the child. The systematic operating procedures (SOP) of the consultation to elucidate the diagnostic are the following:

1) evaluation of the motor, language and emotional development,
2) use of standardized questionnaires like CBCL to evaluate the behavioral and emotional problems,
3) rule out somatic causes of the disorder through electroencephalogram, MRI, genetic and endocrine tests,
4) evaluation of interactive and dynamic familial aspects through standardized video-sequences. These, plus the anamneses, have already an interventional character and can, through competent orientation of the family, improve the

situation in a relatively short time. What is important for us is the evaluation of the emotional exchange process between child and parents based on the attachment theory conception of “emotional availability” (Dornes, 1999).The disorders are classified using the ICD-10 Multiaxial Classification System combined with the DC: 0-3R.

Based on the results of the diagnostic procedure, an overview interview takes place with the family to recommend the necessary measures depending on the gravity of the situation like educative consultation, family therapy, mother-child-psychotherapy, functional therapies like ergotherapy or speech therapy and social assistance by the youth welfare office. In most cases the consultation offers continued assistance in the sense of “Case Manager”, so that the development of the child can be evaluated and supervised in a better way.

Figure 6 shows the evaluated factors of this consultation:

- *Frankfurter Basisdokumentation* (BADO)
- Social demographic data
- Medical history
- ITMSE
- Somatic evaluation
- Diagnostic classification (ICD-10, DC: 0-3 R)
- Assessment of behavior problems: CBCL 1 ½ - 5

Figure 6: Evaluated factors in German inpatient sample. *Note: ITMSE = Infant and Toddler Mental Status Exam, ICD-10 = International Classification of Diseases and Related Health Problems 10th Edition, CBCL/1½ - 5 = Child Behavior Checklist for Ages 1½ - 5.*

The *Frankfurter Basisdokumentation* is a standardized questionnaire which was always filled in by an educated/experienced child psychiatrist after the first appointment and it will be described in the “Instruments and Measures” section.

b) Clinical sample

The German clinical sample included every case of the German community sample (this sample will be described below) with a clinical score on the

CBCL-*Total-Problems*-scale. This sample is useful as an addition for the comparison between the German inpatient sample and the Brazilian clinical sample. However because of its small size, it was only used as a reference framework and was not analyzed as specifically as the other four samples.

c) Community sample

The German community sample is a sub-sample of the PAK-KID Study (*Psychische Auffälligkeiten und Kompetenzen von Kindern und Jugendlichen in Deutschland*), a study of a nation-wide representative sample of children and adolescents aged 4 to 18, where the parents of children aged 4 to 10 completed the German version of CBCL/4-18 (Lehmkuhl, et al., 1998).

Our sample is a sub-sample of 214 children aged four years old of a total of 2856 children aged four to ten years old representative sub-sample.

Figure 7 summarizes the collection of the data.

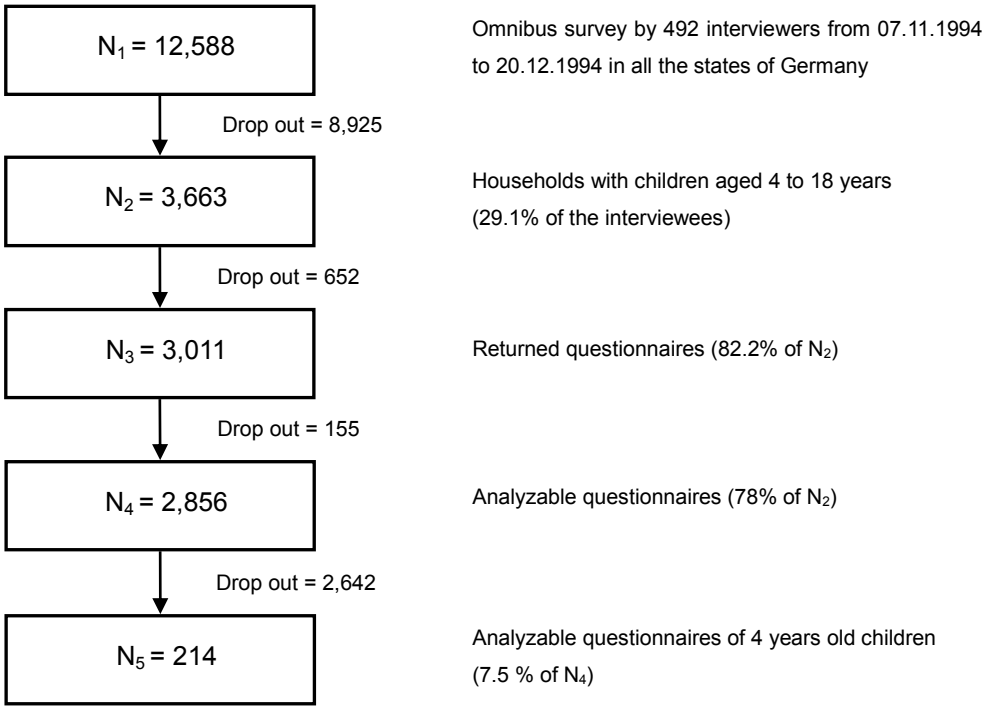


Figure 7: Phases of data collection of the German community sample (Lehmkuhl, et al., 1998).

The families had to fill out questionnaires with socio-demographic data and the German version of the CBCL/4-18. Figure 8 summarizes the evaluated factors.

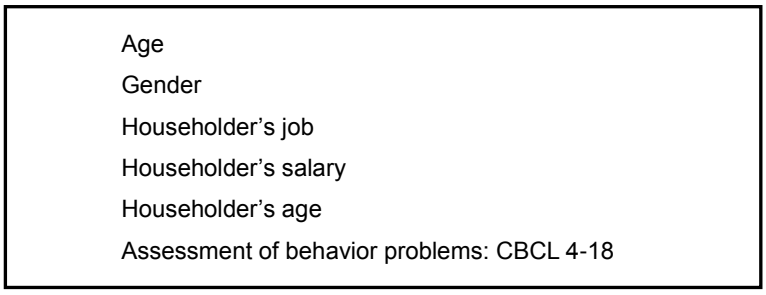


Figure 8: Evaluated factors in German community sample (Lehmkuhl, et al., 1998).

3.2.2. Brazilian samples

a) Clinical sample

The Brazilian clinical samples are the CBCL-*Total-Problems*-scale's scores in the borderline and clinical range of the Brazilian community sample, which is described below.

b) Community sample

The study of the Brazilian population is focused on Pelotas, a city in the southern region of Brazil, Rio Grande do Sul, which currently has 323,034 inhabitants, 153,180 men and 169,854 women, (the third largest in the whole region) according to the official website of the city (*www.pelotas.com.br*). The sample consists of 633 children randomly selected from 5304 hospital births occurring during the year 1993 (from 01.01.1993 to 31.12.1993) (Anselmi, et al. 2004). This cohort was studied in five different Brazilian projects, with their specific methodology and objectives. Our study was divided into two different phases described in figure 9.

During these two phases data were collected on growth, morbidity, development and IQ, and dietary habits, as well as socio-demographic and family data. Figure 10 shows the different factors evaluated in both phases.

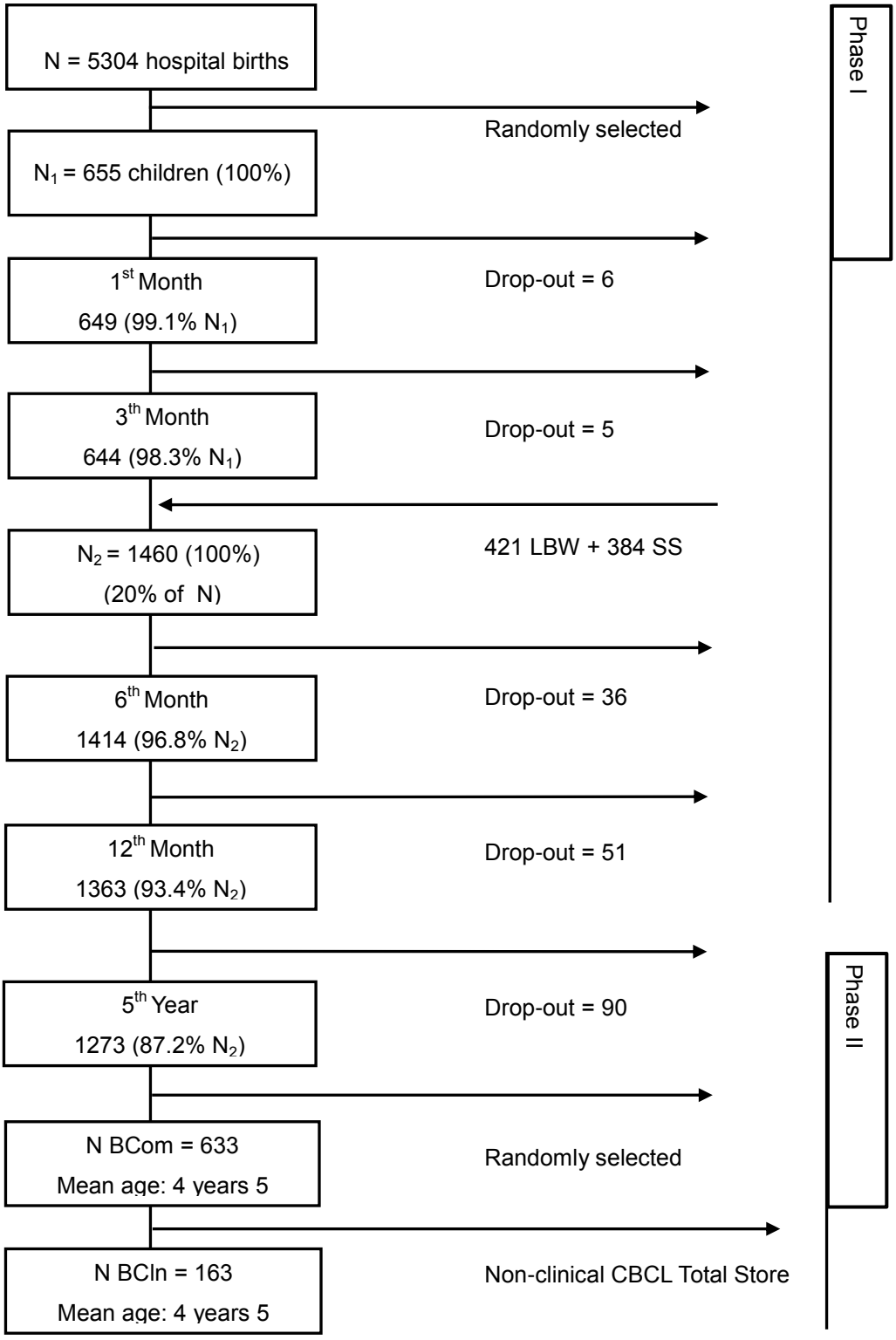


Figure 9: Timeline of the two phases of the study of the Brazilian sample. *Note: SS = systemically selected, LBW = Low birth weight* (Anselmi, et al. 2004).

Phase I	Phase II
Evaluation of perinatal factors	Family composition
Gestational age: Dubowitz method	Home environment: HOME
Socio-demographic and infant development factors	IQ assessment: WPPSI
Anthropometric evaluation	Maternal psychiatric disorder: SRQ-20
Neuropsychomotor assessment: DENVER II	Assessment of behavioral problems: CBCL 4-18

Figure 10: Factors evaluated in the Brazilian sample. *Note: Denver II = The Denver Developmental Screening Test, HOME = Home Observation for Measurement of the Environment, WPPSI = Wechsler Preschool Intelligence Scale, SRQ-20 = Self-Report Questionnaire of Minor Psychiatric Disorders, CBCL/4-18 = Child Behavior Checklist for Ages 4-18* (Anselmi, et al. 2004).

Figure 11 summarizes the sizes and the comparison between the four samples

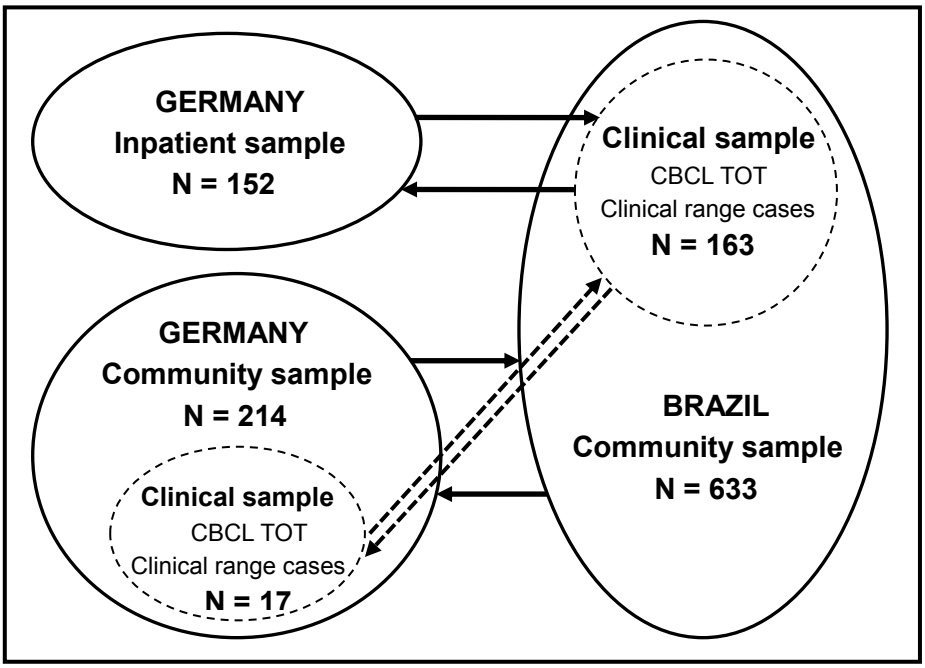


Figure 11: Summary of the sizes of the comparable samples. *Note: CBCL = Child Behavior Checklist.*

3.3 Instruments and measures

3.3.1 Questionnaires

In the German inpatient sample, the *Basisdokumentation* (BADO) was put into practice. It is a standardized questionnaire created by the *Frankfurter Dokumentationssystem* to be used in every department of Infant and Adolescence Psychiatry in Germany (Englert & Poutska, 1993). The current edition (the third one) is divided into twelve sections:

1. Socio-demographic data
2. Medical history
3. The Infant and Toddler Mental Status Exam (ITMSE)
4. Somatic evaluation
5. Diagnostic classification according to the six axis of the ICD-10
6. Additional somatic diagnosis
7. Additional psychological diagnosis
8. Therapy (documentation about the activity)
9. Ending of the treatment
10. Results of the treatment
11. Recommended measures and further treatments
12. Data of the documenter

A total of 120 items are divided into compulsive (107) and additional characteristics (13). Every section of the BADO is structured in the same way: every item consists in different possibilities codified as numbers and the documenter has to fill them out depending on the answer. Some items have to be filled out directly with a number (for example, maternal age at the birth of the child)

The codification of the possibilities is based on the following principle: generally there is no code “0”; the smallest code is the digit “1”. Everything that is described as “normal” or “no characteristic” will be coded with “1”. In cases where a situation cannot be well described with the different choices, there is an additional category called “miscellaneous” or “not applicable” coded usually with the digits “8” or “88”. Finally, in cases where the documenter does not have any or enough information, he or she can enter the category “Unknown”, usually coded with the digits “9” or “99”. In our clinic the first five sections of the BADO are always filled out after the first consultation and all of our study data comes from these sections.

Table 2 summarizes the data obtained in the questionnaires:

Table 2: Summary of the data obtained in the questionnaires. *Note: Q_{1Month} = questionnaire administered in the first month, Q_{1Year} = questionnaire administered in the first year, Q_{4Year} = questionnaire administered in the fourth year, Q = questionnaire of the German community-based sample, $BADO_1$ = Basisdokumentation section I, $BADO_2$ = Basisdokumentation section II, $BADO_5$ = Basisdokumentation section V.*

	Variables	GInp	GCom + GCln	BCom + BCln
Individual	Sex (Sex)	$BADO_1$	Q	Q_{1Month}
	Low Birth weight (LBW)	$BADO_2$	-	Q_{1Month}
	IQ (IQ)	$BADO_5$	-	-
Familial	Maternal psychiatric disorders (MPD)	$BADO_5$	-	SRQ-20
	Mother's absence (MAb)	$BADO_1$	-	Q_{1Month}
	Father's absence (FAb)	$BADO_1$	-	Q_{1Month}
	Number of siblings (NrS)	$BADO_2$	-	Q_{4Year}
	Number of younger siblings (NrY)	$BADO_2$	-	Q_{4Year}
Socio-demographic	Maternal age (MAg)	$BADO_1$	Q	Q_{1Month}
	Paternal age (PAg)	$BADO_1$	Q	Q_{1Month}
	Maternal education (MEd)	$BADO_1$	Q	Q_{1Month}
	Paternal education (PEd)	$BADO_1$	Q	Q_{1Month}
	Maternal occupation (MW)	$BADO_1$	Q	Q_{1Year}
	Family income (FI)	$BADO_1$	Q	Q_{1Month}

In the German community sample a questionnaire concerning child's gender, householder's job, income and age was administered.

Four different questionnaires were applied in Brazil in two different phases to collect the data (only the variables, which were used in our study, will be described):

In phase I of the study, a structured questionnaire was administered to the mother of the new-born in order to obtain information concerning child's gender, family income, parental age, education and presence and birth weight, and another one to obtain information on social demographic factors like information concerning maternal occupation.

In phase II, a structured questionnaire was administered to obtain information regarding number of younger siblings and the Self-Report Questionnaire (SRQ-20) to assess mental disorders in mothers. The SRQ-20 is a screening tool to assess common mental disorders (other than psychoses), especially depression and anxiety. It comprises four questions about physical symptoms and 16 questions about emotional symptoms with "yes/no" answers. Based on the findings of the instrument's validation

study in Brazil, a cut-off point of 8 of 20 points was used to designate a mother as having psychiatric problems (Mary & Williams, 1986).

3.3.2 Intelligence tests

Three different intelligence tests were applied in our study: the German versions of the Snijders-Oomen Non-verbal Intelligence Test (SON-R 2½-7) (Tellegen, et al., 1998) and the Kaufman Assessment Battery for Children (K-ABC) (Melchers & Preuß, 1991), depending on the verbal skills and cognitive functioning of the children in the German inpatient sample, and the Portuguese version of the Wechsler Preschool Intelligence Scale (WPPSI) in the Brazilian clinical sample (Cunha, 1992).

A similarity between the three tests is that intelligence is assessed on the basis of performance on a number of quite diverse tasks. Due to that fact, it makes the results of the three tests comparable.

a) Wechsler Preschool Intelligence Scale (WPPSI)

The WPPSI, which assesses the general intellectual functioning of children aged 4 to 6½ years, was first published by Wechsler in 1967. It is the extension of the Wechsler Intelligence Scale for Children (WIS-C). This test was used in the Brazilian clinical sample in the “Short Form Vocabulary and Block Design” of the test, which comprises only the two named subtests. In the “Block Design subtest” children are asked to reproduce designs using three or four flat, two colored blocks. The “Vocabulary subtest” consists of two question types: children are shown pictures and are asked to name the object in the picture and children are orally presented with a word and are asked to define it. The “Vocabulary subtest” is untimed while the “Block Design subtest” is timed and children are given bonus points on some items for speed.

Short forms of the WPPSI may be used for screening or research, but should not be used for diagnosis, selection or classification. Time allowed is only 15 to 20 minutes.

Validity and Reliability studies described in the WPPSI Manual report that the measure has adequate concurrence and construct validity and excellent reliability, especially for 4 to 6 years old children.

b) Snijders-Oomen Non-verbal Intelligence Test (SON-R 2½-7)

The SON-R 2½-7 provides standardized assessment of intelligence. The child's

scores on six different subtests are combined to form an intelligence score that represents the child's ability relative to his or her age group. These six subtests are administered in this sequence: Mosaics, Categories, Puzzles, Analogies, Situations and Patterns. They can be grouped into two types: Reasoning tests (Categories, Analogies and Situations) and Performance Tests (Mosaics, Puzzles and Patterns). The items on the subtests consist, on average, of 15 questions and are arranged in order of increasing difficulty, for determining a starting point appropriate to the age and ability of each individual child.

This test was administered in the German inpatient sample with children who were handicapped in the areas of communication and language because the test can be done without the use of written or spoken language. For the same reason it is also suitable for immigrant children who have little or no command of the language of the examiner. The testing materials do not need to be translated, making the test suitable for international and cross-cultural research. The administration of the test takes about 50 minutes.

The COTAN (Test Commission of the Netherlands Institute for Psychologists) evaluated as “good” (the categories were “insufficient”, “sufficient” and “good”) the reliability and construct and criterion validities of the SON-R 2½-7.

c) Kaufman Assessment Battery for Children (K-ABC)

The Kaufman Assessment Battery for Children (K-ABC) is a standardized test that assesses intelligence and achievement in children aged two years, six months to 12 years, six months. The edition published in 1983 by Kaufman which was in the process of being revised in 2002 to expand its age range (to cover children ages three to eighteen) and enhance its usefulness. The K-ABC was developed to evaluate preschoolers, minority groups, and children with learning disabilities. It is used to provide educational planning and placement, neurological assessment, and research. The German version of the test was used in the clinical sample with the children who had no language problems.

It is comprised of four global test scores that include: sequential processing scales, simultaneous processing scales, achievement scales and mental processing composite. There is an additional nonverbal scale that allows applicable subtests to be

administered through gestures to hearing impaired, speech/language impaired, or children who do not speak English.

The test consists of 16 subtests—10 mental processing subtests and six achievement subtests. Not all subtests are administered to each age group; only three subtests are administered to all age groups. Children aged two years six months are given seven subtests, and the number of subtests given increases with the child's age. For any child, a maximum of 13 subtests are administered. Children from age seven to 12 and six months are given 13 subtests. Administration of the K-ABC takes between 35 and 85 minutes. The older the child, the longer the test generally takes to administer.

Validity and reliability studies report that K-ABC has adequate concurrent and construct validities and reliability.

3.3.3 Child Behavior Checklist (CBCL)

Two different versions of the CBCL were used in our study: the CBCL/4-18 (Achenbach, 1991) in the Brazilian sample and the German community sample and the CBCL/1½-5 (Achenbach & Rescorla, 2000) in the German inpatient sample.

a) Child Behavior Checklist for Ages 4-18 (CBCL/4-18)

The CBCL/4-18 is the 1991 revision of the CBCL/4-16, the first of what has become a multiaxial empirically based set of measures for assessing children from parent-, teacher-, and self-reports, which was re-normed to include children up to 18 years of age and eight cross-informant constructs or syndromes. It consists of 20 competence items and 120 items on behavioral or emotional problems in the past 6 months. The response format is 0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true.) The scores are organized into nine constructs or scales: *Social Withdrawal* (WITH), *Somatic Complaints* (SOM), *Anxiety/Depression* (ANX), *Social Problems* (SOC), *Thought Problems* (THO), *Attention Problems* (ATT), *Delinquent Behavior* (DEL), *Aggressive Behavior* (AGG) and *Sex Problems* (SEX). In addition to focusing on a child's behavior as defined by one of the eight syndrome scales, the CBCL also allows the examination of two broad groupings of syndromes: *Internalizing Problems* (INT) and *Externalizing Problems* (EXT). *Internalizing Problems* combine the *Social Withdrawal*, *Somatic Complaints*, and *Anxiety/Depression* scales, while

Externalizing combine the *Delinquent Behavior* and *Aggressive Behavior* scales. The sum of all the items forms the *Total Problems* scale (TOT).

A total problem score is computed by adding up all 0s, 1s and 2s. Raw scores are treated mathematically from statistics extracted from the general population in North American standardization, in order to get T-scores. A cut-off point is used for these scores in order to obtain a clinical judgment: T≥67 on *Syndromes* scales and T≥60 on *Internalizing*, *Externalizing* and *Total Problems* groupings. Two categories are derived: clinical/ borderline and non-clinical. The sum of the raw scores obtained in all subscales corresponds to the total of behavior problems. The good reliability and validity of the CBCL (Achenbach, 1991) were confirmed for other studies (Verhulst, van der Ende & Koot, 1996; Schmeck et al., 2001).

b) Child Behavior Checklist for Ages 1½-5 (CBCL/1½-5)

The CBCL/1½-5 is the 2000 revision of the CBCL/2-3 and the preschool version of the CBCL. Many researchers have used it with preschool samples and have established the appropriateness of using this measure with this age group across different cultures and languages (Paterson et al., 2007). The preschool forms and profiles span ages 1½ to 5 years. The forms obtain parents', daycare providers' and teachers' ratings of 99 problem items plus descriptions of problems and disabilities.

The respond format is the same one as the CBCL/4-18 and the scores are organized in this case in seven scales: *Withdrawal* (WITH), *Somatic Complaints* (SOM), *Anxious/Depressed* (ANX), *Emotional Reactive* (EMO), *Sleep Problems* (SLE), *Aggressive Behavior* (AGG) and *Attention Problems* (ATT). The *Internalizing Problems* combine the first four and the *Externalizing Problems* the last two (*Sleep problems* scale is neither one nor the other). The cut-off point used for this version in order to obtain a clinical judgment is T≥63 on *Syndromes* scales and T≥60 on *Internalizing*, *Externalizing* and *Total Problems* groupings.

The computation and the categories are also the same and the Manual for ASEBA Preschool Forms and Profiles shows consistent data of good validities and reliability of the test. In addition, this version contains DSM oriented scales and since 2010 a "Multicultural Supplement" which illustrates multicultural scoring, cross-informant comparisons, and practical applications in school, mental health, medical, and forensic contexts.

Since we use two different versions of the CBCL in our study, we can only evaluate the behavioral and emotional problems of the children with the five comparable scales of these versions. Table 3 highlights these comparable scales:

Table 3: Comparable scales of the two different CBCL versions *Note: N/N = neither nor.*

CBCL/4-18				**CBCL/1½-5**			
120 Items	TOT	INT	**WITH** **SOM** **ANX**	**WITH** **SOM** **ANX** EMO	INT	TOT	100 Items
		EXT	**AGG** DEL	**AGG** **ATT**	EXT		
		N/N	**ATT** SOC THO SEX	SLE	N/N		

We include the *Attention Problems* scale with the *Externalizing* group in our study because although this scale is on the CBCL/4-18 displayed in the “neither *Externalizing* nor *Internalizing* grouping” section of the profiles, it has moderately high loadings on the various versions of the *Externalizing* factor (loading of .618) and it is included by the CBCL/1½-5 with the *Externalizing* grouping (loading of .67)

3.4. Statistical analyses

All analyses were performed using SPSS statistical software for Windows version 18.0 (SPSS Inc. Chicago, USA). The following methods were used:

1. Cross- tables (contingency tables) to relate particular variables and after chi-quadrat-test after Pearson to analyze correlations between variables and to calculate *p*-values and correlation coefficients. The reason of choice of these methods was nominal categorical classification of the dependent variable (CBCL *Syndromes* scales).

2. Binary logistic regression (BLR) was used to quantify the relation between variables and the CBCL *Syndromes* scales, which were previously statistically significant in the previous chi-squared-test. The choice of the BLR was determinate because it takes into account the fact that the dependent variable is categorical. The most positive fact is that this model can be written in terms of odds ($Pi/ (1-Pi) = \exp (\beta 0 + \beta 1 xi)$), where coefficient β gives us the relative odds (OR) value of the association and with it the association between the psychosocial determinants and the behavioral problems can be quantified.

Psychosocial factors were categorized in these analyses for convenience of comparison and for the need of the homogenization between the three populations. This complex process of homogenization was carried out according to the Brazilian sample, because its data collection and configuration were already finished. Therefore, the binomial categorical variables from the Brazilian sample kept unaltered in the process of homogenization, whereas the variables from the German sample were changed in case it was necessary. An example to clarify this process would be the variables “Mother and Father Absence”, which were binomial categorical variables within the Brazilian sample, but within the German sample divided in the following way: “Biologic Parent”, “Adoptive parent”, “Foster Parent”, “Grandparents”, “Relatives” and “No Parent”. In this case, the two first groups (i.e., “Biologic Parent”, “Adoptive parent”) were the negative cases of the variable, that neither father nor mother was absent.

However the quantitative variables were grouped in the most possible homogeneous way to carry out the statistical analyses shown above. An example is the variable “Intelligent Quotient”, which is a discrete quantitative variable in both samples and it was classified in four diverse groups according to Axis III of the ICD-10.

Table 4 shows this homogenization process and the grouping of every variable in every population:

Table 4: Homogenization of the variables from the different populations**.** *Note: mw = Minimum wage; DM = Deutsche Mark (German mark) * German community and inpatient populations had even different variables classification. The column "German Grouping" shows the homogenization of those samples.*

	BRAZILIAN GROUPING	HOMOGENEOUS VARIABLES	GERMAN GROUPING*
INDIVIDUAL		**Sex**	
	Male/Female	Male/Female	Male/Female
		IQ	
	Continuous	4 groups (>114, 114-85, 84-70, <70)	Continuous
		LBW	
	Yes/No	Yes/No	Yes/No
FAMILIAR		**MPD**	
	Yes/No	Yes/No	Yes/No
		MAb/Fab	
	Yes/No	Yes/No	Biologic and adoptive parent, foster parent, grandparents, relatives and no parent
		NrS	
	Continuous	3 groups (0,1,>1)	Continuous
		NrY	
	Continuous	3 groups (0,1,>1)	Continuous
SOCIO-DEMOGRAPHIC		**Mat/Pat age**	
	Continuous	3 groups MAg (<20,20-34,>35) PAg (<25,25-34,>35)	Parental age at consultation (continuous)– Child's age (continuous)
		Med/PEd	
	(≤ 4 y., 4-8 y and ≥ 9 y.)	3 groups Low level, middle level, high level	(No school certificate, special school, secondary school, University entrance diploma, university certificate)
		MW	
	Yes/No	Yes/No	Gainfully employed, shift work, part-time, unemployed, retraining, pensioner, household
		FI	
	(<1mw, 1-3mw, 3.1-6mw, 6.1-10mw, >10mw)	5 groups Very low, low, middle, high, very high	(<1250 DM, 12500-2249 DM, 2250-3499 DM, 3500-4999 DM, >4999 DM)

4. Results

In the following sections all the results of the study will be presented and analyzed. The order of every section will proceed as follows:

1. Inpatient and clinical samples:
   1. Germany
   2. Brazil
2. Community samples:
   1. Germany
   2. Brazil

The comparison between the two clinical samples will be appearing as a complement at the end of every section about the inpatient and clinical samples. The statistic results will be ordered according to the grade of statistical complexity, from univariate to multivariate analyses. CBCL *Internalizing*, *Externalizing* and *Total Problems* grouping scores will be included to complete the information and will be used as a reference frame, but only the CBCL *Syndromes* scales will be analyzed.

To facilitate the reading I would like to note that every psychosocial variable will be abbreviated according to the next table:

Table 5: List of the abbreviated psychosocial factors

PSYCHOSOCIAL FACTORS					
Individual		**Familial**		**Socio-demographic**	
Sex	(Sex)	Maternal Psychiatric Disorder	(MPD)	Maternal Age	(MAg)
Low Birth Weight	(LBW)	Mother's Absence	(MAb)	Paternal Age	(PAg)
IQ	(IQ)	Father's Absence	(FAb)	Maternal Education	(MEd)
		Number of Siblings	(NrS)	Paternal Education	(PEd)
		Number of Younger Siblings	(NrY)	Maternal Occupation	(MW)
				Family Income	(FI)

4.1. Psychosocial factors

4.1.1. Inpatient and clinical samples

The two original samples were represented by 152 children within the German inpatient sample and by 163 within the Brazilian clinical sample. A total of 23 children (15.13%) were excluded from the German sample because of the lack of one ICD-10 or DC:0-3R diagnosis, main criteria inclusion factor of the German inpatient population. In the Brazilian sample 18 (11.04%) cases were excluded because the gender of the children was missing.

After these readjustments, the distribution of the psychosocial factors on both populations was configured as it is summarized in table 6. In most cases, the amount of missing data was higher in the German sample than in the Brazilian one (the first figures refer in each case to the German sample): IQ: 6.20% vs. 3.44; LBW 19.40% vs. 0.0%; MPD: 3.1% vs. 0.0%; FAb: 0.80 % vs. 0.0%; NrS: 3.10 vs. 0.69%; NrY: 3.10 vs. 0.69%; MAg: 9.30% vs. 0.0%; PAg: 20.20% vs. 0.69%; MEd: 6.20% vs. 1.38%; PEd: 14.0% vs. 8.27% and MW: 3.10% vs.0.69%.

The variables without missing cases were Sex and MAb. The main reason of this difference was the complex process of homogenization of the variables, where the Brazilian sample was used as a framework (its data collection and configuration was already finished). Because the need of adaptation of the German sample according to the structure of the Brazilian sample, the variables of the German one had to be restructured. In this process different cases were inevitably missing.

To analyze the differences of the distribution of the factors between the two samples, a univariate chi-squared test was used. Table 6 shows also the results of the test.

There is a significant difference in the distribution between all the factors, except only between two of them (FAb and MEd; but MEd with $p<.10$). In the case of sex, most of the children in the German sample are boys (65.90%) while in the Brazilian sample most are girls (61.40%). The two extreme groups of the IQ classification (>114 and <70) are similar (5.00% vs. 7.90% and 6.60 vs. 7.90%) and the main differences are in the other two groups (normal intelligence and low intelligence) where the German sample has the scores 67.80% and 20.70%, respectively, and the Brazilian one 49.30 % and 35.0 %, with the number of cases of low intelligence in Brazil being nearly double that in

Table 6: Distribution of the psychosocial factors within the inpatient and clinical samples *Note:* X^2 = *Chi-quadrat test. * p<.05; **p<.01; ***p<.001.*

	Psychosocial Factors		INPATIENT AND CLINICAL SAMPLES Germany n=129 n(%)	Brazil n=145 n(%)	X^2 p
INDIVIDUAL	Sex	Males	85(65.9)	56(38,6)	<.001***
		Females	44(34.1)	89(61.4)	
	IQ	>114	6(5.0)	11(7.9)	.023*
		114-85	82(67.8)	69(49.3)	
		84-70	25(20.7)	49(35.0)	
		<70	8(6.6)	11(7.9)	
		Unknown	8	5	
	LBW	No	92(88.5)	91(62.8)	<.001***
		Yes	12(11.5)	54(37.2)	
		Unknown	25	-	
FAMILIAL	MPD	No	91(72.8)	70(48.3)	<.001***
		Yes	34(27.2)	75(51.7)	
		Unknown	4	-	
	MAb	No	116(87.6)	138(95.2)	.024*
		Yes	13(12.4)	7(4.8)	
	Fab	No	95(74.2)	98(67.6)	.230
		Yes	33(25.8)	47(32.4)	
		Unknown	1	-	
	NrS	0	51(40.8)	30(20.8)	<.001***
		1	53(42.4)	46(31.9)	
		>1	21(16.8)	68(47.2)	
		Unknown	4	1	
	NrY	0	91(72.8)	85(59.0)	.019*
		1	30(24.0)	44(30.6)	
		>1	4(3.2)	15(10.4)	
		Unknown	4	1	
SOCIO-DEMOGRAPHIC	MAg	<20	5(4.3)	28(19.3)	<.001***
		20-34	80(68.4)	102(70.3)	
		>34	32(27.4)	15(10.3)	
		Unknown	12	-	
	Pag	<25	8(6.2)	47(32.6)	<.001***
		25-34	48(46.6)	61(42.4)	
		>34	47(45.6)	36(25.0)	
		Unknown	26	1	
	MEd	Low	31(25.6)	47(32.9)	.077+
		Middle	47(38.8)	63(44.1)	
		High	43(35.5)	33(23.1)	
		Unknown	8	2	
	PEd	Low	33(29.7)	34(25.6)	.011*
		Middle	35(31.5)	66(49.6)	
		High	43(38.7)	33(24.8)	
		Unknown	18	12	
	MW	No	59(47.2)	105(72.9)	<.001***
		Yes	66(52.8)	39(27.1)	
		Unknown	4	1	

Germany (35.0% vs. 20.70%). Furthermore, the percentage of children with low weight at birth is higher in the Brazilian sample than in the German one, in this case being more than three times higher (37.20% vs. 11.5%). In the case of familial factors, four of them show a significant difference: MPD, MAb, NrS and NrY. Children whose mother has a psychiatric disorder represent one half in the German sample (27.20% vs. 51.70%). The percentage of maternal absence is almost three times higher in the German sample (12.40 vs. 4.80). The number of siblings, as well as the number of younger siblings, is higher in the Brazilian sample: 31.90 % of children have one sibling and 47.20% more than one (in the German sample 42.40% and 16.80%, respectively) and 30.60% have one younger sibling and 10.49% more than one (in the German sample, 24.0% and 3.2%).

To complete the description of the differences between the two samples, we have to talk about the socio-demographic factors. In this group only the MEd does not show a significant difference. Brazilian parents (mothers as well as fathers) are younger than German parents: 19.3% of the mothers are younger than 20 years (4.30% in the German sample) and only 10.30% are older than 35 years (27.40% in the German sample).

In the case of the fathers, 32.60% are younger than 25 years (only 6.20% in in the German sample) and 25.0% are older than 35 years (45.60% in the German sample). The percentage of fathers with a high level education is higher in the German sample (38.70% vs. 24.80% in the Brazilian sample) and the percentage of fathers with a low level education is almost the same (29.70% in the German sample and 25.60% in the Brazilian sample). The number of working mothers in in the German sample is also higher (52.80% vs. 27.10% in the Brazilian sample).

To quantify the correlation of the psychosocial factors and the countries, a multivariate binary logistic regression was applied and only those results with $p<.05$ are shown in the table 7.

Two individual factors (Sex and LBW), four familial (MPD, MAb, NrS and NrY) and two socio-demographic (MA and PAg) show a significant difference (the *odds ratio* scores refer to the Brazilian sample):

1. Female sex: $OR_{Sex} = 3.738$ 95%-CI (1.636 to 8.538), $p = .002$
2. Children with low birth weight: $OR_{LBW} = 9.716$, 95%-CI (3.139 to 30.076), $p<.001$

3. Children with a mother with a psychiatric disorder: OR_{MPD} = 4.270, 95-CI% (1.781 to 10.235), p =.001
4. Children separated from their mother: OR_{MAb} = 0.105, 95%-CI (0.19 to 0.563), p =.009
5. Children with more than one sibling: OR_{NrY} = 33.757, 95%-CI (7.541 to 151.112), p<.001
6. Children with more than one younger sibling: OR_{NrY} = 0.127, 95%-CI (0.020 to 0.809), p =0.29
7. Children with mothers aged 20 to 34 years: OR_{MAg} = 0.156, 95%-CI (0.028 to 0.876), p<.035 and children with mothers older than 34 years: OR_{MAg} = 0.045, 95%-CI (0.005 to 0.398), p =.005
8. Children with fathers older than 34 years: OR_{PAg} = 0.188, 95%-CI (0.05 to 0.710), p =.014

Table 7: Quantification of the distribution of the psychosocial factors within the inpatient and clinical samples *Note: IND = Individual; OR = odds ratio; 95%-CI = 95% confidence interval.* [a] *Binary logistic regression analyses, where the German sample has the score 0 and the Brazilian, the score 1. * p<.05; **p<.01; ***p<.001.*

			CLINICAL SAMPLES		
Psychosocial factor			**OR[a]**	**95%-CI[a]**	**p[a]**
IND	Sex	Male vs Female	3.738	1.636 – 8.538	.002**
	IQ	High vs. Normal	.0274	.061 – 1.230	.091+
	LBW	No vs. Yes	9.716	3.139 – 30.076	<.001***
FAMILIAL	MPD	No vs. Yes	4.270	1.781 – 10.235	.001**
	MAb	No vs. Yes	.105	.019 - .563	.009**
	NrS	0 vs. >1	33.757	7.541 – 151.112	<.001***
	NrY	0 vs. 1	.369	.126 – 1.081	.069+
		0 vs. >1	.127	.020 - .809	.029*
SOCIO DEMOGRAPHIC	MAg	<20 vs. 20-34	.156	.028 - .876	.035*
		<20 vs. 35+	.045	.005 - .398	.005**
	PAg	<25 vs. 35+	.188	.050 - .710	.014*
	MEd	Low vs. High	3.725	.946 – 14.670	.060+
	PEd	Low vs. Middle	2.505	.855 – 7.337	.094+

Clinical samples

The German clinical sample was represented only by 17 children. The missing data was the following: Mag, MEd and MW 5.88% and PAg and PEd 23.53%. Sex was the only variable without missing cases. The distribution of the psychosocial factors in this sample and the analysis of the differences between the German and Brazilian clinical samples, determined with the chi-squared test, are showed in the table 8. There is a significant difference in the distribution of only one factor, the gender. Most of the children of the German sample are boys (70.6%) and of the Brazilian sample girls (61.4%). It was also the only factor with a p<.05 in the logistic regression: Female sex in Brazil: OR_{Sex} = 4.318, CI-95% (1.037 to 17.791), p = .044

Table 8: Distribution of the psychosocial factors within the clinical samples. *Note: IND = Individual, X^2 =chi-squared test.* p<.05, **p<.01, ***p<.001.*

	Psychosocial Factors		CLINICAL SAMPLES Germany n=17 n(%)	CLINICAL SAMPLES Brazil n=145 n(%)	X^2 P
IND	Sex	Males	12(70.6)	56(38,6)	.012*
		Females	5(29.4)	89(61.4)	
SOCIO-DEMOGRAPHIC	MAg	<20	0(0.0)	28(19.3)	.120
		20-34	13(81.3)	102(70.3)	
		>34	3(18.7)	15(10.3)	
		Unknown	1	-	
	Pag	<25	2(15.4)	47(32.6)	.367
		25-34	6(46.2)	61(42.4)	
		>34	5(38.5)	36(25.0)	
		Unknown	4	1	
	MEd	Low	8(50.0)	47(32.9)	.388
		Middle	5(31.3)	63(44.1)	
		High	3(18.8)	33(23.1)	
		Unknown	1	2	
	PEd	Low	6(46.2)	34(25.6)	.059
		Middle	2(15.4)	66(49.6)	
		High	5(38.5)	33(24.8)	
		Unknown	4	12	
	MW	No	9(56.3)	105(72.9)	.162
		Yes	7(43.7)	39(27.1)	
		Unknown	1	1	

4.1.2. Community samples

From the original Brazilian community sample (n=633), 49 cases (7.74%) were excluded because the gender was unknown. No case was missing in the German

sample. Table 9 shows the distribution of the psychosocial factors in the community samples and the results of the univariate chi-squared test. The percentages of missing data in the community-based samples was as follows (as above, the first figure refers to the German sample): MAg: 19.62% vs. 0.0%; PAg: 21.49% vs. 1.71%; MEd: 19.62% vs. 1.02%; PEd: 21.49% vs. 6.84; MW: 19.62% vs. 0.85%; FI: 5.14% vs. 2.05%. The reason why the missing rates are so high in the German sample is the difference in the variables between both samples. In the German sample the variable “Mother” or “Father” did not exist but the “Interviewed person” and “Householder” did. The missing data was due to the impossibility of coding of these variables.

Table 9: Distribution of the psychosocial factors within the community samples. *Note: X^2 =chi-squared test; IND = Individual. * p<.05, **p<.01, ***p<.001.*

Psychosocial Factors			COMMUNITY SAMPLES Germany n=214 n(%)	COMMUNITY SAMPLES Brazil n=584 n(%)	X^2 P
IND	Sex	Males	115(53.7)	280(47.9)	.147
		Females	99(46.3)	304(52.1)	
SOCIO-DEMOGRAPHIC	MAg	<20	0(0.0)	83(14.2)	<.001***
		20-34	143(83.1)	425(72.8)	
		>34	29(16.9)	76(13.0)	
		Unknown	42	-	
	PAg	<25	8(4.8)	152(26.5)	<.001***
		25-34	109(64.9)	275(47.9)	
		>34	51(30.4)	147(25.6)	
		Unknown	46	10	
	MEd	Low	94 (54.6)	171(29.6)	<.001***
		Middle	56 (32.6)	264(45.7)	
		High	22(12.8)	143(24.7)	
		Unknown	42	6	
	PEd	Low	96 (57.1)	138(25.4)	<.001***
		Middle	42 (25.0)	276(50.7)	
		High	30(17.9)	130(23.9)	
		Unknown	46	40	
	MW	No	96(55.8)	409(70.6)	<.001***
		Yes	76(44.2)	170(29.4)	
		Unknown	42	5	
	FI	Very low	8(3.9)	100(17.5)	<.001***
		Low	23(11.3)	185(32.3)	
		Medium	85(41.9)	167(29.2)	
		High	68(33.5)	54(9.4)	
		Very high	19(9.4)	66(11.5)	
		Unknown	11	12	

Apart from gender, all socio-demographic variables differ significantly. Parental age in the Brazilian sample was lower than in the German one: 14.20% of Brazilian mothers were younger than 20 (0.0% in the German sample) and 13.0% were older than 35 years (16.9% in the German sample). 26.5% of Brazilian fathers were younger than 25 (4.80% in the German sample) and 25.6% were older than 35 years (30.40% in the German sample). Regarding parental education, the rates are as follows: 54.60% of the mothers and 57.10% of the fathers have a low level of education in the German sample (29.60% and 25.40%, respectively, in the Brazilian sample) and 12.80% of the mothers and 17.90% of the fathers have a higher level of education (24.70% and 23.90%, respectively, in the Brazilian sample). The rates of working mothers are higher in the German sample (44.20% vs. 29.4% in the Brazilian sample) and the family's income is also higher in Germany: Very low income rate is four times higher in the Brazilian sample (17.5% vs. 3.9%) and the high income rate is three times higher in Germany (33.50% vs. 9.4%). To quantify the correlation between the psychosocial factors and their respective countries, multivariate binary logistic regression was applied and only the results with p<.05 are showed in next table:

Table 10: Quantification of the distribution of the psychosocial factors within the community samples. *Note: OR = odds ratio; 95%-CI =95% confidence interval. [a] Binary logistic regression analyses, where the German sample has the score 0 and the Brazilian, the score 1. * p<.05, **p<.01, ***p<.001.*

			COMMUNITY SAMPLES		
	Psychosocial factor		OR[a]	95%-CI [a]	p[a]
SOCIO-DEMOGRAPHIC	PAg	<25 vs. 25-34	.343	.130 - .906	.031*
	MEd	Low vs. Middle	2.359	1.289 – 4.318	.005**
		Low vs. High	5.165	2.198 – 12.137	<.001***
	PEd	Low vs. Middle	7.120	3.596 – 14.096	<.001***
		Low vs. High	7.136	2.903 - 17.543	<.001***
	FI	Very low vs. Middle	.024	.006 - .096	<.001***
		Very low vs. High	.004	.001 - .017	<.001***
		Very low vs. Very high	.010	.002 - .047	<.001***

Four socio-demographic factors (PAg, MEd, PEd and FI) show a significant difference:

1. Children with fathers aged 20 to 34 years: OR_{PAg} = 0.343, 95%-CI (0.130 to 0.906), p =.031

2. Children with mothers with a middle level of education: OR_{MEd} = 2.359, 95%-CI (1.289 to 4.318), p =.005 and children with mothers with a high level of education: OR_{MEd} = 5.165, 95%-CI (2.198 to 12.137), p<.001
3. Children with fathers with a middle level of education: OR_{PEd} = 7.120, 95%-CI (3.596 to 14.096), p<.001 and children with fathers with a high level of education: OR_{PEd} = 7.136, 95%-CI (2.903 to 17.543), p<.001
4. Children living in a family with middle income: OR_{FI} = 0.024, 95%-CI (0.006 to 0.096), p<.001; children living in a family with high income: OR_{FI} = 0.004, 95%-CI (0.001 to 0.017), p<.001 and children living in a family with very high income: OR_{FI} = 0.010, 95%-CI (0.002 to 0.047), p<.001

4.2 Behavioral problems in CBCL

The next tables and figures show percentages of positive CBCL scores in all five populations. The abbreviations used for the five scales are: WITH (*Withdrawal*), SOM (*Somatic Complaints*), ANX (*Anxious/Depressed*), ATT (*Attention Problems*) and AGG (*Aggressive Behavior*). Figure 12 shows the prevalence of behavioral problems in all five samples, included the German clinical sample:

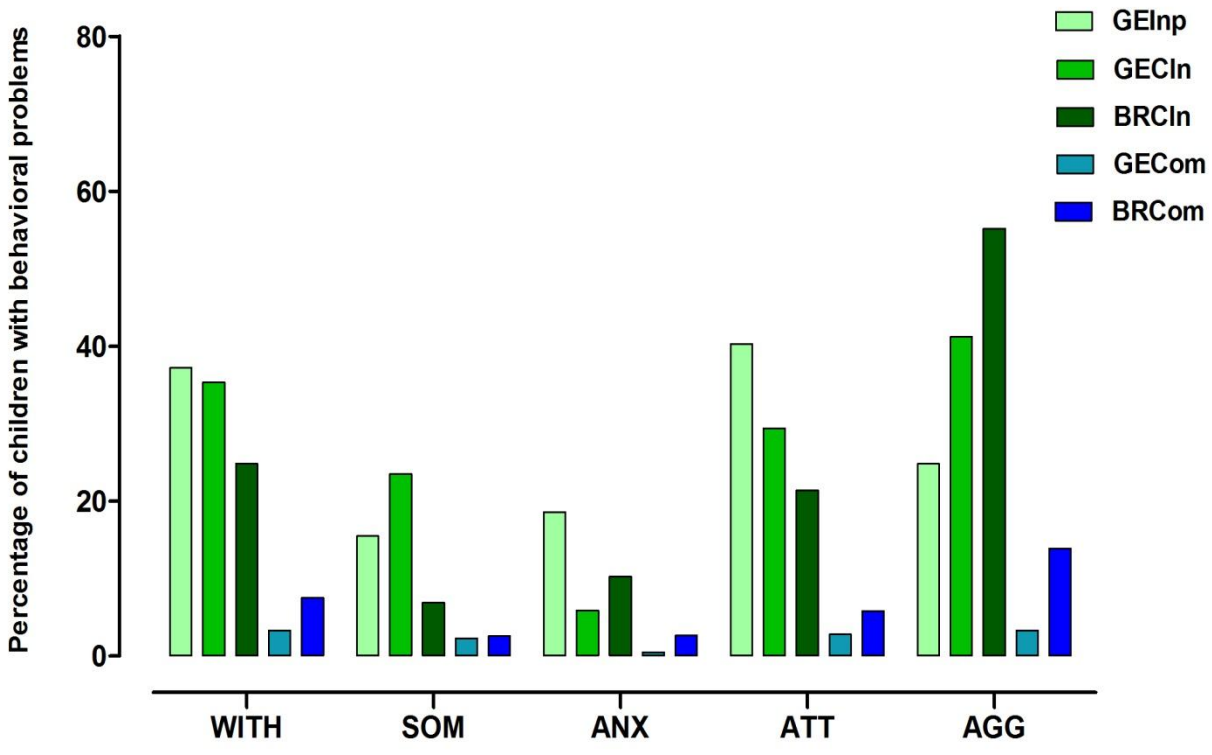


Figure 12: Prevalence of CBCL Syndromes scales within the five samples.

4.2.1. Inpatient and clinical samples

To assess, evaluate and quantify these differences, a chi-squared test and binary logistic regression were applied. Table 11 shows the results of the chi-squared test.

All the scales, apart from ANX show a significant difference and all are higher in the German sample with the exception of AGG: The three *Internalizing Problems* scales: WITH, 37.20% vs. 24.80, p =.027; SOM, 15.5% vs. 6.9%, p =.023 and ANX, 18.60% vs. 10.30%, p =.051 and the *Attention Problems* scale has also higher scores (in this case they are almost twice as high) within the German sample: 40.30% vs. 21.40%, p =.001; however the *Aggressive Behavior* scale has higher scores within the Brazilian one (more than twice as high): 55.20% vs. 24.80%, p <.001.

Table 11: Number and percentages of children in clinical ranges on the five CBCL Syndromes scales and on the three CBCL Summary scales in relation to the nationality of every sample. *Note: * p<.05, **p<.01, ***p<.001.*

	INPATIENT AND CLINICAL SAMPLES		
CBCL SCALES	GERMANY n = 129 n (%)	BRAZIL n = 145 n (%)	X^2 p
WITH			
-	81(62.8)	109(75.2)	.027*
+	48(37.2)	36(24.8)	
SOM			
-	109(84.5)	135(93.1)	.023*
+	20(15.5)	10(6.9)	
ANX			
-	105(81.4)	130(89.7)	.051
+	24(18.6)	15(10.3)	
ATT			
-	77(59.7)	114(78.6)	.001*
+	52(40.3)	31(21.4)	
AGG			
-	97(75.2)	65(44.8)	<.001***
+	32(24.8)	80(55.2)	
INT			
-	43(33.3)	69(47.6)	.017*
+	86(66.7)	76(52.4)	
EXT			
-	72(55.8)	14(9.7)	<.001***
+	57(44.2)	131(90.3)	

In general, the German sample presents higher scores, apart from the AGG scale. To quantify these differences, a non-adjusted and an adjusted binary logistic regression were used. Tables 12 and 13 show the results:

In the non-adjusted analysis, the two populations differ significantly in all the *Syndromes* scales, with the exception of the *Anxious/Depressed* one: OR_{WITH}=0.557, 95%-CI (0.332 – .937), p =.027; OR_{SOM} =0.404, 95%-CI (0.181 – .898), p<.026; OR_{ATT} =0.403, 95%-CI (0.237 - 0.684), p =.001 and OR_{AGG} =3.731, 95%-CI (2.226 – 6.253), p<.001.

Table 12: Non-adjusted weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL subscales scores in both inpatient and clinical samples. *Notes: [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1 * p<.05, **p<.01, ***p<.001.*

	GERMANY vs BRAZIL			
	CBCL SCALES	**OR**	**95 % CI**	**p**
Clinical samples n = 274	WITH	.557	.332 - .937	.027*
	SOM	.404	.181 - .898	.026*
	ANX	.505	.252 - 1.011	.054
	ATT	.403	.237 - .684	.001**
	AGG	3.731	2.226 - 6.253	<.001***

After adjustment, both populations differ significantly now in all scales apart from the *Withdrawal* one: OR_{SOM} =0.178, 95%-CI (0.064 - 0.493), p =.001; OR_{ANX}=0.315, 95%-CI (0.133 – 0.746], p =.009; OR_{ATT} =0.431, 95%-CI (0.213 – 0.871), p =-019 and OR_{AGG} =2.369, 95%-CI [1.219 – 4.605], p =.011).

Table 13: Adjusted weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL subscales scores in both inpatient and clinical samples. *Notes: [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1 * p<.05, **p<.01, ***p<.001.*

	GERMANY vs BRAZIL			
	CBCL SCALES	**OR**	**95 % CI**	**P**
Clinical samples n = 274	WITH	.558	.275 - 1.131	.106
	SOM	.178	.064 - .493	.001**
	ANX	.315	.133 - .746	.009**
	ATT	.431	.213 - .871	.019*
	AGG	2.369	1.219 – 4.605	.011*

The figure 13 summarizes the results of both multivariate analyses.

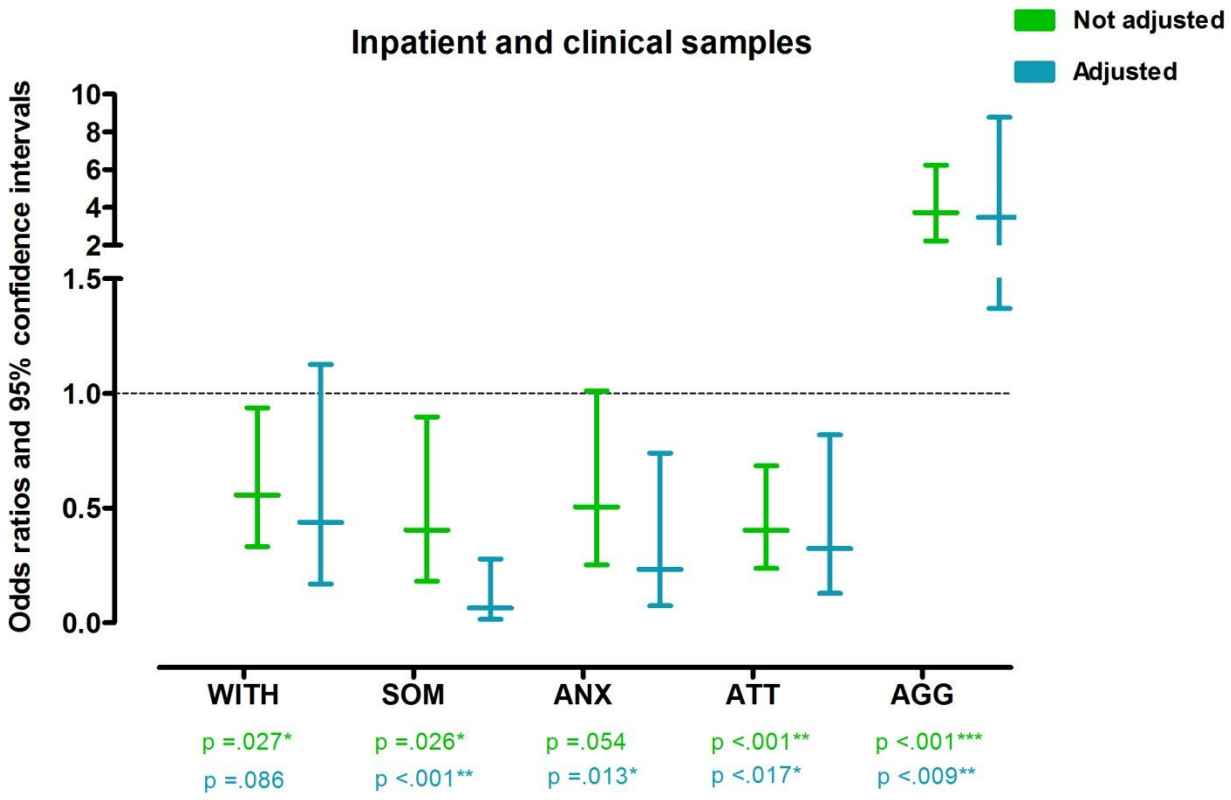


Figure 13: Summary of the binary logistic regression results within the comparison of the inpatient and clinical samples. *Note: p<.05, **p<.01, ***p<.001.*

Clinical samples

Table 14 shows the results of the comparison between the two clinical samples. Only the *Somatic Complaints* scale shows a significant difference, whose score is higher for Germany: SOM, 23.5% vs. 6.9%, p =.021.

To quantify this difference, a not-adjusted and an adjusted binary logistic regression were used: in the not-adjusted analysis the two samples differ significantly (OR_{SOM} =0.241, 95%-CI [0.066 – .876], p<.031) but they do not when the analysis is adjusted (OR_{SOM} =0.121, 95%-CI [0.012 – 1.194], p<.121). These results and those of the other scales are summarized in the figure 14.

Table 14: Number and percentages of children in clinical ranges on the five CBCL Syndromes scales and on the three CBCL Summary scales in relation to the nationality of every sample. *Notes: * p<.05, **p<.01, ***p<.001.*

CBCL SCALES	CLINICAL SAMPLES		
	GERMANY n = 17 n (%)	BRAZIL n = 145 n (%)	X^2 p
WITH			
-	11(64.7)	109(75.2)	.352
+	6(35.3)	36(24.8)	
SOM			
-	13(76.5)	135(93.1)	.021*
+	4(23.5)	10(6.9)	
ANX			
-	16(94.1)	130(89.7)	.560
+	1(5.9)	15(10.3)	
ATT			
-	12(70.6)	114(78.6)	.568
+	5(29.4)	31(21.4)	
AGG			
-	10(58.8)	65(44.8)	.274
+	7(41.2)	80(55.2)	
INT			
-	6(35.3)	69(47.6)	.336
+	11(64.7)	76(52.4)	
EXT			
-	6(35.3)	14(9.7)	.309
+	11(64.7)	131(90.3)	

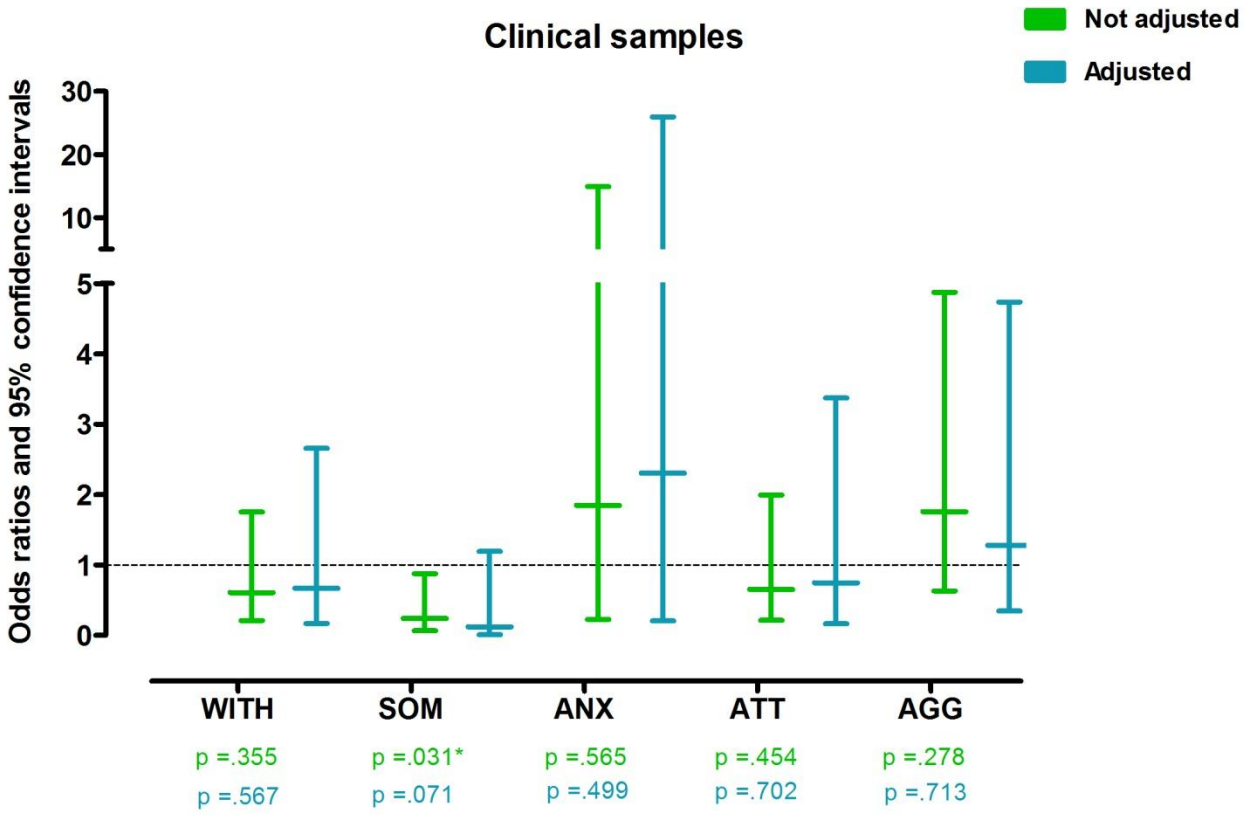


Figure 14: Summary of the binary logistic regression's results within the comparison of the community samples. *Note: p<.05, **p<.01, ***p<.001.*

4.2.2. Community samples

In the community samples, the opposite happens in the case of the inpatient and clinical samples. That is, all scores are higher in the Brazilian sample. Three scores present a statistically significant difference (WITH, 7.50% vs. 3.30%, p<.029; ANX, 2.70% vs. 0.50%, p<.049 and AGG, 13.90% vs. 3.30%, p<.001) (Table 15).To quantify these differences, a not-adjusted and an adjusted binary logistic regression were used. Tables 16 and 17 show the results:

Table 15: Number and percentages of children in clinical ranges on the five CBCL Syndromes scales and on the three CBCL summary scales in relation to the nationality of every sample. *Notes: * p<.05, **p<.01, ***p<.001.*

CBCL SCALES	COMMUNITY SAMPLES		
	GERMANY n = 214 n (%)	BRAZIL n = 584 n (%)	X^2 p
WITH			
-	207(96.7)	540(92.5)	.029*
+	7(3.3)	44(7.5)	
SOM			
-	209(97.7)	569(97.4)	.853
+	5(2.3)	15(2.6)	
ANX			
-	213(99.5)	568(97.3)	.049*
+	1(0.5)	16(2.7)	
ATT			
-	208(97.2)	550(94.2)	.083
+	6(2.8)	34(5.8)	
AGG			
-	207(96.7)	503(86.1)	<.001***
+	7(3.3)	81(13.9)	
INT			
-	199(93.0)	488(83.6)	<.001***
+	15(7.0)	96(16.4)	
EXT			
-	196(91.6)	396(67.8)	<.001***
+	18(8.4)	188(32.2)	
TOT			
-	197(92.1)	439(75.2)	<.001***
+	17(7.9)	145(24.8)	

In the not-adjusted analysis, the two populations differ significantly in one internalizing scale, WITH, and in one externalizing scale, AGG (OR_{WITH} =2.410, 95%-CI [1.068 – 5.435], p =.034; OR_{AGG} =4.762, 95%-CI [2.164 – 10.481], p<.001) and with tendency in the scales ANX and ATT (OR_{ANX}=6.00, 95%-CI [0.791 – 45.521], p =.083; OR_{ATT} =2.143, 95%-CI [0.887 – 5.179], p =.090).

Table 16: Not adjusted weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL Syndromes scales scores in samples in both countries. *Notes: [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1. *p<.05, **p<.01, ***p<.001.*

	GERMANY vs BRAZIL			
	CBCL SCALES	**OR**	**95 % CI**	**p**
Community samples n = 798	WITH	2.410	1.068 - 5.435	.034*
	SOM	1.102	.396 - 3.070	.853
	ANX	6.00	.791 - 45.521	.083
	ATT	2.143	.887 - 5.179	.090
	AGG	4.762	2.164 - 10.481	<.001***

After adjustment of all the psychosocial factors, the results were the follows:

Table 17: Adjusted weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL Syndromes scales scores by samples in both countries. *Notes: [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1. * p<.05, **p<.01, ***p<.001.*

	GERMANY vs BRAZIL			
	CBCL SCALES	**OR**	**95 % CI**	**P**
Community samples n = 798	WITH	1.139	.351 - 3.692	.829
	SOM	.657	.140 - 3.087	.594
	ANX	4.192	.168 - 104.646	.383
	ATT	2.092	.554 - 7.896	.276
	AGG	2.816	1.025 - 7.734	.045*

In the community samples, the two populations differ significantly now in the AGG scale: OR_{AGG} =2.816, 95%-CI [1.025 – 7.734], p =.045.

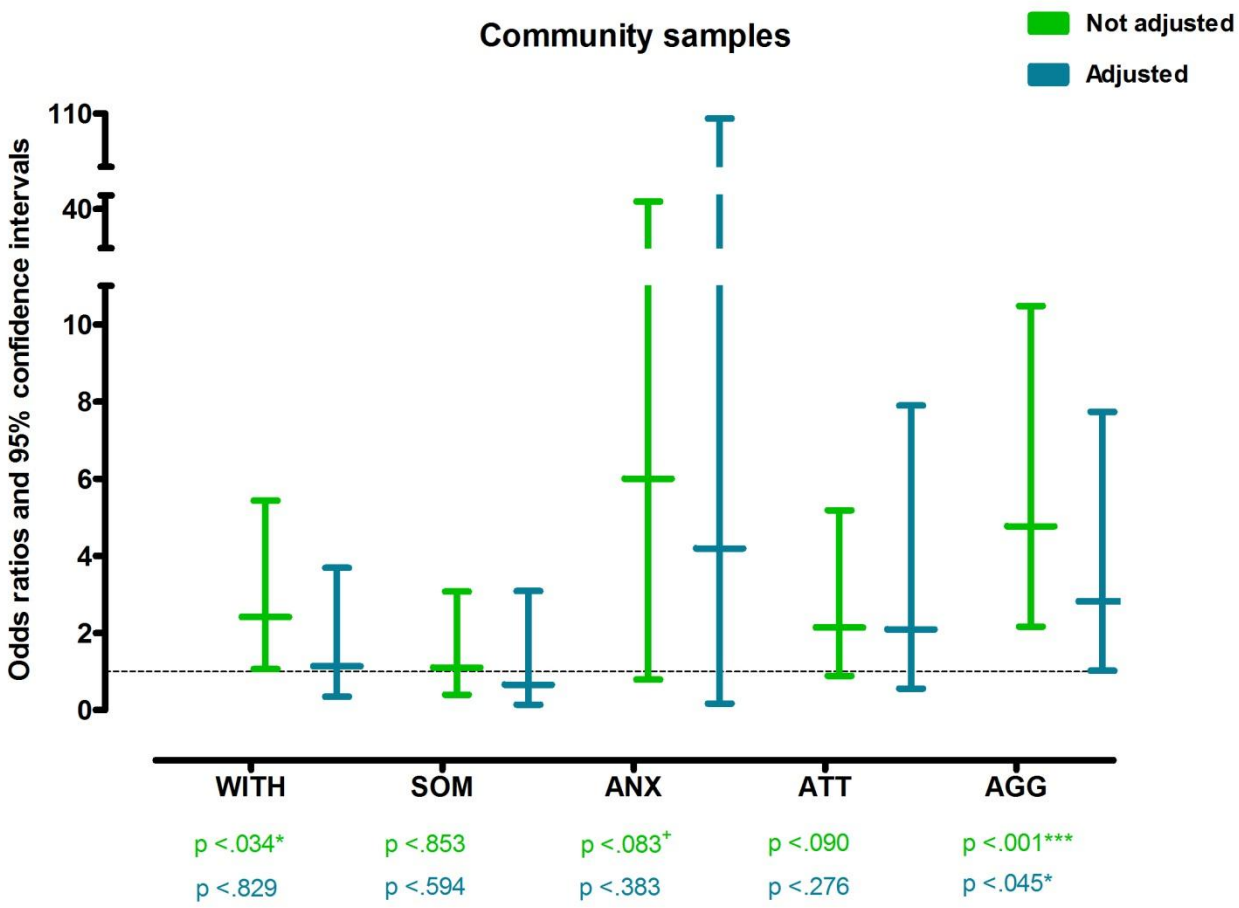


Figure 15: Summary of the binary logistic regression results within the comparison of the dimensional clinical samples. *Note: p<.05, **p<.01, ***p<.001.*

4.3. Association between psychosocial factors and behavioral problems

To evaluate the association between the psychosocial factors and the CBCL subscales scores, the chi-squared test and binary logistic regression were applied.

First of all the chi-squared test was used to analyze the association. The next section shows the results with a p<.05. After that, a binary logistic regression was applied to compare and quantify this association, using only the variables which were significant with the previous test. The order of presentation is the same used until now:

4.3.1. Inpatient and clinical samples

a) Chi-squared test

German inpatient sample

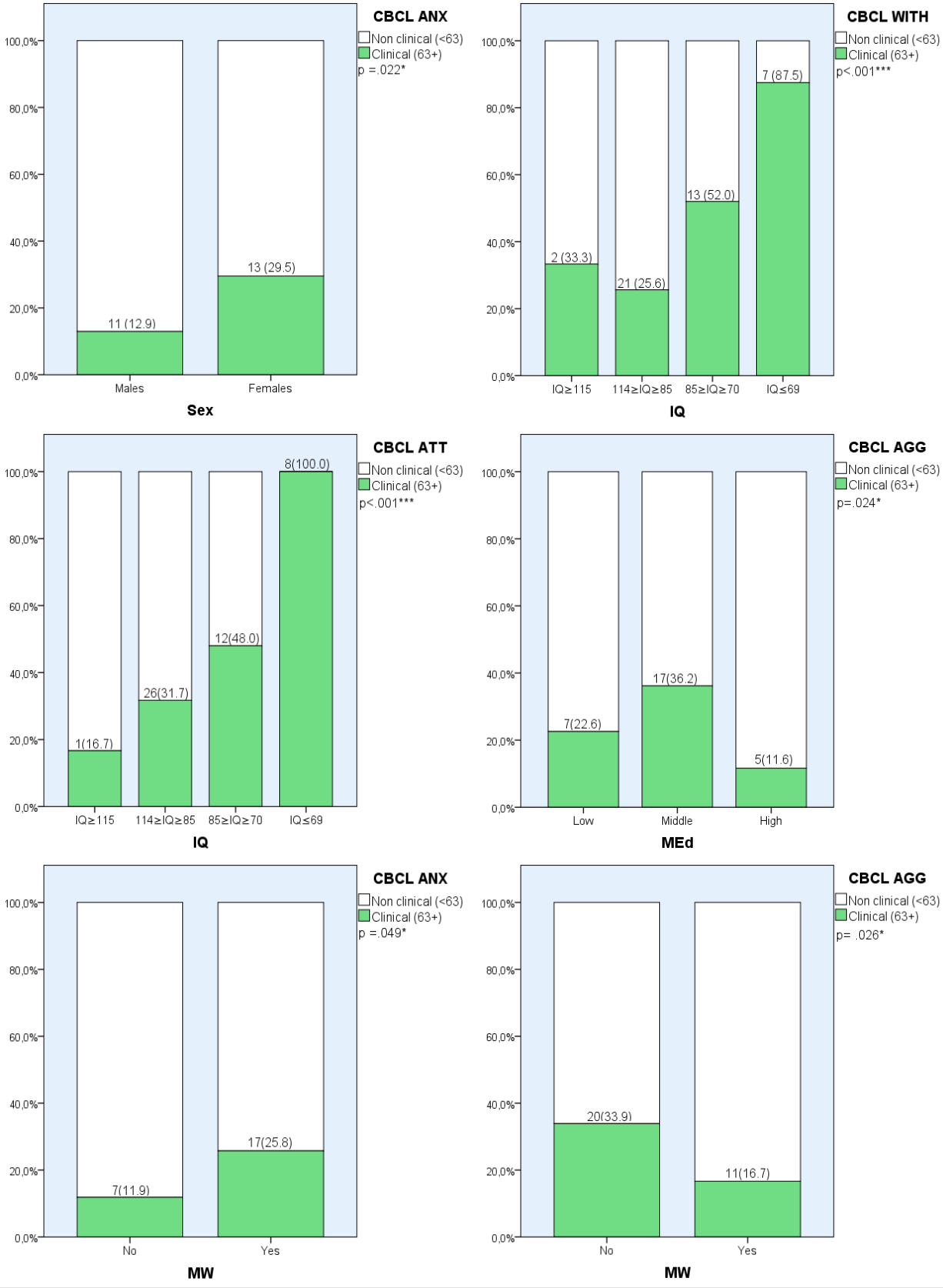


Figure 16: Psychosocial factors associated with the five CBCL Syndrome scales with p<.05 within the **German inpatient sample.** *Notes: * p<.05, **p<.01, ***p<.001.*

Two individual (Sex and IQ) and two socio-demographic factors (MEd and MW) show an association with some CBCL *Syndrome* scale. IQ and MW associate with more than one scale. No familial factor shows an association with any scale.

Individual factors are associated with both *Externalizing* and *Internalizing Problems* scales. Sex is associated with ANX (p =.022): Girls show higher *Anxious/Depressed* score than boys. IQ is associated with WITH (p<.001) and ATT (p<.001) in an inversely proportional way: lower IQ values mean higher CBCL subscales scores.

Socio-demographic factors also present association with *Internalizing* and *Externalizing* scales. MEd is associated with AGG (p<.024) in an inversely proportional way: higher level of education of the mother, lower AGG scores of the child. To conclude, MW is associated with ANX (p =.049) and AGG (p<.026) in two different ways: with ANX in a directly proportional way, i.e., when the mother works the scores are higher and with AGG an inversely proportional way: when the mother works, child has lower scores.

The rest of psychosocial factors, in other words, LBW, all the familial factors (MPD, MAb, FAb, NrS and NrY) and MAg, PAg and PEd, do not present any significant association with any CBCL subscales.

German clinical sample

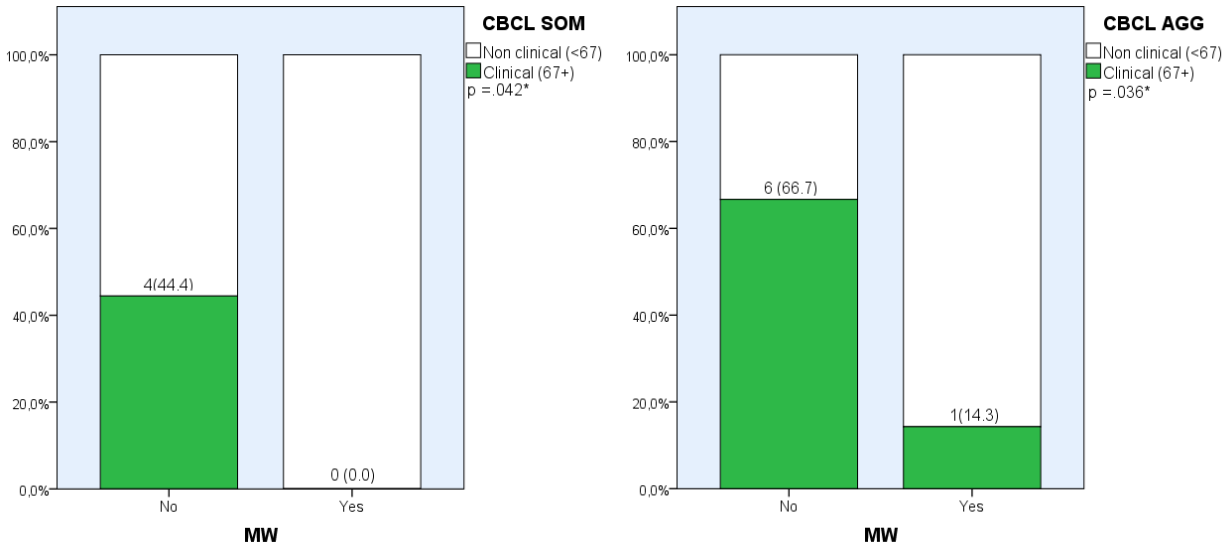
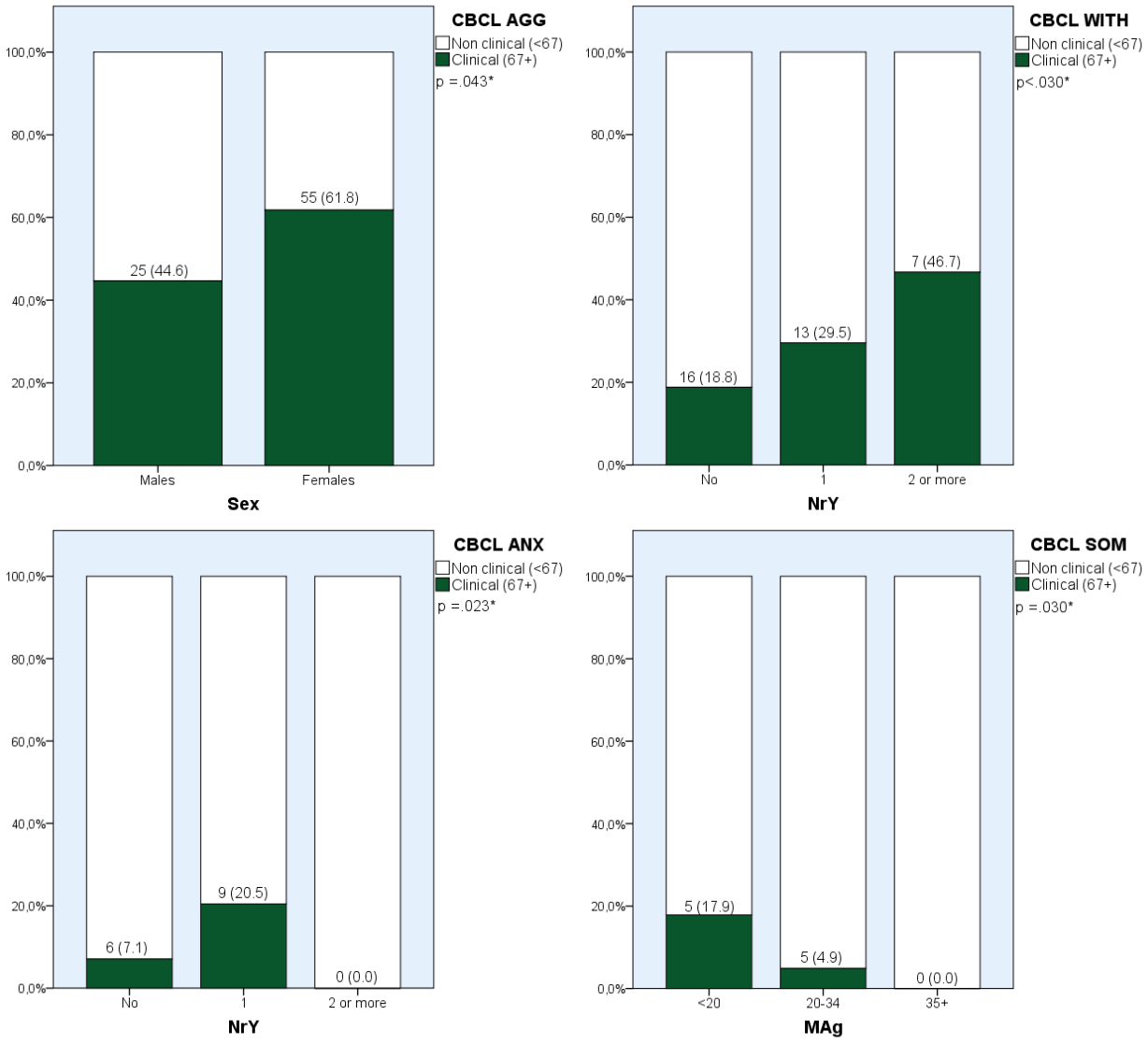


Figure 17: Psychosocial factors associated with the five CBCL Syndrome scales with p<.05 within the **German clinical sample.** *Notes: * p<.05, **p<.01, ***p<.001.*

Only MW shows an association with some CBCL *Syndrome* scale: when the mother works, children have lower *Somatic Complaints* (p=.042) and *Aggressive Behavior* scores (p=.036). No other factor shows a significant association.

Brazilian clinical sample



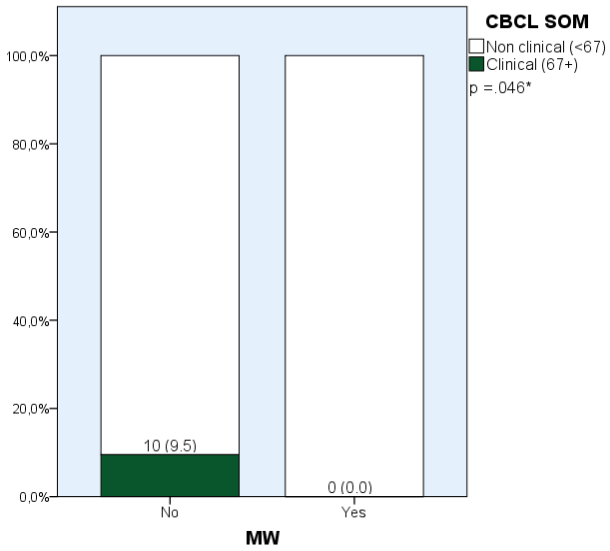


Figure 18: Psychosocial factors associated with the five CBCL Syndrome scales with p<.05 within the **Brazilian clinical sample.** *Notes: * p<.05, **p<.01, ***p<.001.*

One individual (Sex), one familial (NrY) and two socio-demographic factors (MAg and MW) show an association with some CBCL subscale.

Girls present higher scores than boys on the AGG scale (p<.043). NrY is associated with two *Internalizing* scales: WITH (p<.030) and ANX (p<.023). The association with WITH is directly proportional (to have more younger siblings, higher scores) but not with ANX (children with only one sibling have higher scores). To conclude, the two socio-demographic factors (MAg and MW) are associated with the SOM scale (p<.030 and p<.046 respectively), both with an inversely proportional association (older mothers, lower scores and working mothers, lower scores)

The remaining of psychosocial factors (IQ, LBW, MPD, FAb, NrS, PAg, MEd, PEd) do not present any significant association with any CBCL subscales.

b) Binary logistic regression

To quantify and compare the results already commented on above, a binary logistic regression was applied. In this case the analysis of the German dimensional clinical sample was excluded because of the poor significance in the chi-squared tests.

The variables that did remain in our multivariate analyses are summarized in Table 18:

There is no factor associated as predictor with the same scale in either sample.

In the German inpatient sample there are two factors with a significant association with some scales:

1. Sex with ANX: Boys vs. Girls, OR_{SEX} = 2.821, 95%-CI (1.140 – 6.979), p =.025 (In Brazil no association: OR_{SEX} = 0.512, p =.223)
2. MW with AGG: No vs Yes, OR_{AGG} = 0.390, 95%-CI (0.168 - 0.906), p = .028 (In Brazil no association: OR_{AGG} = 0.618, p =.202)

In the Brazilian clinical sample, we observed three factors with a significant association:

1. Sex with AGG (Male vs. Female): OR_{AGG}, 95%-CI = 2.006 (1.018 – 3.954), p =.044 (In Germany no association: OR_{AGG} = 0.899, p =.780)
2. NrY with WITH: 0 vs. 1, OR_{WITH} = 2.229, 95%-CI = (1.002 – 4.957), p =.049; 0 vs. >1, OR_{WITH} = 4.333, 95%-CI (1.451- 12.937), p =.009 (In Germany no association in both cases: OR_{WITH} = 1.121, p =.795 and OR_{WITH} = 1.935, p =. 519 respectively)
3. NrY with ANX: 0 vs.1, OR_{ANX} = 3.031, 95%-CI (1.077 – 8.532), p =.036 (In Germany no association: OR_{ANX} = 1.267, p = .660)
4. MAg with SOM: <20 vs. 20 – 34, OR_{SOM} = 0.237, 95%-CI (0.063 – 0.888) p =.033 (In Germany no association: OR_{SOM} = 0.776, p =.827)

Table 18: Weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL Syndromes scales scores by inpatient and clinical samples.
Notes: VL = Very low; L = Low; M = Medium [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1.
**p<.05, **p<.01, ***p<.001.*

Psychosocial factors		CBCL Subscales	Psychosocial factors Groups	CLINICAL SAMPLES			
				GERMANY		BRAZIL	
				OR (95% CI)	p	OR (95% CI)	p
INDIVIDUAL	**Sex**	ANX	Male vs.Female	2.821 (1.140 – 6.979)	.025*	.512 (.175 – 1.501)	.223
		AGG	Male vs.Female	.899 (.427 – 1.894)	.780	2.006 (1.018 - 3.954)	.044*
	IQ	WITH	H vs M	.689 (.117 – 4.035)	.679	1.471 (.289 - 7.487)	.642
			H vs L	2.167 (.334 – 14.057)	.418	1.012 (.186 - 5.510)	.989
			H vs VL	14.00 (.944 – 207.596)	.055	2.571 (.361 - 18.326)	.346
		ATT	H vs M	2.321 (.258 – 20.885)	.452	2.778 (.329 - 23.462)	.348
			H vs L	4.615 (.469 – 45.390)	.190	1.951 (.218 - 17.448)	.550
			H vs VL	E	.999	8.333 (.776 - 89.470)	.080
FAMILIAR	**NrY**	WITH	0 vs 1	1.121 (.474 – 2.648)	.795	2.229 (1.002 - 4.957)	.049*
			0 vs >1	1.935 (.260 – 14.407)	.519	4.333 (1.451 - 12.937)	.009**
		ANX	0 vs 1	1.267 (.442 – 3.627)	.660	3.031 (1.077 - 8.532)	.036*
			0 vs >1	1.689 (.164 – 17.357)	.659	.000 (-)	.998
SOCIO-DEMOGRAPHIC	**MAg**	SOM	<20 – 20-34	.776 (.080 – 7.515)	.827	.237 (.063 - .888)	.033*
			<20 – 35+	.741 (.068 – 8.085)	.806	.000 (-)	.998
	Med	AGG	L vs M	1.943 (.693 – 5.447)	.207	.988 (.460 - 2.120)	.975
			L vs H	.451 (.128 – 1.585)	.214	.697 (.285 - 1.706)	.429
	MW	SOM	No vs Yes	1.417 (.535 – 3.748)	.483	.000 (-)	.998
		ANX	No vs Yes	2.577 (.984 – 6.750)	.054	.646 (.172 – 2.423)	.517
		AGG	No vs Yes	.390 (.168 -.906)	.028*	.618 (.295 - 1.295)	.202

4.3.2. Community samples

a) Chi-squared test

German sample

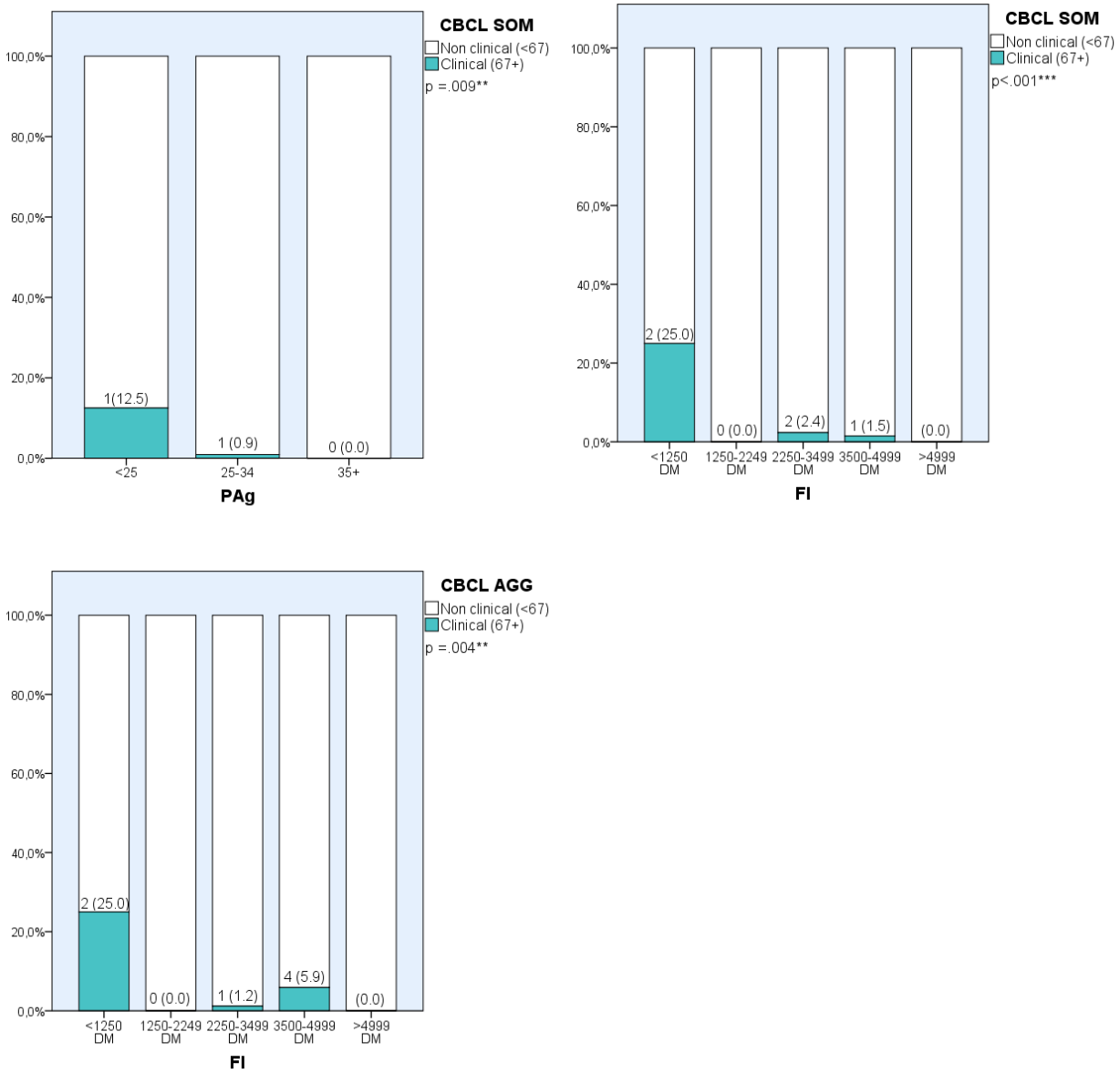


Figure 19: Psychosocial factors associated with the CBCL Syndrome scales with p<.05 within the **German community sample.** *Notes: *p<.05, **p<.01, ***p<.001.*

Two socio-demographic factors show associations with some CBCL *Internalizing* and *Externalizing* scales: PAg and FI. PAg is associated with SOM (p<.009), being

inversely proportional: higher paternal age means lower CBCL scores. FI is associated with two subscales, SOM (p<.001) and AGG (p<.004). The association is inversely proportional: children in families with very low income have higher CBCL scores.

The individual factor “Sex” and the rest of the socio-demographic factors (MAg, MEd, PEd and MW) do not show any association with any scales.

Brazilian sample

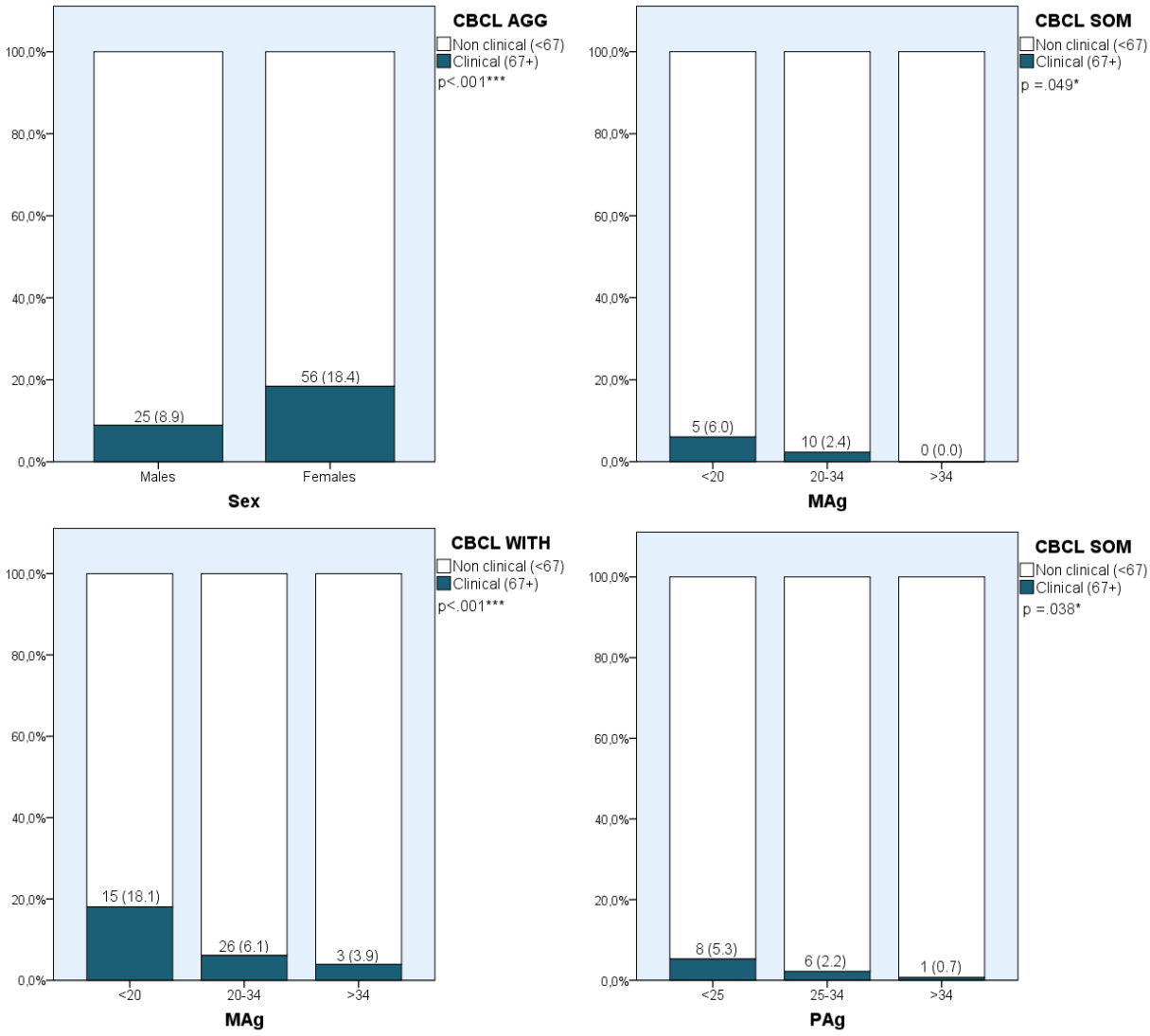


Figure 20: Psychosocial factors associated with the CBCL Syndrome scales with p<.05 within the **Brazilian community sample.** *Notes: *p<.05, **p<.01, ***p<.001.*

The Individual factor “Sex” and two socio-demographic factors (MAg and PAg) show an association with some CBCL *Internalizing* and *Externalizing* scales. Brazilian

girls have higher AGG scores than boys (p<.001). MAg has an inversely proportional association with two *Internalizing* scales, WITH (p<.001) and SOM (p<.049): higher maternal age, lower CBCL scores. PAg has an inversely proportional association with SOM (p<.038): higher paternal age, lower CBCL SOM scores.

The remaining socio-demographic factors (MEd, PEd, MW and FI) do not show any association with any scales.

b) Binary logistic regression

To quantify and compare the results already commented on above, a binary logistic regression was used.

In the German community sample there is one factor with a significant association with some scales:

1. FI with SOM: VL vs. M, OR_{SOM} = 0.072, 95%-CI (0.009 – 0.607), p =.016; VL vs. H, OR_{SOM} = 0.045, 95%-CI (0.004 – 0.569), p =.017
   (In Brazil there was no association at the first group, OR_{SOM} = 1.811, p =.609, but with the second group OR = 7.920, 95%-CI (0.862 – 72.242), p =.067)
2. FI with AGG: VL vs. M, OR_{AGG} (95% CI) =0.036 (0.003 – 0.453), p =.010
   (In Brazil there was no association: VL vs. M, OR_{AGG} = 1.178, p =. 656)

In the Brazilian sample two factors are associated with some scales: Sex and MAg:

1. Sex with AGG: Male vs. Female, OR_{AGG} = 2.303, 95%-CI (1.393 – 3.808), p =.001 (In the German sample no association: OR_{AGG} = 0.454, p =.351)
2. MAg with WITH: <20 vs. 20-34, OR_{WITH} = 0.295, 95%-CI (0.149 – 0.586), p =.001 and <20 vs. >34, OR_{WITH} = 0.186, 95%-CI (0.052 – 0.672), p =.01
   (In the German sample no association: OR_{WITH} = 3.457, p =.185 and OR_{WITH} = 2.333, p = 0.362, respectively).

Table 19: Weighted Odds Ratio[a] (OR) and 95 % Confidence Intervals (95% CI) for CBCL Syndrome scales scores by community samples. *Notes: VL = Very low; L = Low; M = Medium; H = High; VH = Very High; [a] Binary logistic regression where the German sample has the score 0 and the Brazilian, the score 1 * p<.05, **p<.01, ***p<.001.*

Psychosocial factors		CBCL Subscales	Psychosocial factors Groups	COMMUNITY-BASED SAMPLES			
				GERMANY		BRAZIL	
				OR (95% CI)	P	OR (95% CI)	P
IND	**SEX**	AGG	Male vs.Female	.454 (.086 - 2.391)	.351	2.303 (1.393 – 3.808)	<.001***
SOCIO-DEMOGRAPHIC	**MAg**	WITH	<20 vs. 20-34	3.457 (.551 - 21.679)	.185	.295 (.149 - .586)	<.001***
			<20 vs. 35+	2.333 (.377 - 14.450)	.362	.186 (.052 - .672)	.01**
		SOM	<20 vs. 20-34	1.241 (.134 - 11.526)	.849	.376 (.125 - 1.130)	.081
			<20 vs. 35+	.000 (-)	.998	.000 (-)	.997
	PAg	SOM	<25 vs. 25-34	.065 (.004 - 1.149)	.062	.401 (.137 - 1.180)	.097
			<25 vs. 35+	.000 (-)	.997	.123 (.015 - .998)	.05
		ANX	<25 vs. 25-34	1.000 (-)	1.000	.470 (.167 - 1.323)	.153
			<25 vs. 35+	1.000 (-)	.999	.123 (.015 -.998)	.05
	FI	SOM	VL vs. L	.000 (-)	.998	3.318 (.394 - 27.957)	.270
			VL vs. M	.072 (.009 - .607)	.016*	1.811 (.186 - 17.650)	.609
			VL vs. H	.045 (.004 - .569)	.017*	7.920 (.862 - 72.742)	.067
			VL vs. VH	.000 (-)	.998	000 (-)	.997
		AGG	1 vs. 2	.000 (-)	.998	1.194 (.588 - 2.423)	.624
			1vs. 3	.036 (.003 - .453)	.010*	1.178 (.573 - 2.424)	.656
			1 vs. 4	.188 (.028 - 1.244)	.083	.837 (.299 - 2.342)	.734
			1 vs. 5	.000 (-)	.998	.669 (.241 - 1.859)	.441

5. Discussion

The aim of this study was to examine the relationships between the psychosocial environment and the behavioral and emotional problems of preschool children in two different societies. In this section of the dissertation three issues have been analyzed relating to this association:

1. Assessment of the quantitative difference in psychosocial factors between the samples
2. Comparison of the CBCL *Syndrome* scales scores (as measuring instrument of behavior disorders) in both samples
3. Analysis and explanation of the influence of the psychosocial determinants on the children's behaviors and emotions.

5.1. Prevalence differences of psychosocial determinants between the German and the Brazilian samples

5.1.1 Inpatient and clinical samples

The differences in the distribution of psychosocial determinants between the two samples and the association with the socio-economic and cultural structure of the two populations will be explained. Brazil ranks the 75th at the Human Development Index according to the Human Development Report 2009 of the United Nations Development Program (U.N.D.P.) while Germany ranks 22nd. These positions are determined from data of life expectancy, education and per-capita GNI calculated by the U.N.

Table 20 shows a sample of the indexes related to the study which could explain the distribution of our variables.

Three main differences were found between the Brazilian and the German sample: Brazilian children have more siblings, coinciding with the 2.0 score of the Total Fertility Rate in Brazil and the 1.3 in Germany (Deutsche Stiftung Weltbevölkerung, 2010). Parental age at birth in the Brazilian sample is lower, agreeing to the fact that the most frequent range of parental age at birth is 20-24 years in Brazil (increasing even in this country the newborns within the 15-19 years range) and 30-34 years in Germany.

Table 20: Summary of Indexes of the Human Development Report 2009 (UNDP, 2009) *Note: HDI = Human Development Index, GDP = Gross Domestic Product, PPP = Purchasing Power Parity; US$ = United States Dollar; HD = Human Development;* [a] *Data show the ratio of the income or expenditure share of the richest group to that of the poorest.*

HUMAN DEVELOPMENT REPORT 2009										
								Share of income		
HDI rank 2007	HDI value	HDI value 1995	Average annual growth rate (%)	Life expectancy at birth (y.)	Adult I literacy rate (%)	GDP per capita (PPP US$)	GDP index	Poorest 10%	Richest 10%	Inequality measures [a]
22 Germany (Very high HD)	0.947	0.919	0.33	79.8	99%	34,401	0.975	3.2	22.1	6.9
75 Brazil (High HD)	0.813	0.734	0.79	72.2	90%	9.567	0.761	1.1	43.0	40.6

	Public expenditure on health			Public expenditure on education		Education attainment level		
	Per capita (PPP US$)	% government expenditure	Education index	Per pupil in primary education (PPP US$)	% government expenditure	Low (until upper secondary)	Middle (upper Secondary)	High (Tertiary)
22 Germany (Very high HD)	2.548	17.6	0.954	4.837	9.7	21.5	57.1	21.4
75 Brazil (High HD)	367	7.2	0.761	1.005	14.5	70.4	21.2	8.1

Lastly, parental level of education is also lower in the Brazilian sample according to the almost 100% adult literacy rate in Germany and 90% in Brazil (Pötzsch, 2007; Conceição de Lima, 2009; U.N.D.P., 2009).

However the score of the variable *Number of Younger Siblings* in the logistic regression appears in an inverse way (that means, the percentages would be lower in Brazil). The explanation is that it depends on the previous variable, *Number of Siblings*, producing in this way an artifact in the statistical analyses.

Other variables like *IQ, Maternal Psychiatric Disorder, Low Birth Weight*, whose rates are worse in Brazil than in Germany, could be explained by the worse socio-economic status within Brazilian families. In developing countries the greater economic and social difficulties imply the increase of the prevalence of psychiatric disorders in the general

population and the limitations, malnutrition and deficient education imply the increase of births with low weight and the lower IQ scores in the children.

The higher rates of absence of the mothers and maternal working in Germany can be explained by the greater liberation of women in Germany and the patriarchal structure of the Brazilian population, which explains the higher rate of domestic violence and the employment discrimination in this country, good benchmarks by which to assess the situation and position of women in the society. These differences are represented in the UNDP indicator Gender Empowerment Measure (GEM), a measure of inequalities between men's and women's opportunities in a country. It combines inequalities in three areas: political participation and decision making, economic participation and decision making, and power over economic resources; the score from Germany in 2009 was 0.852 and from Brazil 0.504

The only rate which was not expected was the difference rate of gender in the Brazilian population. The rate in the German sample is the expected one, where 4 years-old boys have more behavioral and emotional disorders than girls (Crijnen, Achenbach & Verhulst, 1997). The rates in the Brazilian sample are unexpected and percentages of behavioral and emotional problems are higher in girls. The possible explanation of this phenomenon is that these percentages show volatile, inconstant problems at this age because of different factors in Brazil, not studied in this study, like the girl´s situation in the family, the occupation of the girl or the different forms of domestic violence, more frequent in patriarchal societies. Another possibility could be a CBCL characteristic in this kind of studies in developing countries.

To sum up, the psychosocial risk is in general higher in the Brazilian sample than in the German one, coinciding with the standards of developing and developed countries. The potential contribution of the socioeconomic status of the two countries to the difference between the samples is more than clear. However it is not likely to explain all of the cultural differences within the CBCL *Syndrome* scales.

5.1.2 Community samples

The difference of the distribution of psychosocial determinants in the two community samples keeps the characteristic of the inpatient and clinical samples: Brazilian girls are more aggressive than boys and German boys more than girls, parental age and maternal work rates are lower in Brazil. The *Family Income* variable

also follows the difference between a developed and a developing country: according to the International Monetary Fund report from October 2010, the current Gross Domestic Product based on Purchasing-Power-Parity (PPP) per capita (GDP) is 34,387 US$ in Germany and 10,498 US$ in Brazil, more than three times lower.

The only exception was the variable *Parental Education*, presenting in this case the values in an opposite way: parental education levels are (relatively) higher in Brazil. These rates seem to contradict the difference of the education rates between developed and developing countries in general and between Brazil and Germany in our case: the low educational attainment level (% population aged 25 years and above) percentage is 70.4% in Brazil and 21.5% in Germany, the middle level percentage, 21.2% in Brazil and 57.1% in Germany and the high level percentage, 8.1% in Brazil and 21.4% in Germany. Furthermore, the average years of schooling of adults in Germany are 10.2 and in Brazil 4.9 years (UNDP, 2009). Therefore, the rates in our study could appear confusing but are explained by the process of data homogenization.

The criteria of the three levels of education in the Brazilian sample were “lower than 4 school years”, “4 to 8 school years” and “9 or more school years”. However the criteria in the German sample were stricter. The “low level of education” was represented by parents with *no school certificate*, *Sonderschule* (Special-needs-school) and *Hauptschule* (secondary school; up to 9 school years), the “middle level of education” by the *Realschule* (middle-school; 10 years) and the “high level of education” by *Abitur* (high-school diploma) and *Academic Degree.* These criteria are more realistic to analyze the German population, and they are necessary to make the comparison with the Brazilian one possible, despite the false low levels of education in the German population. Table 21 shows the distribution of the different percentages of education levels in both samples. This shows that if we used the same criteria as those of the Brazilian sample to classify the German one, there would be no “low level of education” group in the German sample. Therefore we preferred the influence of the education within the two samples, rather than focusing on the comparison between them. To be able to compare the influence of parental education on the children’s behavior, it is necessary first to know the different levels of education and its implications in the society in both samples.

To sum up, also the Brazilian community sample shows a higher psychosocial risk for the preschool children. The particular exception of parental education is justified because of the necessary process of homogenization.

Table 21: Prevalence of the different education levels in the two community samples. *Note: w/= with, w/o=without. The solid line demarcates the three education levels (Low, Middle and High) in the Brazilian sample and the broken line in the German one.*

School years/ Grade	COMMUNITY SAMPLES			
	MEd		PEd	
	Germany %	Brazil %	Germany %	Brazil %
0 y.	-	29.6	-	25.4
4y.	-		-	
Elementary school without graduation	11.6	45.7	4.1	50.7
8 y. / Elementary school with graduation	43.2		53.0	
9 y. / Secondary school without graduation	1.7		0.0	
10 y. / Middle-school	28.5	24.7	22.0	23.9
High school without graduation	2.3		3.0	
12y. / High school diploma	8.1		6.0	
College without graduation	1.7		1.2	
College with graduation	2.9		10.7	

5.2. Behavioral and emotional disorders in CBCL in preschoolers in Germany and Brazil

5.2.1 Inpatient and clinical samples

As expected, the scores of every CBCL *Syndrome* scale, with the exception of the *Aggressive Behavior* scale, are higher within the German sample. That is explained by the strict criteria for the children in the German sample, an inpatient sample with a specific and detailed dimensional and categorical diagnostic process and classification. The possibility that the children in the German sample suffer some kind of disorder is higher.

The high score on the *Aggressive Behavior* scale within the Brazilian sample might be caused by the high rate of aggressiveness of the Brazilian girls within the Brazilian sample in general. This score produces a change in every analysis of this

study. This result is also in contradiction to several researches, who state that boys show a higher preponderance of externalizing problems, especially aggression, during the early years of life (Beyer & Furniss, 2007; Beauchaine, Hong & Marsh, 2008). This unexpected result could be important in understanding the mental health problems of girls in preschool years in developing countries. Possible psychosocial risks which are more prominent in Latin American cultures like harsh and physical discipline (more common in patriarchal societies) or the higher gender inequality might be factors associated with these problems. A more detailed description is made below.

Curiously, in spite of the German sample being an inpatient one, the psychosocial data of the Brazilian sample shows a greater risk for possible behavioral and emotional disorders (lower IQ scores, lower weight at birth, lower parental age and lower level of education). This could be explained by the great difference of development between the two countries. Despite the higher psychosocial risk observed in the Brazilian sample, the scores of the CBCL *Syndrome* scales in the German sample are higher, which does not mean that there is no correlation between the psychosocial risk and the behavioral problems in preschool children. Apart from possible explanations based on the role of resilience, the use of different CBCL versions or the lack of other well-known associated psychosocial determinants, the lack of direct correlation can have other explanations. The very high scores of the German sample on the CBCL *Syndrome* scales are based on the assumption that every child of the sample had a well-established diagnosis. Usually children with determined disorders have very high scores on one or two *Syndrome* scales, which cause that the *Total Problems* scores are in the clinical range. However because the Brazilian sample is only defined by the CBCL *Total Problem* scale, this population has also behavioral problems but on a lower level on the *Syndrome* scales. That means that the score in every single scale is more evenly distributed and high, but not as high and defined as in the German sample. Additionally, the disorders in the German children of the inpatient sample are more severe; or rather their disorders are better defined (“outpatient-bias”). For example, a German child of this sample has very high scores on *Attention Problems* and *Aggressive Behavior* scales, but normal scores on the other scales. Nevertheless Brazilian children of this sample have clinical or borderline scores on four or five scales, but lower in comparison with the scores of the one or two specific scales within the German sample.

Furthermore there is a higher preponderance within the German sample of

chronic diseases like pervasive developmental disorders and mentally retarded children and the role of the psychosocial factors on the explanation of these disorders is lower.

To sum up, the higher scores in the German sample on the CBCL *Syndrome* scales are due by the fact that the German sample is a well-defined inpatient sample. However, because the psychosocial risk within the Brazilian sample is higher, it means that the Brazilian general population is more exposed to a risk and, in spite of the lack of a standardized diagnostic process, this sample might be partly also a potential inpatient sample. This lack of clinical and nosological diagnosis is due to the lack of medical resources in developing countries. The fact that there is a lack of clinics, hospitals or healthcare systems, which could appropriately diagnose children with behavioral problems using standardized assessments, does not mean that there are no children with psychiatric disorders. Furthermore, child psychiatric disorders affect more children in developing countries than in developed ones (Goodman et al., 2007). One of the main advantages of the empirical approach of the CBCL or other dimensional instruments is that they need lower economic resources than standardized diagnostic assessment to carry out valid diagnoses. The German inpatient sample was better defined because it used both approaches, standardized categorical and dimensional diagnostic processes. The Brazilian sample could also be called a clinical sample, but only in a dimensional way.

When both samples are compared and the multivariate analyses are adjusted, we note that the psychosocial risk factors of our study have a significant influence on the behavioral and emotional disorders, measured by CBCL, and on the other hand, the model of psychosocial risk factors and the influence of the cultural factors are incomplete and need to be better defined. Both samples differ significantly on every *Syndrome* scale if the analyses between Germany and Brazil are not adjusted. That means when both populations are compared without taking the psychosocial data into account, both populations differ on every scale. However when the psychosocial data is included in the multivariate analyses, it shows that it could itself explain at least the variations on the *Withdrawal* scale within the two populations. Considered by itself psychosocial data cannot account for the variations on the *Externalizing Problems* scales, *Attention Problems* and *Aggressive Behavior* and on the *Internalizing Problems* scales, *Somatic Complaints* and *Anxious/Depressed*. This lack of explanation means that although the data of our study has a significant influence on, and association with, the behavioral and emotional problems of the children of both samples, it cannot explain

the scores on its own. However, there are other missing psychosocial determinants. An inclusion of this data might set a better psychosocial predictor model to explain the development of the behavioral problems shown by preschool children. These factors could simply be other well-known factors which increase the child's vulnerability to mental health problems like pre-term birth, stressful life events or marital discord, or on the other hand, cultural factors which have not been compared, because they are specific and characteristic of the culture.

The psychosocial factors chosen in our study can themselves account for the variations on the *Withdrawal* scale scores between both samples. We now have to look for similar models of factors which can themselves in turn explain the other *Syndrome* scales. Whether these factors are either well-known factors in other studies or if they are culturally characteristic of every sample, we cannot ascertain.

5.2.2 Community samples

As we expected, in the community samples the prevalence of clinical results on every CBCL *Syndrome* scale, including the grouping scales, is higher in the Brazilian sample. These results are concordant with preview research, which show higher prevalence in developing countries. For example, the study by Crijnen, Achenbach and Verhulst (1997) shows a comparison of *Externalizing* and *Internalizing Problems* based on the CBCL reported in twelve different cultures, including Germany and a similar country such as Brazil, the Latin-Caribbean country like Puerto Rico (with a unofficial HDI = 0.853, it would rank 55th in the Human Development Index 2007 [Pedroso Zulueta, 2008]). The overall mean scores for *Externalizing* and *Internalizing Problems* of the 12 societies are 7.1 % and 6.0%, respectively. The German sample showed a derivation of -1.5 and -2.0, respectively, and Puerto Rico +3.8 and +4.8, showing that the prevalence of externalizing and internalizing disorders is higher in Puerto Rican children (The same happens when Puerto Rico is compared with other developed countries like Australia, Netherlands, Sweden and USA). Similar results are shown by the study of 31 different societies from Rescorla et al. (2007). Among the ten societies with lower mean scores on the *Total Problems* scale, nine were developed countries, but among the ten countries with higher mean scores, only three were developed countries.

Furthermore, in the developing world children and adolescents make up a higher

proportion of the population, making child mental health an even more important issue there. Relatively little is known about which of the social risk factors identified in the developed world also apply in the developing world (Fleitlich & Goodman, 2001), but the importance of social adversities like poverty, parental mental illness or lower parental education in the etiology of behavioral problems is clear, and unfortunately these adversities are more severe in the developing world.

In the community samples, the multivariate analysis shows that the influence of this psychosocial data is lower than the influence found in the clinical samples. The main reason is that in the community samples, it was possible to analyze only the socio-demographic data (with the exception of the child's gender) but not important individual and familiar factors like the IQ and the maternal psychiatric disorder

In the not-adjusted analysis the scales *Withdrawal* and *Aggressive Behavior* show a significant difference, but the *Somatic Complaints*, *Anxious/Depressed* and *Attention Problems* scales do not show any such differences. When the influence of this psychosocial data is adjusted, the psychosocial determinants can only explain the variation of the *Withdrawal* scale, like it did in the analysis of the clinical samples. However, the other scale influenced by the parameters, the *Aggressive Behavior* scale, depends on other unknown factors which also increase the vulnerability of the child to behavioral problems. For example, other Brazilian studies show that externalizing problems and aggression were associated with living in a non-traditional family, family alcohol abuse and violence in the family, parental stress, and harsh physical punishment (Goodman et al., 2007; Fleitlich & Goodman, 2001). The other three scales, *Somatic Complaints*, *Anxious/Depressed* and *Attention Problems*, in spite of the lack of statistical significance, show a tendency that these factors could explain a part of the variation.

To sum up, behavioral problems have a higher prevalence in the Brazilian sample than in the German one and it seems that the psychosocial risk plays an important role here. Prevalence of child mental health problems in developing countries is higher and the explanation lies not only in the socioeconomic disadvantages of these countries, but cultural differences and characteristics might also play a significant role. Although the psychosocial determinants examined in our study cannot explain the etiology of the behavioral problems found in the CBCL *Syndrome* scales themselves, they show an important association. In the case of the *Withdrawal* scale, comparisons of both clinical and community samples show a strong correlation. Therefore this data has to be

studied in detail to find out more important factors involved in the etiology of these problems.

5.3. Association of the psychosocial factors with the CBCL scales scores. Comparison between Germany and Brazil

We have seen how the psychosocial determinants examined in our study have an association with different CBCL *Syndrome* scales within the three populations. That shows on the one hand that psychosocial determinants have an influence on the behavioral and emotional problems and on the other hand, that the results show how psychosocial determinants have different associations and influence according to the culture. This allows and makes possible the elaboration of comparison models. Thanks to this kind of studies we can add information to develop future models which include only the psychosocial determinants which could have an influence or are important in the etiology of the problem proper within the population.

Among the most outstanding and important factors within the different populations, we find in our study that the *child´s Gender, Maternal Age* and *Family Income* are the only factors which could be predictors on some CBCL *Syndrome* scales. Furthermore, other less studied factors like the *Number of Younger Siblings* and *Maternal Work* also could have a function as predictors. Nevertheless factors with an important association in the literature like the *Maternal Psychiatric Disorder* or *Parental Education* do not show any kind of association in our study and neither do other less studied factors like the *Number of Siblings* or *Mother´s Absence*.

Furthermore of this association with psychosocial risk factors, CBCL *Syndrome* scales have an association with different kind of categorical syndromes (that is, ICD and DSM, the classification basis in the current child psychopathology research and literature). Therefore the knowledge of underlying determinants in early childhood could be really helpful in resolving these problems. Previous findings show that the *Withdrawal* scale can predict affective and anxiety disorders; the *Somatic Complaints* scale, anxiety and mood disorders and Attention Deficit Hyperactivity Disorder (ADHD); the *Anxious/Depressed* scale, anxiety and mood disorders and disruptive behavior disorders; the *Attention Problems* scale ADHD and the *Aggressive Behavior* scale several disruptive behavior disorders and Major Depression (Kasius, et al., 1997; Krol et

al. 2006; Ferdinand, 2008; Biederman, et al. 2009).The influence of these determinants can vary according to the development of the child and because of this, studies with different ages should be done.

The different significant results of the inpatient, clinical and community samples will now be separately analyzed in the following.

5.3.1. Inpatient and clinical samples

Sex, *Anxious/Depressed* and *Aggressive Behavior*

The data of our study shows that the scores of the *Anxious/Depressed* scale of the German inpatient sample are higher in girls than in boys, which are expected in older ages, but are not that contrasted in infants or toddlers. The general tendency is for externalizing problems to decrease and internalizing ones to increase in the early part of life, the former ones having a greater affect on boys and the latter ones on girls (Achenbach et al., 2008). Like early identified problems are strongly predictive of psychopathology in later years, the beginning of later contrasted psychopathology in these early ages is not surprising. This information might be important and has to be investigated in detail to find the possible links in the evolution of the psychopathology during childhood and adolescence.

The results of the Brazilian clinical sample show that Brazilian girls are more aggressive than boys. The study by Paterson et al. in 2007, within a socio-economically disadvantaged Pacific Island population in New Zealand, also shows significantly higher prevalence of CBCL *Externalizing Problems* among girls. Both results are in contrast to those of several others researches. Possible explanations could be that these gender differences may be due to the volatile period of four year-olds' behavior rather than being an enduring pattern or due to the influence of other typical unknown private and socio-demographic parameters in developing or socio-economically disadvantaged countries.

Societies of Brazil particularly, and Latin America in general, have a more patriarchal structure than the European societies. These structures contain private and public elements that might influence the behavior of young girls. The patriarchal family is not only a model, but also an ideological construction, a frame of reference for standards of the affective, sexual, solidarity and hostility relationships. The prevalence of the domestic, private element in the Brazilian society causes the dominant

relationship of the family with the general social structure. Because of this, the excess of punishment and the inequality within Brazilian families, where women and girls take care of the domestic chores alone, could be the roots of the girls' behavioral problems (Gonçalves, 2003). Research has demonstrated that punitive parenting types of discipline are associated with elevated children's behavioral problem scores (Deater-Deckard & Dodge, 1997; Paterson et al., 2007). Within the patriarchal societies physical punishment is quite accepted. More than 50% of the Brazilian population is contrary to current draft law about children's education, which bans the physical punishment of children (Datafolha Instituto de Pesquisa, 2010). Physical punishment is forbidden in Germany since 1989.

Another explanation, that is in terms of indirect aggression, it is not adequate because social and verbal skills are needed, which lack with 4 years-old and because the CBCL/4-18 scale *Aggressive Behavior* mentions aggression only in terms of direct aggression. Anyway, the rate of aggressiveness in the German sample is higher among boys, which is in agreement with the results of several researches (Beyer & Furniss, 2007; Beauchaine, Hong & Marsh, 2008).

Intelligence Quotient, *Withdrawal* and *Attention Problems*

As reported in earlier studies, intelligence disability is associated with both *Externalizing* and *Internalizing Problems* scale scores (Deckker et al., 2002). Nevertheless the findings of our study show these results in the German sample, but not in the Brazilian one.

The possible explanation of this significant association is the high rate of autistic disorders in the German sample (our "Baby and Toddlers Consultation" of our clinic is an autism referral service). Autistic children in general have a low IQ, according to the diagnosis classifications DSM-IV TR and ICD-10 and higher scores predominantly on the CBCL *Withdrawal* and *Attention Problem* scales (Snow & Lecavalier, 2010; Sikora et al., 2008). These consistent associations can explain the results of the German sample.

In spite of the lack of statistical significance, the Brazilian sample shows the same tendency, and children with lower IQ scores have more behavioral problems. Additionally, in the Brazilian sample the short version of the WPPSI was used, which took only 15 to 20 minutes, in comparison with the IQ tests in Germany which took almost 1 hour. This might explain the fact that the IQ results of the Brazilian sample are less precise than the German data, thereby affecting the significance of the comparison.

Number of younger siblings*, Withdrawal* and *Anxious/Depression*

Empirical studies have found a consistently negative association between family size and children's mental ability, intelligence, and educational attainment. As the number of siblings increases, fewer resources (e.g., parental love and attention, finances) are available to facilitate the development of each child (Kuo & Hauser, 1997). As Dunn indicated (1981), changes in child behavior (increased clinging, withdrawal and tearfulness) and the higher *Internalizing Problems* scores could be motivated and may well of course be a response to changes in maternal behavior (decreased maternal playful attention, increases in confrontation, and changes in the balance of responsibility for initiating interaction with the arrival of the sibling).

Furthermore, although larger families include positive characteristics such as increased family socialization and father involvement, increased family size is also associated with more authoritarian parenting, which, in turn, can negatively impact a child's self-esteem, self-differentiation, and ego identity (Kretschmer & Pike, 2009). Mentioning again Dunn (1999), internalizing disorders have been found to be associated with lower quality of the siblings' relationships.

These results are confirmed by our Brazilian sample, where the number of siblings is associated with, and could be considerate a predictor of, higher scores of CBCL *Withdrawal* and *Anxious/Depression* scales. The reason for the higher association could be that the family's size in Brazil is bigger than in Germany and that family factors in Brazil have a bigger influence on the toddler's behavior than in Germany. The percentages of the variable "number of younger siblings" in the Brazilian sample are: 59.0% have no sibling, 30.60% only one and 10.40% two or more. In Germany, by comparison, 74.40% have no sibling (a 15% higher percentage than in Brazil), 25.0% 1 (5% lower) and only 1.60% two or more (almost 7 times less). This data is coincident with the Total Fertility Rates (the average number of children that would be born to a woman over her lifetime), a valid score to evaluate the number of children within a family, whose values in 2010 within the two populations were 2.0 in Brazil and 1.3 in Germany, showing that the number of children in the Brazilian family must be higher than within a German one (Deutsche Stiftung Weltbevölkerung, 2010).

Maternal Age and *Somatic Complaints*

For most of the scales, the scores are higher in children of younger mothers,

being the scores of the *Somatic Complaints* scale within the Brazilian sample statistically significant. Previous studies confirmed these results, showing consistent tendencies for decreasing maternal age to be associated with increasing risk of mental health problems and worse developmental outcome during early childhood (e.g. children with teenager mothers have risks of later adverse outcomes that were 1.5-8.9 times higher than the risks for offspring of mothers aged over 30) (Fergusson & Woodward, 1999). Furthermore, environmental factors specifically associated with maternal age at childbirth, such as educational underachievement, socioeconomic disadvantage or single parenthood, exert a causal influence on risk for offspring's behavioral problems (D'Onofrio et al., 2009).

The lack of statistically more significant associations could attributed to the limited number of mothers older than 34 years in Brazil (10.30%)

Maternal Education and *Aggressive Behavior*

Significant effects for maternal education were revealed on CBCL *Aggressive Behavior* scale in the German sample, showing both "low level of education" and "middle level of education" higher scores in the scale than the "high level of education" group. This coincides with results reported in earlier studies as a possible predictor of childhood psychiatric disorders.

Owing to the fact that better education means more sensitive and productive parenting, there is a stronger relation between maternal better parenting and less behavioral problems by children with difficult temperament (Bradley & Corwin, 2008). Therefore low maternal education is associated with higher externalizing disorders (Paterson et al., 2007) like higher numbers of ODD and ADHD symptoms (Rydell, 2010) and reported problematic behavior in 5-to-6-years-old children (mainly externalizing ones) attending normal primary schools: OR [CI 95%] = 2.96 [1.59 to 5.52] (Kalff et al., 2001).

However, these previous findings were not correlated with the results of the Brazilian sample. Nor were they correlated with the findings of other Brazilian studies (De Castro Ribas & Borstein, 2005). The possible causes can be that the education classification of the Brazilian sample was not suitable or that the parenting in Brazil is not as strongly associated with the national education system of the mother as in Germany. That means that parenting in Brazil could be influenced by other parameters apart from education, because parental knowledge about children's attainment of

developmental milestones and skills, for example, differs significantly across cultural groups (De Castro Ribas & Bornstein, 2005) and can be learned in very different ways, depending not only on the national education system.

Maternal Occupation, *Somatic Complaints, Anxious/Depressed* and *Aggressive Behavior*

In both German and Brazilian samples, maternal occupation has a significant effect on CBCL *Syndrome* scales scores. Studies in recent decades showed correlations that did reach significance and were quite consistent in showing daughters of working mothers to be more prone to neurotic and psychosomatic complaints (Wallston, 1973). However currently there seems to be no direct evidence of harmful effects of maternal employment on young children. With adequate substitute care, mother's working status does not need to be detrimental, and can in fact be beneficial, because there are variables known to be proportionally related to mothers working status such as socio-economic status (SES) and educational level, which also has an influence on the child´s behavior.

Both conclusions are confirmed with our results: children of working mothers have lower scores on *Somatic Complaints* and *Aggressive Behavior* scales, but higher on the *Anxious/Depressed* scale. On the one hand, working mothers will normally bring a better family income and social status, but on the other, maybe a worse child caregiving. Therefore it is important to clearly define the criteria for sampling working mothers. Attention must be paid to how long has mother worked, how many hours does she work, whether or not she works at home, whether the family is intact or broken or whether she has an adequate substitute caregiver.

5.3.2 Community samples

Sex and *Aggressive Behavior*

The data of the Brazilian community sample shows again a strong and significant association between the female gender and the CBCL *Aggressive Behavior* scale, in this case with a higher statistical significance in the multivariate analysis, with girls having more than twice higher clinical scores than boys. By contrast, in the German sample, the scores are higher in boys, but without a statistical significance, verifying the results of most of the previous studies.

As already explained in the *Inpatient and Clinical Samples* section, these would be related to the dominant patriarchal aspect of the Brazilian society and maybe to the higher gender inequality.

Maternal Age, *Withdrawal* and *Somatic Complaints*

For most of the scales, the scores are higher in children of younger mothers, being significant for the scores of two *Internalizing Problems* scales, *Withdrawal* and *Somatic Complaints* scales and a strong predictor mainly for withdrawal problems in the Brazilian sample. Like the description above in the *Inpatient* and *Clinical* sample section, previous studies are in agreement with these results and show consistent tendencies for decreasing maternal age to be associated with increasing risk of behavioral problems, in this case internalizing ones (Fergusson & Woodward, 1999; D'Onofrio et al., 2009). Young childbearing is usually correlated with privation, children poorer adjustment (Harden et al., 2007) and more often physical aggression during early childhood, which can explain the appearance of these internalizing symptoms in the young child (Tremblay, 2004).

However, these results were not obtained in the German sample because of the lack of mothers younger than 20 years old (83.1% were from 20 to 34 years old and 16.9% older than 34 years old). This made it impossible to make the kind of comparison that was done with the clinical samples. This lack demonstrates the need of a standard homogenization procedure to enable comparisons to be made of psychosocial determinants between different countries.

Paternal Age, *Withdrawal* and *Somatic Complaints*

The results of our study show a significant association of paternal age with *Internalizing Problems* scales within both samples. As mentioned above, to our knowledge there are no previous studies in the literature concerning the association between child behavior problems and the age of the father at birth.

This factor presents statistically significant results, whose cause could be the frequent coincidence of paternal age with other well-documented factors like parental education and family's income. That could explain the more important association of parental age in the Brazilian sample, because in such a patriarchal society like the Brazilian one, the family economy depends almost totally on the father, being the paternal figure is more influential.

Family Income, *Somatic Complaints* and *Aggressive Behavior*

Low socio-economic status as chronic stressor has been established as an important predictor of child psychopathology (Ayer & Hudziak, 2009). Poorer socioeconomic conditions are associated with infant mental health problems and exacerbate the risk for both internalizing and externalizing disorders (El-Sheikh, et al., 2010; Amone-Polak, et al., 2009).

The results of the German sample show that poverty, being a predictor for both results, affects both *Externalizing* (association with the CBCL *Aggressive Behavior* scale) and *Internalizing* (association with *Somatic Complaints* scales) *Problems* (Slopen, et al. 2010).

However the results of the Brazilian sample contradict those findings. It is recognized that the socialization of children in Brazil takes place in a highly unequal and disparate society, whose material inequality between different groups is accepted and considered natural. Different economic structures adopt inevitably different socialization criteria and produce, already in toddlers and infants, different individuals. In the case of families with a low socio-economic status, they are the origin of the main social problems for children in Brazil (Ferreira Nunes, 2003). The reason why the Brazilian sample does not repeat these phenomena could be that our sample is not a national but a regional sample of South Brazil, a region with a high development level in comparison with the rest of the country, where the differences between the classes is consistently lower.

5.4. Addendum: The German clinical sample

The main reason for including this sample in the study was to extend the comparison of the inpatient and clinical samples. Since the Brazilian clinical sample was not a categorical clinical sample, we decided also to make the comparison between the two dimensional clinical samples. That is, a comparison between the CBCL-*Total-Problems*-scale borderline and clinical range cases of both community samples. Taking into account that this German clinical sample has a very small sample size (only 17 cases) and that the number of the psychosocial factors was lower, the conclusions of the comparison were lower significant. Due to that we want simply to formulate and enunciate the more interesting results:

1. The difference associated with gender was more pronounced (that is, the

German preschool boys have more behavioral problems than the girls but vice versa in the Brazilian sample)

2. The percentages of the *CBCL Syndromes* scales were more heterogeneous when compared with the Brazilian clinical sample, than when the German inpatient sample was compared with the Brazilian clinical sample. That is, the *Withdrawal, Somatic Complaints and Attention Problems* scales percentages were higher in the German sample, but the other two, *Anxious/Depressed* and *Aggressive Behavior,* were higher in the Brazilian sample.

3. The *Somatic Complaints* scale was the only one which showed a significant different within the multivariate analysis, because the percentages within the German sample were much higher. The rest of the scales did not show any difference in any analysis.

4. The only psychosocial factor which had an influence on some CBCL scales was the *Maternal Work*, coinciding with the results obtained within the other clinical samples and confirming the importance of this factor on the genesis of behavioral disorders in preschool children.

5.5. Strengths and Limitations

To our knowledge, there is no preschooler inpatient sample for Brazil (nor for any other developing country).Therefore we chose the well-documented Brazilian preschooler sample of Anselmi et al. (2004) for comparison. The Brazilian clinical sample is based on dimensional CBCL measures and is not on an ICD categorical inpatient sample, but the cases are in the clinical range of CBCL.

Although two different CBCL versions were used (CBCL/4-18 and CBCL/1½-5) they are not different tests, but the same test adapted to different ages and five syndrome scales are comparable.

The instruments to assess the psychosocial factors were different because the comparison was a retrospective analysis. However, in spite of this heterogeneity, international comparisons do not deal with high expenses but even so contribute with important information. Furthermore, there is a current need to make pilot transcultural studies because of the present social and political global situation.

Due to the lack of a cumulative risk model we studied the psychosocial risk individually and not as a whole risk. Although in recent years there has been a better

understanding of the importance of examining comprehensive influences of risk factors rather than isolated variables, these studies of individual factors contribute important information, for example, to prevention programs which target specific risk factors and help to determine which factors are more important in relation to children's mental health.

5.6 Future perspectives

Based on the results and the limitations of our study, we would like to contribute with a list of recommendations and warnings for future investigations about psychosocial factors which directly influence preschool children's behaviors:

1. Need to interpret the meaning of the psychosocial factor in association with children's behavior and emotions across the cultures, at least the difference between developing and developed countries.

   That is, the implication of the factor on the development of the child, not the factor *per se.* We know for example that parental education is a well-documented factor in developed countries because we know that mothers with higher education develop better parenting strategies and people there have better access to state's services. However, in developing countries where there fewer services are available, parenting depends more on family (e.g. grandparents) and neighborhood support, and the official education could not be as influential as in developed countries. The same applies to the maternal age: Young mothers differ from adult mothers in many respects other than age.

2. Need to homogenize the measurement of psychosocial factors and behavioral problems to make comparison studies more precise and real.

   If we want to get valid conclusions about children's behavior across the cultures, we need to use homogeneous measuring instruments which interpret these behaviors in similar way and enable comparisons to be made between the countries.

3. Need to develop psychosocial risk models, such as cumulative risk model, which make it possible to study the combined influence of risk factors which are usually

associated (e.g. parental age, education and family's income).

Risk factors most often coincide and may even interact with one another to lead to deleterious outcomes. Therefore it is important to theorize and test mechanisms through which multiple risk factors work together in the emergence of internalizing and externalizing problems in the early life.

4. Need to support the development of clinical samples studies in developing countries.

   International associations like the WHO play an important role in this case because of the lack of resources in developing countries, which are needed to carry out this research.

6. Summary and Conclusions

Ascertaining the psychosocial risk factors for psychiatric disorders in preschool children is important for understanding the etiology of childhood psychopathology and for identifying early potential targets for prevention and intervention. Little is known, however, about the predictors of poor mental health in preschool children, especially from low- and middle-income countries, which is essential for understanding the etiology of mental disorders in infancy and early childhood. Furthermore, most industrialized nations have populations that are markedly heterogeneous with respect to ethnicity, first language, religion and cultural traditions, partly because of the immigration processes from developing countries. To evaluate the influence of these determinants on the early years of live in developed and in low and middle-income countries, studies realized with older children in developed countries can be helpful, contributing with information of well-documented factors which are usually associated which childhood psychiatric disorders.

We compared German and Brazilian community and clinical preschool samples to appraise the aforementioned influence. Our comparison of both community samples shows that the prevalence of both psychosocial risk factors and behavioral problems is higher in the Brazilian sample than in the German one. However, in the comparison of the German inpatient sample and the Brazilian clinical sample, the prevalence of psychosocial risk factors is also higher in Brazil, but not the prevalence of behavioral disorders. This might be because the Brazilian sample is a clinical sample based on dimensional criteria whereas the German is an inpatient sample, whose diagnoses are dimensionally and categorically confirmed. However, in spite of the fact that the German sample is an inpatient one, the prevalence of the psychosocial risk is higher in the Brazilian clinical sample, emphasizing the high risk to which the children of developing countries are unfortunately exposed.

Furthermore, the study shows that the association of these psychosocial determinants with behavioral problems is different within both groups of samples. In the comparison of the German inpatient and the Brazilian clinical samples, the associations are more numerous in the German sample, whereas in the comparison of the community samples they are more numerous in the Brazilian sample. Well-documented factors in developed countries (e.g. paternal education) do not have any association

with any CBCL *Syndrome* scale, but it does other less documented factors (e.g. paternal age). The psychosocial factors which can be considered predictors of childhood behavioral problems according to our investigation are “gender”, “maternal work” and “family income” within the German samples while within the Brazilian samples the predictors are “gender”, “number of younger siblings”, “maternal and paternal age”. It is important to emphasize the significant high scores of the Brazilian girls by the CBCL *Aggressive Behavior* scale. Previous studies found high rates of externalizing problems in boys but not in girls. Therefore it was unexpected and might be important in understanding the mental health problems of girls in developing countries. Although “gender” is a predictor in both samples, it is related with the behavioral and emotional problems in different ways.

Unfortunately, it is unavoidable that the lack of specific diagnostic and therapeutic resources in developing countries entails a higher prevalence of psychosocial risks than in developed countries. At the same time this implies a higher prevalence of child behavioral and emotional problems in preschool children. In spite of our incapacity to change political and social systems, as physicians and child psychiatrists we can look for a way in which child psychiatry could be helpful to the children in low and middle-income countries. Apart from explaining, we are able to understand and help. A first step could be the systematic application of validated questionnaires by the pediatric primary care which could detect and improve childhood mental health problems in developing countries. The understanding of the psychosocial risk together with a pediatricians’ higher sensitivity of the problematic and the child psychiatrist’s holding and containing can be a praiseworthy solution. However, first of all, we have to be able to understand the meaning of the psychosocial risk and its association with the child’s behavioral and emotional problems across the cultures, to find the true targets of intervention and prevention in every society. In this case *emic* studies and other disciplines will be extremely helpful.

7. Zusammenfassung und Schlussfolgerungen

Die Feststellung psychosozialer Risikofaktoren für psychiatrische Störungen im Vorschulalter ist bedeutend, um die Ätiologie der Psychopathologie der Kinder und um frühe potentielle Präventions- und Interventions *Targets* zu erkennen. In Entwicklungsländern hingegen sind die Prädiktoren für schlechte psychische Verfassung im Vorschulalter wenig bekannt, die aber für das Verständnis der Ätiologie psychiatrischer Störungen der frühen Kindheit wesentlich sind. Darüber hinaus unterscheiden sich die meisten Bevölkerungen der Industriestaaten hinsichtlich ihrer Ethnie, Muttersprache, Religion und kultureller Tradition, teilweise wegen der Einwanderung dieser Entwicklungsländer. Studien von älteren Kindern in Industriestaaten können hilfreich sein, um den Einfluss dieser Faktoren auf die Kindheit in Entwicklungsländer auszuwerten. Sie können anhand der Information gut belegten Faktoren, die regelmäßig mit psychiatrischen Störungen der Kindheit assoziiert werden, weiterhelfen.

Wir haben die Screening-Stichproben und Inanspruchnahme deutscher und brasilianischer Vorschüler miteinander verglichen, um den oben genannten Einfluss einzuschätzen. Der Vergleich der Screening-Stichproben zeigt, dass die Prävalenz psychosozialer Faktoren und Verhaltensauffälligkeiten in der brasilianischen Stichprobe höher ist. Die Prävalenz psychosozialer Faktoren ist in Brasilien auch dann höher, wenn die deutsche Inanspruchnahme und die brasilianische klinische Stichprobe miteinander verglichen werden, die Prävalenz für Verhaltensauffälligkeiten hingegen aber nicht. Das könnte daran liegen, dass die brasilianische Stichprobe eine dimensionale klinische Stichprobe ist, die deutsche aber eine Inanspruchnahme mit kategorialen und dimensionalen Diagnosen. Obwohl die deutsche Stichprobe eine Inanspruchnahme darstellt, ist die Prävalenz psychosozialer Faktoren in der brasilianischen klinischen Stichprobe höher, was dem hohen psychosozialen Risiko, dem Kinder von Entwicklungsländern leider ausgesetzt sind, entspricht.

Weiterhin zeigt die Studie, dass die Assoziation psychosozialer Faktoren mit Verhaltensauffälligkeiten in beiden Stichproben unterschiedlich ist. Wenn die deutsche Inanspruchnahme und die brasilianische klinische Stichproben miteinander verglichen werden, sind die Assoziationen in der deutschen Stichprobe zahlreicher. Wenn man aber die deutschen und brasilianischen Screening Stichproben vergleicht, sind die

Assoziationen in Brasilien zahlreicher. Gut belegte Faktoren in Industriestaaten (bspw. die Bildung des Vaters) haben keine Assoziation mit beliebiger CBCL Syndrom Skala, aber doch weniger belegte Faktoren (bspw. das Alter des Vaters). Die psychosozialen Faktoren, die nach unserer Untersuchung als Prädiktoren gelten, sind das Geschlecht, die Arbeit der Mutter und das familiäre Einkommen in der deutschen Stichproben sowie das Geschlecht, die Anzahl jüngerer Geschwister und das Alter der Eltern in der brasilianische Stichprobe. Es ist bedeutsam, auf die höheren Werte der brasilianischen Mädchen in der CBCL Skala *Aggressives Verhalten* hinzuweisen. Frühere Studien haben höhere Anteile externalisierender Verhaltensauffälligkeiten bei Vorschuljungen gefunden, nicht aber bei Vorschulmädchen. Deshalb war dieses Ergebnis unerwartet und es könnte bedeutsam sein, um die Verhaltensauffälligkeiten bei Mädchen in Entwicklungsländern zu verstehen. Obwohl das Geschlecht ein Prädiktor in beiden Gruppen ist, wird es mit Verhaltens- und emotionalen Auffälligkeiten auf verschiedene Weise assoziiert.

Leider ist es unvermeidbar, dass der Mangel an spezifischen diagnostischen und therapeutischen Ressourcen eine höhere Prävalenz psychosozialer Risiken in den Entwicklungsländern mit sich bringt. Gleichzeitig deutet dies auf eine höhere Prävalenz für Verhaltens- und emotionale Auffälligkeiten bei Vorschulkindern hin. Obwohl wir die politischen und sozialen Systeme nicht verändern können, können wir als Mediziner und Kinderpsychiater einen Weg suchen, damit die Kinderpsychiatrie in Entwicklungsländern Hilfe bringt. Neben erklären, können wir verstehen und helfen. Ein erster Schritt könnte die systematische Anwendung validierter Fragebögen in der pädiatrischen Vorsorge sein. Diese könnten dabei helfen, frühzeitig psychiatrische Störungen in den Entwicklungsländern zu erkennen und auf diese Weise die psychische Gesundheit zu verbessern. Der Einbezug des psychosozialen Risikos, aber auch eine höhere Sensibilität der Kinderärzte und der *Holding* und *Containing* der Kinderpsychiater könnte eine vielversprechende Lösung sein. Allerdings sollten wir zuerst in der Lage sein, die Bedeutung der psychosozialen Faktoren und ihre Assoziation mit Verhaltens- und emotionalen Auffälligkeiten im Kindesalter über verschiedene Kulturen hinweg zu verstehen, um die richtigen Prävention- und Interventions *Targets* in jeder Bevölkerung zu finden. In diesem Zusammenhang sind die *emic* Studien und andere Disziplinen besonders hilfreich.

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9. Appendix

9.1. List of tables

9.2. List of figures

10. List of abbreviations

A

ADD/ADHD	Attention-deficit/hyperactivity disorder
AFF	Affective Disorders
AGG	Aggressive Behavior
ANX	Anxious/Depressed
APA	American Psychological Association
ASD	Autism spectrum disorders
ASEBA	Achenbach System of Empirically Based Assessment
ATT	Attention Problems

B

BADO	Basisdokumentation
BCln	Brazilian clinical sample
BCom	Brazilian community sample
BLR	Binary Logistic Regression

C

CBCL	Child Behavior Checklist
CI	Confidence Interval
COTAN	Test Commission of the Netherlands Institute for Psychologists

D

DC:0-3R	Diagnosing Infant and Early Childhood Mental Health and Developmental Disorders Revised
DEL	Delinquent Behavior
DENVER II	Denver Developmental Screening Test
DM	German mark
DMD	Deprivation/Maltreatment Disorder
DSM	Diagnostic and Statistical Manual of Mental Disorders

E

EAT	Feeding Behavior Disorder
EMO	Emotional Reactive
EXT	Externalizing Problems

F

FI	Family’s income

G

GCln	German clinical sample
GCom	German community sample
GDP	Gross Domestic Product
GEM	Gender Empowerment Measure
GInp	German inpatient sample
GNI	Gross National Income

H

H	High
HD	Human Development
HDI	Human Development Index
HOME	Home Observation for Measurement of the Environment

I

ICD	International Classification of Diseases
IND	Individual
INT	Internalizing Problems
IQ	Intelligence Quotient
ITMSE	Infant and Toddler Mental Status Exam

K

K-ABC	Kaufman Assessment Battery for Children

L

L	Low
LBW	Low-birth weight

M

M	Medium
MAb	Maternal absence
MAg	Maternal age
MEd	Maternal education
MPD	Maternal psychiatric disorder
MRI	Magnetic Resonance Imaging
mw	Minimum wage
MW	Maternal work

N

N/N	Neither Nor
NrS	Number of siblings
NrY	Number of younger siblings

O

ODD	Oppositional Defiant Disorder
OR	Odds Ratio
OTH	Other Disorder

P

PAb	Paternal absence
PAg	Paternal age
PAK-KID	Psychische Auffälligkeiten und Kompetenzen von Kindern und Jugendlichen in Deutschland
PDD	Disorder of Relating and Communicating
PEd	Paternal education
PPD	Postpartum Depression
PPP	Purchasing Power Parity

Q

Q	Questionnaire

R

REG	Regulation Disorder

S

SES	Socioeconomic Status
Sex	Gender
SEX	Sex Problems
SLE	Sleep Problems
SOC	Social Problems
SOM	Somatic complaints
SON-R 2½-7	Snijders-Oomen Nonverbal Intelligence Test
SOP	Standard Operation Procedure
SPSS	Statistical Package for the Social Sciences
SRQ-20	Self-Report Questionnaire of Minor Psychiatric Disorders
SS	Systemic Selected

T

THO	Thought Problems
TOT	Total Score

U

UN	United Nations
UNDP	United Nations Developmental Program
UNICEF	United Nations Children's Fund
US$	United States Dollar
USA	United States of America

V

VH	Very high
VL	Very low

W

WHO	World Health Organization
WIS-C	Wechsler Intelligence Scale for Children
WITH	Withdrawal
WPPSI	Wechsler Preschool Intelligence Scale

X

X^2	Chi-quadrat Test

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Eidesstattliche Erklärung

„Ich, Javier Andrés Moral erkläre, dass ich die vorgelegte Dissertation mit dem Thema: „Psychosocial risk factors and behavioral problems at preschool age in CBCL. A comparison between German and Brazilian preschoolers“ selbst verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt, ohne die (unzulässige) Hilfe Dritter verfasst und auch in Teilen keine Kopien anderer Arbeiten dargestellt habe.“

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