

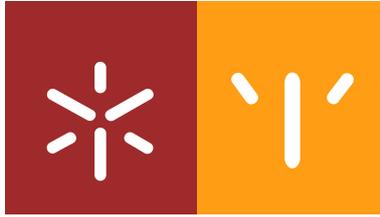


Universidade do Minho
Escola de Psicologia

Alexandra Manuela Paiva Carneiro

**Emotional and Behavioral Problems in
Preschoolers:
Risk factors and Assessment Issues**

outubro de 2015



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Preschoolers:
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Tese de Doutoramento em Psicologia Aplicada

Trabalho efetuado sob a orientação da
Professora Doutora Isabel Soares
e do
Professor Doutor Pedro Dias

outubro de 2015

Nome:

Alexandra Manuela Paiva Carneiro

E-Mail

carneiro.alexandra@gmail.com

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Risk factors and Assessment Issues

Orientadores:

Professora Doutora Isabel Soares

Professor Doutor Pedro Dias

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Full name:

Alexandro Pasquada Paiva Carneiro

Signature:

Alexandro Carneiro

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Emotional and Behavioral Problems in Preschoolers:

Risk factors and Assessment Issues

Abstract

The study of risk factors contributes to a better understanding of the emergence of emotional and behavioral problems in preschool aged children, since this is a period extremely sensitive to the onset of maladaptive life trajectories. Literature provides information about what are the most studied risk factors related to the beginning of problems, and about the idea that intervention has to be preceded by an accurate assessment. Many authors have been stated the importance of assessing emotional and behavioral problems using different informants in several contexts. However, more research focused in this specific age is still lacking. The present doctoral dissertation aims to contribute to a deeper understanding of this topic by integrating four studies focused on emotional and behavioral problems in preschool aged children. Two studies are focused on risks factors and their influence on emotional and behavioral problems, and the other two are focused on agreement between informants from different contexts. The first article, a systematic literature review, aims to examine risk factors associated with emotional and behavioral problems. The second article aims to analyze the contribution of cumulative risk in the development of emotional and behavioral problems in a sample of Portuguese children, testing the individual contribution of each risk factor. Results from these two articles not only evidence the importance of both distal and proximal risks, but also their different influence in child's problems, showing that each risk can have a specific contribution. The third article, a meta-analysis, aims to examine the degree of consistency in the ratings from parents and teachers about emotional and behavioral problems, and to test the effects of the type of sample (community *vs* clinical), measure (ASEBA *vs* other), and child sex, on cross-informant agreement. The fourth article aims to identify the predictors, regarding mothers and teachers agreement and discrepancy, concerning children behavioral and emotional problem in preschool age. Results of the third and fourth articles confirm the importance of assessing emotional and behavioral problems in more than one context, using different informants, and the need to attend to some potential factors that might influence informant's ratings, leading to a lower agreement about child emotional and

behavioral problems. Research findings and conclusions are discussed regarding clinical and research implications.

Problemas emocionais e de comportamento em idade pré-escolar:

Fatores de risco e questões de avaliação

Resumo

O estudo dos fatores de risco contribui para um melhor entendimento acerca da emergência de problemas emocionais e de comportamento em crianças em idade pré-escolar, uma vez que este é um período de desenvolvimento muito sensível ao início de trajetórias de vida menos adaptativas. A literatura fornece informação acerca dos fatores de risco que são mais estudados e se relacionam com o início de problemas, bem como acerca da ideia de que a intervenção deve ser precedida de uma avaliação eficaz junto de diferentes informadores em vários contextos, contudo a investigação focada nesta faixa etária é ainda reduzida. A presente dissertação de doutoramento procura contribuir para o aprofundamento desta temática integrando quatro estudos focados nos problemas emocionais e de comportamento em crianças em idade pré-escolar. Dois estudos são centrados nos fatores de risco e na sua influência nos problemas emocionais e de comportamento, enquanto os outros dois estudos atendem a questões relacionadas com o acordo entre informadores em diferentes contextos. No primeiro estudo, uma revisão sistemática, o objetivo é examinar a literatura sobre os fatores de risco associados com os problemas emocionais e de comportamento, enquanto o segundo estudo pretende estudar a contribuição do risco cumulativo para os problemas emocionais e de comportamento numa amostra de crianças Portuguesas, testando a contribuição individual de cada risco. Os resultados evidenciam a importância dos riscos, desde o mais distal ao mais proximal, bem como a sua influência na emergência de sintomas psicopatológicos, mostrando que cada risco tem a sua própria contribuição. O terceiro estudo, uma meta-análise, tem por objetivo examinar o acordo entre pais e educadores quanto aos problemas emocionais e de comportamento e testar o efeito da amostra (comunidade vs clínica), da medida (ASEBA vs outra) e do sexo nos níveis de acordo entre informadores. No último estudo, o objetivo é identificar os preditores que têm influência no acordo e nas discrepâncias entre mães e educadoras em relação aos problemas emocionais e de comportamento em crianças em idade pré-escolar. Os resultados do terceiro e quarto estudo confirmam, por um lado, a importância da avaliação em mais do que um contexto e, por outro, a necessidade de ter em

consideração de que alguns fatores, relacionados com o contexto ou com o informador, podem condicionar os níveis de acordo. A discussão dos resultados e a conclusão procuram atender às implicações dos resultados para a intervenção e investigação futura.

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Abbreviation List

ASEBA – Achenbach System of Empirically Based Assessment

CBCL 1 ½ - 5 – Child Behavior Checklist for ages 1 ½-5

CTRF – Caregiver Teacher Report Form

EP – Externalizing Problems

IP – Internalizing Problems

IEP – Internalizing and Externalizing Problems

PPD – Post Partum Depression

SES – Socioeconomic Status

CHAPTER 1

Introduction

Introduction

Framework and Aims

The study of the development of emotional and behavioral problems in preschool aged children has received much less attention than the investigation of the same difficulties in older ages (Campbell, 2002). In a review (Egger & Angold, 2006) of epidemiological research based on diagnoses of preschoolers in the USA, only four published studies were identified to use this population. Two studies (Earls, 1982; Keenan, Shaw, Walsh, Delliquadri & Giovanelli, 1997) used fewer than 150 children, and the other two (Egger, Erkanli, Keeler, Potts, Walter & Angold, 2006; Lavigne, et al., 1993) included larger samples. However, across the studies, findings have highlighted the early onset of such problems, and documenting prevalences ranging from 14% to 26% among preschoolers (Earls, 1982; Egger, et al., 2006; Keenan, et al., 1997; Lavigne, Le Bailly, Hopkins, Gouze & Binns, 2009; Lavigne, et al., 1993).

There is substantial evidence that children develop healthy relationships, behaviors, emotions and social skills in the context of early experiences (Leerkes, Blankson & O'Brien, 2009). Thus, empirical findings on the effects of environmental or parental risks on child development are of interest., and several authors (e.g., Teti, Black, Viscardi, Glass, O'Connell, Baker, et al., 2009) have already outlined the importance of several risks (e.g., poverty, lack of social support), but the context of familial relations is still worth studying, as it is the most proximal context for child development (Cabrera, Wight, Fagan & Schadler, 2011).

It is also recognized that the exposure to several risk factors causes much more impairment than the exposure to a single risk factor, which is consistent with a cumulative risk approach (Evans, Li & Whipple, 2013; Doan, Dich & Evans, 2013). Research report that children exposed to multiple risk factors have a much higher probability of developing some kind of emotional and behavioral symptoms, when compared to children exposed to none or to a single risk factor (e.g., Early Childhood Longitudinal Study-Kindergarten, West Denton & Germino-Hausken, 2000).

Furthermore the importance of exposure to risk during preschool years is critical due to the fact that it is a sensitive period to external influences, and children have a limited capacity to report their own difficulties. Although emotional and behavioral

problems have been assessed in several contexts with different informants (Achenbach, McConaughy & Howell, 1987; De Los Reys & Kazdin, 2005), cross-informant agreement tends to be low to moderate increasing the difficultness of integrating information from all informants and understand the severity of symptoms. It is, therefore, important to comprehend why different informants report problems in diverse and distinct ways (Smith, 2007).

This doctoral thesis addresses the questions related to exposure to risks and its effects on the child's emotional and behavioral problems, as well as the factors that influence the agreement between informants when assessing those problems. The two main goals of this study are to enhance the knowledge about risk factors to the development of emotional and behavioral problems in preschool age children, and to expand the comprehension about the factors that contribute to cross-informant agreement and discrepancies.

The first aim of this research is to review risk factors associated in literature with emotional and behavioral problems in preschool age children assessed by the CBCL 1 ½-5. The first article of this doctoral dissertation presents a systematic literature review focused on this problematic, showing the relevance of both distal (e.g., social and familial risks) and proximal (e.g., maternal psychological adjustment, maternal sensitive responsiveness) factors in the development of preschoolers' emotional and behavioral functioning. Thus, the second article aims to study the contribution of cumulative risk in the development of emotional and behavioral in a sample of preschool children. Furthermore, this article also aims to test the individual contribution of each of the studied risk factors to the development of emotional and behavioral problems.

Focused on cross-informant agreement, the third article includes a meta-analysis which has as first goal to examine the degree of consistency in the ratings of parents and teachers about emotional and behavioral problems in preschool aged children. Its second goal is to test the effects of the type of sample (community *vs* clinical), measure (ASEBA *vs* other), and child's sex on the agreement between informants. The fourth and last article, aims to examine the agreement and discrepancy between mothers and preschool teachers on emotional and behavioral problems in a sample of preschool aged children, as well as to explore determinants of mother-teacher agreement and

discrepancy on emotional and behavioral problems, by including familial and preschool factors.

Risk Factors for Emotional and Behavioral Problems

One of the main focus of Developmental psychopathology is on how vulnerabilities (both biological and psychological) interact with environment factors across lifespan (Cicchetti, 1993; Sroufe & Rutter, 1984) illuminating the involved processes across several units of analysis rather than descriptions of diagnostic categories (Rutter & Sroufe, 2000), and focusing on the dynamic interplay of all dimensions across development (Cicchetti, 2008; Cicchetti & Blender, 2004).

It is well known that in tracing the evolution of research models in developmental science Bronfenbrenner and Crouter (1983) distinguished a series of scientific paradigms for investigating the impact of environment on development, and these paradigms can be distinguished in three environmental systems that can serve as sources of external influence on the family system. The three environmental systems are: 1) the *mesosystem* includes the more proximal systems to the child, such as family or school, and represents the interaction between them; 2) *the exosystem* involves settings in which, for example, parents are present but not the child, such as parents work; and 3) *the chronosystem* includes all changes over time, such as age. All these three systems are in a constant process of influencing each other, not only the systems of each paradigm, but also between paradigms (Bronfenbrenner, 1986).

Furthermore developmental psychopathology also gives relevance to other key points: 1) multifinality, 2) equifinality, and 3) change. The concept of multifinality considers that risk factors may not act similarly to all children in all contexts, not leading to comparable outcomes. Instead, risk factors interact in a dynamic and complex process, making their influence change as a function of other key variables of the system. The second concept — equifinality — points out that there are many pathways to the development of psychopathology, considering that a number of risk factors, from a wide range of domains, interact in a complex way in order to lead to the development of a symptom or a problem. The last key point stresses that children grow up, change, and

evolve over time, and the set of skills and abilities of each child, at any given moment, alters the influence of other variables (Kerts & Woodruff-Borden, 2011)

Having in mind that children are continuously integrated in systems and are exposed to several risk factors, it is crucial to deeply understand the risk factors which tend to have a major influence in child functioning and development.

Risk Factors and Cumulative Risk

Early experiences have a profound effect on human development, and preschool age is considered a sensitive period of development, meaning that there is a window of opportunity for certain types of experience to have a foundational effect on the development of skills or competencies (Fox & Rutter, 2010). To date, there is disagreement in the literature concerning the risk factors that might cause psychopathology in preschool age (Ellis, Berg-Nielsen, Lydersen & Wichstrom, 2012) and there is not much information about which risk factors are more frequently associated with psychopathology in preschoolers. Thus, the study of risk factors associated with emotional and behavioral problems in preschool age has become increasingly relevant by providing a deeper knowledge of the causes and course of disorders, and thus enabling efficient preventive and remediative interventions (Kovacs & Lopez-Duran, 2010).

Research in child psychiatry and psychology suggests that most children experience exposure to a single physical or psychosocial risk factor during the first years of life and suffer little if any enduring harm as a consequence of that exposure (Ogg, Dedrick, Brinkman & Carlson, 2010). However, the subset of children who experience multiple risk factors is much more likely to experience significant emotional and behavioral problems. The cumulative risk approach (e.g. Sameroff, Seifer & Baldwin, 1993) of modeling multiple risk factors simultaneously has been useful in explaining socioemotional and health outcomes (Evans, Li & Whipple, 2013).

Cumulative risk approach assumes that it is the accumulation of risk, rather than the content, that matters to the development of negative outcomes. Cumulative risk indices, that quantify the number of risks present in children's life and to which they are exposed, have been shown to be predictive of outcomes in several and different domains

(Gutman, Sameroff & Eccles, 2002). Though cumulative risk models tend to ignore the pathways through some risks, such as poverty may be configured, ignoring the fact that different combinations of risks may lead to different outcomes (Roy & Raver, 2014).

In general, risk factors to which children are exposed during development can be divided into three categories: risks relative to the infant/child, risks involving the parents, and risks in the family and social context (Zeanah, Boris & Lareau, 1997).

Ethnicity and socioeconomic status (SES) are not usually directly influenced by other variables, having their own weight and importance in the development of emotional and behavioral problems in children (Fanti & Henrich, 2010; Paterson, Taylor, Schluter & Iusitini, 2013). However, some risks may be associated with other risks, such as quality of home environment, which may include, for example, the presence of the father (Paterson, 2013), the number of siblings (Robinson et al, 2008) and firstborns (Velders et al., 2011). These results should be understood in a comprehensive way, considering that when mothers are single, or the biological father is absent, they may experience higher levels of parental stress that will influence their relationship with the child, possibly because these mothers do not have the same spousal support that partnered mothers have. So, it is easily assumed that it is not only single motherhood that has an impact on children's emotional and behavioral problems, but also other variables that are indirectly associated to it. This idea turns our attention to risk composites, and the literature reflects the strong correlation between the presence of multiple risks and emotional and behavioral problems, as shown in Bennett, Bendersky, and Lewis (2002) and Trentacosta, Hyde, Shaw, Dishion, Gardner, and Wilson (2008) and.

Several studies focused on maternal characteristics and their impact on the child's emotional and behavior problems, evidence that education (Velders et al., 2011) and age (LaGasse et al., 2012; Twomey et al., 2013) are positively related to the child's emotional and behavioral problems — indicating that less educated and younger's mothers rate their children as having more problems. Other studies (e.g., Bennett, Bendersky & Lewis, 2002; Coyne & Thompson, 2011; Paterson et al., 2013; Twomey et al., 2013) show that maternal psychopathology is significantly associated with the child's emotional and behavioral problems, as well as maternal locus of control (Coyne et al., 2011), or maternal stress (Robinson et al., 2008; Twomey et al., 2013). Mothers

prone to psychopathology may be more likely to feel “out of control”, and thus less available to help their child regulate negative emotions. One possible conceptual framework might suggest that mothers may adopt passive emotion coping strategies, and thus fail to model appropriate emotion regulatory strategies (Coyne & Thompson, 2011). In line with the reported studies, maternal risk factors are hypothesized to be directly linked to parenting by decreasing positive parenting behaviors (e.g. sensitivity and responsiveness) and increasing negative behaviors (e.g. harsh parenting). In Cabrera, Fagan, Wight, and Schadler (2011), maternal risk (e.g. depression) was directly linked to the quality of mother-child interaction. Indeed, maternal sensitivity and cooperation are of particular relevance for child development. Sensitivity refers to the parent’s ability to perceive and respond to the child’s needs, cues and communications: sensitive parents usually respond to the child’s cues reasonably quickly, establishing a clear contingency between their child’s cues and responses. Cooperation means that the parental figure views the child as a separate, active and autonomous person, whose wishes and activities have validity of their own. Parents respect child’s autonomy minimizing interruptions or impositions, showing foresight in planning activities by arranging the physical environment of the house or by timing their own household routines (Ainsworth et al., 1978). Children of sensitive and cooperative mothers tend to present fewer emotional and behavioral problems when compared to other children (Bennett, Bendersky & Lewis, 2002; Leerkes, Blankson & O’Brien, 2009; Miner & Clarke-Stewart, 2008; Paterson et al., 2013).

The most consistent child characteristics that are found to be associated with emotional and behavioral problems are age and sex. Concerning children’s age, in Fanti and Henrich’ (2010) study, a significant decreasing mean level was observed for externalizing problems from ages 3 to 4.5 and also from age 4.5 to 6, however, internalizing problems increased from ages 3 to 4.5. The externalizing problems decrease with age seems to be related to the development of socio-cognitive abilities and the skills to regulate emotions, for instances the relevance of the development of effortful control in the regulation of those behaviors (Poehlmann, Hane, Burnson, Maleck, Hamburger & Shah, 2012).

Concerning child’s sex, several studies (Beyer, Postert, Müller & Furniss, 2012; Fanti & Henrich, 2010; LaGasse et al., 2013; Robinson et al., 2008; Velders, 2011) indicate that significantly more boys than girls present mental health problems. Few

studies (e.g., Chaplin, Coe & Zahn-Waxler, 2005) found that girls had higher levels of mother-reported emotional and behavioral problems at preschool age than boys. Other studies (e.g., Coyne & Thompson, 2011; Mitchell, Lewin & Joseph, 2009; Utendale & Hastings, 2011) found no significant differences between boys and girls on mother-reported child emotional and behavioral problems. Due to this inconsistency some authors (e.g., Ruiter, Dekker, Verhulst & Koot, 2007) recommended that the child's age and gender should be controlled when analyzing the child's emotional and behavioral problems as outcomes.

There are other child's variables of interest to the development of emotional and behavioral problems, such as temperament and attachment, although they are not considered in our present study.

Temperament, integrating several variables such as effortful control, negative emotionality, surgency, shyness, frustration, sadness, discomfort, fear, falling reactivity, attention focusing, inhibitory control, high-intensity pleasure, impulsivity, positive anticipation, frustration, sadness, motor activation, attention focusing, inhibitory control, low-intensity pleasure and headstrongness were shown to be relevant risk factors for the development of emotional and behavioral problems (Ezpeleta, Granero, de la Osa, Penelo & Domènech, 2012; Gartstein, Putnam & Rothbart, 2012; Loukas, Fitzgerald, Zucker & von Eye, 2001; McCartney, Owen, Booth, Clark-Stewart & Vandell, 2004). Children with temperamental difficulties may be more prone to develop symptoms reflecting emotional and behavioral dysregulation and problems in modulating emotional experiences and expression. Difficult temperament has been studied as both a predictor and a moderator, given that the presence of emotional and behavioral dysregulation might increase the impact of other risk factors in child functioning. Poehlmann et al. (2012) found that child's tendency for distress did not predict externalizing problems in preschool age, but the interaction between infant distress and frustrated parenting significantly predicted 36-month emotional and behavioral problems - indicating that high levels of infant tendency for distress, variations in maternal frustration and critical parenting significantly predicted child's problems.

In some studies focused on attachment related variables (e.g., McCartney et al., 2004; O'Connor, Bureau, McCartney & Lyons-Ruth's, 2011), disorganized/controlling

children displayed the least optimal scores in emotional and behavioral problems, and in Levendosky, Huth-Bocks, Shapiro, and Semel (2003), and in McCartney, et al. (2004) security is inversely correlated to child's emotional and behavioral problems. It is important to note that mothers of disorganized/controlling children might experience more depression and display the poorest interactions with their children, who tend to have a poor representation of maternal availability and support reinforced by the poor dyadic interactions, meaning that attachment security is influenced by many variables from the mother, the child, and from the social context (O'Connor et al., 2011).

In short, an integrative approach for investigating risk factors for preschool-age emotional and behavioral problems, with potential implications on clinical assessment of children in that age group is needed (Mash & Barkley, 2007). Children have their own individual characteristics, living, in most cases, with their biological families, and being integrated in a community. Thus, risk factors for emotional and behavioral problems can be more distal or proximal, and can influence each other, often leading to a snow-ball effect which increases the probability of maladaptive developmental trajectories.

Assessment Issues

Assessment of Emotional and Behavioral Problems

The early identification of mental health problems, namely emotional and behavioral disorders, are crucial and an important step toward increasing clinical attention in pediatric setting and reducing the risk of adverse outcomes (Williams, Klinepeter, Palmes, Pulley & Foy, 2004).

Unfortunately, emotional and behavioral problems of children in preschool age are usually underrecognized and undertreated (Horowitz et al., 2007). Thus, the systematic screening of all these types of problems could help to reduce barriers that are related to costs (Earls & Hay, 2006), once pediatric settings have their specificities that, in most of cases, condition an adequate and efficient assessment. Therefore, a screening tool to be used in this context needs to meet logistical and time demands (Silverstein & Sand, 2005). In fact, time limitations are the most common difficulties addressed by clinicians (Horowitz et al., 2007). Having in attention all these issues, an effective

psychosocial screening tool not only has to be psychometrically robust, but it also has to provide clinically meaningful information and be quick to administer, as well as easy to score and interpret (Perrin & Stancin, 2002).

Nowadays, there is a growing awareness of the needs for systematic and dimensional assessments of emotional and behavioral problems during preschool in order to develop better services for helping children with psychopathological problems. Standardize the screening of problems in the preschool age and provide appropriate services will contribute to prevent problems before they impair children's social and educational development (Achenbach & Rescorla, 2000).

Over the last decades there was an increasing interest in the use of psychometric instruments within clinical and research settings. As a result numerous structured interviews, checklists and assessment scales have been developed (Kristensen, Henriksen & Bilenberg, 2010). Besides the existence of several measures, the most commonly used in preschool age are the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), the Early Childhood Inventory – (ECI – 4; Gadow & Sprafkin, 1997), the Preschool Behavior Questionnaire (PBQ; Behar & Stringfield, 1974), the Preschool and Kindergarten Behavior Scales (PKBS; Merrel, 2003) the Child Behavior Questionnaire (CBQ; Rothbart, 1981), and the Achenbach System of Empirically Based Assessment forms (ASEBA; Achenbach & Rescorla, 2000), namely Child Behavior Checklist for Ages 1 ½ - 5 (CBCL 1 ½ - 5) and Caregiver Teacher Report Form (CTRF).

Two of the instruments, for preschool age, that became of more interest to clinicians and researchers were the CBCL 1 ½ - 5, completed by parents, and CTRF, for preschool teachers. These instruments have influenced the standard practice for multi-informant assessment of emotional and behavioral problems around the world, being translated to more than eighty languages (Kristensen et al., 2010). These two questionnaires are inserted in a dimensional approach of assessment of psychopathology, allowing assessing disorder severity, subclinical presentations of disorders, and changes in symptoms over time (Lebeau et al., 2012). Included in this dimensional approach, the empirically based paradigm takes a *bottom up* approach, where syndromes are derived statistically to reflect patterns of problems that co-occur in large samples rated by several informants in different contexts (Rescorla, 2005). The

ASEBA can be considered as the gold standard for the empirically based paradigm, capturing similarities and differences in how children function under different conditions. All of the ASEBA forms have well-documented reliability and validity in numerous countries, societies and cultures (Rescorla et al., 2011).

CBCL 1 ½ -5 and CTRF are designed to capture both similarities and differences in how children behave and function under different conditions in different social settings. Achenbach and his co-workers developed the ASEBA instruments through decades of research and practical experience and described them in their early articles and in the manual. The manual presents the validation and standardization procedures in large American samples. Multicultural studies (c.f. Rescorla et al., 2011) revealed substantial consistency in CBCL 1 ½-5 and CTRF mean scores across many societies, despite a great variation among them in geography, political/economic systems, size, population, ethnicity/race, and religion.

The CBCL 1 ½-5 offers a dimensional perspective based on seven syndrome scales (emotionally reactive, anxious/depressed, somatic complaints, withdrawn, attention problems, aggressive behavior, and sleep problems). There are also five scales oriented to DSM classifications (affective problems, anxiety problems, pervasive developmental problems, attention deficit/hyperactivity problems, oppositional defiance problems) and two second-order dimensions: internalizing problems and externalizing problems. It also provides a total problems score. The 100 items of the CBCL 1 ½ -5 are completed by parents, parent surrogates, and others who observe children in home-like contexts in a 3 point *likert* scale. The informant is asked for descriptions of the child's behaviors, their greatest concerns about the child and the best things about the child. The form provides not only quantitative information but also descriptions of the child (Rescorla, 2005).

The CTRF is very similar to CBCL 1 ½ -5, having these two questionnaires many items in common, more than eighty, which allows a comparison of the behavior of the child in two contexts. It also provides a dimensional perspective based on six syndrome scales (emotionally reactive, anxious/depressed, somatic complaints, withdrawn, attention problems, and aggressive behavior). There are also five scales oriented to DSM classifications (affective problems, anxiety problems, pervasive developmental problems, attention deficit/hyperactivity problems, oppositional defiance

problems) and two second-order dimensions: internalizing problems and externalizing problems. It also offers a total problem score. The 100 items of the CTRF are completed by teachers or other person relevant in preschool context in a 3 point *likert* scale. The informant is also asked for descriptions of the child's behaviors, their greatest concerns about the child and the best things about the child, providing quantitative and descriptive information about the child, which is also similar to the CBCL 1 ½ - 5 (Rescorla, 2005).

Cross Informant Agreement and Discrepancies

Although the assessment of child psychopathology and associated risk factors are of unquestionable importance to achieve an understanding of emotional and behavioral problems in preschool aged children, it also presents some challenges, once that the validity of psychopathological ratings from informants is controversial throughout literature (De Los Reyes & Kazdin, 2005; Gartstein, Bridgett, Dishion & Kaufman, 2009). However, these disagreements are some of the most consistent effects observed in the clinical literature related to this subject (Achenbach, 2006).

Informant discrepancies are critical to understand due to several reasons. First of all, they commonly occur across measurement methods (De Los Reyes & Kazdin, 2005) and areas of clinical science (Achenbach, McConaughy & Howell, 1987), being the differences and their magnitude influenced by the pairs of informants or the type of the problem (Achenbach, 2006). Second, discrepancies are present in different areas of psychological science (Barrett, 2006). Third, it is evidenced that discrepancies account for significant interpretative problems in studying the prevalence of problems (De Los Reyes & Kazdin, 2008), once for some informants the problem may be absent and to the other informant the problem can be severe. At last, discrepancies are related to the way the different informants interact with the child in each context (Beck, Hartos & Simons-Morton, 2006). Therefore, implications of discrepancies in cross-informant agreement increase the need to understand why they exist and are so frequent (De Los Reyes & Kazdin, 2008).

Research on mechanisms accounting for discrepancies is currently at a preliminary stage (De Los Reyes & Kazdin, 2005). Literature that focus on

discrepancies between informants, has been examining the association between discrepancies and characteristics of the informants, namely the informant's depressive symptoms (De Los Reyes, Goodman, Kliewer & Reid-Quiñones, 2008). Indeed, one of the first hypothesis posited to explain why discrepancies exist is referred to the depression distortion hypothesis (Richters, 1992), that states that the rating of the child may be negatively biased by the informant's level of psychopathological symptoms. When informants are depressed they will be more focused in negative and problematic behaviors, influencing their perspective of the problem. According to this hypothesis, informants will not consider positive moments and behaviors when rating the child's difficulties, leading to a biased perspective about the problem.

Despite the importance of integrating information from all informants, and the fact that preschool children have difficulties in explaining their problems, the less studied age is the preschool age. Many studies, with school children and adolescents, have been carried out with other informants (e.g. children, adolescents, independent observers) than parents and teachers, and this research should be used to inform studies to the preschool age. Factors that may influence cross-informant agreement can be divided into three types: 1) child characteristics; 2) parent characteristics; and 3) teacher characteristics. From the most studied child characteristics are the type of problem, age and sex. It is clear that parents and teachers tend to have a better agreement on behavior problems, since they can be directly observed, than on emotional problems that are related to internal states of mind. This difference in agreement may also occur because children in this age, present more difficulties to express issues related to depression or anxiety. Observed behaviors can be easily rated by informants because there are frequently considered more problematic. Regarding child sex, previous studies reported a better agreement for boys than for girls (Berg-Nielsen, 2012; Schroeder, 2010).

Concerning parent characteristics, psychopathology, namely depression has been confirmed as a determinant of informant level of agreement in several studies with clinical samples — indicating that high levels of symptoms are associated with more disagreement (Berg-Nielsen, Vikan & Dahl, 2003; Chi & Hinshaw, 2002; Carter, Briggs-Gowan & Davis, 2004). Two possible explanations to this fact is that parents may over report child's problems in order to elicit services, or simply parents from clinical samples may also report more emotional and behavioral problems because they really exist. Parents from community samples may under-report problems to avoid

stigmatization or attract unwanted involvement with mental health professionals (De Los Reyes & Kazdin, 2004; De Los Reyes & Kazdin, 2005). Other studies report to other familial factors such as stress (De Los Reyes & Kazdin, 2004) or deviant personality traits (Foley, Rutter, Pickles, Angold, Maes, Silberg & Eaves, 2004). Still, there are other maternal characteristics, such as maternal sensitive responsiveness that should be studied, as, to our knowledge; there are no studies that report the influence of this variable on cross-informant agreement on this age.

The teacher's characteristics are the less studied. Though teachers have more experience with children and are aware of their emotional and behavioral development, as part of their training, it does not preclude that they are better informants than parents or that they are not biased by several factors. Some of the most studied characteristics related to teachers and preschool setting are teacher's education, length of time they have known the child, prior experience with children, kind of relationship they have with the child and teacher-perceived conflict with the child (Berg-Nielsen et al., 2012). Berg-Nielsen, Solheim, Belsy, and Wichstrom (2012), found that familial (e.g., parenting stress) and school (e.g., teachers perceived conflict with the child) variables helped to explain discrepancies between parents and teachers of preschool aged children. Authors found that the characteristics of both informants could influence the agreement and the discrepancies about their possible bias in reports. In line with this study, another one (Konold & Pianta, 2005) addressed the issue of influences on informants report of emotional and behavioral problems, in a sample of first-grade children, using a latent Profile Analysis of CBCL and TRF ratings of first graders from the NICHD Study.

The Present Doctoral Dissertation

The exposure to multiple risk factors is clearly harmful to the child's development leading to the emergency of emotional and behavioral problems in preschool aged children. On the one hand, children have to develop competencies to deal with all adversities, and on the other hand, parents need to help children to develop health in adverse contexts, by providing adequate parenting, and preventing that their own difficulties may interfere in the process of evaluating the child's necessities and problems. In response to this conjunction of challenges, it is important to know well the

risk factors that most contribute to emotional and behavioral problems, as well as to understand the characteristics of the informants that can interfere in their assessment of the child's problems. An accurate understanding of the child's functioning and development is fundamental to his or her adaptation and health.

In line with empirical evidence, the goal of the present doctoral dissertation is to answer to four main research questions:

- 1. What are the most frequent risk factors studied in literature, over the past years, that contribute to the development to emotional and behavioral problems (assessed with CBCL 1 ½ - 5) in preschool aged children?*
- 2. Do social and familial risk factors, maternal psychopathology and maternal sensitive responsiveness have a specific contribution to the development of emotional and behavioral problems in preschool aged children?*
- 3. In preschool aged children is the degree of consistency, between parents and teachers, in the rating of internalizing problems, externalizing problems and total problems, the same as the one observed in older children, and does the type of sample (clinical vs community), sex or measure of assessment (ASEBA vs other) interfere in agreement?*
- 4. Do familial and preschool factors predict the agreement and the discrepancies between mothers and preschool teachers?*

The first goal of this doctoral dissertation, addressed in the first article entitled **Risk factors for internalizing and externalizing problems in the preschool years: Systematic literature review based on the Child Behavior Checklist** (Chapter 2) is to focus on internalizing and externalizing problems in preschool age children (between 3 and 6 years old) assessed by the CBCL 1 ½-5 and to identify associated risk factors. Studies published between 2001 and 2014 that used CBCL 1 ½ - 5 to assess emotional and behavioral problems in sample larger than 100 participants, were considered in order to provide a synthesis about the most frequent studied risk factors, as well as the inconsistency in results. The innovation of this article lies on the fact that there is none systematic literature review focused on this problem.

The second aim of this dissertation is addressed in the second article entitled **The role of contextual and parenting adversities** (Chapter 3) by examining the effect of cumulative risk in the development of emotional and behavioral functioning in a

sample of children between three and five years of age. This article focuses on specific risk factors and seeks to know better the contribution of distal and proximal risk factors, not being limited to understand if each risk factor is predictor of emotional and behavioral problems. The cumulative index integrates both distal (social risk and familial risk) and proximal risk factors (maternal psychopathology and maternal sensitive responsiveness). Furthermore, this article also aims to test the individual contribution of each of those risk factors, controlling for child age and sex. Specifically regarding this second aim, the child's age and sex were controlled, once there is no agreement on literature about their effects on the development of the child's emotional and behavioral problems (c.f., Beyer, Postert, Muller & Furniss, 2012; Choe, Olson & Sameroff, 2014; LaGasse, et al., 2012; Utendale & Hastings, 2011).

The third goal of this doctoral dissertation, addressed in the third article entitled **Meta-Analysis of Parents-Teachers Agreement on Preschooler's Emotional and Behavioral Problems** (Chapter 4), is to examine the degree of consistency in the rating of parents and teachers about internalizing problems, externalizing problems and total problems in preschool aged children. Based on existent literature, it was hypothesized to find a low to moderate agreement. Furthermore, the effects of type of sample, measure, and sex on agreement between informants were tested. The innovation of this article relates to the fact that several meta-analyses on cross-informant agreement have been made, but all of them used samples from a wide range of ages. In this article the focus was only in children aged from 3 to 5 years old.

The fourth, and last, aim of this dissertation, addressed in the article entitled **Agreement and discrepancy between mothers' and teachers' report of emotional and behavioral problems in preschool-aged children** (Chapter 5), is to identify the predictors, regarding mothers and teachers agreement and discrepancy, concerning children behavioral and emotional problem in preschool age. Most of the studies that pay attention to factors that influence cross-informant agreement are focused in school children and in psychopathological symptoms of the informants. This article used information about the preschool setting, which has not been carried out in an extensive way until now.

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CHAPTER 2

Risk factors for internalizing and externalizing problems in the preschool years: Systematic literature review based on the Child Behavior Checklist 1 ½ - 5

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Abstract

Early childhood is a common period for the onset of internalizing and externalizing problems. Many are the risk factors that contribute to the emergence of these types of problems. Literature enhances the importance of viewing the child as part of a system, in order to better understand the origin, the trajectory and the impact of risk factors in child mental health in preschool age. The current systematic literature review aims to examine empirical evidence based on the Child Behavior Checklist 1 ½ - 5 (Achenbach, 2001) for risk factors related to the presence of internalizing and externalizing problems in children aged between 3 and 6 years old. The literature review includes articles published from January 2001 to December 2014. Twenty-eight articles that attend to pre-established inclusion and exclusion criteria were reported throughout the review. In general, results indicate that risk factors for internalizing and externalizing problems in preschool age can be organized into three main groups of risks: environment factors, parental / parenting factors, and child factors. It is clear that frequently more than one risk related to the emergence of internalizing and externalizing problems in preschool age children are reported. It is also possible to note that are few risks factors consistently studied in this age, highlighting the need for further investigation.

Keywords: Risk factors; preschool age; CBCL 1 ½ - 5; internalizing problems; externalizing problems.

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Introduction

There is growing awareness of the need for systematic and dimensional assessments of psychosocial functioning during preschool to improve services for children with psychopathological problems and to provide appropriate services to mitigate such problems before they impair a child's social and educational development (Achenbach, 2009; Achenbach & Rescorla, 2000).

The dimensional assessment of psychopathology has some advantages, such as allowing the assessment of disorder severity, subclinical presentations of disorders, and changes in symptoms over time (Lebeau et al., 2012). This empirically based paradigm takes a *bottom up* approach, where syndromes are statistically derived in order to reflect patterns of problems that co-occur in large samples rated by different informants in the same or in different contexts (Rescorla, 2005). The Achenbach System of Empirically Based Assessment (ASEBA) is the gold standard for the empirically based paradigm and captures similarities and differences in how children function under different conditions. One of the advantages of ASEBA is that all of the forms have well-documented reliability and validity in numerous countries and societies (Rescorla et al., 2011).

The Child Behavior Checklist 1/2-5 (CBCL 1 1/2-5; Achenbach, 2001) is part of the ASEBA battery and it is used to assess symptoms of psychopathology in preschool-age children and to provide a dimensional perspective based on seven syndrome scales (emotionally reactive, anxious/depressed, somatic complaints, withdrawal, attention problems, aggressive behavior, and sleep problems). There are also five scales oriented to DSM classifications (affective problems, anxiety problems, pervasive developmental problems, attention deficit/hyperactivity problems, and oppositional defiance problems) and two second-order dimensions: internalizing problems and externalizing problems. Factors under internalizing problems include syndromes concerning symptoms of anxiety, depression, withdrawal and somatic complaints that are essentially related to the child's subjective difficulties and problems. Factors under externalizing problems mainly include conflicts with others, including symptoms compatible with attention problems and aggressive behavior. The CBCL 1 1/2-5 is completed by parents, parent surrogates, or others who observe children in home-like contexts. The informants rate 99 items, using a 0-2 scale, and provide a description of the child's behaviors, their

greatest concerns about the child and the best things about the child. Multicultural studies (c.f. Rescorla et al., 2011) revealed substantial consistency in CBCL 1 ½-5 mean scores across many societies despite great variations in geography, political/economic systems, size, population, ethnicity/race, and religion.

The existence of quality measures to assess psychopathology in preschool children is quite important, once that early experience has a profound effect on human development, and this age is considered a critical development period, meaning that there is a window of opportunity for certain types of experiences to have a foundational effect on the development of skills or competencies (Fox & Rutter, 2010). To date, there is disagreement in the literature concerning the risk factors that might cause psychopathology in preschool-age children (Ellis, Berg-Nielsen, Lydersen & Wichstrom, 2012). Research in child psychiatry and psychology suggests that most children are exposed to a single physical or psychosocial risk factor during the first years of life and suffer little if any lasting harm from that exposure (Ogg, Dedrick, Brinkman & Carlson, 2010). However, children who are exposed to multiple risk factors are much more likely to experience significant internalizing and externalizing problems. The cumulative risk approach has been useful in explaining socioemotional and health outcomes (Evans, Li & Whipple, 2013), and it is well documented in literature that different domains of a child's life — such as familial, social, parental, biological or even prenatal factors — can influence the development of internalizing and externalizing problems.

The study of risk factors associated with internalizing and externalizing problems in preschool-age children has become increasingly relevant, once that providing a deeper knowledge of the causes and effects of disorders will contribute to delineate more efficient interventions, both preventive and remedial (Kovacs & Lopez-Duran, 2010). The main goal of this systematic scientific review is to focus on internalizing and externalizing problems in preschool-age children (between 3 and 6 years old) assessed by the CBCL 1 ½-5 and to identify associated risk factors.

Method

Search Strategy

Three electronic information databases (*Psycharticles and Psychology, Behavioral Sciences Collection and Medline*) were used to identify published articles on the topic. Unpublished research was not considered. The search strategy included the following terms: “Preschool age” OR “CBCL” OR “Risk Factors” AND a) “Internalizing problems”; b) “Externalizing problems”; c) “Emotional problems”; d) “Behavioral problems”. These combinations were used to identify risk factors in preschool-age children from studies using the CBCL 1 ½-5 as a measure for assessing behavioral and emotional problems. This combination of terms aimed to provide a wide range of results, not focusing on a specific type of risk factors (e.g., parental, biological), once that our goal was to provide a global review of risk factors. After identifying relevant articles, longitudinal studies were identified and searched to evaluate whether they were associated to other relevant articles to be included in the review. The process was repeated by a second researcher.

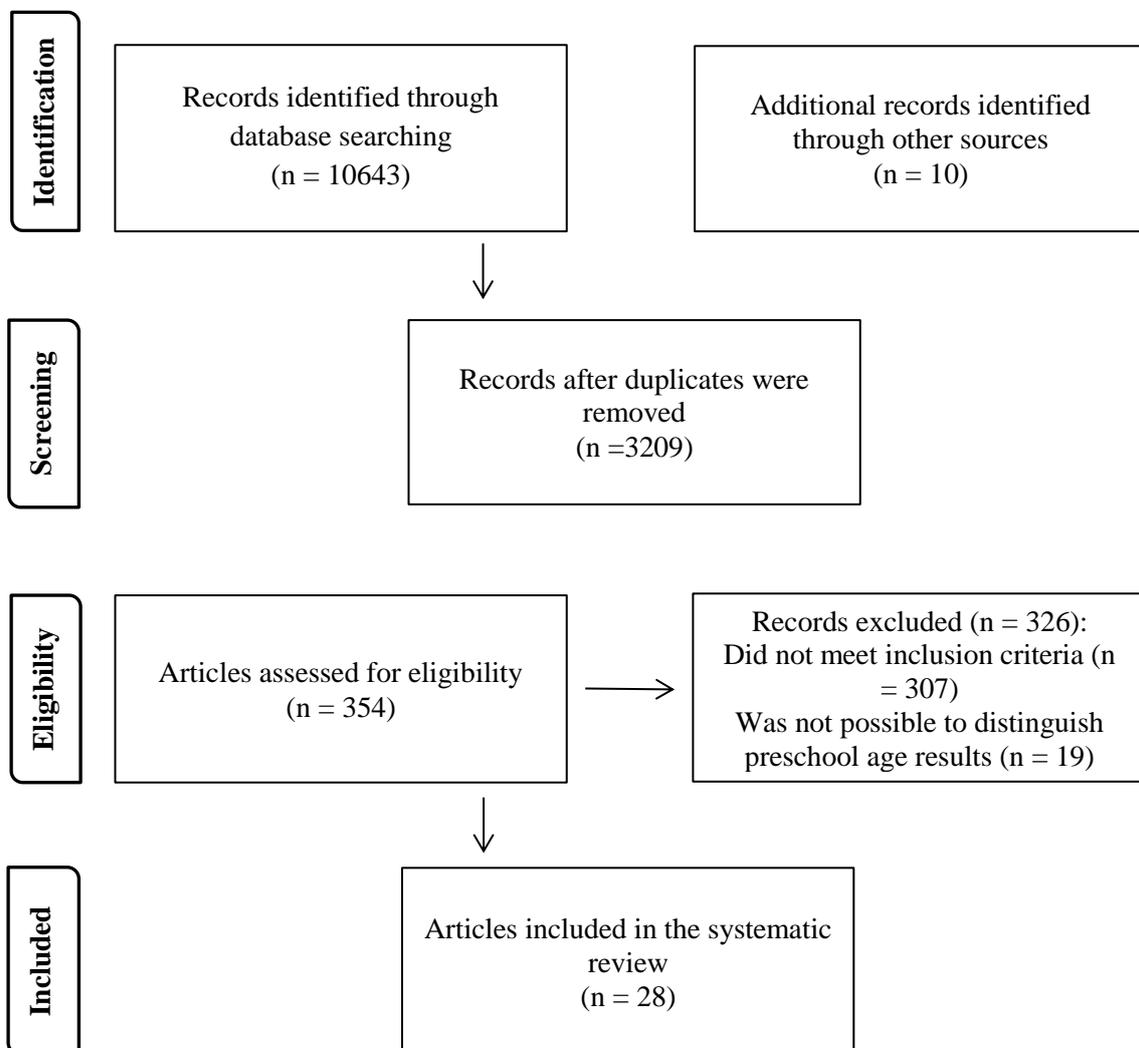
Inclusion and Exclusion Criteria

All of the published empirical studies were searched and reviewed against the following inclusion criteria: a) inclusion of the CBCL 1 ½-5, which allows for a reliable assessment of the frequency and intensity of clinically relevant internalizing and externalizing problems and provides dimensional data of a child’s mental health problems; b) published between 2001 and 2014 — CBCL 1 ½ - 5 only was available in 2000, and c) written in English. Articles were excluded when a) clinical samples were used — only the general population was of interest; b) samples included children with physical disabilities — decreasing the possibility of an over-representation of symptoms that could be secondary to a physical handicap; c) studies included children who were institutionalized or adopted — research indicates that institutionalized children are usually deprived of parental care (Ghera et al., 2008); d) studies used prior versions of the CBCL; and e) studies used a sample minor than 100 participants — studies that use larger sample sizes have a better statistical power, as larger samples will allow a better statistical power to enhance the possibility of generalization of results (Westfall, Kenny

& Judd, 2014). Only internalizing and externalizing problems assessed by the CBCL 1 ½ - 5 were reported, even if additional measures were used to assess psychopathology.

The preliminary search identified 10643 articles, but 7434 were duplicates. The remaining 3209 studies were examined. Ten additional records (from longitudinal studies) were found, but only 3 were included due to the inclusion and exclusion criteria. In total 28 articles were included in the review. The process of reviewing and eliminating non-relevant articles followed PRISMA guidelines (Moher, Liberati, Tetzlaff, Altman & The PRISMA Group, 2009) and is shown in Figure 1A.

Figure 1A. PRISMA Flowchart



In the results and discussion sections, the articles included in the review will be referred using numbers in order to avoid large amounts of references and to facilitate the reading. The studies were numbered in Table 1A.

Table 1A. Studies Included In The Systematic Literature Review

Study	N (%Male)	Type of Study	Analysis
2007			
1. Mistry et al.	2702 (49%)	Longitudinal	Correlations
2008			
2. Bayer et al.	488 (51.4%)	Longitudinal	Regression analysis
3. Chartrand et al.	169	Cross-sectional	t-test
4. Paterson et al.	709 (65.3%)	Longitudinal	GEE
5. Trentacosta et al.	731 (51%)	Cross-sectional	Correlations
2010			
6. Herba et al.	743 (51.1%)	Longitudinal	Regression analysis
7. Poehlmann et al.	172 (53%)	Longitudinal	Regression analysis
2011			
8. Gleason et al.	350	Cross-sectional	t-test
9. Henrichs et al.	5497 (49.8%)	Longitudinal	Regression analysis ANCOVA Correlations
10. Utendale et al.	115 (42.6%)	Longitudinal	Bivariate analysis Regression analysis
11. Velders et al.	2698 (50.1%)	Longitudinal	Correlations Bivariate analysis
2012			
12. Bayer et al.	397 (52.4%)	Longitudinal	Latent Class Analysis
13. Ezpeleta et al.	622 (50%)	Longitudinal	Correlations
14. Kersten-Alvarez et al.	142 (57.7%)	Longitudinal	Correlations
15. Liles et al.	212 (53.8%)	Longitudinal	t-test
16. Poehlman et al.	230	Longitudinal	Regression analysis
17. Steenweg-de Graaff et al.	3209 (48.7%)	Longitudinal	Univariate analysis
18. Verlinden et al.	3761	Longitudinal	Regression analysis
2013			
19. LaGasse et al.	330 (51.5%)	Cross-sectional	Correlations

			t-test
20. Liu et al.	1385	Cohort	t-test
21. Paterson et al.	1047 (51%)	Cohort	Correlations
22. Twomey et al.	214 (52%)	Longitudinal	Correlations
23. van Battenburg-Eddes et al.	2280	Longitudinal	Correlations
2014			
24. Ciciolla et al.	250 (50.7%)	Cross-sectional	Correlations
25. Liu et al. (a)	1372 (55%)	Cohort	Correlations Regression analysis
26. Liu et al. (b)	1341(55%)	Longitudinal	Correlations
27. Knudsen et al.	46756 (51%)	Longitudinal	Correlations
28. Steeweg-de Graaff et al.	3104 (50.5%)	Longitudinal	Correlations

Results

Most studies (71.43%) included in this systematic review had a longitudinal design, 17.86% were cross-sectional studies, and 10.71% were cohort studies.

The 28 studies included allowed for the identification of many risk factors that have been studied as related to internalizing and externalizing problems. In Table 2A all risk factors that were found are reported, however, only risk factors reported in three or more articles were considered in the results' section. The most studied risks can be divided into three categories: risks in the family and social context, risks involving the parents, and risks related to the child (Zeanah, Boris & Lareau, 1997). Therefore, the most consistent risk factors identified in the articles were organized according to three main categories of risk: a) environmental; b) parental/parenting; and c) child. Throughout the review, significant and non-significant results are presented.

Table 2A. Risk Factors And Direction Of Results

Risk factors	Direction of results	Studies
Acculturation	Acculturation does not increases IEP in 1/1 studies	21
Basal vagal tone	Higher basal vagal tone increases EP, but not IP, in 1/1 studies	16
Birth weight	Low birth weight increases IEP in 1/1 studies	11

Blood lead concentration	Blood lead concentrations does not increases IEP in 1/1 studies	26
Cumulative risk	Exposure to multiple risks (Cumulative risk composite: overcrowding, single parent, neighborhood, parental age, criminal conviction, drug/alcohol problem) increases IEP in 1/1 studies	5
Diet	Mediterranean diet increases EP, but not IP, in 1/1 studies Traditionally Dutch diet increases EP, but not IP, in 1/1 studies	28
Family functioning	Parental prenatal family dysfunction increases IEP in 1/1 studies	11
Firstborn	Being firstborn increases IEP in 1/1 studies	11
Ganglithalamic characteristics	Ganglithalamic ovoid diameter increases IP, but no EP, in 1/1 studies	6
Household	Larger households increases EP in 1/1 studies	21
Iron status	Low iron status does no increases IEP in 1/1 studies	25
Suburbs	Live in the suburbs increases IEP in 1/1 studies	25
Maternal marital status	Being a single mother increases IP in 1/1 studies	21
Maternal plasma folate concentration	Low concentrations of maternal plasma folate concentration does not increases IEP in 1/1 studies Folate deficiency during pregnancy increases IEP in 1/1 studies Inadequate folic acid supplement use increases IEP in 1/1 studies Homocysteine does not increases IEP in 1/1 studies	17
Parental professional status	Deployed parent does not increase IEP in 1/1 studies	3
Ventricular characteristics	Ventricular volume increases IP measured in fathers report, but not in mothers, in 1/1 studies Ventricular volume does not increases EP measured in mothers or fathers report in 1/1 studies	6
Vocabulary development	Expressive vocabulary delay increases IEP measured in mothers report, but not in fathers, in 1/1 studies Receptive language delay is does not increases IEP in 1/1 studies	9
TV	Having a TV on the bedroom increases IEP in 1/1 studies Sustained exposure increases EP in 1/1 studies Exposure to TV only 1h per day does not increase EP in 1/1	1, 18

	studies	
	Unsuitable TV exposure does no increases EP in 1/1 studies	
	High TV exposure increases EP in 1/1 studies	
Violence exposure	Severe physical inrapartner violence perpetration increases IEP in 2/2 studies	4, 21
Expectations/ concerns about the child	Inappropriate expectations does not increases IEP in 1/1 studies	
	Inappropriate developmental expectations increases IP in 1/1 studies	2, 8, 12
	Parental concern about mental health increases IEP in 1/1 studies	
Temperament	Effortful control does not increases EP in 1/1 studies	
	Low inhibitory control increase EP in 1/1 studies	
	Irritability increases IP in 1/1 studies	7, 10,
	Negative affect increases IEP in 1/1 studies	13
	Anger increases EP in 1/1 studies	
	Slow soothability increases EP in 1/1 studies	
	Low emotional control increases EP in 1/1 studies	
Parental education	Paternal low education increases IEP in 1/1 studies	8, 11,
	Maternal low education increases IEP in 2/3 studies	25
Child gender	Being a boy increases EP in 3/3 studies, and IP in 1/1 studies	8, 9, 10,
	Being a boy or a girl does not increases IEP in 1/1 studies	19
Maternal age	Being a younger mother increases IEP in 3/4 studies	8, 11, 19, 22
SES	Low SES increases IEP in 1/2 studies	8, 10,
	Low SES increases EP in 2/2 studies	21, 24
Substance abuse	Pre-pregnancy risk drinking increases IEP in 1/1 studies	
	Methamphetamine use during pregnancy increases IEP in 1/1 studies	
	Methamphetamine use during pregnancy increases EP in 1/2 studies	15, 19, 20, 21, 22, 27
	Environmental tobacco exposure during pregnancy increases IEP in 1/1 studies	
	Maternal smoking increases IP in 1/1 studies	
Disciplinary practices/Parental interactions	Harsh discipline increases IEP in 2/2 studies, and EP in 1/1 studies	2, 7, 12, 16, 21, 22, 24
	Low nurturance increase IP in 1/1 studies, but not IEP in 2/2 studies	

	Intrusive interactions does not increases IEP in 1/1 studies	
	Frustrated interactions does not increases IEP in 1/1 studies	
	Low developmental stimulation increases IEP in 1/1 studies	
	Low emotional responsiveness increases IEP in 1/1 studies	
	Less sensitive parenting increases IEP in 1/1 studies	
	Low quality parenting interactions increases IP, but not EP in 1/1 studies	
	Parenting stress increases IP in 2/2 studies	

	Parental prenatal and postnatal depression increase IEP in 2/2 studies	
	Parental prenatal and postnatal hostility increase IEP in 1/1 studies	2, 7, 8,
Maternal/father/parental/familial mental health	Parental prenatal anxiety increases IEP in 1/1 studies	11, 12,
	Post-Partum Depression increases EP in 1/1 studies	14, 19,
	Maternal stress increases IEP in 1/1 studies, and IP in 1/1 studies	21, 22,
	Maternal depression, but not anxiety, increases IEP in 2/3 studies	23,
	History of psychiatric disorder in the family increase IEP in 1/1 studies	

Environmental Risk Factors

Socioeconomic Status

Several studies (c.f. Gleason, Zamfirescu, Egger, Nelson & Zeanah, 2011; Ronan, Canoy & Burke, 2009) indicate that socioeconomic status (SES) is highly associated with disturbance in preschool-age children. In the review, four studies examined the role of SES on internalizing and externalizing problems. One study (8) indicated that low income increases internalizing and externalizing problems and two studies (21, 24) reported that low SES increases externalizing problems. Only one study (10) stated that SES does not have an influence on internalizing and externalizing problems. The study conducted with the larger and most representative sample (21), aimed to understand the relationship between child behavior and sociodemographic variables, such as SES. The other three studies report the effect of SES as a minor result, and the study with the smallest sample was the only one to report no significant results.

All of these studies used the mother as informant; it is well known that mothers can over or under report internalizing and externalizing problems. Although most of the epidemiologic studies (e.g., Egger & Angold, 2006) in child psychiatry use parental report, namely from mothers, this type of report is limited. One way to overcome this problem is to use the combination of reports (e.g., father and mother) or using only one of them, but at the same time assessing the agreement between informants in order to examine the quality of the information. Several factors can be accountable for causing informant bias, such as social desirability or fear of having children labeled as problematic; factors like this could explain the absence of significant results in study 10.

In sum, SES appears to be a relevant variable to the development of internalizing and externalizing problems, confirmed by three of the four studies reviewed, in line with literature that was not included in the review (c.f. Flouri, Tzavidis & Kallis, 2010), stating that the family context, namely SES, has a major effect on child psychopathology and is usually related to other family adversities, such as maternal low education.

Parental/Parenting Risk Factors

Maternal Education and Age

The effect of maternal characteristics such as education and age on child outcomes has been widely considered in the literature. Three studies (8, 11, 25) examined the effect of parental education on child's internalizing and externalizing problems. In two studies (11, 25) low maternal education is related to increases in internalizing and externalizing problems, and one found no significant results on internalizing and externalizing problems (8). Only one study (8) assessed the effect of father low education, finding significant results indicating that when the fathers have a low education level, children tend to present more internalizing and externalizing problems. All studies provide information on descriptive data, showing that on the three articles, mothers have a similar education distribution — almost half of the mothers have a low education. The study with the smallest sample ($n = 350$) is the only one that found non-significant results. It is probably due to the sample size that differences were

not found, which is concordant with the idea that the larger samples allow the identification of effects, even if they are minor.

Three (11, 19, 22) of the studies that surveyed the influence of maternal age found significant differences between younger and older mothers — the younger mothers report more internalizing and externalizing problems than the older ones. Only one study (8) found no significant results. The mean age is very similar in all studies, ranging from 25 to 30 years. Although the study 8 is not the one with the smallest sample, the study with a smallest sample ($n = 214$) is part of a longitudinal research project, and mothers selected to this analysis were from a low SES and were the youngest from all the four studies. In all the four studies analyses were based on correlations and t tests, indicating that the study 8 did not use more exigent statistical procedures and the absence of differences can be a characteristic of the sample.

Moreover, it is relevant to notice that the non-significant results on maternal education and age are provided by the same study (8), and they were reported as minor results in the article.

These two factors reported above may influence and enhance the odds of these children to have more internalizing and externalizing problems than others and also statistical differences can more easily be found; however, in the literature it is well stated that low maternal education and young age are variables associated with a lower SES. These mothers are typically under significant stress due to other variables such as unemployment or housing conditions, leading to a low SES that has already been associated with many other risks.

Substance abuse

Studies related to substance abuse found that pre-pregnancy risk drinking (27) increased internalizing and externalizing problems, methamphetamine use during pregnancy increases internalizing and externalizing problems (19) and externalizing problems (22), tobacco exposure during pregnancy (20) and maternal smoking during child preschool years increases internalizing and externalizing problems (21). One study reported non-significant results to the effect of methamphetamine exposure during pregnancy in externalizing problems (15). Results evidence the robustness of the effect

of substance abuse, especially during pregnancy, to the development of internalizing and externalizing problems.

The unique study that account for non-significant results is the one with the smallest sample, however it shares the sample with studies 19 and 22, once they are from the same longitudinal study and have a similar number of participants in the analyses. Perchance differences among these three studies are due to the fact that they do not use the same exact participants. For instance in study 22 the sample is constituted by mothers of children aged 5 years old. In study 19 the sample is largest (n = 330) when compared to the sample of study 15 (n = 212), enhancing the possibilities to find significant results. All the other studies used very large samples, ranging from 1385 to 46756, evidencing the strength of the results.

These findings should be analyzed in the context of maternal functioning as maternal substance abuse and maternal psychological difficulties coexist in many cases and it may be difficult to ascertain their relative influence on internalizing and externalizing problems. For example, one study (Accornero et al., 2002) found that the co-occurrence of maternal drug use and psychological distress may further compromise overall behavioral health and parenting behavior. Drug-using mothers in the study also suffered from psychological distress, and this may have a more negative influence on child behavior than drug-using mothers not experiencing psychological distress.

Maternal/Paternal/Parental/Familial Mental Health

Maternal psychopathology, particularly depression, has been extensively studied and is considered a major influence in the development of internalizing and externalizing problems in preschool-age children. Almost all of the studies that aimed to examine the contribution of caregiver's mental health found significant associations between the presence of symptoms and internalizing and externalizing problems.

Parental prenatal and postnatal depression was associated with internalizing and externalizing problems (11, 23), and the same was observed with hostility (11). In the case of anxiety, only prenatal anxiety was related to internalizing and externalizing problems (23). Results also indicated that Post-Partum Depression (PPD) increased the odds of externalizing problems (14). Besides prenatal and postnatal assessments, others studies examined the role of psychological symptoms during preschool years, where

maternal depression increases internalizing and externalizing problems (7, 21) — except in one study (2); and maternal stress increases internalizing problems (12). Two studies found that history of psychiatric disorder in the family increased internalizing and externalizing problems (8).

The psychological functioning of the caregiver is a variable of high importance once that when psychological functioning is compromised mothers and fathers tend to be less supportive to their children as well as less capable of teaching their child to regulate his/her emotions. Parents with a low psychological functioning can also over-identify child's internalizing and externalizing problems, reporting problems where they do not exist. Throughout the studies, mental health is a very consistent and robust variable once those significant results were found in large but also in small samples. For instance, there was one study (14) that used two groups, one with children from a community with 113 children and no history of PPD, and other group of mothers with PPD ($n = 29$), and even with this large difference between the groups, it was found that children from mothers with PPD present more externalizing problems in preschool, evidencing the long lasting effects of maternal psychological functioning on child's impairment.

Maternal psychopathology and stress are important variables to study as mothers prone to psychopathology may be more likely to feel “out of control” and thus less available to help their child regulating negative emotions. One possible conceptual explanation is that mothers may adopt passive emotional coping strategies and thus fail to model appropriate emotional regulatory strategies (Coyne & Thompson, 2011). It is important to note that there are studies (c.f., Coyne et al., 2011) where maternal locus of control is associated with a child's internalizing problems, even when controlling for maternal level of education, child age, and whether mothers completed the questionnaire at school or at home.

During pregnancy and neonatal period, the parents' mental health, and specifically maternal mental health, is extremely important to consider in family functioning, as it interferes with daily interaction affecting contextual factors. For example, in families with a depressed parent, the interaction between spouses is often characterized by increased hostility and tension. Usually, these families report poor family functioning more frequently than families with no depressed parents do.

Therefore, children in these families are at an increased risk of internalizing and externalizing problems, not only because they have a parent with mental health problems but also because of the increased likelihood of exposure to marital conflict and poor family functioning (Hughes & Gullone, 2008).

Disciplinary Practices/Parental Interaction

In what concerns to disciplinary practices and parental interactions, results are not as consistent as they are in other variables. Harsh discipline and low nurturance were examined in the same studies. On one hand, harsh discipline was related to the development of internalizing and externalizing problems (2, 12) and externalizing problems (21), and on the other hand, low nurturance was associated to internalizing problems (12), but not to internalizing and externalizing problems (2, 21). Besides the common study (2) that reports significant and non-significant results is a large study, it is a cohort study of a specific population, Pacific Islands, though the other two studies are from longitudinal studies, with a smallest number of participants, but from Australia, that represents a more proximal context to the standard around the world. The study of the Pacific Islands has a large sample ($n = 1047$), and one of the requests to parents participating in the study was that one of the parents at least should be identified as being of Pacific Islands ethnicity and a permanent resident, which, by itself, represents some bias in the generalization of the results to other ethnicities or geographic areas where there are many ethnicities and cultural differences.

One study (16) indicated that intrusive and frustrated interactions between parents and children do not increase internalizing and externalizing problems, but the same study reported that low developmental stimulation (16) is associated with internalizing and externalizing problems. Other studies stated that low emotional stimulation (22) and less sensitive parenting (24) increase the odds of children developing internalizing and externalizing problems. In addition one study reported that low quality of parenting increases internalizing problems, but not externalizing problems (7), and two studies (22, 24) indicated that parenting stress increases externalizing problems. Attending to all of these results one can hypothesize that it is not parenting *per se* that can influence child's outcomes. For example, in some studies other variables have to be considered, such as maternal substance abuse (22), child developmental delay (24), and preterm birth (7). It is important to attend to other

variables because they can be specific of the samples used in the studies and consequently influence the results.

Apart from findings and specific characteristics of the samples used, negative parenting practices have been consistently documented as being related to externalizing problems, but they have been less frequently examined as predictors of internalizing problems. Parenting strategies that increase the reciprocity between disciplinary practices, such as harsh discipline and internalizing and externalizing problems are troublesome as these types of practices usually lead to an environment that is driven by non-effective communication of a child's needs and by parents' rules.

Expectations/Concerns about the child

One study (2) reported that parents' inappropriate expectations of a child between 24 and 36 months old are not related to internalizing and externalizing problems. However, other study (12) found that inappropriate developmental expectations of children from 24 to 36 months and from 36 months to 5 years old are related to increases in internalizing problems, but not externalizing problems. These two articles, even though they are part of the same longitudinal study, report different number of participants, which can help to explain different results. However, it is also important to note that in study 12, inappropriate developmental expectations included two time periods. Perhaps those parents who have some notion of what is expected from their children at different ages tend to have more expectations for their own children than other adults might have — parents might expect, for example, better behavior from their own children, when compared to other children.

One last study (8) found that parental concern about the child mental health increases internalizing and externalizing problems. It is important to notice that sometimes parents over-report child's problems because they are not aware of children's normal development and that some problems are normative in some ages (e.g. temper tantrums at 2-3 years of age). Furthermore, in some cases parents are influenced by their negative evaluation of situations or their tendency to focus only in what is negative. It would have been important, for example, in this study, to assess the knowledge of parents about children's normal development.

Child Risk Factors

Sex

Four studies (8, 9, 10, 19) examined children's gender and its association with internalizing and externalizing problems. Three studies (8, 9, 19) indicated that boys present more externalizing problems than girls, and one study (19) referred that boys have more internalizing problems than girls. Only one study (10) found non-significant results to internalizing and externalizing problems. The study that found non-significant results has the smallest sample and half of the sample is constituted by girls, which may be hiding sex differences.

Although there are no large consistent findings about sex differences, differences found between boys and girls are relatively easy to interpret. Young children exhibit sex differences in traits that may be relevant to the development of disruptive behavior disorders. Boys exhibit lower levels of effortful control (i.e., deliberate control including attention focusing and shifting) and higher levels of surgency (i.e., high-intensity pleasure, activity, and sociability) when compared to girls (Else-Quest, Hyde, Goldsmith & Van Hulle, 2006). Boys tend to play more physical games than girls and tend to solve their problems using aggression; by contrast, girls tend to be sad and might not tell anybody. However, sex differences are not a major result of the studies, and there are few studies controlling for this effect when community samples are used (Ruiter, Dekker, Verhulst & Koot, 2007).

Temperament

Temperament, and specifically, inhibitory control, irritability, negative affect, anger, slow soothability and emotional control were shown to be relevant risk factors for the development of internalizing and externalizing problems. Low inhibitory control (10), anger (13), slow soothability (13) and low emotional (13) control are associated to increases in externalizing problems, and irritability (13) and negative affect (13) are related to the presence of internalizing problems and internalizing and externalizing problems, respectively. The only dimension of temperament that is not linked to internalizing and externalizing problems, namely to externalizing problems, is effortful control (7).

From the three studies, the most robust is the one which contributes the most (13), regarding the number of significant results, to the literature about the influence of temperament in internalizing and externalizing problems. This study is the one with the larger sample and participants are part of a longitudinal study. Two of the studies (10, 13) used the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey & Fisher, 2001) to assess temperament dimensions. The other study (7) used an observational measure where five components of effortful control were analyzed: ability to delay, suppressing-initiating activity to signal, effortful attention, slowing motor activity and lowering voice. The truth is that observational measures are more robust than questionnaires — that usually are completed by the same informant that reports child's internalizing and externalizing problems; but no other study assessed effortful control, hence preventing the comparison of the quality and robustness of all the results. Nevertheless, it would be quite interesting to assess inhibitory control, irritability, negative affect, anger, slow soothability and emotional control with observational measures in the samples that were studied in order to examine if the results would be in the same direction and have the same significance.

Discussion

It is of primary importance to study the risk factors that are associated with internalizing and externalizing problems, especially in children of preschool age. This period of development is highly sensitive to changes and to the impact of negative situations/events. Thus, the main goal of this systematic review was to identify risk factors for the development of internalizing and externalizing problems in preschool-age children as assessed with the CBCL 1 ½ - 5. Twenty-eight articles were included in the review.

When a single risk factor is studied, it is quite difficult to find homogeneity in the literature. For instance, when SES is reported, usually it is indirectly influenced by other variables, such as unemployment or social support that have both direct and indirect influence in the development of internalizing and externalizing problems in children. When considering low SES other risks should also be attended, such as quality of home environment, including violence in the family, conflicts between family members, presence of the father, the number of siblings and birth order. These

evidences should be understood in a comprehensive manner, as they are usually influenced by other variables. When the mother is single or the biological father is absent, the mother experiences higher levels of parental stress that will influence her relationship with the child, perhaps because the mother does not have the same spousal support that partnered mother's do. It is easily assumed that while single motherhood has an impact on a child's internalizing and externalizing problems, other variables are indirectly associated as well. This idea turns our attention to risk composites. The literature reflects the strong correlation between the presence of multiple risks and internalizing and externalizing problems, as shown in Trentacosta et al. (2008), where cumulative risk composite (teen parent, low education, single parent, overcrowding, criminal conviction, drug/alcohol problem, dangerous neighborhood) was correlated to internalizing and externalizing problems, but correlational analysis between individual risk factors and CBCL 1 ½ - 5 scores was very small and largely insignificant.

Regarding maternal characteristics, such as education level or age it is also relevant to consider other risks, such as substance abuse and maternal psychopathology. It is well accepted that mothers who abuse substances tend to have children who exhibit more symptoms of internalizing and externalizing problems. Maternal psychopathology, and specifically maternal depressive and anxious symptomology, is one of the best-studied risks. Still, it is important to understand whether children truly have a higher instance of internalizing and externalizing problems or if biased maternal perception, influenced by psychopathological symptoms, leads mothers to report problems that do not actually exist (NICHD, 1999). Our review shows that maternal risk factors are thought to be directly linked to parenting by decreasing positive parenting behaviors (e.g., sensitivity) and increasing negative behaviors (e.g., harsh parenting). In Cabrera, Fagan, Wight & Schadler (2011), maternal risk (e.g., depression) was directly linked to the quality of mother-child interactions, and the presented results indicated that harsh disciplinary practices, critical parenting and uninvolved parenting all influence child development in relation to internalizing and externalizing problems.

The impact of child characteristics such as sex seems to have a significant influence on internalizing and externalizing problems. When sex differences are reported, usually more problems are found in boys than in girls, particularly with externalizing problems. The impact of child characteristics on internalizing and externalizing problems could be related to social demands emerging during the

preschool period, when this set of skills is relevant for engaging in adaptive relations with peers and adults. Children presenting difficulties in this area may not be successful in problem-solving situations.

Temperament is one characteristic that requires further study, especially using observational measures. In some studies (e.g., Poehlmann et al., 2012), temperament is associated with internalizing and externalizing problems, but it can also be a moderator between other risks (e.g., contextual, maternal) and internalizing and externalizing problems. This is consistent with Belsky's (1997) differential susceptibility hypothesis, which argues that the environment affects children differently depending on their temperament. It is well known that reactive children, sometimes described as "difficult," can be intensely distressed and hard to soothe and may have internalizing and externalizing problems.

The presence of a single risk factor rarely occurred in the articles reviewed. In most studies, two or more risk factors were present, which supports a cumulative risk approach to understanding the development of psychopathology (Ogg, et al., 2010), which is in line with the idea that cumulative risk is harmful and contributes more to the development of internalizing and externalizing problems when compared to the effect of a single risk (Evans et al., 2013).

This literature review highlights the need for an integrative approach — combining developmental psychopathology and a family-system approach — to research on risk factors for preschool-age psychopathology, with potential implications on clinical assessments of children in that age group (Mash & Hunsley, 2007). Children have their own individual characteristics (e.g., temperament); they live, in most cases, with their biological families and they are integrated in a community. Risk factors for internalizing and externalizing problems can be more distal (e.g., ethnicity) or proximal (e.g., maternal psychopathology), and can influence one other (e.g., relation between SES and low maternal education), often leading to a snowball effect that increases the probability of non-adaptive developmental trajectories. Thus a comprehensive and integrative approach to children's psychosocial development not only enhances the quality of problem analysis and understanding but also contributes to better case formulations, as well as an earlier intervention to multiple problems. As risks are identified and their influence is reduced, the chance of children presenting normative

developmental trajectories and not developing internalizing and externalizing problems increases. Taking this in consideration, interventions in community and family settings should occur as early as possible, should focus on the different risk factors assessed, and contribute to a positive and protective effect on children's development.

Methodological Issues

In the review, we did not use a scale to assess the quality of the studies as our aim was to provide information on what has been studied and what variables seem to be most common, independently of the study characteristics. Still, articles with less than 100 participants and using other measures than CBCL 1 ½-5 for assessing psychopathology were excluded. Thus, the quality of the results was enhanced, by reporting findings from larger studies and focusing the assessment on one of the most robust and current measures.

Reporting the results from these 28 studies allows us to draw some conclusions about methodological features and suggest recommendations to strengthen future research. Not all studies present the same methodological quality, probably due to: 1) their aims — which influence the number of participants and the type of analysis, and 2) the variables that were studied — some of which are more difficult to study because not all participants are available to provide information (e.g., substance abuse). Consequently, some methodological issues should be discussed and analyzed in order to provide the reader some ideas to keep in mind when reviewing the studies.

In five studies, information about the child's sex was not available. It is relevant to note that girls and boys are different in their patterns of functioning, and most studies cite differences in internalizing and externalizing problems between girls and boys. In some studies, with comparison groups, it was not possible to understand whether the groups were matched according to the children's age and sex. It is also relevant to note that when comparison groups are used they do not always have equal numbers of participants, which can bias the results and conclusions. Although there is a large variance in sample size (min = 115; max = 46756), it is possible to confirm the influence of some risk factors for the development of internalizing and externalizing problems. Studies that used a larger sample size will have a better statistical power, as

larger samples will allow a better statistical power to enhance the possibility of generalization of results (Westfall, Kenny & Judd, 2014).

Some of the risk factors found in this literature review (e.g., sex, SES, disciplinary practices) were reported in different samples from different cultures, leading us to believe that they have a strong effect on development. Nevertheless, samples' specificities need to be weighted when generalizing results. Inconsistencies found in the results can be a result of how risk was assessed, of informants' values and perceptions, or even of culture characteristics and culturally accepted behaviors (Gross et al., 2006).

Most of the studies followed a longitudinal design. Typical longitudinal studies focus on change processes over months or years, and there is general agreement that longitudinal data are necessary to approach questions regarding developmental and age-related changes within individuals (Rast & Hofer, 2014). Thus, the influence of risk factors can be better understood when there is a starting point of assessment (e.g., a few months before birth) and when the influence of risk factors is reassessed from time to time (e.g., every 6 months). No studies that assessed maternal postnatal psychopathology reported maternal psychopathological symptoms prior to pregnancy and throughout the years, or examined the impact of the continuity of maternal depressive symptoms on child development. In most studies, demographic characteristics were assessed using questionnaires administered to or interviews with mothers. In some cases, mothers may hide difficult situations (e.g., conflicts with a partner, domestic violence to the child) that can have an effect on the development of internalizing and externalizing problems. Few studies used observational measures, and the ones that did it used them to assess maternal interactions with the child or lab observations during tasks.

Future Research

The present systematic review provides useful and practical information on risk factors for the development of internalizing and externalizing problems. It is possible to conclude that a wide range of risk factors influence internalizing and externalizing problems, but it is important to note that many of them act as small interferences in development and have a higher impact when conjugated with other risks, which is in line with the cumulative risk approach. Thus future studies should attempt to control for

important variables that do not have a consistent pattern of influence on internalizing and externalizing problems (e.g., child sex).

The present systematic literature review also highlights a small group of risk factors that are consistently studied, as from the 28 identified risks, only nine were reported in three or more articles, and only three risk factors (parental substance abuse, disciplinary practices and familial mental health) were analyzed in five or more articles. In line with this, future studies need to focus on those risks that are less studied or are more controversial.

In future studies, some variables should be more consistently controlled before and after children develop internalizing and externalizing problems, such as maternal psychological functioning or spousal support, to clarify the real impact of these variables on child's functioning. There are costs associated with these types of studies, and consequently they are difficult to perform.

When comparison groups are used, researchers should strive to have groups that are very similar in some characteristics, such as child age, child sex, and SES, and most importantly to have a similar number of participants in each sample. Otherwise, results may be compromised by simple questions related to the validity and reliability of the analysis. It would also be important to perform studies using observational measures, as they provide significant information that is not possible to collect using questionnaires (e.g., a child's interaction with peers).

Finally, biological and genetic studies are more commonly used today; however, more studies should be conducted to explore additional possible interactions between biological and genetic characteristics and contextual and parental factors during preschool age and their impact on internalizing and externalizing problems.

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CHAPTER 3

The role of contextual and parenting adversities on preschoolers' emotional and behavioral problems

The role of contextual and parenting adversities on preschoolers' emotional and behavioral problems²

Abstract

The present study aimed to examine the effect of cumulative risk, in terms of distal and proximal factors, in the development of preschoolers' emotional and behavioral problems. This study also aimed to test the individual contribution of each of those risk factors, controlling the results for child age and sex. Participants included 275 children (48.7% male) and their mothers. Mothers were asked to complete the CBCL 1 ½-5, the BSI, a sociodemographic questionnaire and to participate in an interactive task with their child. Results show that children exposed to more distal and proximal risks tend to present more emotional and behavioral problems and these risks also predicted child emotional and behavioral problems; moreover the two risks that most contribute to explain the emergence of those problems are social risk and maternal psychopathology. Overall results highlight the importance of cumulative risk on emotional and behavioral problems among preschool aged children, considering both distal and proximal risks.

Keywords: Emotional and behavioral problems, social risk, familial risk, maternal psychopathology, maternal sensitive responsiveness, preschool age.

² Article submitted to the *Early Childhood Research Quarterly*

Introduction

The study of the development of emotional and behavioral problems in preschool children has received much less attention than the investigation of the same difficulties in older ages. However, across the existing studies, besides highlighting the early onset of such problems, findings have documented prevalence ranging from 14% to 26% among preschoolers (Lavigne, Le Bailly, Hopkins, Gouze & Binns, 2009). Such concerning results clearly suggest the need for further research on the predictors of emotional and behavioral problems in such young children, in order to prevent the emergence and the continuity of these difficulties into older ages. This is the subject addressed in the present article.

The preschool period consists of a critical developmental phase, extremely sensitive to the influence of individual and environmental factors, including relational ones. Thus, exposure to risk factors in this period of development may affect children's emotional and behavioral trajectories (Appleyard, Egelang, van Dulmen & Sroufe, 2005). According to some authors (cf., Carneiro, Dias & Soares, 2015; Zeanah & colleagues, 1997), risk factors that might influence the development of emotional and behavioral problems, early in life, can be divided into three categories: child factors (e.g., genetic variations, prenatal and neonatal risks, difficult temperament); risks involving the parents (e.g., parents' psychopathology); and risks in the familial and social contexts (e.g., socioeconomic difficulties). Many studies using a multiple risk approach (Sameroff, Seifer, Zax & Barocas, 1987) have reported that children exposed, simultaneously, to various risk factors have a higher odds to develop emotional and behavioral problems, when compared to children exposed to none or to a single risk factor (cf., Early Childhood Longitudinal Study-Kindergarten, West Denton & Germino-Hausken, 2000). The present study follows this cumulative risk approach, and, based on Bronfenbrenner's (1979) multilayered ecology of human development, is focused on both environmental distal factors, namely risks related to the social and familial contexts, and proximate caregiving processes, including maternal psychological adjustment and responsiveness, that may contribute to child functioning.

Regarding social and familial risks, research has highlighted the important role of poverty in children's emotional and behavioral functioning (Ogg, Dendrick, Brinkman & Carlson, 2010), which is usually related to other risks such as low parental

education (Ronan, Canoy & Burke 2009). For instances, Ciciolla, Gerstein, and Crnic (2014), using a sample of 250 families found that children, aged between 3 to 5 years, of the lowest-income families, had higher odds to develop emotional and behavioral problems, when compared to families of a higher socioeconomic status (SES). Similar literature has referred to other additional risks factors—e.g., single motherhood, being a teenage mother, parents' substance abuse, domestic violence, parental antisocial behavior, lack of social support, family adverse life events, and exposure to maltreatment (Flouri, Tzavidis & Kallis, 2010)—which have also been found to have a major contribution to child emotional and behavioral functioning. Consider in this regard the Appleyard and colleagues' (2005) work, based on a prospective longitudinal study, using a sample of 171 children selected on the basis of poverty level. The authors found that children exposed to maltreatment, inter-parental violence, family disruption, life stress, and socioeconomic status revealed a linear trend to present more emotional and behavioral problems during childhood and adolescence. These findings suggest that the presence of more distal risk factors are related with the presence of emotional and behavioral problems, being thus consistent with a cumulative risk approach.

Albeit social and familial risks, there are other types of risks, more proximal to the child, that may be also important to consider. In the present study, two proximal risk factors were studied—maternal psychopathology and maternal sensitive responsiveness. Concerning to maternal psychopathology, even though research has focused mostly on depressed and anxious mothers, existing findings seem to be consistent, indicating that children of such mothers tend to present more emotional and behavioral problems in preschool age, in comparison with their peers of non-depressed and non-anxious mothers (Bayer, Ukoumunne, Mathers, Wake, Abdi & Hiscock, 2012; Paterson et al., 2013). Authors argued that mothers with lower psychological well-being provided less effective scaffolding for their preschoolers' emotional and behavioral regulatory strategies (Coyne & Thompson, 2011).

Moreover, there is also considerable evidence that children develop healthy social-emotional and behaviors skills in the context of early responsive interactions with caregivers. Responsive mothers tend to respond more promptly and adequately to their children's signs as well as are more cooperative, instead of verbal or physically interfere with their children's ongoing activity (Ainsworth, Blehar, Waters & Wall, 1978).

Literature has revealed that children with more sensitive responsive mothers have fewer emotional and behavioral problems than their peers with less sensitive and cooperative mothers (Leerkes, Blankson & O'Brien, 2009; Paterson et al., 2013). For instances, Kok and colleagues (2013), using a sample of 1821 preschoolers, from a longitudinal study (NICHD SECYD) and a cohort study (Generation R), found evidence for associations between sensitivity and cooperation and less emotional and behavioral problems across time (2, 3, 4.5, and 5.4 years). Due to the well powered sample, these results highlighted the contribution of maternal responsiveness to healthy child functioning.

As clearly implied in the investigations cited, both distal (e.g., contextual risks) and proximal (e.g., maternal psychological adjustment, sensitive responsiveness) factors influence the development of preschoolers' emotional and behavioral functioning. However, much of the research investigating emotional and behavior development in preschoolers has been focused either on distal or on proximal processes, and studies that bring together risks from these two levels in one investigation are lacking. Thereby, the present study seeks to contribute to the literature by examining the effect of cumulative risk in the development of emotional and behavioral functioning in a sample of children between 3 and 5 years of age, integrating in a cumulative index both distal (social risk and familial risk) and proximal risk factors (maternal psychopathology and maternal sensitive responsiveness). Furthermore, this study also aims to test the individual contribution of each of those risk factors, controlling for child age and sex. Specifically regarding this second aim, child's age and sex were controlled, once that there is no agreement on literature about their effects on the development of child's emotional and behavioral problems (c.f., Beyer, Postert, Muller & Furniss, 2012; Choe, Olson & Sameroff, 2014; LaGasse et al., 2012; Utendale & Hastings, 2011).

Method

Participants consisted of 275 (134 boys, 48.7%) preschool children and their mothers. By the time of the assessment, children were 58.40 months ($SD = 7.73$ months, *range* 41-78 months). One hundred and fifty-nine (57.8%) children were firstborns and 65 were referred to mental health services. The mean age of mothers was 33.69 years ($SD = 5.80$ years, *range* 20-50 years). In what concerns to maternal education, 135 (49.1%) had nine or less years of education, and 75 (27.3%) had 12 years of education.

One hundred ninety-seven (71.6%) mothers were employed, 50 (18.2%) were single and 150 (54.5%) were married. In this study, 271 (98.9%) children were Caucasian. All children lived with their biological parents, and mothers were their primary caregivers.

Table 1B. Demographic Characteristics Of The Sample

	N	%	M	SD	Range
Child age at assessment			58.40	7.78	41 – 78
Mother age at assessment			33.69	5.97	20 – 50
Sex (male)	134	48.7			
Maternal education					
≤9 years	135	49.1			
High school	75	27.3			
Superior education	65	23.7			
Employed mothers	197	71.6			
Maternal marital status					
Single	50	18.2			
Married	150	54.5			
Other	75	27.3			

Procedure

The present study was part of a larger research project focused on preschoolers' development using a GXE approach. The participants were recruited from several preschools. Authorizations from the Ministry of Education and from the Portuguese National Commission for Data Protection, which is responsible for ensuring the legal and ethical issues related to human research in Portugal, were obtained. The study was presented to preschool directors, who decided if the institution was available, or not, to participate in the research project. Then, parents received a letter explaining the study, all the measures, and the data collection process. Parents who were interested in participate in the study were called, via telephone, to schedule an appointment at home or at school, according to their preference. The visit had the duration of two and a half hours, and informed written consents were obtained from mothers. During the visit, mother completed the questionnaires, and a mother-child interaction task took place. Some mothers needed help to complete questionnaires (researchers read loud the items,

when mothers presented difficulties in reading, or explained the meaning of some words). A high correlation between low maternal education and help to complete questionnaires ($r = -.272, p < .001$) was observed. However no significant correlations were found between mothers' needing help to complete the questionnaires and the preschoolers' emotional and behavioral functioning ($r = .087; p = .148$; see Measures section).

Measures

Contextual risk

A sociodemographic questionnaire, based on *Familial Risk Profile* (Rodrigo, Rodriguez, Camacho, Martín & Máiquez, 2006; Almeida & Machado, 2007) was used. Information was collected with mother as an interview, and allowed to identify the presence of risk factors related to contextual risk. In the present study, contextual risk included social and familial risks (Carneiro, Dias & Soares, 2015; Zeanah et al, 1997).

Social risk composite. This composite included items related to labor instability (44.4%), difficulties running domestic economy (37.8%), receive economic support (19.6%), house with bad conditions (8.7%), overcrowding (13.1%), one of the parents unemployed (33.8%), single mother (17.5%), and one of the parents with less than nine years of education (40%). The items were summed to form a composite, with a higher scores reflecting children's exposure to more social risks (Min = 0, Max = 8).

Familial risk composite. This composite included items related to the history of physical abuse in family (5.8%), history of reference to social services in the family (8.7%), family history of neglect (3.3%), family history of sexual abuse (2.2%), family history of violent or anti-social behavior (4%), family history of addiction (4.7%), and family history of crime (2.9%). The composite was calculated, by summing the items, with a higher scores reflecting the presence of more familial risks (Min = 0, Max = 4).

Maternal risk

Maternal psychopathology. To assess maternal psychopathology *The Brief Symptom Inventory* (BSI; L. Derogatis, 1982; Canavarro, 1999) was used. This questionnaire assesses psychopathological symptoms in adults using 53 items rated on a

5 point scale ranging from 0 (Not at all) to 4 (Extremely). Results are organized into nine dimensions and three indices. In the present study *Positive Symptom Distress Index* (PSDI) was used. In the Portuguese validation study (Canavarro, 2007), PSDI was considered to be the best index to discriminate subjects with and without psychopathological problems, exhibiting adequate values of precision and validity.

Maternal Sensitive Responsiveness. Ainsworth's 9-point rating scales (Ainsworth et al., 1978) were used to assess sensitivity and cooperation. Sensitivity scale allows to rate maternal ability to perceive child's signals and to respond to them promptly and adequately. Cooperation scale allows to rate maternal ability to not interrupt the child's activity, or exert some kind of control, respecting child's autonomy. 37% and 25% (sensitivity and cooperation, respectively) of cases were coded by two trained raters. Interclass Coefficient Correlation (ICC, single measure, absolute agreement) was .86 to sensitivity and .83 to cooperation. The two scales were coded attending to the observation of a 15-minutes videotaped mother-child interaction task: (i) mothers were asked to taught the child how to play with a challenging toy (5 minutes); (ii) researcher provided child with an uninteresting toy while placing more interesting ones out of reach, but in view, and mothers completed a distractive questionnaire, while preventing the child to reach the interesting toys (5 minutes); (iii) child and mother played with the previous out-of-reach toys, followed by a clean-up task for the child (5 minutes). Sensitivity and cooperation were highly correlated ($r = .684, p < .001$). In the present study, a composite of sensitive responsiveness was calculated, consisting on the mean of the sensitivity and cooperation scores (Juffer, Hoksbergen, Riksen-Walraven & Kohnstamm, 1997; Luijk et al., 2011). Higher scores indicated more maternal sensitive responsiveness.

Cumulative Risk

Each of the four risk variables (social, familial, maternal psychopathology and maternal sensitive responsiveness) was transformed into a dichotomous variable, and then summed into a cumulative risk index. The social and familial risks scores were first standardized. Then, scores $\geq 1SD$ were coded as 1, while scores $< 1SD$ were coded as 0 (Flouri, Tzavadis & Kallis, 2010). For maternal psychopathology, the mean and standard deviation obtained from the Portuguese validation of the measure was used (Canavarro, 2007). Thereby, that mothers scored one standard deviation above the

Portuguese mean were coded with 1, and when they scored lower they were coded with 0. Regarding maternal sensitive responsiveness, the cutoff of 5 was used, as previously suggested (Ainsworth et al., 1978). Thereby, mothers who received a score from 1 to 4, were considered less sensitive responsive (and were coded with 1), whereas mothers who received a score between 5 and 9, were classified as more sensitive responsive (and were coded with 0).

Child

Child emotional and behavioral problems. The *Child Behavior Checklist for ages 1 ½-5* (CBCL 1 ½-5; Achenbach & Rescorla, 2000; Achenbach et al., 2014) was used to assess child emotional and behavioral problems through maternal report. The questionnaire is composed by 100 items in a 3-point *likert* scale. The questionnaire allows calculating seven empirically based scales (emotionally reactive, anxious/depressed, somatic complaints, withdrawn, sleep problems, attention problems and aggressive behavior). Six of these subscales (sleep problems excluded) integrate two second order subscales—i.e., internalizing problems and externalizing problems. Other five subscales (DSM-oriented scales) can also be computed (affective problems, anxiety problems, pervasive developmental problems, attention deficit/hyperactivity problems, oppositional defiant problems). Finally, a total score is computed—*Total Problems* scale—which compiles all the emotional and behavioral symptoms that child presents in parent report. Only the *Total Problems* scale was used in the present study. Studies (cf., Rescorla et al., 2012) have reported good values of validity to this questionnaire, as well as the Portuguese validation (Achenbach et al., 2014). In the present study, the Cronbach alpha of the *Total Problems* scale was .93.

Results

Analytic Strategy

A series of descriptive statistics and bivariate associations were initially performed in order to characterize study variables, namely child emotional and behavioral problems, social risk, familial risk, maternal psychopathology, maternal sensitive responsiveness, and the cumulative risk index. Then, a one-way ANOVA was performed, in order to analyze the effect of cumulative risk on preschoolers' emotional

and behavioral problems. After that, multiple linear regressions were carried out, and the R^2 change was calculated, in order to examine the individual contribution of each risk factor on emotional and behavioral functioning, while controlling for child age and sex.

Descriptive statistics and bivariate associations

Means and standard deviations of the observed variables are presented in Table 2B. All examined correlations are presented in Table 3B.

Table 2B. Characterization Of Study Variables

	<i>M (SD)</i>	Range
Child emotional and behavioral problems	42.19 (20.06)	3-131
Contextual Risk	2.15 (1.89)	0-8
Social	.32 (.74)	0-4
Familial		
Maternal Risk	1.56 (.47)	0-3
Maternal psychopathology	4.59 (1.51)	0-8
Maternal sensitive responsiveness	.96 (.90)	0-4
Cumulative Risk		
	N of children with each risk	%
Contextual Risk		
Social	31	11.3
Familial	25	9.1
Maternal Risk		
Maternal psychopathology	61	22.2
Maternal sensitive responsiveness	148	53.8
Cumulative Risk		
0 risks	93	33.8
1 risk	118	42.9
2 risks	48	17.5
3 risks	13	4.7
4 risks	3	1.1

Child's emotional and behavioral problems were positively correlated with social ($r = .166$; $p = .006$) and family risks ($r = .197$, $p < .001$), as well as with maternal psychopathology ($r = .393$, $p < .001$), and sensitive responsiveness ($r = -.264$, $p < .001$). Therefore, when children presented more emotional and behavioral problems, according to maternal report, they also tended to be exposed to more social and familial risk, and to more maternal psychopathology, and to have less responsive mothers. Social risk was positively associated to familial risk ($r = .317$, $p < .001$), and to more maternal psychopathology symptoms ($r = .140$, $p = .020$) and to less sensitive responsiveness ($r = -.237$, $p < .001$). Familial risk was also positively associated with maternal psychopathology symptoms ($r = .135$, $p = .025$), which, in turn, was negatively associated with sensitive responsiveness ($r = -.105$, $p = .081$), indicating that mothers who reported more psychopathology symptoms were less sensitive and cooperative in interaction with their child.

Table 3B. Correlations Among Variables

	1	2	3	4
1.Emotional/behavioral problems	1			
2.Social risk	^b .166**	1		
3.Familial risk	^b .197***	^b .317***	1	
4.M psychopathology	^a .393***	^b .140*	^b .180**	1
5.M sensitive responsiveness	^b -.264***	^b -.237***	^b -.105	^b -.169**

^aPearson Correlations | ^b Spearman Correlations | ** $p < .010$; *** $p < .001$; * $p < .05$

Effect of cumulative risk on emotional and behavioral problems

One-way analysis and *t test* were carried out in order to examine the nature of relations between cumulative risk and emotional and behavioral problems in preschool aged children. Originally children were grouped into five levels of risk: 0 risk, 1 risk, 2 risks, 3 risks and 4 risks. However, the group of children with 4 risks only included three children, so these children were reclassified as having 3 or more risks, resulting in a four-group variable.

Results show that when children were exposed to more contextual and maternal risks they tend to present more emotional and behavioral problems ($F(3) = 16.579$; $p < .000$; $\eta^2 = .16$). *Gabriel post hoc* tests indicated that children exposed to 0 risks did not

differ significantly from children exposed to 1 risk ($p = .603$); however, they significantly differ from those children exposed to 2 ($p < .001$), 3 or more risks ($p < .001$). Children exposed to 1, 2, or 3 or more risks differ significantly from each other (all $p < .001$), increasing emotional and behavioral problems, as number of risks increased. Then, children were distributed into two groups — the first group was composed by children that were exposed to 0 or 1 risk, while a second group was composed by children exposed to 2 or more risks. Results indicated that children exposed to 2 or more risks presented more emotional and behavioral problems when compared to children exposed to 0 or 1 risk ($t(273) = -5.229$; $p < .001$; $d = .82$). A large effect size was found.

Multiple regression analysis predicting emotional and behavioral problems

A multiple linear regression was computed to predict emotional and behavioral problems, using social risk, familial risk, maternal psychopathology and maternal sensitive responsiveness as predictors. This analysis was used to examine the individual contribution of each risk to the development of emotional and behavioral problems in preschool aged children.

Age and sex were used as covariates, and thus were entered in the first step of the analysis. Predictors were introduced from more distal to more proximal risks to the child. Thereby, in the second step of the model the social risk was added; in the third step, the familial risk; and in the fourth and fifth step, maternal psychopathology and maternal sensitive responsiveness were entered, respectively.

As showed in Table 4B, in the present study, child age ($\beta = .061$, $p = .316$) and sex ($\beta = -.104$, $p = .087$) were not significant predictors of child's emotional and behavioral problems. On the other hand, social risk ($\beta = .250$, $p < .001$; R^2 change = $.062$ $p < .001$; $f^2 = .06$) was found to be an individual predictor of emotional and behavioral functioning. The model explained 6.2% of the overall variance of emotional and behavioral problems. The same pattern was observed regarding the familial risk ($\beta = .163$, $p = .009$; R^2 change = $.023$, $p = .009$; $f^2 = .02$), which has emerged also as a significant predictor, and accounted for additional 2.3% of the variance. Regarding proximal risk factors, both maternal psychopathology ($\beta = .344$, $p < .001$; R^2 change =

.111, $p < .001$; $f^2 = .12$), and sensitive responsiveness ($\beta = -.158$, $p = .006$; R^2 change = .022, $p = .006$; $f^2 = .022$) emerged as significant predictors of preschoolers' emotional and behavioral problems, adding a unique power to the model, and thus resulting also in a significant increase in R^2 . The final model proved significant, explaining 21% of the total variance.

Table 4B. Predictors Of Child Psychopathology

	β	T	R^2 (adj)	F	R^2 Change	F Change
Step 1						
Age	.061	1.004	.013 (.006)	1.830	.013	1.830
Sex	-.104	-1.719				
Step 2						
Social risk	.250	4.253***	.075 (.065)	7.328***	.062	18.092***
Step 3						
Familial risk	.163	2.620**	.098 (.085)	7.330***	.023	6.862**
Step 4						
M	.344	6.138***	.209 (.194)	14.195***	.111	37.672***
psychopathology						
Step 5						
M sensitive responsiveness	-.158	-2.772**	.232 (.214)	13.404***	.022	7.686**

** $p < .01$; *** $p < .001$

Discussion

Children exposed to many risks factors are more likely to present developmental difficulties (Mäntymaa, Puura, Luoma, Latva, Salmelin & Tamminem, 2012). Specifically, social and family system, as well as maternal variables, including maternal psychopathology and sensitive care, have been seen as critical for understanding children's emotional and behavioral adjustment. The current study extended the study of the effects of children's exposure to risk, by exploring the specific contribution of each risk factor, from both distal to proximate levels, to the development of emotional and behavioral problems in preschool aged children.

In the present study, emotional and behavioral problems were associated with social and familial risks, as well as with maternal psychopathology and less sensitive responsiveness. Other relevant associations were also observed, namely the association between social risk and all others risks, the association between familial risks and maternal psychopathology and the association between maternal risks. The presence of all these associations enhances the idea that risks usually are associated with one another, meaning that children need to have or to develop competencies to deal with all of them simultaneously, challenging their growth and psychological adjustment. However, the association between familial risks and maternal sensitive responsiveness was not significant. It should be noticed that the familial risk composite comprised information related to history of abuse, neglect or violence within the family. All of problems were not necessarily related to mothers, as they could be perpetrated by any family member.

Results related to cumulative risks are consistent with prior research in this area (Sameroff, Seifer, Zax & Barocas, 1987), supporting the cumulative risk hypothesis that the increased number of risk factors in early childhood predicts emotional and behavioral problems in the same age period. The evidence for a linear effect provides support for the additive model of risk. In this study, children who were exposed to two or more risks presented more emotional and behavioral problems. Thus among preschool aged children, while there is a substantial heterogeneity in exposure to social, familial and maternal risks, the more risks children are exposed to, the greater likelihood of the mother to report higher scores of emotional and behavioral problems in their young children. Note that there is less variability of risks, with 76.7% of the sample with no risk (33.8) or only one risk (42.9%). In considering this threshold response to risk, one can draw a scenario in which parents may be able to cope with some adversity, however, when these risks amount, their ability to successfully parenting a child and cope in an efficient way begins to diminish. The present study does not address the issue related to a “point of no return”, it only claims attention to the importance of cumulative risk in preschool age and its potential influence in subsequent years.

Different risks may exert distinct influence, and have a unique contribution to the development of problems in preschoolers. Thereby, our study was also focused on the individual contribution of each risk. Analyses revealed that all risks included in this

article contributed significantly to child functioning, but each one explained different amounts of variance of the emotional and behavioral problems. First, the distal risks factors were entered in the regression analysis, followed by the proximal ones, after controlling age and sex.

It seems notable that in this study, no sex or age effect on emotional and behavioral problems was detected. Most studies that report significant and non-significant differences do not have as main goal to find any association between sex or age and psychological problems; however, attending to the fact that there is no consistency in literature, it is important to control its effect, especially in community samples, as recommended by Rutter, Dekker, Verhulst, and Koot (2007). Regarding age, an association between age and emotional and behavioral problems in preschool children was expected, indicating that younger children tend to present more problems. Differences in age may not been observed once that child's mean age is 58-40 months and standard deviation is 7.78, reflecting small variability in the sample.

After controlling age and gender, distal and proximal risks were entered, as mentioned, and it was found that some risks tend to have a lower contribution to the model, such as maternal sensitive responsiveness and familial risks, and others have a major contribution—maternal psychopathology and familial risk. Indeed, Dong et al. (2004) found that, when examining the occurrence of childhood adversities, the respondents that reported one adversity, usually reported a second adversity. When the adversities were summed, the distribution was significantly different from the distribution that would have occurred if adversities had been considered independent from each other. In line with these results, in the present study some risks might have a minor contribution because their influence may already be considered in the influence of other risks, presenting the latter a major contribution to the model. Thus, familial risk may contribute by itself, but also can contribute indirectly through social risk—note the high and significant correlation between these two risks. Social risk included information about familial SES, and it is well known that in low SES families tend to occur more frequently violence episodes (Ogg et al., 2010). The same pattern can be perceived in maternal sensitive responsiveness, which has its own contribution, and is also correlated with maternal psychopathology.

Overall our results highlight the importance of cumulative risk on emotional and behavioral problems among preschool aged children, considering both distal and proximal risks.

Limitations and further implications

There are limitations in the present study that need to be mentioned. First, as all the studies that focus on co-occurrence of risk, findings are shaped by the variables that are included in the model. Based on previous literature, the present study focused on social risk, familial risk, maternal psychopathology, and maternal sensitive responsiveness. However, there are many other risks—e.g. neonatal and prenatal risks, social support—related to the ones studied that might influence the developmental outcome. The risks under study do not fully capture the spectrum of stressors that children are exposed during preschool years.

Second, the analysis does not capture the temporal relationships between risks. The analytical strategy provides important information at one time in point, not informing about how early the exposure to each risk may contribute to current risks and the outcome. Additionally, the analyses offered information on specific contribution of each risk to emotional and behavioral problems in preschool age, but do not inform about the influence of specific combination of risks. Cluster analyses allows to know what are the risk combinations that are more negative to child's development, however the present study design did not consent these analyses.

Third, this study was only focused on mothers. Fathers surely also play a relevant role in child's emotional and behavioral development, so further studies should include fathers' information.

Finally, demographic characteristics were assessed based on mothers' report, in an interview format, and some information may have been omitted by them.

Although the limitations, the current study highlights the role of risk in the development of emotional and behavioral problems in preschool age. The results should serve as driving forces in the design of preventive interventions in preschoolers' mental health, involving their teachers and parents to promote children's development.

Knowing the risk and protective factors operating in the different relational contexts that impact on child's emotional and behavioral functioning enhances the odds of children develop normatively (Cicchetti & Curtis, 2007).

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CHAPTER 4

Meta-Analysis of Parents-Teachers Agreement on Preschooler's Emotional and Behavioral Problems

Meta-Analysis of Parents-Teachers Agreement on Preschooler's Emotional and Behavioral Problems³

Abstract

There is growing evidence that information on emotional and behavioral problems in preschool aged children needs to be collected from multiple sources, namely in different contexts with parents and teachers. Cross-informant agreement has been studied in different cultures and societies and is well established that it tends to be low to moderate. This article presents meta-analysis results from thirteen studies that assessed cross-informant agreement. The samples comprised preschool children from community and clinical settings. Informants were parents (mother, father, or both) and teachers. Level of cross-informant agreement tended to be low. Almost all the distributions were heterogeneous. Meta-regression analyses showed that sex of child and type of sample (community vs clinical) did not predict the level of cross-informant agreement on emotional and behavioral problems of preschool aged children, but measure of assessment (ASEBA forms vs. other measure) did. Results of this meta-analysis underscore that cross-informant agreement tends to be low, and that this level of agreement is expectable in different cultures and societies.

Keywords: cross-informant agreement, internalizing problems, externalizing problems, meta-analysis, preschool age.

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Introduction

Because there are no definitive pathological tests to identify disorders such as depression, anxiety, disruptive behavior in children, the presence of such conditions is generally determined by obtaining reports from various informants, such as parents and teachers. Differences between the reports of emotional and behavioral problems obtained from different informants are very common, with correlations between informants' ratings generally low to moderate (Achenbach, 1991; Achenbach, McConaughy & Howell, 1987; Berg-Nielsen, Solheim, Belsky & Wichstrom, 2012; Cai, Kaiser & Hancock, 2004; Ferdinand, van der Ende & Verhulst, 2007; Gagnon, Vitaro & Tremblay, 1992; Kohen, Brooks-Gunn, McCormick & Graber, 1997; Kolko, Kazdin, 1993; Kumpulainen, Rasanen, Hentonen, Moilanen, Piha, Puura, Tamminan & Almqvist, 1999; Schroeder, Hood & Hughes, 2010; Touliatos & Lindholm, 1981; Verhulst & Achenbach, 1995; Verhulst & Akkerhuis, 1989; Youngstrom, Loeber & Stouthamer-Loeber, 2000). In fact, modest cross-informant agreement between different types of informants is among the most robust and well-established findings in child clinical psychology, (Achenbach, 2006; Achenbach, McConaughy & Howell, 1987; De Los Reyes, Alfano & Beidel, 2010; De Los Reyes & Kazdin, 2005; Thompson, 1993).

There are several reasons for why informants may differ in their reports about child and adolescent psychopathology. First, child behavior may be situation-specific, with problems only occurring in certain settings. Secondly, different informants may observe different behaviors because they see the child in different contexts (such as school vs. home). Even in the same context, informants may elicit different behaviors in the child by interacting differently with that child. Additionally, informants may differ in how problematic they consider that a given behavior to be. Finally, the reliability of children's own reports of their emotional and behavioral problems can be questioned, as a result of differences in cognitive abilities and abilities to think about their own behavior (Renk, 2005; Richardson & Day, 2000). For all of these reasons, modest cross-informant agreement may represent important information rather than simply lack of validity or reliability in their reports (Achenbach, McConaughy & Howell, 1987; Satake, 2003). Because there are currently no definitive guidelines as to how discrepant reports should be handled, assessments that clinicians and researchers conduct may vary depending on the choice of informants, the extent of agreement

between different pairs of informants, and whether information from one informant is weighted more heavily when disagreement exists (Sawyer, Baghurst & Mathias, 1992).

The most common pairs of informants for preschool aged children are parents (mother, father or both) and teachers, because both types of informant can provide a comprehensive picture of a child's problems (Satake, 2003). Thus, in the present meta-analysis, parents and teachers were the informants selected. To our knowledge, there is no published meta-analysis of cross-informant agreement between parents and teachers in preschool samples. However, Rescorla et al. (2012) analyzed cross-informant agreement between parents and teachers/caregivers for 7,380 children in 13 different societies using data obtained from the Child Behavior Checklist for ages 1 ½ - 5 and the Caregiver-Teacher Report Form (CBCL 1 ½ - 5, C-TRF; Achenbach & Rescorla, 2000), providing important aggregated findings. For example, mean Total Problems scores derived from parent ratings were significantly higher than mean Total Problems scores derived from caregiver/teacher ratings in all the societies, but the size of the difference varied somewhat across societies. Averaged across the 13 societies, cross-informant correlations for scale scores were .29 for total problems, .25 for internalizing problems, and .35 for externalizing problems. Agreement was significantly higher for Externalizing than for Internalizing in eight of the 13 societies. Societies were very similar with respect to which problem items, on average, received high versus low ratings from parents and caregivers/teachers, but dyadic cross-informant levels varied widely across children in every society.

A limitation of the Rescorla et al. (2012) study is that it did not include clinical samples. Additionally, it did not test heterogeneity nor look at the effect of instrument ion agreement. The current study addresses these limitations. Our first and main goal was to examine the degree of consistency in the rating of parents and teachers about internalizing problems, externalizing problems and total problems in preschool aged children. Based on existing literature, we hypothesized that results would indicate modest agreement. The second goal was to test effects of type of sample, measure, and sex on agreement between informants. We hypothesized that agreement would be better for clinical than population samples, because of higher levels of problems in the former than the latter (Kolko & Kazdin, 1993; Cai, Kaiser & Hancock, 2004). Based on previous studies (Berg-Nielsen, 2012; Schroeder, 2010), we expected better agreement for boys than for girls. We also expected better agreement for externalizing problems

than for internalizing problems, as the former are more visible to informants (Liu et al., 2011; Müller et al., 2011).

Method

Literature Search

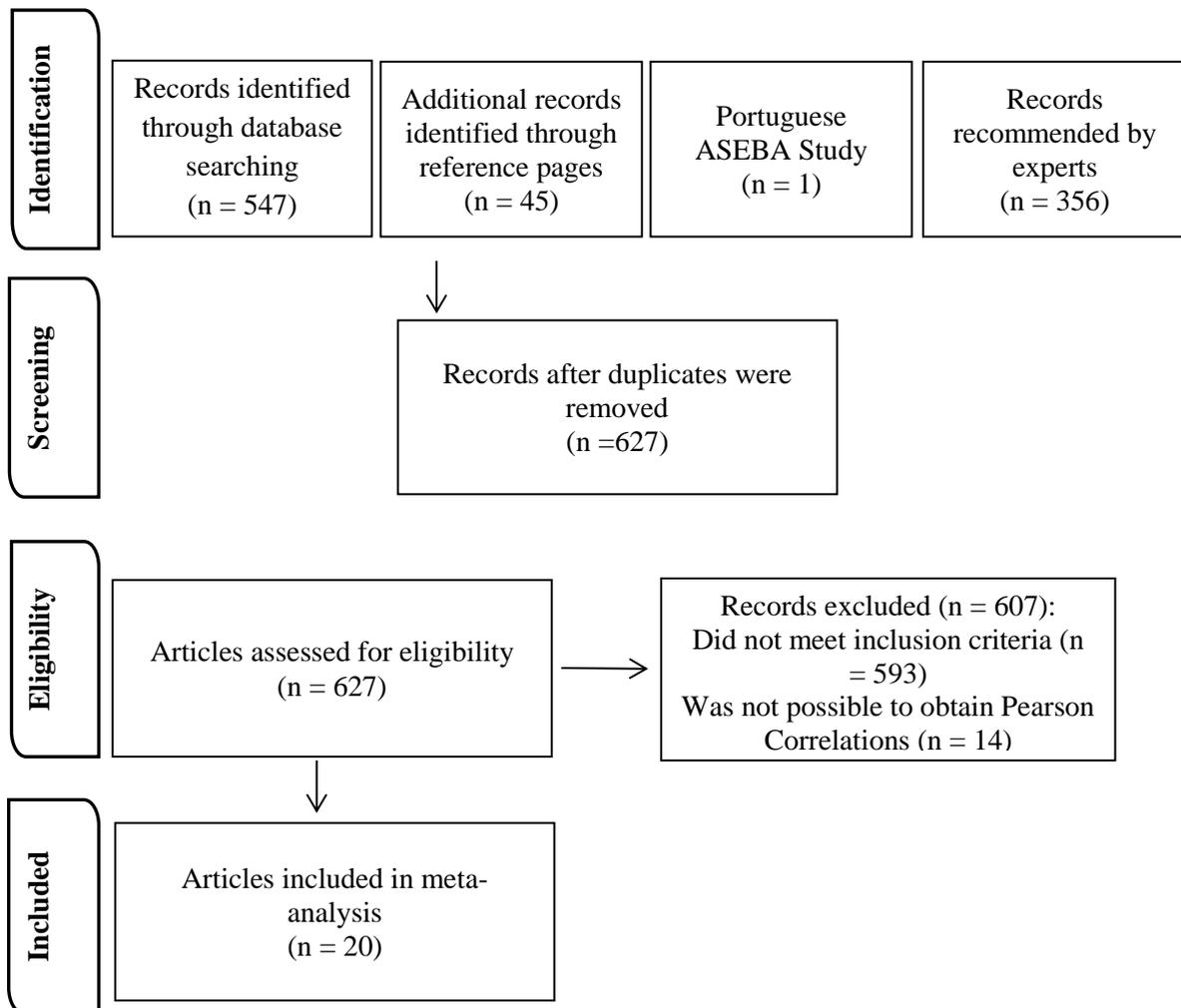
Potential studies to be included in the present study were identified by searching the literature up to August, 2014. Five electronic information databases (Psycharticles, Psychology and Behavioral Sciences Collection, ERIC, Academic Search Complete and PubMed) were used to identify published articles on the topic. The search strategy included the following terms: 1) “Child Psychopathology” AND “Agreement” AND a) “Parents Report”, b) “Teachers Report”, c) “Behavioral Problems”, d) “Emotional Problems”, e) “Externalizing Problems”, f) “Internalizing Problems”; 2) “Child Psychopathology” AND “Parent-Teacher Agreement” AND a) “Behavioral Problems”, b) “Emotional Problems”, c) “Externalizing Problems”, d) “Internalizing Problems”; 3) “Child Psychopathology” AND “Cross-Informant” AND a) “Parents Report”, b) “Teachers Report”, c) “Behavioral Problems”, d) “Emotional Problems”, e) “Externalizing Problems”, f) “Internalizing Problems”; 4) “Child Psychopathology” AND “Discrepancies” AND a) “Parents Report”, b) “Teachers Report”, c) “Behavioral Problems”, d) “Emotional Problems”, e) “Externalizing Problems”, f) “Internalizing Problems”. These search term combinations were used to identify articles addressing cross-informant agreement on internalizing problems, externalizing problems and total problems in preschool age children in familial and school contexts. After identifying relevant articles, we also searched for articles by examining the reference pages of review articles. In addition, two experts in the area of cross-informant agreement and in preschool children were contacted who suggested a few other studies to consider for inclusion in the present work.

Inclusion and Exclusion Criteria

All the published empirical studies were searched and reviewed against the following inclusion criteria: a) children live with their biological parents; b) children

attend preschool; c) preschool aged children; d) informants in familial context were mother, father or both; e) informant at school was kindergarten teacher; f) cross-informant agreement was reported using Pearson Correlations. Articles were excluded when children were institutionalized or adopted. If the studies provided other measures of cross-informant agreement (e.g., kappa), authors were asked to provide the Pearson Correlations. When Pearson Correlations were not available, studies were excluded.

Figure 1C. Search Flowchart



As shown in Figure 1C, the preliminary search included 547 articles, but 319 were exact duplicates. All of the remaining 228 studies were examined. From this first search, eight studies were included, and 45 additional articles were identified based on references cited on the selected articles. The two experts consulted suggested additional

studies. Thirty-four studies were selected to be included in the meta-analysis. However, fifteen studies were then excluded because Pearson Correlations were not available. One study from our team, published in the Portuguese ASEBA manual for preschool children, was also included. The studies included in the meta-analysis are listed in Table 1C.

Table 1C. Studies Included In The Meta-Analysis

Authors	Measures	Sample (N; Male)
Verhulst et al. (1989)	Parents: CBCL 4-18; Teachers: TRF	Community (271; 128)
Gagnon et al. (1991)	Parents: PBQ; Teachers: PBQ	Community (1924; 1024)
Vitaro et al. (1991)	Parents: BQ; Teachers: BQ	Community (379; 215)
Rescorla et al. (2000)*	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (1192; 608)
Winsler et al. (2002)	Parents: PKBS; Teachers: PKBS	Community (47; 22)
Morrel et al. (2003)	Parents: CBCL 4-18; Teachers: TRF	Community (206; 111)
Doctoroff et al. (2004)	Parents: ECBI; Teachers: CBP	Community (79; 43)
Griens et al. (2004)	Parents: CBCL 4-18; Teachers: TRF	Community (424; 212)
Frigerio et al. (2006)*	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (526; 274)
Jusiene et al. (2007)*	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (648; 338)
Kerr et al. (2007)	Parents: CBCL 2-3; Teachers: CTRF 2-5	Community (177; 92)
Tick et al. (2007)*	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (381; 184)
Poch et al. (2008)	Parents: ECI-4; Teachers: ECI-4	Community (204; 108)
Guodmundsson et al. (2009)*	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (170; 78)
Kanne et al. (2009)	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (325; 299)
Kristensen et al. (2010)	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (609; 300)
Liu et al. (2011)	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (876; 462)
Müller et al. (2011)	Parents: CBCL 1 ½-5; Teachers: CTRF	Clinical (124; 89)
Berg-Nielsen et al. (2012)	Parents: CBCL 1 ½-5; Teachers: CTRF	Community (732; 491)
Harvey et al. (2013)	Parents: BASC; Teachers: BASC	Community (196; 113)
Achenbach et al. (2014)	Parents: CBCL 1 ½-5; Teachers: CTRF	Clinical (139; 88) Community (781; 414)

CBCL 4-18: Child Behavior Checklist 4-18 | TRF: Teacher Report Form | PBQ: Preschool Behavior Questionnaire | BQ: Behavior Questionnaire | CBCL 1 ½-5: Child Behavior Checklist 1 ½-5 | CTRF: Caregiver Teacher Report Form | PKBS: Preschool and Kindergarten Behavior

Scales | ECBI: Eyberg Child Behavior Inventory | CBP: Child Behavior Profile | ECI-4: Early Childhood Inventory-4 | BASC: Behavior Assessment System for Children. * Samples extracted from the article of Rescorla et al. (2012).

Coding

In addition to coding the effect sizes, we also coded type of sample (clinical vs community), the measure used to assess psychopathology (ASEBA form vs. other measure), and child sex (male vs female). These three variables were used as predictors of the level of cross-informant agreement.

Data Analyses

Correlation coefficients (r_s) were converted to Z_r . Means and confidence intervals of Z_r s were transformed back to the correlation coefficient. Random-effects model was used because it allows both within study and between-study variation. Studies with large sample sizes were examined as possible outliers. Multiple effect sizes were considered non-independent because they are extracted from the same participants. In each study, all the information about internalizing problems, externalizing problems and total problems was extracted for males, females and mixed sample. Analyses were performed using the program Comprehensive Meta-Analysis, version 3 (Borenstein, Hedges, Higgins, Rothstein, 2005).

Results

Mean Correlation and Outlier Analyses

The meta-analysis included 10,410 participants from 22 studies, consisting of 139 samples that reported the correlation between parental and kindergarten teacher report on internalizing problems, externalizing problems and total problems. The correlation coefficients ranged from $-.047$ to $.540$, with a mean r of $.284$, $p < .001$ (95%CI, $.257$ to $.310$). According to the guidelines proposed by Cohen (1992), this correlation represents a small effect. The meta-analytic model fit statistics were $Q =$

149.259, $p < .001$. Thus the distribution of the correlations was heterogeneous ($I^2 = 65.831$).

Table 2C. Heterogeneity Results

		<i>R</i>	CI	<i>Q</i>	<i>I</i> ²
IP	Girls	.232***	.157 - .304	62.950***	77.760
	Boys	.219***	.185 - .252	16.497	15.136
	Mixed Sample	.197***	.133 - .260	105.428***	85.772
EP	Girls	.335***	.265 - .401	60.758***	76.958
	Boys	.393***	.350 - .434	30.697**	54.393
	Mixed Sample	.365***	.312 - .419	101.135***	83.191
TP	Girls	.265***	.175 - .350	67.558***	80.757
	Boys	.279***	.227 - .330	28.635**	54.601
	Mixed Sample	.262***	.209 - .313	89.329***	82.089

Q = model fit statistics | *I*² = homogeneity analyses

** $p < .01$ *** $p \leq .001$

As seen in Table 2C, *r*s for internalizing problems ranged from .197 to .232. The distribution for all samples was heterogeneous, except for boys. For externalizing problems, *r*s ranged from .335 to .393, and all the distributions were heterogeneous. For total problems, *r*s ranged from .262 to .279 and distributions were also heterogeneous. All studies with larger samples were included, given that mean correlations did not change significantly if they were excluded.

Meta-Regression

Type of sample did not affect the correlation between parental and kindergarten teacher report of internalizing problems ($\beta = .065$; $p = .390$; $Q = .74$; $p = .390$; $I^2 = 76.36$; $Q = 186.09$; $p < .001$), externalizing problems ($\beta = .036$; $p = .636$; $Q = .22$; $p = .636$; $I^2 = 77.32$; $Q = 202.80$; $p < .001$) or total problems ($\beta = .009$; $p = .910$; $Q = .01$; $p = .910$; $I^2 = 77.08$; $Q = 187.65$; $p < .001$).

With respect to the instrument used, there was a significant effect for internalizing problems ($\beta = .149$; $p = .001$; $Q = 11.32$; $p = .001$; $I^2 = 74.13$; $Q = 170.11$; $p < .001$), with ASEBA forms having slightly higher mean *rs*. Type of instrument was not significant for externalizing problems ($\beta = .024$; $p = .596$; $Q = .28$; $p = .596$; $I^2 = 76.98$; $Q = 199.82$; $p < .001$) or total problems ($\beta = .054$; $p = .230$; $Q = 1.44$; $p = .230$; $I^2 = 75.92$; $Q = 178.57$; $p < .001$).

Finally, child sex did not affect the correlation between parental and kindergarten teacher report of child internalizing problems ($\beta = -.027$; $p = .564$; $Q = .33$; $p = .564$; $I^2 = 66.86$; $Q = 78.46$; $p < .001$), externalizing problems ($\beta = .070$; $p = .163$; $Q = 1.95$; $p = .163$; $I^2 = 70.46$; $Q = 88.02$; $p < .001$) or total parents ($\beta = .005$; $p = .930$; $Q = .01$; $p = .930$; $I^2 = 73.98$; $Q = 96.10$; $p < .001$).

Discussion

There is not a definite measure that allows the assessment of clinical conditions related to psychopathological maladjustment. Therefore, collecting information from different informants in different contexts is the best method to obtain a comprehensive picture of emotional and behavioral problems in preschool aged children. However, literature indicates that cross-informant agreement tends to be low to moderate.

Our first goal was to determine the level of agreement between ratings of parents and teachers about psychopathological symptoms (internalizing problems, externalizing problems and total problems) in preschool aged children. As expected, the agreement between parents and teachers was low-to-moderate. Many other studies (c.f. Berg-Nielsen et al., 2012; Cai, 2004; Gagnon et al., 1992; Müller, 2011; Renk, 2005; Satake, 2003; Touliatos, 1981) also found low to moderate cross-informant agreement similarly to Achenbach, McConaughy & Howell (1987).

Cross-informant agreement was lower for internalizing problems than for externalizing problems. This result is consistent with previous literature (e.g., Berg-Nielsen et al., 2012; Ferdinand et al., 2007; Gagnon et al., 1992; Grietens et al., 2004; Kerr et al., 2007; Liu et al., 2011; Müller et al., 2011; Rescorla et al., 2012; Satake et al., 2003; Vitaro et al., 1991; Winsler et al., 2002). Cross-informant agreement might be higher in externalizing problems than in internalizing problems because externalizing

problems is directly observable and consequently more obvious to report (Satake, 2003). Other possible explanation is that children might be more likely to confide in their parents to talk about their emotional problems. Teachers might also evaluate internalizing symptoms, such as tears, fears and anxiety as age-appropriate emotional reactions. Other important fact is that teachers have a classroom full of children, so they can be less attentive to internalizing problems that are less immediate than externalizing problems (Berg-Nielsen, 2012). Interestingly, the Rescorla et al., study (2012) (which included many of the samples used in the present meta-analysis) found a larger societal effect for internalizing problems than for externalizing problems. That is, Parents and teachers/caregivers varied more across societies in their reports on internalizing problems than on externalizing problems. This suggests that there may be more consistency across societies regarding what constitutes externalizing problems such as aggression than internalizing problems such as anxiety and depression.

The second goal of our study was to examine whether differences in type of sample, measure of assessment and sex contribute to a higher or lower agreement between cross-informants. Our results showed few significant effects of these variables. We expected to find higher cross-informant agreement when children were in the clinical sample because severity of symptoms would be greater than in population samples (Berg-Nielsen, 2012). However, these results can be due to the fact that in the meta-analysis there were only four samples of referred children. ASEBA forms are widely used to assess psychopathological problems in children, from 18 months to 18 years. Results indicated that agreement was better for internalizing problems when ASEBA forms were used than when other forms were used. This finding is consistent with research indicating differences in results based on the measure used to assess emotional and behavioral problems in preschool aged children (Hancock, 2004). Perhaps ASEBA forms are the most complete instrument of assessment regarding internalizing problems, enhancing parents and teachers to be more aware to this kind of problems. Finally, there were no prediction effects for sex in the agreement between parents and teachers on internalizing problems, externalizing problems or total problems. Accordingly to earlier studies, better cross-informant agreement is expected for boys than for girls (Berg-Nielsen, 2012; Satake, 2003; Schroeder, 2010). For example, Rescorla and colleagues (2012) found that the discrepancy between parents and teachers was smaller for boys than for girls in older preschoolers. They

hypothesized that, as children get older, girls seem to have a better adjustment to the demands of care and educational contexts, and boys tend to be perceived as more aggressive, non-compliant and less attentive when compared to girls.

Overall, our meta-analysis confirms findings from previous studies in showing that cross-informant agreement using maternal and teacher report is relatively low. Across the samples (boys, girls, mixed samples) it is possible to observe that there is heterogeneity in results, except for internalizing problems with the boys. Therefore there is a large percentage of variance that needs to be explained. Our results also show that potential predictors examined (type of sample, measure of assessment and sex) were generally not significant. It's still important to better understand which variables influence the average and quality of agreement between parents and teachers. Many studies addressed this question, but some consistency is needed. One of the main advantages of the present meta-analysis is that articles from several societies, different kinds of sample, and using different instruments were included allowing to conclude that cross-informant agreement (teachers and parents) on emotional and behavioral problems of preschool aged children is low, independently of the measure of assessment used.

Thus it is not expected that informants have to agree on emotional or behavioral problems. One study (Zahner & Daskalakis, 1998) showed that a trigger point to the question related to the variables that contribute to a higher or a lower cross-informant agreement is the familiarity and contact with the children, enhancing parent-teacher agreement when both informants know well the child. Berg-Nielsen (2012) proposes that variables that influence cross-informant agreement on psychological problems in preschool children can be divided into three categories: child characteristics (type and severity of problem, age and sex), parent characteristics (depression, stress, deviant personality, interest in mental health services and will to avoid stigmatize children), and teacher characteristics (education, length of time they know the child, prior experience with children, kind of relationship with children and conflict with the child). More research is still needed in this area, given that variables affecting cross-informant agreement between parents and teachers have not been widely studied in preschool children.

Practical implications

Adults tend to differ in their ratings about child psychopathology, as well as children tend to disagree with adults about their own symptoms. Knowing better which the factors most influence discrepancies are would allow clinical practitioners and researchers to choose informants in an effective way. Considering informant characteristics, the nature of the child's problems and the context in which the problems occur may improve consensus on the problems hence more effective and timely interventions. However, it is important to notice that our results indicate that it is expectable to find low to moderate cross-informant agreement, especially if informants interact with children in different contexts. It is important to keep in mind that sometimes problems are contextual specific and informants react to them in different ways.

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CHAPTER 5

**Agreement and discrepancy between mothers' and teachers' report
of emotional and behavioral problems in preschool-aged children**

Agreement and discrepancy between mothers' and teachers' report of emotional and behavioral problems in preschool-aged children

Abstract

The present study aimed to identify the predictors, regarding mothers and teachers agreement and discrepancy, concerning children behavioral and emotional problem in preschool age. The participants included 175 (89 boys) preschoolers, their mothers and teachers. Mothers were asked to complete the CBCL 1 ½-5, the BSI, a sociodemographic questionnaire and were observed in an interactive task with their child. Teachers completed the CTRF. Results show that cross-informant agreement is low. None of the studied variables was predictor of cross-informant agreement; however, maternal psychopathology and the absence of an assistant in the classroom were predictors of discrepancies among mothers and teachers. Overall, the results highlight the importance of maternal and preschool variables when assessing emotional and behavioral problems in preschool-aged children.

Keywords: Emotional and behavioral problems, cross-informant agreement, discrepancies.

Introduction

Due to the limited capacity that preschool children have to report their own difficulties, it is common for psychologists and psychiatrists to ask parents and other relevant adults to give their opinion about the child's emotional and behavioral problems. In the present study, and following Achenbach et al. (2014) guidelines to assess these problems, they are considered as internalizing problems, externalizing problems and total problems (Achenbach, 2011). This practice is in line with recommendations from several authors (c.f. Achenbach, McConaughy & Howell, 1987; De Los Reyes & Kazdin, 2005), who recommend that the assessment of children's difficulties should occur with different informants in different contexts. However, it is also frequently stated that informants, especially those in different contexts, disagree, resulting in uncertainty among clinicians regarding the most appropriate way to integrate the information that was collected from those multiple sources (Smith, 2007).

Informant's discrepancies represent a major problem for several reasons: 1) discrepancies are present in all measurement methods (De Los Reyes & Kazdin, 2005); 2) discrepancies are present in different areas of psychological science (Barrett, 2006); 3) discrepancies account for significant interpretative problems in studying the prevalence of problems (De Los Reyes & Kazdin, 2008); and 4) discrepancies are related to the way the different informants interact with the child in each context (Beck, Hartos & Simons-Morton, 2006). Therefore, implications of discrepancies in cross informant agreement increase the need to understand why they exist and are so frequent (De Los Reyes & Kazdin, 2008). Therefore it is also important to know better what influences the agreement and the discrepancies between informants, which is addressed in the present study.

Since the classical meta-analysis performed by Achenbach et al. (1987) it is clear that the agreement between informants from the same context (e.g., father and mother) is higher (.59) than the agreement between informants from different contexts (e.g., mother and teachers); the latter tend to be lower (.27). Similarly, in a meta analysis conducted by De Los Reyes et al. (2015) using a sample of studies that assessed cross-informant agreement of children under the age of 18, the overall cross informant correlation was .28, which reflects a low agreement. Another meta analysis (Carneiro, Soares, Rescorla & Dias, 2015) focused only in preschool children also

found that the agreement between one of the parents and the teacher tends to be low to moderate for girls (internalizing problems = .23; externalizing problems = .34; total problems = .27), boys (internalizing problems = .22; externalizing problems = .39; total problems = .28), and mixed samples (internalizing problems = .20; externalizing problems = .37; total problems = .26). Once the cross-informant agreement tends to be low, Achenbach (2011) suggested that clinicians should incorporate information from all contexts in order to obtain a broader picture to better understand the child's difficulties. Nevertheless, other authors (cf., Renk, 2005) noticed that it is quite difficult to use information from different informants if there is interest to know better the typical behavior of the child. Thus, over the last two decades, researchers have been interested in knowing more about how to integrate in a meaningful way the information collected from different raters in different contexts (Schroeder, Hood & Hughes, 2010).

Apart from being important to integrate the information from multiple informants, it is also important to know which factors may contribute to a higher or lower agreement and to more or less discrepancies. Some authors have already studied the question related to the factors that enhance or decrease cross-informant agreement, however, there are not many papers published regarding preschool age. Berg-Nielsen, Solheim, Belsy & Wichstrom (2012) published a paper of singular relevance, using a sample of 732 community preschool children. In that study they used familial (e.g., parenting stress) and school (e.g., teachers perceived conflict with the child) variables to explain discrepancies between parents and teachers. The authors found that characteristics of both informants could influence the agreement and the discrepancies about the child's emotional and behavior problems, advising clinicians to be caution with possible bias in reports.

Literature show that agreement tend to be higher for clinical than population samples, because of severe problems lead children to mental health services (Cai, Kaiser, & Hancock, 2004; Kolko, & Kazdin). In Berg-Nielsen et al. (2012) and in Schroeder (2010) studies, it was also observed that the cross-informant agreement is higher for boys than for girls.

From all the characteristics that can influence the informants report, the well studied variable is psychopathology of the informant, specifically mothers' depression (De Los Reyes, Goodman, Kliwer & Reid-Quiñones, 2008). Indeed one of the first

hypotheses posited to explain why informant's discrepancies exist is referred as the depression-distortion hypothesis (Richters, 1992). This hypothesis posits that an informant's report of child emotional and behavioral problems may be negatively biased by the informant's level of psychopathological symptoms. Thus, a negative mood may make an informant to attend, to encode, and to remember negative events as opposed to positive or neutral events, leading informants to predominantly use this information to rate child's problems. Other studies report other familial factors such as stress (De Los Reyes & Kazdin, 2004) or deviant personality traits (Foley, Rutter, Pickles, Angold, Maes, Silberg & Eaves, 2004). Still, there are other maternal characteristics, such as maternal sensitive responsiveness, that should be studied. Maternal sensitive responsiveness is an important variable in the prediction of emotional and behavioral problems in preschool-aged children, as it was found in Carneiro et al. (2015) in a sample of 274 preschool-aged community children. However, to our knowledge, there are no studies that report the influence of this variable on cross-informant agreement on this age. In the present study this question is addressed.

The preschool setting has been less studied and the characteristics that are attention targets are teacher's education, length of time they have known the child, prior experience with children, kind of relationship they have with the child and teacher perceived conflict with the child (Berg-Nielsen et al., 2012). Some variables from the preschool setting that also deserve attention, and are here considered, are: 1) the number of hours of work per week of teachers; 2) teaching activities; 3) the presence of an assistant in the classroom in a consistent way; and 4) the number of children in the class. All these mentioned variables can contribute to a major burnout of the teacher and influence her perspective of the emotional and behavioral problems of each child. Other variables studied regarding the preschool setting were teacher's age, educational level, professional experience, number of their own children in preschool age and length of the knowledge of the child, and presence of an assistant in the classroom.

Taking into account the previous research by focusing in the preschool setting, the present study aimed to identify the predictors, regarding mothers and teachers agreement and discrepancy, concerning children behavioral and emotional problem in preschool age.

Method

Participants

The participants consisted of 175 (89 boys, 50.9%) preschool children, their mothers and teachers (see Table 1D). To accomplish the aims of the study, mothers and teachers were used as informants, once they are the reporters on who mental health professionals most commonly rely on when they need to collect information about the child behavior for purposes of clinical assessment (Hunsley & Mash, 2007).

By the time of the assessment, children were 58.26 months of age ($SD = 7.94$ months, range 40-76 months). 96 (54.9%) children were firstborns and 40% were referred to mental health services. In this study, 172 (98.3%) children were Caucasian. All children lived with their biological parents, and mothers were their primary caregivers.

The mothers' mean age was 33.64 years old ($SD = 6.01$ years, range 20-50 years). In what concerns maternal education, 92 (52.6%) had nine or less years of education, and 42 (24%) had twelve years of education. 122 (69.7%) mothers were employed, 33 (18.9%) were single and 97 (55.4%) were married. The mothers had in average two children ($M = 1.85$; $SD = .90$; range 1-6).

In preschool contexts ($N = 26$), all participating teachers were female and their mean age was 40.93 years old ($SD = 7.72$ years, range 29-62 years). Only 26 teachers (14.9%) had some kind of post-graduation (e.g., master degree). In what concerns to their own children, 51 (29.1%) teachers had one child aged between 3 and 5 years old, 35 (20%) had no children. Teachers' professional experience with children was 17 years ($SD = 7.58$; range 1-36). One hundred and twenty four teachers (70.9%) had an assistant in the classroom. For the present study it will be considered having an assistant in the classroom when it happens regularly (124 have an assistant and 51 do not). Considering teaching activities, only 32 teachers develop other type of work besides being a teacher. Teachers consider to know the children in average for 22 months ($SD = 13.6$; range 2-70) and classes included in average 22 children ($SD = 3$, range 13-28).

Table 1D. Demographic Characteristics Of The Sample

	N	%	<i>M</i>	<i>SD</i>	Range
Child					
Age at assessment			58.26	7.94	40 – 76
Sex (male)	89	50.0			
Mothers					
Age at assessment			33.64	6.01	20 - 50
Education					
≤9 years	92	52.6			
High school	42	24			
Graduation	39	22.3			
Employed	122	69.7			
Marital status					
Single	33	18.9			
Married	97	55.4			
Other	45	25.7			
Teachers					
Age at assessment			40.93	7.72	29-62
Professional experience			16.99	7.58	1-36

Procedure

The present study was part of a larger research project focused on preschoolers' development. The participants were recruited from several preschools. Authorizations from the Ministry of Education and from the Portuguese National Commission for Data Protection, which is responsible for ensuring the legal and ethical issues related to human research in Portugal, were obtained. The study was presented to preschool directors, who decided if the institution was available, or not, to participate in the research project. Then, parents received a letter explaining the study, all the measures, and the data collection process. The parents who were interested in participate in the study were called, via telephone, to schedule an appointment at home or at school, according to their preference. The visit lasted for two and a half hours, and informed written consents were obtained from the mothers. During the visit, the mother completed the questionnaires, and a mother-child interaction task took place. Some mothers needed help to complete questionnaires (the researchers read loud the items,

when mothers presented difficulties in reading, or explained the meaning of some words). A significant correlation between low maternal education and help to complete questionnaires ($r = -.171, p < .050$) was observed. However, no significant correlations were found between mothers' needing help to complete the questionnaires and the preschoolers' emotional and behavioral functioning (internalizing problems $r = .019; p = .802$; externalizing problems $r = .121; p = .109$; total problems $r = .040; p = .599$; see Measures section). After the mothers' participation, teachers were invited to complete a questionnaire about the child's emotional and behavioral problems; all informed consents were also obtained from teachers. In order to accomplish confidentiality, no information was shared with the mothers about the teacher's ratings of the child and vice-versa.

Measures

Sociodemographic information

Concerning the mother's data collection included the following information: age, number of children, education, employment, and marital status. In regard teachers data collection included: was collected information regarding personal life, such as age and number of children of their own in preschool age; and information concerning professional life, such as graduation vs post-graduation, teaching activities, number of years of professional experience, presence of an assistant in the classroom, number of hours of work per week and number of children in the classroom.

Mother assessment

Maternal psychopathology. To assess maternal psychopathology *The Brief Symptom Inventory* (BSI; Derogatis, 1982; Canavarro, 1999) was used. This questionnaire assesses psychopathological symptoms in adults using 53 items rated on a 5-point scale ranging from 0 (Not at all) to 4 (Extremely). Results are organized into nine dimensions and three indices. In the present study *Positive Symptom Distress Index* (PSDI) was used. In the Portuguese validation study (Canavarro, 2007), PSDI was considered to be the best index to discriminate subjects with and without psychopathological problems, exhibiting adequate values of precision and validity.

Maternal Sensitive Responsiveness. Ainsworth's 9-point rating scales (Ainsworth et al., 1978) were used to assess sensitivity and cooperation. The sensitivity scale allows to rate the maternal ability to perceive the child's signals and to respond to them promptly and adequately. The cooperation scale allows to rate the maternal ability not to interrupt the child's activity, or exert some kind of control, respecting the child's autonomy. 43.4% and 29.7% (sensitivity and cooperation, respectively) of the cases were coded by two trained raters. Interclass Coefficient Correlation (ICC, single measure, absolute agreement) was .85 to sensitivity and .79 to cooperation. The two scales were coded attending to the observation of a 15-minute videotaped mother-child interaction task: (i) mothers were asked to teach the child how to play with a challenging toy (5 minutes); (ii) the researcher provided the child with an uninteresting toy while placing more interesting ones out of reach, but in view, and the mothers completed a distractive questionnaire, while preventing the child to reach the interesting toys (5 minutes); (iii) both child and mother played with the previous out-of-reach toys, followed by a clean-up task for the child (5 minutes). Sensitivity and cooperation were highly correlated ($r = .666, p < .001$). In the present study, a composite of sensitive responsiveness was calculated, consisting on the mean of the sensitivity and cooperation scores (Juffer, Hoksbergen, Riksen-Walraven & Kohnstamm, 1997; Luijk et al., 2011). Higher scores indicated more maternal sensitive responsiveness.

Child assessment

Child emotional and behavioral problems. The *Child Behavior Checklist for ages 1 ½-5* (CBCL 1 ½-5; Achenbach & Rescorla, 2000; Achenbach et al., 2014) and the *Caregiver Teacher Report Form for ages 1 ½-5* (CTRF; Achenbach & Rescorla, 2000; Achenbach et al., 2014) were used to assess the child's emotional and behavioral problems through maternal and teacher report. The questionnaires are composed by 100 items in a 3-point *Likert* scale. The questionnaires allow the calculation of seven empirically based scales (emotionally reactive, anxious/depressed, somatic complaints, withdrawal, attention problems, aggressive behavior, and sleep problems – only in CBCL 1 ½ -5). Six of these subscales (sleep problems excluded) integrate two second order subscales—i.e., internalizing problems and externalizing problems. Other five subscales (DSM-oriented scales) can also be computed (affective problems, anxiety problems, pervasive developmental problems, attention deficit/hyperactivity problems, oppositional defiant problems). Finally, a total score is computed — total problems —

which compiles all the emotional and behavioral symptoms that a child presents in parent and teacher report. Studies (cf., Rescorla et al., 2012) have reported good values of validity to these questionnaires, as well as the Portuguese validation (Achenbach et al., 2014). In the present study, for CBCL 1 ½-5 the Cronbach alpha of the internalizing problems scale was .83, externalizing problems scale was .86, and the total problems scale was .92. For CTRF the Cronbach alpha of the internalizing problems scale was .87, externalizing problems scale was .90, and the total problems scale was .94.

Results

Analytic Strategy

Statistical analysis of agreement (Pearson correlations) and discrepancies (maternal report minus teacher report) were based on raw scores of cross-informant report, once that raw scores reflect the actual distributions of the extent of symptom behavior and should be favored for statistical analysis of the CBCL 1 ½ - 5 and CTRF (Achenbach & Rescorla, 2000; Achenbach et al., 2014).

A series of descriptive statistics and bivariate associations were performed in order to characterize study variables, namely child internalizing problems, externalizing problems and total problems, and all variables were used as predictors of cross-informant agreement or discrepancies. *T tests* were conducted to examine differences, according to children sex and clinical status, in what concerns cross-informant agreement and discrepancies.

Multiple linear regressions were carried out for agreement and discrepancies, according to the type of problems.

Descriptive statistics and bivariate associations

Descriptive statistics indicated that mothers tend to report significantly more internalizing problems, externalizing problems ($X^2 = 1378.19$; $p < .001$) and total problems than teachers, as shown in Tables 2D and 3D.

Table 2 D. Assessment Of Child's Problems

	<i>M (SD)</i>	Range	χ^2
Internalizing problems (M)	14.30 (7.70)	1-45	987.75**
Internalizing problems (T)	8.39 (7.33)	1-53	
Externalizing problems (M)	14.97 (6.88)	2-38	1378.19***
Externalizing problems (T)	10.55 (9.74)	1-64	
Total Problems (M)	44.10 (19.49)	7-123	5131.18***
Total problems (T)	26.12 (20.51)	3-172	

M = Mother | T = Teacher | *** $p < .001$; ** $p < .01$

Table 3D. Cross-Informant Agreement And Discrepancies

Agreement	M	SD	Min	Max
Internalizing Problems	.19	.23	-.31	1.00
Externalizing Problems	.17	.24	-.30	.76
Total Problems	.22	.15	-.12	.54
Discrepancies				
Internalizing Problems	4.91	8.89	-48.00	27.00
Externalizing Problems	7.42	8.54	-41.00	24.00
Total Problems	16.47	21.51	-131.00	58.09

Concerning the familial context (see Table 4D) it was found that the problems reported by mothers were highly negatively correlated with maternal education and with maternal sensitive responsiveness, and positively correlated to maternal psychopathology.

Within the preschool context (see Table 4D), the problems reported by teachers were not associated with the teacher's personal characteristics (e.g., age or education) or to professional characteristics (e.g., presence of an assistant at the classroom).

Mothers and teachers reports were crossed (see Table 4D). Regarding maternal report, only externalizing problems were associated with the presence of an assistant in the classroom. Concerning teacher report, internalizing problems was negatively associated with maternal education, and externalizing problems and total problems were negatively correlated to maternal sensitive responsiveness.

When analyzing association with cross-informant agreement, only agreement on total problems was positively associated with how many hours does the child spend at school. The existence of more discrepancies on internalizing problems was negatively associated with maternal education and with the presence of an assistant in the classroom, and positively correlated to maternal psychopathology. Discrepancies on externalizing problems were negatively associated with maternal education, post-graduation of the teacher and the presence of an assistant in the classroom, and positively correlated to maternal psychopathology. Discrepancies on total problems are negatively associated with post-graduation of the teachers and presence of an assistant in the classroom, and positively correlated to maternal psychopathology (see Table 4D).

Table 4D. Correlations Among Variables

	IP (M)	EP (M)	TP (M)	IP (T)	EP (T)	TP (T)	IP (A)	EP (A)	TP (A)	IP (D)	EP (D)	TP (D)
Mother												
Age ^a	-.095	-.057	-.095	-.079	-.020	.023	-.089	.020	-.063	-.134	-.031	-.097
Education ^b	-.254**	-.164*	-.239**	-.164*	-.052	-.145	-.012	-.044	-.055	-.159*	-.131	-.171*
Number of children ^a	.125	.042	.073	.101	.061	.072	-.096	-.096	-.065	.032	-.010	.013
Psychopathology ^a	.311***	.341***	.360***	-.073	-.063	-.074	.034	.025	.097	.298***	.331***	.345***
Sensitive responsiveness ^a	-.300***	-.240***	-.293***	-.130	-.191*	-.181*	.054	-.015	-.024	-.142	-.036	-.121
Teacher												
Age ^a	-.030	-.125	-.073	.017	-.024	-.011	.010	-.126	-.132	-.052	-.064	-.055
Graduation vs post-graduation ^b	-.044	-.171	-.110	-.041	-.003	-.014	-.042	-.136	-.108	-.116	-.176*	-.167*
Number of children of their own in preschool age ^a	-.061	-.022	-.055	-.054	-.082	-.082	.108	.124	.094	.003	.055	.019
Professional experience ^a	-.022	-.105	-.072	.043	-.020	.007	.030	-.065	-.082	-.062	-.059	-.071
Presence of an assistant ^c	-.104	-.164*	-.136	.066	.103	.068	.023	.032	.047	-.211**	-.277***	-.265***
Hours of work per week ^a	-.071	-.033	-.016	-.023	-.005	-.031	-.035	-.102	.003	-.030	-.004	-.001
Teaching activities ^c	-.014	-.038	.000	.092	.052	.067	.006	-.061	-.036	-.091	-.082	-.068
Number of children in classroom ^a	.119	.077	.110	.021	-.067	-.047	.074	-.003	.045	.087	.125	.114
How long knows the child ^a	.004	-.011	-.016	.013	.076	.076	.066	-.107	-.101	-.130	-.090	-.077

M = Mother | T = Teacher | A = Agreement | D = Discrepancies | ^aPearson Correlations | ^bSpearman Correlations | ^cPoint Biserial Correlations | *** $p < .001$; ** $p < .010$; * $p < .050$

Cross-informant agreement and discrepancies

Pearson correlations, used to assess cross-informant agreement, show that the agreement was low (internalizing problems — $r = .121$, $p = .111$; $M = .19$, $SD = .23$; externalizing problems — $r = .254$, $p < .001$; $M = .17$, $SD = .24$; total problems — $r = .148$, $p = .050$; $M = .22$, $SD = .15$), see Table 3. Observed discrepancies were low to moderate (internalizing problems — $M = 4.91$, $SD = 8.89$; externalizing problems — $M = 7.42$, $SD = 8.54$; total problems — $M = 16.47$, $SD = 21.51$), see Table 3.

In cross-informant agreement there were no differences concerning child sex (internalizing problems $t(173) = .400$, $p = .690$; externalizing problems $t(173) = .124$, $p = .901$; total problems $t(173) = 1.114$, $p = .267$), as well as in discrepancies analysis (internalizing problems $t(173) = .546$, $p = .586$; externalizing problems $t(173) = .864$, $p = .389$; total problems $t(173) = .915$, $p = .361$).

In cross-informant agreement there were no differences regarding clinical status (internalizing problems $t(173) = -1.037$, $p = .304$; externalizing problems $t(173) = -1.337$, $p = .183$; total problems $t(173) = -1.620$, $p = .111$), as well as in discrepancies analysis (internalizing problems $t(173) = -.289$, $p = .774$; externalizing problems $t(173) = -.555$, $p = .581$; total problems $t(173) = -.156$, $p = .877$).

Once that there were no sex or clinical status differences neither in cross-informant agreement nor on discrepancies, all analyses were performed using the entire sample.

Multiple regression analysis predicting emotional and behavioral problems

A multiple linear regression was computed to predict cross-informant agreement and discrepancies on emotional and behavioral problems, using maternal variables, teacher variables and contextual variables of preschool setting as predictors.

From all maternal variables studied (age, education, number of children, sensitive responsiveness and psychopathology), none was predictor of cross-informant agreement on internalizing problems, externalizing problems or total problems. However, maternal psychopathology appears to be a significant predictor of discrepancies between informants on internalizing problems ($\beta = 5.629$, $t = 4.183$, $p <$

.001; $F(1, 173) = 5.890, p < .001; R^2(adj) = .122 (.101), f^2 = .14$), externalizing problems ($\beta = 6.043, t = 4.697, p < .001; F(1, 173) = 6.266, p < .001; R^2(adj) = .128 (.108), f^2 = .15$), and total problems ($\beta = 15.784, t = 4.929, p < .001; F(1, 173) = 7.506, p < .001; R^2(adj) = .150 (.130), f^2 = .18$). In all cases maternal psychopathology increased the discrepancies.

The teacher's characteristics such as age, graduation vs post-graduation, and number of children of their own in preschool age were neither predictors of cross-informant agreement nor discrepancies between informants.

Other characteristics related to teachers and preschool context were not predictors of cross-informant agreement —professional experience, presence of an assistant in the classroom, teaching activities, number of children in the classroom, for how long does the teacher know the child and number of children in the classroom. As far as the discrepancies are concerned, only the presence of an assistant in the classroom is predictor of discrepancies in internalizing problems ($\beta = -4.330, t = -3.123, p = .002; F(1, 173) = 5.232, p = .006; R^2(adj) = .058 (.057), f^2 = .06$), externalizing problems ($\beta = -5.439, t = -4.135, p < .001; F(1, 173) = 8.887, p < .001; R^2(adj) = .094 (.084), f^2 = .10$), and total problems ($\beta = -13.214, t = -3.974, p < .001; F(1, 173) = 8.370, p < .001; R^2(adj) = .089 (.079), f^2 = .10$). In all cases, not having an assistant in the classroom increases the discrepancies between informants.

Discussion

Despite the cross-informant agreement being low to moderate in the literature, the agreement found in the present study was lower than expected. Berg-Nielsen (2012) had found an agreement of .26, which corresponds almost perfectly to the .27 agreement reported by Achenbach et al. (1987), .28 reported by De Los Reys et al. (2015) and .28 reported by Carneiro et al. (2015). However, in our study an agreement ranging from .12 to .25 was found, and it was only statistically significant to externalizing problems. It was also expected, as observed, a higher agreement for externalizing problems than for internalizing problems, once that these type of problems are the visible ones, and consequently much easier to identify, as reported by other authors (e.g., Ferdinand et al., 2007; De Los Reyes et al., 2015).

Regarding sex and clinical status, there were no differences on cross-informant agreement or in discrepancies. These results are in line with the meta-analysis of Carneiro et al. (2015) that evidenced already that these two differences were not observed in samples of preschool children. It is important to notice that, regarding clinical status, the sample size of referred children is only 40, which may be influencing the results, once that community children are the remaining sample.

Association tests revealed that only the number of hours that the child spends at school was correlated with agreement. This result may be explained due to the fact that although teachers are well informed about normative development, they need to spend time with each child to deeply know and understand the child's behavior in a comprehensive way, attending to the child's own developmental stage, rhythm and circumstances, avoiding inflexible perspectives. Besides this correlation, the number of hours that the child spends at school was not a predictor of agreement.

The discrepancies were significantly associated with maternal education, maternal psychopathological symptoms, teacher's education and presence of an assistant in the classroom. Results also revealed that maternal psychopathology and the presence of an assistant in the classroom were significant predictors of discrepancies.

Certainly mothers with higher education are more informed, or if not they seek for information about the child's emotional and behavioral normal development, leading them to identify more easily which behavior may be reason for concern and which ones that, besides bothering parents — like tantrums, are common at certain ages. Mothers with lower education may not be so aware of developmental information, and then they score high some behaviors that are normative.

As literature as already shown (e.g., De Los Reyes et al., 2008) mothers with psychopathological symptoms may be more focused on negative events, retaining and remembering them more easily than the positive ones. In this way, they do not only provided less effective scaffolding for their preschoolers' emotional and behavioral regulatory strategies (Coyne & Thompson, 2011), but they also tend to retain more information about unpleasant events and they resort to it at the time they assess their children. Thus, maternal psychopathology appears to have a predictive value on informant discrepancies.

As opposed to Berg-Nielsen et al. (2012), we found that the teacher's education was positively related with discrepancies, meaning that when teachers do not have a post-graduation the discrepancies with parents were higher. Perhaps teachers with a post-graduation are more concerned about mental health in preschool age, allowing them to know psychopathological problems better and to do an effort to know the children better in order to provide better teaching and support to the children.

To our knowledge it has never been studied the impact of the presence of an assistant in the classroom. Our results showed that when an assistant was not systematically in the classroom the discrepancies between mothers and teachers were higher. Possibly teachers without assistance do not have the chance to pay attention to all children equally, as they need to provide extra care to those children that overall ask for more attention or are refereed as having some type of problem or difficulty. Thus teachers, despite their competences do not have enough time to know each child deeply and offer a reliable report, turning the presence of an assistant in the classroom into a predictor of informant's discrepancies.

The present study stressed that all the information from both informants is relevant and that both informants' reports may be influenced by several variables emphasizing the fact that there is not a "gold informant".

Limitations

Besides various strengths of the current study, such as sample size, and the fact that this study highlighted the importance of some variables to the agreement between informants, some limitations should be addressed.

A longitudinal design would enable a view of the evolution of the information obtained among these informants, allowing to analyze the consistency of agreement and discrepancies throughout time and the (differential) impact of the variables that condition agreement and discrepancies

It is important to attend to the fact that only the interaction between mothers and children was assessed, and it would be interesting to do the same between teachers and children.

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CHAPTER 6

GENERAL DISCUSSION

General Discussion

In the final chapter of the present doctoral dissertation the main findings will be discussed, firstly the two first studies related to risk factors to the development of emotional and behavioral problems in preschool aged children, and subsequently the results found in the other two studies related to the assessment issues of emotional and behavioral problems in the preschool age. Finally, integrative comments will be presented regarding to the whole research project, considering its strengths, limitations, and clinical and research implications.

Risk Factors

The first two papers directed their attention to the risk factors associated with emotional and behavioral problems in preschool aged children. In the first paper the most consistent risk factors studied in literature were highlighted, and in the second paper the impact of distal (social and familial) and proximal (maternal psychopathology and sensitive responsiveness) risks was studied. These two papers were justified by the importance of preschool age as a period of development that this highly sensitive to changes and impact of negative situations/events (Fox & Rutter, 2010).

In the first paper, a systematic literature review, the main objective was pertinent due to the fact that, to date, there is disagreement in the literature concerning the risk factors that might cause psychopathology in pre-school age (Ellis, Berg-Nielsen, Lydersen & Wichstrom, 2012); consequently, there is no information about which risk factors are more frequently associated with psychopathology in preschoolers. These two gaps in literature lead to the relevance of the study of risk factors associated with emotional and behavioral problems in preschool age, thus it has become increasingly pertinent by providing a deeper knowledge of the causes and course of disorders and thus enabling efficient preventive and remediative interventions (Kovacs & Lopez-Duran, 2010).

Twenty-eight articles were included in our systematic literature review. As expected it was observed that when a risk factor is considered isolated from others it is difficult to be sure of its unique importance to the development of problems in children. Besides this idea, it is important to take into account that when a single risk is

considered, it is necessary to consider it within the context. For instance, SES should not be studied isolated from others such as unemployment, low education, low income, receiving social and economic support from social services and so on are always related to it. Several studies (e.g., Flouri, Tzavidis & Kallis, 2010; Trentacosta, Hyde, Shaw, Dishion, Gardner & Wilson, 2008) have outlined the effect of cumulative risk, and the relevance of cumulative risk composites. Because mothers are usually the primary caregivers, it was anticipated that maternal characteristics would arise as having a major importance in the child's development of emotional and behavioral problems. Some maternal risks, as maternal psychopathology, and specifically maternal depressive and anxious symptomology, are well studied as risks to child functioning. In the review it became clear that literature provides information in the direction that maternal risk factors are thought to be directly linked to parenting by decreasing positive parenting behaviors (e.g., sensitivity) and increasing negative behaviors (e.g., harsh parenting). For example, some studies (e.g., Cabrera, Fagan, Wight & Schadler, 2011), showed that maternal depression is linked to the quality of mother-child interactions, and it is well known that harsh discipline, critical parenting and uninvolved parenting influence the child development in relation to emotional and behavioral problems. Despite the importance of external risks, it is not only these influences that must be considered to affect the child's impairment. There are many risks related to the child himself. Literature indicates that sex, age and temperament are important as well.

A consistent finding in the systematic literature review is that, no matter if the focus is on distal or proximal factors, the presence of a single risk factor rarely occurs. In the majority of the studies, two or more risk factors were present, which supports a cumulative risk approach to understanding the development of psychopathology (Ogg, Dedrick, Brinkman & Carlson, 2010), which is in line with the idea that cumulative risk is harmful and contributes more to the development of emotional and behavioral problems when compared to the effect of a single risk (Beckwith, 2000; Evans, Li & Whipple, 2013; Flouri & Kallis, 2007; Mäntymaa, Puura, Luoma, Latva, Salmelin & Tamminem, 2012).

Following our systematic literature review, the focus turned into our data collected in the present research. More than understanding the effect of cumulative risks, the goal was to know the specific contribution of each risk to the cumulative risk model. First, it is important to notice that all risks were positively correlated to the

child's outcome, indicating that their presence was associated to more problems. Results of the second paper were in agreement with literature related to cumulative risks approach (Sameroff, Seifer, Zax & Barocas, 1987; West, Denton & Germino-Hausken, 2000), supporting the cumulative risk hypothesis: the increased number of risk factors in early childhood predicts emotional and behavioral problems in the same age. It was also possible to observe that the studied risks have a specific contribution, as some had a major weight than others, in line with the notion that adversities tend to co-occur during preschool age (Dong et al., 2004). In line with this hypothesis, some risks may have a direct effect, but also an indirect effect on child outcome, being the direct effect minor because its effect was previously considered throughout other risks (Ogg, Dendrick, Brinkman & Carlson, 2010). In the second paper it was clear that risks are associated to each other, indicating that children need to have several competencies to prevent the emergence of problems. These adversities challenge their growth and psychological functioning.

Attending to the results of both papers, it becomes obvious that an integrative approach is needed — combining developmental psychopathology and a family-systems approach — to research on risk factors for preschool-age psychopathology, with potential implications on clinical assessments of children in that age group (Mash & Hunsley, 2007). Children are integrated in a familial system which in turn is part of a social system, which in turns follows specific cultural, social, religious, and political practices. Accounting to all this, children have their own idiosyncrasies. Risk factors for emotional and behavioral problems can be more distal (e.g., cultural questions) or proximal (e.g., maternal education and age), and can influence one another (e.g., related variables to low SES). Thus a comprehensive and integrative approach to children's psychosocial development not only enhances the quality of problem analysis and understanding, but it also contributes to better case formulations, as well as an earlier intervention while the problems are not yet consolidated. As soon as risks are identified and their influence is minored, the chances for children to present normative developmental trajectories and not developing emotional and behavioral problems are better. Taking this into consideration, interventions in community and family settings, should occur as early as possible, focusing on the different risk factors assessed, contributing to a positive and protective effect on children's development.

Assessment Issues

Attending to the need of an integrative approach to child's development, emotional and behavioral problems are not confined to familial contexts; they are also present in other contexts, like preschool setting. Thereby, these types of problems should also be assessed beyond the familial context. On the one hand, it extends the accuracy of the assessment, and on the other hand, it provides useful information about the symptoms (e.g., are they present in a single context? is the problem severe?). In line with this, the third and fourth papers become relevant — meta-analysis and cross-informant agreement and discrepancies analysis.

In the meta-analysis was found that the agreement between parents and teachers of preschool children is low to moderate, as observed in older children (e.g., Berg-Nielsen, Solheim, Belsky & Wichstrom, 2012; Cai, 2004; Gagnon, Vitaro & Tremblay, 1992; Müller, Achtergarde & Furniss 2011; Renk, 2005; Satake, Yoshida, Yamashita, Kinukawa & Takagishi, 2003; Touliatos & Lindholm, 1981), and as reported by Achenbach, McConaughy & Howell (1987). Cross-informant agreement was lower for internalizing problems than for externalizing problems, and this result is consistent with previous literature. Agreement between informants was higher to observable behaviors than to non-direct observable ones, as it was also reported by other studies (e.g., Berg-Nielsen et al., 2012; Ferdinand, van der Ende & Verhulst, 2007; Gagnon et al., 1992; Grietens et al., 2004; Kerr, Lunkenheimer & Olson 2007; Liu, Cheng & Leung, 2011; Müller et al., 2011; Rescorla et al., 2012; Satake et al., 2003; Winsler & Wallace, 2002; Vitaro, Gagnon & Tremblay, 1991). It was found that agreement was better for externalizing problems than for internalizing problems, and it may be because those types of problems are directly observable, and consequently more obvious to report (Satake et al., 2003). In the third paper, no differences were found regarding child's sex or type of sample, however, there was a better agreement on internalizing problems when ASEBA forms were used. This significant result may indicate that ASEBA forms are the most complete instrument of assessment regarding internalizing problems, enhancing parents and teachers to be more aware to this kind of problems. Generally, the findings lead to the raising of some questions related to what informant's characteristics influence their ratings of child's emotional and behavioral problems. This issue was assessed in the fourth paper where familial and preschool setting variables were considered.

In the present sample, cross-informant agreement was low to moderate, which is very similar to other studies (e.g., Achenbach et al., 1987; Berg-Nielsen et al., 2012; De Los Reys et al., 2015). Like in the meta-analysis, no sex differences were found. Regarding the type of sample, mothers and teachers from children included in the clinical sample reported more internalizing problems, externalizing problems and total problems when compared to mothers and teachers of children from community. However, there were no differences neither on cross-informant agreement nor discrepancies between the two samples.

The study of associations between characteristics that might influence the agreement revealed that only the number of hours that the child spends at school was correlated with agreement. Concerning the variables that influence discrepancies, it was different, as they were associated with maternal education, maternal psychopathological symptoms, teacher's education and the presence of an assistant in the classroom. Results also revealed that maternal psychopathology and the presence of an assistant in the classroom were significant predictors of discrepancies.

These two last papers are important once they brought to light some characteristics that have not been considered yet, when examining differences and discrepancies on cross-informant reports. Besides the significant results, the fourth paper did not clarify if there is an informant better than the other, as it has been assumed that an adequate assessment of child's functioning includes information from several informants and settings. This supposition is according to literature where the report of symptoms and dysfunction are more likely to be manifested in the more demanding environments, like the school, than at home (Wolraich, Lambert & Bickman, 2004) however familial environment is one of the most important where children are inserted.

Overall, both papers demonstrate that cross informant agreement is not high, but it also evidences that informants can observe the symptoms in different ways because of the contexts (Wolraich et al., 2004), their own biases (De Los Reyes & Kazdin, 2008), and the interaction of the child with others (Berg-Nielsen, et al., 2012). It was not expected that mothers and teachers agree in all symptoms and severity, but of main importance is their familiarity and contact with the children, which will reflect the richness of their report and contribution to a more robust assessment (Zahner & Daskalakis, 1998).

Study strengths, limitations and practical implications

Some strengths and limitations need to be addressed in order to help the understanding of the results presented above. As strength, it should point out the combined use of questionnaire and observational measures. The assessment of risk was based on an interview to mothers, allowing to get information related to risks in a wide manner. In some cases, mothers reported the absence of risks, but throughout the interview it was possible to know that mothers did not share some information that was collected in other topics of the interview. Despite the effort to collect the maximum of information about the risk, it is possible that mothers did not share all the information. Having this in mind, when data was collected with preschool teachers, they were also asked if they knew about potential risk in each family. However, information provided by preschool teachers was only considered when they had specific episodes or specific information about situations related to the family. If they based their information on suppositions or in facts that someone told to them, it was not included.

Concerning the sample, it is important to refer that the sample used was not a high risk sample, which may be considered as a limitation of the study. If the analysis were undertaken using a high risk sample, probably more characteristics of the informants and from the context would be revealed as being significant. Similarly, longitudinal data would enable a view of the evolution of the information obtained among these informants, enabling analysis to study the consistency of agreement and the consistency of the influence of the variables that condition agreement. Even so, in our sample was possible to detect effects of the exposure to risk. In studies that focus their attention into co-occurrence of risk, results are always influenced by many variables that are not considered in the models. Considering that it was not possible to control all variables, the present research focused in specific risks that potentially are related to others such as neonatal and prenatal risks, social support. Obviously, the risks under study do not fully capture the spectrum of stressors that children are exposed during preschool years.

In data analysis, age and gender were always considered because of two main reasons. First, parents may under-report problems to avoid stigmatization or attract unwanted involvement with mental health professionals (De Los Reyes & Kazdin, 2004; De Los Reyes & Kazdin, 2005), and second, given that there is no consistency in

literature, it is important to control its effect, especially in community samples, as recommended by Ruiters, Dekker, Verhulst, and Koot (2007). Regarding to data analysis, it is also essential to report two limitations. First, the analysis does not capture the temporal relations between risks. They provide important information at one time in point, not informing about how early the exposure to each risk may contribute to current risks and the outcome. Second, the analyses offer information on specific contribution of each risk to emotional and behavioral problems in preschool age, but do not inform about the influence of specific combination of risks. Cluster's analyses allows to know what are the risk combinations that are more negative to the child's development, however the present study design did not consent these kind of analysis.

As mothers were the primary caregivers of children, only they were considered when collecting information about the child. It would be interesting to include fathers' report and interactions with the child. Within our sample, fathers were almost always absent from the house or the preschool, at the time of data collection, but if they were invited to participate many would probably agree to do it.

Despite the limitations, the current study highlights the role of risks in the development of emotional and behavioral problems in preschool age, and what kind of factors could influence the agreement between raters. The results should serve as driving forces in the design of preventive interventions in preschoolers' mental health, involving their parents and parents to promote children's development.

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