PREADOLESCENT INTERNALIZING AND EXTERNALIZING PSYCHOPATHOLOGY

A DEVELOPMENTAL PERSPECTIVE

Judi Mesman

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Een ontwikkelingsperspectief

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Introduction

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Introduction

In the field of child psychopathology research, a growing number of longitudinal studies have investigated early developmental precursors of maladaptive outcomes (see for reviews: Campbell, 1995; Koot, 1995; Sameroff and Seifer, 1990). The multitude of theoretical assumptions and related risk factors and outcomes represented by these studies calls for a more integrated approach to the study of the development of psychopathology. In such an approach, the developmental psychopathology paradigm and the distinction between internalizing and externalizing psychopathology are especially useful. The developmental psychopathology paradigm is a promising theoretical framework which provides a structured approach to the development of maladaptation across the life-span. This approach centers around the identification of endogenous and environmental factors that are involved in the early origins, course, and detection of psychopathology (Cicchetti and Cohen, 1995a; Koot, 2000). Because of the emphasis on the developmental aspect of psychopathology in this approach, the distinction between internalizing and externalizing expressions of dysfunction is of special interest, since it is the only consistently empirically identified classification across ages (Cicchetti and Toth, 1991). Internalizing disorders are characterized by disordered mood or behavior such as withdrawal, anxiety, or depression, while externalizing disorders are characterized by disordered behavior such as aggression, or delinquency, and hyperactivity (Achenbach and McConaughy, 1997; Cicchetti and Toth, 1991). In the following section, the developmental psychopathology perspective on the early origins, course, and detection of psychopathology will be introduced. This framework and salient gaps in related empirical efforts regarding internalizing and externalizing psychopathology provide the basis for this thesis.

Early origins of psychopathology

The developmental perspective focuses on both early child and context characteristics as potential precursors of psychopathology. The process of adaptation is seen as a succession of salient developmental challenges that may be successfully

negotiated depending on internal (child) and external (context) resources. A hierarchical process or 'snowball effect' is postulated in which the presence of positive resources increases the chance of successfully negotiating key developmental demands, which in turn will leave the a child even better equipped to meet the next developmental task. In contrast, a lack of resources is likely to lead to problematic adaptation to developmental demands, which increases the chance of future developmental failure (Cicchetti and Cohen, 1995a). As Sroufe (1989) noted, a major factor in the development of maladaptation is preceding development itself.

Child characteristics logically represent the closest and most integral part of the subject of investigation and are seen as crucial to the process of adaptation throughout the life-span. Indeed, substantial continuity of early problematic behavior patterns into childhood, adolescence, and even adulthood have been reported by several authors (e.g., Campbell, 1995; Caspi et al., 1996; Hofstra et al., 2000). As noted by Sroufe (1989), externalizing psychopathology early in life is generally found to be most predictive of later psychopathology, including internalizing problems (Fischer et al., 1984; Rose et al., 1989). However, several studies have also reported considerable continuity of early internalizing problems into later childhood (Ialongo et al., 1993; 1995; Pianta and Castaldi, 1990; Verhulst et al., 1990). Further, several early temperamental characteristics have been found to predict internalizing and externalizing problems in later life. These predictive associations are generally conceptually coherent in that disinhibited temperament predicts later externalizing problems, and temperamental inhibition predicts later internalizing problems (see for a review: Prior, 1992).

In the developmental psychopathology perspective, the importance of early child characteristics is viewed as inseparable from the context in which these exist (Sroufe, 1997). During the early years, this context is mainly represented by the family. Especially at a very young age, children are largely dependent on the care of their parents, and the parent-child relationship may even represent the first and most fundamental developmental process in a child's life (Carlson and Sroufe, 1995). Several studies have reported evidence that early family and parenting variables are related to concurrent and short-term prospective internalizing and externalizing psychopathology in children (see for reviews: Campbell, 1995; Carlson and Sroufe, 1995; Emery and Kitzmann, 1995). The most consistently found family and

parenting predictors of internalizing and externalizing psychopathology include insecure attachment, insensitive or harsh parenting, parental psychopathology, low socio-economic status, and stressful life-events.

Two salient gaps in previous research regarding the early origins of internalizing and externalizing psychopathology can be noted. First, although early family risk factors have been found to predict psychopathology in later years, virtually no studies have investigated the impact of early family risk factors while accounting for the effects of early child characteristics. Therefore, their long-term impact on the development of such problems *independent* of early child characteristics is still unclear. Considering the substantial developmental stability of child problem behavior across ages, the question is raised whether early context variables can significantly add to the prediction of psychopathology. Second, it is unclear whether some risk factors are specific to one rather than the other expression of psychopathology. This issue is of particular interest regarding the development of internalizing and externalizing psychopathology. While there is considerable agreement regarding the (early) symptomatic expression of these dimensions, there is little evidence to support the specificity of concurrent or early non-symptomatic context variables in relation to internalizing and externalizing psychopathology. Only one study has systematically investigated whether child and family risk factors can distinguish between internalizing and externalizing problems in childhood (Weiss et al., 1998), but this study did not include longitudinal data, which precludes inferences regarding the *developmental* specificity of risk factors.

The course of psychopathology

Central to the developmental approach to psychopathology is the diversity in course and outcome of developmental pathways. This is reflected in the concepts of multifinality and equifinality. Multifinality refers to pathways in which a single component of development may lead to a variety of outcomes. Conversely, equifinality is concerned with a diversity of pathways to the same outcome (Cicchetti and Rogosch, 1996; Egeland et al., 1996). Another distinction between different types of developmental pathways of psychopathology is that between homotypic and heterotypic pathways. Homotypic pathways refer to the longitudinal relation between the same types of disorders (e.g., internalizing or externalizing

problems), and heterotypic paths refer to the longitudinal association between different types of disorders (e.g., from internalizing to externalizing, or vice versa). A growing number of longitudinal studies have investigated the development of internalizing and externalizing psychopathology from an early preschool age (e.g., Campbell and Ewing, 1990; Egeland et al., 1996; Fischer et al., 1984; Lavigne et al., 1998; Pianta and Castaldi, 1990; Tremblay et al., 1994; Verhulst et al., 1990). However, several issues regarding developmental pathways of psychopathology from an early age have remained virtually unaddressed, including the potential complexity of longitudinal relations and the influence of social problems and sex differences in such pathways.

First, to do justice to the complexity of developmental pathways of psychopathology, both internalizing and externalizing psychopathology need to be investigated simultaneously, allowing for a comprehensive picture of their longitudinal stabilities and developmental relation to each other. Further, a wide variety of early emotional and behavior problems need to be investigated as potential starting points in the development of internalizing and externalizing psychopathology. Only a few included both internalizing and externalizing problems (Egeland et al., 1996; Fischer et al., 1984; Lavigne et al., 1998; Verhulst et al., 1990), and none included a wide variety of early problems.

Second, the developmental psychopathology framework emphasizes (in)competence in social functioning as a crucial element in the process of (mal)adaptation (Masten and Coatsworth, 1995; Parker et al., 1995). The inability to master key developmental tasks early in life, may potentially set a child on a course of psychopathology, and learning social skills and making friends represent one of the most important developmental challenges to young children. Further, several authors have suggested mediational models in which early symptoms such as aggression hamper the development of positive social relations, and the resulting peer rejection or social isolation in turn, lead to further emotional and behavioral problems (Dodge, 1993; Panak and Garber, 1992; Patterson et al., 1989; Patterson and Stoolmiller, 1991). Although a number of studies have reported significant cross-sectional and longitudinal associations between social problems and both internalizing and externalizing psychopathology (e.g., Bell-Dolan et al., 1995; Cole et al., 1996; Hinshaw and Melnick, 1995; Hymel et al., 1990; Morison and Masten,

1991), none have investigated the role of social problems in pathways of internalizing and externalizing psychopathology from the early preschool years into later childhood.

Finally, the importance of examining potential sex-specific pathways of psychopathology was convincingly advocated in a comprehensive paper by Keenan and Shaw (1997). These authors note that the commonly found sex differences in rates of internalizing and externalizing psychopathology vary across ages, suggesting that the development of these dimensions of psychopathology may run a different course for boys and girls. However, there is a paucity of studies investigating pathways of internalizing and externalizing psychopathology from an early age separately for boys and girls. Therefore, it remains unclear whether pathways of psychopathology and the role of social problems are the same across sexes regardless of these differences, or whether age-specific sex differences in psychopathology and social functioning are reflected in different early pathways to internalizing and externalizing problems in later childhood.

Detection of psychopathology

The focus on the early origins and manifestations of psychopathology in the developmental perspective is not only of theoretical interest. It is this particular subject that represents the link to clinical practice in that it may provide insights relevant to the development of adequate prevention and intervention strategies (Cicchetti and Toth, 1992). In clinical practice, the referral of children to mental health services is generally based on the concern of significant others such as parents or teachers. When experiencing emotional or behavioral problems, children themselves are generally not in a position to seek professional help without an adult. Further, at a very young age, children are not equiped to report about their mental state and behavior, which makes others the primary informants regarding early signs of disturbance. However, the different views on a child's psychological well-being represented by the parents, the teacher, or the child generally show relatively little correspondence (Edelbrock et al., 1986; Rowe and Kandel, 1997; Verhulst and Akkerhuis, 1989; Verhulst and van der Ende, 1992). This lack of agreement between informants and the absence of a golden standard for the assessment of emotional and behavioral problems in children hampers the study of psychopathology during

childhood. This problem seems to be especially relevant regarding the (early) detection of child internalizing psychopathology compared with externalizing psychopathology (Herjanic and Reich, 1997; Kolko and Kazdin, 1993). In addition, the first type of problems is more strongly related to child-perceived need for professional help than the latter, while the reverse is true for parent-perceived need for professional help for their children (Wu et al., 1999).

Externalizing problems and disorders represent socially unacceptable behaviors that may even be a potential threat to others (e.g., delinquency, physical aggression), and on a broader level, society. Therefore, there is substantial motivation from others, such as parents or teachers, to seek treatment for children with such problems. Indeed, children with externalizing problems are overrepresented in professional mental health care (Wu et al., 1999), and early developmental precursors of externalizing problems have received substantial theoretical and research attention (Cicchetti and Toth, 1991). Because of their social impact, externalizing problems are easily recognized by others. Problems such as hyperactivity and oppositional behavior can put a great strain on family life and have been shown to be related to substantial parenting stress (Anastopoulos et al., 1992; Fischer, 1990). Such behaviors are also salient in a classroom setting, where teachers have the difficult task of minimizing the impact of children with externalizing problems on the social and academic processes involving other children in the class.

Internalizing behaviors, unlike externalizing behaviors, do not pose a potential threat to others, which makes such behaviors less salient to others, including parents, teachers, but also researchers and policy makers, and even the society as a whole. Several studies have reported poor agreement between child-reports and other informants' reports of child internalizing problems than externalizing problems (Herjanic and Reich, 1997; Kolko and Kazdin, 1993; Verhulst and Van der Ende, 1991). These findings may be due to several reasons. First, internalizing problems refer to an inner mental state that, although salient to the child itself, may be less easily detected by others than externalizing problems. Although certain behaviors indicating internalizing problems such as social withdrawal, irritability, or separation anxiety may be observed by others, the underlying subjective mood may not necessarily be noticed. Second, several developmental theories posit that

parental insensitivity to children's needs and a lack of parental involvement may lead to child internalizing problems (Carlson and Sroufe, 1995; Hammen and Rudolph, 1996). This parental insensitivity may be stable into later childhood, which may explain why parents are relatively unaware of children's internalizing problems. Further, since both child depression and anxiety are strongly related to similar problems in parents (Rutter et al., 1990), it may be that the presence of such symptoms in parents hampers sensitivity to a child's feelings and needs. Considering these difficulties regarding the detection and appropriate referral of children with internalizing problems, it is of special interest to investigate which (early) behaviors as observed by others signal the presence of or the risk for child-perceived internalizing problems.

Aims of the project

The general aim of the present study was to contribute to the understanding of the development of internalizing and externalizing problems in childhood from an early age, and was guided by the developmental psychopathology perspective. Based on the key issues in developmental psychopathology research described above, the following specific research questions are addressed in the present report:

1. Do early preschool parenting and family risk factors independently contribute to the prediction of later internalizing and externalizing psychopathology, when similar early preschool psychopathology is accounted for?
2. Which early and concurrent child and family risk factors are specific correlates of preadolescent internalizing and externalizing problems?
3. Which developmental pathways from specific preschool problems to internalizing and externalizing psychopathology in preadolescence can be identified, and are pathways different for boys and girls?
4. Which behaviors in preadolescence as reported by parents and teachers signal the presence of concurrent child-perceived internalizing problems, that is depression and anxiety?
5. Which early and late preschool behaviors as reported by parents and teachers signal a risk for child-perceived depression and anxiety in preadolescence?

Project design

The present study reports the results of the second follow-up (Time 3) of a sample of 420 preschool children aged 2-3 years from the general population (Koot, 1993; Koot et al., 1997; Koot and Verhulst, 1991). Table 1.1 summarizes the number of participants at each time of assessment for each informant. Table 1.2 lists the measures used at each time of assessment.

Table 1.1

Respondents at Each Time of Assessment (and Percentage of Original Time 1 Sample)

	1989	1991		1997	
	2-3 years	4-5 years		10-11 years	
	N	*N*	% of Time 1	*N*	% of Time 1
Parents	420	397	95	358	85
Teachers	--	342	81	294	70
Children	--	--		295	70

Participants at Time 1 and Time 2

At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (mean age 2.56; *SD* = 0.80; 215 boys and 205 girls; response: 91% of target sample). In 1991, two years after the first time of measurement, the sample was approached again for a follow-up study (Time 2). Usable parent information was obtained for 397 of the 420 children participating at Time 1 (94.5%; 204 boys, 193 girls; mean age 5.31; *SD* = 0.64). Usable teacher information was obtained for 342 children of the 420 children participating at Time 1 (81.4%).

Parent-reports at Time 3

In August 1997, all 420 respondents who participated at Time 1 received a letter asking them to participate in a second follow-up (Time 3), regardless of their participation at Time 2. After receiving the letter, respondents were contacted by telephone to obtain consent to send them a package of questionnaires for the second follow-up. Twenty-three parents refused to participate, two of whom did so because their children had problems and were already subjected to many tests and questions

from mental health institutes. Further, 14 parents had unlisted phone numbers and did not respond to subsequent letters asking them to contact us; three respondents could not be located. The parents of one child with Down's Syndrome as well as

Table 1.2

Variables and Measures Used at Each Time of Assessment

Variables	Time 1	Time 2	Time 3
Parent-reports			
Problem behavior	CBCL/2-3	CBCL/4-18	CBCL/4-18
DSM-IV diagnoses	-	-	DISC-IV-P
Language development	-	LSI	-
Temperament	-	DOTS-R	DOTS-R
Life-events	LEQ	LEQ	LEQ
Parenting stress	-	PSI	PSI
Family functioning	-	-	FAD
Child health	Interview	Interview	Questionnaire
Family characteristics	Interview	Interview	Questionnaire
Parental psychopathology	Interview	Interview	YASR
Teacher-reports			
Problem behavior	-	TRF	TRF
School competence	-	NOSP + TRF	TRF
Language development	-	LSI	-
Social functioning	-	-	RCP
Child-reports			
Competence	-	-	SPPC
Social support	-	-	SSSC
Depression	-	-	DDPC
Trait anxiety	-	-	STAIC

NOTE: CBCL/2-3 = Child Behavior Checklist for 2-3-year-olds; CBCL/4-18 = Child Behavior Checklist for 4-18-year-olds; DISC-IV-P = Diagnostic Interview Schedule for Children IV-Parent version; LSI = Language Screening Instrument; DOTS-R = Dimensions of Temperament Survey-Revised; LEQ = Life-Events Questionnaire; YASR = Young Adult Self-Report; TRF = Teacher's Report Form; NOSP = Nijmegen Observation Scale for Preschoolers; RCP = Revised Class Play; SPPC = Self-Perception Profile for Children; SSSC = Social Support Scale for Children; DDPC = Dimensions of Depression Profile for Children; STAIC = Spielberger State-Trait Anxiety Inventory for Children.

parents of a child diagnosed with autism asked to be removed from the sample, because the questionnaires were inappropriate for these children. Finally, 378 parents gave consent to send them a package of questionnaires and agreed to fill these out and send them back to us, 20 of whom never did. Usable written parent information was obtained for 358 children (85.2% of the original 1989 Time 1 sample; 180 boys, 178 girls; mean age 10.9 years; *SD* = 7.2 months; age range 9.8-12.5 years). The majority of written parent information was obtained during September to November 1997. The average time between Time 1 and Time 3 was 7.90 years (*SD* = 0.17; range 7.42 – 8.67 years).

After obtaining written information, parents were telephoned again in February 1998, to make an appointment for the DISC-P home interview. Of the 358 parents who sent us written information, 332 (92.7%) gave permission for a home visit and were interviewed by one of 11 trained lay interviewers (10 female, 1 male), who had just finished or were in the final year of a study in the social or medical sciences. The reasons given by the remaining 26 parents for not participating in the interview were either "no time" or "do not want home visitors". The majority of these interviews were conducted during April to June 1998. There was an average of 7.5 months (*SD* = 2.0) between the collection of written parent information and the interview.

Teacher and child-reports at Time 3

Included in the mailing to the parents was a form asking for permission to send the child's teacher two questionnaires. Usable teacher information was obtained for 294 of the 358 participants at Time 3 (82.1%). Forty-seven parents did not give their consent to approach teachers, and of the 311 teachers for whom parental consent was obtained, 17 never returned their questionnaires. For the children's reports, parental consent was obtained in 314 cases. Of these, 16 questionnaires were never returned, 9 returned questionnaires were incomplete. Usable child-reports were obtained for 295 children. The majority of teacher information was obtained in the period from November 1997 to January 1998.

Structure of the present report

In *Chapter 2*, the independent eight-year predictive value of a wide range of early preschool child and family risk factors regarding preadolescent internalizing and externalizing DSM-IV diagnoses is examined. In *Chapter 3*, the specificity of a wide range of early and concurrent child and family risk factors in relation to preadolescent Internalizing and Externalizing problems is investigated. In other words: do some factors specifically enhance the risk for internalizing or externalizing problems, or do they tend to be rather non-specific? Two methods of assessing specificity of risk factors were used and compared. *Chapter 4* describes pathways from a variety of specific behavior problems at age 2-3 years to internalizing and externalizing problems at age 10-11 years, and the role of social problems and psychopathology at school-entry in such pathways. The influence of sex of the child and the type of informant (parent or teacher) on such pathways were also investigated. *Chapter 5* is concerned with the identification of children who report internalizing problems such as depression and anxiety. Children with high self-reported internalizing scores were compared to children in the 'normal' range on a large number of specific parent- and teacher-reported problem behaviors. In *Chapter 6*, early and late preschool predictors as reported by parents and teachers regarding child-reported internalizing problems in preadolescence were investigated. Finally, in *Chapter 7*, the results presented in the foregoing chapters will be integrated and discussed from the developmental psychopathology perspective.

Early Preschool Predictors of Preadolescent Internalizing and Externalizing DSM-IV Diagnoses

Judi Mesman and Hans Koot

Submitted for publication

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Early Preschool Predictors of Preadolescent Internalizing and Externalizing DSM-IV Diagnoses

Abstract

The objective was to investigate the independent predictive value of psychopathology and family risk factors in early preschool in relation to internalizing and externalizing psychopathology in preadolescence. Subjects were participants in a longitudinal study of 420 2-3-year-olds from the general population that started in 1989. At second follow-up 8 years later (ages 10-11 years), 358 children participated again. For the present study, 332 children for whom DSM-IV diagnoses (derived from the DISC-IV-Parent version) were obtained at age 10-11 years were included. Preschool risk factors were obtained through the Child Behavior Checklist/2-3 and a parent interview. Early preschool internalizing and externalizing problems were predictive of their DSM-IV counterparts eight years later, independent of the influence of early family risk factors. Preschool child physical problems were independently predictive of both internalizing and externalizing diagnoses in preadolescence. Of the environmental risk factors, only stressful life-events contributed independently to the prediction of later externalizing problems. Early adverse family circumstances and parenting characteristics did not contribute to the prediction of later psychopathology once child characteristics are accounted for.

Introduction

One of the main research aims in the field of developmental psychopathology is the early identification of children at risk for different types of psychopathology (Cicchetti and Cohen, 1995a; Sroufe, 1989). In longitudinal risk research, a focus on very young children is of special interest. The extensive developmental changes and the significance of family life during the preschool years may potentially set a child on a course of adaptation or maladaptation, and more specifically a path to one type of disorder rather than another (Campbell, 1995). In addition, the internalizing-externalizing distinction is especially useful in the identification of early child and family risk factors for different types of disorders, since it represents the most

consistently empirically identified classification of psychopathology across ages, including the early preschool years (Achenbach et al., 1987a; Cicchetti and Toth, 1991).

Preschool child and family risk factors can be grouped according to their 'proximity' to the child (cf. Bronfenbrenner, 1979). The first category includes child disorders, both emotional/behavioral and physical, that logically represent the closest and most integral part of the subject of investigation. The second category includes aspects of the parent-child relationship (e.g., insecure attachment) and parenting strategies (e.g., physical punishment), that represent context risk factors directly related to the child. The third category includes general adverse family circumstances, such as low socio-economic status (SES), stressful life-events, and family psychopathology, that posit a potential negative influence on the child, but are not necessarily directly related to or aimed at the child.

A large variety of preschool risk factors from all three categories have been found to significantly predict internalizing and externalizing psychopathology in later childhood (see for a review: Campbell, 1995). However, relatively few longitudinal studies have investigated family risk factors from an early preschool age. Those that did, were generally concerned with family factors related to the *stability* of early problems (Campbell et al., 1996; Lavigne et al., 1998; Prior et al., 1992). This strategy ignores children who do not yet show significant psychopathology at an early age, but who may live under family circumstances that predispose them for psychopathology in later childhood. Further, little is known about the *independent* predictive value of these risk factors when early psychopathology is accounted for. This is especially relevant considering the commonly found cross-sectional association between child psychopathology, parenting, and adverse family characteristics (Belsky et al., 1996; Sonuga-Barke et al., 1996). To investigate the independent predictive value of preschool risk facors regarding psychopathology in later childhood, the hierarchy of risk factors according to their proximity to the child is especially useful. The question is raised whether and how each subequent category can add to the prediction of psychopathology when the previous category is accounted for.

Both early emotional/behavioral and physical child disorders are potentially important risk factors in the development of psychopathology in later years. There is

a growing body of evidence that internalizing and externalizing problems in the preschool and kindergarten years are considerable predictors of similar problems in later childhood (Campbell and Ewing, 1990; Egeland et al., 1996; Fischer et al., 1984; Lavigne et al., 1998; Rose et al., 1989). In addition, there is some evidence that preschool externalizing problems can predict later internalizing problems (Egeland et al., 1996; Fischer et al., 1984; Lavigne et al., 1998; Rose et al., 1989), and to a lesser extent vice versa (Egeland et al., 1996; Lavigne et al., 1998). These results reflect a substantial continuity of psychopathology from the preschool years into later childhood and adolescence. There is also considerable evidence regarding the long-term impact of early *physical* health problems regarding the development of psychopathology (Allen et al., 1998; Pless et al., 1993; Wallander and Varni, 1998). However, most of these studies were concerned with *chronic* physical disorders, rather than a wider range of physical problems that may occur more frequently in the general population. To our knowledge, such preschool physical health problems have not been investigated in the context of possible coexisting early problematic behaviors in a general population sample. This is especially important considering that a variety of somatic and psychosocial/behavioral problems have been found to occur in clusters, suggesting a complex interaction between various forms of dysfunction (Starfield et al., 1984).

The parent-child relationship and parenting characteristics are an integral part of theories regarding the development of psychopathology (Carlson and Sroufe, 1995; Richter, 1994). Theories of internalizing problems tend to focus on the role of insecure attachment as a result of negative maternal attitudes towards the child characterized by hostility, little warmth, and inconsistent availability (e.g., Cicchetti and Toth, 1995; Hammen and Rudolph, 1996; Rubin and Mills, 1991). A negative parent-child relationship is thought to lead to a negative internal 'working model' that either anticipates rejection by withdrawal, or one that expects unavailability by helplessness and dependence (Cicchetti and Toth, 1995). The development of externalizing problems has often been linked to early harsh discipline and physical punishment (Strassberg et al., 1994; Weiss et al., 1992). Several studies have shown that physical discipline ranging from spanking (Strassberg et al., 1994) to more severe and harsh physical punishment (Weiss et al., 1992) are prospectively related to externalizing problems. This association is thought to be due to a cycle of

vicarious reinforcement of aggressive behaviors, leading the child to imitate the parent and internalize the behavior as a normal way of coping with certain situations (Strassberg et al., 1994). It must be noted that, although less widespread and consistent, there is also evidence that insecure attachment is related to externalizing problems (Greenberg et al., 1997), and that harsh discipline is related to internalizing problems (Weiss et al., 1992).

A number of adverse family circumstances have been found to be related to psychopathology in children (Emery and Kitzmann, 1995), including family psychopathology, maternal absence, stressful life-events, and low socio-economic status (SES). Family psychopathology is a potential risk factors for psychopathology in children through genetic or parenting mechanisms (Downey and Coyne, 1990; Rutter et al., 1990). There is evidence that there is a genetic component in the familial occurrence of psychopathology (see for a review: Rutter et al., 1990). Further, parental psychopathology may be the cause of ineffective and harmful parenting strategies which may cause psychopathology in children (Cummings and Davies, 1994). Frequent maternal absence has also been found to predict psychopathology in children (see for a review: Belsky, 1990). This finding is generally thought to be due to the negative effect that maternal inavailability can have on the attachment process (Pierrehumbert et al., 1996). Stressful life-events have also been consistently implicated as a risk factor for psychopathology (Berden et al., 1990; Goodyer, 1990). This association can be seen as a simple stress-reaction process, but is likely to be more complex than that through the effects of coping, the (un)availability of social support, and the possibility of a reciprocal association (DuBois et al., 1992). Finally, low socio-economic status has been well documented as a small but significant risk factor for psychopathology in children (Verhulst, 1995). This is generally hypothesized to be due to the effects of factors thought to be related to low SES such as ineffective parenting, and reduced access to a variety of resources (McLoyd, 1998).

The aim of this study is to investigate the independent predictive value of early preschool (ages 2-3 years) child disorders (internalizing and externalizing psychopathology, physical health problems), adverse parenting characteristics (negative maternal attitude, harsh discipline), and adverse family circumstances (family psychopathology, frequent maternal absence, stressful life-events, low SES)

regarding internalizing and externalizing DSM-IV diagnoses in preadolescence (10-11 years) in a general population sample.

Methods

Sample and procedure

A more detailed description of the sample and procedure can be found elsewhere (Mesman and Koot, in press-a; Mesman and Koot, in press-b). The procedures for all three times of assessment were approved by the medical-ethical committee of the Erasmus University Rotterdam/University Hospital Dijkzigt.

Subjects were participants in the second follow-up of a longitudinal study of preschool children from the general population (Koot, 1993; Koot et al., 1997; Koot and Verhulst, 1991). The original Time 1 sample of preschool children was drawn randomly and stratified by age and sex from the inoculation register of the Dutch province of Zuid-Holland, which included all 2-3-year-olds in the province (excluding Rotterdam), and from the Rotterdam municipal population register. At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (mean age 2.6; $SD = 0.8$; 215 boys and 205 girls; response: 91% of target sample). In August 1997, all 420 respondents who participated at Time 1 received a letter asking them to participate in a second follow-up (Time 3). Usable written parent information was obtained for 358 children, the respondents being primarily the mothers (85.2% of the original 1989 Time 1 sample; 180 boys, 178 girls; mean age 10.9 years; $SD = 7.2$ months; age range 9.8-12.5 years). After obtaining written information, parents were telephoned again in February 1998, to make an appointment for the DISC-P home interview. Of the 358 parents who sent us written information, 332 (92.7%) gave permission for a home visit and were interviewed by one of 11 trained lay interviewers (10 female, 1 male), who had just finished or were in the final year of a study in the social or medical sciences.

Instruments

Time 1 psychopathology was assessed using the Child Behavior Checklist for ages 2-3 years (CBCL/2-3; Achenbach, 1992). In a study involving exploratory and confirmatory factor analyses in a community, a clinical, and a twin sample of Dutch preschool children by Koot et al. (1997), the CBCL/2-3 was found to have a

somewhat different factor structure than the U.S. version (Achenbach, 1992). For the present study, only the Dutch broadband Internalizing and Externalizing syndromes were used (see for a description: Koot et al., 1997). Since no nationally representative Dutch normative data are available for the CBCL/2-3, deviancy was defined as having scores above the 82nd percentile based on frequency tables within our own sample, congruent with the borderline cutoff commonly used for the Child Behavior Checklist for 4-18-year-olds (Achenbach, 1991a).

In an interview with the parent, information on a variety of child, parenting and family characteristics was obtained. These were dichotomized and grouped into meaningful variables, which in turn were grouped into the categories described in the introduction. The variable 'child physical health problems' (one or more physical problems rated as 'serious' by the parent such as ear infections, rashes, or allergies ever) was included in the child disorder category. The variables 'negative maternal attitude' (mother irritated by child every day, or wanting to hurt the child sometimes or often, or exhausted from raising child most of the time), and 'harsh parenting' (mother hitting child several times a week or more, or ever hitting child leaving physical traces) were included in the parenting category. The variables 'family psychopathology' (poor self-perceived maternal mental health, or family mental health service use ever), 'maternal absence' (mother away from home or nonparental care more than 20 hours a week), 'stressful life-event' (2 or more that occurred between birth and Time 1), and 'low socio-economic status' (Netherlands Central Bureau of Statistics, 1993) were included in the adverse family circumstances category.

The parent-version of the Diagnostic Interview Schedule for Children, (DISC-P; Shaffer et al., 1998) was translated into Dutch (Ferdinand and Van der Ende, 1998) and used to obtain DSM-IV diagnoses. The DISC-P is a structured interview which generates the one-year prevalence of DSM-IV diagnoses in 6 modules: A. Anxiety disorders; B. Psychosomatic disorders; C. Affective disorders; D. Schizophrenic disorders; E. Disruptive disorders; F. Substance abuse disorders. For practical purposes, and considering the average age of our sample, only the modules representing Anxiety disorders (A), Mood disorders (C), and Disruptive Behavior disorders (E) were used. The scoring logic for deriving DSM diagnoses from the interview was obtained from the authors (Shaffer et al., 1998). For the present

article, diagnoses were grouped into an internalizing category (one or more diagnoses from module A or C), and an externalizing category (one or more diagnoses from module E).

Statistical analyses

First, the cross-sectional relationship between all Time 1 predictors was investigated, using odds ratios. Second, univariate odds ratios between each of the separate Time 1 predictors (CBCL/2-3 syndromes, child health problems, and family characteristics) and the Time 3 internalizing and externalizing psychopathology outcomes were computed. Third, multivariate odds ratios were derived from logistic regression analyses theoretically organized in subsequent blocks (method enter), with child characteristics in the first block (sex, internalizing and externalizing problems and physical health problems), parenting characteristics directly related to the child in the second block (harsh parenting and negative maternal attitude), and more general negative family circumstances in the third block (family psychopathology, maternal absence, negative life-events, low SES).

Sample attrition

For the present article, only those subjects were included for whom complete Time 3 DISC-P data were available ($N = 332$). To ensure that this subsample did not suffer from selective attrition, a series of chi-square tests were performed comparing the current sample to dropouts ($N = 88$) on all Time 1 predictors used in this study. Using $p < 0.05$ as a treshold for significance, results revealed no differences on sex; internalizing problems; externalizing problems; physical health problems; harsh parenting; negative maternal attitude; family psychopathology; maternal absence; or stressful life-events. A close to significant trend of selective attrition was found for low SES ($\chi^2 = 3.81$; $p = 0.05$), with dropouts having a lower socio-economic status than remainers. However, when correcting for multiple comparisons, this effect would not be considered significant.

Results

Psychopathology at Time 3

As shown in Table 2.1, at Time 3, 22.3% of the sample met criteria for one or more DSM-IV diagnoses (N = 74). Prevalence rates for any internalizing and externalizing diagnosis were similar (13.3% and 12.0% respectively). The most prevalent diagnoses were Specific Phobia (9.0%), Attention Deficit Hyperactivity Disorder-Inattentive type (6.0%), and Oppositional Defiant Disorder (4.8%). Further, 27 boys and 29 girls had a single disorder, 8 boys and 6 girls had 2 disorders, and 4 boys met criteria for 3 or more disorders (maximum 5 disorders). No significant sex differences in rates of disorders were found.

Table 2.1

DSM-IV Diagnoses at Time 3 for Boys (n = 166) and Girls (n = 166)

	Boys		Girls		Total	
	%	(*n*)	%	(*n*)	%	(*n*)
Social Phobia	2.4	(4)	0.6	(1)	1.5	(5)
Separation Anxiety	1.8	(3)	3.0	(5)	2.4	(8)
Specific Phobia	7.2	(12)	10.8	(18)	9.0	(30)
Agoraphobia	1.2	(2)	0.0	(0)	0.6	(2)
Generalized Anxiety Disorder	0.6	(1)	0.6	(1)	0.6	(2)
Selective Mutism	0.6	(1)	0.0	(0)	0.3	(1)
Obsessive-Compulsive Disorder	1.8	(3)	0.6	(1)	1.2	(4)
Major Depressive Episode	0.6	(1)	0.0	(0)	0.3	(1)
ADHD-Inattentive type	6.0	(10)	3.6	(6)	4.8	(16)
ADHD-Hyperactive type	3.6	(6)	0.6	(1)	2.1	(7)
ADHD-Combined type	1.8	(3)	0.0	(0)	0.9	(3)
Oppositional Defiant Disorder	7.2	(12)	4.8	(8)	6.0	(20)
Any Internalizing Disorder	12.7	(21)	13.9	(23)	13.3	(44)
Any Externalizing Disorder	15.1	(25)	9.0	(15)	12.0	(40)
Any Disorder	23.5	(39)	21.1	(35)	22.3	(74)

NOTE: Diagnoses that did not occur in our sample are not shown in the table: Panic Disorder, Post-Traumatic Stress Disorder, Dysthymic Disorder, Manic Episode, Hypomanic Episode, Conduct Disorder.

Associations between preschool predictors

To gain insight in the cross-sectional association between Time 1 predictors, odds ratios (OR) were computed using a 95% confidence interval (95% CI). Time 1 internalizing problems were significantly associated with externalizing problems (OR = 2.4; 95% CI= 1.3 – 4.7), negative maternal attitude (OR = 2.1; 95% CI = 1.2 – 3.8), and low SES (OR = 2.1; 95% CI = 1.2 – 3.8). Externalizing problems were significantly related to harsh parenting (OR = 2.8; 95% CI = 1.5 – 5.0), negative maternal attitude (OR = 2.9; 95% CI = 1.6 – 5.2), family psychopathology (OR = 2.5; 95% CI = 1.4 – 4.7), and low SES (OR = 2.8; 95% CI = 1.5 – 5.1). In addition, harsh parenting was related to negative maternal attitude (OR = 2.7; 95% CI = 1.7 – 4.5), and family psychopathology (OR = 2.2; 95% CI = 1.3 – 3.8), and the latter two were also related to each other (OR = 4.2; 95% CI = 2.5 – 7.2). Finally, child physical health problems was only related to low SES (OR = 3.3; 95% CI = 1.7 – 6.6).

Longitudinal predictions

Table 2.2 shows that in the univariate analyses, three of the Time 1 predictors were significantly related to preadolescent DSM-IV internalizing diagnoses, including Time 1 internalizing problems, child physical health problems, and negative maternal attitude. Five Time 1 predictors were significantly related to DSM-IV externalizing diagnoses, including Time 1 externalizing problems, physical health problems, harsh parenting, negative maternal attitude, and stressful life-events. Time 1 low SES, maternal absence, nor family psychopathology were significantly related to either of the psychopathology outcomes.

The results of the multiple logistic regression analyses are presented in Table 2.3. In blocks 2 and 3, variables that were entered in previous blocks are printed in italics. Results showed that both Time 3 internalizing and externalizing psychopathology outcomes were significantly and independently predicted by their Time 1 CBCL counterparts and child physical health problems. In addition, Time 1 stressful life-events added significantly to the prediction of Time 3 externalizing

Table 2.2

Univariate Odds Ratios for Time 1 Predictors and Time 3 DSM-IV Internalizing and Externalizing Diagnoses (N = 332)

		Internalizing		Externalizing	
Time 1 predictors	(n deviant)	OR	(95% CI)	OR	(95% CI)
Sex (boy)	(166)	-	-	-	-
CBCL Internalizing Problems	(59)	2.87	(1.42 – 5.78)	-	-
CBCL Externalizing Problems	(56)	-	-	4.80	(2.35 – 9.77)
Physical health problems	(38)	3.22	(1.46 – 7.09)	2.63	(1.14 – 6.07)
Harsh parenting	(96)	-	-	2.53	(1.29 – 4.95)
Negative maternal attitude	(114)	2.13	(1.12 – 4.04)	2.11	(1.08 – 4.10)
Family psychopathology	(78)	-	-	-	-
Maternal absence	(42)	-	-	-	-
Stressful life-events	(52)	-	-	2.70	(1.27 – 5.74)
Low SES	(87)	-	-	-	-

NOTE: Table entries represent odds ratios (OR) and 95% confidence intervals (95% CI). Only significant odds ratios are shown.

disorders after all other predictors were entered. Although Time 1 harsh parenting and negative maternal attitude were significantly related to psychopathology outcome(s) in the univariate analyses, this relation did not remain significant when child characteristics were corrected for.

Discussion

This study reported the independent predictive value of early preschool child and family risk factors regarding internalizing and externalizing DSM-IV diagnoses in preadolescence. The one-year prevalence of DSM-IV diagnoses found in our study (22.3%) is slightly higher than in other studies that report overall prevalences of diagnoses ranging from 17.6% to 21.4% in preadolescent samples (Anderson et al., 1987; Kashani et al., 1989; Velez et al., 1989). These studies employed DSM-III or DSM-III-R criteria, whereas the prevalence of diagnoses in our study was based on DSM-IV criteria. Consistent with results reported in other studies (Belsky et al., 1996; Sonuga-Barke et al., 1996), the cross-sectional results of this study showed

Table 2.3

Multivariate Odds Ratios for Time 1 Predictors and Time 3 DSM-IV Internalizing and Exteralizing Diagnoses

		Internalizing		Externalizing	
	Time 1 predictors	OR	(95% CI)	OR	(95% CI)
Block 1:	Sex (boy)	-	-	-	-
	CBCL Internalizing	2.82	(1.36 – 5.83)	-	-
	CBCL Externalizing	-	-	5.12	(2.44 – 10.76)
	Physical health problems	3.22	(1.44 – 7.21)	2.79	(1.15 – 6.74)
Block 2:	*Sex (boy)*	-	-	-	-
	CBCL Internalizing	2.70	(1.29 – 5.65)	-	-
	CBCL Externalizing	-	-	4.22	(1.95 – 9.13)
	Physical health problems	3.22	(1.42 – 7.30)	2.79	(1.15 – 6.79)
	Harsh parenting	-	-	-	-
	Negative maternal attitude	-	-	-	-
Block 3:	*Sex (boy)*	-	-	-	-
	CBCL Internalizing	2.84	(1.33 – 6.04)	-	-
	CBCL Externalizing	-	-	4.46	(1.99 – 10.02)
	Physical health problems	3.36	(1.41 – 8.03)	2.64	(1.02 – 6.83)
	Harsh parenting	-	-	-	-
	Negative maternal attitude	-	-	-	-
	Family psychopathology	-	-	-	-
	Maternal absence	-	-	-	-
	Stressful life-events	-	-	2.55	(1.11 – 5.84)
	Low SES	-	-	-	-

NOTE: Table entries represent odds ratios (OR) and 95% confidence intervals (95% CI). Only significant odds ratios are shown.

that almost all preschool predictors were related to one or more other predictors, except for sex.

Univariate odds ratios revealed evidence for considerable homotypic stability of internalizing and externalizing psychopathology, in that both preschool syndromes only predicted their DSM-IV counterparts in preadolescence. Preschool children

with internalizing problems had an almost 3-fold increased risk for later similar problems, while children exhibiting externalizing problems at age 2-3 years showed an almost 5 times higher risk for later similar problems. These results confirm the considerable developmental stability of such problems even from a very young age, as well as the somewhat stronger stability for externalizing problems compared to internalizing problems found by other authors (Fischer et al., 1984; Lavigne et al., 1998). Further, preschool child physical health problems proved to be a strong predictor of both internalizing and externalizing diagnoses. This is especially interesting considering that preschool health problems were not cross-sectionally related to internalizing and externalizing problems. Apparently, the impact of early physical problems is of a long-term and general nature. In the literature regarding the effects of chronic illness on development, theoretical models include functional dependence, psychosocial stress, and coping as potential mediators in this association (see for a review: Wallander and Varni, 1998).

Of the preschool family variables, negative maternal attitude predicted both internalizing and externalizing diagnoses eight years later. This may reflect the importance of negative parenting related to insecure attachment which in turn is related to internalizing psychopathology (Cicchetti and Toth, 1995), but also to externalizing problems (Greenberg et al., 1993). Harsh parenting was found to predict later externalizing, but not internalizing diagnoses. This is consistent with the commonly held assumption that parental use of physical punishment leads to aggressive behavior in children through a process of imitation (Strassberg et al., 1994). However, it is inconsistent with a study by Weiss et al. (1992) in which an association between physical punishment and both externalizing and internalizing problems was found. Finally, our results showed that preschool stressful life-events were quite strongly related to later externalizing, but not internalizing diagnoses. Post-hoc examination of the specific preschool life-events that constitute the cumulative variable revealed that 'parental burnout' and 'increase in maternal absence' were strong longitudinal predictors of later externalizing diagnoses. Apparently, especially life-events related to parental availability during the period between child birth and the early preschool years increase the risk for externalizing problems at a later age. This may represent additional evidence to support the notion

that attachment plays an important role in the development of disruptive behavior (Greenberg et al., 1993).

Our multivariate analyses were aimed at identifying independent preschool predictors of preadolescent internalizing and externalizing psychopathology. For the sake of clarity, it must be noted that *statistically* independent predictors are not necessarily conceptually independent of each other as risk factors. They may still be related in a number of ways, but they each contribute uniquely to the prediction of psychopathology regardless of this association. Our results showed that when preschool child characteristics (i.e., internalizing and externalizing problems and physical health problems) are accounted for, environmental factors (i.e., harsh punishment, negative maternal attitude, family psychopathology, maternal absence, low SES) do not independently contribute to the prediction of preadolescent psychopathology, suggesting that these risk factors are only related to later psychopathology through their association with concurrent child physical and emotional/behavioral disorders. Only stressful life-events remained an independent significant predictor of later externalizing problems after accounting for the influence of child disorders and parenting variables. These findings may have several explanations. First, it is possible that risk factors within the child are indeed mostly responsible for the development of psychopathology in childhood. This can be either directly (e.g., a genetic/biological vulnerability), or in interaction with environmental variables (e.g., a difficult child evokes ineffective parenting, which in turn leads to difficult behavior). Alternatively, it is possible that parenting and family risk factors influence the development of the child mainly during infancy, i.e., before the preschool years. It may be that once psychopathology develops during the preschool years as a result of ineffective parenting and/or adverse circumstances, it is this problematic behavior that mainly dictates the future development of psychopathology.

Clinical implications

Our results showed that early parenting and general family risk factors did not significantly add to the prediction of later psychopathology when early physical and behavioral problems were accounted for. These results suggest that early detection and prevention efforts regarding child psychopathology may be most cost-effective

if they are primarily aimed at early child physical and psychiatric disorders rather than environmental circumstances. Further, clinicians should be aware of the potential impact of early preschool physical health problems on the development of psychopathology in later childhood. This finding may be especially relevant for prevention purposes since physical health problems were not cross-sectionally, but only longitudinally related to psychopathology. General practitioners in particular are in a position to identify physical health problems in children and, if necessary, to refer them to appropriate services.

Limitations

Some limitations of this study can be noted. First, only parent-reports were used. Teacher-reports could not be obtained at Time 1 because children did not yet attend school, and children were too young to complete self-reports. Regarding Time 3 outcomes, the validity and reliability of the child version of a structured diagnostic interview such as the DISC for children under 12 is questionable (Edelbrock et al., 1985; Ribera et al., 1996). The use of a single informant (parents) may have lead to an overestimation of the longitudinal associations between Time 1 predictors and Time 3 outcomes due to the effects of informant-bias. It may also be responsible for the low prevalence of mood disorders in that parents are commonly found to underreport problems referring to subjective mood (Herjanic and Reich, 1997; Valla et al., 1993). This in turn may have lead to an underestimation of associations between certain risk factors (those known to be especially related to depression, such as negative maternal attitude and parental psychopathology) and the internalizing outcome. Further, this means that the results regarding the internalizing outcome should be interpreted as pertaining to anxiety disorders, and especially specific phobia, which is the most prevalent internalizing disorder. Second, Time 1 family risk factors and child health were not obtained through standardized measures. This means that the reliability and validity of these variables is uncertain and that the results regarding these risk factors are difficult to compare to findings obtained by other studies. Third, we found a nonsignificant trend suggesting that children from low SES families may have been underrepresented in the follow-up sample. Since low SES is generally found to be related to an increased prevalence of child psychopathology and is likely to be a fairly stable family characteristic

(McLoyd, 1998), this selection may have caused, if anything, an underestimation of the strength of association between preschool and preadolescent psychopathology. Finally, interactions between preschool child characteristics and family risk factors were not included because of too small cell sizes. Therefore, the potential contribution of some family risk factors may have been underestimated.

In conclusion, future studies are needed to replicate our results using multiple informants, standardized preschool family risk factors, and a larger and possibly younger sample. Considering the strong independent predictive value of child physical health problems and stressful life-events, these factors deserve special attention in future longitudinal risk studies.

Common and Specific Correlates of Preadolescent Internalizing and Externalizing Psychopathology

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Common and Specific Correlates of Preadolescent Internalizing and Externalizing Psychopathology

Abstract

The specificity of various child characteristics and environmental correlates of childhood internalizing and externalizing problems was examined using both cross-sectional and longitudinal analyses (from ages 2-3 and 4-5 years) in a general population sample of 10-to-11-year-olds. Specificity was defined according to a between-subjects and a within-subjects method, using parent and teacher-reports of psychopathology. Temperamental withdrawal, parental internalizing psycho-pathology, and early single parenthood (for girls) were identified as correlates which are specific for internalizing problems, while temperamental high general activity level was identified as externalizing-specific. Further, parenting stress, poor school results (only for boys), and stressful life-events (only for girls) were found to be common correlates of psychopathology. Research implications regarding our findings and the use of a within-subjects method are discussed.

Introduction

The distinction between internalizing and externalizing expressions of dysfunction is a widely used concept in childhood psychopathology (Cicchetti and Toth, 1991). internalizing disorders are characterized by disordered mood or behavior such as withdrawal, anxiety, or depression, while externalizing disorders are characterized by disordered behavior such as hyperactivity, aggression, or delinquency (Achenbach and McConaughy, 1997; Cicchetti and Toth, 1991). Various studies have identified "common" correlates of psychopathology that distinguish between normality and disorder (e.g., Anderson et al., 1989; Offord et al., 1992; Williams et al., 1990). In addition to the identification of these common correlates of psychopathology, the study of non-symptomatic correlates that discriminate between different types of psychopathology is essential for the

validation of existing diagnostic syndromes, and the understanding of differential etiology or outcome related to these syndromes (Anderson et al., 1989; Werry et al., 1987).

Only very few studies have addressed the issue of specificity of correlates distinguishing between internalizing or externalizing problems (Compas et al., 1991; Weiss et al., 1998; Williams et al., 1990). In these studies, it was generally found that the correlates of interest distinguished between disorder and no disorder, and between single disorder and multiple disorders, but seldom between internalizing and externalizing problems. Compas et al. (1991) found that children with internalizing problems showed significantly lower self-perceived competence in the area of social acceptance than children with externalizing problems. Further, mothers' obsessive compulsive symptoms and hostility symptoms were higher among children with internalizing problems than among children with externalizing problems. However, these findings were not replicated across informants (self and parent). In a study by Williams et al. (1990), children in the externalizing group showed significantly lower IQs and more often came from a single-parent family than children in the internalizing groups, whereas children in the internalizing group were more likely to have mothers with past depression. Finally, Weiss et al. (1998) reported that low self-perceived academic and social competence were internalizing-specific.

Although other studies have not specifically distinguished between broadband internalizing and externalizing problems, and/or were aimed at one particular correlate or group of correlates, some are worth mentioning. Capaldi (1991) investigated correlates in relation to depressive symptoms and conduct problems and found higher levels of parental antisocial behavior, and lower levels of discipline and monitoring in the conduct-problems group than in the depressive group. Conversely, self-esteem was significantly lower in the depressed group than in the conduct problems group. Further, a lower child-reported quality of the parent-child relationship was found for the depressive group in comparison to the conduct problems group, whereas for parent-reported quality of the parent-child relationship the reverse was found. In an inpatient adolescent sample, Barrera and Garrison-Jones (1992) found that low levels of social support were uniquely related to depression, and not to anxiety or conduct disorder. Finally, Anderson et al. (1989)

and Werry et al. (1987) attempted to identify correlates that distinguish between different diagnoses, but failed to find clear evidence of specificity.

Considering the previous, candidates for internalizing-specificity are parental internalizing psychopathology, self-perceived competence, and self-perceived social support. Further, low IQ, single parenthood, low levels of discipline and monitoring, and parental antisocial behavior are candidates for externalizing-specificity.

Different definitions and methods may be used to assess the specificity of certain correlates in relation to different forms of psychopathology. In the categorical approach, different diagnostic groups are identified and the mean scores on the variables of interest are compared between groups to identify significant differences (e.g., Compas et al., 1991). In the dimensional approach, differences in strength of association of each syndrome with the variable of interest are investigated to assess specifity (e.g., Barrera and Garrison-Jones, 1992). Both approaches are based on between-subject differences on certain variables. The question in these approaches is whether a variable is more related to one syndrome than to the other. As Achenbach and Edelbrock (1983) pointed out, the difference in internalizing and externalizing problem scores within a subject is also an important criterion for the classification of participants in pure broadband syndrome groups. Thus, in terms of specificity, the question is then whether a variable is related to a progressively larger difference between internalizing and externalizing problem scores within the subject. Recently, Weiss et al. (1998) tested a data-analytical model that integrates within-subject differences in the definition of specificity. In this method, correlates of interest are tested for their association with a variable that represents the within-subject difference between internalizing and externalizing problem scores.

Because of the small number of studies addressing the specificity issue, and the heterogeneity of methods and criteria used in previous research in this field, conclusions about specificity of correlates in relation to internalizing and externalizing problems can not be reliably drawn. To obtain reliable results regarding specificity, studies need to address a number of issues. First, multiple informants, and multiple methods should be used to ensure generalization of results. Second, as with all risk factors, longitudinal data should be obtained. Third, considering the generally large correlations between internalizing and externalizing problems, results should be corrected for this association. In the present study, we

assessed internalizing and externalizing problems using both parent and teacher ratings and the variables of interest were obtained from parent, teacher and child-reports. We assessed specificity using the between-subjects method, which is aimed at identifying variables that are significantly more strongly correlated with one syndrome than with the other, and the recently developed within-subjects method, which is aimed at identifying variables that are significantly related to the within-subjects difference between the internalizing and externalizing syndrome scores (Weiss et al., 1998). Further, both prospective and concurrent risk factors were included, and to account for the commonly found medium to strong association between internalizing and externalizing problems, correlations of one syndrome with the variables of interest were corrected for the influence of the other syndrome.

To guide our search for specific correlates, we formulated hypotheses about the syndrome-specificity of a broad range of variables that were investigated in the present study. These variables are child characteristics, including health problems, temperament, perceived social support, and actual or perceived lack of competence in various areas of functioning. Further, environmental and family characteristics were investigated, including socio-economic status (SES), family structure, family functioning, parenting stress, parental psychopathology, and stressful life-events. So far, research has provided little conclusive evidence suggesting the syndrome-specificity of any of these correlates. Hypotheses regarding the specificity of these correlates can therefore only be based on the few studies that have tested these correlates for specificity and on theories of internalizing and externalizing psychopathology that provide clear directions on this subject.

On the basis of the studies discussed above, internalizing-specificity was expected for low self-perceived competence in various areas (Compas et al., 1991; Weiss et al., 1998), low levels of perceived social support (Compas et al., 1991), and parental internalizing psychopathology (Compas et al., 1991; Williams et al., 1990). Evidence regarding the specificity of low self-esteem or self-worth is contradictory, because it was found to be more common among children with depression than with conduct problems (Capaldi, 1991), but was identified as a nonspecific common correlate of psychopathology by Weiss et al. (1998). Finally, single parenthood was expected to be externalizing-specific (Williams et al., 1990).

Although temperament has not been tested for specificity in previous studies, there is some theoretical basis for expecting specificity of different dimensions of temperament. A child's temperament is assumed to be an early, relatively stable behavioral disposition that may influence the course of development in multiple areas of functioning, including the emergence of psychopathology (e.g., Prior, 1992). Research aimed at identifying temperamental precursors or correlates of child psychopathology has shown that different dimensions of temperament are generally related to specific types of psychopathology in a conceptually coherent way (e.g., Caspi et al., 1995; Prior, 1992). Thus, temperamental lack of control or unihibited behavior is associated with inattentive/externalizing problems (Caspi et al., 1995; Schwartz et al., 1996), whereas inhibition or withdrawn behavior are related to internalizing problems (Biederman et al., 1993; Caspi et al., 1995). We therefore expected temperamental withdrawal, negative mood, and rigidity to be internalizing-specific, whereas temperamental activity level, poor task orientation, and rhythmicity were expected to be externalizing-specific.

Because there is no further available evidence to suggest specificity of any of the other variables that were investigated, and because these remaining variables represent general unfavourable characteristics or circumstances, we expected these to be common correlates of psychopathology, that is, variables that do not distinguish between internalizing and externalizing problems.

Methods

Sample

Participants were children involved in the second follow-up of a longitudinal study of preschool children from the general population (Koot, 1993; Koot et al., 1997). The original Time 1 sample of preschool children was drawn randomly and stratified by age and sex from the inoculation register of the Dutch province of Zuid-Holland, and from the Rotterdam municipal health service register. At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (215 boys and 205 girls; mean age 2.6 years, $SD = 0.8$). In 1991, 2 years after the first time of measurement, the sample was approached again for a follow-up study (Time 2). Usable parent information was obtained for 396 of the 420 children participating at Time 1 (204 boys, 193 girls; mean age 5.3 years, $SD = 0.6$).

In 1997, at second follow-up (Time 3), usable parent information was obtained from 358 respondents, primarily mothers (85.2% of the original 1989 Time 1 sample). Twenty-six parents refused to participate, 2 of which did so because their children had problems and were already subjected to many tests and questions from other mental health institutes, and 2 of which asked to be removed from the sample because their children had Down's syndrome and autism respectively, and the questionnaires were inappropriate for these children. Further, 15 parents had unlisted phone numbers and did not respond to subsequent letters asking them to contact us; three respondents could not be located. Finally, 376 parents gave consent to send them a package of questionnaires and agreed to fill these out and send them back to us, 18 of whom never did. Parents were also asked to give their consent to obtain teacher and self-reports. The sample at Time 3 (n = 358), consisted of 178 boys and 180 girls with a mean age of 10.9 years (SD = 7.2 months; range 9.8-12.5 years). The average time between Time 1 and Time 3 was 8.9 years (SD = 2.1 months; range 7.4 – 8.7 years).

For the teachers, parental consent was obtained for 311 of the 358 participants at Time 3 (80.4%). Forty-seven parents did not give their consent to approach teachers, and of the 311 teachers for whom parental consent was obtained, 17 never returned their questionnaires. Usable teacher-information was obtained for 294 children. For the children's reports, parental consent was obtained in 314 cases. Of these, 16 questionnaires were never returned; 9 returned questionnaires were incomplete. Usable child-reports were obtained for 295 children.

Instruments

For the present article, we recoded all measures so that high scores on all variables would always reflect a negative state and are expected to be positively related to psychopathology (e.g., difficult temperament, low global self-worth, poor school results). For each variable, the time(s) of assessment are reported in parentheses. All instruments have been found reliable and valid by their authors. If information about validity and reliability in Dutch samples is available, this information is noted. Further, the reliability (Cronbach's alpha) of each instrument in the present study, if appropriate, is reported (in chronological order for each time of assessment, separated by a slash).

Child Behavior Checklist for ages 4-18 (CBCL/4-18). We measured parent-reported child psychopathology (Time 3) using the CBCL/4-18, which obtains parents' reports of children's problem behaviors and consists of 20 competence items and 120 problem items (Achenbach, 1991b). The competence items form three scales: activities, social competence, and academic competence. The problem items are scored on a 3-point Likert scale based on the preceding 6 months.

Teacher's Report Form (TRF). We assessed teacher-reported child psychopathology (Time 3) with the teacher version of the CBCL, the TRF, which has 120 problem items, including 95 of the same problem items as the CBCL (Achenbach, 1991c). Achenbach replaced items that are only relevant to the home situation with items more relevant to the school situation. In addition to the problem items, two competence scales are included: academic competence and classroom adaptive functioning. The scoring format is identical to that of the CBCL, only the TRF scores are based on the preceding 2 months.

Achenbach (1991b) constructed eight cross-informant narrowband syndromes that can be scored on the CBCL/4-18, and TRF by summing the items that belong to each syndrome, in addition to two higher-order broadband syndromes labeled *Internalizing* and *Externalizing*. In the present study only the broadband syndromes were used. The Internalizing syndrome consists of the following narrowband syndromes: Withdrawn, Somatic Complaints, and Anxious/Depressed. The Externalizing syndrome consists of the narrowband syndromes designated as Delinquent Behavior, and Aggressive Behavior. The structure of these syndromes was confirmed for the Dutch situation (De Groot et al., 1994; 1996), as well as the good reliability and validity for the Dutch translation of the CBCL and the TRF (Verhulst and Akkerhuis, 1986; Verhulst et al., 1985a).

Demographic and Health Characteristics (Times 1, 2, and 3). At each time, we assessed demographic and health characteristics of the family and the child using a questionnaire that included questions used in the present study about problems during pregnancy/birth, child health, number of children, SES (range 1-3; Netherlands Central Bureau of Statistics, 1993), marital status of the parents, and family-mental-health service use.

Life-events (Time 1, 2, and 3). Parents completed the Life-Events Questionnaire (LEQ), which is a reliable 32-item self-report questionnaire assessing potentially

stressful life-events such as parental divorce, death of a family member, and long-term hospitalization (Berden et al., 1990). At Time 3 a 12-item short form was used. The items have a no-yes response format to indicate whether or not an event had occurred during the 6-year period between Time 2 and Time 3 assessment. The item scores (0,1) are summed into a total life-events score.

Language Screening Instrument (LSI). We assessed language development (Time 2) using the LSI (Taal Screening Instrument; Gerritsen, 1988), which consists of three parts: a formal test of the child's language competence (37 items for 4-year-olds, and 39 items for 5-year-olds), supplemented by a parent and teacher rating scale (12 and 6 items, respectively). The test part measures active and passive vocabulary, verbal comprehension, and syntax. The parent and teacher questionnaires ask for information on language use, comprehension, and development (α = .71).

Nijmegen Observation Scale for Preschoolers (NOSP). We assesed school-related competence (Time 2), as reported by the teacher, using the NOSP (Rost, 1992), which consists of 43 7-point Likert-type items concerning social-emotional competence. The items are summarized in four scales: Task-Related Behavior (11 items; α = .89), Social Behavior (17 items; α = .91), Affect (6 items; α = .77), and Self-Help (9 items; α = .66).

School results (Time 3). School results were reported by parents and teachers on the school competence scale of the CBCL and TRF respectively. Reported school-results on various subjects were averaged.

Classroom functioning (Time 3). Class functioning was reported by teachers on a subscale of the TRF competence scale, which includes four items: how hard is he or she working, how appropriately is he or she behaving, how much is he or she learning, how happy is he or she (Achenbach, 1991c).

Temperament (Time 2 and 3). To assess difficult temperament, we asked parents to complete the Dimensions of Temperament Survey-Revised (DOTS-R; Windle and Lerner, 1986), which is a 54-item, factor-analytically derived instrument that measures nine temperament attributes in children (Windle and Lerner, 1986). The items are scored on a 4-point Likert-scale ranging from *usually false* (1) to *usually true* (4). The nine temperament scales are High Activity Level-General (α =

.75/.70), High Activity Level-Sleep (α = .84/.74), Withdrawal (α = .80/.82), Rigidity (α = .73/.79), Negative Mood (α = .72/.74), Low Rhythmicity-Sleep (α = .55/.62), Low Rhythmicity-Eating (α = .81/.72), Low Rhythmicity-Daily Habits (α = .54/.58), and Poor Task Orientation (α = .71/.65). Considering the low alphas of Rhythmicity-Sleep and Rhythmicity-Daily Habits at both times of assessment, these scales were not used in the present study.[1]

Parenting Stress (Time 2 and 3). Parents completed the Nijmegen Parenting Stress Index (NPSI), which is a modified Dutch version of Abidin's Parenting Stress Index (Abidin, 1983), measuring the level of perceived parental stress originating from several child and parent characteristics within the caregiving context (De Brock et al., 1990a). The items are scored by the parents on a 6-point Likert scale. We used a short form which included 25 items, that are derived from scales measuring the perceived child characteristics and parent characteristics (De Brock et al., 1990a; 1990b). For the present article, only the parent characteristics scale was used (α = .85/.88).

Family Functioning (Time 3). The McMaster Family Assessment Device (FAD; Epstein et al., 1983) is a 60-item parent-report questionnaire measuring family

[1] The question of conceptual overlap or insufficient distinction between the constructs of temperament and psychopathology, especially when both are parent-reported, has not yet been sufficiently answered (see: Rothbart et al., 1995) for a discussion). However, several studies have shown that despite moderate to strong correlations between the two constructs, they are not identical (e.g., Mathijssen et al., 1999; Maziade et al., 1990). For example, Mathijssen et al. (1999) found that problem behavior was related to family functioning and child intelligence, even after controlling for child temperament measured by the DOTSR. Furthermore, that same study showed that even though temperament did not have a main effect on the 1-year course of problem behavior, the influence of stressful life-events on the aggrevation of problem behavior was stronger in the case of difficult temperament after controlling for earlier levels of problem behavior. This indicates that DOTSR measured temperament moderates the relation between stress and the course of problem behavior, which further indicates that temperament is not identical to psychopathology. Finally, as noted by Bates (1990), conceptual overlap between temperament and psychopathology is to be expected if the first is theoretically assumed to contribute to the development of the second.

functioning. The items constitute seven scales, one measuring general family functioning (12 items) and one for each of the six dimensions of the McMaster Model. The items are scored on a 4-point Likert scale. For the present study, only the general-family-functioning scale was used (α = .85).

Parental internalizing psychopathology (Time 3). Parents completed the Young Adult Self-Report (YASR), which is derived from the Youth Self-Report for young people aged 11 to 18 (Achenbach, 1997). The YASR has the same format as the CBCL, except that items are worded in the first person. We used a short form, consisting of the 34 items that were found to discriminate best between referred and nonreferred samples (Achenbach, 1997). For the present article, we selected only the items that belong to the broadband Internalizing problems syndrome. This resulted in a scale of 11 items (α = .83).

Self-perceived Competence (Time 3). Children completed the Self-Perception Profile for Children (SPPC) developed by Harter (1985a). The SPPC is a self-report instrument to assess the child's self-perceived competence across several specific domains as well as his or her general sense of self-worth. The SPPC contains 36 four-point items which form 6 subscales, each containing 6 items: Scholastic Competence (α = .79) , Social Acceptance (α = .80), Athletic Performance (α = .72), Physical Appearance (α = .80), Behavioral Conduct (α = .75), and Global Self-Worth (α = .80). The SPPC was translated into Dutch and found to be reliable and internally valid in measuring the self-concept of Dutch children (Van Dongen-Melman et al., 1993).

Perceived Social Support (Time 3). Children completed the Social Support Scale for Children (SSSC), which is a self-report questionnaire designed to measure child-perceived support from significant others (Harter, 1985b). The SSSC contains 24 four-point items which represent four different sources of social support: Parents (α = .53), Teachers (α = .76), Classmates (α = .80), and Close Friends (α = .84). Each source of support defines a separate subscale, including six items. Considering the low alpha for the parents scale, we decided to exclude this scale from the analyses.

Procedure

In August 1997, all 420 respondents who participated at Time 1 received a letter asking them to participate in a second follow-up (Time 3), regardless of their participation at Time 2. They were then contacted by telephone to obtain consent to send them a package of questionnaires. Along with the questionnaires, parents filled out a form asking them for their consent to obtain teacher and child-reports. The children were to fill out their questionnaires at school, to avoid parental interference. If the parent specifically objected to this setup, children could fill out their questionnaires at home. The majority of parent information was obtained during September-December, 1997; teacher and child-reports were obtained during November, 1997-January, 1998.

Statistical analyses

In the present article, the psychopathology variables for both parent and teacher-reports were the CBCL and TRF internalizing scales Withdrawn, Somatic Complaints, and Anxious/Depressed, and the externalizing scales Delinquent Behavior and Aggressive Behavior. To enable the application of the criteria of specificity provided by the between-subjects method and the within-subjects method, four psychopathology variables were computed from these syndromes, separately for parents and teachers: (a) an overall psychopathology variable, which was obtained by summing the scores on all five narrowband syndromes; (b) an internalizing variable that is the sum of the Withdrawn, Somatic Complaints, and Anxious/Depressed syndromes; (c) an externalizing variable that is the sum of the Delinquent Behavior and Aggressive Behavior syndromes; (d) a broadband contrast variable representing the difference between the internalizing and externalizing variables.

We computed correlations between the parent-, teacher-, and self-reported factors of interest and the eight (4 CBCL, 4 TRF) psychopathology variables. Because the correlation between the broadband CBCL internalizing and externalizing variables was .60 in our sample (although only .19 for the TRF), associations between a correlate and the internalizing variable were corrected for the influence of the externalizing variable, and vice versa. To this end, multiple regression analyses were performed, in which the factor was the dependent variable

and the internalizing and externalizing variables were the independent variables. Thus, for associations between the factors and the internalizing and externalizing variables, part correlations were obtained. The correlations of the factors with the overall psychopathology variable and the broadband contrast variable represent zero-order Pearson correlations.

The between-subject method is concerned with differences in strength of association of a factor with the internalizing and externalizing variables. We tested the significance of the difference between part correlations using the method described by Cohen and Cohen (1983), which is specifically designed to test the difference between partial regression coefficients. According to the between-subjects method, a factor was considered a common correlate if (a) the factor was significantly and positively related to both the internalizing and externalizing variables and (b) no significant difference in correlations with the internalizing and externalizing variables was found. A factor was considered a broadband-specific correlate if (a) the factor was significantly related to either the internalizing or externalizing variables or both and (b) the correlation of a factor with one broadband variable was significantly higher than the correlation with the other broadband variable. The first criterion was added because the comparison of two non-significant correlations does not make sense if one is trying to identify common and specific correlates of psychopathology.

In addition to the internalizing and externalizing variables, the within-subjects method proposed by Weiss et al. (1998) requires an overall psychopathology variable that is the sum of all narrowband syndromes, and a contrast variable that represents the difference between the broadband internalizing and externalizing variables. This contrast variable is computed by subtracting the mean item score on the externalizing scales from the mean item score on the internalizing scales. We used mean item scores to correct for the different number of items that constitute the internalizing and externalizing variables. A factor was considered a common correlate of psychopathology if the factor was (a) significantly and positively related to the overall psychopathology variable and (b) significantly and positively related to both the internalizing and the externalizing variables. A factor was considered broadband-specific if the factor was (a) not a common correlate, and (b) significantly related to the within-subjects contrast variable. Thus for this method, if

a factor is identified as an internalizing-specific correlate, the factor is related to a progressively larger difference between internalizing and externalizing scores, with higher internalizing scores than externalizing scores.

Considering the moderate correlations between parent and teacher-reports of problem behaviors (Total Problems CBCL-TRF, r = .51 for boys, and r = .44 for girls), and possible informant bias in the relation between same-informant measures, we performed analyses separately for parent and teacher-reports of psychopathology. Finally, because means and variances on the psychopathology variables were significantly higher for boys than for girls, which may influence the nature of the association with correlates of interest, analyses were performed separately for boys and girls.

Results

Preliminary analyses

To ensure that sample loss between Time 1 and Time 3 was non-selective, we performed t tests to compare Time 3 responders (n = 358) to nonresponders (n = 62) on Time 1 CBCL/2-3 scores (Achenbach, 1992). No significant group differences were found on Internalizing, $t(418) = 1.52$; p = .13; Externalizing, $t(418) = -0.15$; p = .879; and Total Problem scores, $t(418) = 0.62$; p = .537.

For the present article, we used data obtained at Time 1, 2, and 3, including data from three different informants (parent, teacher, child). To make optimal use of our sample, we did not use the Valid Listwise N across all these variables. Instead, we used different subsamples in different analyses, depending on the Time(s) and informant(s). First, participants for whom complete parent-reports were obtained at all ages were selected (n = 314; 161 boys, 153 girls). From this sample, we selected 5 subsamples for different groups of analyses: analyses involving Time 2 teacher-reports (n = 275), Time 3 teacher-reports (n = 256), Time 3 self-reports (n = 263), Time 2 and Time 3 teacher-reports (n = 224), Time 3 teacher-reports and self-reports (n = 244). We performed t tests to compare these subsamples to the respective remaining samples on Time 1 and Time 3 CBCL, and Time 3 TRF Internalizing, Externalizing, and Total Problem scores. No significant differences between any of the subsamples and the respective remaining participants were found.

In addition, chi-square tests revealed no significant differences between subsamples and remainig participants on sex, age at Time 1 (2 vs. 3 years old), Time 1 SES (low vs. other), number of children (four or more children vs. other), age of mother (37 years or older vs. other), or financial public assistance as portion of family income (yes vs. no). However, all subsamples showed significantly higher parental education levels than the original Time 1 sample, indicating selective attrition of children with parents with lower levels of education. Further, the base sample (n = 314), and the subsample involving Time 2 teacher-reports (n = 275) included significantly fewer children with non-Dutch ethnicity than the remaining samples of dropouts. This difference means that those two samples used in the present study were not representative of the original Time 1 sample regarding ethnic compilation.

Correlations

Table 3.1 shows the correlations of the parent- and teacher-reported psychopathology variables with the factors of interest for boys and girls. For the sake of conciseness, only those factors that met between-subject criteria, within-subject criteria, or both for common or specific correlates for one or more informant-by-sex groups are included. The majority of correlates that were not identified as common or specific were related to the overall psychopathology variable, and to either the internalizing or externalizing variable, but not to the contrast variable. Positive correlations with the broadband contrast variable (internalizing - externalizing) indicate that the correlate is related to higher internalizing problem scores compared with externalizing problem scores, whereas negative correlations indicate a relation with higher externalizing problem scores compared with internalizing problem scores. To correct for the number of statistical tests, we only interpreted differences between part correlations with the internalizing and externalizing variables as significant if $p < .01$.

Table 3.1 shows that mostly specific correlates were identified, although not often across informants and for both boys and girls. Consistent internalizing-specificity, that is, across more than one informant-by-sex group, was identified for Time 1 single parenthood, but only for girls. Time 2 and Time 3 temperamental withdrawal, Time 3 parental internalizing psychopathology, and low self-perceived

Table 3.1

Correlations between Parent- and Teacher-Reported Psychopathology and Factors for Boys and Girls

Factors	Groups[a]	Psychopathology variables				Specificity[e]	
		Overall[b]	IN[c]	EX[c]	IN vs EX[d]	Between[f]	Within[f]
Time 1 Parent-reported factors							
Problems during pregnancy or birth	P-Boys	(.02)	.20	-.18	.19	I	I
Single parenthood	P-Girls	(.05)	.22	-.16	.21	I	I
	T-Girls	(.14)	.28	(-.11)	.22	I	I
Time 2 Parent-reported factors							
Stressful ife-events	P-Girls	.28	(-.01)	.28	-.19	-	E
Parenting stress	P-Boys	.52	.23	.21	(-.15)	C	C
Temperament: High general activity	P-Boys	.34	(-.07)	.34	-.30	E	E
	T-Boys	.35	(.09)	.34	-.23	-	E
Temperament: Withdrawal	P-Girls	(.00)	.19	-.18	.21	I	I
	T-Boys	(-.07)	(.15)	-.19	.23	-	I
Child health problems	T-Girls	(-.05)	(.13)	-.18	.19	-	I

Table 3.1 continues

Table 3.1 (continued)

Factors	Groups[a]	Psychopathology variables				Specificity[e]	
		Overall[b]	IN[c]	EX[c]	IN vs EX[d]	Between[f]	Within[f]
Time 2 Teacher-reported factors							
Language problems	T-Girls	(.03)	.23	(-.18)	.25	I	I
School competence: Task-related behavior	T-Boys	.36	.31	.19	(.01)	C	C
School competence: Self-help	T-Girls	(.02)	(.16)	(-.17)	.21	-	I
Time 3 Parent-reported factors							
Stressful life-events	P-Girls	.40	.22	.17	(-.01)	C	C
	T-Girls	.31	.17	.18	(-.04)	C	C
Parenting stress	P-Boys	.67	.29	.27	-.16	C	C
	P-Girls	.47	.16	.30	(-.12)	C	C
	T-Boys	.33	.20	.24	(-.10)	C	C
Parental Internalizing psychopathology	P-Boys	.34	.44	-.14	.22	I	I
	T-Girls	(.08)	.24	(-.14)	.22	I	I
Poor school results	P-Boys	.41	.19	.15	(-.08)	C	C
	T-Boys	.38	.32	.21	(-.02)	C	C

Table 3.1 continues

Table 3.1 (continued)

Factors	Groups[a]	Psychopathology variables				Specificity[e]	
		Overall[b]	IN[c]	EX[c]	IN vs EX[d]	Between[f]	Within[f]
Poor school results (cont.)	T-Girls	.31	.43	(-.07)	.27	I	I
Temperament: High general activity	P-Boys	.44	(-.12)	.47	-.43	E	E
	P-Girls	.31	(-.06)	.35	-.26	E	E
Temperament: Withdrawal	P-Boys	.32	.36	(-.08)	.15	I	I
	P-Girls	(.14)	.24	(-.10)	.18	-	I
	T-Boys	(.04)	.23	(-.12)	.20	I	I
Temperament: Low rythmicity-eating	P-Boys	.27	(.02)	.20	-.16	-	E
Temperament: Poor task orientation	P-Girls	.18	(-.05)	.22	-.17	-	E
	T-Boys	.30	.21	.19	(-.06)	C	C
Temperament: Negative mood	T-Girls	(.05)	(-.14)	.18	-.19	-	E
Time 3 Teacher-reported factors							
Poor school results	T-Boys	.43	.33	.26	(-.06)	C	C
Poor classroom functioning	P-Boys	(.15)	(-.10)	.22	-.20	-	E
	P-Girls	.27	(-.02)	.28	-.21	-	E

Table 3.1 continues

Table 3.1 (continued)

Factors	Groups[a]	Psychopathology variables				Specificity[e]	
		Overall[b]	IN[c]	EX[c]	IN vs EX[d]	Between[f]	Within[f]
Time 3 Self-reported factors							
Low perceived academic competence	t-Girls	(.15)	.25	(.08)	.18	-	I
Low perceived athletic competence	P-Boys	(-.06)	(.13)	-.17	.18	-	I
	T-Boys	(.07)	(.16)	-.19	.24	I	I
	T-Girls	(.08)	.26	(-.17)	.25	-	I
Low perceived behavioral competence	P-Boys	.27	(-.03)	.26	-.21	-	E
	T-Boys	.36	(.13)	.33	-.21	-	E
Low perceived social support-teacher	T-Girls	.22	(-.08)	.31	-.25	-	E
Low perceived social support-classmates	T-Boys	.19	.33	(.00)	(.16)	I	-

Note: Only those factors that were identified as common or specific for one or more groups are reported. Correlations are all significant at $p < .05$. Correlations between parentheses are not significant. To correct for the number of tests, differences between part correlations were only interpreted if they were significant at $p < .01$. [a] P-Boys = Parent-reported Time 3 psychopathology for boys; P-Girls = Parent-reported Time 3 psychopathology for girls; T-Boys = Teacher-reported Time 3 psychopathology for boys; T-Girls = Teacher-reported Time 3 psychopathology for girls; [b]Overall = Overall psychopathology (Internalizing + Externalizing); [c] Coefficients for Internalizing and Externalizing are part correlations derived from multiple regression analyses; [d] IN vs. EX = Contrast variable (Internalizing – Externalizing); [e] C = Common factor; I = Internalizing-specific factor; E = Externalizing-specific factor; [f] Between = specificity according to the between-subjects method; Within = specificity according to the within-subjects method.

athletic competence were also quite consistently identified as internalizing-specific. Other correlates that showed some internalizing-specificity, but only for one group, include problems during pregnancy or birth, Time 2 child health problems, Time 2 language problems, Time 2 teacher-reported school competence: self-help, Time 3 parent-reported poor school results, Time 3 low self-perceived academic competence, and self-perceived social support from classmates.

Consistent externalizing-specificity was found for both prospective and concurrent temperamental high levels of general activity. Further, Time 3 teacher-reported poor classroom functioning was externalizing-specific but only according to parent-reports of psychopathology. Time 3 low self-perceived behavioral competence was found to externalizing-specific, but only for boys, and only by the within-subjects method. Externalizing-specificity for only one group was found for Time 2 negative life-events, the Time 3 temperamental characteristics negative mood, low rhythmicity-eating, and poor task orientation; and Time 3 perceived social support from teachers.

Finally, a number of common correlates were identified. For boys, concurrent parent-reported poor school results were identified as a common correlate of psychopathology. Further, Time 3 negative life-events was identified as a common correlate of psychopathology, but only for girls, and concurrent parenting stress was found to be a common correlate for three groups. Time 2 parenting stress was found to be a common correlate only for the parent-boys group. Concurrent poor classroom functioning was identified as a common correlate, but only for the two teacher groups. Three common correlates were only found for the teacher-boys group, including Time 2 teacher-reported task-related behavior, Time 3 temperamental poor task orientation, and Time 3 teacher-reported poor school results.

Discussion

The present study showed a relatively high number of cross-sectional and longitudinal broadband-specific associations, but relatively few that were consistent across sex and informants informant-by-sex groups. Thus, specificity is not easily generalized across sex and informants, and shows different patterns depending on the subsample. Further, a number of factors were identified as common correlates of

psychopathology. Those correlates that were found to be common or specific tended to be consistent with our hypotheses.

As expected, temperamental characteristics were identified as broadband-specific in a conceptually coherent way. Temperamental withdrawal was found to be consistently internalizing-specific across informants (i.e., parents and teachers), both concurrently and prospectively. Further, temperamental high level of general activity was found to be rather consistently Extenalizing specific. This finding is similar to findings from studies regarding the distinction between inhibited (avoidant/withdrawn/shy) and uninhibited (approach/impulsivity, overactivity) temperament, which have shown temperamental inhibition to be mainly related to internalizing psychopathology, whereas temperamental uninhibited behavior is mainly related to externalizing psychopathology (Biederman et al., 1993; Schwartz et al., 1996; Wertlieb et al., 1987). Our results confirm the assumption that children with certain extreme temperaments are more vulnerable to the development of specific types of psychopathology.

Two findings were only significant for girls, and not boys. First, the internalizing-specificity of Time 1 single parenthood, and second the identification of negative life-events in the 5 years preceding the Time 3 assessment as a common correlate. The internalizing-specificity of Time 1 single parenthood was unexpected. Previous studies suggest this to be an externalizing-specific correlate of child psychopathology (Williams et al., 1990). Although criteria for specificity were not met for boys, results indicate a trend towards externalizing-specificity rather than internalizing-specificity for boys. These findings may also imply sex-specific reactions to family stressors such as divorce. Such a sex difference however, is inconsistent with reviews of the divorce literature which generally conclude that there are little or no sex differences in the effects of marital breakup on children (Amato and Keith, 1991; Emery and Kitzmann, 1995). Although the identification of negative life-events as a common correlate of psychopathology is consistent with results reported by Steinhausen and Radtke (1986), no sex differences in this association were found in that study nor in other studies (Berden et al., 1990; Goodyer et al., 1986). However, evidence from studies of sex differences in attributional style may provide an explanation for the finding that the negative effects of single parenthood and (other) negative life-events were only significant

for girls. Although evidence is contradictory, some studies have found that girls make more internal attributions for events than boys; that is, to blame themselves, which may make them more vulnerable to depression and possibly other symptoms in response to such events (for an overview of studies, see: Gladstone et al., 1999).

Parental internalizing psychopathology was found to be an internalizing-specific correlate for two informant-by-sex groups, but were not consistent for sex or informant (parent-boys and teacher-girls). However, considering previous literature, this finding is theoretically consistent, and can be evidence of a genetic vulnerability (Rutter et al., 1990), the specific influence of a depressed and/or anxious parent on a child's behavior (Cummings and Davies, 1992), or of a bias in a depressed or anxious parent's report about a child's behavior (e.g., Chilcoat and Breslau, 1997; Fergusson et al., 1993a). This last explanation, however, is less likely because internalizing-specificity of this correlate was also found for girls in relation to teacher-reported psychopathology.

The expected internalizing-specificity of low self-perceived competence was only consistently confirmed for low self-perceived athletic competence, but mainly for boys. This finding for boys was mostly due to significant negative correlations with the Externalizing syndrome. Boys with externalizing problems view themselves as competent in the athletic area, whereas boys with internalizing problems do not. Thus, low self-perceived athletic competence is internalizing-specific, which is consistent with findings by Compas et al. (1991).

Concurrent parenting stress was found to be a common correlate for three groups. Prospective parenting stress at ages 4-5 years was also found to be common, but only for the parent-boys group. This finding is consistent with results reported by Donenberg and Baker (1993), who found that within a group of children with externalizing problems, parent-reported internalizing scores showed a similar relationship to the parenting stress measures as did the externalizing scores. Apparently, raising a child with emotional or behavior problems is stressful for a parent, regardless of the type of problems the child exhibits. This finding was especially valid, considering that it was also found in relation to teacher-reported psychopathology, although only for boys.

For boys only, a number of factors that reflect various levels of academic problems were identified as common correlates of psychopathology, including Time

2 teacher-reported task-related behavior, Time 3 temperamental poor task orientation, Time 3 parent-reported poor school results, and Time 3 teacher-reported poor school results. These findings indicate that problems with earlier and concurrent school-related skills in boys (but not girls) are associated with both preadolescent internalizing and externalizing problems. The association between factors related to school competence (IQ, grades) and psychopathology has also been reported by other authors (Offord et al., 1992; Velez et al., 1989). To our knowledge, however, the sex difference found in the present study has not been previously reported and needs replication.

A number of other factors (see Table 3.1) have also been found to be broadband-specific or common correlates of psychopathology, but these findings were rather inconsistent and were not found across informants nor for both sexes or both methods. For example, although low self-perceived competence and social support were expected to be internalizing-specific based on results reported from previous studies (Barrera and Garrison-Jones, 1992; Compas et al., 1991; Weiss et al., 1998), our data did not consistently support these findings. Further research is needed to replicate these and other inconsistent findings, before conclusions can be drawn about the specificity of such factors.

It should be noted that despite the positive findings, our results have some limitations. Only a few correlates were measured with the same instruments at all three times of assessment. Especially at Time 1, measures of risk factors were limited compared to Time 2 and Time 3. Further, for correlates that were only assessed concurrently, it remains unclear whether the relationship between that correlate and the syndromes is the result of an influence of that correlate on the syndrome, or vice versa. For correlates that were prospectively associated with preadolescent psychopathology, the possibility of mediation of these associations by earlier psychopathology was not examined.

In conclusion, our results have several important implications. First, parenting stress, temperament, school competence (for boys), and stressful life-events (for girls) seem to be the most important target variables for prevention and intervention efforts because these were most consistently related to both preadolescent internalizing and externalizing psychopathology. It must be noted that almost all other risk factors investigated in the present study were also significantly related to

preadolescent psychopathology. However, these factors did not meet criteria for specific or common correlates in our investigation of specificity, which was the main goal of our study. Second, the identification of only two consistent purely non-symptomatic specific risk factors that do not represent child characteristics, that is, early single parenthood for girls and preadolescent parental internalizing psychopathology, implies that prevention or intervention programs can hardly be targeted at specific psychopathology outcomes. However, the unexpected internalizing-specificity of early single parenthood for girls does raise interesting questions for further research regarding the underlying mechanisms of these findings. Third, the two methods of identifying specificity yielded largely the same results and have both proven to be very useful in our investigation of specific and common risk factors for psychopathology. The within-subjects method introduced by Weiss et al. (1998) is a valuable addition to this area of research. Its most convincing advantage over the between-subjects method is its inherent focus on differences within a child, which is ultimately what clinicians are most interested in. This method answers the question whether the (increased) presence of a certain risk factor in a child is related to the prominence of one particular psychopathology profile (internalizing or externalizing) relative to the other. Because there are several large longitudinal research projects worldwide that have the means to examine specificity of risk factors in their respective samples, the introduction of the within-subjects method and accompanying criteria by Weiss et al. (1998) as well as the results of the present study will hopefully inspire further research in this area.

Preschool Developmental Pathways to Preadolescent Internalizing and Externalizing Problems

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Abstract

The present study investigated longitudinal pathways from specific early preschool behavioral problems (ages 2-3 years) to internalizing and externalizing problems in preadolescence (ages 10-11 years), and the role of social problems at school-entry (ages 4-5 years) in such pathways. Path analyses were performed using both parent and teacher-reports in a sample of 251 to 346 children from the general population, depending on the availability of parent and teacher data at each time of assessment. Structural equation modeling revealed homotypic internalizing and externalizing pathways, predictions from early preschool externalizing problems to later internalizing problems, and negative predictive paths from early internalizing problems to externalizing problems in preadolescence. Cross-informant predictions spanning 8 years were found between parent-reported aggression and overactivity at ages 2-3 years and teacher-reported externalizing problems at ages 10-11 years. Further, results showed that boys' pathways were more complex and showed greater predictive validity than pathways for girls, and that social problems at school-entry played a significant role in pathways to internalizing problems, but only for boys. The results are discussed from a developmental psychopathology perspective.

Introduction

The distinction between internalizing and externalizing problems in children is widely used in developmental psychopathology studies, and there are a number of theories regarding their developmental pathways (e.g., Cicchetti and Toth, 1991; Loeber et al., 1993; Rubin and Mills, 1991). From a developmental perspective, the transition from the early preschool years to school-entry and into later childhood is of special interest in the search for pathways to internalizing and externalizing problems. It has been demonstrated that at an early preschool age (ages 2-3 years),

psychopathology can be reliably assessed and differentiated (e.g., Achenbach, 1992; Koot et al., 1997). Behavioral and emotional problems at this age may potentially set a child on a course of maladaptation (Campbell, 1995), and more specifically on a pathway to internalizing or externalizing problems. At school-entry (ages 4-5 years), preschool children' behavioral patterns meet with a variety of social demands represented by key developmental tasks such as making friends and learning certain social skills required by the school-setting. Children's (in)ability to succesfully adapt to these social demands is often thought to be crucial to their further development, and more specifically the development of internalizing and externalizing expressions of dysfunction in later childhood (Masten and Coatsworth, 1995; Parker et al., 1995). The aim of the present study is to investigate pathways from a variety of specific behavior problems at age 2-3 years to internalizing and externalizing problems at age 10-11 years, and the role of social problems and psychopathology at school-entry in such pathways.

Externalizing problems have generally received more research attention than internalizing problems. Externalizing problems have been found to show considerable longitudinal stability, even from before the age of 4 (Campbell and Ewing, 1990; Fischer et al., 1984; Lavigne et al., 1998; Rose et al., 1989). Theories and studies regarding specific behavioral antecedents of externalizing problems generally focus on oppositional, hyperactive, and aggressive behavior. Loeber and colleagues (Loeber, 1991; Loeber and Stouthamer-Loeber, 1998) proposed an early-onset pathway that starts as early as the preschool years with oppositional behavior and hyperactivity, leading to conduct problems in middle childhood. In a follow-up study by Campbell and Ewing (1990), 48% of preschool children with problems including hyperactivity, inattention and discipline problems, met DSM-III criteria for an externalizing disorder at the age of 9. Further, McGee et al. (1991) found that a considerable proportion of hyperactive preschool children show disruptive behavior 12 years later. However, in a study by Nagin and Tremblay (1999) no support was found for hyperactivity at the age of 6 years as an independent predictor of delinquency at age 15 years after correcting for early levels of physical aggression or oppositional behavior, but this study did not include data at an early preschool age. Finally, some authors have reported significant predictive links between early internalizing and later externalizing problems (Egeland et al., 1996;

Lavigne et al., 1998), but others did not (Fischer et al., 1984; Rose et al., 1989). Early internalizing problems such as inhibition and anxiety have been found to serve as a protective factor in the development of externalizing problems (Kerr et al., 1997; Schwartz et al., 1996; Tremblay et al., 1994). Based on the previous, we expect preadolescent externalizing problems to be predicted by pathways of early aggression, hyperactivity, and/or oppositional behavior, but also negatively influenced by early internalizing pathways.

Relatively few studies have investigated early preschool behavioral predictors (before the age of 4) of child internalizing problems, and those that did used only broad definitions of internalizing problems at preschool age. Results are inconsistent, with some studies reporting that early preschool internalizing problems can predict later internalizing problems (Lavigne et al., 1998), while others do not confirm these findings (Fischer et al., 1984; Rose et al., 1989). Further, studies investigating internalizing problems from a kindergarten age, report more substantial homotypic stability into later childhood (Ialongo et al., 1993; Ialongo et al., 1995; Pianta and Castaldi, 1990). There is very little empirical evidence linking more specific early behaviors to the development of internalizing problems. Theories regarding pathways to internalizing problems have generally focused on early behavioral inhibition (Kagan, 1997; Rubin and Mills, 1991), which is expressed as fearfulness and anxiety during the toddler years, specifically in the form of fear and avoidance of new and unfamiliar people or situations. Studies have shown that behavioral inhibition at the age of 21 months is stable into early childhood and predicts social wariness and withdrawal at the ages of 4 and 7½ years (Kagan et al., 1984; Kagan et al., 1988; Rubin and Stewart, 1996). Further, there is some empirical evidence linking preschool behavioral inhibition to anxiety at school-age (Biederman et al., 1993; Hirshfeld et al., 1992; Kagan, 1997). Finally, there is some evidence that early preschool externalizing problems also predict later internalizing problems (Fischer et al., 1984; Rose et al., 1989). It is unclear whether these latter findings should be attributed to early aggression, hyperactivity, or oppositional behavior. Considering the above, we expect preadolescent internalizing problems to be predicted by early internalizing problems such as anxiety and withdrawal, as well as by one or more specific early externalizing problems.

The results from a number of studies suggest that social problems may be involved in the development of both internalizing and externalizing problems in several ways (Cole et al., 1996; Hymel et al., 1990; Patterson et al., 1989; Rubin and Mills, 1991; Salzer Burks et al., 1995). First, social problems may be causes as well as consequences of internalizing problems, or both. For example, failure in social functioning may foster negative self-perceptions that are associated with depression (Cole et al., 1996), and depressive symptoms such as lack of interest and energy may lead to difficulties in social functioning (Cicchetti and Schneider-Rosen, 1986). Second, the link between early externalizing problems and later internalizing problems is possibly mediated by social problems, in that early aggression may lead to peer rejection, which in turn may lead to diminished self-esteem and associated internalizing problems (Panak and Garber, 1992; Patterson and Stoolmiller, 1991). Third, some authors have suggested a pathway from early aggression, to peer rejection, and later delinquency (Patterson et al., 1989). In this theory, the disruptive and socially unaccepted nature of early aggressive behavior hampers the formation of positive social relations with other children, which may take the form of peer rejection and a subsequent association with a similarly deviant and aggressive peer group which in turn predicts externalizing behaviors such as delinquency (Cairns et al., 1988; Dodge, 1993; Patterson et al., 1989). None of these pathways have been investigated from an early age. We hypothesize that potential homotypic internalizing and externalizing pathways, as well as heterotypic externalizing-internalizing pathways may be mediated by social problems at school-entry.

When investigating developmental pathways of psychopathology, potential sex differences are of special interest. Previous research has not only shown sex differences in the prevalence rates of internalizing and externalizing psychopathology (Cohen et al., 1993), but also that these differences vary across developmental stages (Keenan and Shaw, 1997). During the early preschool years boys and girls appear to show similar rates of behavior problems (Keenan and Shaw, 1994; Koot, 1993; Rose et al., 1989), while after the age of 4 boys have significantly higher rates of externalizing disorders than girls but rates of internalizing problems remain similar across sexes (Offord et al., 1987). During adolescence, girls' rates of internalizing disorders exceed that of boys (Angold and Rutter, 1992), while rates of

externalizing disorders are still higher for boys than for girls (Offord et al., 1987; Simonoff et al., 1997).

There is little consistent empirical evidence regarding sex-differences in developmental pathways of psychopathology from an early age, since most longitudinal studies of early preschool problems did not perform separate analyses for boys and girls (Lavigne et al., 1998; Rose et al., 1989), and most studies regarding externalizing behaviors such as aggression and delinquency, included only boys (Campbell et al., 1996; Loeber et al., 1993; Moffitt, 1990). However, several hypotheses can be formulated based on Keenan and Shaw's (1997) overview of research regarding sex differences across development and the role of social problems in such pathways. First, since patterns of psychopathology from toddlerhood into later childhood tend to be more continuous for boys than for girls, we expect predictive psychopathology pathways from an early age to be more salient for boys than for girls. Second, Keenan and Shaw (1997) posited that disruptive behavior is less accepted for girls than for boys and may for girls be channeled into internalizing problems as a result of sex-stereotypic socialization processes. We therefore hypothesize that early externalizing problems in girls are especially likely to lead to internalizing problems in later years. Third, boys seem to develop social skills somewhat later than girls, and since deficits in social skills are related to psychopathology, this may explain the greater continuity of early preschool problems in boys. We hypothesize that social problems at school-entry play a significant role in pathways of psychopathology for boys (cf. Keenan and Shaw, 1997).

Finally, on a methodological level, the use of multiple informants and a general population sample is of special interest in the investigation of early pathways to internalizing and externalizing problems. Most longitudinal studies in this area of research included only a single informant at each time of assessment, while the importance of including multiple informants of child psychopathology has been illustrated by previous studies (Achenbach et al., 1987b; Loeber et al., 1990; Verhulst et al., 1994). When reporting only data provided by one informant, the associated informant-bias is ignored, and combining the data in composite scores disregards the incompatibility of informants and obscures the actual differences between reports (Offord et al., 1996). Pathways may be different depending on the

informant and the situation that is represented by the informant, but pathways that are consistent across situations (e.g., home and school) may be especially salient for theories of developmental psychopathology. Further, many previous studies used clinical or high-risk samples. From a developmental perspective however, general population samples rather than clinical or selected high-risk samples are especially useful (Koot, 1995). In a general population sample, behaviors ranging from normal to severely disordered may be found, as well as a variety of different types of problem behaviors. Clinical samples on the other hand, will be less diverse, and may be selective regarding factors such as higher incidence of multiple disorders, an overrepresentation of externalizing problems, or low socio-economic status, which impedes the generalization of results.

In sum, a number of studies have investigated pathways from preschool behavioral and emotional problems to internalizing and externalizing problems in later childhood, as well as social problems in relation to such problems. However, none have integrated a wide variety of preschool problems as well as the role of social problems and sex differences in pathways to both internalizing and externalizing problems, using multiple informants in a general population sample. The present study aims to do so, and based on previous studies the following hypotheses were formulated: (1) early preschool oppositional behavior, aggression, and overactivity predict later externalizing problems; (2) early preschool withdrawal and anxiety *negatively* predict later externalizing problems; (3) early preschool withdrawal and anxiety predict later internalizing problems; (4) early externalizing problems predict later internalizing problems; (5) social problems at school-entry mediate homotypic internalizing and externalizing pathways, as well as heterotypic pathways from early externalizing to later internalizing problems; (6) sex differences in pathways include greater predictive value of early problems for boys than for girls, externalizing-internalizing pathways are especially salient for girls, and social problems at school-entry are especially important in pathways of psychopathology for boys.

Methods

Sample

Subjects were participants in the second follow-up of a longitudinal study of preschool children from the general population (Koot, 1993; Koot et al., 1997). The original Time 1 sample of preschool children was drawn randomly and stratified by age and sex from the Rotterdam municipal population register and the inoculation register of the Dutch province of Zuid-Holland. At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (215 boys and 205 girls, mean age = 2.6 years, *SD* = 0.8). In 1991, two years after the first time of measurement, the sample was approached again for a follow-up study (Time 2). Usable parent information was obtained for 397 of the 420 children participating at Time 1 (204 boys, 193 girls; mean age = 5.3 years, *SD* = 0.6).

At this 8-year follow-up (Time 3), usable parent information was obtained from 358 respondents, primarily mothers (85.2% of the original 1989 Time 1 sample). Twenty-six parents refused to participate, two of which did so because their children had problems and were already subjected to many tests and questions from other mental health institutes, and two of which asked to be removed from the sample because the children had Down's ayndrome and autism respectively, which made the questionnaires inappropriate for these children. Further, 15 parents had unlisted phone numbers and did not respond to subsequent letters asking them to contact us, three respondents could not be located. Finally, 378 parents gave consent to send them a package of questionnaires and agreed to fill these out and send them back to us, 18 of whom never did. The sample at Time 3 (n = 358), consisted of 180 boys and 178 girls with a mean age of 10 years and 11 months (*SD* = 7.2 months; age range = 9.8-12.5 years).

Teacher information was obtained for 294 of the 358 participants at Time 3 (80.4%). Forty-seven parents did not give their consent to approach teachers, and of the 311 teachers for whom parental consent was obtained, 17 never returned their questionnaires.

Most children were living with both biological parents (86.9%), while 7.8% of children lived in a single-parent home, and 5.3% lived with one biological parent and his or her new partner. The large majority of parents were born in The Netherlands (93.6%). Parents' mean socio-economic status as measured by the

highest occupational level in the family was 5.04, which is the midpoint of the 9-point occupational scale (Netherlands Central Bureau of Statistics, 1993). The families had an average of 2.6 children and the children in the sample were mostly (82.4%) first or second-born. Finally, 3.6% of the children were reported to have a chronic physical condition, 6.1% had received or were receiving special education, and 4.5% had been or still were referred for mental health services.

Instruments

A large number of measures were obtained at each time of assessment, including demographic and family factors, parental characteristics, child temperament and physical health problems. For the aim of the present study however, only measures of emotional and behavioral problems were included.

Time 1 psychopathology was assessed using the Child Behavior Checklist for ages 2-3 (CBCL/ 2-3; Achenbach, 1992) and psychopathology at Time 2 and 3 was measured using the Child Behavior Checklist for ages 4-18 (CBCL/ 4-18; Achenbach, 1991b), and the Teacher's Report Form (TRF; Achenbach, 1991c). The CBCL/2-3 (100 items) and CBCL/4-18 (120 items) obtain parents' reports of children's problem behaviors. The TRF (120 items) obtains teachers' reports and includes 95 of the same problem items as the CBCL/4-18, while items that are only relevant to the home situation were replaced by items relevant to the school situation. On these instruments, the problem items are scored on a 3-point Likert scale based on the preceding 6 months (CBCL/4-18) or 2 months (CBCL/2-3 and TRF): 0 if the item is "not true" of the child, 1 if the item is "somewhat or sometimes true", and 2 if the item is "very true or often true".

In a study involving exploratory and confirmatory factor analyses in a community, a clinical, and a twin sample of Dutch preschool children by Koot et al. (1997), the CBCL/2-3 was found to have a somewhat different factor structure than the U.S. version (Achenbach, 1992). The following factors were found to be robust across the Dutch samples (see Table 4.1): Oppositional (17 items), Withdrawn/Depressed (10 items), Aggressive (9 items), Anxious (9 items), Overactive (5 items), Sleep Problems (7 items), and Somatic Problems (3 items). Two higher-order factors were also found: the Internalizing syndrome which consists of the Withdrawn/Depressed and Anxious syndromes, and the Externalizing syndrome which consists of the Oppositional,

Table 4.1

Items Constituting the CBCL/2-3 Syndromes Found for the Dutch Situation

Oppositional	Aggressive	Sleep Problems
Can't wait	Cruel to animals	Doesn't want to sleep alone
Cries much	Destroys own things	Can't sleep
Demands must be met	Destroys other's things	Nightmares
Easily frustrated	Disobedient	Resists going to bed
Easily jealous	Fights	Sleeps little
Feelings easily hurt	Hits	Talks or cries in sleep
Gets into everything	Hurts accidentally	Wakes often
Angry moods	Attacks people	
Screams	Too loud	Somatic Problems
Selfish		Aches
Stubborn	Anxious	Nausea
Moody	Afraid to try new things	Stomachaches
Sulks	Avoids eye contact	
Temper tantrums	Clings to adults	
Uncooperative	Disturbed by change	
Wants attention	Upset by separation	
Whining	Self-conscious	
	Shy	
Withdrawn/Depressed	Too fearful or anxious	
Acts too young	Upset by new	
Doesn't answer		
No fun	Overactive	
Looks unhappy	Can't concentrate	
Unresponsive	Can't sit still	
Little affectin	Constantly seeks help	
Little interest	Quickly shifts activity	
Stares blankly	Refuses active games	
Strange behavior		
Sad		

Aggressive, and Overactive syndromes. The psychometric properties of the Dutch CBCL/2-3 syndrome scales were comparable to Achenbach's (1992) findings in U.S. samples (Koot et al., 1997). For the present study, only the syndromes included in the broadband Internalizing and Externalizing syndromes were used.

For the CBCL/4-18 and the TRF, Achenbach (1991b) constructed eight narrowband syndromes that can be scored on both instruments by summing the items that belong to each syndrome, in addition to two higher-order broadband syndromes labeled "Internalizing" and "Externalizing". The Internalizing syndrome consists of the narrowband syndromes Withdrawn, Somatic Complaints, and Anxious/Depressed. The Externalizing syndrome consists of the narrowband syndromes designated as Delinquent Behavior, and Aggressive Behavior. Three additional syndromes do not belong to either broadband scale: Social Problems, Thought Problems, and Attention Problems. The structure of these syndromes was confirmed for the Dutch situation, as well as the good reliability and validity for the Dutch translation of the CBCL (De Groot et al., 1994; 1996; Verhulst et al., 1985a; 1985b). For the present study, only the syndromes Internalizing Problems, Externalizing Problems, and Social Problems were used.

Procedure

In August 1997, all 420 respondents who participated at Time 1 received a letter asking them to participate in a second follow-up (Time 3), regardless of their participation at Time 2. They were then contacted by telephone to obtain consent to send them a package of questionnaires. The majority of parent information was obtained during September to December 1997. Included in the mailing to the parents was a form asking for permission to send the child's teacher two questionnaires. The majority of teacher information was obtained in the period from November 1997 to January 1998.

Statistical analyses

First, a series of t tests and χ^2 tests were performed to compare the sample used in the present study to the original Time 1 sample. Second, means and standard deviations of the Internalizing and Externalizing syndromes at each time of assessment were computed separately for boys and girls, and t tests were performed

to examine possible sex differences. Third, path analyses were performed using the CBCL/2-3 syndromes Oppositional, Withdrawn/ Depressed, Aggressive, Anxious, and Overactive at Time 1, the CBCL/4-18 and TRF syndromes Internalizing, Externalizing, and Social Problems at Time 2, and the CBCL/4-18 and TRF syndromes Internalizing and Externalizing Problems at Time 3. We calculated variance-covariance matrices of syndrome scores using PRELIS 2.3 (Jöreskog and Sörbom, 1999a). Any missing syndrome was deleted pairwise, thus slightly reducing sample size for each syndrome pair. The multiple regression analyses were performed with the statistical package LISREL 8.3 (Jöreskog and Sörbom, 1999b), using variance-covariance matrices and maximum likelihood as the estimation method. Direct pathways were defined from Time 1 syndromes to Time 3 syndromes, and indirect predictions were defined as pathways from Time 1 syndromes via Time 2 syndromes to Time 3 syndromes.

Path analyses were first performed across informants and sexes, but χ^2 tests revealed significant differences in regression coefficients between boys and girls for both parent-reports ($\Delta\chi^2 = 61.58$; $\Delta df = 13$; $p<0.05$) and teacher-reports ($\Delta\chi^2 = 92.65$; $\Delta df = 13$; $p<0.05$). Further, a significant difference in coefficients was found for parent and teacher-reports ($\Delta\chi^2 = 89.76$; $\Delta df = 13$; $p<0.05$). This lead us to compute pathways separately for boys and girls, and parent and teacher-reports. Parent models included parent-reported syndromes at all times of assessments, and teacher models included teacher-reported syndromes at Time 2 and Time 3, but parent-reported syndromes at Time 1 (children did not attend school at ages 2-3 years, so teacher-reports were not obtained). Predictor variables were tested for collinearity using a tolerance criterion of 0.10. There was no evidence of multicollinearity among predictor variables.

Results

Sample attrition

Sample sizes in pathway analyses differed according to the times of assessment and informants used for each part of the models. These sample sizes range from 251 for the models using teacher-reports at Time 2 and Time 3, to 346 for models using parent-reports at all times of assessment. *T* tests and χ^2 tests comparing each

subsample to their respective dropouts from the original Time 1 sample (n = 420) revealed no significant differences between each subsample and the respective dropouts on Time 1 CBCL Internalizing and Externalizing problems, child physical health problems, sex, SES, nonparental care, family mental health service use, or negative life-events.

Sex differences across ages

To describe our sample in terms of age- and sex-specific prevalences of internalizing and externalizing problems, means and standard deviations for these CBCL and TRF syndromes at each time of assessment, and for each available informant were computed. T tests revealed no significant sex differences in prevalence at ages 2-3 years on either syndrome. However, examination of the Time 1 narrowband syndromes did reveal significantly higher scores for boys on the Aggressive scale $t(418) = 4.46$; $p = .000$), but none of the others. At ages 4-5 years, boys had significantly higher scores on the Externalizing Problems syndromes compared to girls on the CBCL $t(395) = 5.67$; $p = .000$) and the TRF $t(340) = 5.33$; $p = .000$). The same was true at ages 10-11 years for both the CBCL $t(356) = 5.19$; $p = .000$) and the TRF $t(292) = 5.09$; $p = .000$). Boys also had slightly, but significantly higher Internalizing Problems scores on the CBCL at Time 3 than girls $t(356) = 2.43$; $p = .016$). Finally, boys had significantly higher scores than girls on the Time 2 TRF Social Problems syndrome $t(340) = 3.35$; $p = .001$).

Longitudinal pathways

Full results of the pathway analyses for the models bor boys and girls are presented in Tables 4.2 and 4.3, respectively. Table 4.2 shows that for boys using parent-reports, the proportions of variance in preadolescent internalizing and externalizing problems explained by preschool pathways are considerable (0.39 and 0.43, respectively). For boys using teacher-reports, these figures are lower, and indicate that preadolescent externalizing problems ($R^2 = 0.29$) are better predicted by preschool pathways than internalizing problems ($R^2 = 0.14$). Pathways for girls showed poorer predictive validity than for boys, as evidenced by consistently lower R^2 values for both parent-reports ($R^2 = 0.13$ for internalizing problems, and $R^2 = 0.25$ for externalizing problems), and teacher-reports ($R^2 = 0.08$ for internalizing

Table 4.2

Betas for Pathway to Time 3 Internalizing and Externalizing Problems for Boys in the Parent and Teacher Models

	Time 2			Time 3	
	SP	IN	EX	IN	EX
R^2 Parent model	0.26	0.20	0.36	0.39	0.43
T1 Oppositional	-0.06	0.20*	0.41***	0.12	0.02
T1 Withdrawn/Depressed	0.39***	0.21**	-0.01	0.04	0.01
T1 Aggressive	0.16*	0.00	0.14*	0.01	0.05
T1 Anxious	0.07	0.12*	-0.02	-0.04	-0.13*
T1 Overactive	0.04	0.00	0.18**	0.11	0.20**
T2 Social Problems (SP)	-	-	-	0.19**	0.08
T2 Internalizing Problems (IN)	-	-	-	0.46***	0.09
T2 Externalizing Problems (EX)	-	-	-	0.09	0.47***
R^2 Teacher model	0.16	0.05	0.20	0.14	0.29
T1 Oppositional	-0.05	-0.02	0.13	0.02	-0.11
T1 Withdrawn/Depressed	0.28**	0.18*	0.23**	0.10	0.06
T1 Aggressive	0.06	0.09	0.15*	0.08	0.24**
T1 Anxious	-0.11	-0.05	-0.20**	0.10	-0.24**
T1 Overactive	0.20**	0.00	0.13*	-0.07	0.29**
T2 Social Problems (SP)	-	-	-	0.19**	0.12*
T2 Internalizing Problems (IN)	-	-	-	0.18*	-0.16*
T2 Externalizing Problems (EX)	-	-	-	-0.04	0.02

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.0005$

problems, and $R^2 = 0.22$ for externalizing problems. To gain more insight in the significant preschool pathways to internalizing and externalizing problems, Figures 4.1 to 4.4 (representing each sex-by-informant model) show only those results that represent significant pathways to internalizing and externalizing problems at Time 3.

Table 4.3

Betas for Pathway to Time 3 Internalizing and Externalizing Problems for Girls in the Parent and Teacher Models

	Time 2			Time 3	
	SP	IN	EX	IN	EX
R^2 Parent model	0.14	0.24	0.21	0.13	0.25
T1 Oppositional	0.16*	0.33**	0.32**	0.01	0.04
T1 Withdrawn/Depressed	0.15	0.16*	0.00	-0.10	-0.13
T1 Aggressive	0.04	-0.09	0.13	0.07	0.05
T1 Anxious	0.12	0.26**	-0.09	0.08	0.08
T1 Overactive	0.07	-0.05	0.12	0.09	0.01
T2 Social Problems (SP)	-	-	-	0.02	0.07
T2 Internalizing Problems (IN)	-	-	-	0.19**	-0.09
T2 Externalizing Problems (EX)	-	-	-	0.12	0.45***
R^2 Teacher model	0.02	0.04	0.03	0.08	0.22
T1 Oppositional	0.08	0.12	0.15	0.28**	0.10
T1 Withdrawn/Depressed	-0.05	-0.04	-0.03	-0.02	-0.03
T1 Aggressive	-0.08	-0.05	-0.06	-0.20*	-0.06
T1 Anxious	0.01	0.16*	-0.11	-0.11	0.00
T1 Overactive	0.09	-0.01	0.06	-0.09	-0.03
T2 Social Problems (SP)	-	-	-	0.12	0.08
T2 Internalizing Problems (IN)	-	-	-	0.12	-0.05
T2 Externalizing Problems (EX)	-	-	-	-0.05	0.46***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.0005$

Pathways to Externalizing Problems

All models, except the boys-teachers model, show homotypic pathways from Time 2 Externalizing Problems to Time 3 Externalizing Problems. In the boys-parents model, indirect pathways from Time 1 Aggressive, Oppositional, and Overactive via Time 2 Externalizing Problems to Time 3 Externalizing Problems was found. For the girls-parents model, an indirect path from Time 1 Oppositional via Time 2 to Time 3 Externalizing Problems was identified. The girls-teachers

model shows no significant Time 1 predictors of Time 2 or Time 3 Externalizing Problems. Direct homotypic pathways from Time 1 Aggressive and Overactive to Time 3 Externalizing Problems were found for the boys-teachers model. In this model homotypic externalizing pathways from Time 1 to Time 2 were also found (see Table 4.2), but these did not lead to the Time 3 outcomes. In addition, several negative predictive pathways to Time 3 externalizing problems were found, including one model with a negative pathway from Time 2 Internalizing (boys-teachers), and two models with direct negative pathways from Time 1 Anxious (both models for boys). Finally, the boys-teachers model showed indirect pathways from Time 1 Withdrawn/Depressed and Overactive via Time 2 Social Problems to Time 3 Externalizing problems.

Pathways to Internalizing Problems

Three models (boys-parents, boys-teachers, and girls-parents) show homotypic indirect pathways from Time 1 Withdrawn/Depressed via Internalizing Problems at Time 2 to Internalizing Problems at Time 3. The two models derived from parent-reports both show that Time 1 Anxious predicts an indirect homotypic pathway via Time 2 Internalizing to Time 3 Internalizing Problems. In the same models, heterotypic indirect paths from Time 1 Oppositional via Time 2 Internalizing Problems to Time 3 Internalizing Problems were also found. The two models for boys both yielded significant pathways to Time 3 Internalizing Problems involving Time 2 Social Problems. In the boys-parents model, indirect paths from Time 1 Withdrawn/Depressed and Time 1 Aggressive via Time 2 Social Problems to Time 3 Internalizing Problems were found, and in the boys-teachers model we found an indirect path from Time 1 Overactive, via Time 2 Social Problems, to Time 3 Internalizing Problems. The girls-teachers model shows a direct pathway from Time 1 Oppositional to Time 3 Internalizing Problems, as well as a negative predictive link between Time 1 Aggressive and Time 3 Internalizing Problems.

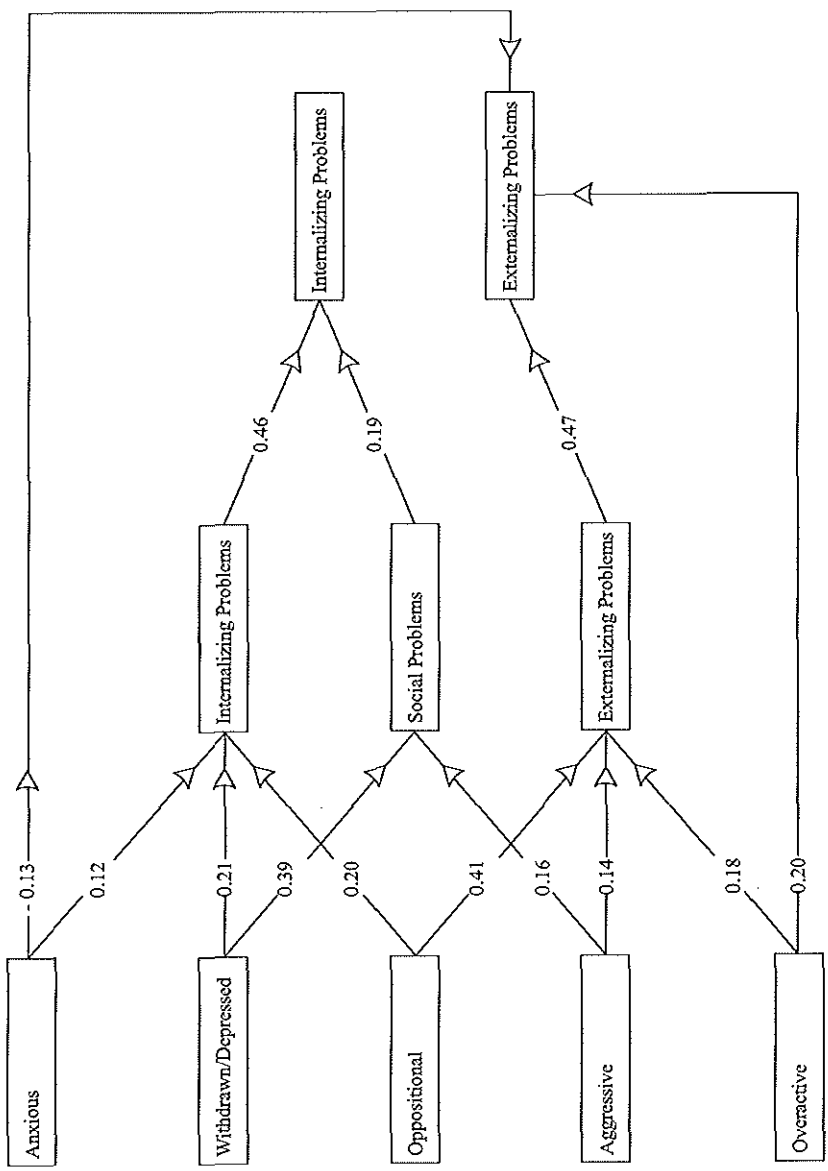


Figure 4.1 Pathways in the Boys-Parents Model

Figure 4.2 Pathways in the Boys-Teachers Model

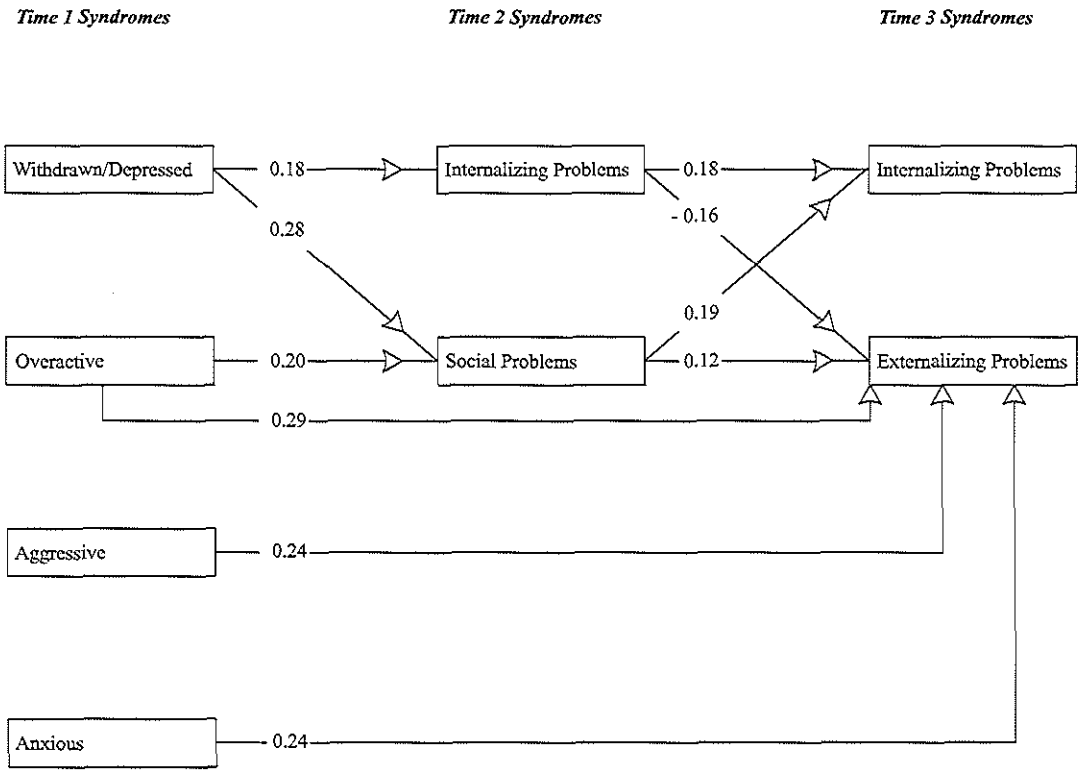


Figure 4.3 Pathways in the Girls-Parents Model

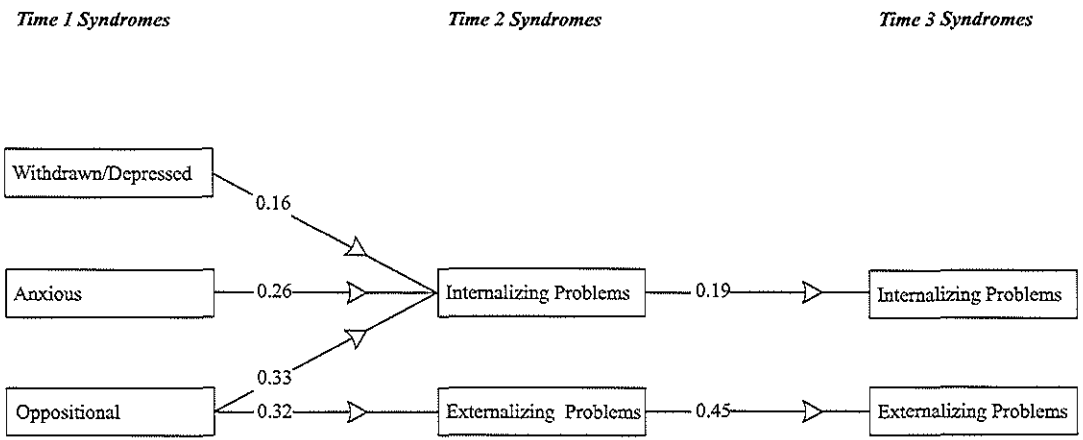
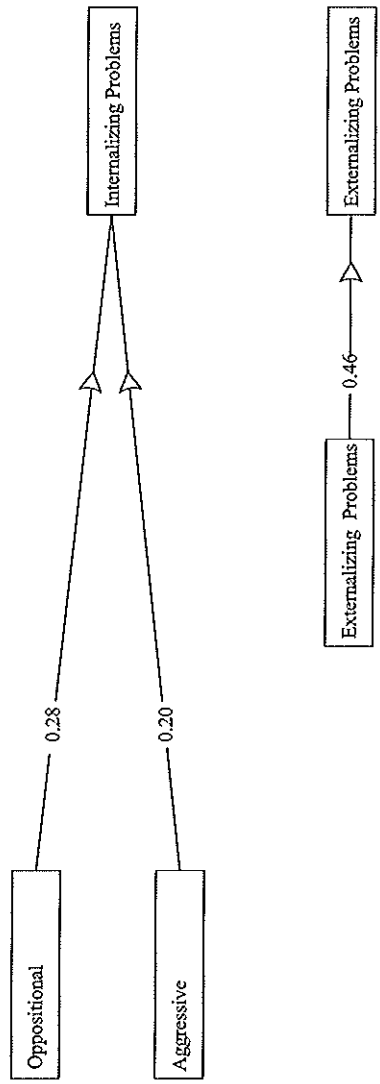


Figure 4.4 Pathways in the Girls-Teachers Model



Discussion

Our results mostly confirmed the age and sex differences in prevalence of internalizing and externalizing problems described by Keenan and Shaw (1997). Boys and girls were not significantly different on broad measures of internalizing and externalizing problems at ages 2-3 years, while boys showed significantly more externalizing problems, but generally not more internalizing problems compared to girls at ages 4-5 years and 10-11 years (Angold and Rutter, 1992; Cohen et al., 1993; Offord et al., 1987). Girls' internalizing scores at ages 10-11 years do not yet exceed those of boys, which fits expectations that such differences do not emerge until adolescence. At a more specific level, boys were found to have significantly higher scores on the Aggressive syndrome than girls at ages 2-3 years, which contradicts results reported by others (Keenan and Shaw, 1994; Rose et al., 1989). This contradiction may be caused by the fact that those studies used relatively small low-income samples, while our study used a larger general population sample. On the whole however, our results do illustrate the importance of testing separate pathways of internalizing and externalizing psychopathology for boys and girls (Keenan and Shaw, 1997). Path analyses across sexes and informants confirmed this observation, since significant differences in regression models between boys and girls (and informants) were found, which indicates a better fit to the data for separate versus combined models for boys and girls. In addition, results illustrated the considerable developmental significance of emotional and behavioral problems during the preschool years and at school-entry regarding psychopathology in later childhood. Path analyses showed that large proportions of variance in the internalizing and externalizing outcomes could be explained by Time 1 and Time 2 syndromes, especially in the boys-parents model ($R^2 = 0.39$ and 0.43, respectively).

Homotypic Externalizing pathways

As expected, preschool pathways to preadolescent externalizing problems were characterized by strong homotypic predictors including early preschool aggression, overactivity, and oppositional behavior. Several strong direct pathways from specific early externalizing problems to preadolescent externalizing problems were identified, as well as consistent indirect preschool externalizing pathways via school-entry into preadolescence. Our findings confirm the developmental

significance of a variety of externalizing problems from a very early age found by other authors (Campbell and Ewing, 1990; Fischer et al., 1984; Loeber et al., 1992). Because of variations between models, our results do not provide clear evidence for the predictive superiority of one specific type of early externalizing problem over the other.

Negative Internalizing-Externalizing pathways

Further, as hypothesized, several negative pathways from early internalizing problems to later externalizing problems were found in addition to the homotypic externalizing pathways. Similar to findings by other authors, preschool anxiety, and internalizing problems at school-entry were found to be protective factors in the development of preadolescent externalizing problems, including aggressive and delinquent behavior (Kerr et al., 1997; Schwartz et al., 1996; Tremblay et al., 1994). It is likely that a subgroup of preschool children experiencing strong anxiety and shyness will never be able to exhibit uninhibited, and to some extent dangerous behaviors such as delinquency and aggression. This subgroup may represent children with temperamental behavioral inhibition as described by Schwartz et al. (1996), whose behavioral disposition protects them from externalizing problems in later years. It is especially salient that these negative assocations were identified independent of concurrent externalizing problems.

Homotypic Internalizing pathways

Although not as strong as homotypic pathways to externalizing problems, results regarding early behavioral antecedents of internalizing problems indicated support for early homotypic preschool internalizing pathways. These included predictions from early preschool anxiety and withdrawn/depressed behavior to internalizing problems at school-entry and into preadolescence. Previous studies yielded inconsistent results, with some reporting a longitudinal association between internalizing problems at ages 2-3 years into later childhood (Lavigne et al., 1998), that was not confirmed in other studies (Fischer et al., 1984; Rose et al., 1989). However, these studies used broad definitions of internalizing problems at an early preschool age. One might speculate that the developmental significance of early anxiety in the development of later internalizing problems represents the concept of

early inhibition as described by (Kagan, 1997). The item content of the Anxious syndrome suggests similar behaviors such as 'upset by the new', 'shy', and 'afraid to try new things' (see Table 4.1).

Heterotypic Externalizing-Internalizing pathways

Similar to findings reported by Fischer et al. (1984), early externalizing problems also played a significant role in pathways to later internalizing problems. Early preschool oppositional behavior was a significant predictor of preadolescent internalizing problems, either through its association with internalizing problems at school-entry, or directly. The nature of the Oppositional syndrome is one of general difficult behavior and negativity (see Table 4.1) and seems to represent a nonspecific early preschool precursor of a variety of problems in later childhood, similar to the concept of general difficult temperament (Prior, 1992), rather than a specific predictor of externalizing problems. It may be that the CBCL/2-3 Oppositional syndrome represents that part of externalizing problems at an early preschool age that is responsible for at least part of the commonly reported relationship between early externalizing problems and later internalizing problems (Fischer et al., 1984; Rose et al., 1989).

The role of social problems

Social problems at school-entry were found to be significant in preschool pathways to preadolescent psychopathology, but only for boys. One path to internalizing problems originated from withdrawn/depressed behavior. This finding may represent those preschool boys that through their behavior (i.e., shows little interest, acts too young, no fun), have difficulties making friends and fitting into a social group at school-entry. This failure to succesfully associate with peers may then lead to negative self-perceptions and social isolation that in turn are closely linked to the development of further internalizing problems in later childhood (Cole et al., 1996; Rubin et al., 1991). Two other pathways involving social problems seem to refer to a subgroup of boys described by Panak and Garber (1992), who show socially undesirable externalizing behaviors such as aggression or overactivity at an early age, which may result in social problems in the form of peer rejection, and subsequently leads to internalizing problems. No support was found for the

aggressive-social problems-externalizing problems pathway described by Patterson et al. (1989) when externalizing problems at school-entry were corrected for. In the boys-teacher model, this may be due to the association between early preschool overactive behavior and aggression, since overactivity did predict social problems at school-entry and subsequent externalizing problems in preadolescence.

Sex differences

Separate regression models for boys and girls revealed that larger proportions of variance in preadolescent internalizing and externalizing psychopathology were explained by preschool pathways for boys compared to girls. As hypothesized, this may represent what Keenan and Shaw (1997) refer to as a more discontinous pattern of psychopathology for girls than for boys over the course of development. These authors note that girls seem to show a greater decline or lack of increase in rates of behavioral and emotional problems from the preschool years into later childhood than boys. Our hypothesis that girls' early externalizing problems would develop into internalizing problems at a later age through sex-stereotypic socialization processes was only partly confirmed. Early oppositional behavior in girls did predict internalizing problems in later years in both models (but also for boys in one model), but early aggression was a protective factor in the development of internalizing problems. Early preschool aggression in boys represented a significant developmental precursor of a variety of later problems, but for girls it did not even predict later externalizing problems. This finding may reflect that aggression at an early age is qualitatively different in boys and girls, or at least has a different developmental meaning. Finally, social problems at school-entry were significant in models for boys, but not for girls, which is consistent with our hypothesis. This finding may be an illustration of previous findings indicating that girls learn several aspects of social-emotional functioning at an earlier age than boys (Keenan and Shaw, 1997), which makes boys at that age more vulnerable to social problems and associated psychopathological outcomes. Our data indeed show that boys at ages 4-5 years have significantly higher scores on the TRF Social Problems syndrome than girls (although not on its CBCL counterpart).

Parents and teachers as informants

The fact that models for teachers showed less predictive strength than those for parents is not surprising. All predictions in the teacher models from Time 1 were cross-informant, since teacher-reports were unavailable at Time 1 and parent-reports were used instead. In addition, the teacher information at Time 2 and Time 3 was not provided by the same person, since school children in the Netherlands hardly ever have the same teacher in first and seventh grade of elementary school. In contrast, the parent-reports were obtained from the same person at all times of assessment in the majority of cases, namely the mother. However, it must be noted that substantial predictive pathways were identified for preadolescent teacher-reported externalizing problems in boys, including no less than three direct cross-informant paths from Time 1 parent-reported problems to Time 3 teacher-reported externalizing problems. Parent and teacher models did show some convergence in pathways, including for boys the direct predictive association between preschool overactivity and preadolescent externalizing problems, the direct negative pathway from preschool anxiety to externalizing problems in preadolescence, the role of social problems in the development of internalizing problems, and for girls the significance of preschool oppositional problems in pathways to internalizing problems.

Conclusion

This study was the first to integrate several important aspects of developmental pathways to internalizing and externalizing problems from a very early age, including a variety of early preschool problems, the role of social problems, and sex differences. The results of the present study generally confirmed our hypotheses based on previous literature. Our findings illustrate the developmental significance of a number of early preschool emotional and behavioral problems, as well as the role of social problems at school-entry in the development of internalizing problems in boys, and the importance of performing analyses separately for boys and girls, and reports from different informants. Further research is needed to replicate some of our findings regarding sex differences, and to investigate the role of environmental factors such as family functioning and parenting in developmental pathways of internalizing and externalizing problems from a young age.

Child-Reported Depression and Anxiety in Preadolescence II. Associations with Parent- and Teacher-Reported Problems

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Child-Reported Depression and Anxiety in Preadolescence
II. Associations with Parent- and Teacher-Reported Problems

Abstract

The objective of the present study was to examine a wide range of parent- and teacher-reported behaviors in relation to child-reported depression and anxiety in preadolescence. Subjects are participants in a longitudinal study of 420 preschool children from the general population that started in 1989. At second follow-up 8 years later (ages 10-11 years), usable parent-information was obtained for 358 children. For the present study, 274 children for whom complete child, parent and teacher-reports were obtained at age 10-11 years were included. Measures included the Dimensions of Depression Profile for Children, the State-Trait Anxiety Inventory for Children, the Child Behavior Checklist/4-18, and the Teacher's Report Form. Of 120 parent-reported problem items, only 11 and 9 were associated with child-reported depression and anxiety, respectively. For teachers, 33 and 20 items (of 120) were significantly associated with child-reported depression and anxiety, respectively, including items referring to withdrawal, anxiety, depression, social problems, and academic problems. Teachers are more likely than parents to notice internalizing problems and related problems such as social and academic problems in children reporting depression or anxiety.

Introduction

Various authors have reported that many children who need mental health services, do not receive those services (Verhulst and Van der Ende, 1997; Wu et al., 1999). Children who do receive professional mental health care are more likely to be children with externalizing problems, such as hyperactivity, or conduct problems, than children with internalizing problems such as depression and anxiety (Cohen et al., 1991; Wu et al., 1999).

In attempting to explain the lack of referrals for children with internalizing problems, one might conclude that internalizing problems in children are not very serious and reflect transient problems that do not require professional help.

However, Wu et al. (1999) reported that children's perception of the need for professional help is more related to depression than to disruptive disorders. Furthermore, child-reported internalizing problems have been found to predict internalizing problems as well as problems in adaptive functioning in later years (Ialongo et al., 1993; 1995), which illustrates the developmental seriousness of such problems. It seems that internalizing problems as reported by the child him- or herself, represent significant problems that warrant attention.

Considering these findings, as well as the fact that the referral of children is generally based on parental concern, the low rate of referrals of children with internalizing problems may therefore be due to a lack of parental awareness of such child-perceived problems. Internalizing problems refer to an inner mental state that, although salient to the child itself, may not be immediately obvious to parents or other adults such as teachers. Although certain internalizing behaviors such as social withdrawal, irritability, or separation anxiety may be observed by others, the underlying subjective mood may not necessarily be noticed. The results of several studies have indeed shown poorer agreement between child-reports and other informants' reports of child internalizing problems than between child-reports and other informants' reports of child externalizing problems (Herjanic and Reich, 1997; Kolko and Kazdin, 1993; Verhulst and Van der Ende, 1991). To enhance the referral of children with internalizing problems to mental health services, it is of special importance to investigate this issue, and identify ways to improve the detection of child-perceived internalizing problems by others.

The apparent lack of parents' and teachers' awareness of child internalizing problems may be caused by several complications. First, internalizing and externalizing problems in children often co-occur (Gjone and Stevenson, 1997; Verhulst and van der Ende, 1993). This overlap may represent *comorbidity* of internalizing and externalizing disorders, or may reflect that some externalizing symptoms such as poor concentration are a *part of* internalizing disorders, or that externalizing symptoms are a behavioral *signal* for underlying internalizing problems. In all three cases, the greater visibility of externalizing symptoms compared with internalizing symptoms makes it more likely for externalizing symptoms to become the focus of referral and intervention, overshadowing the internalizing problems. Second, previous studies have focused only on the

agreement between children and parents on the same internalizing symptoms. Because internalizing symptoms themselves are rather elusive to others, one may have to look for other observable behaviors that indirectly signal the presence of child-perceived internalizing problems. For instance, parents and teachers may notice impairment in competence areas such as social and academic functioning, which has been found to be associated with both childhood depression and anxiety (Masten and Coatsworth, 1995), although the former has received more systematic research attention.

The aim of this study is to investigate which parent- and teacher-reported broad behavioral syndromes and which of a wide range of specific behaviors, signal the presence of child-perceived depression and anxiety in children from a general population sample. The investigation of a wide range of problem behaviors, including internalizing, as well as externalizing and social and academic problems may yield new viewpoints on the detection of internalizing problems in children. Furthermore, the investigation of this issue in a general population sample rather than a referred sample is especially useful, inasmuch as the main focus of this study is to identify those children who are experiencing internalizing problems but who are not receiving the necessary professional help.

Methods

Sample and procedure

Subjects were participants in the second follow-up of a longitudinal study of preschool children from the general population (Koot, 1993; Koot et al., 1997; Koot and Verhulst, 1991). The original Time 1 sample of preschool children was drawn randomly and stratified by age and sex from the inoculation register of the Dutch province of Zuid-Holland, which included all 2-3-year-olds in the province (excluding Rotterdam), and from the Rotterdam municipal population register. At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (mean age 2.6; *SD* = 0.8; 215 boys and 205 girls; response: 91% of target sample). In 1991, two years after the first time of measurement, the sample was approached again for a follow-up study (Time 2). Usable parent information was obtained for 397 of the 420 children participating at Time 1 (94.5%, 204 boys, 193 girls; mean age 5.3; *SD* = 0.6).

In August 1997, all 420 respondents who participated at Time 1 received a letter asking them to participate in a second follow-up (Time 3), regardless of their participation at Time 2. The procedures for all three times of assessment were approved by the medical-ethical committee of the Erasmus University Rotterdam/University Hospital Dijkzigt. After receiving a letter, respondents were contacted by telephone to obtain consent to send them a package of questionnaires for the second follow-up. Twenty-three parents refused to participate, two of whom did so because their children had problems and were already subjected to many tests and questions from mental health institutes. Furthermore, 14 parents had unlisted phone numbers and did not respond to subsequent letters asking them to contact us; three respondents could not be located. The parents of one child with Down's syndrome as well as parents of a child diagnosed with autism asked to be removed from the sample, because the questionnaires were inappropriate for these children. Finally, 378 parents gave consent to send them a package of questionnaires and agreed to fill these out and send them back to us, 20 of these never did. Usable written parent information was obtained for 358 children, the respondents being primarily the mothers (85.2% of the original 1989 Time 1 sample; 180 boys, 178 girls; mean age 10.9 years; *SD* = 7.2 months; age range 9.75-12.5 years). The majority of written parent information was obtained during September to November 1997. The average time between Time 1 and Time 3 was 7.9 years (*SD* = 0.2; range 7.4 – 8.7 years).

Included in the mailing to the parents was a form asking for permission to send the child's teacher and the child a number of questionnaires. To avoid parental interference, teachers were asked to permit children to fill out their questionnaires at school. Usable teacher information was obtained for 294 (82.1%) of the 358 participants at Time 3. Forty-seven parents did not give their consent to approach teachers, and of the 311 teachers for whom parental consent was obtained, 17 never returned their questionnaires. For the children's reports, parental consent was obtained in 314 cases. Of these, 16 questionnaires were never returned, and 5 returned questionnaires were incomplete. Usable child-reports were obtained for 293 children (81.8%). The majority of teacher and child information was obtained in the period from November 1997 to January 1998.

Instruments

All instruments have been found reliable and valid by their authors. If information about validity and reliability in Dutch samples is available, this will be noted.

The Dimensions of Depression Profile for Children (DDPC; Harter and Nowakowski, 1987) assesses a number of specific aspects of depression in children, and contains 30 four-point items. We used the DDPC rather than other available self-reports of depression because it contains 5 subscales that reflect different aspects of depression rather than one broad overall depression scale. These subscales include Depressed Mood, Self-Blame, Low Energy/Interest, Suicidal Thoughts, and Low Global Self-Worth. Factor analysis replicated this scale structure perfectly in our sample. However, for the present study, only the total depression score was used, which is computed by summing the 5 subscale scores. Alphas for subscales in the present study were all greater than .79. Subscale-total score correlations were highest for Depressed Mood (.85) and Low Global Self-Worth (.81).

The State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) measures anxiety at the time of assessment (state anxiety) and dispositional anxiety (trait anxiety). Both scales contain 20 items which are scored on a three-point Likert scale. For the present study, only the Trait Anxiety scale was used (α = .83 in the present study). To our knowledge, the STAIC is the only internationally used self-report of anxiety that has been translated and validated for the Dutch situation (Bakker et al., 1989).

The Child Behavior Checklist/4-18 (CBCL/4-18; Achenbach, 1991b) and the The Teacher's Report Form (TRF; Achenbach, 1991c) were completed by parents and teachers respectively to obtain standardized reports of children's problem behavior. On both instruments, the items are scored on a 3-point scale, 0 if the item is "not true" of the child, 1 if the item is "somewhat or sometimes true", and 2 if the item is "very true or often true". Achenbach (1991b) constructed eight cross-informant narrowband syndromes, labeled as Withdrawn, Somatic Complaints, and Anxious/Depressed (which form the broadband Internalizing scale), and Delinquent Behavior and Aggressive Behavior (which form the broadband Externalizing scale), and Social Problems, Thought Problems, and Attention Problems. The good reliability and discriminative validity established by Achenbach (1991a; 1991c), as

well as the factor structures were confirmed for the Dutch translations, supporting the cross-cultural validity of the instrument (De Groot et al., 1994; 1996; Verhulst et al., 1985a; 1985b).

Statistical analyses

First, the depression and anxiety reports from children were examined more closely. We performed *t* tests to examine sex differences in mean scale scores, and the correlation between both measures was computed. Second, to investigate the association between child-reported depression and anxiety and parent- and teacher-reported syndromes, Pearson correlations between the DDPC and STAIC total scores and the CBCL and TRF syndromes were computed. Furthermore, linear regression analyses (method enter) were performed to investigate the total proportion of variance in child-reported depression and anxiety explained by the CBCL and TRF narrowband syndromes. Finally, to gain more insight into the specific behaviors that parents and teachers report if a child-reports elevated levels of depression or anxiety, the DDPC and STAIC scores were dichotomized using a cutoff at 1 *SD* above the mean and dichotomized CBCL/TRF items were defined as 0 (not true) versus 1 (somewhat or sometimes true) and 2 (very true or often true). Odds ratios between the child-reports and dichotomized CBCL/TRF items were computed.

Sample attrition

For this article, only those subjects were included for whom complete Time 3 child-reports were available, as well as complete CBCL, and TRF data ($N = 274$). To ensure that this subsample did not suffer from selective attrition, a series of *t* tests and χ^2 tests were performed. *T*-tests revealed no significant differences in comparison to the respective remaining children from the original sample on the Time 1 CBCL Total Problems $t(418) = 0.21$; $p = .83$, Internalizing $t(418 = 0.68$; $p = .50$) or Externalizing scores $t(418) = -0.15$; $p = .88$. Neither were there differences on the Time 3 CBCL Total Problems, $t(356) = 0.79$; $p = .43$; Internalizing Problems, $t(356) = 0.31$; $p = .76$; or Externalizing Problems scores, $t(356) = 0.32$; $p = .75$. Furthermore, χ^2 tests showed that the current sample was not significantly different from the respective remaining samples regarding sex, $\chi^2(1) = 0.83$; $p = .36$; socio-

economic status, $\chi^2(2) = 4.56$; $p = .10$; or Time 1 risk factors such as parent-reported family mental health service use, $\chi^2(1) = 0.48$; $p = .49$; nonparental care, $\chi^2(1) = 0.81$; $p = .37$; parenting stress, $\chi^2(1) = 0.10$; $p = .75$; or parental physical punishment of the child, $\chi^2(1) = 1.06$; $p = .30$. These results lead us to conclude that the subsample used in this present study was not influenced by selective attrition.

Results

Child-reported depression and anxiety

The t tests revealed no significant sex differences regarding means of the depression total score, $t(272) = -.50$; $p = .62$; the anxiety total score, $t(272) = -1.90$,

Table 5.1

Correlations Between Parent-Reported (CBCL/4-18) and Teacher-Reported (TRF) Behavioral Syndromes and Child-Reported Depression and Anxiety (N = 274)

	Depression		Anxiety	
CBCL/TRF Syndromes	Parents	Teachers	Parents	Teachers
Withdrawn	-	.30	-	.23
Somatic Complaints	.14	.18	-	-
Anxious/Depressed	-	.30	.13	.30
Social Problems	.17	.31	-	.34
Thought Problems	-	.12	-	.14
Attention Problems	.15	.23	.13	-
Delinquent Behavior	-	-	-	-
Aggressive Behavior	.13	-	-	-
Internalizing Problems	.13	.32	-	.30
Externalizing Problems	.13	-	-	-
Total Problems	.14	.27	.13	.14
Adjusted R^2 *	.02	.11	.01	.08

*NOTE: Only significant correlations are shown. Hyphens indicate nonsignificant correlations. * Proportion of explained variance derived from linear regression analyses, with the child-reported as dependent variables, and the 8 CBCL/TRF narrowband syndromes as independent variables.*

p = .058; or any of the depression subscales, although there was a nonsignificant tendency for girls to have higher anxiety scores than boys. The correlations between the child-report measures of depression and anxiety were high, and they were similar for boys (0.62) and girls (0.68).

Correlations with CBCL/TRF syndromes

Table 5.1 shows that the correlations between child-reported depression and anxiety, and parent- and teacher-reported behavioral syndromes were generally small, or medium at best according to Cohen's criteria (Cohen, 1988). For both child-reported depression and anxiety, correlations were generally higher and more often significant for the teacher-reported syndromes than for parent-reported syndromes. The teacher-reported syndromes Anxious/Depressed, Withdrawn, and Social Problems were most strongly related to both child-reported depression and anxiety. Child-reported depression, but not anxiety, was also significantly related to parent-reported aggressive behavior and externalizing problems. Additional linear regression analyses showed that the proportions of explained variance of child-reported depression and anxiety were very low for the CBCL syndromes (1% and 2% respectively) and slightly higher for TRF syndromes (11% and 8% respectively).

Odds ratios with CBCL/TRF items

Table 5.2 shows the relative risk for child-reported depression and anxiety regarding the CBCL/TRF items which were grouped according to the cross-informant syndromes. Similar to the findings regarding the CBCL/TRF syndromes, the teacher-child odds ratios were generally higher and more often significant than the parent-child odds ratios. For parents, only 11 of the 120 items were significantly related to child-reported depression. These items belonged to 5 different syndromes, including only 2 from the internalizing syndromes Withdrawn and Anxious/Depressed, but there were 4 items from the Aggressive Behavior syndrome. Only 9 parent-reported items were significantly related to child-reported anxiety, 3

Table 5.2

Odds Ratios Between CBCL/TRF Items and Child-Reported Depression and Anxiety (N = 274)

		Depression ($n = 45$)[a]				Anxiety ($n = 44$)[a]			
		Parents		Teachers		Parents		Teachers	
CBCL/TRF items per syndrome	(*n*/*n*)[b]	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Withdrawn									
42.would rather be alone	(68/60)	4.4	(1.4 – 5.2)	2.3	(1.2 – 4.6)	-	-	-	-
102. underactive	(18/25)	-	-	4.1	(1.7 – 9.8)	-	-	3.4	(1.4 – 8.4)
103. unhappy, sad, depressed[c]	(40/36)	-	-	5.8	(2.7 – 12.4)	-	-	3.8	(1.7 – 8.2)
Anxious/Depressed	(34/25)	2.9	(1.3 – 6.5)	6.0	(2.5 – 14.4)	2.5	(1.1 – 5.7)	5.1	(2.2 – 12.3)
12/ lonely	(53/35)	-	-	3.3	(1.4 – 8.1)	-	-	2.8	(1.1 – 6.9)
33. feels unloved	(82/62)	-	-	4.5	(2.3 – 8.9)	2.0	(1.0 – 3.9)	2.9	(1.5 – 5.8)
34. feels persecuted	(53/39)	-	-	3.2	(1.5 – 6.8)	-	-	2.8	(1.3 – 6.1)
35. feels worthless	(106/101)	-	-	2.3	(1.2 – 4.3)	-	-	-	-
45. nervous, tense[d]	(42/40)	-	-	2.6	(1.2 – 5.6)	3.0	(1.4 – 6.5)	2.3	(1.1 – 5.1)
50. fearful, anxious	(31/19)	-	-	4.3	(1.6 – 11.4)	-	-	4.4	(1.7 – 11.7)
52. feels too guilty	(32/35)	-	-	3.8	(1.8 – 8.3)	-	-	-	-
89. suspicious	(na/50)	na	na	-	-	na	na	2.2	(1.0 – 4.6)
106. overly anxious to please	(68/49)	-	-	2.5	(1.2 – 5.2)	-	-	-	-
112. worries									

Table 5.2 continues

Table 5.2 (continued)

		Depression ($n = 45$) [a]				Anxiety ($n = 44$) [a]			
		Parents		Teachers		Parents		Teachers	
CBCL/TRF items per syndrome	(n/n) [b]	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Social Problems									
11. too dependent	(71/55)	-	-	2.10	(1.3 – 5.4)	-	-	2.5	(1.2 – 5.0)
25. doesn't get along with peers	(53.62)	-	-	3.2	(1.6 – 6.2)	-	-	2.3	(1.1 – 4.6)
38. gets teased	(63/39)	2.6	(1.4 – 5.4)	5. 7	(2.7 – 12.0)	-	-	5.1	(2.4 – 10.9)
48. not liked by peers	(42/47)	-	-	3.1	(1.5 – 6.3)	-	-	2.8	(1.3 – 5.8)
64. prefers younger kids	(58/34)	3.2	(1.6 – 6.3)	2.4	(1.1 – 5.5)	-	-	-	-
Attention Problems									
4. fails to finish	(na/70)	na	na	2.0	(1.0 – 4.0)	na	na	2.1	(1.1 – 4.2)
8. can't concentrate	(129/129)	-	-	-	-	2.0	(1.0 – 3.9)	-	-
22. difficulty following directions	(na/74)	na	na	2.1	(1.1 – 4.0)	na	na	-	-
49. difficulty learning	(na/79)	na	na	2.6	(1.3 – 5.0)	na	na	-	-
60. apathetic	(na/58)	na	na	3.2	(1.6 – 6.3)	na	na	-	-
61. poor school work	(27/57)	-	-	2.5	(1.3 – 5.1)	-	-	-	-
92. underachieving	(na/40)	na	na	-	-	na	na	2.3	(1.1 – 5.1)
Delinquent Behavior									
26. lacks guilt	(60/46)	-	-	2.5	(1.2 – 5.3)	-	-	-	-
90. swearing, obscenity	(66/23)	2.2	(1.1 – 4.4)	-	-	-	-	-	-

Table 5.2 continues

Table 5.2 (continued)

CBCL/TRF items per syndrome	(*n*/*n*) [b]	Depression (*n* = 45) [a]				Anxiety (*n* = 44) [a]			
		Parents		Teachers		Parents		Teachers	
		OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Aggressive Behavior									
19. demands attention	(118/78)	2.3	(1.2 – 4.4)	-	-	2.2	(1.1 – 4.2)	2.8	(1.4 – 5.4)
21. destroys others' things	(13/21)	3.5	(1.1 – 11.1)	-	-	-	-	-	-
24. disturbs other pupils	(na/81)	na	na	2.2	(1.1 – 4.3)	na	na	-	-
27. jealous	(100/45)	-	-	2.9	(1.4 – 6.0)	-	-	-	-
68. screams	(38/21)	-	-	2.8	(1.1 – 7.5)	-	-	-	-
76. explosive	(na/32)	na	na	2.7	(1.2 – 6.2)	na	na	-	-
93. talks too much	(98/88)	-	-	-	-	2.3	(1.2 – 4.3)	-	-
94. teases	(62/42)	2.2	(1.1 – 4.4)	-	-	-	-	-	-
104. loud	(70/47)	2.0	(1.0 – 4.0)	-	-	-	-	-	-
Other									
13. confused	(10/36)	-	-	2.6	(1.2 – 5.9)	-	-	-	-
30. fears going to school	(9/8)	-	-	5.5	(1.3 – 22.8)	4.5	(1.2 – 17.5)	-	-
51. feels dizzy	(9/5)	-	-	8.1	(1.3 – 50.0)	-	-	8.3	(1.4 – 51.5)
55. overweight [c]	(33/26)	2.6	(1.1 – 5.8)	3.1	(1.3 – 7.5)	-	-	2.6	(1.1 – 6.5)
59. sleeps in class	(na/9)	na	na	-	-	na	na	4.5	(1.2 – 17.5)

Table 5.2 continues

Table 5.2 (continued)

CBCL/TRF items per syndrome	(*n*/*n*) [b]	Depression (*n* = 45) [a]				Anxiety (*n* = 44) [a]			
		Parents		Teachers		Parents		Teachers	
		OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Other (cont.)									
83. stores up things	(37/5)	2.5	(1.1 – 5.6)	8.1	(1.3 – 50.0)	-	-	-	-
96. thinks about sex too much	(6/6)	-	-	-	-	5.5	(1.1 – 28.4)	-	-
98. thumb-sucking	(37/na)	-	-	na	na	3.6	(1.7 – 7.8)	na	na
107. dislikes school	(na/23)	na	na	-	-	na	na	3.2	(1.3 – 8.1)
110. unclean personal appearance	(na/9)	na	na	7.0	(1.8 – 27.3)	na	na	-	-

NOTE: Table entries respresnt odds ratios (OR) and 95% confidence intervals (95% CI). Only items with one or more significant odds ratios are shown. Hyphens indicate non-significant odds ratios. "na" indicates that the items is not applicable for this informant. [a] *n deviant based on cutoff at 1 standard deviation above the mean;* [b] *n deviant CBCL / n deviant TRF (deviant = score 1 or 2):* [c] *Also in Anxious/Depressed on CBCl and TRF;* [d] *Also in Attention Problems on CBCL and TRF:* [e] *For parents in Social Problems syndrome.*

of which were from the Anxious/Depressed syndrome. The parent-reported items 'lonely' and 'demands attention' were related to both depression and anxiety.

For teachers, 33 items were significantly related to child-reported depression, most of which belonged to the internalizing syndromes Withdrawn or Anxious/Depressed (e.g., 'unhappy', 'lonely'), the Social Problems syndrome (e.g., 'doesn't get along with peers', 'gets teased'), the Attention Problems syndrome (e.g., 'difficulty learning', 'poor school work'), or the Aggressive Behavior syndrome (e.g., 'jealous', 'screams'). A number of teacher-reported items from the 'other' category were also significantly associated with child-reported depression (e.g., 'feels dizzy', 'stores up things'), but most were associated with large confidence intervals, diminishing the reliability of these findings.

Twenty teacher-reported items were significantly associated with child-reported anxiety, the majority of which belonged to the Anxious/Depressed syndrome (e.g., 'lonely', 'feels too guilty'), the Social Problems syndrome (e.g., 'gets teased', 'not liked by peers'), or the 'other' category (e.g., 'feels dizzy', 'sleeps in class'). Odds ratios with items from the latter category were generally based on very few children, which is evidenced by large confidence intervals. Fifteen of the 20 teacher-reported items that were significantly related to child-reported anxiety were also related to child-reported depression. Only the CBCL/TRF item 'lonely' was significantly related to both child-reported depression and anxiety for both parent and teacher-reports.

Discussion

The goal of this study was to identify which parent- and teacher-reported behaviors signal the presence of child-reported depression and anxiety. Results showed that, at the syndrome-level, child-perceived depression and anxiety are only marginally related to parent-reported problems, while they are moderately related to teacher-reported problems. Consistent with previous studies, correlations between child-reported internalizing problems and parent- and teacher-reported internalizing syndromes were small, or medium at best (Ivens and Rehm, 1988; Kolko and Kazdin, 1993; Stanger and Lewis, 1993). This was also evidenced by the low proportions of variance in child-reported depression and anxiety explained by the CBCL and TRF syndromes.

When we examined the more specific parent- and teacher-reported behaviors, results again revealed that parental reports of children's problem behaviors were very poor indicators of child-perceived internalizing problems compared to teachers' reports. Only two parent-reported internalizing items ('would rather be alone', 'lonely') were significantly related to child-perceived depression, and three internalizing items ('lonely', 'feels persecuted', 'fearful, anxious') to child-perceived anxiety. It was striking that the parent-reported item 'unhappy, sad, depressed' was not significantly related to child-reports of depression, illustrating the lack of parental insight into their children's state of mind. For parents, it is signs of loneliness and withdrawal, rather than mood that distinguish children with severe depression from others. For teachers, the majority of internalizing items were significantly related to child-perceived depression and anxiety, indicating that teachers are more sensitive to these problems in children than parents.

A number of parent- and teacher-reported externalizing items were significantly associated with child-perceived depression, but not anxiety. Although both anxiety and depression have been found to be often comorbid with conduct disorder or oppositional-defiant disorder, the rates of co-occurence tend to be higher for depression than for anxiety (Fergusson et al., 1993b; Simonoff et al., 1997). Furthermore, some models of depression posit that unacceptable disruptive behavior leads to peer rejection and problems in academic functioning, which in turn lead to depression (Patterson and Capaldi, 1990). Others have suggested that anger as expressed in aggression and conduct problems, may be an integral part of depression in a significant subgroup of subjects (Renouf and Harter, 1990). Although the issue is still unresolved, our results do show that parents' and teachers' reports of externalizing behaviors are indicative of heightened risk for child-perceived depression. It must be noted however, that these externalizing behaviors mostly represent general 'acting out' behavior ('demands attention', 'jealous', 'screams') and not antisocial behavior such as fighting or stealing.

Regarding social functioning, items from the Social Problems syndrome as reported by teachers, but not parents, were frequently related to both child-perceived depression and anxiety (e.g., 'gets teased', 'not liked by peers'). This finding is consistent with results from previous research which has shown significant (reciprocal) associations between internalizing symptoms and problems in social

functioning (Bell-Dolan et al., 1995; Rubin and Stewart, 1996). Regarding academic functioning, a number of teacher-reported items from the Attention Problems syndrome were significantly associated with child-reported depression, and marginally to anxiety. Most of these items were specific to the TRF, as they represent behaviors related to academic functioning (e.g., 'fails to finish tasks', 'difficulty learning'). The relationship between depression and academic problems is consistent with that found in previous studies (Cole, 1990; Slotkin et al., 1988). As with social problems associated with depression, it remains unclear whether this is due to the often found comorbidity between ADHD and depression (Biederman et al., 1991; Jensen et al., 1993), whether academic problems precede depression due to failure and negative feedback, or whether depressive symptoms such as lack of interest and low energy levels lead to academic problems. Regardless of the direction of causality, teachers' reports of inadequate social and academic functioning signal a heightened risk for child-perceived depression.

There may be several reasons for the apparent lack of parental awareness of child-perceived internalizing problems compared with teacher awareness. First, this insensitivity of parents to their child's internalizing problems may have been one of the causes of these problems in the first place. In the depression literature, a lack of parental involvement and insecure attachment have been implicated in the development of child depression (Hammen and Rudolph, 1996). Furthermore, inasmuch as both child depression and anxiety are strongly related to similar problems in parents (Rutter et al., 1990), it may be that the presence of such symptoms in parents hampers sensitivity to a child's feelings and needs. In contrast, a teacher's (in)sensitivity is not likely to be related to the cause of child internalizing problems. Second, because social and academic problems seem to be important indicators of child-perceived internalizing problems, the classroom setting may provide teachers with a better position to observe such problems than parents would have at home. Feelings of worthlessness, nervousness or anxiety in children may be especially salient when they are confronted with peers with whom a certain level of social interaction is required, or with academic tasks that require concentration and a sense of self-competence. Finally, teachers can easily compare a child's behavior with that of a relatively large group of age-mates, which may enhance their sensitivity to deviations in behavior and affect, while parents generally do not have

such a standard with which to compare their children's behavior. This may be especially important, considering that children in elementary schools in the Netherlands generally have the same teacher every day, all day.

Clinical implications

Consistent with results from previous studies, others, especially parents, seem relatively unaware of the child-perceived inner mental state of children, which illustrates the importance of child-reports in the detection of internalizing problems such as depression and anxiety in children (Herjanic and Reich, 1997; Loeber et al., 1990). Furthermore, teachers are more aware of a child's inner mental state than parents, and it seems that the classroom provides them with a better setting to signal other aspects of functioning related to child-perceived internalizing problems, such as social and academic problems. Therefore, a more prominent role for teachers in the detection of child-perceived depression and anxiety needs to be considered. In this light, we examined the sensitivity and specificity of the TRF as a screening instrument for child-perceived depression and anxiety. The dichotomized TRF Internalizing syndrome (borderline cutoff at the 82nd percentile, see: Achenbach, 1991a), showed a sensitivity of .42 and a specificity of .87 for child-reported depression and a sensitivity of .27 and specificity of .84 for child-reported anxiety. Because these figures are far from acceptable, we tried to improve the TRF's sensitivity by creating two new TRF syndromes that include all the items that were found to be significantly related to depression (33 items, score range 0-66) and anxiety (20 items, score range 0-40) respectively. For depression, a cutoff at score 11 yielded a sensitivity of 0.56 and a specificity of 0.86, and for anxiety, a cutoff at score 6 yielded a sensitivity of 0.43 and a specificity of 0.84. Although an increase in sensitivity was found, the TRF is still not (and does not aim to be) an acceptable screening instrument for child-perceived depression and anxiety. However, these findings do illustrate the importance of developing a teacher-report instrument specifically designed for the detection of child-perceived depression and anxiety, which, to our knowledge, does not yet exist. As can be concluded from our results, such an instrument should include not only 'standard' internalizing items, but also items referring to social and academic functioning, and mild externalizing problems. The development of a teacher screening measure may be the first step in enhancing

the detection of children experiencing internalizing problems, and promoting adequate referral to mental health services of these children.

Limitations

There were some limitations to this study. First, sex differences in the relation between child-perceived internalizing problems and parent- and teacher-reported behaviors were not examined. The number of boys and girls in the deviant depression and anxiety groups would be too low to ensure reasonable reliability of findings. Although no significant sex-differences in child-reported depression and anxiety were found, it may be that depressed or anxious boys exhibit different behaviors than depressed or anxious girls exhibit, or that others notice different behaviors about those boys and girls. Further study is needed to investigate this issue. Second, only rating scales were used to assess child depression and anxiety. Therefore, the findings based on these measures cannot necessarily be generalized to clinical diagnoses of depression and anxiety. Third, the low correlations between the CBCL/TRF and the DDPC and STAIC may be due to the fact that the underlying constructs measured by these instruments are different. However, the low interinformant agreement for internalizing problems found in our study is consistent with results from other studies using the same instrument and construct for both informants (Herjanic and Reich, 1997; Kolko and Kazdin, 1993; Verhulst and Van der Ende, 1991). Furthermore, possible differences in constructs in our study would only be a explanation for the low associations on the syndrome-level, and not for the results regarding the specific items of the CBCL and TRF, as these do not represent constructs, but single observable behaviors. Finally, the cross-sectional nature of this study did not allow for the identification of early parent- or teacher-observed behaviors that may signal the need for prevention rather than intervention efforts. Longitudinal investigations of this issue may shed more light on early signals of preadolescent child-reported internalizing problems.

Child-Reported Depression and Anxiety in Preadolescence II. Preschool Predictors

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Child-Reported Depression and Anxiety in Preadolescence
II. Preschool Predictors

Abstract

The objective of the present study was to examine the predictive association of a wide variety of parent- and teacher-reported behaviors at age 2-3 years in relation to child-reported depression and anxiety at age 10-11 years. Subjects were participants in a longitudinal study of 420 children ages 2-3 years from the general population first assessed in 1989 and again in 1991 (n = 397) and 1997 (n = 358). For the present study, 249 children were included for whom all relevant measures were obtained. These measures include the Child Behavior Checklist (CBCL) for 2-3-year-olds at Time 1, the CBCL for 4-18-year-olds, and the Teacher's Report Form at Time 2, and the Dimensions of Depression Profile for Children, and the State-Trait Anxiety Inventory for Children at Time 3. Only 5 and 8 of 220 parent-reported preschool problem items were significantly related to later child-reported depression and anxiety respectively, and only 3 of 120 teacher-reported problem items were related to later anxiety. Of 120 teacher-reported preschool problem items, 21 were significantly related to later depression, including items referring to early signs of depression, and social and academic problems. Teachers, but not parents, can provide valuable information regarding preschool signals of preadolescent depression, but not anxiety. These signals include early social and academic problems.

Introduction

Previous research has shown that child-reported internalizing problems such as anxiety and depression are only marginally noticed by significant others such as parents and teachers (Herjanic and Reich, 1997; Kolko and Kazdin, 1993). These studies highlighted the importance of the child's own perception in the identification of internalizing problems, which reflect an inner mental state that only the child himself or herself may be privy to. Part I of this study (Mesman and Koot, in press-a) confirmed these findings, showing especially poor parental awareness of

preadolescent internalizing problems as perceived by the child. However, the results showed that teacher-reported child internalizing problems, as well as social and academic problems were important indicators of child-reported internalizing problems. The association between problems in social and academic functioning and child internalizing problems has also been found by other authors (Bowen et al., 1995; Cole, 1990; Hymel et al., 1990; Rubin et al., 1995; Strauss et al., 1987). These findings however, were all based on cross-sectional data. For prevention purposes, we are also interested in the potential predictive validity of a wide range of early childhood problems as reported by parents and teachers in relation to later child-reported internalizing problems. This question is especially relevant considering a young child's limited ability to report inner mental states. Problem behaviors as noticed by others are the only potential indicators of a risk for later child-perceived internalizing problems.

To our knowledge, only one study has examined the predictive value of very early childhood problems (i.e., in kindergarten) as reported by others in relation to child-reported internalizing problems in later childhood. In a comprehensive study by Bowen et al. (1995), kindergarten measures of teacher-reported anxiety-withdrawal, peer-rated shyness and popularity, and mother-rated adaptability were included as potential predictors of fifth grade teacher-rated anxiety-withdrawal, peer-rated social withdrawal, and child-rated internalizing symptoms. Their findings showed that none of the kindergarten measures significantly predicted child-reported internalizing problems in fifth grade. These results could lead to the conclusion that preadolescent child-perceived internalizing problems cannot be predicted from such an early age. However, as they themselves suggested, Bowen and colleagues included only a relatively limited array of kindergarten variables that did not include behaviors that may be more predictive of later childhood internalizing problems. Considering the results of part I of this study, one might argue that a wide range of more specific behaviors may yield a more comprehensive picture of potential predictors of preadolescent child-perceived internalizing problems.

Although no studies have examined a wide variety of kindergarten and preschool behaviors as potential predictors of preadolescent child-perceived depression and anxiety, theoretical models of the etiology and developmental course of internalizing problems have suggested several early markers. Theories of depression have focused

on the importance of a lack of competence in several of areas of functioning, mainly emphasizing social and cognitive/academic problems (Cicchetti and Schneider-Rosen, 1986; Cole, 1991; Hammen and Rudolph, 1996; Patterson and Stoolmiller, 1991). In models of the development of anxiety in children, the role of early behavioral inhibition has been emphasized (Albano et al., 1996; Biederman et al., 1993; Hirshfeld et al., 1992). This construct refers to a temperamental style expressed as fearfulness and anxiety during the toddler years, specifically in the form of fear and avoidance of new and unfamiliar people or situations. In addition to the potential early markers of internalizing problems provided by these models, there is some evidence that preschool and kindergarten externalizing problems may also be important in the prediction of later internalizing problems (Egeland et al., 1996; Fischer et al., 1984).

The aim of this study is to identify broad as well as specific parent-reported early preschool (ages 2-3 years), and parent- and teacher-reported late preschool (ages 4-5 years) behavioral predictors of child-reported depression and anxiety in preadolescence in a general population sample. Included are preschool measures of psychopathology, temperament, child characteristics related to parenting stress, and school-related competence.

Methods

The sample characteristics, procedure, and some of the instruments are described in part I of the present study (Mesman and Koot, in press-a). A brief summary follows, as well as a description of additional instruments.

Sample and procedure

Subjects were participants in the second follow-up of a longitudinal study of preschool children from the general population (Koot, 1993; Koot et al., 1997; Koot and Verhulst, 1991). At Time 1 (1989) the sample consisted of 420 children aged 2-3 years (mean age 2.6; *SD* = 0.8; 215 boys and 205 girls; response: 91% of target sample). In 1991, two years after the first time of measurement, the sample was approached again for a follow-up study (Time 2). Usable parent information was obtained for 397 of the 420 children participating at Time 1 (94.5%; 204 boys, 193 girls; mean age 5.3; *SD* = 0.6). Usable teacher information was obtained for 342

children of the 420 children participating at Time 1 (81.4%). At second follow-up in 1997 (Time 3), usable written parent information was obtained for 358 children (85.2% of the original 1989 Time 1 sample; 180 boys, 178 girls; mean age 10.9 years; *SD* = 7.2 months; age range 9.8-12.5 years). Usable teacher information was obtained for 294 (82.1%) of the 358 participants at Time 3, and complete child-reports were obtained for 293 (81.8%) of the 358 participants at Time 3.

Instruments

The Dimensions of Depression Profile for Children (DDPC; Harter and Nowakowski, 1987) was used to assess a number of specific aspects of depression in children, and contains 30 four-point items that form 5 subscales, each containing 6 items: Depressed Mood, Self-Blame, Low Energy/Interest, Suicidal Thoughts, and Low Global Self-Worth. A total depression score is computed by summing the 5 subscale scores.

The State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) measures anxiety at the time of assessment (state anxiety) and dispositional anxiety (trait anxiety). Both scales contain 20 items which are scored on a three-point Likert scale. For this study, only the Trait Anxiety scale was used.

The Child Behavior Checklist/2-3 (CBCL/2-3; Achenbach, 1992), which obtains parent-reports of preschool children's problem behaviors consists of 100 items. These items are scored on a 3-point scale, 0 if the item is "not true" of the child, 1 if the item is "somewhat or sometimes true", and 2 if the item is "very true or often true", based on the preceding 2 months. In a study involving exploratory and confirmatory factor analyses in a community, a clinical, and a twin sample of Dutch preschool children by Koot et al. (1997), the CBCL/2-3 was found to have a factor structure than was somewhat different from that of the U.S. version (Achenbach, 1992). The following factors were found to be robust across the Dutch samples: Oppositional, Withdrawn/Depressed, Aggressive, Anxious, Overactive, Sleep Problems, and Somatic Problems. The psychometric properties of the Dutch CBCL/2-3 factors were comparable with Achenbach's findings in U.S. samples (Achenbach, 1992; Koot et al., 1997).

The CBCL/4-18 (Achenbach, 1991b) and the Teacher's Report Form (TRF; Achenbach, 1991c) were completed by parents and teachers respectively.

The Dimensions of Temperament Survey-Revised (DOTS-R; Windle and Lerner, 1986) is a 54-item, factor-analytically derived instrument that measures nine temperament attributes in children as reported by parents (Windle and Lerner, 1986). The items are scored on a 4-point Likert-scale ranging from "usually false" (1) to "usually true" (4). The nine temperament scales are: High Activity Level-General, High Activity Level-Sleep, Withdrawal, Rigidity, Negative Mood, Low Rhythmicity-Sleep, Low Rhythmicity-Eating, Low Rhythmicity-Daily Habits, and Poor Task Orientated Behavior. In our sample, α values for subscales were all greater than .70, except for the Rhythmicity-Sleep ($\alpha = .55$) and Rhythmicity-Daily Habits scales ($\alpha = .54$), which were therefore excluded from the study.

The Nijmegen Parenting Stress Index (NPSI) is a modified Dutch version of Abidin's Parenting Stress Index (Abidin, 1983), measuring the level of perceived parental stress originating from several child and parent characteristics within the caregiving context (De Brock et al., 1990a). The items are scored by the parents on a 6-point Likert scale. We used a short form which included 25 items ($\alpha = .95$), that are derived from scales measuring the perceived child characteristics and parent characteristics (De Brock et al., 1990a; 1990b). For the present article, only the child characteristics scale was used.

The Nijmegen Observation Scale for Preschoolers (NOSP; Rost, 1992) was completed by teachers and consists of 43 items scored on a 7-point Likert scale concerning social-emotional competence. The items are summarized in four scales: Task-Related Behavior, Social Behavior, Affect, and Self-Help (α values ranging from .73 to .90).

Statistical analyses

To investigate the association between Time 3 child-reported depression and anxiety and Time 1 and Time 2 parent- and teacher-reported syndromes, Pearson correlations between the DDPC and STAIC total scores and the Time 1 CBCL and Time 2 CBCL and TRF syndromes and the Time 2 DOTS-R, NOSP, and Parenting Stress Index scales were computed. Furthermore, linear regression analyses (method enter) were performed to investigate the total proportion of variance in child-reported depression and anxiety explained by the CBCL and TRF narrowband

syndromes. Finally, to gain more insight in the specific parent- and teacher-reported preschool behaviors that predict child-reported elevated levels of depression or anxiety in preadolescence, the child-reports were dichotomized using a cutoff at 1 *SD* above the mean. Time 1 CBCL and Time 2 CBCL and TRF items were dichotomized as 0 (not true) versus 1 (somewhat or sometimes true) or 2 (very true or often true). Odds ratios between the dichotomized DDPC and STAIC scores and dichotomized CBCL/TRF items were computed.

Sample attrition

For this article, only those subjects were included for whom complete Time 3 child-reports, complete Time 1 CBCL, as well as complete Time 2 CBCL and TRF data (N = 249) were available. To ensure that this subsample did not suffer from selective attrition, a series of t tests and χ^2 tests were performed. The t tests revealed no significant differences in comparison to the respective remaining children from the original sample on the Time 1 CBCL Total Problems, $t(418) = 0.61$; $p = .54$; Internalizing Problems, $t(418) = 0.30$; $p = .77$; or Externalizing Problems scores, $t(418) = -1.07$; $p = .28$. Neither were there differences on the Time 3 CBCL Total Problems, $t(356) = 1.47$; $p = .15$; Internalizing Problems, $t(356) = 0.40$; $p = .69$; or Externalizing Problems scores, $t(356) = 0.72$; $p = .48$. Furthermore, χ^2 tests showed that the current sample was not significantly different from the respective remaining samples regarding sex, χ^2 (1) = 0.90; $p = 0.34$; or socio-economic status, χ^2 (2) = 3.10; $p = 0.22$; nor on Time 1 risk factors such as parent-reported family mental health service use, χ^2 (1) = 0.14; $p = .71$; nonparental care, χ^2 (1) = 0.00; $p = .98$; parenting stress, χ^2 (1) = 0.37; $p = .54$; or parental physical punishment of the child, χ^2 (1) = 1.41; $p = .24$. These results lead us to conclude that the subsample used in this study was not influenced by selective attrition.

Results

Correlations

Our analyses yielded no significant correlations between Time 1 CBCL syndromes and Time 3 child-reported depression and anxiety. Therefore, Table 6.1

Table 6.1

Correlations Between Time 2 Parent- and Teacher-Reported Behaviors and Time 3 Self-Reported Depression and Anxiety

	Depression		Anxiety	
	Parents	Teachers	Parents	Teachers
CBCL/TRF Syndromes (N = 249)				
Withdrawn	-	.14	-	-
Anxious/Depressed	-	-	.14	-
Social Problems	-	.19	-	-
Attention Problems	-	.19	.14	-
Internalizing Problems	-	.13	-	-
Total Problems	-	.16	-	-
DOTS-R Scales (N = 236)				
High Activity level-general	.14	na	-	na
NOSP Scales (N = 244)				
Poor Task-Related Behavior	na	.19	na	-
Poor Social Behavior	na	.16	na	-
Negative Affect	na	.13	na	-

NOTE: Only Time 2 predictors with one or more significant correlations are shown. Hyphens indicate nonsignificant correlations. 'na' indicates that the scale is not applicable for the informant in question. No significant correlations were found for the CBCL/TRF syndromes Somatic Complaints, Thought Problems, Delinquent Behavior, Aggressive Behavior, and Externalizing, and the DOTS-R scales Activity Level-Sleep, Approach-Withdrawal, Flexibility-Rigidity, Mood, Rhythmicity-Sleep, Rhythmicity-Eating, Rhythmicity-Daily Habits, and Task-Orientated Behavior, and the PSI child characteristics scale, and the NOSP Self-Help scale.

only shows the correlations regarding Time 2 predictors. Results show that there are few significant correlations and that those that are significant are small according to Cohen's criteria (Cohen, 1988). Only one of the Time 2 parent-reported predictors were significantly related to Time 3 child-reported depression (DOTS-R, High Activity Level-General). The Time 2 teacher-reported TRF Social Problems and

Social Behaviors scales were most strongly related to Time 3 child-reported depression. Only the Time 2 parent-reported Anxious/Depressed and Attention Problems syndromes were significantly related to Time 3 child-reported anxiety. Additional linear regression analyses (not shown in Table 6.1) showed that the proportion of explained variance of child-reported depression and anxiety was 2% or less for parents and teachers.

Odds ratios with specific problem items

Of the Time 1 CBCL items, only two were significantly associated with Time 3 child-reported internalizing problems: 'painful bowel movements' with anxiety (odds ratio = 5.3; 95% confidence interval = 1.8 – 16.2), and 'picks nose, skin, or other body parts' with depression (odds ratio = 2.2; 95% confidence interval = 1.1 – 4.3). Table 6.2 only shows the relative risk for child-reported depression and anxiety regarding the Time 2 CBCL and TRF items that were grouped according to the cross-informant syndromes. Similar to the findings regarding the Time 2 CBCL/TRF syndromes, the teacher-child odds ratios were generally higher and more often significant than the parent-child odds ratios. For parents, only 4 of the 120 items were significantly related to Time 3 child-reported depression. These include 'would rather be alone', 'strange behavior', 'screams', and 'wets self during day'. Regarding child-reported anxiety, 7 Time 2 parent-reported items were significant, three of which from the Aggressive Behavior syndrome, including 'brags, 'screams', and 'talks too much'. For teachers, 21 items were significantly related to Time 3 child-reported depression, most of which belonged to the internalizing syndromes Withdrawn or Anxious/Depressed (e.g., 'unhappy', 'lonely', 'feels too guilty'), the Social Problems syndrome (e.g., 'acts too young', 'clumsy'), and the Attention Problems syndrome (e.g., 'underachieving', 'fails to carry out tasks'). Furthermore, only 3 Time 2 teacher-reported items were significantly associated with Time 3 child-reported anxiety, including 'clumsy', 'messy work', and 'underachieving'.

The item 'strange behavior' was related to Time 3 child-reported depression for both parent and teacher-reports. Furthermore, the Time 2 teacher-reported item 'underachieving' was significant for both Time 3 child-reported depression and

Table 6.2

Odds Ratios Between Time 2 CBCL/TRF Items and Time 3 Child-Reported Depression and Anxiety (N = 249)

		Depression ($n = 45$)[a]				Anxiety ($n = 44$)[a]			
		Parents		Teachers		Parents		Teachers	
CBCL/TRF items per syndrome	(*n*/*n*)[b]	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Withdrawn									
42. would rather be alone	(110/74)	2.0	(1.0 – 3.8)	-	-	-	-	-	-
75. shy, timid	(125/130)	-	-	2.1	(1.1 – 4.1)	-	-	-	-
80. stares blankly[c]	(17/34)	-	-	3.0	(1.4 – 6.7)	-	-	-	-
103. unhappy, sad, depressed[d]	(16/20)	-	-	3.5	(1.3 – 9.0)	-	-	-	-
Anxious/Depressed									
12. lonely	(18/15)	-	-	3.3	(1.1 – 9.9)	-	-	-	-
45. nervous, tense[e]	(75/71)	-	-	-	-	2.0	(1.0 – 4.0)	-	-
52. feels too guilty	(12/8)	-	-	4.9	(1.2 – 20.3)	-	-	-	-
81. hurt when criticized	(na/57)	na	na	2.8	(1.4 – 5.6)	na	na	-	-
106. overly anxious to please	(na/34)	na	na	2.5	(1.1 – 5.7)	na	na	-	-
108. afraid of mistakes	(na/84)	na	na	2.0	(1.0 – 3.8)	na	na	-	-
Social Problems									
1. acts too young	(38/58)	-	-	2.7	(1.4 – 5.4)	-	-	-	-
11. too dependemt	(63/55)	-	-	2.3	(1.2 – 4.7)	-	-	-	-

Table 6.2 continues

Table 6.2 (continued)

CBCL/TRF items per syndrome	(*n*/*n*) [b]	Depression ($n = 45$) [a]				Anxiety ($n = 44$) [a]			
		Parents		Teachers		Parents		Teachers	
		OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Social Problems (cont.)									
62. clumsy [c]	(26/46)	-	-	3.2	(1.6 – 6.6)	-	-	2.2	(1.0 – 4.6)
Thought Problems									
70. sees things	(9/2)	-	-	-	-	4.0	(1.0 – 15.6)	-	-
84. strange behavior	(9/14)	3.9	(1.0 – 15.1)	5.2	(1.7 – 15.6)	-	-	-	-
Attention Problems									
2. hums, odd noises	(na/27)	na	na	2.6	(1.1 – 6.2)	na	na	-	-
10. can't sit still	(125/78)	-	-	2.0	(1.0 – 3.9)	-	-	-	-
22. difficulty following directions	(na/60)	na	na	2.3	(1.1 – 4.5)	na	na	-	-
72. messy work	(na/70)	na	na	-	-	na	na	2.0	(1.0 – 4.0)
92. underachieving	(na/26)	na	na	4.1	(1.7 – 9.6)	na	na	4.2	(1.8 – 10.0)
100. fails to carry out tasks	(na/28)	na	na	2.4	(1.0 – 5.8)	na	na	-	-
Aggressive Behavior									
7. brags	(135/70)	-	-	-	-	2.3	(1.1 – 4.7)	-	-
27. jealous	(119/40)	-	-	2.3	(1.1 – 4.9)	-	-	-	-
68. screams	(69/29)	2.0	(1.0 – 3.9)	-	-	2.1	(1.1 – 4.1)	-	-

Table 6.2 continues

Table 6.2 (continued)

CBCL/TRF items per syndrome	(*n*/*n*) [b]	Depression (*n* = 45) [a]				Anxiety (*n* = 44) [a]			
		Parents		Teachers		Parents		Teachers	
		OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Aggressive Behavior (cont.)									
93. talks too much	(104/58)	-	-	-	-	2.4	(1.2 – 4.6)	-	-
Other									
13. confused	(14/20)	-	-	3.5	(1.3 – 9.0)	-	-	-	-
29. fears	(110/30)	-	-	-	-	2.1	(1.1 – 4.0)	-	-
92. talks/walks in sleep	(59/na)	-	-	na	na	2.2	(1.1 – 4.3)	na	na
107. wets self during day	(14/na)	3.8	(1.2 – 11.5)	na	na	-	-	na	na
109. whining	(62/13)	-	-	4.3	(1.4 – 13.6)	-	-	-	-
110. unclean personal appearance	(na/5)	na	na	7.2	(1.2 – 44.5)	na	na	-	-

NOTE: Table entries respresnt odds ratios (OR) and 95% confidence intervals (95% CI). Only items with one or more significant odds ratios are shown. Hyphens indicate non-significant odds ratios. "na" indicates that the items is not applicable for the informant in question. [a] *n deviant based on cutoff at 1 standard deviation above the mean;* [b] *n deviant CBCL/ n deviant TRF (deviant = score 1 or 2);* [c] *Also in Attention Problems on CBCL and TRF, and also in Thought Problems on CBCL;* [d] *Also in Anxious/Depressed on CBCL and TRF;* [e] *Also in Attention Problems on CBCL and TRF.*

anxiety. Finally, the Time 2 parent-reported item 'screams' was significantly related to both Time 3 child-reported depression and anxiety.

Discussion

In this article, we examined the predictive value of a wide range of broad and specific preschool behavior problems as reported by parents and teachers in relation to child-reported depression and anxiety in preadolescence. Our results showed that the predictive value of parent-reported behavior problems at ages 2-3 years and ages 4-5 years regarding child-reported depression and anxiety at ages 10-11 years is negligible. Significant parent-reported early predictors tended to be scattered across syndromes, and no obvious meaningful pattern of predictive behaviors could be discerned. This finding is consistent with the cross-sectional results of part I of this study, and it suggests that parents' reports of early or concurrent behaviors do not provide a reliable or consistent indication of a risk for child-perceived internalizing problems in preadolescence. It must be noted however, that the results of the two studies are not independent, since the same parents are reporting at each time of assessment. Although teacher-reported problems at ages 4-5 years were also not predictive of preadolescent child-reported anxiety, teachers proved to be very useful informants regarding early predictors of later child-reported depression.

First, a number of teacher-reported preschool internalizing items were significantly related to child-reported depression in preadolescence (e.g., 'unhappy, sad, depressed', 'lonely', 'feels too guilty'), indicating early depression-related problems that are noticed by teachers. This finding is especially salient considering that the prediction spans a 6-year time interval, and reflects an association between teacher- and child-reported problems. It is interesting to realize that even at such a young age, such specific internalizing problems are predictive of similar problems at a later age.

Second, a number of significant predictors regarding early teacher-reported social problems (e.g., NOSP Poor Social Behavior, and TRF items 'acts too young', 'too dependent', and 'clumsy') provide some support for theories of depression that emphasize the role of a lack of social skills, peer rejection and social withdrawal in the development of depression (Boivin et al., 1994; Cole, 1990; Patterson and Capaldi, 1990; Rudolph et al., 1994). Of interest, the preschool Social Problems

items that were found to be longitudinally predictive of later depression seem to be of a different nature than the preadolescent Social Problems items related concurrently to depression (see part I: Mesman and Koot, in press-a). The significantly associated Social Problems items at ages 10-11 years reflect peer-rejection (e.g., 'doesn't get along with peers', 'gets teased', 'not liked by peers'), while the predictive Social Problems items at ages 4-5 years seem to refer to child behaviors that may constitute reasons for subsequent peer-rejection ('acts too young', 'too dependent', 'clumsy').

Third, the NOSP Task-Related Behaviors, as well as several items from the TRF Attention Problems syndrome at ages 4-5 years were significantly predictive of later child-reported depression (e.g., 'underachieving', 'fails to carry out tasks'). These items reflect behavior that may seriously impair academic functioning. Consistent with the cross-sectional results from part I of this study, as well as other cross-sectional studies (Cole, 1990), academic problems are an important indicator of preadolescent depression in children, even when assessed in first grade. These findings may also reflect the often found comorbidity between depression and attention-deficit hyperactivity disorder in children (Biederman et al., 1991; Jensen et al., 1993). Although the results of part I also showed that parent- and teacher-reported externalizing behaviors signal concurrent child-reported depression, preschool externalizing behaviors did not predict later child-reported depression.

Considering these findings, we must first emphasize the crucial role of teachers in the identification of depression in children. Teachers show more awareness of such problems than parents, and appear to be in better position than parents to detect additional depression-related problems such as social and academic problems. Most important, our results have shown that this conclusion is not only relevant for the identification of current child-reported depression, but that teacher-reports of such problems at ages 4-5 years are predictive of child-reported depression six years later. This finding is especially salient considering that in the Netherlands, kindergarten and grade 5 are never taught by the same teacher. Furthermore, although this was not the main aim of the present study, our findings provide some support for competence-based models of depression (Cicchetti and Schneider-Rosen, 1986; Cole, 1991; Patterson and Stoolmiller, 1991). The failure to successfully negotiate important developmental tasks such as forming peer relationships and academic

achievement have indeed been shown to be significant concurrent and predictive indicators of child depression.

Child-reported anxiety in preadolescence could not be consistently predicted from parent- and teacher-reported preschool or kindergarten behavior problems. Several other studies did report early behavioral inhibition, characterized by fear of the new and withdrawal and shyness in unfamiliar situations, to be predictive of later anxiety (Biederman et al., 1993; Hirshfeld et al., 1992). In the present study, several CBCL/TRF items pertaining to the construct of behavioral inhibition showed large numbers of children in the deviant range (Time 1 CBCL 'shy' and 'fear of the new'; Time 2 CBCL/TRF 'shy') This may have caused their lack of distinguishing power regarding later anxiety. Therefore, we reanalysed these items in relation to later anxiety, using a stricter cutoff point to select the most extreme cases (children who *often* display the behavior). These analyses yielded one significant odds ratio for Time 2 parent-reported 'shyness' in relation to later child-reported anxiety (odds ratio = 5.2; 95% confidence interval = 1.6 – 17.1), but not for the Time 1 parent-reported or the Time 2 teacher-reported items. Following Hirshfeld's example (1992), we also examined the predictive value of *stable* preschool shyness in relation to preadolescent child-reported anxiety, but no significant results emerged. These results partly confirm earlier findings, albeit only for parent-reports of shyness in kindergarten. However, the studies by Hirshfeld et al. (1992) and Biederman et al. (1993) were based on laboratory observations of early inhibition, whereas apparently, teacher-rated similar early behaviors do not signal the risk for child-reported anxiety in preadolescence. It may be that shyness and other anxiety-related behaviors observed by teachers in a child's first school year(s) represent a transient state specific to a new situation and are therefore qualitatively different from child-reported anxiety in the last two years of elementary school.

Clinical implications

The cross-sectional findings presented in part I and the longitudinal results presented in this article illustrate the importance of child-reports in the detection of internalizing problems, inasmuch as parents seem relatively unaware of such problems in children. Furthermore, teachers were found to show relatively substantial cross-sectional and longitudinal sensitivity regarding child-perceived

internalizing problems (mainly depression) in preadolescence. As in part I of this study, we examined the sensitivity and specificity of the TRF (but this time in first grade) regarding child-perceived internalizing problems in preadolescence. We included depression and not anxiety in these analyses, as the latter was significantly related to only 3 items of the TRF. The dichotomized TRF Internalizing syndrome showed a sensitivity of 0.24 and a specificity of 0.85 for child-reported depression. We tried to improve the TRF's sensitivity by creating a new TRF syndrome which includes all the items that were found to be significantly related to depression (21 items, score range 0-42). For this new syndrome, a cutoff at score 6 yielded a sensitivity of 0.53 and a specificity of 0.83. Although the sensitivity is now doubled, it is still not acceptable for screening purposes. However, as was noted in part I of this study, a teacher-report screening instrument specifically designed for the detection of child-perceived depression may prove to be very useful, and should include items referring to depression, as well as to social and academic problems. Moreover, the results of our longitudinal study showed that such an instrument may also be valid from a very young age, and may potentially enhance the early detection of children at risk for such problems, and pave the way for appropriate prevention strategies.

Limitations

The limitations of the present study are similar to the limitations described in part I. First, sex differences in the relation between preadolescent child-perceived internalizing problems and preschool parent- and teacher-reported behaviors were not examined. As in part I, the number of boys and girls in the deviant depression and anxiety groups would be too low to ensure reasonable reliability of findings. Although no significant sex differences in child-reported depression and anxiety were found, it may be that different preschool behaviors are predictive of later depression and anxiety for boys than for girls. Further study is needed to investigate this issue. Second, only rating scales were used to assess child depression and anxiety, and some of the low correlations at the syndrome-level may be due to differences in constructs underlying our parent/teacher-report versus child-report instruments. However, this explanation would be a valid one only for the low associations on the syndrome-level and not for the results regarding the sepcific

items of the CBCL and TRF, as these do not represent constructs, but single observable behaviors.

General Discussion

7

General Discussion

The main aim of this study was to investigate key issues regarding the early origins, course, and detection of child internalizing and externalizing psychopathology, using the developmental psychopathology paradigm as a theoretical framework. More specifically, the following issues were investigated: (1) the independent predictive value of preschool risk factors regarding preadolescent psychopathology accounting for early child psychopathology; (2) the specificity of the association between a range of child and family risk factors and internalizing versus externalizing psychopathology; (3) developmental pathways of psychopathology from early preschool to preadolescence; (4) the (early) detection by parents and teachers of child-perceived internalizing problems in preadolescence. In the previous chapters, studies of these issues have each been extensively introduced, described, and discussed. The purpose of this final chapter is to integrate the results from these studies and to discuss their theoretical implications from the developmental psychopathology perspective. Further, some strengths and limitations of these studies will be discussed in terms of recommendations for future research.

Early origins

The present study yielded several new and interesting findings regarding the early origins of psychopathology. First, the longitudinal analyses reported in chapter 2 show that the best early preschool predictor of preadolescent internalizing and externalizing psychopathology is early similar psychopathology. This specific and strong predictive association illustrates the developmental significance of such problems even at the age of 2-3 years. Although other studies have reported similar results (Fischer et al., 1984; Lavigne et al., 1998; Rose et al., 1989), none have examined this relationship in a general population sample correcting for the influence of other preschool risk factors.

Second, physical health problems as reported by the parent during the preschool years was found to independently predict both internalizing and externalizing

problems across an 8-year-interval (chapter 2). The developmental importance of early preschool physical health problems has not been previously established independent of concurrent psychopathology. Further, the impact of early physical problems seems to be of a long-term nature since preschool health problems were not cross-sectionally related to preschool internalizing and externalizing problems. The mechanisms underlying these findings are still unclear. This aspect of a child's early development is notably absent in most general developmental models of psychopathology. In the literature regarding the effects of chronic illness in childhood, several hypotheses have been formulated, including functional dependence, psychosocial stress, and coping as potential mediators in this association (see for a review: Wallander and Varni, 1998]., or a common genetic or environmental vulnerability (Starfield et al., 1984). Future research is needed to test such hypotheses.

Third, results reported in chapter 2 showed that although preschool family and parenting factors were related to concurrent psychopathology, these risk factors could not significantly add to the longitudinal prediction of psychopathology in preadolescence once preschool psychopathology levels were accounted for. There are several possible explanations for these findings. One hypothesis suggests that the development of internalizing and externalizing psychopathology from a preschool age is mainly dictated by preschool child characteristics, rather than environmental risk factors. From a developmental psychopathology perspective, problematic behavioral patterns are regarded as the result of a series of unsuccessful adaptation processes (Cicchetti and Cohen, 1995a). Even though adaptation refers to a reaction to events (both endogenous and environmental), it is thought to primarily reflect the presence or absence of internal capacities to resolve those challenges. Indeed, several authors have suggested that some infants are more susceptible to the effects of insensitive and negative parenting than others (Belsky et al., 1998; Campbell, 1995). Their unfavourable temperamental disposition may make them more vulnerable to rearing experiences. Thus, although negative parenting strategies do affect the development of children, they may do so primarily when children do not have the resources to adapt to such stressors.

Alternatively, it is possible that environmental risk factors such as adverse family circumstances and insensitive parenting negatively influence the

development of the child mainly during infancy, i.e., before the age of 2. Since the parent-child attachment relationship is formed well before the age of 2 years (Ainsworth, 1985), the effects of insensitive parenting and insecure attachment may be most salient during that developmental period, which was not included in the present study. It may be that once problem behaviors develop during the preschool years due to problematic attachment processes, the impact of parenting factors on the further development of psychopathology in later years is mitigated by the detrimental effect of the preschool deviant behavior itself. In other words, once a preschooler deviates from healthy adaptation through the influence of parenting during infancy, it is mainly the maladaptive behavior itself that dictates the development of psychopathology and maybe even the particular expression thereof.

Fourth, virtually no evidence was found for the specificity of non-symptomatic environmental characteristics regarding the development of either internalizing or externalizing problems (chapter 3). The distinction between the two expressions of dysfunction was mainly accounted for by early child characteristics such as temperament and concurrent child characteristics such as (self-perceived) competence. Apparently, the early origins of either internalizing or externalizing psychopathology represent differences within the child, rather than external influences. This finding is consistent with results reported in chapter 2, in that it suggests that child characteristics outweigh environmental risk factors regarding the development of psychopathology. The fact that specificity of risk factors regarding internalizing and externalizing psychopathology was mainly found for child characteristics may also partly reflect a genetic vulnerability to a particular type of disorder. Early variations in temperament and competence in later childhood may reflect the same developmental pattern as the internalizing or externalizing outcomes in preadolescence and both may result from common genetic risks.

The course of psychopathology

The results reported in chapter 4 revealed several significant preschool developmental pathways to internalizing and externalizing problems in preadolescence. These findings can be grouped according to the distinction between homotypic and heterotypic pathways. Homotypic paths were represented by findings that early internalizing and externalizing problems predicted later similar problems.

These included pathways from early preschool withdrawn/depressed and anxious behaviors to preadolescent internalizing problems on the one hand and pathways from early preschool oppositional behavior, aggression, and overactivity to preadolescent externalizing problems on the other. These pathways reflect the stability of the same type of problems across ages and suggests that there are subgroups of children that at a very early age exhibit specific types of problems that may represent a genetic vulnerability to these specific problems and may mark the start of a chronic course of such problems (cf. Kagan et al., 1990; Moffitt, 1993).

Heterotypic paths were found regarding the predictive association between preschool externalizing problems and later internalizing psychopathology, but also by negative paths from early internalizing to later externalizing problems. Early preschool oppositional behavior predicted later internalizing problems. Since oppositional behavior during the preschool years was also found to predict externalizing problems, this type of problem behavior seems to reflect a general vulnerability for any type of psychopathology. It is interesting to note that such problems are generally seen as typical to the preschool developmental stage. However, the results reported in chapter 4 suggest that certain extreme levels of oppositional behavior in the early years need to be taken seriously as a potential precursor of psychopathology.

Early anxiety was found to negatively predict later externalizing problems. As hypothesized by other authors, this association is likely to reflect a subgroup of anxious children who because of their symptoms will be too inhibited to exhibit potentially dangerous and undercontrolled behaviors such as aggression or delinquency (Schwartz et al., 1996). This finding holds an interesting paradox: it may be beneficial to be anxious in that it serves as a protective factor for externalizing psychopathology, but anxiety does pose a risk for the development of later internalizing problems. It is likely that there are qualitative and quantitative differences between anxious children who are protected for externalizing problems and those who will develop internalizing problems. For instance, anxiety that leads to internalizing problems may reflect an early expression of psychopathology, while anxiety that is a protective factor for externalizing problems may represent parenting efforts aimed at instilling a sense of inhibition when it comes to socially undesirable behavior. Further research may identify such subgroups.

In addition to these findings, social problems and sex differences in pathways of psychopathology were found to be of special interest and will be discussed in more detail.

The role of social problems

As shown in chapter 4, the role of social problems was significant in preschool pathways to both preadolescent internalizing and externalizing psychopathology, but only for boys. Developmental pathways were identified from both early preschool aggression and withdrawn/depressed behavior via social problems at school-entry, to internalizing problems in preadolescence. These pathways may represent the development of a subgroup of preschool boys who due to their undesirable behavior (aggression, withdrawal) have difficulties making friends and fitting into a peer group at school-entry. This failure to succesfully form peer relations may then lead to negative self-perceptions, low self-esteem and peer rejection that in turn have been found to be related to the development of internalizing problems in later childhood (Cole et al., 1996; Panak and Garber, 1992; Rubin et al., 1991). Further, a pathway was indentified from early preschool overactivity via social problems at school-entry, to preadolecent externalizing problems. This pathway may represent a subgroup of overactive preschool boys who also exhibit aggression, who as described by Patterson et al. (1989), are rejected by the general peer group but associate with a deviant peer group exhibiting the same problematic behaviors, which in turn has been found to predict externalizing problems such as delinquency (Cairns et al., 1988).

The results reported in chapters 5 and 6 confirm the importance of early and concurrent problems in peer relations regarding the development of internalizing problems, and most notably depression in later childhood. More specifically, teacher-reported social problems at school-entry and in preadolescence predicted child-reported depression in preadolescence. Thus, social problems at school-entry and during preadolescence are not only predictive of psychopathology reported by parents and teachers, but also of internalizing problems as reported by preadolescent children themselves.

To understand the link between social problems and psychopathology from a developmental psychopathology perspective, the concepts of developmental tasks

and incompetence are especially useful. The developmental psychopathology perspective views development as a process of coping with a succession of age- and stage-appropriate tasks (Cicchetti and Cohen, 1995a). Incompetence is defined as the inability to negotiate such developmental demands and to attain a satisfactory level of adaptation (Cicchetti and Schneider-Rosen, 1986). Since forming positive peer relations is thought to be one of the most salient developmental tasks during childhood (Parker et al., 1995), incompetence in the social area of functioning may potentially play a crucial role in the development of maladaptation. Several models to explain the relationship between incompetence and psychopathology have been proposed by Masten and Coatsworth (1995).

First, psychopathology may interfere with (the development of) competence. Psychopathological symptoms generally refer to dysfunctions in one or more psychological processes that are required to obtain (social) competence. The results reported in chapter 4 provide some evidence for this assumption. Several expressions of psychopathology during the preschool years, including withdrawn/depressed behavior and overactivity, were found to predict social problems at school-entry. However, these associations were not corrected for problems in social functioning during the preschool years. Thus, they may have been a reflection of developmental deficits that were already present at an early preschool age. The formation of friendships and the development of prosocial behavior such as helping, sharing, and empathy begins to be observed during the early preschool years (Parker et al., 1995). Deviations in peer interactions during this developmental stage may therefore mark the start of continuing problems in social functioning into later childhood.

Second, the failure to achieve competence may contribute to psychopathology. This link is thought to operate mainly through the effects of incompetence on psychological well-being. More specifically, both the inability to attain satisfactory social relations and the subsequent or related peer rejection could lead to distress, frustration, and low self-esteem. Some support for this mechanism was also found in the present study, since social problems at school-entry were found to predict psychopathology in preadolescence, although only for boys.

Finally, a common etiological factor may be responsible for the association between social incompetence and psychopathology. General biological/genetic or

family risk factors may lead to problems in the development of both competence and emotional and behavioral adjustment. This hypothesis was not tested in the present study. To test this, a model including such early risk factors as well as outcomes representing competence and psychopathology is required. Then, independent pathways from early biological/genetic and family risk factors to both competence and psychopathology need to be tested.

In sum, the role of social incompetence in the development of psychopathology is of great theoretical and research significance. Further research is needed to fully elucidate the underlying processes of this association and may potentially uncover crucial information regarding the developmental mechanisms of psychopathology in childhood.

Sex differences

In chapter 4, several sex differences in developmental pathways of internalizing and externalizing psychopathology were found. First, pathways for boys were stronger than for girls as reflected by higher proportions of variance in the psychopathology outcomes explained by preschool pathways. Second, pathways were more complex for boys as evidenced by a larger diversity of significant longitudinal associations between psychopathology during the preschool years, at school-entry, and in preadolescence. Third, problems in peer relations were only a significant predictor in pathways for boys but not for girls. Finally, early preschool aggression was a positive predictor of later internalizing and externalizing psychopathology for boys, while such behaviors served as a protective factor for internalizing problems in girls.

Possible explanations for these findings were discussed in chapter 4 using the hypotheses posited by Keenan and Shaw (1997), including sex differences in early socialization processes and the development of social skills. Although these authors reviewed a large number of studies investigating sex differences with respect to a variety of developmental issues, there is little systematic evidence regarding the underlying mechanisms of sex differences in early developmental pathways of psychopathology. This is illustrated by the fact that the comprehensive *Developmental Psychopathology* series edited by Cicchetti and Cohen (1995b), which includes chapters about virtually all salient aspects of development and

psychopathology, does not include a separate chapter discussing sex differences. Further, many child psychopathology studies include only boys and not girls (e.g., Belsky et al., 1998; Campbell et al., 1996; Capaldi, 1992; Hinshaw and Melnick, 1995; Nagin and Tremblay, 1999; Patterson and Stoolmiller, 1991). Although the underlying motivation of this difference seems to be supported by the data reported in this thesis, i.e., that the developmental pathways of psychopathology in boys are more salient than in girls, it ignores the fact that the *overall* rate of psychiatric disorders in girls is generally similar to that in boys (see chapter 2 and Newman et al., 1996; Simonoff et al., 1997; Verhulst, 1995; Verhulst et al., 1997). The more elusive nature of the development of psychopathology in girls should be an incentive rather than a deterrent to investigate early precursors and pathways of problems in girls. To do justice to the differences between boys and girls, the literature regarding the early origins and course of psychopathology would be greatly enhanced by a consistent distinction between the sexes, and equal attention to boys and girls.

Detection of internalizing psychopathology

Because the detection of psychopathology by others is a more salient issue for the more elusive internalizing problems than for the more obvious externalizing problems, chapters 5 and 6 focused on the detection of the first rather than the latter. Results reported in these chapters showed that teachers are indispensable informants when attempting to identify children experiencing internalizing problems, and especially depression. Teachers not only notice actual internalizing problems, but also a variety of social and behavioral aspects of the child's functioning that are indirectly indicative of the presence of or risk for child-perceived internalizing problems. Parents on the other hand are virtually unaware of child-perceived internalizing problems, and hardly notice any other behaviors that might indicate such problems in their children. This difference between informants may be explained by their differential sensitivity to deficits in child competence that according to the competency-based model of depression underlies the child's internalizing problems (see chapters 5 and 6).

Although incompetence has been hypothesized to play an important role in the onset and maintenance of psychopathology in general, it has received most attention as a factor in the development of depression (Cicchetti and Schneider-Rosen, 1986;

Cicchetti and Toth, 1995; Cole, 1991). Similar to the general theory regarding competence and psychopathology, the competence model of depression posits that the failure to succesfully negotiate salient developmental tasks leaves children ill-equipped to cope with later challenges in life (Masten and Coatsworth, 1995). More specifically however, the latter model emphasizes the detrimental effects of developmental incompetence on self-esteem and mood, possibly through the effects of peer rejection (Patterson and Stoolmiller, 1991). A growing number of studies have found empirical support for this model (Cole et al., 1996; Patterson and Capaldi, 1990; Weisz et al., 1992). Since the school-setting centers around the acquisition and use of a variety of stage-salient skills in the social, academic, and behavioral areas of functioning, it is likely that teachers especially are in a position to observe problems in these areas and the related low self-esteem and dysphoric mood.

Strengths and limitations: implications for future research

The present study has yielded a number of new and interesting results regarding the development of internalizing and externalizing problems from an early preschool age. Several aspects of the study design warrant further attention, including issues regarding the sample, informants, times of assessment, and measures. In this section, strengths and limitations of the present study will be discussed in terms of recommendations for future research.

First, it must be noted that this study was originally not designed to be a longitudinal project to investigate developmental processes regarding psychopathology, but to validate the CBCL/2-3 for Dutch preschool children (Koot et al., 1997). Therefore, the range of variables during the preschool years (Time 1 and Time 2) was somewhat limited, and potentially important early risk factors in the development of psychopathology such as temperament at Time 1, problematic attachment and more specific parenting variables were not included. Further, clinical observation methods were not included during the preschool years, while several previous studies have shown their potential importance in the detection of behavior patterns that predict later psychopathology (Caspi et al., 1995; Caspi et al., 1996; Kagan, 1989; Kagan et al., 1999). Ideally, a longitudinal design includes all

variables and methods that are known to be potentially important in the development of psychopathology.

Second, when investigating the early origins and course of child psychopathology, longitudinal studies using general population samples are especially relevant (Koot, 1995). This study's findings illustrate this. The use of a general population sample has a number of advantages that may be beneficial to future studies. The developmental perspective on psychopathology emphasizes the multitude of potential individual developmental pathways throughout the life-span. In a general population sample, behaviors ranging from normal to severely disordered may be found, as well as a variety of different types of problem behaviors, while clinical samples will be less diverse, and may be selective regarding factors such as higher incidence of multiple disorders, and an overrepresentation of externalizing problems. In addition, in contrast to studies using clinical or high-risk samples, the use of general population samples allows for the identification of preschool children at risk for psychopathology who might otherwise be missed because they do not (yet) show clinically significant problems or do not come from adverse social environments. Further, the use of multiple informants in the investigation of child psychopathology has been widely acknowledged (e.g., Achenbach, 1995; Loeber et al., 1990; Offord et al., 1996). As shown most convincingly in chapters 4, 5, and 6, parents, teachers, and children themselves each provide unique information, which enriches the understanding of child psychopathology regarding the significance of different contexts and different viewpoints. Our findings illustrate the recommendation by Offord et al. (1996) which states that studies should not aggregate the data obtained from different informants into composite scores because it disregards the incompatibility of informants and obscures the actual differences between reports.

Third, the assessment of problems and risk factors during the early preschool years and at school-entry in the present study has allowed for important inferences about the nature of adaptation during these years that are often considered crucial to further development (Campbell, 1995). Relatively few previous longitudinal studies included children younger than 4 years of age, and many investigated samples with wide age-ranges spanning different developmental stages, hampering the interpretation of results from a developmental perspective. Results reported in

chapters 4, 5 and 6 illustrate the distinct developmental significance of emotional, behavioral, and social problems at ages 2-3 and 4-5 years. However, as stated earlier, the period before the age of 2 holds some potentially vital information regarding the development of psychopathology and most notably the role of family factors during infancy. To fully understand the origins and course of psychopathology from a developmental life-span perspective, longitudinal studies should ideally start at birth or in the first or second year, assessing child and family characteristics at each subsequent developmental stage. For example, in a study by Prior et al. (1992), data regarding temperament in the first year in a large general population sample are included and follow-ups during toddlerhood, the preschool period, and the first year of school. However, few family risk factors were included in this study. Promising longitudinal studies in this area are one by Shaw and colleagues (Shaw et al., 1994; Shaw et al., 1997), which includes child and family data at age 12 months, and one by Belsky and colleagues (Belsky et al., 1998; Belsky et al., 1996), which includes child and family characteristics at age 15 months. However, both studies are based on relatively small and selective samples.

Fourth, as mentioned earlier, the investigation of sex differences in the early origins and course of psychopathology is of special interest. The results of the present study showed that developmental pathways for boys and girls are quantitatively and qualitatively different. However, sex differences were not tested for in the analyses reported in the other chapters, leaving several questions regarding possible sex-specific early origins of psychopathology unanswered. To fully understand the nature of the development of psychopathology, studies should perform analyses separately for boys and girls and test for significant differences.

Finally, the inclusion of a wide variety of potential child and family predictors of psychopathology allows for a comprehensive discussion of the origins and course of psychopathology. For example, the simultaneous investigation of early preschool child and family risk factors reported in chapter 2 showed that the association between early family factors and later psychopathology was mostly due to concurrent early child characteristics. Further, early preschool child physical health problems, social problems at school-entry, and sex proved to be important variables in the development of psychopathology and warrant future research attention. However, to fully understand the developmental interaction between a variety of

early child and family risk factors in the course to psychopathology, more sophisticated statistical methods such as structural equation modeling are needed. Chapter 4 did report results based on such analyses, but only included emotional and behavioral problems across ages, and not family factors. Future research should ideally include a wide variety of child and family risk factors across ages and analyze them simultanously in a longitudinal design, using statistical methods that do justice to the complexity of the subject matter.

Clinical implications

Although this thesis was mainly aimed at investigating theoretical issues regarding the development of internalizing and externalizing psychopathology in children, some of the findings may provide useful suggestions for prevention and diagnostic processes in clinical practice. First, early detection and prevention efforts regarding child psychopathology may be most cost-effective if they are primarily aimed at child characteristics rather than environmental circumstances. Findings reported in chapter 2 showed that psychopathology outcomes are mainly dictated by early preschool child psychopathology and physical health problems and that environmental risk factors did not significantly add to this prediction. Results reported in chapter 4 suggest that high levels of oppositional behavior at an early preschool age is a prime candidate for prevention efforts aimed at both internalizing and externalizing outcomes. Second, clinicians should be aware of the potential impact of early preschool child physical health problems on the development of psychopathology in later childhood. This finding may be especially relevant for prevention purposes. General practitioners in particular are in a position to identify physical health problems in a child, and if necessary, refer them to the appropriate services. Third, non-symptomatic environmental factors do not pose a unique risk for either internalizing or externalizing problems, and are therefore not suitable for prevention efforts targeted specifically at one or the other expression of dysfunction. Fourth, in addition to reports by the child and the parents, teacher-reports should be included in the diagnostic process whenever possible, especially regarding the identification of internalizing problems. In this study, teachers were found to be important informants in the detection of self-perceived depression through their unique perception of children's behavior in the classroom setting. Finally, social

incompetence was found to play an important role in the development of psychopathology and may prove to be a useful target for prevention efforts, and teacher-reports are likely to be especially helpful in the detection of problems with peers related to social incompetence.

Conclusions

This study is the first to systematically investigate key issues regarding the development of internalizing and externalizing psychopathology from the early preschool years into later childhood in a general population sample. Unique results were reported regarding the lack of independent predictive value of early preschool child and family characteristics in the development of psychopathology, the developmental significance of a wide range of emotional and behavioral problems as well as physical health problems during the early preschool years, the complexity of developmental pathways of psychopathology from preschool to preadolescence, and the importance of teacher-reports in the detection of child-perceived internalizing problems. Further, the results reported in this thesis illustrated the usefulness of the developmental psychopathology perspective as a theroretical framework for research efforts regarding the early origins and course of psychopathology in children. This perspective provides a structured approach to development that has the potential to guide future research to more productive study designs and subsequently, more comprehensive results. Although this study has some limitations, it contains a rich data set that holds much potential for future research. A third follow-up in 3 or 4 years is especially interesting because children in this sample will then have gone through the first stages of adolescence, which is generally viewed as a key developmental stage in the course of psychopathology.

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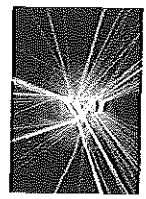

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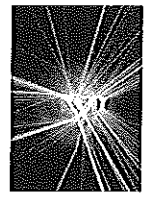
Summary



Summary

The main aim of this study was to investigate key issues regarding the early origins, course, and detection child psychopathology. In this field of research, the developmental psychopathology paradigm and the distinction between internalizing and externalizing psychoapthology are especially useful. The developmental psychopathology paradigm is a promising theoretical framework which provides a structured approach to the development of maladaptation across the life-span. This approach centers around the identification of endogenous and environmental factors that are involved in the early origins, course, and detection of psychopathology. The process of adaptation during the life-span is seen as a succession of salient developmental challenges that may be successfully negotiated depending on internal (child) and external (context) resources. The diversity in course and outcome of developmental pathways in (mal)adaptation is emphasized, as well as the importance of early detection of child psychopathology for the timely referral to adequate services. Because of the emphasis on the developmental aspect of psychopathology in this approach, the distinction between internalizing and externalizing expressions of dysfunction is of special interest, since it is the only consistently empirically identified classification across ages. Internalizing disorders are characterized by disordered mood or behavior such as withdrawal, anxiety, or depression, while externalizing disorders are characterized by disordered behavior such as aggression, or delinquency, and hyperactivity.

Based on salient gaps in previous research regarding the early origins, course, and detection of internalizing and externalizing psychopathology, the following specific issues were investigated: (1) the predictive value of preschool risk factors regarding preadolescent psychopathology accounting for early child psychopathology; (2) the specificity of the association between a range of child and family risk factors and internalizing versus externalizing psychopathology; (3) developmental pathways of psychopathology from early preschool to preadolescence; (4) the (early) detection by parents and teachers of child-perceived internalizing problems in preadolescence.

The design of this study included a general population sample of 420 preschoolers originally aged 2-3 years in 1989 (Time 1). Parent-reported information regarding child psychopathology, health, family circumstances, and life-events was obtained. In 1991 when children were in aged 4-5 years (Time 2), usable parent-reports was obtained for 397 children (95%) of the original sample. This included the same core variables as at Time 1, as well as temperament and language development. Further, 342 usable teacher-reports regarding child psychopathology, language development, and school competence were obtained. In preadolescence, i.e., when children were aged 10-11 (1997; Time 3), usable parent-reports were obtained for 358 children (85%) of the original Time 1 sample, including the same information as at Time 2. Usable teacher-reports regarding child psychopathology and social competence were obtained for 294 children. Further, 294 children filled out questionnaires regarding self-perceived competence, social support, depression, and anxiety.

Chapter 2 reports on the independent predictive value of psychopathology and family risk factors in early preschool in relation to internalizing and externalizing psychopathology in preadolescence. Preschool risk factors were categorized according to their 'proximity' to the child. The first category included child emotional/behavioral and physical disorders, the second category included parenting characteristics such as harsh parenting and negative maternal attitude, and the third category included adverse family circumstances such as family psychopathology, maternal absence, stressful life-events, and low socioeconomic status (SES). Preadolescent outcomes were DSM-IV internalizing and externalizing diagnoses obtained from a parent-interview. Univariate results showed that early preschool internalizing and externalizing problems were predictive of their DSM-IV counterparts eight years later, and that preschool child physical health problems and negative maternal attitude were predictive of both internalizing and externalizing diagnoses in preadolescence. Harsh parenting and stressful life-events predicted only externalizing diagnoses in later childhood. The multivariate results showed that only preschool child emotional/behavioral and physical disorders were independent significant predictors of psychopathology in preadolescence. Of the parenting and family variables, only stressful life-events contributed independently to the prediction of later externalizing problems. The results suggest that preschool

parenting characteristics and adverse family circumstances do not contribute to the prediction of later psychopathology once child physical and emotional/behavioral problems are accounted for.

In chapter 3, the specificity of various early and concurrent child characteristics and environmental correlates regarding preadolescent internalizing and externalizing psychopathology was examined. Specificity in this study regarded the question which early and concurrent risk factors can distinguish between preadolescent internalizing and externalizing psychopathology. Specificity was defined according to a between-subjects and a within-subjects method, using parent and teacher-reports of psychopathology. The between-subjects method is aimed at identifying variables that are significantly more strongly correlated with one syndrome than with the other, and the recently developed within-subjects method is aimed at identifying variables that are significantly related to the within-subjects difference between the internalizing and externalizing syndrome scores. Results showed that temperamental withdrawal, parental internalizing psychopathology, and early single parenthood (for girls) were identified as correlates which are specific for internalizing problems, while temperamental high general activity level was identified as externalizing-specific. Further, parenting stress, poor school results (only for boys), and stressful life-events (only for girls) were found to be common correlates of psychopathology. Overall, virtually no purely nonsymptomatic environmental correlates were identified as specific, suggesting that the specific nature of psychopathological outcomes is not dictated by external influences, but rather by child characteristics. The new within-subjects method proved to be a valuable addition to this field of research.

In chapter 4, longitudinal pathways from early preschool (ages 2-3 years) anxiety, withdrawn/depressed behavior, oppositional behavior, overactivity, and aggression to internalizing and externalizing psychopathology in preadolescence (10-11 years) were addressed, as well as the role of social problems at school-entry (4-5 years) in such pathways. Further, sex differences in pathways were examined. Structural equation modeling revealed homotypic pathways from preschool anxiety and withdrawn/depressed behavior to preadolescent internalizing problems and from preschool oppositional behavior, overactivity, and aggression to later externalizing psychopathology. Further, pathways were found from early preschool oppositional

behavior to later internalizing problems, and negative predictive paths from early anxiety to externalizing problems in preadolescence. Cross-informant predictions spanning 8 years were found between parent-reported aggression and overactivity at ages 2-3 years and teacher-reported externalizing problems at ages 10-11 years. Further, results showed that boys' pathways were more complex and showed greater predictive validity than pathways for girls. Social problems at school-entry (ages 4-5 years) played a significant role in pathways to internalizing problems, but only for boys. Pathways were identified from preschool aggression and withdrawn/depressed behavior via social problems at school-entry to internalizing problems in preadolescence. Most of these results were consistent with findings from previous studies and have several implications. First, preschool psychopathology shows considerable homotypic and heterotypic stability into later childhood. Second, early oppositional behavior problems seem to reflect a general vulnerability to any type of psychopathology. Third, early internalizing problems are a protective factor for externalizing psychopathology in preadolescence. Fourth, developmental pathways of psychopathology for girls are more elusive than for boys and warrant further research attention. Finally, undesirable behavior during the preschool years may lead to social problems at school-entry, which in turn may lead to internalizing problems in later childhood.

The objective of chapter 5 was to examine a wide range of parent- and teacher-reported behaviors in relation to child-reported internalizing problems in preadolescence. Of 120 parent-reported behavior problems on the Child Behavior Checklist for 4-18-year-olds (CBCL/4-18), only 11 and 9 were associated with child-reported depression and anxiety, respectively. For teachers, 33 and 20 problem items out of 120 on the Teacher's Report Form (TRF) were significantly associated with child-reported depression and anxiety, respectively, including items referring to withdrawal, anxiety, depression, social problems, and academic problems. The resuls indicate that teachers are more likely than parents to notice internalizing problems and related problems such as social and academic problems in children reporting depression or anxiety.

The aim of chapter 6 was to examine the predictive association of a wide variety of parent- and teacher-reported behaviors at age 2-3 years and age 4-5 years in relation to child-reported depression and anxiety at age 10-11 years. Only 5 and 8

out of 220 parent-reported preschool problem items (CBCL/2-3 and CBCL/4-18) were significantly related to later child-reported depression and anxiety, respectively, and only 3 of 120 teacher-reported TRF problem items with later anxiety. Of 120 teacher-reported preschool problem items, 21 were significantly related to later depression, including items referring to early signs of depression, and social and academic problems. Similar to findings reported in chapter 5, teachers, but not parents, can provide valuable information regarding preschool signals of preadolescent depression, but not anxiety. These signals include early social and academic problems. Considering these results, the usefulness of a teacher-report of child internalizing problems was discussed.

The purpose of chapter 7 was to integrate the results reported in previous chapters and to discuss their theoretical implications from the developmental psychopathology perspective. Regarding the early origins of psychopathology, it was concluded that preschool psychopathology and physical health problems are of special developmental importance and that preschool child characteristics rather than environmental characteristics dictate the development of psychopathology and the expression thereof. This may reflect a genetic vulnerability that can not be altered by the environment, or that environmental factors such as parenting influence the child mainly before the preschool years, in infancy. In the latter line of reasoning, once a preschooler deviates from healthy adaptation through the influence of parenting during infancy, it is mainly the maladaptive behavior itself that dictates the development of psychopathology and maybe even the particular expression thereof.

Regarding the course of psychopathology, it was concluded that preschool internalizing and externalizing problems show considerable long-term homotypic stability, and that early oppositional behavior is an important risk factor for both internalizing and externalizing psychopathology in later childhood. Further, the developmental meaning of early anxiety is paradoxal, because it is a risk factor for later internalizing problems, but a protective factor for externalizing problems. The important role of social problems in pathways of psychopathology may represent the developmental significance of (a lack of) social competence. Theories suggest three possible models in which either psychopathology causes problems in competence, a lack of competence causes psychopathology, or a lack of competence and

psychopathology share a common etiological factor. In this study, evidence was found for the first and second model. The sex differences in developmental pathways found in this study emphasize the need for more theoretical attention to such differences and the elusive nature of the development of psychopathology in girls. It was concluded that future studies should consistently distinguish between the sexes in their analyses to clarify the mechanisms underlying these findings.

With respect to the detection of internalizing psychopathology, it was concluded that parents and teachers miss many of the symptoms of depression and anxiety in preadolescent children, although teachers show considerably more sensitivity to these problems than parents. It was suggested that the usefulness of teachers as informants of depression is related to the (developmental) significance of child competence in such problems found in this study. Theories of depression emphasize the detrimental effects of developmental incompetence on self-esteem and mood, possibly through the effects of peer rejection. Since the school-setting centers around the acquisition and use of a variety of stage-salient skills in the social, academic, and behavioral areas of functioning, it is likely that teachers especially are in a position to observe problems in these areas and the related low self-esteem and dysphoric mood.

Further, some strengths and limitations of the present study were discussed in terms of recommendations for future research. It was concluded that future research should ideally include a wide variety of child and family risk factors across ages, reported by different informants, analyze them simultanously in a longitudinal design, separately for boys and girls, using statistical methods that do justice to the complexity of the subject matter. Finally, the clinical implications of the results of this study were discussed. These included recommendations regarding the importance of early child physical and emotional/behavioral problems as target variables in the early detection and possibly prevention of psychopathology and the importance of teachers as informants in the (early) detection of child-perceived internalizing problems.

Samenvatting

De belangrijkste doelstelling van dit project was het onderzoeken van belangrijke thema's met betrekking tot de vroege oorsprong, het verloop en de detectie van internaliserende en externaliserende psychopathologie bij kinderen. In deze tak van onderzoek zijn het ontwikkelingspsychopathologie paradigma en het onderscheid tussen internaliserende en externaliserende psychopathologie zeer bruikbaar. Het ontwikkelingspsychopathologie paradigma is een veelbelovend theoretisch raamwerk dat een gestructureerde benadering biedt voor de ontwikkeling van onaangepast gedrag tijdens de levensloop. Deze aanpak concentreert zich op de identificatie van interne en omgevingsfactoren die betrokken zijn bij de vroege oorsprong, het verloop en de detectie van psychopathologie. Vanuit dit perspectief wordt het adaptatieproces gezien als een serie achtereenvolgende belangrijke ontwikkelingstaken die met succes kunnen worden volbracht, afhankelijk van de aanwezigheid van interne (het kind) en externe (de omgeving) factoren. Verder wordt de diversiteit in het verloop en de uitkomst van ontwikkelingspaden in het proces van adaptatie benadrukt, net als het belang van de vroegtijdige detectie van psychopathologie om kinderen tijdig naar de juiste zorg te kunnen doorverwijzen.
Wat betreft het ontwikkelingsaspect van psychopathologie in deze benadering, is met name het onderscheid tussen internaliserende en externaliserende expressies van dysfunctioneren interessant, aangezien dit de enige classificatie van psychopathologie is die empirisch consequent is aangetoond voor alle leeftijden. Internaliserende stoornissen worden gerkenmerkt door verstoord affect of gedrag zoals teruggetrokken gedrag, angst, of depressie, terwijl externaliserende stoornissen worden gekenmerkt door gestoord gedrag zoals agressie, delinquentie, of hyperactiviteit.

Uitgaande van opvallende hiaten in voorgaand onderzoek met betrekking tot de vroege oorsprong, het verloop en de detectie van internaliserende en externaliserende psychopathologie werden de volgende specifieke vragen onderzocht: (1) de onafhankelijke predictieve waarde van kind- en gezins-risicofactoren tijdens de peuterleeftijd met betrekking tot psychopathologie in de preadolescentie; (2) de specificiteit van de relatie tussen een scala aan vroege

risicofactoren en internaliserende versus externaliserende psychopathologie in de preadolescentie; (3) ontwikkelingspaden van psychopathologie van de peutertijd tot in de preadolescentie; (4) de (vroege) detectie van door het kind gerapporteerde internaliserende problemen in de preadolescentie door ouders en leraren.

Het onderzoek werd uitgevoerd in een steekproef van 420 kinderen uit de algemene bevolking die 2-3 jaar oud waren in 1989 (Tijdstip 1). Op dat tijdstip werd door ouders gerapporteerde informatie met betrekking tot psychopathologie, gezondheid, gezinsomstandigheden en levensgebeurtenissen verzameld. In 1991, toen de kinderen 4-5 jaar oud waren (Tijdstip 2), werden voor 397 kinderen (95%) van de oorspronkelijke steekproef bruikbare ouder-rapportages verzameld, waaronder dezelfde informatie als op Tijdstip 1 en bovendien over temperament en taalontwikkeling. Ook werd over 342 kinderen bruikbare informatie van leraren verzameld met betrekking tot psychopathologie, taalontwikkeling en schoolcompetentie. In de preadolescentie, toen de kinderen 10-11 jaar oud waren (1997; Tijdstip 3), werd voor 358 kinderen (85%) van de oorspronkelijke steekproef bruikbare informatie van ouders verzameld over dezelfde onderwerpen als op Tijdstip 2. Voor 294 kinderen werd bruikbare informatie van leraren verzameld met betrekking tot psychopathologie en sociale competentie. Ook vulden 294 kinderen vragenlijsten in met betrekking tot zelf-waargenomen competentie, sociale steun, depressie en angst.

In hoofdstuk 2 werd de predictieve waarde van psychopathologie en gezinsfactoren op de peuterleeftijd onderzocht in relatie tot internaliserende en externaliserende problemen in de preadolescentie. Predictoren op de peuterleeftijd werden gecategoriseerd aan de hand van hun 'nabijheid' tot het kind. De eerste categorie bevatte emotionele, gedrags- en lichamelijke problemen, de tweede categorie bevatte opvoedingskenmerken zoals hardhandige opvoedingsaanpak en negatieve houding van de moeder tegenover het kind, en de derde categorie bevatte ongunstige gezinsomstandigheden zoals psychopathologie in het gezin, afwezigheid van de moeder, stressvolle levensgebeurtenissen en lage sociaal-economische status. De uitkomstvariabelen in de preadolescentie waren DSM-IV internaliserende en externaliserende diagnoses verkregen uit ouder-interviews. De univariate resultaten toonden dat internaliserende en externaliserende problemen op de peuterleeftijd internaliserende en externaliserende stoornissen volgens de DSM-IV acht jaar later

prediceerden en dat lichamelijke gezondheidsproblemen en negatieve attitude van de moeder zowel internaliserende als externaliserende diagnoses in de preadolescentie voorspelden. Hardhandige opvoeding en stressvolle levens-gebeurtenissen voorspelden alleen externaliserende diagnoses. De multivariate resultaten lieten zien dat alleen de kindfactoren (psychopathologie en gezondheidsproblemen) tijdens de peuterleeftijd onafhankelijke predictoren waren van psychopathologie in de preadolescentie. Van de opvoedings- en gezinsfactoren leverden alleen stressvolle levensgebeurtenissen een onafhankelijke bijdrage aan de predictie van later externaliserende problemen. De resultaten suggereren dat vroege negatieve opvoeding en gezinsomstandigheden niet bijdragen aan de voorpelling van latere psychopathologie wanneer gecorrigeerd wordt voor de vroege emotionele en lichamelijke problemen van het kind.

In hoofdstuk 3 werd de specificiteit van een aantal vroege en gelijktijdige kind- en omgevingsfactoren onderzocht met betrekking tot internaliserende en externaliserende probleen in de preadolescentie. Daarbij werd onderzocht welke vroege en gelijktijdige risicofactoren onderscheid kunnen maken tussen preadolescente internaliserende en externaliserende psychopathologie. Specificiteit werd gedefinieerd aan de hand van een 'between-subjects' en een 'within-subjects' methode, gebruik makend van rapportages van ouders en leraren over psychopathologie. De 'between-subjects' methode is gericht op de identificatie van variabelen die significant sterker gerelateerd zijn aan een syndroom dan aan een ander syndroom. De recent ontwikkelde 'within-subjects' methode is gericht op de identificatie van variabelen die significant gerelateerd zijn aan het verschil binnen subjecten tussen internaliserende en externaliserende syndroom scores. De resultaten lieten zien dat teruggetrokken temperament, ouderlijke internaliserende psychopathologie en het opgroeien in een eenoudergezin (voor meisjes) specifiek zijn voor internaliserende problemen, terwijl een hoog algemeen activiteitsniveau als specifiek voor externaliserende problemen werd geïdentificeerd. Verder bleken ouderlijke stress, slechte schoolresultaten (alleen voor jongens) en stressvolle levensgebeurtenissen (alleen voor meisjes) niet-specifieke algemene correlaten van psychopathologie te zijn. Over het algemeen werden bijna geen niet-symptomatische omgevingsfactoren als specifiek geïdentificeerd. Dit suggereert dat de specifieke aard van psychopathologische uitkomsten niet worden beïnvloed door

omgevingsfactoren, maar door verschillen binnen het kind. De nieuwe 'within-subjects' methode bleek een waardevolle aanwinst voor deze tak van onderzoek.

In hoofdstuk 4 werden longitudinale paden van specifiek vroeg probleemgedrag naar internaliserende en externaliserende problemen in de preadolescentie onderzocht, alsmede de rol van sociale problemen op 4-5-jarige leeftijd in zulke paden. Verder werden sekseverschillen in paden bekeken. Met behulp van 'structural equation modeling' analyses werden homotypische paden gevonden van angstig en teruggetrokken/depressief gedrag in de peuterleeftijd naar internaliserende problemen in de preadolescentie en van vroeg oppositioneel gedrag, overactiviteit en agressie naar latere externaliserende psychopathologie. Ook werden paden gevonden van vroeg oppositioneel gedrag naar latere internaliserende problemen en negatieve paden van vroege angst naar later externaliserende problemen. Cross-informant voorspellingen over een periode van 8 jaar werden gevonden tussen door ouders gerapporteerde agressie en overactiviteit op 2-3-jarige leeftijd en door leraren gerapporteerde externaliserende problemen op 10-11-jarige leeftijd. Verder lieten de resultaten zien dat paden voor jongens meer complex waren dan voor meisjes en grotere predictieve waarde hadden. Ook speelden sociale problemen op 4-5-jarige leeftijd een significante rol in paden naar internaliserende problemen, maar alleen voor jongens. Er werden paden gevonden van vroege agressie en teruggetrokken/depressief gedrag via sociale problemen in de kleutertijd naar internaliserende problemen in de preadolescentie. Het merendeel van deze resulaten waren consistent met bevindingen van voorgaande onderzoeken en hebben een aantal implicaties. Ten eerste lijkt psychopathologie op de peuterleeftijd behoorlijk stabiel over de tijd heen, zowel homotypisch als heterotypisch. Ten tweede lijkt vroeg opppositioneel gedrag een algemene kwetsbaarheid voor beide typen psychopathologie te zijn. Ten derde bleken vroege internaliserende problemen een protectieve factor voor externaliserende problemen in de preadolescentie. Ten vierde zijn psychopathologische ontwikkelingspaden voor meisjes minder helder dan voor jongens en verdienen daarom meer aandacht in onderzoek. Ten slotte leidt ongewenst gedrag op de peuterleeftijd tot sociale problemen in de kleutertijd dat weer leidt tot internaliserende problemen in de preadolescentie.

Het doel van het vijfde hoofdstuk was het onderzoeken van een breed scala aan door ouders en leraren gerapporteerde gedragingen in relatie tot door kinderen

gerapporteerde internaliserende problemen in de preadolescentie. Van de 120 ouder-gerapporteerde gedragsproblemen op de Child Behavior Checklist voor 4- tot 18-jarigen (CBCL/4-18), waren er slechts 11 en 9 gerelateerd aan door het kind gerapporteerde depressie, respectievelijk angst. Voor leraren waren 33 en 20 probleem-items van de 120 in de Teacher's Report Form (TRF) significant gerelateerd aan door het kind gerapporteerde depressie en angst, waaronder items met betrekking tot teruggetrokken gedrag, angst, depressie, sociale problemen en schoolproblemen. Deze resultaten laten zien dat leraren beter dan ouders internaliserende problemen en gerelateerde problemen zoals sociale en schoolproblemen waarnemen bij kinderen die depressieve of angstige problemen rapporteren.

Het doel van hoofdstuk 6 was het onderzoeken van de voorspellende relatie tussen een breed scala aan door ouders en leraren gerapporteerde gedragingen op de peuter- en kleuterleeftijd en door kinderen gerapporteerde internaliserende problemen in de preadolescentie. Slechts 5 en 8 van de 220 door ouders gerapporteerde probleemgedragingen op de peuter- en kleuterleeftijd (CBCL/2-3 en CBCL/4-18) waren significant gerelateerd aan respectievelijk kind-gerapporteerde depressie en angst en slechts 3 van de 120 TRF probleem-items waren gerelateerd aan latere kind-gerapporteerde angst. Van de 120 door de leraar gerapporteerde probleem-items op de kleuterleeftijd waren er 21 significant gerelateerd aan latere depressie, waaronder items met betrekking tot vroege uitingen van depressie en sociale en schoolproblemen. Net als in hoofdstuk 5 bleek uit deze resultaten dat leraren wel en ouders niet in staat zijn om waardevolle informatie te geven met betrekking tot vroege signalen voor depressie. Onder deze signalen vallen sociale problemen en schoolproblemen. Voor door kinderen gerapporteerde angst is geen van beide een goede informant. Gezien deze resultaten werd ook de bruikbaarheid van een eventuele leraar-vragenlijst voor depressie bij kinderen besproken.

Het doel van hoofstuk 7 was het integreren van de resultaten die in voorgaande hoofstukken werden gerapporteerd en de theoretische implicaties van de resultaten te bespreken vanuit het perspectief van de ontwikkelingspsychopathologie. Met betrekking tot de vroege oorsprong van psychopathologie werd geconcludeerd dat psychopathologie en lichamelijke gezondheidsproblemen op de peuterleeftijd van speciaal belang zijn en dat met name kindfactoren en niet omgevingsfactoren de

ontwikkeling en het type van de psychopathologie bepalen. Dit kan een genetische aanleg weerspiegelen die niet veranderd kan worden door omgevingsfactoren, of betekenen dat omgevingsfactoren zoals opvoeding het kind met name vòòr de peutertijd beïnvloeden, in het eerste levensjaar. In het laatste geval kan het zo zijn dat een peuter afwijkt van een gezonde ontwikkeling door de invloed van opvoeding tijdens het eerste levensjaar en dat het onaangepaste gedrag dat daaruit volgt daarna de verdere ontwikkeling van psychopathologie bepaalt en misschien zelfs de specifieke uiting daarvan.

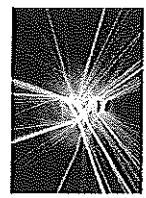
Met betrekking tot het beloop van psychopathologie werd geconcludeerd dat internaliserende en externaliserende problemen tijdens de peutertijd behoorlijke homotypische lange-termijn stabiliteit laten zien en dat vroeg oppositioneel gedrag een belangrijke risicofactor is voor zowel latere internaliserende als externaliserende problemen. De betekenis van vroege angst is paradoxaal, omdat het een risicofactor is voor internaliserende problemen en een beschermende factor voor externaliserende problemen. De belangrijke rol van sociale problemen in paden van psychopathologie verwijst mogelijk naar het belang van (een gebrek aan) sociale competentie voor de ontwikkeling. Theorieën suggereren drie mogelijke modellen waarin of psychopathologie competentieproblemen veroorzaakt, of een gebrek aan competentie psychopathologie veroorzaakt, of beide een gemeenschappelijke etiologische factor delen. In deze studie werd evidentie voor het eerste en het tweede model gevonden. De sekse-verschillen in paden van psychopathologie die in deze studie werden gevonden benadrukken de behoefte aan meer theoretische aandacht voor zulke verschillen en de onduidelijke aard van de ontwikkeling van psychopathologie bij meisjes. Er werd geconcludeerd dat toekomstige studies in hun analyses consequent onderscheid tussen de seksen zouden moeten maken om de onderliggende mechanismen van deze resultaten te verhelderen.

Wat betreft de detectie van internaliserende problemen werd geconcludeerd dat ouders en leraren veel symptomen van depressie en angst in de preadolescentie missen, hoewel leraren aanzienlijk sensitiever zijn met betrekking tot de detectie van dergelijke problemen dan ouders. Er werd gesuggereerd dat de bruikbaarheid van leraren als informanten van depressie gerelateerd is aan de significante rol van competentie bij zulke problemen zoals in deze studie werd gevonden. Theorieën over depressie benadrukken de schadelijke effecten van incompetentie voor het

zelfbeeld en de stemming, mogelijk door de effecten van afwijzing door leeftijdsgenoten. Omdat de school draait om het aanleren en gebruiken van verschillende fase-specifieke vaardigheden met betrekking tot het sociale en schoolfunctioneren, is het waarschijnlijk dat met name leraren in een positie zijn zowel problemen op deze gebieden als het gerelateerde negatieve zelfbeeld en de depressieve stemming waar te nemen.

Verder werd een aantal sterke en zwakke kanten van het onderzoek besproken in termen van aanbevelingen voor verder onderzoek. Er werd geconcludeerd dat toekomstig onderzoek idealiter een breed scala aan kind- en gezinsfactoren op alle leeftijden verzamelt, gerapporteerd door verschillende informanten, deze tegelijkertijd in een longitudinale opzet analyseert, apart voor jongens en meisjes, gebruik makend van statistische methoden die de complexiteit van het onderwerp recht doen. Ten slotte werden de klinische implicaties van het onderzoek besproken. Hieronder vielen aanbevelingen met betrekking tot het belang van vroege emotionele en lichamelijke problemen als doelvariabelen bij de vroege detectie en mogelijk preventie van psychopathologie en het belang van leraren als informanten voor de vroege detectie van internaliserende problemen.

Dankwoord en Curriculum Vitae



Dankwoord

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Curriculum vitae

Judi Mesman werd geboren op 14 augustus 1974 te Aduard (Groningen). In 1992 behaalde zij het V.W.O.-diploma aan het Rijnlands Lyceum te Sassenheim. Hierna studeerde zij Psychologie aan de Rijksuniversiteit Leiden en behaalde in 1996 het doctoraal-examen in de afstudeerrichting Klinische en Gezondheidspsychologie (met genoegen). Van april 1997 tot februari 2000 was zij werkzaam als junior onderzoeker op de afdeling kinder- en jeugdpsychiatrie van het Sophia Kinderziekenhuis te Rotterdam. Hier verrichtte zij een longitudinaal promotie-onderzoek naar ontwikkelingspaden van psychopathologie van de peuterleeftijd tot in de schoolleeftijd. De resultaten van dit onderzoek zijn in dit proefschrift beschreven. Sinds februari 2000 werkt zij als onderzoeker bij het NIVEL in Utrecht.