Prevalence of problem behavior in a general population sample of children with learning problems

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Abstract

The prevalence of problem behavior was studied in a general population sample of 44 children with learning problems aged 6 through 12 using the Child Behavior Checklist (CBCL). This sample formed part of a general population sample drawn within the context of a large-scale epidemiological study on problem behavior in children in Flanders. Children were selected on the basis of their parents' reports on learning problems. CBCL scores of children with learning problems were compared with CBCL scores of same-aged normally achieving children and a clinical sample of children consulting a mental health service. Children with learning problems manifested a wide variety of behavioral and emotional problems. Compared to normally achieving children, they scored significantly higher on Total Problems, the Internalizing and Externalizing scales and four out of eight narrowband syndromes, Anxious/Depressed, Social Problems, Attention Problems, and Aggressive Behavior. Compared to children of the clinical sample, children with learning problems received significantly lower scores only on two narrowband syndromes, Withdrawn and Thought Problems. No specific problem behavior pattern was found in children with learning problems. Poor concentration was the most widely distributed sample characteristic. This study illustrates the high correlation between learning problems and problem behavior in a nonclinical general population sample.

Introduction

Learning problems have long been associated with behavioral and emotional problems, in clinical reports as well as in research reports. In the Isle of Wight study for instance, Rutter, Tizard and Whitmore (1970) found that one third of the 10- and 11-year-old children with reading retardation of at least 28 months manifested serious behavioral and antisocial disorders, and one third of the 10- and 11-year-old children with antisocial behavior had reading retardation of at least 28 months. Recent handbooks on child psychiatry contain one or more chapters on learning disorders and their relation with psychopathology and psychiatric disorders (e.g., Feinstein & Aldershof, 1991; King & Noshpitz, 1991; Maughan & Yule, 1994; Taylor, 1989). The origins and causes of learning disorders are not yet clearly delineated, nor are their course and the influence of concomitant etiological factors (Feinstein & Aldershof, 1991; King & Noshpitz, 1991). Generally, there are three important hypotheses on the relation between learning problems and psychopathology in children (King & Noshpitz, 1991; Rourke & Del Dotto, 1994; Maughan & Yule, 1994). The first hypothesis supposes that behavioral and emotional problems are primary. They can cause secondary learning problems, because behaviorally disturbed children lack the abilities and competencies (e.g., concentration, delay of gratification, coping with new situations, making friends) that are needed to adapt themselves to school and achieve well. Some of the students manifest severe psychopathology or major psychiatric disorders, hampering their academic performance. Because the learning difficulties of these children primarily have to do with emotional disturbance, they generally are not included under the rubric of learning disabilities (Rourke & Del Dotto, 1994).

In the second hypothesis, learning problems are considered as primary. Children with learning problems often are confronted with school failure and disapproval or rejection by parents, teachers, and peers. This can have negative consequences on their personality development. Many children with learning problems never develop a sense of "industry" or "having success" (Erikson, 1963), instead they feel themselves inferior and worthless. These children are especially at risk for various psychopathological conditions (e.g., depression, behavioral disorders).

In the third hypothesis, both learning problems and problem behavior in children are seen as influenced by common underlying constitutional, hereditary, or neuropsychological factors. One type of underlying factor that is often mentioned in current literature is language disorder (Baker & Cantwell, 1987; Feinstein & Aldershof, 1991; Stevenson, Richman, & Graham, 1985). There seems to be a high comorbidity between language disorders and learning problems on the one hand, and between language disorders and psychopathology on the other hand. Of particular importance is the child's ability to make use of an inner language that refers to and symbolizes the outer world. Parents and teachers of children with developmental language disorder report several behavioral and emotional problems. Feinstein and Aldershof (1991) estimated the incidence of psychopathology for children attending speech and language clinics in the United States to be 50%, while studies in psychiatric populations also mentioned language disorders in about 50% of the cases. For example, Beitchman, Nair, Clegg, Ferguson, and Patel (1986) estimated the prevalence of psychiatric disorders in children with speech and language disorders to be more than four times higher than in a control group of children without speech and language disorders (48.9% vs. 11.9%, respectively).

Other factors that can cause both learning problems and problem behavior include specific patterns of central processing assets and deficits (Rourke & Del Dotto, 1994). In several studies Rourke and Del Dotto found two particular subtypes of learning disorder that were caused by neuropsychological assets and deficits: a reading and spelling disorder (the Group R-S subtype) and an arithmetic disorder (the Group A subtype). While children of the former group generally did not manifest significantly more behavioral and emotional problems than normal children, the latter subtype seemed to be connected strongly with a particular form of socioemotional functioning, that is, internalized psychopathology. Because it is difficult to understand that poor arithmetic performance directly causes disturbed psychosocial functioning or vice versa, it seemed plausible that a third factor was responsible for the apparent relationship between academic functioning and psychosocial functioning. This intervening third factor is cognitive functioning, since research indicated that both academic functioning and psychosocial functioning were strongly associated with patterns of cognitive functioning. Rourke and his colleagues called this subtype nonverbal learning disability (NLD). It is characterized by specific cognitive deficits, namely poor

achievement in arithmetic and nonverbal problem solving relative to good reading and spelling performance, psychomotor clumsiness, tactile insensitivity, visual-spatial organizational deficits, difficulties in dealing with novelty, and weakness in intermodal integration. Furthermore, these children evidence a high prevalence of severe internalizing problems (Rourke, 1988; Rourke, Young, & Leenars, 1989). This internalizing problem behavior seems to stem from the NLD child's inability to appreciate and process the social context of novel situations, his inappropriate social behavior, and constant reliance on verbal prescriptions. This pattern of problems can lead to chronic social failure and rejection. It can result in social withdrawal and isolation, anxiety, depression, and finally, in extreme cases, in suicidal behavior (Rourke, 1988; Achenbach & McConaughy, 1992).

Psychiatric disorders frequently found in general population and clinical samples of learning disabled children are Attention-Deficit Hyperactivity Disorder (Cantwell & Baker, 1991; King & Noshpitz, 1991; McConaughy, 1986; McConaughy & Ritter, 1986) and Conduct and Oppositional Defiant Disorder (King & Noshpitz, 1991; McKinney, 1989; Schachar & Wachsmuth, 1990). Other problems that are more often mentioned in learning disabled children than in normal control children are social problems (in particular difficulties in making friends, poor peer relationships, low sociometric status, and difficulties in the acquisition of social skills) (la Greca & Stone, 1990; Schneider & Yoshida, 1988; Toro, Weissberg, Guare, & Liebenstein, 1990), and internalizing problems (in particular feelings of worthlessness, low self-esteem, withdrawal, insecurity, anxiety, depression, and accompanying emotional problems) (Achenbach & McConaughy, 1992; Feinstein & Aldershof, 1991; King & Noshpitz, 1991; McKinney, 1989; Stein & Hoover, 1989; Wright-Strawderman & Watson, 1992).

A few studies emphasize the severity of problem behavior in children with learning problems. For example, in a Canadian study (Schachter, Pless, & Bruck, 1991) problem behavior was assessed by the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983; Achenbach, 1991) in a sample of 502 learning disabled children who were seen in a specialized learning centre . The prevalence of seriously deviant problem behavior in this sample was 43%, more than four times higher than the prevalence rate of 10% that can be expected in the general population when this measure is used. Older children and children from broken homes or lower social class background

were most at risk for developing severe behavioral and emotional problems. In another study using the CBCL, McConaughy (1986) found that learning disabled boys aged 6 to 11 scored significantly lower on social competence and higher on internalizing behavior, externalizing behavior, and all the narrowband CBCL syndrome scales than normative samples of the same age. In comparison with a clinical sample of referred children, significantly more learning disabled boys manifested a hyperactive CBCL profile (22.0% of the learning disabled boys versus 14.1% of the clinical sample). Salyer, Holmstrom, and Noshpitz (1991) investigated more in depth manifestations of psychopathology in children with learning disabilities, including ego functioning in the areas of object relations, defense effectiveness, and reality testing (using projective techniques), as well as behavior and academics (using the CBCL and achievement tests, respectively). Compared to normally achieving children, the children in the learning disabled group manifested a significant degree of emotional maladjustment. Learning disabled children showed severe disturbances in object relations, defense mechanisms, and reality testing. They were incapable of using their mental abilities efficiently and unable to integrate their school experiences in everyday life. These disturbances in ego functioning are rather severe and pervasive. These same deficits were also identified in children with a borderline personality organization.

In the present study, prevalence rates of behavioral and emotional problems are reported in children who are perceived as manifesting learning problems, according to their parents. This study forms part of a large-scale epidemiological study on problem behavior in 3- to 12-year-old children in Flanders (Hellinckx, De Munter, & Grietens, 1991, 1993). The aim of the present study is to describe the relation between learning problems and problem behavior in a general population subsample. The severity of problem behavior in this subsample will be checked, as well as the variety of syndromes as measured on the CBCL. CBCL scores of children with learning problems will be compared with those of same-aged normally achieving children and children consulting a mental health service.

Method

Samples

General population sample The sample of the large-scale epidemiological study in Flanders (Belgium) was drawn between February 1991 and June 1991 in the five Flemish provinces (West-Vlaanderen, Oost-Vlaanderen, Limburg, Brabant, and Antwerpen) and in the region of Brussels. This sample could be considered as representative for Flanders with regard to distribution of urbanization. In all, it consisted of 1,400 Flemish primary school children between 6 and 12 years of age. They were randomly selected from the population in a two-stage sample design. In the first stage, a sample of youth health care services was drawn in each province and in the region of Brussels, taking into account population density. These youth health care services perform an obligatory medical examination on all children in schools from kindergarten to college. In the second stage, 100 children of each gender and age were selected using a systematic sampling procedure (Verhulst & Koot, 1992), based on the pupil registers of the youth health care services.

The CBCL was sent by mail to the parents of these children, together with an introductory letter and a return enveloppe. If parents did not respond after 4 weeks, they were sent a reminder letter and a new questionnaire. In this way 1,120 CBCLs were collected. Excluding refusals and untraceable families, the response rate was 82.9% (1,120 out of 1,351). A more detailed description of the sampling procedure can be found in Hellinckx et al. (1991).

Sample of children with learning problems CBCL competence Item VII 4 "Has your child had any academic or other problems in school?" assesses school problems. Parents have to answer this question with "Yes" or "No." If "Yes" they have to describe and specify their child's school problems. The answers on this item can roughly be divided into three categories: learning problems (e.g., dyslexia, arithmetic problems, reading problems), behavioral and emotional problems (e.g., hyperactive, is getting teased, lack of motivation, fear of failure), and a mixture of learning and behavioral problems. The sample of the present study consisted of parents who *explicitly* reported a currently present general or specific learning problem in their child on Item VII 4. In case of a doubtful answer (e.g., poor concentration, hyperactivity, developmental delay) the child was not included in the sample. This selection procedure resulted in a sample of 44 children. Twenty parents reported nonspecific learning problems (45.5%), 9 parents reported reading problems

(20.5%), 3 parents dyslexia (6.8%), 6 parents arithmetic problems (13.6%), 4 parents language problems (9.1%), and 2 parents reading and writing problems (4.5%).

Children were selected only on the basis of parents' reports. There was no further assessment to confirm the reported learning problems nor to verify whether they primarily had to do with cognitive functioning.

Clinical sample The clinical sample was drawn between May 1991 and May 1992. It consisted of 6 to 12-year-old children consulting in 10 mental health services in the Flemish province of Limburg. Mental health services provide ambulatory help for children and families and consist of multidisciplinary teams with a child psychiatrist, clinical psychologists, and social workers. They are rather easily accessible and treat a wide variety of psychosocial problems. Generally, mental health services primarily focus on psychoscial problems in children and families, and don't treat learning problems. To what extent children with associated learning problems were included in this clinical sample is not clear, but the proportion of children with learning problems that consult a mental health service probably is very small. The CBCL was introduced to the parents as part of the intake procedure and sent to them by mail after announcement. Except in cases of crises, parents completed the checklist before their first consultation. During this one-year registration period, 410 CBCLs of Flemish primary school children between 6 and 12 years old were collected. A more extensive description of the sampling procedure is given in Hellinckx et al. (1993).

Instrument

Problem behavior in children was assessed by means of the Child Behavior Checklist (CBCL; Achenbach, 1991; Achenbach & Edelbrock, 1983). The CBCL is a frequently applied questionnaire, containing 20 items on children's competence and 120 problem items. Parents score each item as 0 if the item is not true of the child, 1 if it is somewhat or sometimes true, and 2 if it is very true or often true. The higher the score, the more behavioral and emotional problems the child actually has, or has been manifesting within the last six months.

In the epidemiological study in Flanders both the 1983 and 1991 profiles have been used. The data of the present study on problem behavior in children with learning problems were analyzed using the recent 1991 profile. Only data on problem behavior were analyzed.

Although in Achenbach's opinion psychopathology is considered as a continuous variable on which each child has a place that is relative according to his or her gender and age, it is possible to describe the severity of a child's problem behavior in a more categorical way. Therefore, normative CBCL cut-off points have been identified. Total problem behavior scores above the 90th percentile of the raw score distribution are considered as seriously deviant. Children scoring in this *clinical range* have severe behavioral and emotional problems according to their parents' perception. Total problem behavior scores between the 82th and 90th percentile of the raw score distribution are categorized as intermediate *borderline range*. Total problem behavior scores below the 82th percentile are classified as in the *normal range*. Using these cut-off points provided a significant discrimination between demographically matched referred and nonreferred samples (Achenbach, 1991).

Besides a total problem behavior score and item scores, children receive scores on eight statistically derived domains of problem behavior, indicated as the *CBCL narrowband syndromes*: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Attention Problems, Thought Problems, Aggressive Behavior, and Delinquent Behavior. The first three syndromes are grouped together into the broadband syndrome Internalizing, the last two into Externalizing. Externalizing problem behavior causes or results in distress in others (e.g., arguing, disobedience), while internalizing problems cause suffering or distress in the self (e.g., sadness, feelings of loneliness). All syndrome scores can be categorized into a normal (below the 96th percentile), clinical (above the 98th percentile), and borderline range (between the 96th and 98th percentile). CBCL syndromes cannot be considered as clinical entities, they merely refer to a cluster of co-occurring behavioral and emotional problems.

CBCL norms are based on data of children who had not received mental health services or special remedial school classes within the preceding 12 months of the study. There are four normative samples: 4- to 11-year-old boys, 4- to 11-year-old girls, 12- to 18-year-old boys, and 12- to 18-year-old girls.

In the present study the same cut-off points for the total problem behavior score and the syndrome scores were used as in the United States and Holland (Achenbach, Verhulst, Baron, & Akkerhuis, 1987; Achenbach, Verhulst, Baron, & Althaus, 1987; Verhulst, Achenbach, Althaus, & Akkerhuis, 1988). This could be justified because in a cross-national comparison of population studies in 6- to 12-year-old children in Flanders (Belgium) and Holland no significant nationality differences on the Total Problems scale and syndrome scales were found, except for a significant but small difference on Anxious/Depressed and Delinquent Behavior. On these syndromes Flemish children scored slightly higher than Dutch children (Hellinckx, Grietens, & Verhulst, 1994).

Results

CBCL data of the three samples were analyzed by using a quantitative and a categorical approach. Quantitative analysis implies ANCOVAs, in which scores of the three samples were compared and socioeconomic status served as the covariate. SES was defined by the higher-order parent's occupation. Recent research has shown that this is a very reliable index of SES (Achenbach, Howell, Quay, & Conners, 1991). Parent's occupations were categorized by means of a hierarchical classification system consisting of a 6-point scale, from 1 = *low-SES status* (e.g., unskilled worker) to 6 = *high-SES status* (e.g., doctor) (Van Westerlaak et al., 1975). If both parents were working, the occupational status of each was classified, and the highest occupational status was taken into account for the ANCOVAs. Categorical analysis implies the use of Achenbach's statistically derived cut-off points (1991) to classify children of the three samples into the normal, borderline, and clinical range. The percentages of scores in the borderline and clinical range were considered as estimations of the prevalence of children with moderately or seriously deviant problem behavior. Quantitative and categorical approaches of problem behavior in children are not necessarily incompatible with each other (Achenbach, 1993). If used carefully, both approaches can complement each other and increase knowledge on the distribution of problems in populations.

In Table 1 the number of children and the distribution by gender in the three samples is given, as well as the means and standard deviations of SES. Due to missing values, these numbers of

children that were finally included in the data analyses, were smaller than the numbers reported in the 'Method' section.

INSERT TABLE 1 ABOUT HERE

Quantitative analysis

In Table 2 the means and standard deviations of the three samples on Total Problems, the Internalizing scale, the Externalizing scale, and eight narrowband syndromes are presented, as well as the results of the ANCOVAs and the post hoc comparisons between samples. For post hoc comparison use was made of Tukey's Studentized Range (HSD) tests with $p = .01$ (see Kirk, 1968). Comparisons between normally achieving children (sample I) and children consulting a mental health service (sample II) are not described in the table, because they are beyond the scope of this study. All comparisons between these two samples were significant at $p < .01$ and in the same direction: children consulting a mental health service scored significantly higher than normally achieving nonconsulting children on Total Problems, the Internalizing and Externalizing scale, and eight narrowband syndromes.

Post hoc comparisons between the sample of children with learning problems and the sample of normally achieving children showed significant differences for Total Problems (learning problems, M = 38.67; normally achieving, M = 20.46), the Internalizing scale (learning problems, M = 10.18; normally achieving, M = 5.52), the Externalizing scale (learning problems, M = 12.79; normally achieving, M = 7.33), and four out of eight narrowband syndromes: Anxious/Depressed (learning problems, M = 5.90; normally achieving, M = 2.91), Social Problems (learning problems, M = 3.77; normally achieving, M = 1.67), Attention Problems (learning problems, M = 7.67; normally achieving, M = 3.29), and Aggressive Behavior (learning problems, M = 10.62; normally achieving, M = 5.91). In all significant cases, children with learning problems had higher scores than normally achieving children in the general population sample.

No significant differences were found between children with learning problems and children consulting a mental health service because of psychosocial problems on Total Problems (learning problems, M = 38.67; clinical sample, M = 44.71), the Internalizing scale (learning problems, M = 10.18; clinical sample, M = 12.80), and the Externalizing scale (learning problems, M = 12.79; clinical sample, M = 14.94). Only on two narrowband syndromes children of the clinical sample received significantly higher scores than children with learning problems: Withdrawn (learning problems, M = 3.10; clinical sample, M = 4.45), and Thought Problems (learning problems, M = 0.69; clinical sample, M = 1.23).

Significant SES differences were found on Total Problems, the Internalizing scale, the Externalizing scale, and all eight narrowband syndromes. In all cases, children of lower-SES families had higher scores than children of higher-SES families. This is indicated by negative Pearson correlations between CBCL scores and SES, ranging from -.07 (Somatic Complaints) to -.23 (Social Problems). All correlations were significant at the .01 level.

INSERT TABLE 2 ABOUT HERE

Categorical analysis

According to Achenbach's (1991) statistically derived cut-off points, scores on Total Problems, the Internalizing scale, the Externalizing scales and eight narrowband syndromes of the three samples were classified into the normal, borderline, and clinical range. For the general population sample of normally achieving children the percentages of deviant scores on Total Problems, the Internalizing and Externalizing scale were statistically derived as 10%, the percentages of deviant scores on narrowband syndromes as 4% (Achenbach, 1991). The percentages of scores in the borderline and clinical range can be considered as estimations of the prevalence of children with moderately or seriously deviant problem behavior (Table 3). Of the children with learning problems, 32.6% scored within the clinical range on Total Problems and manifested severely deviant problem

behavior according to their parents. This was more than three times the percentage of severely deviant scores in the general population sample of normally achieving children (10.0%). The percentages of seriously deviant scores on the Internalizing and Externalizing scales in the sample of children with learning problems (25.6% and 20.9%, respectively) exceeded those of the general population sample of normally achieving children more than twice.

Significantly more children with learning problems than normally achievers scored in the clinical or borderline range on Total Problems, the Internalizing scale and the Externalizing scale; for Total Problems ^{2} (1, N = 1119) = 34.7, p<.0001; for the Internalizing scale ^{2} (1, N = 1119) = 7.8, p<.01; for the Externalizing scale ^{2} (1, N = 1119) = 5.7, p<.05.

Compared with the clinical sample significantly fewer children with learning problems scored in the clinical or borderline range on the Internalizing scale (34.9% of the learning disabled children versus 53.3% of the clinical sample); ^{2} (1, N = 450) = 5.3, p<.05. On Total Problems and the Externalizing scale no significant differences were found between both samples in the number of scores falling in the borderline or clinical range; for Total Problems, ^{2} (1, N = 450) = 0.3, ns; for the Externalizing scale, ^{2} (1, N = 450) = 2.4, ns.

On four syndromes the prevalence rate of children with learning problems was significantly higher than in the general population of normally achieving children: Anxious/Depressed (14.0% of the children with learning problems scored in the clinical or borderline range; ^{2} = 9.6(1, N = 1119), p < .01), Social Problems (23.3%; ^{2} = 35.0(1, N) = 1119), p < .001), Attention Problems (46.5%; ^{2} = 142.1(1, N = 1119), p < .001), and Delinquent Behavior (14.0%; ^{2} = 9.6(1, N = 1119), p < .01). There was no significant difference between the two samples concerning the prevalence of Withdrawn (4.7%; ^{2} = 0.1(1, N = 1119), ns), Somatic Complaints (4.7%; ^{2} = 0.1(1, N = 1119), ns), Thought Problems (0.0%; ^{2} = 1.9(1, N = 1119), ns), and Aggressive Behavior (9.3%; ^{2} = 2.9(1, N = 1119), ns).

On five out eight narrowband syndromes the number of children manifesting moderately or seriously deviant problem behavior was significantly higher in the clinical sample than in the sample of children with learning problems, namely on Withdrawn (28.8% deviant scores in the clinical sample, versus 4.7% in the learning problems sample; ^{2} = 11.7(1, N = 450), p < .001), Somatic Complaints (16.5% versus 4.7%; ^{2} = 4.2(1, N = 450), p < .05), Anxious/Depressed (28.7%

versus 14.0%; ^{2} = 4.4(1, N = 450), p < .05), Thought Problems (17.0% versus 0.0%; ^{2} = 8.6(1, N = 450), p < .01), and Aggressive Behavior (26.8% versus 9.3%, ^{2} = 6.4(1, N = 450), p < .05). Only on Social Problems (29.5% deviant scores in the clinical samples, versus 23.3% in the learning problems sample; ^{2} = 0.8(1, N = 450), ns), Attention Problems (39.8% versus 46.5%; ^{2} = 0.5(1, N = 450), ns), and Delinquent Behavior (27.0% versus 14.0%; ^{2} = 3.4(1, N = 450), ns) no significant differences in the distribution of CBCL scores were found, when this classification scheme was used.

INSERT TABLE 3 ABOUT HERE

Discussion

The CBCL was used to study problem behavior in a general population sample of 44 Flemish children with learning problems ages 6 to 12. The CBCL scores on Total Problems, the Internalizing and Externalizing scale, and eight narrowband syndromes of this sample were compared with those of two other samples of same-aged Flemish children: a general population sample of normally achieving children and a clinical sample of children consulting a mental health service because of psychosocial problems. CBCL scores were compared by means of quantitative (ANCOVAs) and categorical analysis (statistically derived cut-off points).

On the one hand, both the small sample size (n = 39 in the ANCOVAs, n = 43 in the categorical analysis) and the sample selection procedure that was fully based on parents' perception of learning problems in their children, inevitably restrict the generalizability of results concerning the prevalence of problem behavior in children with learning problems. On the other hand, this sample forms a part of a 'purely' general population sample that was drawn within the framework of a large-scale epidemiological study on problem behavior in 6 to 12-year-old primary school children in Flanders (Hellinckx et al., 1991). Children were selected randomly from the general population. By using general population samples, the selection processes or "filters" that determine whether help is obtained for children (Verhulst & Koot, 1992) and that are inevitable when drawing

clinical samples, can be avoided. The probability of unbiased prevalence rates of behavioral and emotional problems likely will increase.

The CBCL scores of this general population sample of children with learning problems indicated a rather high degree of deviant problem behavior. Nearly one third of the children with learning problems (32.6%) scored in the clinical range on Total Problems and thus manifested seriously deviant problem behavior according to their parents. In the general population the rate of clinically deviant CBCL scores is statistically defined as 10% (Achenbach, 1991). More than one fifth of all children with learning problems (20.9%) scored in the borderline range on Total Problems manifesting moderately deviant problem behavior (against 8% in the general population). Concerning the number of children scoring in the clinical or borderline range on Total Problems, no significant difference was found between the learning problem sample and a clinical sample of same-aged children consulting a mental health service in one Flemish province (Limburg). Neither did the means on Total Problems of both samples differ significantly. The degree of problem behavior in children with learning problems can be compared with that of a population of children consulting in ambulatory mental health services for various psychosocial problems. This finding can be useful for parents, teachers, school directories, and school psychologists when looking for appropriate help for children manifesting both learning problems and problem behavior. Combining the frequencies of CBCL total problem scores in the clinical and borderline range, one can state that more than half of the 6- to 12-year-old children with learning problems run the risk of developing emotional and behavioral disorders and are in need of professional help.

The prevalence of severely deviant problem behavior in our sample (32.6%) was lower than that of Schachter et al. (1991). In their sample of learning disabled children who were seen in a specialized learning centre, 43% of the total sample of 6- to 16-year-old children manifested severely deviant problem behavior. In the group of 6- to 11-year-old children the prevalence rate was 41%. This difference could be due to the different nature of both samples. Our sample was drawn in the Flemish general population forming part of a large-scale epidemiological study on problem behavior, while the sample of Schachter et al. (1991) was a clinical sample consisting of children who were referred to specialized learning centres either by their parents or teacher. Because of nonsampling bias, prevalence rates that are obtained in clinical populations may not be

generalizable to the general population (Verhulst & Koot, 1992, p. 97). A prevalence study in a large-size general population sample, making use of the same diagnostic criteria to define learning disabilities in children as the study of Schachter et al. (1991), probably would highlight more clearly the differences in severely deviant problem behavior between clinical and nonclinical samples.

In the present study, children with learning problems manifested various behavioral and emotional problems. As was shown in several other studies (e.g., Achenbach & McConaughy, 1992; McConaughy, 1986; McConaughy & Ritter, 1986; Schachter et al., 1991), such children's problems are neither predominantly externalizing nor internalizing. In the present study, 34.9% of the children with learning problems received scores in the clinical or borderline range on the Internalizing scale, 32.5% on the Externalizing scale. The prevalence rate of severely deviant externalizing problem behavior in the learning problem sample did not differ significantly from that of the clinical sample (45.0%). On the other hand, significantly more children in the clinical sample manifested severely deviant internalizing problem behavior (53.3%). Nevertheless, ANCOVAs revealed no significant differences on Total Problems, the Internalizing scale , and the Externalizing scale between both samples. The high amount of internalizing problems in our clinical sample could partly be explained by the specific nature of the setting. Although mental health services generally can treat a wide variety of behavioral and emotional problems, not all types of problems are referred. Children manifesting markedly externalizing problems will usually be admitted to child psychiatric units or residential institutions.

CBCL syndromes that were most common in the sample of children with learning problems were Attention Problems (prevalence of severely and moderately deviant problems: 46.5%), Social Problems (23.3%), Anxious/Depressed (14.0%), and Delinquent Behavior (14.0%). There were no significant differences between the learning problem sample and the clinical sample in the prevalence of Attention Problems, Social Problems, and Delinquent Behavior. The five other narrowband syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Thought Problems, and Aggressive Behavior) had significantly lower prevalence rates in the learning problem sample, when a categorical approach to analyze scores was used. The prevalence of Withdrawn (4.7%), Somatic Complaints (4.7%), Thought Problems (0.0%), and Aggressive Behavior (9.3%) was

similar to that of the general population (4%). Using ANCOVAs, only significant differences on Withdrawn and Thought Problems between the clinical sample and the sample of children with learning problems were found: children consulting a mental health service scored higher on these syndromes than children with learning problems.

Attention Problems seemed to be the most common syndrome in our sample in our sample of children with learning problems. Nevertheless, the syndrome was not specific to this sample. There were found no significant differences on Attention Problems between the sample of children with learning problems and a clinical sample of children consulting in a mental health service. A few symptoms coming under this syndrome had an extremely high prevalence in children with learning problems, that is, Item 8, "can't concentrate," 95.3%, Item 10, "can't sit still," 74.4%, and Item 41, "impulsive," 60.5%. Nearly all children with learning problems manifested poor concentration to a much or lesser degree: 46.5% manifested the symptom sometimes, 48.8% often. Six out of 43 children (14.0%) *often* manifested a combination of poor concentration, hyperactivity, and impulsive behavior. The finding that attention problems and learning problems were highly concomitant corresponds well with other prevalence studies in clinical as well as nonclinical samples (Cantwell & Baker, 1991; McConaughy, 1986; McConaughy & Ritter, 1986; Ritter, 1989; Schachter, Pless, & Bruck, 1991; Shaywitz & Shaywitz, 1991). Because recent studies showed that the Attention Problems syndrome was highly stable and predicted well several other disturbances in childhood and adolescence (Achenbach, 1993; McConaughy, Stanger, & Achenbach, 1992; Verhulst & van der Ende, 1992), it would be of great importance to detect, diagnose, and treat attention problems in children as soon as possible.

Using CBCL syndromes as taxonic constructs to group behavioral and emotional problems, one can conclude that the Attention Problems and Social Problems syndromes are very prevalent in children with learning problems, though not specific for this population. As part of the Attention Problems syndrome, poor concentration seemed to be a the most widely distributed characteristic. The nonspecific nature of behavioral and emotional problems in these children complicates diagnosis and treatment and makes clear prognoses of long-term outcomes rather difficult.

Conclusions

Children with learning problems of a 6 to 12-year-old general population sample manifested a wide variety of behavioral and emotional problems according to their parents. Compared to normally achieving children in the general population, children with learning problems received significantly higher CBCL scores on Total Problems, the Internalizing scale, the Externalizing scale, and four out of eight narrowband syndromes (Anxious/Depressed, Social Problems, Attention Problems, Aggressive Behavior). Compared to a clinical sample of children consulting a mental health service, children with learning problems only received significantly lower score on two narrowband syndromes (Withdrawn, Thought Problems). Although the syndromes Attention Problems, Social Problems, Anxious/Depressed and Delinquent Behavior were highly prevalent in children with learning problems, no specific pattern of behavioral and emotional problems could be delineated in this sample. Poor concentration was the most widely distributed nonspecific sample characteristic.

This general population study adds to the support of the correlation between learning problems and problem behavior in primary schoolchildren. Besides, it provides rather reliable prevalence rates of CBCL syndromes in children with learning problems. Future research should center on the multiaxial empirically based assessment of problem behavior in large-scale general population samples of subgroups of learning disabled children (e.g., dyslectic children, children with arithmetic disorder) in order to detect concomitant patterns of problem behavior, as well as in clinical samples of clearly diagnosed learning disabled children consulting specialized services. Intensive study in clinical and nonclinical samples can increase our empirical knowledge of the complicated relationship between learning disabilities and problem behavior in children.

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TABLE 1. Distribution by gender and means and standard deviations of SES in three samples

	Gender			SES	
	Boys	**Girls**	**Total**	**Mean**	**SD**
Sample I	456	453	909	3.90	1.48
Sample II	219	145	364	3.05	1.40
Sample III	20	19	39	3.77	1.49

Note Sample I = general population sample of normally achieving children (n = 909), Sample II = clinical sample of children consulting in a mental health service (n = 364), Sample III = general population sample of children with learning problems (n = 39).

TABLE 2. Comparison of CBCL scores for Total Problems, Internalizing scale, Externalizing scale, and eight narrowband syndromes between three samples

	Sample I		Sample II		Sample III			Post hoc comparison	
	Mean	SD	Mean	SD	Mean	SD	F	I-III	II-III
Total Problems	20.46	16.65	44.71	24.18	38.67	17.63	188.56	III > I	II = III
Internalizing scale	5.52	5.75	12.80	9.29	10.18	5.73	146.53	III > I	II = III
Externalizing scale	7.33	6.91	14.94	10.39	12.79	7.88	91.02	III > I	II = III
Withdrawn	1.89	2.12	4.45	3.47	3.10	2.20	121.96	I = III	II > III
Somatic Complaints	0.82	1.51	1.87	2.42	1.49	1.86	49.88	I = III	II = III
Anxious/Depressed	2.91	3.46	6.98	5.75	5.90	3.69	121.67	III > I	II = III
Social Problems	1.67	2.00	3.87	2.94	3.77	2.69	105.25	III > I	II = III
Thought Problems	0.27	0.72	1.23	1.71	0.69	0.83	99.16	I = III	II > III
Attention Problems	3.29	3.27	6.98	4.55	7.67	3.52	123.57	III > I	II = III
Delinquent Behavior	1.42	1.66	2.76	2.71	2.18	2.26	43.06	I = III	II = III
Aggressive Behavior	5.91	5.68	12.19	8.35	10.62	6.26	94.19	III > I	II = III

Note Sample I = general population sample of normally achieving children (n = 909), Sample II = clinical sample of children consulting in a mental health service (n = 364), Sample III = general population sample of children with learning problems (n = 39). All F-values are significant at $p<.001$. Post hoc comparison consisted of Tukey's Studentized Range (HSD) tests with $p = .01$; all comparisons between Sample I and Sample II were significant at $p < .01$ in the same direction (II > I) and therefore not presented in the table.

TABLE 3. Percentages of CBCL scores on Total Problems, the Internalizing scale, the Externalizing scale, and eight narrowband syndromes classified into the normal, borderline and clinical range in three samples

	Sample I			Sample II			Sample III		
	Normal	**Borderline**	**Clinical**	**Normal**	**Borderline**	**Clinical**	**Normal**	**Borderline**	**Clinical**
Total Problems	84.4%	5.6%	10.0%	42.0%	8.8%	49.2%	46.5%	20.9%	32.6%
Internalizing scale	84.3%	6.4%	9.3%	46.7%	13.0%	40.3%	65.1%	9.3%	25.6%
Externalizing scale	85.3%	5.0%	9.7%	55.0%	9.6%	35.4%	67.5%	11.6%	20.9%
Withdrawn	96.0%	2.0%	2.0%	71.2%	12.8%	16.0%	95.3%	0.0%	4.7%
Somatic Complaints	96.0%	2.0%	2.0%	83.5%	7.9%	8.6%	95.4%	2.3%	2.3%
Anxious/Depressed	96.0%	2.0%	2.0%	71.3%	8.6%	20.1%	86.1%	2.3%	11.6%
Social Problems	96.0%	2.0%	2.0%	70.5%	14.0%	15.5%	76.7%	9.3%	14.0%
Thought Problems	96.0%	2.0%	2.0%	83.0%	10.8%	6.2%	100.0%	0.0%	0.0%
Attention Problems	96.0%	2.0%	2.0%	60.2%	16.0%	23.8%	53.4%	27.9%	18.6%
Delinquent Behavior	96.0%	2.0%	2.0%	73.0%	14.2%	12.8%	86.0%	9.3%	4.7%
Aggressive Behavior	96.0%	2.0%	2.0%	73.2%	8.9%	17.9%	90.6%	4.7%	4.7%

Note Sample I = general population sample of normally achieving children (n = 909), Sample II = clinical sample of children consulting in a mental health service (n = 364), Sample III = general population sample of children with learning problems (n = 39). Classification of narrowband syndromes in normally achieving children of the general population into the normal, borderline, or clinical range is based on Achenbach's statistically defined cut-off points (1991)