# **Assessment of Childhood Depression**

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**Background:** Depression as a disorder in childhood began to be increasingly recognised in the 1970s. Epidemiologic community and clinic-based studies have characterised the prevalence, clinical course, and complications of this illness throughout childhood and adolescence into adulthood. This paper reviews two instruments for assessing depression in prepubertal children – the Dominic Interactive and The Preschool Age Psychiatric Assessment. Both instruments are useful in screening for psychiatric disorders and reliably identifying the presence of depressive symptoms in young children.

Keywords: Depression; assessment; childhood; PAPA; Dominic Interactive

## Introduction

The recognition that depressive syndromes and disorders exist in young people is a relatively recent development. In the mid-twentieth century, when psychoanalytic theory provided the primary conceptual model for psychiatric disorders, clinicians rarely diagnosed depression in young people. Initial challenges to the psychoanalytic theory that depression required full superego development came with the recognition of 'anaclitic' depression in very young children (Spitz & Wolf, 1946), a condition marked not by self-criticism but by low energy, low interest, and low mood reflecting unmet basic dependency needs. By the 1970s, there was acknowledgment that depression might be 'underlying' disruptive behaviour problems in children, and clinicians began to search for 'masked' depression (Cytryn & McKnew, 1972). This theory, however, could not be substantiated.

Researchers began noting the similarities and differences between childhood and adult depression including sadness, anhedonia, low self-esteem, and other vegetative signs and symptoms uniquely occurring in children such as somatic complaints, social withdrawal, aggression, and school refusal. Lewinsohn et al. (1993) proposed that the study of affective disorders in children and adolescents began in earnest in the 1970s when several sets of investigators demonstrated that such disorders exist and can be reliably assessed in young people. Objective documentation of affective phenomenology in children similar to that in adults was made possible by the standardization of operational criteria in research and epidemiological studies.

## Diagnostic criteria/nosology

Depressive disorders are now commonly diagnosed in accordance with DSM-IV or ICD-10 criteria. Similar criteria are used for children and adults. Depressive disorders have disturbed mood as the core-defining characteristic for children. Categories of depressive disorders under the DSM-IV (American Psychiatric Association, 1994) nomenclature include major

depressive disorder, dysthymic disorder and depressive disorder not otherwise specified.

In depression, children may report feeling sad, unhappy, bored or disinterested in usual activities, angry or irritable, or may appear sad or tearful (APA, 1994). The diagnosis of major depressive disorder (MDD) requires at least one episode in which the child has had five or more of the following symptoms, including one of the first two, for a minimum of two weeks: (1) depressed or irritable mood; (2) markedly diminished interest or pleasure in activities; (3) weight or appetite loss or gain; (4) insomnia or hypersomnia; (5) psychomotor agitation or retardation; (6) fatigue or loss of energy; (7) feelings of worthlessness or excessive guilt; (8) decreased ability to think, concentrate or make decisions; (9) recurrent thoughts of death or suicide or a suicide attempt or plan.

The diagnosis of dysthymic disorder (DD) according to DSM-IV criteria is given if depressed or irritable mood is present most days for a year or more and is accompanied by two or more of six key symptoms. The one-year duration of dysthymic disorder for children and adolescents is a contrast to the two-year duration required for adults. The two unipolar mood disorders are not mutually exclusive, and some children or adolescents will experience MDD during the course of DD.

Luby and colleagues (2002) proposed developmentally modified DSM-IV criteria for diagnosis of depression in preschool children. The prominent symptoms of their modified criteria were sad or irritable mood, anhedonia, low energy, eating and sleeping problems, and low self-esteem. Their developmental modification also included a reduction in the duration requirement for persistence of depressed or irritable mood. Namely, depressed or irritable mood must be present but not necessarily persistently present over a two-week period. Another modification was that persistent death and suicide themes in play were included in the assessment of suicidal ideation. A full description of the modified depression criteria can be found in Luby et al. (2002).

# Epidemiology and course

The rate of depressive disorders in preschoolers varies significantly across the few community studies of preschool depression. A recent study of psychopathology in a sample of children (n=307) aged 2–5 (Angold et al., 2005) is the first non-clinical study to use a reliable structured interview specifically developed for preschool children (the PAPA, see description that follows). The cohort was selected from a sample of 1073 children screened in a large primary care paediatric medical practice. The rate of depressive disorders, including major depression, dysthymia, and minor depression, was 2.1%. There was no significant difference in rates of depression between boys and girls, but there was a non-significant trend suggesting that older preschoolers (4 and 5 year olds) were more likely than toddlers (2 and 3 year olds) to be depressed.

Fleming and Offord's (1990) review of studies showed that the prevalence of MDD in preadolescent children is roughly 2%, with an increase to 4% to 8% in adolescents. The onset of puberty is now thought to be associated with this increase.

Rates of depression are associated with gender and puberty (Birmaher et al., 1996). Among depressed children, there is equal gender representation, but in adolescents (post pubertal), the ratio of depression is about two females to one male, similar to the pattern among adults. The phenomenology of the disorder also differs by puberty, with postpubertal adolescents with MDD more likely than children to have anhedonia, hypersomnia, weight change, or more lethal suicide attempts.

Despite the differences in likelihood of some symptoms, Birmaher and colleagues (2004) have found that depressed children and adolescents have largely similar symptom patterns, course, patterns of comorbidity, and parental histories. They also have similar pharmacological treatment responses (Emslie et al., 2002) and biological findings related to depression (Birmaher et al., 1996; Kaufman et al., 2001).

# Consequences

Depression during childhood or adolescence increases the risk of depression during adulthood four-fold (Harrington et al., 1990). Depression is associated with multiple impairments in functioning, particularly in the social domain (Kovacs & Goldston, 1991). Such impairment may be evident even among depressed preschoolers (Luby et al., 2002), and may persist following the resolution of depressive episodes (Puig-Antich et al., 1985). Problems in social functioning may be related to comorbid psychiatric disorders (Renouf, Kovacs, & Mukerji, 1997).

Kovacs and colleagues (Kovacs et al., 1984a, 1984b) studied the course of depressive disorders in a clinical (not an epidemiological) sample of prepubertal children. The average duration of an episode of MDD in their sample was 32 weeks; for DD, however, the average duration is about 3 years (Kovacs et al., 1984a). Both MDD and DD children demonstrated a high likelihood of having a second depressive episode within a 9-year follow-up period (Kovacs, 1996). Childhood and adolescent depression is also associated with higher risk of suicidal behaviour (Goldston et al., 1999; Kovacs, Goldston, & Gatsonis, 1993; Pfeffer et al., 1993).

# Comorbidity

Depression during childhood often does not occur by itself. The onset of unipolar depression is known to

follow the onset of other disorders, except for substance abuse and panic disorder, which have their onset in adolescence. A meta-analysis by Angold and Costello (1993) found that anxiety disorders, conduct and oppositional disorders, and attention deficit hyperactivity disorder are 8.2, 6.6, and 5.5 times more common in depressed children and adolescents, respectively.

#### **Treatments**

Developing and evaluating effective psychosocial and psychopharmacological treatments for childhood and adolescent MDD has been a significant focus of research. The National Institute for Health and Clinical Excellence (NICE) and the National Collaborating Centre for Mental Health have released a clinical guideline on the treatment and management of depression in children and young people (NICE, 2005). The guideline recommends that children and young people with moderate to severe depression should be offered, as a first-line treatment, a specific psychological therapy (such as cognitive behavioural therapy, interpersonal therapy or family therapy of at least 3 months duration). Antidepressant medication should not be offered to children or young people with moderate to severe depression except in combination with a concurrent psychological therapy and should not be offered at all to children with mild depression.

Cognitive-behavioural therapy (CBT) involves working with the young person to understand and to modify thoughts and behaviours that are likely contributing to depression. Interpersonal psychotherapy (IPT) involves working with the young person to understand the impact of relationship or role conflicts on depression and to modify interpersonal patterns. There is considerable evidence to support the efficacy of CBT both for childhood and for adolescent depression (Curry, 2001), and of IPT for adolescent MDD (Mufson et al., 1999). Studies of tricyclic antidepressant medications did not demonstrate efficacy in children or adolescents (Hazell et al., 1995). Emslie and his colleagues (Emslie et al., 1997) using fluoxetine, a selective serotonin reuptake inhibitor, did show a significantly better outcome for those on medication than for those receiving placebo.

*The process of diagnosing childhood depression* Although the clinical criteria are similar for adults and children and adolescents, the process of determining the diagnosis is not. Whereas in adults the primary emphasis lies with the individual interview of the adult, in children and adolescents, collateral information is emphasised. Additionally, direct clinical interviews are limited by the verbal and cognitive abilities of preadolescent children. Indeed, it is common to find disagreement between parent and child about their reports of depressive symptoms. Further complicating this problem is the finding that a parent's psychological condition may also influence reports (e.g. depressed mothers have been found to over report depressive symptoms compared to the reports of their children; Renouf & Kovacs, 1994).

Assessment may focus on severity of symptoms, the syndrome of depression, functional impairment or correlates of depression, or any combination of these domains. When assessing the severity of symptoms with standardised instruments, normative data and/or

cut-offs for identifying when symptoms are clinically significant or arise to the level of 'caseness' are frequently used. Structured and semi-structured diagnostic interviews often provide the opportunity for assessing depressive symptoms from the perspective of both the child and adult informants. In assessing symptoms for the purposes of determining diagnoses, it is important to try to carefully assess the chronology and course of symptoms over time (e.g. for differential diagnosis purposes such as distinguishing between major depression and dysthymic disorder, and for helping to determine antecedents of symptoms or symptom worsening). Unfortunately, however, younger children are often not reliable reporters of temporal information.

Diagnostic instruments for research and clinical practice have been developed to address these issues. In research, the population being studied (clinical or community) has often determined which type of instrument to be used, as well as the cost and primary aims of the information being collected. For epidemiological studies, where community based prevalence and disease burden are goals, there is a need to assess large numbers of subjects. This requires lay interviewers using highly structured formats with little room for interpretation. For clinic populations, where trained clinicians make diagnoses using clinical judgment, an interviewer-based interview is best. Interviewer-based interviews typically rely more upon clinical judgment and less on structured questions which limit the respondent's answers (Angold & Fisher, 1999). For general clinical use, a combination of self-report by a child of depressive symptoms, confirmed by a clinical interview, is often preferable (Waslick, Kandel, & Kakouros, 2002).

At present, there are a variety of evaluation instruments including self-rating scales and semi-structured interviews for children and adolescents. Most have fair to good test-retest inter-rater reliability. There is no clear superiority of one over the other. Consideration of the specific features usually determines their use in specific research for depressive youths. For clinical practice, the ease of use, cost and efficiency are additional considerations. A complete review of available instruments is beyond the scope of this paper. For a detailed review of currently used diagnostic instruments and rating scales for childhood depression, the reader is referred to an overview by Waslick et al. (2002). The focus of the current paper is on two new instruments, which are in different stages of development, and focus on different age groups.

The first to be reviewed will be the Preschool Age Psychiatric Assessment (PAPA), which has been developed by Egger, Ascher and Angold (1999). The second instrument to be reviewed will be the Dominic Interactive, a structured psychiatric interview presented as video game to children 6 to 11 years of age. It has been under development since 1981 by Valla et al. (2002).

# The Preschool Age Psychiatric Assessment (PAPA) (http://devepi.mc.duke.edu)

Our understanding of depression and depressive symptoms in children under the age of 6 remains limited. Two interrelated challenges underpin the attempt to understand the presentation, course, and outcome of depressive symptoms in preschool children. The first challenge is that it remains unclear whether the DSM/

ICD criteria for major depression and dysthymia are appropriate for diagnosing depression in toddlers or older pre-school children. The second challenge is that, until recently, there were no reliable structured interviews for making a diagnosis (either based on current or modified DSM criteria) in preschool children.

The PAPA is a structured (interviewer-based) parent interview for diagnosing psychiatric disorders and symptoms in preschool children aged 2 through 5 focusing on the three months immediately preceding the interview (primary period) as well as lifetime occurrence on some symptoms such as traumatic life events (Egger et al., 1999; Egger & Angold, 2004).

The PAPA incorporates approaches used by clinicians to gather information on symptoms and experiences from patients while utilizing a standardised process, which improves the consistency and reliability of the information obtained. Definitions of symptoms are present in a glossary. The interviewer questions the parent using mandatory probes until s/he can decide whether the symptoms described by the parent meet these definitions. The entire PAPA takes from 1.5 to 2 hours to administer. The interview is comprised of diagnostic modules that can be administered separately. At the end of each module, there is an evaluation of the disability resulting from the behaviours or emotions. Once the interview is completed, it is coded and entered into a computerised database, which can be customised for a particular clinical setting. Computerised algorithms generate diagnoses for DSM-IV disorders in addition to a variety of symptom, impairment, life events and family functioning scores.

A brief developmental assessment introduces the PAPA to orient the interviewer to the developmental level of the child being discussed. Likewise, there are sections assessing areas of development not fully covered in diagnostic criteria such as sleep behaviours, feeding history and eating behaviours, toileting history and elimination patterns, play and peer relationships, and daycare and school settings and experiences.

Results of a test-retest reliability study show that the PAPA is a reliable tool for assessing psychiatric disorders, including depression, in young children (Egger et al., in press). Comparison with the kappas and ICCs reported from community studies of the reliability of the Parent Diagnostic Interview Schedule for Children (DISC) (Lucas et al., 1999) and the Structured Clinical Interview for DSM-III-R (SCID; Williams et al., 1992), a widely used structured adult psychiatric interview, shows that the one week test-retest reliability of the PAPA diagnoses and scale scores are comparable to the results for these interviews used with parents of older children and adults. For example, the kappa for a PAPA depression diagnosis was 0.72 with an ICC (Intra-class Correlation Coefficient) of 0.71 for the depression symptom scale. In the community study of the parent DISC, the kappa was 0.55 and the ICC 0.51, while in the test-retest study of the SCID, the kappa was 0.47 and the ICC 0.52.

The PAPA is an interviewer-based interview, which reliably measures psychopathology in preschool children along with symptom and impairment information from parent or guardian. Thus it is particularly suitable as part of clinical assessments using multiple sources although currently its primary use is in research.

Dominic interactive school aged prepubescent children (http://www.dominicinteractive.com)
An important part of an evaluation of a prepubescent aged child is the child's perception of his or her own symptoms in comparison with that of the parents and professionals. In fact, no major decision about a child should be made without a direct examination of the child and we know that valid information about a child's mental state is better identified by the child him/herself (Weissman et al., 1987).

Due to the cognitive immaturity of school aged children 6- to 11-years-old, Valla and colleagues (2002) developed a child self-report approach to the evaluation of most common mental health problems in youth by combining auditory as well as visual symptom items in a computer program, the Dominic Interactive. The problems assessed with the Dominic Interactive include both internalizing (Depressive disorder; Anxiety disorders: Generalised Anxiety; Separation Anxiety; and Specific Phobias) and externalising disorders (Attention Deficit/Hyperactivity Disorder; Oppositional Defiant Disorder; and Conduct Disorder).

Akin to a video game, the computer program presents visual and auditory stimuli (cartoon pictures and voice commentary) to provide better information processing and understanding of verbal concepts than either visual or auditory stimuli alone. It shows a child (boy and girl versions) named Dominic by himself, with peers or adults in situations of daily life of children. Alternative ethnic variations have been created to address the fact that a child has an awareness of ethnic differences by the age of 4: Terry - an African American child, Gobi - a Latino child and Ming - an Asian child.

Symptoms are described via drawings (90 pictures running 15 minutes), which have associated questions focused on one concept (e.g. sadness, fear, and suicidal thought). Due to limited comprehension of abstract concepts in this age group, queries about frequency, duration, or age of onset of symptoms were not included. Consequently, assessments yield only diagnostic approximates. These results are meant for use in epidemiological surveys, longitudinal studies, prevention, evaluation research, or clinical studies, and as a complement to clinical practice.

This instrument's psychometric properties have been confirmed in extensive validation studies in North America (Valla et al., 1994, 1997, 2000). Community- based samples in schools from different populations were involved in these studies. Because there is no 'gold standard' for child mental health assessment instruments, Valla used three criteria for validity indicators: (1) concurrent validity measured by the correspondence between children's positive responses to the Dominic Interactive and clinical judgment by three independent raters; (2) discriminant validity measured by the comparison between children referred to child psychiatric services and general population children; (3) discriminant validity measured by the comparison between children referred to child psychiatric services whose parents reported at least one mental disorder on the Child Symptom Inventory (CSI) and those from the general population who presented no mental disorder based on the CSI. Additionally, internal consistency was calculated and testretest reliability was determined using kappa statistics

to show agreement. Results of these test-retest analyses showed kappa values at the minimum accepted criterion equal to or greater than 0.40 for 86 out of 94 symptoms. Test-retest reliability of symptom scales were good to excellent (kappa = .75) with all symptoms scales excellent for children 9-11 years old. Inter-rater reliability was excellent between each pair of raters for concurrent validity of symptoms (behaviour, emotions, and thoughts). The only area not showing a significant difference between referred clinic children with at least one CSI mental disorder and CSI-negative children in the general population was Separation Anxiety, which parents tend to miss. Finally, risk indicators (e.g. parents' psychopathology and family history of mental disorders or suicidal behaviours) did not show a significant association with the test-retest reliability.

Two cut-off points were established using results from a general population and referred samples in North America. This created three categories (likely absent, possible, likely present) instead of the usual two defining normal subjects and youths with difficulties potentially in need of intervention. The middle category of 'possible' is meant to avoid misclassifying children whose scores are near the threshold for distinguishing normal subjects from cases. Different language versions of the Dominic are available: English, French, Spanish, and German. Studies suggest Dominic is transculturally suitable. Coding errors are eliminated as responses are automatically recorded with immediate results available. Either a lay or professional interviewer can administer the program. Because of the video-game format, the Dominic-Interactive may have particular utility for eliciting information about depression and related symptoms from elementary school aged children.

## Conclusion

The field of child mental health has established depression as a diagnosis occurring in children and adolescents. Ongoing assessment of both clinical and community samples have provided us with a clearer picture of the developmental and gender differences at different stages/ages. Birmaher et al. (2004) concluded that MDD is the same disorder in children and adolescents.

Given the seriousness of the impairments of depression in childhood and its continuity into adolescence and early adulthood, the need for careful assessment and early detection and treatment are significant public health concerns. The assessment of children and adolescents for depression differs significantly from adults. Multiple informants are needed and self-reports from younger children, although highly important, are much harder to obtain in a reliable and valid manner. Preschool children may be particularly difficult to evaluate because of cognitive immaturity.

Fortunately much progress has been made and we are now able to use a well-validated screening tool (Dominic Interactive) for children ages 6–11, which gives the child's perspective about his/her self and allows the clinician to efficiently establish prior probabilities for the presence of depression and other comorbidities. This information can then be used to guide

the clinical interview and overall assessment of the child.

For the evaluation of preschool children Egger et al. (in press) have developed the Preschool Age Psychiatric Assessment (PAPA) instrument. Although this structured parent interview is the first instrument for use in this age group, it should be used as part of assessments drawing upon multiple informants including the child him/herself.

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