Later published as:


Current Issues in the Assessment of Anxiety in Children and Adolescents: A Developmental Perspective

Marilyn A. Campbell
University of Queensland
Ronald M. Rapee
Macquarie University

This paper describes some of the current problems with the assessment of children’s anxiety. The main assessment methods—structured clinical interview and self-report—often have problems with validity and reliability while less frequently used measures, such as physiological recording, behavioural observation, and thought-listing also have their attendant difficulties. Possible ways of reducing some of these problems using a developmental perspective are discussed.

Although the study of anxiety in children and adolescents has increased in recent years, there are still many problems with the assessment of anxiety in this population. One of the major issues is the lack of correspondence among sources of information (i.e., teachers, parents, and children) with respect to diagnostic information (Klein, 1991). As well, self-report measures of children's anxiety have been unable to consistently distinguish between anxious and nonanxious children (Bell-Dolan, Last, & Strauss, 1990; Perrin & Last, 1992) or between childhood anxiety disorders (Last, Francis, & Strauss, 1989). These problems could be partly due to the high co-morbidity between anxiety disorders, other internalising disorders, and externalising disorders of childhood, as well as measurement issues such as method variance. Furthermore, developmental factors such as cognitive limitations, language development, and changes in psychosocial functioning could all be contributing to these assessment difficulties. However, for research purposes, for clinical diagnosis, and in order to measure the degree of therapeutic change, reliable and valid measures of anxiety in children and adolescents are needed. The present paper describes each of the currently used methods and their limitations. The value of taking a developmental perspective to the conceptualisation of assessment in anxious children is discussed.

INTERVIEWS
Clinical interviews are at present the most widely used process to assess anxiety in children and adolescents. As the reliability of the unstructured psychiatric interview has shown to be poor (Achenbach, 1980), semistructured and highly structured interviews have been developed. Most of these interviews for assessing anxiety disorders have parallel versions for the parent and child: the Diagnostic Interview for Children and Adolescents (DICA; Herjanic & Reich, 1982), the Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984), and the Anxiety Disorders Interview Schedule for Children (ADIS-C; Silverman & Nelles, 1988), to name a few. The reliability of structured interviews has been assessed both by inter-rater agreement (criterion variance) and by parent—child agreement (informant variance). One methodology used to rate criterion variance is to provide pairs of interviewers with similar information, either through direct observation, with an interviewer and an observer, or through videotapes or audiotapes. Many studies using this methodology have found moderate to high inter-rater agreement (Ambronisi, Metz, Prabucki, & Lee, 1989; Costello et al., 1984; Last, 1989). However, in many of these studies, the number of children meeting criteria for an anxiety disorder has been very small. In a large study of the ADIS-C (based on DSM-III-R criteria; American Psychiatric Association, 1987), inter-rater reliability for most of the childhood anxiety disorders was found to be moderate to
strong (Rapee, Barrett, Dadds, & Evans, 1994). Therefore, it seems that the childhood anxiety disorders can be reliably diagnosed by pairs of clinicians using a structured interview.

However, the issue of concordance between parents and child is still a contentious issue, not only for research but also for clinical diagnosis. Parents are often the main source of information in diagnosing children’s clinical disorders, as they are the ones who usually refer the child for assistance and have more knowledge of the child, in most cases, than anyone else. Children and adolescents are also an important source of information on their own behaviour and feelings especially when assessing internalising disorders such as anxiety (Edelbrock, Costello, Duncan, Kalas, & Conover. 1985). The difficulty is that most studies have shown that there is poor agreement between parents and children, or between clinicians, parents, teachers, or children, in the clinical assessment of anxiety (Brunshaw & Szatmari, 1988; Stavrakaki. Vargo, Roberts, & Boodoosingh, 1987). Although method variance, that is, using different measures for each reporting source, could be one explanation of this phenomenon, even the use of parallel forms of structured interviews shows this problem (Edelbrock. Costello, Dulcan, Conover, & Kalas, 1986: Klein, 1991, Rapee et al., 1994). Determining the accuracy of child-report data based on its agreement with adults assumes that adults’ perceptions are correct. In fact, when there is disagreement between reporting sources, clinicians are more likely to diagnose in accordance with parents’ reports (Rapee et al., 1994). On the other hand, while there is general agreement that it is more important to elicit information from children about subjective child behaviour (Silverman, 1994), it has been shown that the self-reports of children about their anxiety often lack reliability. Using a test-retest paradigm, many studies have found the children’s reliability on structured interview tends to be low (Chambers et al., 1985; Costello et al., 1984). Children seem to report more symptoms of anxiety and fearfulness on the first interview compared to the second and subsequent interviews.

The age of the child is an important variable in determining the reliability of clinical interviews. In assessing the reliability of the DISC at different age levels, Edelbrock et al. (1985) found that the reliability of the child’s report increased with age while the reliability of the parents’ report decreased with the age of the child. Children aged 6 to 9 years of age were not very reliable in reporting anxious symptoms except for simple fears. However, for the oldest age group of 14 to 18 years there were no significant parent-child differences in reliability. Silverman and Eisen (1992) also investigated age differences in reliability with the ADIS-C, and found that older children tended to be more reliable on a test-retest paradigm than were younger children across most areas of reporting. Finally, in the study by Rapee et al. (1994) slightly lower inter-rater and parent-child agreement were found for children under 10 years than for children aged 10 years and older.

Structured interviews, while taking into account language differences (Silverman, 1994), do not take into account different expressions of symptoms with age. As Silverman (1994) points out, this is because most of the diagnostic criteria on which the interviews are based are not developmentally sensitive. For example, for most disorders symptoms and criteria in DSM-IV (American Psychiatric Association, 1994) are identical for children, adolescents, and adults. The DSM-IV classification scheme emphasises specific and static symptoms without considering how age may influence the manifestation of anxiety disorders. Therefore, current structured interviews are limited by the insensitivity to development by the schemes or criteria on which they are based.

**SELF-REPORT MEASURES**

Existing self-report measures of children’s anxiety have failed to consistently distinguish anxious from nonanxious children or to distinguish amongst the childhood anxiety disorders. The three self-report measures that are most often used in assessing anxiety in children are the Fear Survey Schedule – Revised (FSSC-R; Ollendick, 1983), the Revised Children’s Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) and the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973).

An early study using the FSSC-R indicated that this instrument discriminated between normal controls and school-phobic children (Ollendick, 1983). However, total scores on the instrument did not differentiate between nondepressed anxiety-disordered children and
children with other psychiatric disorders (Strauss, Last, Hersen, & Kazdin, 1988). Total scores on the RCMAS have also failed to distinguish anxious children from other psychiatrically disturbed children (Hodges, 1990; Hoehn-Saric, Maisami, & Wiegand, 1987), non anxious and subclinically anxious children (Bell-Dolan et al., 1990) or anxious and depressed children (Strauss et al., 1988). Although the STAIC has been shown to differentiate between nonanxious and subclinically anxious children (Bell-Dolan et al., 1990) and between anxiety-disordered and normal boys (Perrin & Last, 1992), the measure was unable to discriminate between anxiety-disordered and other psychiatrically disordered children (Hoehn-Saric et al., 1987; Perrin & Last, 1992, Strauss et al., 1988).

The three main self-report measures of children’s anxiety have thus far shown limited success in differentiating between anxious and nonanxious children. They have also failed to differentiate amongst the anxiety disorders. Last et al. (1989) failed to find any differentiation in either total or factor scores on the FSSC-R between separation-anxiety disordered children, overanxious disordered and phobic disordered children. However, they claim that the focus of the children’s fear was differentiated by a few items on the FSSC-R. Separation-anxiety disordered children feared getting lost, overanxious disordered children feared being criticised, being teased, and making mistakes, while school-phobic children feared going to school.

Self-report measures of child anxiety, however, do have advantages, in that they are easy to administer, are cost-effective and time-efficient. They can be used for pre- and post-intervention measurement, for normative data gathering and for screening purposes. As anxiety is an internalising disorder, it seems justifiable to collect information from the child, and self-report data should not be trivialised or discounted because of the present difficulties.

Age may also be an important variable in self-report measures of anxiety. Most self-report measures of children’s anxiety are based on adult models. For example, the FSSC-R, which is based on Scherer and Nakamura’s (1968) Fear Survey for Children (FSS-FC), was originally based on the adult versions of the Fear Survey Schedule (FSS-I, Akutagawa. 1956). Similarly, the RCMAS, based on the Children’s Manifest Anxiety Scale (Castaneda, McCandless, & Palermo, 1956), was originally based on Taylor’s (1953) adult Manifest Anxiety Scale. The STAIC is a downward extension of the equivalent scale for adults Thus, there seems to be an assumption with most of these measures that children experience and report anxiety in the same way as adults.

However, it has been shown that children do not always have a shared understanding of language with adults in the self-report format. Campbell, Rapee, and Spence (1996) found that there were developmental changes in the interpretation of instructions on a questionnaire measure of worry. The questionnaires were worded in three different ways and given to three separate groups of children and adults. The first questionnaire asked “How much do you worry about these events?”, the second “How bad would it be if you had these events happen to you?” and the third “How often do you think about these events?”. Adults answered the worry and frequency-of-thought questionnaires with similar ratings, and the aversiveness questionnaires with different ratings. In contrast, children under 10 years of age answered the worry and aversiveness versions with similar ratings, with the frequency-of- thought wording scores being substantially lower. Thus, the results indicated that adults equate the concept of worry with the concept of frequency-of thought. On the other hand, children seem to equate the concept of worry with the aversiveness of the outcome. This study therefore has implications for the wording of self-report questionnaires for children. At different ages, children have been shown to have different understandings of what worry means. The limitations of children’s comprehension of language needs to be considered when developing self-report questionnaires.

Perhaps one solution to reliable and valid assessment of anxiety in children and adolescents could be found by using the minor, or less popular, measures of assessing anxiety, such as physiological, behavioural, and cognitive measures.

PHYSIOLOGICAL MEASURES
Although there have been only a few studies examining the physiological parameters of anxious mood in children, most researchers have found that the physiological responses by
normal children to fear-producing or threatening situations are similar to those found in adults. These include increased heart rate (Beidel, 1988; Schwartz, Campos, & Baisel, 1973), changes in respiration (Tal & Miklich, 1976), and increases in palmar sweating (Lore, 1966). In anxiety-disordered children, increased adrenergic activity (Rogeness, Cepeda, Macedo, Fischer, & Harris, 1990) and increased baseline zygomatic muscle tension (Turner, Beidel, & Epstein, 1991) have been found; however, plasma measures (3-methoxy-4-hydroxphenylglycol, MHPG) have not differentiated children with depressive, anxiety, or conduct disorders (Pliszka, Rogeness, & Medrano, 1988).

Although measurement of these physiological variables is possible with children, there are several difficulties, including the paucity of normed measurements, the inconvenience and expense of the necessary sophisticated equipment, and the necessity in some procedures for the children to cooperate. However, as Beidel (1989) asserts, psychophysiological assessment could help in determining if purported differences in anxiety and fears based on sex represent "true" differences or are reflections of different socialisation practices which discourage admission of fears and anxieties by boys.

Age impacts on the measurement of anxiety in children and adolescents by physiological means because of the physical development of the child. When analysing blood pressure recordings it is necessary to covary the weight of the child as weight has a significant effect on children’s blood pressure (Murphy, Alpert, Willey, & Somes, 1988). Similarly, the number of active sweat glands in the body decrease with age (Beidel, 1989). As there are no developmental guidelines which currently exist, this is a difficulty. Heart rate is also highly dependent on the child’s age and physical stature.

Values may vary across children by as much as 30 beats per minute and still be considered normal (Beidel, 1988). Age is also of practical significance in assessing anxiety by physiological measures. Children tire more easily than adults, and it has been found that with severely anxious children, long baseline periods may heighten the emotional state and interfere with assessment process (Turner et al., 1991). As with other measures of children’s anxiety, physiological assessment therefore must be developmentally sensitive.

**BEHAVIOURAL MEASURES**

Although some reports of behaviour are collected through structured interviews, checklists can also be used. Although no specific checklists have yet been developed to measure childhood anxiety, parental and teacher checklists often contain a behavioural component, for example, the Child Behavior Checklist (Achenbach & Edelbrock, 1983), the Connor’s Teacher Rating Scale (Conners, 1969), and the Revised Behaviour Problem Checklist (Quay & Peterson, 1983). All contain an anxiety or withdrawal dimension; however, in some cases (e.g., the Child Behavior Checklist), this is confounded with depression. Strauss (1988) found that children diagnosed with overanxious disorder were rated by both their parents and teachers as demonstrating significantly higher levels of anxious-withdrawn behaviour on the Revised Behaviour Problem Checklist than were children in a normal control group. However, the informant providing the information often accounts for a significant amount of variance in ratings (Daugherty & Shapiro, 1994), as it does in the structured interview. That is, the information provided by the parents differs from the information provided by the self-report of the child or indeed from teachers or others.

Direct behavioural observations are rare in studies of the assessment of children’s anxiety. However, behavioural avoidance tests (BATs), observational rating scales, and diary writing are alternative ways that have been suggested to assess anxiety in children. BATs have been used mainly to assess phobic disorders in children (Giebenhain & O’Dell, 1984; Lewis, 1974). In these tests, the stimulus is operationalised and the subject asked to perform a series of graduated tasks to approach the feared stimulus (see Dadds, Rapee, & Barrett, 1994).

One limitation of this procedure is the difficulty of operationalisation of the stimulus, especially in assessing social fears and generalised anxiety conditions. Although there are some observational rating scales for measuring anxiety connected with dental and medical procedures (Behavior Profile Rating Scale; Melamed, Yurcheson, Fleece, Hutcherson, & Hawes, 1978, also the Observer Rating Scale of Anxiety; Melamed & Siegel, 1975), there seems to be only one observational scale for use in a naturalistic setting: the Preschool...
Observational Scale of Anxiety (POSA; Glennon & Weisz, 1978), which is a standardised instrument developed for use with anxious preschool children. The scale was designed for use across a range of stimulus situations, although it was originally used to assess the behaviour of preschool children when forced to separate from their mothers. The POSA contains 30 observable indicators of fearful behaviour in children, such as avoidance of eye contact, nail-biting, and trembling.

Diary writing by children to assess the extent of their anxiety has been suggested by Beidel (1991) as a substitute for actual behavioural observations. By comparing the diaries of overanxious disordered children, socially phobic children, and normal controls she found that the anxious children exhibited significant distress and impairment in their daily functioning. The socially anxious group, when faced with performing in front of others, responded by crying and behavioural avoidance. Unfortunately, the main problem with behavioural measures is that studies have not yet been conducted to show that the measures are able to reliably differentiate anxious from nonanxious children or to distinguish between the various anxiety disorders.

Age has also been shown to affect the behavioural manifestation of anxiety. Katz, Kellerman, and Siegel (1980) found that younger children tended to show a greater variety of anxious behaviours and were most likely to express their anxiety by crying and screaming. The older children tended to withdraw from the situation. Francis, Last, and Strauss (1987) showed that symptoms of separation anxiety disorder (SAD) looked different at different ages. Younger children with SAD reported nightmares and excessive distress upon separation, whereas older children always presented with physical complaints on school days. When assessing anxiety in adults, avoidance is the main behavioural response to anxiety. Although avoidance has also been demonstrated in some anxiety-disordered children (Beidel, 1991; Morris & Kratochwill, 1987), this symptom is probably not as frequently reported in children as in anxious adults, because children are often not permitted to avoid situations such as taking tests or giving talks at school. In contrast, children may be more likely to avoid social interaction situations because they do not have the social pressures on them that adults do. The different pressures (responsibility, social, parental) on children and adults are likely to be a major influence on differences in patterns of avoidance.

COGNITIVE MEASURES

The measurement of anxious cognition in children and adolescents is also in its infancy. Zatz and Chassin (1983) showed some evidence of cognitive distortion with test-anxious children. Using the Children's Cognitive Assessment Questionnaire (CCAQ), which consists of 40 yes/no items each prefaced by "I thought", they showed that high test-anxious children had more task-debilitating cognitions than moderate or low test-anxious children. That is, they reported experiencing more negative cognition, especially in relation to their own abilities. Prins (1986) examined self-speech of children by semistructured interview, during a fear-provoking diving test. A significant relation was found between self-speech and high fear. Ronan, Kendall, and Rowe (1994) have developed a questionnaire, the Children's Anxious Self-statement Questionnaire (CASSQ) to assess the self-talk of anxious children. Preliminary reliability and validity data indicate that the measure differentiates between anxious and nonanxious clinic children. Anxious children scored higher on a factor measuring negative self-statements.

Two methodologies that have shown some potential at the present time are the interpretation of ambiguous stimuli and attentional bias. When children were presented with a set of ambiguous social and physical situations and asked ‘What do you think is happening?’, they answered with more threat interpretations of the ambiguous situations than did nonanxious children (Barrett, Rapee, Dadds, & Ryan. in press). This is similar to the way adults process information about threat in the environment (Butler & Mathews, 1983). However, as children with oppositional disorder interpreted even more threat, this method has limited validity as an assessment device. Attentional bias has also been investigated with children. Vasey and El-Hag (1993) found, with a probe detection task using threat words related to both physical and social threat, that children high in test anxiety showed an attentional bias towards emotionally threatening stimuli. This study was replicated with clinically anxious children (Vasey, Daleiden, Williams, & Brown, 1993). Again, anxious children demonstrated an attentional bias.
towards emotionally threatening words. Although Kendall and Chansky (1991) have suggested self-statement and thought-listing techniques for assessing anxious cognitions in children, they found no difference, using this method, between anxiety-disordered children and nonanxious children.

As the diagnosis of childhood anxiety disorders in DSM-IV includes many cognitive features such as worry, it is important that work continue to assess this aspect of children's anxiety. However, one of the difficulties in assessing children's anxious cognitions is children's inability to describe their cognitive activities, that is, their lack of metacognitive skills. As yet there are no reliability data and no standardised methods for assessing anxious cognition in children and adolescents.

DEVELOPMENTAL CONSIDERATIONS

Studies show that there are changes in anxiety with age. Fears in childhood reportedly decrease (Croake, 1969; Miller, Barrett, Hampe, & Noble, 1972; Ollendick, Matson, & Helsel, 1985) and symptoms of anxiety also change with age (Francis et al., 1987; Katz et al., 1980). Age is also important, not only in our knowledge of children's anxiety but also in the development of assessment devices. Although developmental sensitivity is often referred to in the literature (e.g., Ollendick & King, 1991) as shown by the previous discussion, it is not yet evident in many assessment devices for children.

Age-related changes may influence the assessment of child anxiety for a variety of reasons. These include changes in children's cognition, in their language, and in psychosocial functioning. Development of cognitive understanding affects the way children answer questions about themselves. They seem to answer questions about anxiety with a global negative affect. Ronan et al. (1994) found that with younger children (7-10 years old) anxious and depressed groups were not as distinguished they were with older children (11-15 years old) because the younger children seemed to have cognitive focus more exclusively on negative self-statements. Campbell et al. (1996) also showed that children under 10 years seem to equate the concept of worry with the aversiveness of the outcome rather than equating the concept of worry with frequency of thought, as shown by adults.

Children's developing language skills and the limitation of comprehension of language that this entails means children often misunderstand questions put to them. The recommendation to use an equal number of positively and negatively worded items as a way of reducing response set (Nunnally, 1978) has been shown to adversely affect the validity of attitude measurements when used with elementary school students (Benson & Hocevar, 1985). The insertion of the word "not" in an item not only changed its psychometric characteristics but also changed the construct that the item was intended to measure. Marsh (1986) showed that negative item bias with preadolescent children was a cognitive-developmental phenomenon, as not only was there a dramatic developmental shift during early school years (Grades 2-5) in the ability of the children to respond appropriately to negatively phrased items, but also within a grade level there were individual differences that were related to verbal achievement. Even though it has been found young children score high on the lie scale of the RCMAS, this is most probably due to the lack of language skills in understanding absoluteness of "never" (e.g., in "I am never angry") rather than an attempt not to tell the truth, Even the notion of discussing "problems" in an interview is influenced by age. Kovacs (1986) showed that 6-, 7-, and 8-year-old children think that having a problem refers to undesirable external or physical events, and is not until around age 10 that having a problem is understood to also include internal events or psychological distress.

The way children answer questions is also dependent on their level of development in psychosocial functioning. As Siegal (1991) has shown, children often fail to recognise the meaning and purpose of the questions put to them. Through repeated questioning, adults can mislead children to give inconsistent answers because the adults are departing from the conventional rules of conversation. Children's answers to questions can also be influenced by their desire to please the interviewer (King & Yuille, 1987). This tendency is even more accentuated with anxious children who have a tendency to "fake good" (Kendall & Chansky, 1991). As Hoehn-Saric et al. (1987) found, although some children were eager to persuade
the interviewer of their distress, most anxiety-disordered children appeared to deny their anxious symptoms.

SUMMARY
There are difficulties with all methods of assessing anxiety in children and adolescents at the present time. Structured interviews, while showing moderate to high inter-rater reliability, have problems with informant variance. While some effort is being channelled into making interviews more developmentally sensitive (Silverman, 1994), the major problem is that the symptoms and criteria in DSM-IV on which the interviews are based are identical for children, adolescents, and adults, despite research which shows that symptoms change with age. Self-report measures, while being easy to administer, cost-effective and time-efficient lack discriminant validity. The difficulties of shared understanding of language with adults is a problem which is being addressed. Physiological, behavioural, and cognitive methods are not yet well enough researched to provide reliable clinical assessment of anxiety disorders in children.

We are not arguing that children’s experience of anxiety is different from adults — in fact we argue the opposite — but that developmental considerations of age and experience which affect cognitive, linguistic, and psychosocial functions need to be taken into account to validly assess children's anxiety. Thus, while research into accurately assessing anxiety in children using more developmental sensitivity is in progress, clinical judgement will have to prevail.

REFERENCES


