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Development and validation of a short form of the Chinese version of the State Anxiety Scale for Children

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Abstract

Background: There is a lack of a simplified instrument for use in busy clinical settings to measure and differentiate anxiety levels of children.
Objectives: To develop a short form of the Chinese version of the State Anxiety Scale for Children (CSAS-C) and test psychometric properties of the new form.
Design: The study was divided into two phases with phase one aimed at developing a short form of the CSAS-C, while phase two aimed at testing psychometric properties of the new form. A test–retest, within-subjects design was employed. Children (7–12 years of age) admitted for surgery in a day surgery unit during two consecutive years' summer holiday were invited to participate in the study. In phase one, selected participants ($N = 112$) were asked to respond to the CSAS-C. In phase two, selected participants ($N = 82$) were asked to respond to the short form of the CSAS-C.
Results: Using exploratory factor analysis, a subset of 10 items, which was highly correlated with scores obtained from the full form ($r = 0.92$) and, which had acceptable internal consistency ($r = 0.83$) was developed. The psychometric properties of this short form have been empirically tested, showing adequate internal consistency reliability, good concurrent validity, and excellent construct validity.
Conclusion: This study addresses a gap in the literature by developing a 10-item short form of the CSAS-C. Results indicate that this short form is an appropriate and objective assessment tool for measuring anxiety levels of Chinese children in a busy clinical setting where time constraints make unfeasible the use of the full form.

Keywords: Anxiety; Children; Nursing; Reliability; Surgery; Validity

What is already known about the topic?

- Invasive medical procedures, especially surgeries, can cause considerable anxiety to children.
- There is a lack of simplified instrument for use in busy clinical settings to determine the actual levels of anxiety in children.

What this paper adds

- A short form of the Chinese version of the State Anxiety Scale for Children has been developed.
- The short form of the Chinese version of the State Anxiety Scale for Children was shown to be an appropriate and objective assessment tool for measuring anxiety levels of children in a busy clinical setting.

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1. Introduction

Anxiety is the most commonly reported emotion for children when confronted with surgery or stressful medical procedures (Lizasoain and Polaino, 1995; Ziegler and Prior, 1994). Although a mild to moderate level of anxiety is crucial for learning and can promote better adjustment (Janis, 1958), excessive anxiety can be detrimental to children's physical and psychological health. Previous studies have shown that excessive anxiety hinders children's ability to cope with medical treatment, encourages negative and uncooperative behaviour, and causes behavioural changes (Becher and Sing, 1997; Li and Lam, 2003; Ziegler and Prior, 1994). Therefore, children need to be well prepared before surgery or stressful medical procedures, and the goal of such preparation should focus on minimizing their level of anxiety. However, the availability of a valid, reliable, and suitable tool that accurately measures and differentiates anxiety levels in children is crucial before designing appropriate interventions to minimize their apprehension and enhance their coping ability.

A review of the literature reveals that instruments frequently used to measure children's anxiety were the Children's Manifest Anxiety Scale (Castaneda et al., 1956), the General Anxiety Scale for Children (Sarason et al., 1960), and the State-Trait Anxiety Inventory for Children (STAIC; Spielberger et al., 1973). In contrast to the General Anxiety Scale for Children and the Children's Manifest Anxiety Scale, the STAIC consists of separate self-report scales for measuring state anxiety (A-State) and trait anxiety (A-Trait). These concepts were first introduced by Catell and Scheier (1961, 1963) and further elaborated by Spielberger (1966, 1972). According to Spielberger et al. (1973), state anxiety refers to a transitory emotional reaction, which is characterized by subjective, perceived feelings of apprehension, tension, and worries that varied in intensity from time to time. Trait anxiety was regarded as a relatively stable personality disposition.

The State Anxiety Scale for Children is frequently used in clinical areas to determine the actual levels of children's anxiety intensity induced by stressful procedures such as invasive medical procedures and surgeries. The scale asks children to indicate the degree to which they are experiencing a particular feeling at the current moment. Each item begins with the stem "I feel", and children respond by placing an "X" next to one of three possible responses that best describes how they feel. The scale consists of 20 items, which are scored from 1 to 3, with total possible scores ranging from 20 to 60. Higher scores indicate greater anxiety. This scale has been used extensively in a number of cross-cultural studies and translated into several languages including Spanish (Bauermeister et al., 1976), Japanese (Soga, 1983), Arabic (Day et al., 1986), Dutch, Portuguese, German, Greek, Turkish, French (Walker and Kaufman, 1984), Thai (Chaiyawat and Brown, 2000), and Chinese (Li and Lopez, 2004).

The original State Anxiety Scale for Children has been translated into Chinese (CSAS-C; Li and Lopez, 2004). The term *anxiety* is a general concept and has been frequently used in Chinese culture to describe emotions reported by children, such as feelings of worry, upset, and nervousness, during hospitalization or when confronted with surgery (Becher and Sing, 1997; Fielding and Tam, 1989, 1990). Nevertheless, prior to commencing translation and use of the State Anxiety Scale for Children in a new cultural group, it is crucial to ensure cultural congruence of a construct. A bilingual clinical psychologist working with Chinese children was consulted to review the context of the original scale (English version). The items of the State Anxiety Scale for Children were found to reflect behaviours and emotions that are also typical for Chinese children. The instrument was then translated and back-translated following the technique described by Bracken and Barona (1991). The semantic and content equivalence of the translated version was also ensured. Content equivalence implies that each item in the instrument has consistent cultural relevance; semantic equivalence implies that each item remains conceptually and idiomatically the same after translation (Flaherty et al., 1988).

The test–retest reliability coefficients for the Chinese version were 0.79 and 0.78 for age groups 7–8 and 9–12, respectively, and the internal consistencies of the scale ranged from 0.81 to 0.94 across different age groups. Concurrent validity was supported by correlation of the scale with children's heart rate and mean arterial blood pressure during preoperative and postoperative periods. Construct validity of the scale was confirmed by administering the scale to primary school students of different grades under different conditions. The higher mean scores for the scale in the pre-examination condition than in the post-examination condition were statistically significant.

The factorial structure of the State Anxiety Scale for Children has been examined using exploratory factor analysis (Dorr, 1981; Gaudry and Poole, 1975; Hedl and Papay, 1982) and confirmatory factor analysis (Li and Lopez, 2004) previously. These studies consistently provided evidence that there are two factors underlying the scale. Factor I (*State Anxiety Present*) was defined almost exclusively by state anxiety present items, e.g., "*I feel nervous*" and "*I feel worried*". Factor II (*State Anxiety Absent*) was defined exclusively by state anxiety absent items, e.g., "*I feel calm*" and "*I feel happy*". These results also are congruent with Spielberger and coworkers' (1973) conception and expectation that the State Anxiety Scale is composed of anxiety absent, and anxiety present dimensions.