


Systematic Review of Screening Instruments for Psychosocial Problems in Children and Adolescents With Long-Term Physical Conditions

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Abstract

Children and adolescents with long-term physical conditions (LTPCs) are at greater risk of developing psychosocial problems. Screening for such problems may be undertaken using validated psychometric instruments to facilitate early intervention. A systematic review was undertaken to identify clinically utilized and psychometrically validated instruments for identifying depression, anxiety, behavior problems, substance use problems, family problems, and multiple problems in children and adolescents with LTPCs. Comprehensive searches of articles published in English between 1994 and 2014 were completed via Medline, Embase, PsycINFO, CINAHL, and Cochrane CENTRAL databases, and by examining reference lists of identified articles and previous related reviews. Forty-four potential screening instruments were identified, described, and evaluated against predetermined clinical and psychometric criteria. Despite limitations in the evidence regarding their clinical and psychometric validity in this population, a handful of instruments, available at varying cost, in multiple languages and formats, were identified to support targeted, but not universal, screening for psychosocial problems in children and adolescents with LTPCs.

Keywords

screening, depression, anxiety, children, adolescents, chronic illness

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Introduction

More than 10% of children and adolescents worldwide are affected by long-term physical conditions (LTPCs), including asthma, diabetes, and epilepsy.¹ These individuals are more prone to a range of psychosocial problems including depression, anxiety disorders, behavior disorders, and posttraumatic disorder.¹⁻⁹ The prevalence of formal psychiatric disorder in children with LTPCs is estimated at between 29% and 34%,¹⁰ and pediatricians often lack the confidence to identify such disorders.¹¹ Medical complications of psychiatric problems include poorer treatment adherence, increased hospitalization, and the development of long-term complications.^{12,13} Although some studies have shown that children with LTPCs such as cancer can cope well,^{14,15} others have shown they experience more emotional and behavioral problems, even following the completion of treatment.¹⁶

Children with LTPCs often minimize distress when asked directly, and parental depression, which is more common in such families, can contribute to the under-reporting of children's mental health symptoms by caregivers.¹⁷⁻²⁰ Symptoms of psychological problems in these children are likely to overlap not just with each other but also with those of their physical conditions.^{21,22} For instance, somatic symptoms such as low energy, loss of appetite, and difficulty getting to sleep can be both features of depression and side-effects of chemotherapy. Even subclinical psychological symptoms in children

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with LTPCs can be associated with significant emotional and relational problems.²³ Early intervention requires the timely identification of psychosocial problems.²⁴ Despite World Health Organization criteria²⁵ being fulfilled for the screening of many such problems in this population, there are no well-known formal screening programs for identifying psychosocial difficulties in children and adolescents with LTPCs. Currently, psychosocial screening is often undertaken in pediatric settings using nonvalidated techniques such as HEEADSSS assessment.²⁶ Over the past few decades, a number of psychometric instruments have been developed to identify problems in single or multiple psychosocial domains. Many of these have been used in children with LTPCs, but their psychometric properties with this group have not formally been evaluated.¹⁰

Previous reviews of psychometric instruments for identifying psychosocial problems in children and adolescents have focused on the clinical utility and psychometric properties of such instruments in the general population. Given that children and adolescents with LTPCs are a higher risk group and that cutoff scores designed for use with the general population may lead to an over- or underestimation of true rates of problems in this cohort, this systematic review was undertaken to identify psychometric instruments that have been used in studies of children and adolescents with LTPCs and to assess their utility as screening tools from both clinical and psychometric viewpoints. Specifically, this review was designed to identify suitable instruments for identifying (a) depression, (b) anxiety, (c) behavior problems, (d) substance use problems, (e) family problems, and (f) multiple problems in this clinical population.

Methods

Literature Search Strategy

Articles detailing the use of psychometric instruments for either identifying or measuring change in one or more of the 6 types of psychosocial problems mentioned above, that had been published in English between 1994 and 2014, were sourced via Medline, Embase, PsycINFO, CINAHL, and Cochrane CENTRAL databases accessed between December 20 and 31, 2014 (see the appendix); from reference lists of articles identified from the database searches; and from previous reviews of psychometric instruments for use with children and adolescents.^{27,28} Abstracts were reviewed by 2 authors (HT and HM), and complete articles were reviewed and a subset identified for data extraction and analysis by all 4 authors (HT, HM, KM, and KG). The study protocol was registered with PROSPERO on January 19, 2015 (Registration Number: CRD42015016021).

Evaluation of Instruments

Psychometric instruments were compared on the basis of clinical properties, including the type of LTPCs with which they had been tested, the time required for completion, available formats, and cost for their use. In addition, they were compared according to their psychometric properties within the child and adolescent LTPC population. Based on the recommendations of previous studies,²⁷⁻²⁹ the “ideal screening instrument” for each condition was expected to have been tested against a gold standard for screening or identifying cases of psychological disorder in one or more populations of children and adolescents with LTPCs (either an in-depth sophisticated clinical interview with an empathic and experienced interviewer or a scale that had been demonstrated to be as good as such an interview). It was also expected to possess good sensitivity (the probability of having a positive test result among those patients who have a positive diagnosis), specificity (the probability of having a negative test result among those patients who have a negative diagnosis), positive predictive value (the probability of having a positive diagnosis among those patients having a positive test result), and negative predictive value (the probability of having a negative diagnosis among those patients having a negative test result). Finally, it was expected to have good validity (eg, internal consistency Cronbach’s $\alpha > 0.8$ ²⁹) and reliability (eg, interrater reliability > 0.4 ³⁰) and clear cut points for case identification in children and adolescents with LTPCs. As a meta-analysis was not planned, no formal assessment of risk of bias was undertaken.

Results

Results are presented in accordance with PRISMA guidelines.³¹ A total of 4105 abstracts were extracted and reviewed using the search strategy described above, and 57 potential screening instruments were identified (Figure 1). Of these, 13 instruments were subsequently excluded as they were found to either have been used only in children without LTPCs or adult populations, or because they only included quality of life measures. Forty-four suitable scales were evaluated as outlined in Table 1. Further details regarding these scales can be found via the manuals and websites listed in Table 2.

Depression

Twenty-eight instruments for identifying depression in children and adolescents with LTPCs were found by our search (Table 1). These included the BASC-2,³² BDI-II,³³

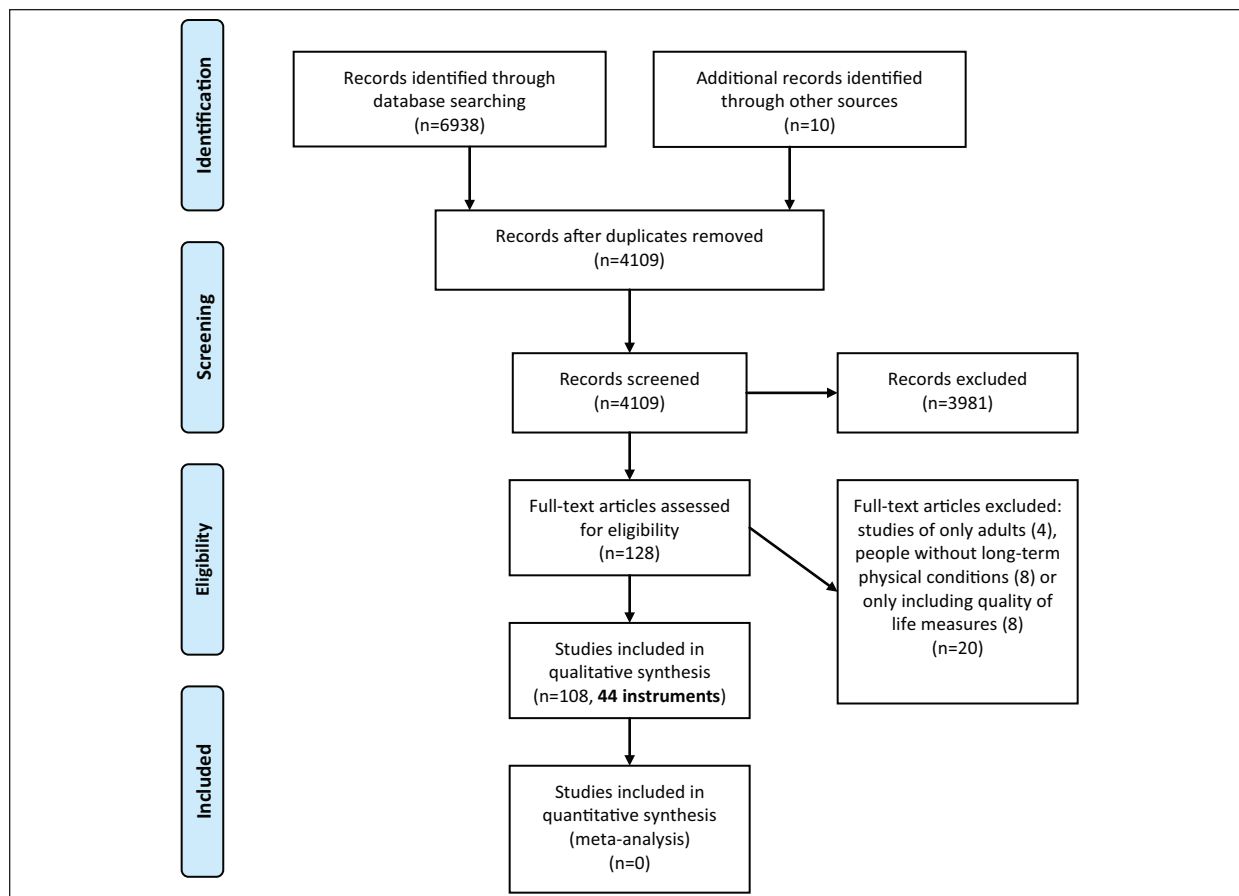


Figure 1. PRISMA flow chart.

BDI-FS,³⁴ BSI 18,³⁵ BYI-II,³⁶ CBCL,³⁷ CCSRC-R1,³⁸ CDI,³⁹ CDRS-R,⁴⁰ CESD,⁴¹ CPMS,⁴² DAWBA,⁴³ DICA,⁴⁴ DISC-IV,⁴⁵ DI,⁴⁶ GHQ-28,⁴⁷ HADS,⁴⁸ HSCL 25,⁴⁹ K-SADS-PL,⁵⁰ MFQ,⁵¹ PAT,⁵² PSC,⁵³ SAFA,⁵⁴ SCICA,⁵⁵ SCL-90-R,⁵⁶ SDQ,⁵⁷ VPHQ,⁵⁸ and YSR.⁵⁹ Of these, the only instruments to have been psychometrically investigated by Canning¹⁰ in a single sample of 112 children and adolescents with multiple LTPCs, aged 9 to 18 years from a tertiary care medical center in the United States, were the CBCL, CDI, and PSC, all of which were compared with the DISC-IV intensive structured clinical interview as a gold standard. In this study, all 3 instruments demonstrated low sensitivity, positive predictive value, and negative predictive value, but high specificity.

Anxiety

Twenty-eight instruments for identifying anxiety in children and adolescents with LTPCs were identified by our search (Table 1). These included the BAI,⁶⁰ BASC-2,³² BYI-II,³⁶ CBCL,³⁷ CPMS,⁴² DAWBA,⁴³ DICA,⁴⁴

DISC-IV,⁴⁵ DI,⁴⁶ GHQ-28,⁴⁷ HADS,⁴⁸ K-SADS-PL,⁵⁰ MASC,⁶¹ PAT,⁵² PSC,⁵³ PTSD RI,⁶² RCMAS,⁶³ SAFA,⁵⁴ SCARED,⁶⁴ SCICA,⁵⁵ SCL-90-R,⁵⁶ SDQ,⁵⁷ STAI-C,⁶⁵ TMAS,⁶⁶ VPHQ,⁵⁸ YAAS,⁶⁷ and YSR.⁵⁹ None of these instruments had been validated as a screening tool for anxiety in the target population, either against a gold standard or other instrument. Nor had any sensitivity, specificity, positive predictive values, or negative predictive values been reported by any of the authors of these studies.

Behavior Problems

Eighteen instruments for identifying behavior problems in children and adolescents with LTPCs were found by our search (Table 1). These included the BASC-2,³² BYI-II,³⁶ CBCL,³⁷ CBQ,⁶⁸ Conners,⁶⁹ CPMS,⁴² DAWBA,⁴³ DICA,⁴⁴ DISC-IV,⁴⁵ DI,⁴⁶ GHQ-28,⁴⁷ K-SADS-PL,⁵⁰ PSC,⁵³ RBPC,⁷⁰ SCICA,⁵⁵ SDQ,⁵⁷ VPHQ,⁵⁸ and YSR.⁵⁹ Of these, the CBCL, SDQ, and YSR were the most commonly used, and only the CBCL had specifically been validated with this population.¹⁰

Table 1. Clinical and Psychometric Properties of Identified Instruments.

Name; Author, Year	Description: (a) Number of Items (Subscales); (b) Completed by C/P/T/ CL/TA; (c) Languages -Eng/Spa/Fre/Ger/Other (Number); (d) Electronic Version—C/W/N/I/I ⁴ ; (e) Google Scholar Citations ⁶	Conditions Identified					Family	Substance	Behavior	Depression	Anxiety	Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity (or > 0.8)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Family	Substance	Behavior	Depression	Anxiety							
Beck Anxiety Inventory (BAI); Beck, Epstein, Brown, Steer, Kazdin (1998) ⁶⁰	(a) 21 (0) (b) C, TA (c) Eng, Spa (d) C, W (e) 34 506	X										(a) N/A (b) No (c) No	(a) Asthma ¹²¹ (b) 16-21 (c) ID
Behavior Assessment System for Children, Second Edition (BAS-C-2); Reynolds, Kamphaus (2004) ³²	(a) TRS = 105-165 items, PRS = 139-175 items, self-report = 30 minutes (5s) (b) C, P, T, CL (c) Eng (d) C (e) 3113	X	X	X								(a) N/A (b) No (c) No	(a) Acute lymphoblastic leukaemia, ¹²² medulloblastoma, ¹²³ recurrent abdominal pain ¹²⁴ (b) 2-21 (c) ID
Beck Depression Inventory—Revision (BDI-II); Beck, Steer, Brown (1996) ³³	(a) 21 (0) (b) C, TA (c) Eng, Spa (d) C, W (e) 1569			X								(a) N/A (b) No (c) No	(a) Asthma, ¹²¹ beta-thalassemia, ¹²⁵ cancer, ¹²⁶ primary dysmenorrhea, ¹²⁷ polycystic ovarian syndrome, ¹²⁸ various (asthma, diabetes, epilepsy) ¹²⁹ (b) 8-21 (c) ID
Beck Depression Inventory—Fast Screen (BDI-FS); Beck, Steer, Brown (2000) ³⁴	(a) 7 (0) (b) C (c) Eng, Spa (d) Nil (e) 6			X								(a) N/A (b) No (c) No	(a) Cancer ¹³⁰ (b) 16-30 (c) ID
Brief Symptom Inventory—18 (BSI-18); Derogatis (2001) ³⁵	(a) 18 (3s) (b) C (c) Eng, Spa (d) C, W (e) 4649	X		X								(a) N/A (b) No (c) No	(a) Asthma, ¹²¹ cancer, ¹³¹ cancer, ¹³² irritable bowel syndrome ¹³³ (b) 14-39 (c) ID + C
Beck Youth Inventories (BYI-II); Beck, Jolly (2001) ³⁶	(a) 20 (5s) (b) C (c) Eng (d) Nil (e) 342	X	X	X								(a) N/A (b) No (c) No	(a) Asthma, ¹³⁴ brain tumours ¹³⁵ (b) 7-18 (c) ID + C

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales ^b); (b) Completed by C/P/T/T-Eng/Spa/Fre/Ger/Other (Number) ^c ; (d) Electronic Version—C/W/N/It ^d ; (e) Google Scholar Citations ^e	Conditions Identified					Clinical Properties: (a) Age Range (years); (b) Time to Complete (Minutes); (c) Cost per Use	Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity ($\alpha > 0.8$)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family			
Child Behavior Checklist (CBCL); Achenbach (1991) ³⁷	(a) 100 (1.5-5 y/o = 7s empirical, 5s DSM-related; 6-18 y/o = 8s empirical, 6s DSM-related) (b) P (c) Eng, Fre, Ger, Spa, Other (84) (d) C, W (e) 13 013	X	X	X	X	(a) 1.5-5; 6-18 (b) 10-15 (c) US\$1.80	(a) Sens = 36, Spec = 91, PPV = 80, NPV = 58, Val = N/A, Rel = N/A (b) Yes (c) No	(a) 22q11.2 deletion syndrome, ¹³⁶ acute leukaemia, ¹³⁷ acute lymphoblastic leukaemia, ¹³⁸ asthma, ¹³⁹ asthma, ¹⁴⁰ asthma, ¹⁴¹ asthma, ¹⁴² bladder extrophy and epispadias, ¹⁴³ brain tumours, ¹⁴⁴ cancer, ¹⁴⁵ cancer, ¹⁴⁵ cerebellar astrocytoma, ¹³⁴ cloacal extrophy, ¹⁴⁶ congenital heart disease, ¹⁴⁷ congenital heart disease, ¹⁴⁸ congenital heart disease, ¹⁴⁹ congenital heart disease, ¹⁵⁰ craniofacial anomalies, ¹⁵¹ diabetes, ¹⁵² diabetes, ¹⁵³ encopresis, ¹⁵⁴ encopresis, ¹⁵⁵ epilepsy, ¹⁵⁶ epilepsy, ¹⁵⁷ epilepsy, ¹⁵⁸ epilepsy, ¹⁵⁹ juvenile idiopathic arthritis, ¹⁶⁰ Kawasaki disease, ¹⁶¹ kidney disease, ¹⁶² kidney disease, ¹⁶³ liver transplant patients, ¹⁶⁴ liver transplant patients, ¹⁶⁵ liver transplant patients, ¹⁶⁶ lung transplant patients, ¹⁶⁷ phenylketonuria, ¹⁶⁸ port wine stains, ¹⁶⁹ Prader-Willi syndrome, ¹⁷⁰ various (asthma, allergic rhinitis, and atopic dermatitis), ¹⁷¹ various (asthma, cystic fibrosis, hematological/oncological conditions), ¹⁷² various (asthma, diabetes, epilepsy), ¹⁵⁹ various (diabetes, epilepsy), ¹⁷³ various (asthma, coeliac disease, cystic fibrosis, diabetes, Friedreich's ataxia, arthrogryposis/visual impairment, lymphedema) ¹⁷⁴ (b) 0-20 (c) ID + C	
Children's Behavior Questionnaire (CBQ); Rothbart, Ahadi, Hershey (1994) ³⁸	(a) 191 (15s) (b) P (c) Eng, Fre, Ger, Spa, Other (16) (d) Nil (e) 1445			X		(a) 3-7 (b) 60 (c) Available for research on request	(a) N/A (b) No (c) No	(a) Sickle cell disease ¹⁷⁵ (b) 7-14 (c) ID	
Children's Coping Strategies Checklist-Revision I (CCSC-R1*); Ayers, Sandler (1999) ³⁸	(a) 54 (13s) (b) C (c) Eng (d) Nil (e) 38		X			(a) N/A (b) N/A (c) N/A	(a) N/A (b) No (c) No	(a) Various (asthma, coeliac disease, cystic fibrosis, diabetes, Friedreich's ataxia, arthrogryposis/visual impairment, lymphedema) ¹⁷⁴ (b) 10-14 (c) ID + C	

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales); (b) Completed by C/P/T/CLTA ³ ; (c) Languages -Eng/Spa/Fre/Ger/Other (Number) ⁵ ; (d) Electronic Version—CW/Nil ⁴ ; (e) Google Scholar Citations ⁶	Conditions Identified			Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity (α > 0.8)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior		
Children's Depression Inventory 2 (CDI, now CDI-2); Kovacs (1980) ^{39,85}	(a) 28 (4s) (b) C, P, T (c) Eng, Spa (d) C, W (e) 2161	X			(a) Sens = 27, Spec = 95, PPV = 84, NPV = 57, Val = N/A, Rel = N/A (b) Yes (c) No	(a) 22q11.2 deletion syndrome, ¹⁷⁶ alopecia, ¹⁷⁷ asthma, ¹⁴¹ cancer, ¹²⁶ cancer, ¹⁷⁸ childhood cancer survivors, ¹⁷⁹ diabetes, ¹⁸⁰ diabetes, ¹⁵³ diabetes, ¹⁸¹ epilepsy, ¹⁵⁶ epilepsy, ¹⁸² familial Mediterranean fever, ¹⁸³ hepatitis B, ¹⁸⁴ kidney disease, ¹⁸⁵ lung transplant patients, ¹⁶⁷ obesity, ¹⁸⁶ psoriasis, ¹⁸⁷ recurrent abdominal pain, ¹⁸⁸ systemic lupus erythematosus, ¹⁸⁹ vitiligo, ¹⁹⁰ various (cancer, cystic fibrosis, sickle cell disease, others), ¹⁹¹ various (asthma, diabetes, cystic fibrosis, coeliac disease, Friedreich's ataxia, atrophygypsis/visual impairment, lymphedema) ¹⁷⁴ (b) 5-20 (c) ID + C
Children's Depression Rating Scale—Revised (CDRS-R); Poznanski, Cook, Carroll (1979) ⁴⁰	(a) 17 (0) (b) CL (c) Eng, Ger, Other (1) (d) Nil (e) 442	X			(a) N/A (b) No (c) No	(a) Sickle cell disease ¹⁹² (b) 6-18 (c) ID
The Center for Epidemiologic Studies Depression Scale (CES-D, now CESD-R ³); Radloff (1979) ⁴¹	(a) 20 (9g) (b) C, CL (c) Eng (d) Nil (e) 355	X			(a) N/A (b) No (c) No	(a) Central adrenal insufficiency, ¹⁹³ congenital heart disease ¹⁹⁴ (b) 12-25 (c) ID + C
Conners (now Conners 3); Conners, Wells, Parker, Starenios, Diamond, Powell (1997) ⁶⁹	(a) 324 (99 (C), 110 (P), 115 (T)) (17s) (b) C, P, T, CL (c) Eng, Spa (d) C, W (e) 2188		X		(a) N/A (b) No (c) No	(a) Diabetes ¹⁹⁵ (b) 6-16 (c) ID
Childhood Psychopathology Measurement Schedule (CPMS); Malhotra, Varma, Verma, Malhotra (1998) ⁴²	(a) 75 (8g) (b) C, CL (c) Eng, Other (1) (d) Nil (e) 58	X	X		(a) N/A (b) No (c) No	(a) Atopic dermatitis, ¹⁹⁶ acute lymphoblastic leukaemia ¹⁹⁷ (b) 3-19 (c) ID
The Development and Well-Being Assessment (DAWBA); Goodman, Ford, Richards, Gatward, Meltzer (2000) ⁴³	(a) 118 sides of paper (0) (b) C, P, T, TA (c) Eng, Fre, Ger, Other (17) (d) W (e) 818	X	X		(a) N/A (b) No (c) No	(a) Recurrent headache and abdominal pain ¹⁹⁸ (b) 5-17 (c) ID

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales); (b) Completed by C/P/TI/CLUTA; (c) Languages -Eng/Spa/Fre/Ger/Other (Number); (d) Electronic Version—C/W/N/I; (e) Google Scholar Citations ⁶	Conditions Identified					Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity ($\alpha > 0.8$)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family		
Diagnostic Interview for Children and Adolescents (DICA); Herjanic, Reich (1982) ⁴⁴	(a) Variable, >1600 (18g) (b) CL, TA (c) Eng (d) C (e) 993	X	X	X	X	X	(a) N/A (b) No (c) No	(a) 22q11.2 deletion syndrome ¹³⁶ (b) 12 (M) (c) ID
Diagnostic Interview Schedule for Children (DISC-IV); Shaffer, Fisher, Lucas, et al (2000) ^{45(a)}	(a) ~3000 (6d) (b) C, CL, TA (c) Eng, Spa (d) C (e) 2407	X	X	X	X	(a) N/A (b) No (c) No	(a) Asthma, ¹⁹⁹ asthma, ²⁰⁰ asthma, ²⁰¹ Duchenne muscular dystrophy, ²⁰² various (diabetes, sickle cell disease) ²⁰³ (b) 5-23 (c) ID	
Dominic Interactive (DI); Yalla, Bergeron, Berube, Gaudet, St-Georges (1994) ⁴⁶	(a) 91 (7g) (b) C (c) Eng (d) C (e) 38	X	X	X		(a) N/A (b) No (c) No	(a) Recurrent headache ²⁰⁴ (b) 6-11 (c) ID	
Family Adaptation and Cohesion Scales (FACES III, now FACES IV); Olson, Portner, Lavee (1985) ⁷²	(a) 62 (6s) (b) C, P (c) Eng, Fre, Gre, Spa, Other (4) (d) Nil (e) 206					X	(a) Diabetes ²⁰⁵ (b) 1-14 (c) ID + C	
McMaster Family Assessment Device (FAD); Epstein, Baldwin, Bishop (1983) ⁷³	(a) 60 (7s) (b) C, P (c) Eng, Fre, Spa (d) Nil (e) 2476					X	(a) Acute lymphoblastic leukaemia ²²² (b) 2-10 (c) ID	
Family Environment Scale (FES); Moos (1975) ⁷⁴	(a) 90 (10s) (b) C, P (c) Eng, Fre, Ger, Spa, Other (18) (d) W (e) 4228					X	(a) Chronic encopresis, ¹⁵⁵ kidney disease, ¹⁶² various (asthma, diabetes, cystic fibrosis, coeliac disease, Friedreich's ataxia, arthrogryposis/visual impairment, lymphedema) ¹⁷⁴ (b) 2-18 (c) ID + C	
Feetham's Family Functioning Survey (FFFS); Roberts, Feetham (1982) ⁷⁵	(a) 26 (3s) (b) P (c) Eng, Other (2) (d) Nil (e) 122					X	Various (asthma, leukemia, cardiac conditions, others) ²⁰⁵ (b) 1-17 (c) ID + C	
General Health Questionnaire-28 (GHQ-28); Goldberg (1972) ⁴⁷	(a) 28 (4s) (b) C (c) Eng, Other (38) (d) Nil (e) 4130	X	X	X	X	(a) N/A (b) No (c) No	(a) Diabetes, ²⁰⁶ various (asthma, epilepsy) ²⁰⁷ (b) 1-25 (c) ID + C	

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales); (b) Completed by C/P/T/CLUTA ⁵ ; (c) Languages -Eng/Spa/Fre/Ger/Other (Number) ⁵ ; (d) Electronic Version—C/W/Nil ⁵ ; (e) Google Scholar Citations ⁶	Conditions Identified					Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity (α > 0.8)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family		
Hospital Anxiety and Depression Scale (HADS); Zigmond, Snaith (1983) ⁴⁸	(a) 14 (2s) (b) C (c) Eng, Fre, Ger, Other (11) (d) W (e) 22 082	X	X	X			(a) N/A (b) No (c) No	(a) Cystic fibrosis ²⁰⁸ (b) 15(M) (c) ID
The Hopkins Symptom Checklist 25 (HSCL25); Derogatis, Lipman, Rickels, Uhlenhuth, Covi (1984) ⁴⁹	(a) 25 (5g) (b) CL (c) Eng, Other (1) (d) Nil (e) 3707		X				(a) N/A (b) No (c) No	(a) Diabetes ²⁰⁹ (b) 6-18 (c) ID
The Kiddie Schedule for Affective Disorders and Schizophrenia—Present and Lifetime (K-SADS-PL); Kaufman, Birmaher, Brent, et al (1996) ⁵⁰	(a) 82 + 5 diagnostic supplement modules (0) (b) CL (c) Eng, Other (1) (d) Nil (e) 4883	X	X	X			(a) N/A (b) No (c) No	(a) 22q11.2 deletion syndrome, ¹³⁶ cerebral palsy, ²¹⁰ epilepsy, ²¹¹ epilepsy, ¹⁵⁹ recurrent abdominal pain, ¹⁶⁸ various (chronic fatigue syndrome, juvenile idiopathic arthritis) ²¹² (b) 5-18 (c) ID + C
Multidimensional Anxiety Scale for Children (MASC, now MASC-2 ⁵¹); March, Parker, Sullivan, Stallings, Conners (1997) ⁶¹	(a) 100 (7s) (b) C, P (c) Eng (d) C, W (e) 1724	X					(a) N/A (b) No (c) No	(a) Epilepsy, ¹⁵⁶ systemic lupus erythematosus ¹⁶⁹ (b) 8-17 (c) ID
The Mood and Feelings Questionnaire (MFQ); Angold, Costello, Messer, Pickles, Winder (1995) ⁵¹	(a) 33 (0) (b) C, P (c) Eng (d) Nil (e) 43		X				(a) N/A (b) No (c) No	(a) Heart/lung transplant patients, ²¹³ heart/lung transplant patients ⁴⁹ (b) 0-17 (c) ID
Psychosocial Assessment Tool (PAT, now PAT 2.0); Kazak, Prusak, McSherry, Simms, Beele, Rourke, Alderfer, Lange (2001) ⁵³	(a) 69 (7s) (b) P (c) Eng, Spa, Others (N/S) (d) C (e) 84	X	X			X	(a) N/A (b) No (c) No	(a) Cancer, ¹⁰⁷ survivors of childhood cancer, ¹⁰⁸ congenital heart disease, ¹⁰⁹ inflammatory bowel disease, ¹¹¹ kidney transplant patients, ¹¹² sickle cell disease ²¹⁴ (b) 0-18 (c) ID
Pediatric Symptom Checklist (PSC); Jellinek, Murphy (1988) ⁵³	(a) 35 (3s) (b) C, P (c) Eng, Fre, Spa, Ger, Other (17) (d) W (e) 260	X	X	X			(a) Sens = 36, Spec = 95, PPV = 88, NPV = 60, Val = N/A, Rel = N/A (b) Yes (c) No	(a) Various (unspecified) ²¹⁵ (b) 4-15 (c) ID

(continued)

Table 1. (continued)

Name; Author, Year	Description: (a) Number of Items (Subscales ^b); (b) Completed by C/P/T/CLTA ^b ; (c) Languages -Eng/Spa/Fre/Ger/Other (Number) ^c ; (d) Electronic Version—CW/Nil ^d ; (e) Google Scholar Citations ^e	Conditions Identified					Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec/PPV/NPV/Validity ($\alpha > 0.8$)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family		
UCLA Posttraumatic Stress Disorder Reaction Index for DSM-IV (PTSD RI); Steinberg, Brymer, Decker, Pynoos (2004) ⁶²	(a) 22 (1d) (b) C (c) Eng, Fre, Ger, Spa, Other (12) (d) Nil (e) 64	X					(a) N/A (b) No (c) No	(a) Traumatic physical injury ²¹⁶ (b) 12-18 (c) ID
Revised Behavior Problem Checklist (RBPC); Quay, Peterson (1987) ⁶⁰	(a) 89 (6s) (b) P, T (c) Eng (d) Nil (e) 531			X			(a) N/A (b) No (c) No	(a) Duchenne's muscular dystrophy ²¹⁷ (b) N/S (c) ID
Manifest Anxiety Scale, Second Edition (RCMAS-2); Reynolds, Richmond (1985) ⁶³	(a) 49 (5s) (b) C (c) Eng, Spa (d) Nil (e) 1501	X					(a) N/A (b) No (c) No	(a) 22q11.2 deletion syndrome, ¹⁷⁶ asthma, ⁴¹ various (asthma, diabetes, cystic fibrosis, coeliac disease, Friedreich's ataxia, arthrogyposis/visual impairment, lymphedema) ¹⁷⁴ (b) 5-18 (c) ID + C
Self-administered Psychiatric Scales for Children and Adolescents (SAFA); Cianchetti, Fascello (2001) ⁶⁴	(a) 174 (6s) (b) C (c) Other (1) (d) Nil (e) 14	X		X			(a) N/A (b) No (c) No	(a) Childhood obesity ¹⁸⁶ (b) 9(M) (c) ID
Screen for Child Anxiety Related Disorders (SCARED); Birmaher, Khetarpal, Brent et al (1997) ⁶⁴	(a) 41 (5s) (b) C, P (c) Eng, Fre, Ger, Spa, Other (5) (d) C, W (e) 1194	X		X			(a) N/A (b) No (c) No	(a) Asthma, ⁶⁰ polycystic ovarian syndrome, ²³⁸ recurrent abdominal pain ¹²⁴ (b) 7-19 (c) ID + C
Semistructured Clinical Interview for Children and Adolescents (SCICA); Achenbach, McConaughy (1994) ⁵⁵	(a) 224 (18s) (b) C, TA (c) Eng, Far, Other (2) (d) W (e) 7	X		X			(a) N/A (b) No (c) No	(a) Asthma, ¹⁴⁰ chronic kidney disease ¹⁶² (b) 6-15 (c) ID
Symptom Checklist-90-Revised (SCL-90-R); Derogatis (1992) ⁵⁶	(a) 90 (9y) (b) C (c) Eng, Fre, Spa (d) C, W (e) 239	X		X			(a) N/A (b) No (c) No	(a) Central adrenal insufficiency, ¹⁹³ lung transplant patients, ¹⁶⁷ recurrent abdominal pain ¹²⁴ (b) 5-25 (c) ID + C

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales ²); (b) Completed by C/P/T/CL/TA ³ ; (c) Languages -Eng/Spa/Fre/Ger/Other (Number) ⁴ ; (d) Electronic Version—CW/Nil ⁵ ; (e) Google Scholar Citations ⁶	Conditions Identified					Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity ($\alpha > 0.8$)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family		
Strengths and Difficulties Questionnaire (SDQ); Goodman (1997) ³⁷	(a) 25 (5s) (b) C, P, T (c) Eng, Fre, Ger, Spa, Other (77) (d) C, W (e) 6196	X	X	X	X	X	(a) N/A (b) No (c) No	(a) Adenotonsillar hypertrophy, ²¹⁸ asthma, ²¹⁹ asthma, ²²⁰ cerebral palsy, ²¹⁰ epilepsy, ²²¹ Kawasaki disease, ¹⁶² kidney transplant patients, ²²² nephrotic syndrome, ²²³ polycystic ovarian syndrome, ¹⁹⁸ recurrent headache and abdominal pain, ¹⁹⁸ various (asthma, cerebral palsy, diabetes, epilepsy, obesity) ²²⁴ (b) 3-18 (c) ID
State Trait Anxiety Inventory—Children (STAI-C); Spielberger, Edwards (1973) ⁶⁵	(a) 40 (2s) (b) C, TA (c) Eng, Fre, Ger, Spa, Other (23) (d) C (e) 891	X					(a) N/A (b) No (c) No	(a) Cancer, ¹⁷⁹ cancer, ¹²⁶ encopresis, ¹⁵² epilepsy, ¹⁸² heart disease, ¹⁹⁴ hepatitis B, ¹⁸³ kidney disease, ²²⁵ psoriasis, ¹⁸⁷ vitiligo, ¹⁹⁰ various (asthma, diabetes, spina bifida), ²²⁶ various (asthma, heart disease, muscular dystrophy, others), ²⁰⁵ various (alopecia areata, epilepsy), ¹⁷⁷ various (cancer, cystic fibrosis, sickle cell disease, others) ¹⁹¹ (b) 1-20 (c) ID + C
Taylor Manifest Anxiety Scale (TMAS); Taylor (1953) ⁶⁶	(a) 38 (0) (b) C (c) Eng (d) W (e) 3313	X					(a) N/A (b) No (c) No	(a) Dysmenorrhea ¹²⁷ (b) 14-20 (c) ID
The Vernon Post Hospital Behavior Questionnaire (VPHQ); Vernon, Schulman, Foley (1966) ³⁸	(a) 25 (6s) (b) P (c) Eng (d) Nil (e) 313	X	X	X	X		(a) N/A (b) N/A (c) N/A	(a) Various (asthma, heart disease, muscular dystrophy, others) ²⁰⁵ (b) 1-17 (c) ID + C

(continued)

Table 1. (continued)

Name; Author; Year	Description: (a) Number of Items (Subscales); (b) Completed by C/P/T/CLTA ³ ; (c) Languages -Eng/Spa/Fre/Ger/Other (Number) ⁵ ; (d) Electronic Version—C/W/Nil ⁴ ; (e) Google Scholar Citations ⁶	Conditions Identified					Psychometric Properties in Children and Adolescents With LTPCs: (a) Sens/Spec PPV/NPV/Validity ($\alpha > 0.8$)/Reliability (IRR > 0.4); (b) Validated Against Gold Standard—Yes/No; (c) Clear Cut Point for Case Identification—Yes/No	Use With Children and Adolescents With LTPCs: (a) Conditions; (b) Ages of Participants (Range or Mean in Years); (c) Used for Identification (ID) or Measuring Change (C)
		Anxiety	Depression	Behavior	Substance	Family		
Youth Asthma-Related Anxiety Scale (YAAS); Bruzzese, Unikel, Shrout, et al (2011) ⁶⁷	(a) 9 (2s) (b) C, P (c) Eng, Spa (d) Nil (e) 5	X					(a) N/A (b) No (c) No	(a) Asthma ⁶³ (b) 10-16 (c) ID
Youth Self-Report (YSR); Achenbach (1987) ³⁹	(a) 112 (14s) (b) C (c) Eng, Fre, Ger, Spa, Other (70) (d) C, W (e) 3691	X	X	X			(a) N/A (b) No (c) No	(a) Bladder exstrophy and epispadias, ²²² congenital heart disease, ¹⁴⁸ congenital heart disease, ¹⁵⁰ chronic headache, ²²⁷ lung transplant patients, ¹⁶⁷ various (asthma, cancer, diabetes, others), ²²⁸ various (asthma, cystic fibrosis, hematologic/oncological conditions), ¹⁷² various (asthma, diabetes, epilepsy) ¹⁷⁹ (b) 5-20 (c) ID

Abbreviations: C, change; ID, identification; IRR, interrater reliability; M, mean; N/A, not applicable; NPV, negative predictive value; N/S, not stated; PPV, positive predictive value; Sens, sensitivity; Spec, specificity.
³⁹Newer version available.

⁶³Subscales: s, subscale; d, domain; g, symptom group.

⁶⁷Completion of instrument: C, child/adolescent/patient; P, parent/caregiver (may include family members ≥ 12 years of age); T, teacher/childcare provider; CL, clinician; TA, trained administrator (may or may not be a clinician, teacher).

⁴Languages: Eng, English; Fre, French; Ger, German; Spa, Spanish; Other, other languages (details available via authors).

⁵Online completion: C, computer-based scoring available; W, website-based scoring available; Nil, not available.

⁶Citation numbers: Relate to the version used in the identified studies, not previous or subsequent versions.

Table 2. Key Websites or References for Identified Instruments.

Instrument	Website or Reference
BAI	Beck Anxiety Inventory [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 13, 2015]. Available from: http://www.pearsonclinical.com/psychology/products/100000251/beck-anxiety-inventory-bai.html#tab-training
BASC-2*	Behavior Assessment System for Children, Third Edition (BASC-3) [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 13, 2015]. Available from: https://www.pearsonclinical.com.au/products/view/566#pricing=&tabs=0
BDI-II	Beck Depression Inventory [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 13, 2015]. Available from: http://www.pearsonclinical.com/psychology/products/100000159/beck-depression-inventoryii-bdi-ii.html
BDI-FS	Beck AT, Steer RA, Brown GK. <i>BDI-Fast Screen for Medical Patients: Manual</i> . San Antonio, TX: Psychological Corporation; 2000 ³⁴
BSI 18	Brief Symptom Inventory 18 [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 13, 2015]. Available from: http://www.pearsonclinical.com/psychology/products/100000638/brief-symptom-inventory-18-bsi-18.html
BYI-II	Beck Youth Inventories—Second Edition (BYI-II) [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 13, 2015]. Available from: http://www.pearsonclinical.com/psychology/products/100000153/beck-youth-inventories-second-edition-byi-ii.html#
CBCL	Child Behavior Checklist [Internet]. Burlington, VT: ASEBA; ©2015 [Cited December 14, 2015]. Available from: http://www.aseba.org/
CBQ	Rothbart MK, Ahadi SA, Hershey KL, Fisher P. Investigations of temperament at three to seven years: the Children's Behavior Questionnaire. <i>Child Dev</i> . 2001;72(5):1394-1408.
CCSC-R1	Camisasca E, Caravita SCS, Milani L, et al. The Children's Coping Strategies Checklist—Revision 1: a validation study in the Italian population. <i>TPM Test Psychom Methodol Appl Psychol</i> . 2012;19(3):197-218.
CDI 2	Kovacs M. [Internet]. Cheektowaga, NY: Multi-Health Systems; ©2004-2015 [Cited December 14, 2015]. Available from: http://www.mhs.com/product.aspx?gr=edu&id=overview&prod=cdi2
CES-D*	Poznanski EO, Mokros HB. [Internet]. Torrance, CA: WPS; ©2015 [Cited December 14, 2015]. Available from: http://www.wpspublish.com/store/p/2703/childrens-depression-rating-scale-revised-cdrs-r#purchase-product
CDRS-R	The Center for Epidemiologic Studies Depression Scale. [Internet]. San Clemente, CA: Center for Innovative Public Health Research; ©2015 [Cited December 14, 2015]. Available from: http://cesd-r.com/cesdr/
Conners*	Conners 3 [Internet]. San Antonio, TX: Pearson Clinical; ©2015 [Cited December 14, 2015]. Available from: https://www.pearsonclinical.com.au/products/view/92#tabs=0
CPMS	Malhotra S, Varma VK, Verma SK, et al. Childhood psychopathology measurement schedule: development and standardization. <i>Indian J. Psychiatry</i> . 1988;30(4):325-331.
DAWBA	DAWBA [Internet]. London, England: youthinmind; ©2009 [Cited December 14, 2015]. Available from: http://www.dawba.info/a0.html
DICA	Reich W, Welner Z, Herjanic B. [Internet]. Melbourne, Australia: Psych Press; ©2016 [Cited January 8, 2016]. Available from: http://www.psychpress.com.au/Psychometric/product-page.asp?ProductID=88#expand
DISC-IV	Fisher P, Lucas L, Lucas C, Sarsfield, Shaffer D. [Internet]. Atlanta, GA: Center for Disease Control and Prevention; ©2006 [Cited December 14, 2015]. Available from: http://www.cdc.gov/nchs/data/nhanes/limited_access/interviewer_manual.pdf
DI	Dominic Interactive [Internet]. Westmount, Canada: Dominic Interactive; ©2009 [Cited December 14, 2015]. Available from: http://www.dominic-interactive.com/index_en.jsp
FACES III	FACES IV [Internet]. Minneapolis, MN: Life Innovations, Inc; ©2006 [Cited December 15, 2015]. Available from: http://www.facesiv.com/
	Family Adaptability and Cohesion Scale [Internet]. Los Angeles, CA: The National Center for Child Traumatic Stress; ©2014 [Cited December 15, 2015]. Available from: http://www.nctsn.org/content/family-adaptability-and-cohesion-scale
FAD	Family Assessment Device [Internet]. Los Angeles, CA: The National Center for Child Traumatic Stress; ©2013. [Cited December 15, 2015]. Available from: http://www.nctsn.org/content/family-assessment-device
FES	Moos BS, Moos RH [Internet]. Menlo Park, CA: Mind Garden Inc; ©2002 [Cited December 15, 2015]. Available from: http://www.mindgarden.com/96-family-environment-scale#horizontalTab1
FFFS	Roberts CS, Feetham SL. Assessing family functioning across three areas of relationships. <i>Nurs Res</i> . 1982;31(4):231-235.
	Family Nursing [Internet]. Kobe, Japan: Family Health Care Nursing; ©2013 [Cited December 16, 2015]. Available from: http://www.familynursing.org/fffs/

(continued)

Table 2. (continued)

Instrument	Website or Reference
GHQ-28	General Health Questionnaire [Internet]. London, England: GL-Assessment; ©2015 [Cited December 16, 2015]. Available from: http://www.gl-assessment.co.uk/products/general-health-questionnaire/general-health-questionnaire-faqs
HADS	Hospital Anxiety and Depression Scale [Internet]. London, England: GL-Assessment; ©2015 [Cited December 16, 2015]. Available from: http://www.gl-assessment.co.uk/products/hospital-anxiety-and-depression-scale-0
HSCL25	Derogatis LR, Lipman RS, Rickels K, et al. The Hopkins Symptom Checklist (HSCL): a self-report inventory. <i>Behav Sci.</i> 1974;19:1-15
K-SADS-PL	Diagnostic Interview Kiddie-SADS-Present and Lifetime Version (K-SADS-PL) [Internet]. Pittsburgh, PA: University of Pittsburgh; ©1996 [Cited December 18, 2015]. Available from: http://www.psychiatry.pitt.edu/sites/default/files/Documents/assessments/ksads-pl.pdf
MASC	Multidimensional Anxiety Scale for Children–2nd Edition [Internet]. Cheektowaga, NY: Multi-Health Systems; ©2015. [Cited December 20, 2015]. Available from: https://ecom.mhs.com/(S(4uxe41553naha2zh4z0tjv55))/product.aspx?gr=cli&prod=masc2&id=overview
MFQ	The MFQ [Internet]. Durham, NC: Duke University; ©2008 [Cited December 20, 2015]. Available from: http://devepi.duhs.duke.edu/instruments.html
PAT	The Psychosocial Assessment Tool [Internet]. Washington, DC: American Psychological Association; ©2015 [Cited December 20, 2015]. Available from: http://www.apa.org/pi/about/publications/caregivers/practice-settings/assessment/tools/psychosocial-assessment.aspx
PSC	Pediatric Symptom Checklist [Internet]. Boston, MA: Massachusetts General Hospital Department of Psychiatry; ©2015 [Cited December 20, 2015]. Available from: http://www.massgeneral.org/psychiatry/services/psc_about.aspx
PTSD RI	UCLA Posttraumatic Stress Disorder Reaction Index for DSM IV [Internet]. Los Angeles, CA: UCLA; ©2012 [Cited December 20, 2015]. Available from: http://www.nctsn.org/content/ucla-posttraumatic-stress-disorder-reaction-index-dsm-iv
RBPC	Revised Behavior Problem Checklist (RBPC)–PAR Edition [Internet]. Lutz, FL: PAR; ©2012 [Cited December 20, 2015] Available from: http://www4.parinc.com/Products/Product.aspx?ProductID=RBPC
RCMAS	RCMAS-2 [Internet]. Cheektowaga, NY: Multi-Health Systems; ©2015 [Cited December 20, 2015]. Available from: http://www.mhs.com/product.aspx?gr=edu&prod=rcmas2&id=overview
SAFA	Franzoni M, Monti M, Pellicciari A, et al. SAFA: a new measure to evaluate psychiatric symptoms detected in a sample of children and adolescents affected by eating disorders. Correlations with risk factors. <i>Neuropsychiatr Dis Treat.</i> 2009;5:207-214
SCARED	Screen for Childhood Anxiety Related Emotional Disorders (SCARED) [Internet]. San Diego, CA: The California Evidence Based Clearinghouse for Child Welfare; ©2015 [Cited December 20, 2015]. Available from: http://www.cebc4cw.org/assessment-tool/screen-for-childhood-anxiety-related-emotional-disorders-scared/
SCICA	ASEBA Semistructured Clinical Interview for Children & Adolescents (SCICA 6/18) [Internet]. Lutz, FL: PAR; ©2012 [Cited December 20, 2015]. Available from: http://www4.parinc.com/Products/Product.aspx?ProductID=SCICA
SCL-90-R	Symptom Checklist-90-Revised [Internet]. San Antonio, TX: Pearson Clinical; ©2015. [Cited December 20, 2015]. Available from: http://www.pearsonclinical.com/psychology/products/100000645/symptom-checklist-90-revised-scl-90-r.html#
SDQ	SDQ [Internet]. London, England: youthinmind; ©2009 [Cited December 22, 2015]. Available from: http://www.sdqinfo.com/
STAI-C	State-Trait Anxiety Inventory for Children [Internet]. Menlo Park, CA: Mind Garden Inc; ©2002 [Cited December 23, 2015]. Available from: http://www.mindgarden.com/146-state-trait-anxiety-inventory-for-children
TMAS	Taylor Manifest Anxiety Scale [Internet]. Reading, MA: Psychology Tools; ©2015 [Cited December 23, 2015]. Available from: https://psychology-tools.com/taylor-manifest-anxiety-scale/
VPHQ	Karling M, Hägglöf B. Child behaviour after anaesthesia: association of socioeconomic factors and child behaviour checklist to the Post-Hospital Behaviour Questionnaire. <i>Acta Paediatr.</i> 2007;96(3):418-423
YAAS	Bruzzese J, Unikel L, Shrout PE, et al. Youth and Parent Versions of the Asthma-Related Anxiety Scale: development and initial testing. <i>Pediatr Allergy Immunol Pulmonol.</i> 2011;24(2):95-105
YSR	Youth Self-Report 11-18 [Internet]. Los Angeles, CA: The National Center for Child Traumatic Stress; ©2012 [Cited December 28, 2015]. Available from: http://www.nctsn.org/content/youth-self-report-11-18

*Newer version available.

Substance Use Problems

Only 2 instruments for identifying substance use problems in children and adolescents with LTPCs were found by our search, namely, the DICA⁴⁴ and DISC-IV⁴⁵ (Table 1). Neither of these instruments was purpose-designed as an instrument for rating substance use problems and both identified these issues as part of a broader *DSM-IV*⁷¹ aligned assessment process in research settings. Neither instrument had been validated as a screening tool for substance use problems in the target population, either against a gold standard or other instrument, and no sensitivity, specificity, positive predictive values, or negative predictive values have been reported by any of the authors of these studies.

Family Problems

Seven instruments for assessing family problems were identified by our search, namely, the DICA,⁴⁴ FACES III,⁷² FAD,⁷³ FES,⁷⁴ FFFS,⁷⁵ PAT,⁵² and SDQ⁵⁷ (Table 1). None of these instruments had been validated as a screening tool for family problems in the target population, either against a gold standard or other instrument. Nor had any sensitivity, specificity, positive predictive values, or negative predictive values been reported by any of the authors of these studies.

Multiple Problems

Of the instruments we found, the DICA⁴⁴ was the only one that identified all 5 types of problem, namely, depression, anxiety, behavior, substance use problems, and family issues. The DISC,⁴⁵ GHQ-28,⁴⁷ and SDQ⁵⁷ being broad screening instruments identified 4 of these problems (the first two excluding family issues, the third excluding substance use problems). The combination of depression, anxiety, and behavior problems was identified by the BASC-2,³² BYI-II,³⁶ CBCL,³⁷ CPMS,⁴² DAWBA,⁴³ DI,⁴⁶ K-SADS-PL,⁵⁰ SCICA,⁵⁵ VHPQ,⁵⁸ and YSR.⁵⁹ The combination of depression, anxiety, and family problems was identified by the PAT.⁵² Overall, none of our identified instruments proved to be a clinically viable instrument for easily identifying all of these problem areas in children and adolescents with LTPCs.

Discussion

Children and adolescents with LTPCs remain at greater risk of developing psychosocial problems. Despite enthusiasm from public health and funding bodies to routinely identify and address common childhood mental health problems as early as possible in high-risk groups,⁷⁶⁻⁷⁹ there is inadequate evidence to recommend

doing so using currently available psychometric instruments.^{80,81} Targeted screening using some of these tools is probably more valid. Of the 44 potential instruments evaluated by us, none met the criteria for an “ideal screening instrument” outlined prior to the commencement of the review and most had only had confirmation of their psychometric properties within the general population.

Previous reviewers of psychometric instruments for children and adolescents have had varying views, as outlined below, partly due to differences in focus and partly due to when their reviews were undertaken. Myers,^{27,82} Brookes,²⁸ Stocking,⁸³ and Quittner⁸⁴ have conducted the most comprehensive reviews of instruments for identifying depression and anxiety. Myers⁸² recommended the Reynolds Adolescent Depression Scale (RADS⁸⁵) and Reynolds Child Depression Scale (RCDS⁸⁶) for the identification of depression in the general population, and a combination of the clinician-rated CDRS-R⁴⁰ and patient-rated CDI-2⁸⁷ for identifying depression in clinical populations, the latter instruments being more sensitive to clinical change. Both Brookes²⁸ and Stocking⁸³ identified significant limitations in the KSADS,⁵⁰ DISC,⁴⁵ DICA,⁴⁴ BDI,³³ Hamilton Depression Rating Scale (HDRS⁸⁸), and Montgomery Asberg Depression Rating Scale (MADRS⁸⁹) for identifying depressive symptoms, and the BDI-II,³³ CDI-2,⁸⁷ CES-D,⁴¹ and RADS⁸⁵ in identifying “caseness.” A recent consensus statement on the identification of anxiety and depression in children and adolescents with cystic fibrosis⁸⁸ recommended that the Patient Health Questionnaire (PHQ-9⁹⁰) should be routinely used to screen children with the condition over the age of 12 years as it is brief, reliable, has valid optimal cutoff scores for detecting psychological symptoms that map onto *DSM-5*⁹¹ criteria, and is free and available in all major languages. Unfortunately, no studies of children and adolescents with LTPCs using the PHQ-9 were identified by our search, leaving us unable to comment on this recommendation. The BDI-FS³⁴ was designed for “evaluating symptoms of depression in patients reporting somatic and behavioral symptoms that may be attributable to biological, medical, alcohol, and/or substance abuse” and has been shown to be better than the PHQ-9 at discriminating between depressive and somatic symptoms.⁹² Although most studies have focused on its use in primary care and only one study in children with LTPCs was identified by us, it shows some promise.

Myers and Brookes favored the MASC and SCARED for identifying anxiety, due to their clear constructs, adequate internal psychometric properties, ability to discriminate between anxiety and depression, response formats that should detect treatment effect, short screening

forms, and parallel parent-report forms. Myers and Brookes disagreed on the value of the RCMAS⁶³ and STAI C,⁶⁵ with the latter favoring these instruments. Brooks and Kutcher additionally identified the CBCL,³⁷ K-SADS-PL,⁵⁰ and ADIS-C/P⁹³ as viable instruments for detecting anxiety. Quittner recommended the GAD-7⁹⁴ for identifying anxiety in children over the age of 12 years with cystic fibrosis.

Comprehensive reviews of instruments for identifying behavior disorders in children and adolescents^{95,96} have previously recommended the Conners,⁶⁹ Swanson Nolan and Pelham IV Questionnaire (SNAP-IV),⁹⁷ Attention Deficit Disorder Evaluation Scale (ADDES-2⁹⁸), and ADHD Symptom Rating Scale (ADHD-SRS⁹⁹) for identifying combined/hyperactive symptoms of ADHD; the Brown Attention Deficit Disorder Scale (BADDS¹⁰⁰) for identifying inattention; the Eyberg Child Behavior Inventory (ECBI¹⁰¹), the Sutter-Eyberg Student Behavior Inventory–Revised (SESBI-R¹⁰²), and the New York Teacher Rating Scale for Disruptive and Antisocial Behavior (NYTRS¹⁰³) for assessing broad constructs of disruptive behavior disorder; and the Antisocial Process Screening Device (APSD¹⁰⁴) for evaluating youth with conduct disorder.

A number of well-validated, specific, and brief instruments exist for identifying substance use problems in young people including the CRAFFT¹⁰⁵ substance abuse screening test, recommended by Pilowsky¹⁰⁶ following a recent review of screening instruments for adolescent substance abuse in primary care settings; the Personal Experience Short Questionnaire (PESQ¹⁰⁷), recommended by Farrow¹⁰⁸ during a similar review for the Washington State Division of Alcohol and Substance Abuse; and newer instruments such as the Substances and Choices Scale (SACS¹⁰⁹) and the Teen Addiction Severity Index (T-ASI¹¹⁰). Despite their lack of use and psychometric validation with children and adolescents with LTPCs, their specific design for identifying substance use problems, cost, and ease of use probably make them better choices for the targeted identification of such problems in clinical settings compared with the DICA⁴⁴ or DISC-IV.⁴⁵

The FACES III,⁷² FAD,⁷³ FES,⁷⁴ and FFFS⁷⁵ were exclusively designed to assess family functioning, and despite lack of psychometric validation in children and adolescents with LTPCs, they had all been shown to be of some clinical use in this population. Out of all the identified instruments, the PAT 2.0^{52,111,112} is the most extensively researched and promising screening instrument for systemic issues within families of children and adolescents with LTPCs. It is linked to a triaging system, based on the Pediatric Psychology Preventative Health (PPPH) model¹¹³ to ensure appropriate referrals are made, and information provided to the treating team. It has been researched in families of children with

conditions such as cancer,⁵² congenital heart disease,¹¹⁴ inflammatory bowel disease,¹¹⁵ and kidney transplants.¹¹⁶ While it has shown good discrimination in terms of family and parental psychosocial difficulties and behavior problems, it has not specifically been researched as a screener for childhood or adolescent anxiety or depression.

This review provides a snapshot of instruments that have been used in children and adolescents with LTPCs and some information regarding their nature. There are a number of other considerations to be factored in when deciding *which* screening instruments to use for identifying psychosocial problems in this population, *when* to use such instruments, and *how* to do so. All scales are not built equal. Briefer scales such as the MFQ designed for quick identification of conditions are less comprehensive, but more practical to use in clinical settings than comprehensive assessment questionnaires such as the DISC-IV.¹¹⁷ Although clinician-rated scales have been shown to be more accurately predict outcomes than self-report scales, the former are more commonly used, are more relevant to patient-centered care,¹¹⁸ and the 2 scales are best used in combination for optimum result. Newer scales are more accurate than older scales, particularly in discriminating between overlapping constructs such as anxiety and depression.²⁹ However, the former have a longer track record and clinicians may be more familiar with them. If identification of “cases” rather than symptoms is important, checklists that are aligned with diagnostic manuals such as the *DSM-5*⁷¹ are probably more useful than those that rate symptoms continuously using different paradigms. Online or electronically available scales allow for efficient data analysis, but can be costly and off-putting for those with less familiarity with technology. Finally, acceptability and validity of scales in different languages and cultures is important to establish as some instruments such as the GAD7 have been shown to be less accurate in some groups (eg African Americans) than others.¹¹⁹

Limitations of this review include the fact that only instruments used in studies of children and adolescents with LTPCs were included in the main analysis and other newer and potentially useful scales that have been not similarly researched may have been excluded. In addition, few instruments had psychometric data pertaining to the target population and assumptions of efficacy had to be made for most instruments based on their properties within the general population. Strengths of the review include the wide range of LTPCs with which identified instruments had been used and the correlation of our findings with those of key reviews of these instruments in the wider population to enable recommendations for clinicians and researchers that are based on the most up-to-date evidence.

Overall, in our opinion, the best instruments identified by us for targeted screening for psychosocial problems in children and adolescents with LTPCs are as follows. For depression, the clinician-rated CDRS-R⁴⁰ and patient-rated CDI-2,⁸⁷ BDI,³² and PHQ-9⁹⁰ are the easiest to use and best regarded instruments, with the BDI-FS³⁴ showing promise. For anxiety, the self/parent-rated MASC-2,⁶¹ SCARED,⁶⁴ and GAD-7⁹⁴ all have satisfactory appeal. Behavior problems are best identified using the parent-rated SDQ⁵⁷ and CBCL,³⁷ and ADHD is best identified using the self/parent/teacher-rated Conners-3.⁶⁹ Substance use problems are best screened for using the well-established self-rated CRAFFT¹⁰⁵ and PESQ¹⁰⁷ or newer but easier to use scales such as the SACS¹⁰⁹ and T-ASI.¹¹⁰ Family problems are best identified using the parent-rated PAT 2.0,⁵² and finally, depending on their combination, multiple problems may be screened for using a limited range of instruments including the parent-rated BASC-3,³² SDQ,⁵⁷ and PAT 2.0.⁵²

Just as important as screening is what comes after it. Care pathways and provision of high-quality care should be in place before the implementation of any targeted or universal screening programme.¹²⁰ Future research should include more in-depth evaluation of existing instruments in children and adolescents with LTPCs and the development of more specific instruments for identifying psychosocial problems in this population.

Conclusions

For now, clinicians should continue to be vigilant regarding the greater likelihood of psychosocial problems in children and adolescents with LTPCs and should only use recommended instruments in a targeted manner to support clinical judgment within an established continuum of care.

Appendix

Keywords Used for Ovid Medline Database Search on December 30, 2014

1. Mass Screening/
2. screen\$.tw.
3. identif\$.tw.
4. detect\$.tw.
5. (routine\$ adj3 (ask\$ or question\$)).tw.
6. assess*.mp. [mp = title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
7. risk.mp. [mp = title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
8. 1 or 2 or 3 or 4 or 5 or 6 or 7
9. psychological problem*.tw.
10. exp stress, psychological/
11. ((emotion* or psycholog* or mental or mental health) adj3 (stress* or problem* or disturb* or aspect* or state* or ill*)).tw.
12. child psychology/
13. adolescent psychology/
14. psychosocial.mp. [mp = title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
15. 9 or 10 or 11 or 12 or 13 or 14
16. ANXIETY DISORDERS/ or AGORAPHOBIA/ or NEUROCIRCULATORY ASTHENIA/ or OBSESSIVE-COMPULSIVE DISORDER/ or PANIC DISORDER/ or PHOBIC DISORDERS/ or STRESS DISORDERS, TRAUMATIC/ or STRESS DISORDERS, POST-TRAUMATIC/ or anxiety, separation/ or neurotic disorders/
17. (anxi* or general* anxiety disorder* or GAD or obsessive compulsive or OCD or phobi* or obsess* or compulsi* or panic or phobi* or ptsd or posttrauma* or post trauma* or social phobia or panic attack* or neurotic or neurosis).tw.
18. ((procedur* or treat* or manage*) adj3 anxiety).tw.
19. ((hospi* or clinic*) adj3 anxiety).tw.
20. 16 or 17 or 18 or 19
21. MOOD DISORDERS/ or AFFECTIVE DISORDERS, PSYCHOTIC/ or BIPOLAR DISORDER/ or CYCLOTHYMIC DISORDER/ or DEPRESSIVE DISORDER/ or DEPRESSION, POSTPARTUM/ or DEPRESSIVE DISORDER, MAJOR/ or DEPRESSIVE DISORDER, TREATMENT-RESISTANT/ or DYSTHYMIC DISORDER/ or SEASONAL AFFECTIVE DISORDER/ or AFFECTIVE SYMPTOMS.mp. [mp = title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
22. (mood disorder* or affective disorder* or bipolar i or bipolar ii or (bipolar and (affective or disorder*)) or mania or manic or cyclothymic* or depression or depressive or depressed or dysthymi* or anhedoni* or affective symptoms).tw.

23. 21 or 22
24. 15 or 20 or 23
25. infant*.tw.
26. child*.tw.
27. adolesc*.tw.
28. (baby or babies or newborn* or new-born* or neonat* or neo-nat* or toddler* or preschool* or pre-school* or schoolchild* or school-child* or boy* or girl* or teen* or preteen* or pre-teen* or youth* or young* person* or young people* or pediatr* or paediatr* or juveni* or minors).tw.
29. 25 or 26 or 27 or 28
30. exp pain/
31. exp complex regional pain syndromes/
32. exp rheumatic diseases/
33. exp neoplasms/
34. exp diabetes mellitus/
35. exp asthma/
36. exp brain injuries/
37. exp brain damage, chronic/
38. exp inflammatory bowel diseases/
39. exp anemia, sickle cell/
40. exp skin diseases/
41. Chronic Disease/
42. Cystic Fibrosis/
43. Bronchopulmonary Dysplasia/
44. respiratory tract disease/ or exp bronchiectasis/
45. Kidney Failure, Chronic/
46. heart diseases/ or exp heart defects, congenital/
47. exp liver diseases/
48. ((chronic* or longterm* or long-term*) adj5 (condition* or ill* or disease*)).tw.
49. (kidney* or renal or cystic or heart or cardiac or colon or lung or lungs or asthma* or diabet* or rheumat* or arthrit* or fibromyalg* or cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or respirat* or bronchi* or epilep* or eczema or dermati* or leuk* or liver).tw.
50. ((brain or head) adj5 (trauma* or injur*)).tw.
51. (bowel* adj5 (condition* or disease* or illness* or inflam*)).tw.
52. brain diseases/ or brain abscess/ or brain diseases, metabolic/ or brain neoplasms/ or cerebrovascular disorders/ or encephalitis/ or epilepsy/ or hydrocephalus/ or hypoxia, brain/
53. 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52
54. 8 and 24 and 29 and 53
55. limit 54 to (english language and yr = "1994-Current")
56. randomized controlled trial/
57. controlled clinical trial.pt.
58. randomi#ed.ab.
59. placebo*.ab.
60. randomly.ab.
61. trial.ab.
62. clinical trials as topic.sh.
63. groups.ab.
64. 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63
65. exp animals/ not humans.sh.
66. 64 not 65
67. 55 and 66
68. Psychological Distress.mp. [mp = title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
69. 8 and 29 and 53 and 68
70. limit 69 to (english language and yr = "1994-Current")
71. 70 and 66

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Author Contributions

HT: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted the manuscript; critically revised the manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

HM: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted the manuscript; critically revised the manuscript.

KG: Contributed to analysis and interpretation; drafted the manuscript; critically revised the manuscript.

KM: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted the manuscript.

Declaration of Conflicting Interests

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