

The measurement of OCD in children and young people in clinical practice

Running head: The measurement of OCD in children and young people in clinical practice

**Measurement Issues: The measurement of OCD in children and young
people in clinical practice**

Sophie Bennett, Anna Coughtrey, Roz Shafran, & Isobel Heyman

UCL Institute of Child Health and Great Ormond Street Hospital for Children NHS

Foundation Trust, 30 Guilford Street, London, WC1N 1EH; Email:

Sophie.Bennett.10@ucl.ac.uk

Background: If left untreated, Obsessive Compulsive Disorder (OCD) can cause significant distress and impact on functioning throughout the lifespan. Despite the severity of the disorder, there is often a significant delay between the onset of symptoms and successful treatment. This is in part due to delays in recognising OCD symptoms in young people, particularly if the symptom forms are less common. Once OCD is accurately diagnosed, Cognitive Behavioural Therapy (CBT) is known to be an efficacious treatment, sometimes in combination with medication, producing good long-term prognosis. It is therefore important to accurately detect OCD in children and young people so that they can be offered timely intervention. Use of the best tools in clinical and research settings improves detection and diagnosis, as well as enabling the tracking of progress through treatment. The aim of this current paper is to review measurement tools for OCD in young people with a focus on the practicalities of using tools in busy child mental health clinical settings. **Method:** To discover what measurement tools are available for OCD in young people, we conducted a pragmatic literature review. We searched PsycINFO, Med-Line and the Cochrane databases for reports relating to the measurement of OCD. Additionally, we sought information from the National Institute for Health and Care Excellence (NICE) guidance, the Child Outcomes Research Consortium (CORC) website and the Children and Young People's Improving Access to Psychological Therapies (CYP IAPT) Programme. We also reviewed large trials and meta-analyses of the treatment of OCD in young people and communicated with relevant researchers/clinicians. **Results:** Seventeen questionnaire measurement tools, with variable psychometric properties, and four commonly used semi-structured clinician administered interview measures were identified. **Conclusions:** There are a several measurement tools with good psychometric properties that are useful for initial screening/identification of OCD, as well as formal diagnosis, symptom tracking and treatment evaluation. With the availability of brief screens, as well as online diagnostic

The measurement of OCD in children and young people in clinical practice

measures, such tools should not be a burden on clinical practice, but rather a helpful aid to support clinician's assessment and treatment of OCD.

Keywords: Obsessive-Compulsive Disorder; rating scales; psychometrics; assessment; questionnaires.

Key Practitioner Message

- If left untreated, OCD can cause significant distress and impact on functioning throughout the lifespan.
- Despite the severity of the disorder, there is often a significant delay between the onset of symptoms and successful treatment.
- Delays in treatment are partly due to delays in recognising and accurately diagnosing OCD symptoms in young people, particularly if the symptom forms are less common.
- Useful measurement tools are available for the detection, assessment, diagnosis and tracking/evaluation of treatment of OCD in children and young people.
- Questionnaire measures are helpful to screen for OCD. Interview based assessments can support with accurate differential diagnosis.

Introduction

Obsessive compulsive disorder (OCD) is characterized by the presence of obsessions (including unwanted intrusive thoughts, images and urges) and compulsions (repetitive, distressing and time consuming behaviours or mental acts which are performed to reduce anxiety and/or prevent a future negative outcome; APA, 2013). OCD is a relatively common psychiatric disorder, which affects between 1-4% of young people (Shafran et al., 2003; Moore et al., 2007; Walitza et al., 2011). As many as 34% of adult cases of OCD arise in childhood (Millet et al., 2004).

Although symptoms may wax and wane, untreated OCD typically causes significant distress and impact on functioning throughout the lifespan (Krebs & Heyman, 2014; Piacentini, Bergman, Keller & McCracken, 2003; Skoog & Skoog, 1999; Stewart et al., 2004). Conversely, meta-analyses indicate good prognosis for children and young people treated with Cognitive Behavioural Therapy (Abramowitz, Whiteside & Deacon, 2006).

Despite the severity of the disorder, and the availability of efficacious interventions, there is often a significant delay between the onset of symptoms and the start of treatment (Krebs & Heyman, 2014), and a significant proportion of children and young people with OCD do not receive adequate intervention; only 12% of young people identified as meeting diagnostic criteria for OCD in the British nationwide survey of child mental health had consulted with a paediatrician or CAMH Service (Heyman et al., 2001).

This is in part due to delays in recognising the condition if the symptom forms are less common (Stengler et al., 2013). There are a number of challenges in accurately detecting OCD for practitioners. Young people may feel embarrassed and try to conceal

their symptoms, particularly if the content of their obsessions are sexual in nature (Fernandez de la Cruz et al., 2013). There may also be difficulties in differentiating true OCD from normative rituals during development (Evans et al., 1997). While repetitive or ritualized behaviour is normal in young children, for example lining up their toys in a particular way, the hallmark of OCD is when such behaviours become distressing, time-consuming or interfere with normal life (Leonard, Goldberger, Rapoport, Cheslow & Swedo, 1990). However in the early stages of OCD, symptoms can be mistaken for normative ritualized behaviour. A further difficulty is that young people can present with a wide variety of OCD symptom profiles (Krebs & Heyman, 2014).

Differential diagnosis can be difficult, particularly with regard to autism and tic disorders (Krebs & Heyman, 2014). In young people with autism spectrum disorder it can be challenging to distinguish compulsions (which are driven by anxiety and distress) from repetitive behaviour that is motivated by pleasure (Williams & Shafran, 2015).

Furthermore, prevalence rates of OCD are higher in individuals with autism than they are in the general population (Simonoff et al., 2008) and the two conditions may coexist, displaying mixed symptom profiles. It is also important to detect OCD in young people with tic disorders, as OCD symptoms can be the most impairing aspect of their condition (March et al., 2007). Although complex tics can be difficult to differentiate from compulsions, typically tics are largely involuntary and are relatively simple behaviours (Krebs & Heyman, 2014).

There is therefore clearly a need to ensure that OCD is accurately diagnosed so that young people can access appropriate treatment. Measurement tools can be used to support this diagnostic process. A review of evidence based assessment for OCD in young people highlighted the role of measurement tools in seven key areas (Lewin &

Piacentini, 2010): (1) as initial screening for OCD to establish presenting problems prior to the initial appointment, or to determine eligibility for a service or research project; (2) to establish a diagnosis of OCD; (3) to rule out alternative diagnoses; (4) to identify comorbidities; (5) to establish and track symptom severity; (6) to assess impairment and impact on quality of life, including impairment in family, social and academic domains; and (7) to evaluate treatment outcome and track progress.

There are several comprehensive reviews of measurement tools for OCD in young people (e.g. Grabill et al., 2008; Iniesta-Sepúlveda, Rosa-Alcázar, Rosa-Alcázar & Storch, 2014; King & Scahill, 1999; Langlely, Bergman & Piacentini, 2002; Lewin, Storch, Adkins, Murphy & Geffken, 2005; Lewin & Piacentini, 2010; Merlo, Storch, Murphy, Goodman & Geffken, 2005) focused mainly on studies in the USA. These reviews have highlighted the usefulness of such tools, but there has been a lack of focus on the practicalities of using such tools in clinical and research settings in the UK. Therefore the aim of this current review is to review measurement tools for OCD in young people with a focus on the practicalities of using tools in busy NHS settings, including how tools can support diagnosis and inform clinicians regarding treatment options.

Method

A pragmatic approach was undertaken to identify relevant measurement tools. We searched PsychInfo, Med-Line and the Cochrane database for English-language papers with terms relating to OCD (OCD OR Obsessive Compulsive Disorder OR obsessions OR compuls*) AND measurement (rating scales OR instruments OR diagnos*) AND young people (youth OR young people OR child* OR adolescen* OR teen*).

Additionally, we sought measures from the NICE guidance (NICE, 2005), the Child Outcomes Research Consortium website (CORC, 2016) and the Children and Young

People's Improving Access to Psychological Therapies Programme (CYP-IAPT, 2016).

We also reviewed large trials and meta-analyses of the treatment of OCD in young people (e.g. Abramowitz, Whiteside & Deacon, 2006; Franklin et al., 2011; Geller et al., 2003; POTS, 2004; Rosa-Alcázar et al., 2015; Watson & Rees, 2008) and consulted relevant researchers/clinicians.

The following inclusion criteria were used:

- Measures primarily focused on use in children and adolescents aged 0-18 years.
- Focus on OCD severity
- Parent, young person, teacher or clinician rated.

We focused primarily on measures of OCD severity rather than specific OCD symptomatology (e.g. compulsive checking) or a related disorder such as hoarding. We selected these measures to provide maximal clinical guidance during treatment as symptoms trackers. This is in the context of current commonly used clinical approaches to measuring treatment progress and outcome. A disorder specific measure is usually combined with a measure of global function, and session by session treatment goals.

We initially identified 57 measurement tools, of which 17 met criteria for this review. We excluded measures that were primarily focused on use in adults or validated in adults. Whilst we recognise that these adult measures may be more appropriate for some older adolescents within CAMHS services reviews of the adult literature are already available (see Grabill et al.,2008).

We also excluded measures of broader symptomatology and impact that do not have OCD specific subscales, for example Goal Based Outcomes (e.g. Law, n.d.). Whilst such measures are clearly of importance in assessment and tracking of treatment

progress, we have assumed that clinicians have a level of familiarity with these measures, and will tend to use them in conjunction with a disorder specific measure. Guidelines on how to determine whether a psychometric instrument should be incorporated into clinical practice have been suggested (Simmons, Wilkinson and Dubicka, 2015). Therefore the following data were extracted: informant, age range, costs, accessibility, purpose, length/administration time, psychometric properties (see Box 1) and specificity of the measure.

Results

The search found a total of 17 measures of OCD severity. Of these, three are brief screening instruments, eight are diagnostic interviews and the remaining six are measures of symptom severity. Table 1 presents the basic properties of each of these measures, including psychometrics.

---INSERT TABLE 1 HERE---

Screening instruments

Although the definition is somewhat arbitrary, we defined a screening instrument as a brief measure (<10 items) which could be used to initially identify the presence of OCD symptoms in young people. Using this definition we identified three screening instruments, one specific to OCD (Short OCD Screener (SOCS); Uher, Heyman, Mortimore, Frampton & Goodman, 2007) and two OCD subscales of broader measures (OCD subscale of the Child Behaviour Checklist (CBCL-OCS); Nelson et al., 2001 and the OCD Subscale of Revised Children's Anxiety and Depression Scale (RCADS); Chorpita et al., 2000). All three screening measures were self-report; the RCADS and CBCL-OCS have both parent and young person versions and the SOCS is suitable for young person report only.

The measurement of OCD in children and young people in clinical practice

All three screening measures have good psychometric properties (see Table 1), although the SOCS has higher specificity, which is likely to be because it is an OCD specific measure. The SOCS is advantageous clinically as it is freely available, brief and easy to score. However, the RCADS and CBCL are available in multiple languages (thus increasing accessibility and utility) and can also be used to screen for comorbid disorders (e.g. depression) and differential diagnoses (e.g. other anxiety disorders). The RCADS is freely available and forms part of the recommended data collected as part of the UK national program: Children and Young Peoples Increasing Access to Psychological Therapies CYP IAPT . This nationally collected minimum dataset allows for benchmarking across services.

In the absence of the availability of the screening measures discussed above (for example, if a clinician identifies potential symptoms during an intake assessment or screening phone call), National guidelines for the assessment and treatment of OCD and related disorders, NICE guidelines (NICE, 2005) recommend that the following questions can be used as an initial screen:

- Do you wash or clean a lot?
- Do you check things a lot?
- Is there any thought that keeps bothering you that you'd like to get rid of but can't?
- Do your daily activities take a long time to finish?
- Are you concerned about putting things in a special order or are you very upset by mess?
- Do these problems trouble you?

If a client answers 'yes' to any of these, or scores highly on one of the three OCD screening tools discussed above, then it may be beneficial to follow-up with a more comprehensive measure such as the measures of symptom severity discussed below.

The measurement of OCD in children and young people in clinical practice

Diagnostic interviews

Eight diagnostic interviews were identified. Psychometric properties of the measures are all acceptable; however one of the main difficulties in assessing their properties with regards to an OCD assessment is the relatively low prevalence of OCD in comparison to other mental health disorders in children. The psychometric properties are often not cited for OCD subscales alone, but further, OCD is often not included in the sample at all. The DAWBA has been successfully used as an assessment tool for children and young people with OCD in the UK, however (e.g. Heyman et al., 2001).

Angold and colleagues (2012) describe three 'styles' of psychiatric interview: respondent-based (fully-structured), interviewer-based (semi-structured), and expert judgement. Respondent based interviews may take longer but can be rated by non-experts. Interviewer-based or semi-structured interviews may require training to deliver. Within clinical practice, the advantages of interviewer-based, or semi-structured interviews is that the interviewer can skip questions that are not relevant and focus the interview on those that are, probing for more detail if necessary. The length of the interview is likely to depend on the extent and severity of reported symptoms, however they require varying degrees of training to deliver. In contrast, a respondent-based interview may take longer and is, by definition, more structured, but does not need the same level of training. The DAWBA, defined as an 'expert judgement' tool, provides a combination of the two. It has pre-specified questions with automated skip-rules so that sections can be left if no symptoms of that disorder are present. It is available in a computerised format, and a computer algorithm can rate the likelihood of the symptoms meeting diagnostic threshold. Alternatively, it can be rated by a clinician/expert rater.

However, as Angold and colleagues (2012) outline, the 'best' measure depends on the purpose. They found that when the psychometric properties of the DAWBA, DISC and CAPA were compared, they were broadly similar with some key differences. Notably, the DAWBA was more specific but less sensitive; it 'generated fewer, more severe cases' than either the DISC and

The measurement of OCD in children and young people in clinical practice

CAPA. The ChIPS was initially designed as a screening tool and interviewers are trained to overdiagnose rather than underdiagnose (Weller, Weller, Fristad, Rooney & Schechter, 2000).

Measures of symptom severity

Measures of symptom severity have utility for identifying sub-types of OCD and for monitoring progress over time. We identified six measures of OCD symptom severity; five were self report and one was clinician administered. Three measures were both parent and young person report and three were young person report only. All had reasonable psychometric properties and all were OCD specific, making them relevant for identifying the presence and nature of OCD in young people. Length of measure varied considerably, from 10 to 32 items. Shorter questionnaires may be more acceptable to young people and their parents when they are being completed on a weekly basis, whereas the longer measures may have clinical utility in identifying areas in which OCD is particularly problematic. The CYBOCS was the only clinician interview measure of OCD severity that we identified in our search. The advantage of the CYBOCS is that the clinician can ask families to elaborate on areas of relevance, thus increasing the meaningfulness of the measure.

Table 1

Measure	Informant (practitioner, young person, parent)	Validity	Reliability	Sensitivity/ Specificity	Cost	Length	Age group (years)	Practicalities
Screening instruments								
Obsessive Compulsive Scale of Child Behaviour Checklist (CBCL-OCS; Nelson et al., 2001)	Parent report (4-18 years)	CON: $r = .54, r = .6$ CY-BOCS, TODS-PR OCD (Storch et al., 2006) DIS: $r = .38, r = .49$ CDI, TODS-PR (Storch et al., 2006)	IC: $\alpha = .84, \alpha = .87, \alpha = .75$ Total score (Nelson et al., 2001; Geller et al., 2006; Storch et al., 2006)	SE: 92% (vs. clinical control and general population. SP: 67% (vs. clinical controls), 89% vs. general population Total ≥ 5 (Hudziak et al., 2006) SE: 69%, SP: 56% (vs. other internalizing disorders) SE: 77%, SP: 59% (vs. externalizing disorders) Total ≥ 3.5 (Storch et al., 2006) SE: 75.3% - 84.9%, SP: 82.2% to 92.5% cutoffs at or above the 60th percentile (Nelson et al., 2001)	Hand scoring starter kit £300 Computer scoring starter kit £340 Pack of 50 forms £25	8 item (OCD subscale only) 118 items (full measure)	4-18	Approx 15-20 mins completion time and 10 min scoring time for total measure. Available in over 90 languages.

The measurement of OCD in children and young people in clinical practice

OCD Subscale of RCADS (Chorpita et al., 2000)	Parent and young person report (8-18 years)	<p>CON: $r = .44$ RCMAS-W (Chorpita et al., 2000)</p> <p>$r = .59$ RCAMS clinical sample (Chorpita, Moffitt & Gray, 2005).</p> <p>DIV: $r = .29, r = .38$ CDI, RCMAS-C (Chorpita et al., 2000)</p> <p>$r = .04, .05$ Parent and child report of oppositional behaviour in a clinical sample (Chorpita et al., 2005).</p>	<p>IC: $\alpha = .73$ Community sample (Chorpita et al., 2000)</p> <p>$\alpha = .82$ Clinical sample (Chorpita et al., 2005)</p> <p>TR: ICC = .65 (Chorpita et al., 2000)</p>	<p>SE:70%, SP:65% Total ≥ 5 (Chorpita et al., 2005)</p>	Freely available	6 items (OCD subscale only) 47 items (full measure)	8-18	<p>Approx 10 mins completion time for full measure and 5 mins scoring time.</p> <p>Can either be scored manually or by using an automated program.</p>
Short OCD Screener (SOCS) (Uher, Heyman, Mortimore, Frampton & Goodman, 2007)	Young person report (11-15 years)	<p>CON: $r = .38, r = .65, r = .57, r = .80$ Total score in clinical sample correlated with CY-BOCS total score, C-FOCI symptom checklist, C-FOCI severity scale, OCI-CV total score (Piqueras et al., 2015).</p> <p>$r = .61, r = .49, r = .72$ Total score in community sample correlated with CY-BOCS total score, C-FOCI symptom checklist, C-FOCI severity scale, OCI-CV total score (Piqueras et al., 2015).</p> <p>DIV: $r = .26-.49, r = .36-.43$ Total score correlated with the RCADS subscales in a clinical</p>	<p>IC: $\alpha = .85$ Self report total score (Uher et al., 2007)</p> <p>TR: $r = .79$ (clinical sample); $.63$ (community sample) (Piqueras et al., 2015).</p>	<p>SE:97%, SP:88% vs. health controls, 84% vs. mixed community sample, 52% psychiatric control group Total ≥ 6 (Uher et al., 2007)</p>	Freely available	7 items	11-15	<p>Available in 13 languages. Approx 5 min completion and scoring time.</p> <p>Available in English and Spanish.</p>

The measurement of OCD in children and young people in clinical practice

and community sample
(Piqueras et al., 2015).

Diagnostic interviews

Child and Adolescent Psychiatric Assessment (CAPA; Angold et al., 1995; Angold & Costello, 2000)	<p>Interviewer based</p> <p>Parent and young person report (6-18 years).</p> <p>Administered by a trained interviewer. Rated by a Bachelor's level rater who is required to complete a training programme.</p>	<p>CON: k = 0.61, k = 0.48 DISC, DAWBA (Angold et al., 2012)</p>	<p>TR: k = 0.55-1.0, k = 0.5-0.9 Subscales (Angold & Costello, 2000; Angold, Erkanli, Egger & Costello, 2000)</p> <p>IC: $\alpha = .5 - .9$ (Angold et al., 2000)</p>	NR	<p>Measures available free of charge after contacting first author for copyright approval</p> <p>Training cost available on request</p>	<p>Covers a range of DSM-IV diagnoses. Also covers sleep disorders, constipation and somatisation.</p>	6-18	<p>60-120 mins administration time.</p> <p>Available in English and Spanish versions.</p>
Children's Interview for Psychiatric Syndromes (ChIPS/P-ChIPS; Weller, Weller, Fristad, Rooney & Schecter, 2000)	<p>Training required.</p> <p>Parent and young person versions (6-18 years)</p> <p>Can be rated by a trained lay-person but results need to be reviewed by a trained clinician.</p> <p>Training recommended</p> <p>Training can be completed using licenced administration manual</p>	<p>CON: k = .18 - .66 K-SADS-PL (Swenson et al., 2007)</p> <p>k = .31 - .73; 0.28 - 0.74 DICA (Teare, Fristad, Weller, Weller & Salmon, 1998a; 1998b)</p> <p>k = .49 Clinician diagnosis (P-ChIPS; Fristad, Teare, Weller, Weller & Salmon, 1998c)</p>	<p>IR: R ≥ 0.90 (Weller et al., 2000)</p>	<p>SE: 0.66, SP: 0.88 (Weller et al., 2000)</p> <p>SE: 0.8, SP: 0.78 (Teare et al., 1998a)</p> <p>SE: 87%, SP: 76% (Fristad et al., 1998c)</p>	<p>£58 manual contains interview and scoring forms</p>	<p>Covers 20 common diagnostic categories</p>	6-18	<p>20-50 mins administration time.</p> <p>Available in English, Spanish, Brazilian and Portuguese</p> <p>Can be delivered over the telephone (Paing, Weller, Dixon & Weller, 2010)</p>

The measurement of OCD in children and young people in clinical practice

<p>Development and Wellbeing Assessment (DAWBA; Goodman, Ford, Simmons, Gatward & Meltzer, 2000)</p>	<p>Expert judgement Parent (5-17 years) and young person (11-17 years) report. Can be delivered by lay interviewers with training Raters should be clinically qualified and well trained in DSM/ICD</p>	<p>CON: $\kappa = .64$ Case-note review (Goodman <i>et al.</i>, 2000)</p>	<p>IRR: $\kappa = .64$ (Aebi <i>et al.</i>, 2012)</p>	<p>SE: >92%, SP: 89% (Goodman <i>et al.</i>, 2000)</p>	<p>Freely available for clinical use</p>	<p>Covers >20 ICD-10 and DSM IV and 5 psychiatric diagnoses</p>	<p>5-17</p>	<p>Average 30-50 minutes administration time</p>
<p>Diagnostic Interview for Children and Adolescents (DICA; Reich, 1997; 2000)</p>	<p>Parent, young person and child versions Can be administered by lay interviewers who are highly trained Training takes 2-4 weeks</p>	<p>CON: $\kappa = .11-.25$ (Ezpeleta <i>et al.</i>, 1997)</p>	<p>TR: $\kappa = .32-.92$ (Reich, 2000) IRR: $\kappa = .65 - 1.0$ (De la Osa <i>et al.</i>, 1997)</p>	<p>SE: .61, SP: .87 (Weller <i>et al.</i>, 2000)</p>	<p>Computer version \$ 2,310.00</p>	<p>6-17</p>	<p>Available in English plus an additional 19 languages. Teacher, early years and adult versions available A computer administered version is also available Online manual available to help new raters train themselves 60-120 mins administration time Computer version shorter and can be self-administered</p>	

The measurement of OCD in children and young people in clinical practice

<p>Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas & Klaric, 1984)</p>	<p>Parent (6-17 years) or young person report (9-17 years)</p>	<p>Criterion: $\kappa = 0.4-0.8$ <i>(Schwab-Stone et al., 1996)</i></p>	<p>TR: $r = .43-.96$ (Parent version), $r = .25-.92$ (young person version) <i>(Shaffer, Fisher, Lucas, Dulcan & Schwab-Stone., 2000)</i></p>	<p>SE: 0.73 to 1.0 For less common diagnoses including OCD <i>(Fisher et al., 1993)</i></p> <p>SE: 0.82 SP: 0.66 <i>(Kunst, Blinder, Esrubilsky, Longarela & Vega, 2008)</i></p>	<p>\$150-\$2000 for computer installation. \$50 per young person and parent plus shipping and handling</p>	<p>Covers more than 30 psychiatric diagnoses based on DSM-IV and ICD-10</p>	<p>6-17</p>	<p>Available in English and Spanish</p>
	<p>Other versions (e.g. Teacher DISC) available</p>							<p>90-120 mins administrative time</p>
	<p>Rated by a trained lay rater.</p>							<p>A computerised version is also available.</p>
	<p>Training takes 1-2 days for the computer administered version or 4-5 days for the paper version</p>							<p>The questions in the DISC are clear and easy to understand with closed question responses, usually yes/no</p>
	<p>Training recommended</p>							
<p>Schedule for Affective Disorder and Schizophrenia for School-Aged Children Present and Lifetime Version (K-SADS-PL; Kaufman, Birmaher, Brent, Rao & Ryan, 1996)</p>	<p>Parent and child version (6-18 years), administered separately</p>	<p>CON: $k = .42$ Consensus <i>(Apter et al., 1988)</i></p> <p>$r = .19 - .65$ CBCL <i>(Brasil & Bordin, 2010; Birmaher et al., 2009)</i></p>	<p>TR: $k = .63-1$ <i>(Ambrosini, 2000; Kaufman et al., 1997; Apter et al., 1988)</i></p> <p>ICC: $k = .63-67$ <i>(Abromsini, 2000; Kaufman et al., 1997)</i></p>	<p>SE: 0.74 – 0.83 , SP: 0.35 – 0.56 T-score>63 <i>(Brasil & Bordin, 2010)</i></p>	<p>Free for download and use if specific criteria are met.</p>	<p>Approximately 70 minutes to administer depending on symptoms reported</p>	<p>6-18</p>	<p>90 mins administrative time for both parent and child. Available in multiple languages.</p>
	<p>Administered and rated by a trained clinician</p>	<p>DIS: $p = .009- <.001$ ECI-4 <i>(Birmaher et al., 2009)</i></p>	<p>IRR: $k = .78$ <i>(Apter et al., 1988)</i></p>			<p>Assessment of 20 DSM-IV disorders</p>		<p>Designed primarily for affective disorders and schizophrenia</p>
	<p>Training required</p>							

The measurement of OCD in children and young people in clinical practice

Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID; Sheehan et al., 2010)	Parent (6-17 years) and young person version (13-17 years) Can be rated by a trained lay-person but results need to be reviewed by a trained clinician	CON: k = 0.41-0.87 K-SADS-PL (Sheehan et al., 2010)	TR: k = 0.41-0.42 (Sheehan et al., 2010)	SE: 0.61 – 1.00, SP: 0.73 -1.00 (Sheehan et al., 1998)	Free for download and use if specific criteria are met	Covers 23 Axis I disorders	6-17	15-50 mins administration time. Available in English and Spanish.
						Training recommended		
Measures of Symptom Severity								
Children's Florida Obsessive Compulsive Inventory (C-FOCI) (Storch et al., 2009)	Young person report Nb. Administered online in one study (Storch et al., 2009)	CON: r=.373-.541, .485, .417, .396 Severity with CYBOCS total obsessions and compulsions, COIS-P, COIS-C, MASC (Storch et al., 2009)	IC: α=.79 & .73, KR-20=.76 & .74 Severity and symptoms checklists (Storch et al., 2009)	NR (although results suggest sensitivity to change following treatment (Storch et al., 2009)	Freely available (use requires written permission from authors)	22 items	7-20	No reported data. Approx 10 mins completion time.
		r=.253 - .331, .280, .401, .607 Symptom checklist with CYBOCS total obsessions and compulsions COIS-P, COIS-C, MASC (Storch et al., 2009)						
		DIV: r =.405, .479, .112, .351, .361, .125 Severity scale with CDI-S, CBCL-Int, CBCL-Ext, Symptoms scale with CDI-S, CBCL-Int, CBCL-Ext (Storch et al., 2009) CHOCI	CHOCI (all Shafran et al., 2003):	CHOCI	Freely available	32 items	7-18	Approx 10 min completion time
Children's Obsessional Compulsive Inventory CHOCI	Young person and parent	CON: r=.38-.49 Subscales with CY-	IC: α>0.8 for all four subscales	SP:95%, SE:88% Total impairment score				

The measurement of OCD in children and young people in clinical practice

<p>(Shafran et al., 2003) and CHOCI-R (Uher, Heyman, Turner & Shafran, 2008)</p>	<p>BOCS total, (Shafran et al., 2003)</p>	<p>(Shafran et al., 2003)</p>	<p>>17 (Shafran et al., 2003)</p>					
	<p>r=.60-.65 Parent-completed CHOCI impairment range with CYBOCS total (Shafran et al., 2003)</p>	<p>CHOCI-R IC: α=.72-.87 Self and parent-report CHOCI-R impairment, severity and symptoms (Uher et al., 2008)</p>						
	<p>r=0.38-0.49 child-completed CHOCI impairment range with CY-BOCS total (Shafran et al., 2003)</p>							
	<p>CHOCI-R</p>							
	<p>CON: r=.55 and r=.45 Self- and parent-report severity scores with the CY-BOCS respectively (Uher et al., 2008)</p>							
	<p>DIV: r=.30-.51, r= .11-.22, r=.26-.32 Self- and parent-report severity scores with SDQ subscales for emotional disorders, conduct problems and hyperactivity (Uher et al., 2008)</p>							
<p>Leyton Obsessional Inventory – Child Version, Survey form (Berg, Whitaker, Davies, Flament & Rapoport, 1988)</p>	<p>Young person report</p>	<p>CON: r=.2, r=.23, r=.17, r=.14, r=.07, r=.45 CY-BOCS (Stewart, Ceranoglu, O’Hanley & Geller, 2005; Storch et al., 2011), CGI, CBCL-OCS, COIS-P, COIS-C (Storch et al., 2011)</p>	<p>IC: α=.79, α=.81, α=.79, α=.9, α=.74-.77 α=.81, α=.53 α=.65, α=.49 α=.65, α=.66</p>	<p>Treatment SE: Cohen's d = 0.98 (Storch et al., 2011)</p>	<p>Freely available</p>	<p>20 items</p>	<p>7-18</p>	<p>No reported data. Approx 10 mins completion time.</p>
		<p>DIS: r=.37, r=.11-.22, r=-.03 - .03, r=.22, r=.12 Global Assessment of</p>	<p>α=.49, α=.56 Total score (Storch et al.,</p>	<p>SE: 36% Total 20 (Stewart et al., 2005)</p>				

The measurement of OCD in children and young people in clinical practice

		<p>Functioning (Stewart et al., 2005), CBCL subscales – internalizing and externalizing, CDI, MASC (Storch et al., 2011)</p> <p>2011; Berg et al., 1988; Storch et al., 2011; Bamber, Tamplin, Park, Kyte & Goodyer, 2002; King, Inglis, Jenkins, Myerson & Ollendick., 1995)</p> <p>General Obsessive (Berg et al., 1988; Storch et al., 2011)</p> <p>Dirt/Contamination (Berg et al., 1988; Storch et al., 2011)</p> <p>Numbers/Luck (Berg et al., 1988; Storch et al., 2011)</p> <p>School (Berg et al., 1988; Storch et al., 2011)</p> <p>TR: $r=.72$ (King et al., 1995)</p>	<p>SE: 28% Total ≥ 25 (Stewart et al., 2005)</p>					
<p>Obsessive Compulsive Inventory – Child Version (OCI-CV) (Foa et al., 2010)</p>	<p>Young person report</p>	<p>CON: $r=.31, r=.26, r = .23 -.52$ Total with CY-BOCS Total (Foa et al., 2010, Jones et al., 2012), CY-BOCS symptom dimensions (Jones et al., 2012)</p> <p>$r =.23, r =.32-.45, r=.62, r =.27$ Total with NIMH-OCD, COIS-C/P, MASC Anxiety (Foa et al., 2010), CGI (Jones et al., 2012)</p> <p>DIV: $r=.47$ Total CDI (Foa et al., 2010)</p>	<p>IC: $\alpha=.85, \alpha=.81-.88, \alpha=.5-.87$ Total score and subscales (doubting/checking, hoarding, washing, ordering, neutralising) (Foa et al., 2010, Jones et al., 2012)</p> <p>TR ICC: $r=.77, r=.68-.83$ Total score and subscales (Foa et al., 2010)</p>	<p>NR (although results suggest sensitivity to change following treatment; Foa et al., 2010)</p>	<p>Freely available</p>	<p>21 items</p>	<p>7-17</p>	<p>No reported data. Approx 10 mins completion time.</p>

The measurement of OCD in children and young people in clinical practice

<p>Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS)- Self and Parent report (severity items only) and clinician administered versions (symptom checklist and severity items) (Scahill et al., 1997)</p>	<p>Parent and young person report</p>	<p>Self report severity: CON: $r=.58-.72$. $r = .51-.67$, $r = .28-.46$, $r=.76$ Total score correlated with: CY-BOCS clinician administered, CBCL-OCS, TODS-PR-OCD (Storch et al., 2006), CY-BOCS clinician administered (Conelea, Freeman & Garcia, 2012)</p> <p>DIS: $r = .14-.29$ CBCL, TODS-PR (Storch et al., 2006)</p> <p>Clinician administered symptom checklist: CON: $r = .55 - .87$ Correlated with relevant items of ADIS-IV-P</p> <p>DIS: $r = .15 - .29$ Correlated with unrelated items of ADIS-IV-P</p>	<p>IC: $\alpha=.70 - .88$; $\alpha=.78 - .87$, $\alpha=.77$ Parent and child total and subscales (Storch et al., 2006)</p>	<p>Not available</p>	<p>Freely available</p>	<p>Symptom severity (all versions):10 items</p> <p>Symptom checklist: 62 obsessions and compulsions in 17 categories rated yes/no for current/past symptoms.</p>	<p>5-17</p>	<p>No reported data. Approx 10 mins completion time for self-report symptom items..</p>
<p>Toronto Obsessive Compulsive Scale (TOCS) (Park et al., 2016)</p>	<p>Parent and young person report</p>	<p>CON: $r=.51$ Total score correlated with CBCL-OCS (Park et al.,2016)</p> <p>DIV: $r=.01$ Total score correlated with the SWAN (Park et al., 2016)</p>	<p>IC: $\alpha=.93$; $\alpha=.8-.93$ Self report total and subscales (Park et al., 2016)</p> <p>ICC: $.13-.36$ Self report and parent report agreement (Park et al., 2016)</p>	<p>SP:70%, SE:81% Total score >0 in a community sample (Park et al., 2016)</p>	<p>Freely available</p>	<p>21 items</p>	<p>6-17</p>	<p>No reported data. Approx 10 mins completion time.</p>

CON = Convergent Validity, DIV = Divergent Validity, IC = Internal Consistency, TR = Test-Retest Reliability, ICC = Intraclass Correlation Coefficient

CBCL-Int = Child Behavior Checklist-Internalising subscale, CBCL-Ext = Child Behavior Checklist – Externalising subscale; CDI = Children's Depression Inventory; CGI = Clinical Global Impressions; CY-BOCS = Children's Yale-Brown Obsessive Compulsive Scale; MASC = Multidimensional Anxiety Scale for Children; NIMH-OCD = NIMH Global Obsessive-Compulsive Scale; RCMAS = Revised Children's Manifest Anxiety Scale; RCMAS-C = RCMAS, Concentration Anxiety Subscale; RCMAS-W = RCMAS Worry/Oversensitivity Subscale; SDQ = Strengths and Difficulties Questionnaire; TODS-PR = The Tourette's Disorder Scale – Parent Rated; SWAN = Strengths and Weaknesses of ADHD Symptoms and Normal Behaviour Rating Scale.

Discussion

A recent review (Iniesta-Sepulveda, Rosa-Alcázar, Rosa-Alcázar & Storch, 2014) categorized measures according to criteria defining 'Evidence Based Assessments' (Cohen et al., 2008). The authors categorized measures as either 'well established' (reliability and validity demonstrated in at least two published studies by two research teams), 'approaching well-established' (reliability and validity demonstrated in at least two published studies by one research team or two research teams published studies offering mixed psychometric results), 'promising assessment' (reliability and validity have been demonstrated in at least one published study) or 'insufficiently tested'.

Based on these criteria, the only measure which they considered to be 'well established' was the CY-BOCS (Scahill et al., 1997). The OCI-CV (Foa et al., 2010) was 'approaching well established', and the LOI-CV (Berg et al., 1988) was 'insufficiently tested'. The other measures reviewed were all considered 'promising' assessments.. However, whilst psychometric properties are clearly important factors in choosing instruments, more factors come into play when considering their use in clinical practice.

Lewin and Piacentini's (2010) seven key areas in which measures may be a helpful addition are consistent with NICE recommendations (see Box 2). Given their convenience and low cost, questionnaires have utility in screening (including for comorbid disorders or differential diagnoses), tracking of symptom severity, determining psychosocial functioning, and evaluating clinical improvement. Interview measures are most helpful in supporting formal diagnosis and differential diagnosis, and may also be used to evaluate clinical improvement, particularly in research trials.

Screening instruments

Regarding screening, the self-report measures outlined in the present review can be used to identify areas of current concern, and quantify the likelihood that a child or young person may have OCD. Screening measures have several benefits. They can be administered quickly and cheaply, and remove a level of embarrassment as they can be completed without direct contact with the clinician. In addition, they can also help to normalize symptoms as patients see that others may have similar obsessions/compulsions to their own. Finally, they can open up avenues of discussion for further assessment. It may be that a very brief screening questionnaire can be used initially as a preliminary assessment – for example subscales of the RCADS (Chorpita et al., 2000) and CBCL (Nelson et al., 2001). These measures can also help in the identification of comorbidities and/or support differential diagnosis. The RCADS (Chorpita et al., 2000) is freely available and routinely used in UK CAMHS. It is also used in the national CYPIAPT initiative and therefore allows for comparison to national datasets and service benchmarking. Regarding the use of parent versus young person reports, studies have shown that both may provide important clinical information. Parents may be more accurate at reporting externalizing symptoms, whereas young people find it easier to disclose internalizing symptoms (e.g. Karver, 2006). Therefore, where possible, it is helpful to have both parent and young person reports.

Diagnostic interviews

The concept of stepped care is applied to the management of OCD within the UK, and standardised diagnostic measures could be beneficial in indicating the intensity of intervention that is required. For example, mental health practitioners in general practice may be helped to identify children who would benefit from specialist services. Likewise practitioners within specialist child mental health services can use

standardised diagnostic measures to provide more comprehensive information to aid diagnosis (PenCLAHRC, 2016).

Following brief assessment with a standardised instrument, a diagnostic interview may be beneficial for a number of reasons. Measures that assess a range of constructs (e.g. broader anxiety interviews) may help with differential diagnosis, and identification of comorbid or co-occurring disorders, which may require a distinct treatment, or may interact with the treatment. For example, young people with OCD in the context of ASD respond less well to CBT intervention for OCD; Murray, Jassi, Mataix, Barrow & Krebs, 2015). As clinicians are completing the measure with the child or parent, clinicians can further explain items that a young person may find difficult to understand. The interviews are generally more in depth, and can help to guide treatment plans (for example, through identifying the most interfering or distressing symptom/s). However, in busy community clinic settings, full diagnostic interviews may be impractical. Some of the measures require significant training in order to be able to administer the interview with accuracy, which may also deter clinicians from using them in their standard clinical practice. Additionally, the properties of individual measures do need consideration, for example at times it may be clinically relevant to consider dimensional aspects if there are impairing symptoms which do not meet diagnostic threshold, but none-the-less, warrant a low intensity intervention. The CY-BOCS (Scahill et al., 1997) perhaps therefore provides the best of both worlds for a more in-depth assessment of OCD. It is freely available, requires little training, and measures only OCD (and therefore is significantly shorter than the other semi-structured interviews). It has excellent psychometric properties, and can be used to guide treatment. However, it does not allow for detection of comorbidities. The addition of the online administered DAWBA (Goodman et al., 2000), which can be completed by the family prior to their assessment, may provide the clinician with a reasonably complete picture of the symptoms without imposing on clinician time.

Measures of symptom severity

For tracking clinical severity and evaluating clinical improvement, any of the symptom severity measures outlined in Table 1 have potential, although given that other weekly measures are likely to be used in conjunction (such as evaluation of treatment goals and session evaluations), shorter measures may have value here. The RCADS OCD subscale (Chorpita et al., 2000) is the recommended weekly measure for CYPIAPT. Tracking symptoms weekly allows the clinician and client to make collaborative decisions about the nature and direction of treatment, as well as ensuring that the client is making the expected progress. Research has demonstrated that tracking symptom change through self-report questionnaire measures can lead to improved client outcome, compared to change judged by therapist opinion alone (Lambert, 2007) and a large scale trial across multiple 'real world' clinical settings showed that young people improved faster when clinicians received weekly feedback regarding symptom severity and functioning (Birkman, Kelley, Breda, de Andrade & Riemer, 2011). However, it is important to note that at a service level, the use of brief, broad measures (e.g. the SDQ, Goodman, 1997; or RCADS, Chorpita et al., 2000) may underestimate the clinical effectiveness of a service, compared to a narrow focused measure specific to the disorder in question (Lee, Jones, Goodman & Heyman, 2005). Therefore, it is wise to use at least two measures with both a broad and narrow focus to facilitate comparability to other services and to capture clinically significant change (Lee et al., 2005).

Conclusion

There are a number of measures with good psychometric properties, supporting clinicians with initial screening/identification of OCD, as well as formal diagnosis, symptom tracking and treatment evaluation. With the advent of brief screens, as well

The measurement of OCD in children and young people in clinical practice

as online diagnostic measures, such tools should not be a burden on clinical practice, but rather a helpful aid to support clinician's assessment and treatment of OCD.

Acknowledgements

No external funding was received in relation to this review. The research was supported by the National Institute for Health Research Biomedical Research Centre at Great Ormond Street Hospital for Children NHS Foundation Trust and University College London. The authors have declared that they have no competing or potential conflicts of interest.

References

- Abramowitz, J. S., Whiteside, S. P., & Deacon, B. J. (2006). The effectiveness of treatment for paediatric obsessive-compulsive disorder: A meta-analysis. *Behavior Therapy, 36*(1), 55-63.
- Ambrosini, P. J. (2000). Historical development and present status of the schedule for affective disorders and schizophrenia for school-age children (K-SADS). *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(1), 49-58.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. American Psychiatric Pub.
- Angold, A., & Costello, E. J. (2000). The child and adolescent psychiatric assessment (CAPA). *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(1), 39-48.
- Angold, A., Erkanli, A., Copeland, W., Goodman, R., Fisher, P. W., & Costello, E. J. (2012). Psychiatric diagnostic interviews for children and adolescents: a comparative study. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*(5), 506-517.
- Angold, A., Prendergast, M., Cox, A., Harrington, R., Simonoff, E., & Rutter, M. (1995). The child and adolescent psychiatric assessment (CAPA). *Psychological medicine, 25*(04), 739-753.
- Bamber, D., Tamplin, A., Park, R. J., Kyte, Z. A., & Goodyer, I. M. (2002). Development of a short Leyton obsessional inventory for children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(10), 1246-1252.
- Berg, C. Z., Whitaker, A., Davies, M., Flament, M. F., & Rapoport, J. L. (1988). The survey form of the Leyton Obsessional Inventory-Child Version: norms from an epidemiological study. *Journal of the American Academy of Child & Adolescent Psychiatry, 27*(6), 759-763.
- Bickman, L., Kelley, S. D., Breda, C., de Andrade, A. R., & Riemer, M. (2011). Effects of routine feedback to clinicians on mental health outcomes of youths: results of a randomized trial. *Psychiatric Services, 62*, 1423–1429.
- Birmaher, B., Ehmann, M., Axelson, D. A., Goldstein, B. I., Monk, K., Kalas, C., ... & Guyer, A. (2009). Schedule for affective disorders and schizophrenia for school-age children (K-SADS-PL) for the assessment of preschool children—a preliminary psychometric study. *Journal of psychiatric research, 43*(7), 680-686.
- Brasil, H. H., & Bordin, I. A. (2010). Convergent validity of K-SADS-PL by comparison with CBCL in a Portuguese speaking outpatient population. *BMC psychiatry, 10*(1), 1.

Chorpita, B. F., Moffitt, C. E., & Gray, J. (2005). Psychometric properties of the Revised Child Anxiety and Depression Scale in a clinical sample. *Behaviour Research and Therapy*, 43(3), 309-322.

Chorpita, B. F., Yim, L., Moffitt, C., Umemoto, L. A., & Francis, S. E. (2000). Assessment of symptoms of DSM-IV anxiety and depression in children: A revised child anxiety and depression scale. *Behaviour Research and Therapy*, 38(8), 835-855.

Cohen, L. L., La Greca, A. M., Blount, R. L., Kazak, A. E., Holmbeck, G. N., & Lemanek, K. L. (2008). Introduction to special issue: Evidence-based assessment in pediatric psychology. *Journal of Pediatric Psychology*, 33(9), 911-915.

Conelea, C. A., Freeman, J. B., & Garcia, A. M. (2012). Integrating behavioral theory with OCD assessment using the Y-BOCS/CY-BOCS symptom checklist. *Journal of Obsessive-Compulsive and Related Disorders*, 1(2), 112-118.

Child Outcomes Research Consortium. (n.d.). Retrieved April 12, 2016, from <http://www.corc.uk.net/>

Children and Young People's Improving Access to Psychological Therapies Programme. (n.d.). Retrieved April 12, 2016, from <https://www.england.nhs.uk/mentalhealth/cyp/>

Costello, A. J., Edelbrock, C. S., Dulcan, M. K., Kalas, R., & Klaric, S. H. (1984). Report on the NIMH Diagnostic Interview Schedule for Children (DIS-C) National Institute of Mental Health. Washington, DC.

De la Osa, N., Ezpeleta, L., Doménech, J. M., Navarro, J. B., & Losilla, J. M. (1997). Convergent and discriminant validity of the Structured Diagnostic Interview for Children and Adolescents (DICA-R). *Psychology in Spain*, 1(1), 37-44.

Evans, D. W., Leckman, J. F., Carter, A., Reznick, J. S., Henshaw, D., King, R. A., & Pauls, D. (1997). Ritual, habit, and perfectionism: The prevalence and development of compulsive-like behavior in normal young children. *Child Development*, 58-68.

Fernández de la Cruz, L., Barrow, F., Bolhuis, K., Krebs, G., Volz, C., Nakatani, E., ... & Mataix-Cols, D. (2013). Sexual obsessions in pediatric obsessive-compulsive disorder: clinical characteristics and treatment outcomes. *Depression and Anxiety*, 30(8), 732-740.

Fisher, P. W., Shaffer, D., Piacentini, J. C., Lapkin, J., Kafantaris, V., Leonard, H., & Herzog, D. B. (1993). Sensitivity of the Diagnostic Interview Schedule for Children, (DISC-2.1) for

The measurement of OCD in children and young people in clinical practice

specific diagnoses of children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 32(3), 666-673.

Flament, M. F., Whitaker, A., Rapoport, J. L., Davies, M., Berg, C. Z., Kalikow, K., ... & Shaffer, D. (1988). Obsessive compulsive disorder in adolescence: an epidemiological study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 27(6), 764-771.

Foa, E. B., Coles, M., Huppert, J. D., Pasupuleti, R. V., Franklin, M. E., & March, J. (2010). Development and validation of a child version of the obsessive compulsive inventory. *Behavior Therapy*, 41(1), 121-132.

Franklin, M. E., Sapyta, J., Freeman, J. B., Khanna, M., Compton, S., Almirall, D., ... & Foa, E. B. (2011). Cognitive behavior therapy augmentation of pharmacotherapy in pediatric obsessive-compulsive disorder: the Pediatric OCD Treatment Study II (POTS II) randomized controlled trial. *JAMA*, 306(11), 1224-1232.

Fristad, M. A., Teare, M., Weller, E. B., Weller, R. A., & Salmon, P. (1998). Study III: Development and concurrent validity of the Children's Interview for Psychiatric Syndromes—parent version (P-ChIPS). *Journal of Child and Adolescent Psychopharmacology*, 8(4), 221-226.

Geller, D. A., Biederman, J., Stewart, S. E., Mullin, B., Martin, A., Spencer, T., & Faraone, S. V. (2003). Which SSRI? A meta-analysis of pharmacotherapy trials in pediatric obsessive-compulsive disorder. *American Journal of Psychiatry*, 160(11), 1919-1928.

Geller, D. A., Doyle, R., Shaw, D., Mullin, B., Coffey, B., Petty, C., ... & Biederman, J. (2006). A quick and reliable screening measure for OCD in youth: reliability and validity of the obsessive compulsive scale of the child behavior checklist. *Comprehensive Psychiatry*, 47(3), 234-240.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, 38(5), 581-586.

Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(11), 1337-1345.

Goodman, R., Ford, T., Simmons, H., Gatward, R., & Meltzer, H. (2000). Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *The British Journal of Psychiatry*, 177(6), 534-539.

Grabill, K., Merlo, L., Duke, D., Harford, K. L., Keeley, M. L., Geffken, G. R., & Storch, E. A. (2008). Assessment of obsessive-compulsive disorder: a review. *Journal of Anxiety Disorders*, 22(1), 1-17.

The measurement of OCD in children and young people in clinical practice

- Heyman, I., Fombonne, E., Simmons, H., Ford, T., Meltzer, H., & Goodman, R. (2001). Prevalence of obsessive—compulsive disorder in the British nationwide survey of child mental health. *The British Journal of Psychiatry*, *179*(4), 324-329.
- Hudziak, J. J., Althoff, R. R., Stanger, C., Bejsterveldt, C. V., Nelson, E. C., Hanna, G. L., ... & Todd, R. D. (2006). The Obsessive Compulsive Scale of the Child Behavior Checklist predicts obsessive-compulsive disorder: a receiver operating characteristic curve analysis. *Journal of Child Psychology and Psychiatry*, *47*(2), 160-166.
- Iniesta-Sepúlveda, M., Rosa-Alcázar, A. I., Rosa-Alcázar, Á., & Storch, E. A. (2014). Evidence-based assessment in children and adolescents with obsessive—compulsive disorder. *Journal of Child and Family Studies*, *23*(8), 1455-1470.
- Jones, A. M., De Nadai, A. S., Arnold, E. B., McGuire, J. F., Lewin, A. B., Murphy, T. K., & Storch, E. A. (2013). Psychometric properties of the obsessive compulsive inventory: Child version in children and adolescents with Obsessive—Compulsive disorder. *Child Psychiatry & Human Development*, *44*(1), 137-151.
- Karver, M. S. (2006). Determinants of multiple informant agreement on child and adolescent behavior. *Journal of Abnormal Child Psychology*, *34*(2), 242-253.
- Kaufman, J., Birmaher, B., Brent, D., Rao, U. M. A., Flynn, C., Moreci, P., ... & Ryan, N. (1997). Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): initial reliability and validity data. *Journal of the American Academy of Child & Adolescent Psychiatry*, *36*(7), 980-988.
- Kaufman, J., Birmaher, B., Brent, D., Rao, U., & Ryan, N. (1996). Kiddie-Sads-present and Lifetime version (K-SADS-PL). Pittsburgh, University of Pittsburgh, School of Medicine.
- King, N., Inglis, S., Jenkins, M., Myerson, N., & Ollendick, T. (1995). Test-retest reliability of the survey form of the Leyton obsessional inventory-Child version. *Perceptual and Motor Skills*, *80*(3), 1200-1202.
- King, R. A., & Scahill, L. (1999). The assessment and coordination of treatment of children and adolescents with OCD. *Child and Adolescent Psychiatric Clinics of North America*, *8*(3), 577-97.
- Krebs, G., & Heyman, I. (2014). Obsessive-compulsive disorder in children and adolescents. *Archives of Disease in Childhood*, *100*(5), 495-499.

The measurement of OCD in children and young people in clinical practice

Kunst, G., Blidner, J., Esrubilsky, V., Longarela, H., & Vega, E. (2008). Evaluation of the validity of Diagnostic Interview Schedule for Children IV (DISC IV) in the city of Buenos Aires]. *Vertex* (Buenos Aires, Argentina), 20(86), 245-251.

Lambert, M. J., Bailey, R., Kimball, K., Shimokawa, K., Harmon, S. C., & Slade, K. (2007). *Clinical support tools manual-brief version-40. Salt Lake City: OQ Measures.*

Langley, A. K., Bergman, R. L., & Piacentini, J. C. (2002). Assessment of childhood anxiety. *International Review of Psychiatry*, 14(2), 102-113.

Law, D. (n.d.). Goals and goal based outcomes (GBOs): Some Useful Information. Retrieved from https://www.ucl.ac.uk/ebpu/docs/publication_files/GBOs_Booklet

Lee, W., Jones, L., Goodman, R., & Heyman, I. (2005). Broad outcome measures may underestimate effectiveness: an instrument comparison study. *Child and Adolescent Mental Health*, 10(3), 143-144.

Leonard, H. L., Goldberger, E. L., Rapoport, J. L., Cheslow, D. L., & Swedo, S. E. (1990). Childhood rituals: normal development or obsessive-compulsive symptoms?. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29(1), 17-23.

Lewin, A. B., & Piacentini, J. (2010). Evidence-based assessment of child obsessive compulsive disorder: recommendations for clinical practice and treatment research. *Child & Youth Care Forum*, 39(2), 73-89.

Lewin, A. B., Storch, E. A., Adkins, J., Murphy, T. K., & Geffken, G. R. (2005). Current directions in pediatric obsessive-compulsive disorder. *Pediatric Annals*, 34(2), 128-134.

March, J. S., Franklin, M. E., Leonard, H., Garcia, A., Moore, P., Freeman, J., & Foa, E. (2007). Tics moderate treatment outcome with sertraline but not cognitive-behavior therapy in pediatric obsessive-compulsive disorder. *Biological Psychiatry*, 61(3), 344-347.

Merlo, L. J., Storch, E. A., Murphy, T. K., Goodman, W. K., & Geffken, G. R. (2005). Assessment of pediatric obsessive-compulsive disorder: A critical review of current methodology. *Child Psychiatry and Human Development*, 36(2), 195-214.

Millet, B., Kochman, F., Gallarda, T., Krebs, M. O., Demonfaucon, F., Barrot, I., ... & Hantouche, E. G. (2004). Phenomenological and comorbid features associated in obsessive-compulsive disorder: influence of age of onset. *Journal of Affective Disorders*, 79(1), 241-246.

The measurement of OCD in children and young people in clinical practice

- Moore, P. S., Mariaskin, A., March, J., Franklin, M. E., Storch, E., & Geffken, G. (2007). Obsessive-compulsive disorder in children and adolescents: Diagnosis, comorbidity, and developmental factors. *Handbook of Child and Adolescent Obsessive-Compulsive Disorder*, 17-45.
- Murray, K., Jassi, A., Mataix-Cols, D., Barrow, F., & Krebs, G. (2015). Outcomes of cognitive behaviour therapy for obsessive-compulsive disorder in young people with and without autism spectrum disorders: A case controlled study. *Psychiatry Research*, 228(1), 8-13.
- Nelson, E. C., Hanna, G. L., Hudziak, J. J., Botteron, K. N., Heath, A. C., & Todd, R. D. (2001). Obsessive-compulsive scale of the child behavior checklist: specificity, sensitivity, and predictive power. *Pediatrics*, 108(1), e14-e14.
- National Institute for Health and Clinical Excellence (2005). Obsessive-compulsive disorder and body dysmorphic disorder: treatment. *NICE guideline* (CG31).
- Paing, W. W., Weller, R. A., Dixon, T. A., & Weller, E. B. (2010). Face-to-face versus telephone administration of the parent's version of the children's interview for psychiatric syndromes (P-ChIPS). *Current Psychiatry Reports*, 12(2), 122-126.
- Park, L. S., Burton, C. L., Dupuis, A., Shan, J., Storch, E. A., Crosbie, J., ... & Arnold, P. D. (2016). The Toronto Obsessive-Compulsive Scale: Psychometrics of a Dimensional Measure of Obsessive-Compulsive Traits. *Journal of the American Academy of Child & Adolescent Psychiatry*, 55(4), 310-318.
- Pediatric OCD Treatment Study Team (2004). Cognitive-behavior therapy, sertraline, and their combination for children and adolescents with obsessive-compulsive disorder: the Pediatric OCD Treatment Study (POTS) randomized controlled trial. *JAMA*, 292(16), 1969.
- PenCLAHRC (2016). Priority briefing: Does standard diagnostic assessment improve clinical outcome, and access to evidence based practice, in Child and Adolescent Mental Health Services? Retrieved from <http://clahrc-peninsula.nihr.ac.uk/uploads/attachments/Priority%20Briefs/Round%205/6%20Routine%20assessment%20CAMHS%20PB%20FINAL.pdf>
- Piacentini, J., Bergman, R. L., Keller, M., & McCracken, J. (2003). Functional impairment in children and adolescents with obsessive-compulsive disorder. *Journal of Child and Adolescent Psychopharmacology*, 13(2, Supplement 1), 61-69.
- Piqueras, J. A., Rodríguez-Jiménez, T., Ortiz, A. G., Moreno, E., Lázaro, L., & Godoy, A. (2015). Validation of the Short Obsessive-Compulsive Disorder Screener (SOCS) in children and adolescents. *British Journal of Psychiatry Open*, 1(1), 21-26.

The measurement of OCD in children and young people in clinical practice

Reich, W. (2000). Diagnostic interview for children and adolescents (DICA). *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(1), 59-66.

Reich, W., Leacock, N., & Shanfeld, K. (1997). DICA-IV Diagnostic Interview for children and Adolescents-IV [Computer software]. *Toronto, Ontario: Multi-Health Systems, Inc.*

Rosa-Alcázar, A. I., Sánchez-Meca, J., Rosa-Alcázar, Á., Iniesta-Sepúlveda, M., Olivares-Rodríguez, J., & Parada-Navas, J. L. (2015). Psychological Treatment of Obsessive-Compulsive Disorder in Children and Adolescents: a Meta-Analysis. *The Spanish Journal of Psychology*, 18, E20, 1-22.

Scahill, L., Riddle, M. A., McSwiggin-Hardin, M., Ort, S. I., King, R. A., Goodman, W. K., ... & Leckman, J. F. (1997). Children's Yale-Brown obsessive compulsive scale: reliability and validity. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(6), 844-852.

Schwab-Stone, M. E., Shaffer, D., Dulcan, M. K., Jensen, P. S., Fisher, P., Bird, H. R., ... & Rubio-Stipec, M. (1996). Criterion validity of the NIMH diagnostic interview schedule for children version 2.3 (DISC-2.3). *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(7), 878-888.

Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(1), 28-38.

Shafran, R., Frampton, I., Heyman, I., Reynolds, M., Teachman, B., & Rachman, S. (2003). The preliminary development of a new self-report measure for OCD in young people. *Journal of Adolescence*, 26(1), 137-142.

Sheehan DV, Lecrubier Y, Sheehan KH, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry*. 1998;59(suppl 20):21-32.

Sheehan, D. V., Sheehan, K. H., Shytle, R. D., Janavs, J., Bannon, Y., Rogers, J. E., ... & Wilkinson, B. (2010). Reliability and validity of the mini international neuropsychiatric interview for children and adolescents (MINI-KID). *The Journal of clinical psychiatry*, 71(3), 313-326.

Simmons, M., Wilkinson, P., & Dubicka, B. (2015). Measurement Issues: Depression measures in children and adolescents. *Child and Adolescent Mental Health*, 20(4), 230-241.

Simonoff, E., Pickles, A., Charman, T., Chandler, S., Loucas, T., & Baird, G. (2008). Psychiatric disorders in children with autism spectrum disorders: prevalence, comorbidity, and associated factors in a population-derived sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(8), 921-929.

The measurement of OCD in children and young people in clinical practice

Skoog, G., & Skoog, I. (1999). A 40-year follow-up of patients with obsessive-compulsive disorder. *Archives of General Psychiatry*, *56*(2), 121-127.

Stengler, K., Olbrich, S., Heider, D., Dietrich, S., Riedel-Heller, S., & Jahn, I. (2013). Mental health treatment seeking among patients with OCD: impact of age of onset. *Social Psychiatry and Psychiatric Epidemiology*, *48*(5), 813-819.

Stewart, S. E., Geller, D. A., Jenike, M., Pauls, D., Shaw, D., Mullin, B., & Faraone, S. V. (2004). Long-term outcome of paediatric obsessive-compulsive disorder: a meta-analysis and qualitative review of the literature. *Acta Psychiatrica Scandinavica*, *110*(1), 4-13.

Stewart, S. E., Ceranoglu, T. A., O'Hanley, T., & Geller, D. A. (2005). Performance of clinician versus self-report measures to identify obsessive-compulsive disorder in children and adolescents. *Journal of Child & Adolescent Psychopharmacology*, *15*(6), 956-963.

Storch, E. A., Khanna, M., Merlo, L. J., Loew, B. A., Franklin, M., Reid, J. M., ... & Murphy, T. K. (2009). Children's Florida obsessive compulsive inventory: psychometric properties and feasibility of a self-report measure of obsessive-compulsive symptoms in youth. *Child Psychiatry and Human Development*, *40*(3), 467-483.

Storch, E. A., Murphy, T. K., Adkins, J. W., Lewin, A. B., Geffken, G. R., Johns, N. B., ... & Goodman, W. K. (2006). The children's Yale-Brown obsessive-compulsive scale: Psychometric properties of child-and parent-report formats. *Journal of Anxiety Disorders*, *20*(8), 1055-1070.

Storch, E. A., Murphy, T. K., Bagner, D. M., Johns, N. B., Baumeister, A. L., Goodman, W. K., & Geffken, G. R. (2006). Reliability and validity of the child behavior checklist obsessive-compulsive scale. *Journal of Anxiety Disorders*, *20*(4), 473-485.

Storch, E. A., Park, J. M., Lewin, A. B., Morgan, J. R., Jones, A. M., & Murphy, T. K. (2011). The Leyton Obsessional Inventory-Child Version Survey Form does not demonstrate adequate psychometric properties in American youth with pediatric obsessive-compulsive disorder. *Journal of Anxiety Disorders*, *25*(4), 574-578.

Swenson, L. P., Esposito-Smythers, C., Hunt, J. I., Hollander, B. L., Dyl, J., Rizzo, C. J., ... & Spirito, A. (2007). Validation of the Children's Interview for Psychiatric Syndromes (ChIPS) with psychiatrically hospitalized adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*(11), 1482-1490.

Teare, M., Fristad, M. A., Weller, E. B., Weller, R. A., & Salmon, P. (1998). Study I: development and criterion validity of the Children's Interview for Psychiatric Syndromes (ChIPS). *Journal of Child and Adolescent Psychopharmacology*, *8*(4), 205-211.

The measurement of OCD in children and young people in clinical practice

Teare, M., Fristad, M. A., Weller, E. B., Weller, R. A., & Salmon, P. (1998). Study II: concurrent validity of the DSM-III-R Children's Interview for Psychiatric Syndromes (ChIPS). *Journal of Child and Adolescent Psychopharmacology*, 8(4), 213-219.

Uher, R., Heyman, I., Mortimore, C., Frampton, I., & Goodman, R. (2007). Screening young people for obsessive-compulsive disorder. *The British Journal of Psychiatry*, 191(4), 353-354.

Uher, R., Heyman, I., Turner, C. M., & Shafran, R. (2008). Self-, parent-report and interview measures of obsessive-compulsive disorder in children and adolescents. *Journal of Anxiety Disorders*, 22(6), 979-990.

Walitza, S., Melfsen, S., Jans, T., Zellmann, H., Wewetzer, C., & Warnke, A. (2011). Obsessive-compulsive disorder in children and adolescents. *Dtsch Arztebl Int*, 108(11), 173-9.

Watson, H. J., & Rees, C. S. (2008). Meta-analysis of randomized, controlled treatment trials for pediatric obsessive-compulsive disorder. *Journal of Child Psychology and Psychiatry*, 49(5), 489-498.

Weller, E. B., Weller, R. A., Fristad, M. A., Rooney, M. T., & Schecter, J. (2000). Children's interview for psychiatric syndromes (ChIPS). *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(1), 76-84.

Williams, T. I., & Shafran, R. (2015). Obsessive-compulsive disorder in young people. *BJPsych Advances*, 21(3), 196-205.

Box 1. Psychometric properties of measures

Validity

Convergent (CON): how well scores on the measure correlate with psychometrically robust measures of the same concept.

Divergent (DIV): The extent to which the measure correlates with psychometrically robust measures of different concepts.

Reliability: Consistency of measurement

Internal Consistency(IC): correlation between items on one measure to test whether they measure the same construct. Measured with Cronbach's alpha (α):

$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Test-Retest (TR): The extent to which a measure produces the same result when completed on different occasions. Measured with the Intra Class Correlation Coefficient (ICC).

Sensitivity (SE)

The proportion of true cases correctly identified [true positives/(true positives + false negatives)]

Specificity (SP)

The proportion of true non-cases correctly identified [true negatives/(true negatives + false positives)]

Box 2. NICE guidelines regarding use of standardised assessments for OCD in children and young people (NICE, 2005)

Once the diagnosis of OCD is suspected, it can be helpful to use standardised rating scales to help the young person reveal specific information regarding symptoms, rate severity, and monitor treatment. These might include disorder specific scales such as the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Scahill *et al.*, 1997) or the Child Obsessive Compulsive Inventory (Shafran *et al.*, 2003). A general emotional and behavioural symptom checklist, such as the Strength and Difficulties Questionnaire (SDQ; Goodman, 2001) will reduce the possibility that comorbid conditions are missed.