

Manual for the
Children’s Somatic Symptoms Inventory (CSSI)
[formerly the Children’s Somatization Inventory (CSI)]

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OVERVIEW:

The Children’s Somatic Symptoms Inventory (CSSI) is a self-report measure of somatic distress – the extent to which youth are bothered by various nonspecific somatic symptoms. A parallel parent-proxy report of the CSSI asks parents to rate their children’s somatic symptoms. The CSSI is available in 24-item (CSSI-24) (Walker, Beck, Garber, & Lambert, 2009) and 8-item (CSSI-8) (Walker, Garber, Lambert, & Campo, 2011) versions. An adult self-report version (ASSI-24) is also available.

HISTORY AND NAME CHANGE:

The CSSI was created as a dimensional measure of the severity of bothersome somatic symptoms experienced by children and adolescents. When it was developed in 1991 (Walker, Garber, & Greene, 1991) the measure was named the *Child Somatization Inventory (CSI)* because most of the symptom items were derived from the somatization subscale of the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenleth, & Covi, 1974). The original name was an unfortunate choice, as clinicians and investigators sometimes mistakenly inferred that the CSI was a measure of Somatization Disorder, a psychiatric disorder defined by DSM III (APA, 1980). To avoid this confusion, the name has been changed to *Children’s Somatic Symptoms Inventory*, with the previous CSI now changed to **CSSI**.

CITING THE CSSI:

Please cite the following references:

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DEVELOPMENT AND VALIDATION OF THE CSSI:

Medically unexplained somatic symptoms gained attention in the pediatric literature from Apley’s (1975) clinical observation of these symptoms in children with recurrent abdominal pain and a subsequent study that searched the medical records of patients with medically unexplained or “functional” abdominal pain for symptoms of DSM III Somatization Disorder (APA, 1980).

Walker and colleagues (Walker, Garber, & Greene, 1991) developed and validated the original 35-item CSI to standardize assessment of children's nonspecific somatic symptoms, first in a sample of pediatric patients presenting for evaluation of abdominal pain. Subsequent validations were conducted in the community and with other patient populations (Garber, Walker, & Zeman, 1991; Gulewitsch, Rosenkranz, Barkmann, & Schlarb, 2015; Kadioğlu, Şişman, & Ergun, 2012; Litcher et al., 2001; Meesters, Muris, Ghys, Reumerman, & Rooijmans, 2003; Orgilés & Espada, 2014). The current 24-item CSSI (Walker, Beck, Garber, & Lambert, 2009) is based on extensive psychometric evaluation that resulted in elimination of infrequently endorsed items and those with low item-total correlations. The 8-item CSSI-8 has good psychometric properties, is highly correlated with the CSSI-24 ($r = .90$ in a pediatric patient sample; $r = .94$ in a community sample) (Walker et al., 2011), and may be useful when a briefer measure is needed (e.g., Dyb, Jensen, Glad, Nygaard, & Thoresen, 2014; Stene & Dyb, 2015).

It is important to note that the CSSI assesses the extent of bothersome somatic symptoms without making any assumptions regarding the cause of these symptoms. Without a medical evaluation, the symptoms cannot be interpreted as "medically unexplained" or "functional." Indeed, youth with organic disease may have high scores on the CSSI.

ADMINISTRATION:

Age: The CSSI is appropriate for use with children and adolescents aged 8-17.

Format: The CSSI may be administered to children, adolescents, and parents as a self-report measure. For younger youth and those with low reading ability, we recommend oral administration, with the interviewer reading each item aloud and the respondent selecting a response from a card that lists response options. In the case of telephone administration, the response card can be sent to the child/parent prior to the interview, or the interviewer may instruct the child (or parent) to write the options on paper at home to have in front of them when they rate each item. The CSSI also can be administered online (e.g., in [REDCap](#)).

Instructions and Rating scale: Respondents are asked to rate the extent to which the child was bothered by each of the nonspecific somatic symptoms listed. The reporting period "during the past 2 weeks" is used to minimize the potential influence of acute symptoms associated with any brief transient illness (e.g., upper respiratory infection, minor injury). Some investigators and clinicians have used a different reporting period (e.g., one week) to be consistent with other measures in their protocols.

The instructions and rating scale are as follows:

Below is a list of symptoms that children and teens sometimes have. Please circle a number telling how much you (your child) were bothered by each symptom during the past two weeks.

0 = Not at all

1 = A little

2 = Some

3 = A lot

4 = A whole lot

Scoring: Total scores are computed by summing the ratings for each item. Higher scores indicate greater somatic distress.

Missing Items: If the CSSI-24 has at least 20 nonmissing items, it still can be scored, although the scoring instructions are different in this case (see Walker et al., 2009 for instructions).

PSYCHOMETRIC PROPERTIES:

Reliability: Walker and colleagues (2009) evaluated the psychometric properties of the CSSI-24 in a sample of 876 consecutive new patients ages 8- to 18-years-old ($M = 11.66$, $SD = 2.47$; 59% female) referred to a pediatric gastroenterology clinic at a university medical center for evaluation of chronic or recurrent abdominal pain. They split the sample into a learning sample ($n = 417$) and a cross-validation sample ($n = 459$). Internal consistency reliability was good for both samples (alphas = .88 and .87, respectively). See Walker et al. (2009) for more detail.

Validity: Construct validity has been demonstrated via significant correlations between the CSSI-24 and measures of anxiety, depression, functional disability, and quality of life.

Factor Structure: Walker et al. (2009) evaluated the factor structure of the CSSI-24. A principal component analysis (PCA) indicated that a single large component explained about 30% of the total variance, and a second independent component explained 8% of the variance. PCA loadings for the second eigenvalue were relatively low. Others also have evaluated the CSSI factor structure (Essau, Olaya, Bokszczanin, Gilvarry, & Bray, 2013; Lavigne, Saps, & Bryant, 2014); Orgilés & Espada, 2014).

Subscales of the CSSI-24: Subscales for gastrointestinal (GI) and non-gastrointestinal (non-GI) symptoms may be constructed by summing responses to the relevant items of the CSSI-24. The GI symptom subscale includes items referring to nausea, constipation, diarrhea, stomachaches, vomiting, feeling bloated or gassy, and food making you sick). The remaining 17 items make up the non-GI symptom subscale. Studies using these subscales include: Horst et al., 2014; Langer, Romano, Levy, Walker, & Whitehead, 2009; Levy et al., 2004, 2010, 2014; Litcher et al., 2001; Walker, Sherman, Bruehl, Garber, & Smith, 2012.

Sensitivity to Treatment: The GI symptoms subscale of the CSSI-24 has shown sensitivity to treatment. Levy and colleagues (2010) randomly assigned 200 children with functional abdominal pain (ages 7-17 years) and their parents to receive either cognitive-behavioral therapy (CBT) or an educational intervention. Parents of children who received CBT reported significantly fewer child somatic complaints after intervention, compared to youth in the education group (Levy et al., 2010).

TRANSLATIONS:

The original CSSI is in English. Walker has reviewed and approved translations of the CSSI into the languages listed below. These translations may be accessed at: <http://pediatrics.mc.vanderbilt.edu/interior.php?mid=5679>

Chinese	German	Norwegian (CSSI-8)	Swedish
Danish	Hebrew	Portuguese	Turkish
Farsi	Hindi	Sinhala (Sri Lanka)	Urdu
French	Italian	Spanish	

For permission to translate the CSSI into additional languages, contact Dr. Lynn Walker at lynn.walker@vanderbilt.edu. We request forward and back translation with independent translators, and that the back translation be sent to us for review and approval. We also request a copy of the final translation for distribution to investigators seeking translated versions of the CSSI.

POPULATIONS:

The CSSI is appropriate for assessing somatic symptoms among youth in both community and clinical samples. Selected references for studies using the CSSI in community and clinical samples are listed below.

Community samples:

- **Britain** (Vila et al., 2009)
- **Germany** (Gulewitsch et al., 2014)
- **Italy** (Rossi, Bruno, Chiusalupi, & Ciaramella, 2018)
- **South Africa** (Swain, Pillay, & Kliewer, 2017)

- **Spain** (Orgilés & Espada, 2013)
- **The Netherlands** (Meesters et al., 2003)
- **Ukraine** (Litcher et al., 2001)
- **United States** (Garber et al., 1991; Lavigne et al., 2014; Wilson, Moss, Palermo, & Fales, 2014)

Clinical samples:

- **Anorexia nervosa** (e.g., Perez, Coley, Crandall, Di Lorenzo, & Bravender, 2013)
- **Chest pain** (e.g., McDonnell & White, 2010)
- **Chronic fatigue syndrome** (e.g., van de Putte, Engelbert, Kuis, Kimpen & Uiterwaal, 2006)
- **Chronic pain** (e.g., Mahrer, Montaña, & Gold, 2012; Randall et al., 2018)
- **Constipation** (e.g., Rajindrajith, Devanarayana, Weerasooriya, Hathagoda, & Benninga, 2013)
- **Conversion disorder** (e.g., Yilmaz, Bilgiç, Akça, Türkoğlu, & Hergüner, 2015)
- **Disaster victims** (e.g., Bromet et al., 2000; Bugge et al., 2017; Dyb et al., 2014; Stene & Dyb, 2015)
- **Dental patients** (e.g., Foster Page, Thomson, Ukra, & Baker, 2013; Foster Page, Thomson, Ukra, & Farella, 2013)
- **Functional abdominal pain** (e.g., Dengler-Crish, Horst, & Walker, 2011; Devanarayana et al., 2014; Jarrett, Heitkemper, Czyzewski, Zeltzer, & Shulman, 2012; Horst et al., 2014; Levy et al., 2014; Roohafza, Pourmoghaddas, Saneian, & Gholamrezaei, 2014; Sherman, Bruehl, Smith, & Walker, 2013; Walker, Dengler-Crish, Rippel, & Bruehl, 2010; Walker et al., 2012)
- **Gastrointestinal symptoms** (e.g., Alioto & Di Lorenzo, 2018; Rajindrajith et al., 2018; Russell, Stone, & Walker, 2017; Seino et al., 2012; Williams, Czyzewski, Self, & Shulman, 2015; Wong et al., 2014)
- **Headache** (e.g., Cappucci & Simons, 2015)
- **Irritable bowel syndrome** (e.g., Chumpitazi et al., 2018; Evans et al., 2014; Vlieger, Rutten, Govers, Frankenhuis, & Benninga, 2012)
- **Psychogenic nonepileptic seizures** (e.g., Salpekar et al., 2010)
- **Siblings of children with intellectual disability** (e.g., Lobato, et al., 2011; Long et al., 2013)
- **Sickle-cell disease** (e.g., Tsao, Jacob, Seidman, Lewis, & Zeltzer, 2013)
- **Students with performance and interaction anxiety** (e.g., May et al., 2014)

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CSSI-24 (Child Report)

Your Symptoms

Below is a list of symptoms that children and teens sometimes have. Please circle a number telling how much you were bothered by each symptom during the past two weeks.

In the past 2 weeks, how much were you bothered by each symptom?

	Not at all	A little	Some	A lot	A whole lot
1. Headaches	0	1	2	3	4
2. Faintness or dizziness (feeling faint or dizzy)	0	1	2	3	4
3. Pain in your heart or chest	0	1	2	3	4
4. Feeling low in energy or slowed down	0	1	2	3	4
5. Pains in your lower back	0	1	2	3	4
6. Sore muscles	0	1	2	3	4
7. Trouble getting your breath (when you're not exercising)	0	1	2	3	4
8. Hot or cold spells (suddenly feeling hot or cold for no reason)	0	1	2	3	4
9. Numbness or tingling in parts of your body	0	1	2	3	4
10. Weakness (feeling weak) in parts of your body	0	1	2	3	4
11. Heavy feelings in your arms or legs (when they feel too heavy to move)	0	1	2	3	4
12. Nausea or upset stomach (feeling like you might throw up, or having an upset stomach)	0	1	2	3	4
13. Constipation (when it's hard to have a B.M. or go poop)	0	1	2	3	4
14. Loose (runny) BM's or diarrhea	0	1	2	3	4
15. Pain in your stomach or abdomen (stomach aches)	0	1	2	3	4
16. Your heart beating too fast (even when you're not exercising)	0	1	2	3	4

How much were you bothered by each symptom in the past 2 weeks?

	Not at all	A little	Some	A lot	A whole lot
17. Difficulty swallowing	0	1	2	3	4
18. Losing your voice	0	1	2	3	4
19. Blurred vision (when things look blurry, even with glasses on)	0	1	2	3	4
20. Vomiting (or throwing up)	0	1	2	3	4
21. Feeling bloated or gassy	0	1	2	3	4
22. Food making you sick	0	1	2	3	4
23. Pain in your knees, elbows or other joints	0	1	2	3	4
24. Pain in your arms or legs	0	1	2	3	4

CSSI-24 (Parent Report)

Your Child's Symptoms

Below is a list of symptoms that children and teens sometimes have. Please read each one and circle a number telling how much your child was bothered by each symptom during the past two weeks.

In the past 2 weeks, how much was your child bothered by each symptom?

	Not at all	A little	Some	A lot	A whole lot
1. Headaches	0	1	2	3	4
2. Faintness or dizziness	0	1	2	3	4
3. Pain in the heart or chest	0	1	2	3	4
4. Feeling low in energy or slowed down	0	1	2	3	4
5. Pains in the lower back	0	1	2	3	4
6. Sore muscles	0	1	2	3	4
7. Trouble getting breath (when not exercising)	0	1	2	3	4
8. Hot or cold spells (feeling hot or cold for no reason)	0	1	2	3	4
9. Numbness or tingling in parts of the body	0	1	2	3	4
10. Weakness in parts of the body	0	1	2	3	4
11. Heavy feelings in arms or legs	0	1	2	3	4
12. Nausea or upset stomach	0	1	2	3	4
13. Constipation (hard to have a B.M.)	0	1	2	3	4
14. Loose (runny) bowel movements or diarrhea	0	1	2	3	4
15. Pain in stomach or abdomen (stomach aches)	0	1	2	3	4
16. Heart beating too fast (even when not exercising)	0	1	2	3	4
17. Difficulty swallowing	0	1	2	3	4

How much was your child bothered by each symptom in the past 2 weeks?

	Not at all	A little	Some	A lot	A whole lot
18. Loss of voice	0	1	2	3	4
19. Blurred vision (even with glasses on)	0	1	2	3	4
20. Vomiting	0	1	2	3	4
21. Bloating (gassy)	0	1	2	3	4
22. Food making child sick	0	1	2	3	4
23. Pain in knees, elbows or other joints	0	1	2	3	4
24. Pain in arms or legs	0	1	2	3	4

CSSI-8

From Walker, Garber, Lambert & Campo (2011)

Item Sum Score	Rasch Measure Score	Percentile
0	4	1
1	16	1
2	23	4
3	27	7
4	30	12
5	32	19
6	34	27
7	37	35
8	38	43
9	40	50
10	42	57
11	43	64
12	45	70
13	46	75
14	48	80
15	49	84
16	50	88
17	52	91
18	53	93
19	54	95
20	55	96
21	57	97
22	58	98
23	60	99
24	61	99
25	63	99
26	65	99
27	67	99
28	70	99
29	73	99
30	77	99
31	85	99
32	97	100

Calculating a Total Score for the CSSI-8

- A. If the CSSI-8 has no missing items, compute the total score as the sum of the 8 items. Items are scored 0–4. For the CSSI-8, item sum scores can range from 0 to 32.
- B. If the CSSI-8 has missing items, compute the total score in two steps:
 1. Calculate the average item score from all nonmissing items.
 2. Multiply the average item score by 8.
- C. If there are fewer than 6 completed items, researchers may treat the CSSI-8 as missing or incomplete.
- D. Researchers who want equal-interval scores may look up the Rasch measure score that corresponds to the Item Sum.

CSSI-8 (Child Report)

Your Symptoms

Below is a list of symptoms that children and teenagers sometimes have. Circle a number telling how much you were bothered by each symptom during the past two weeks.

In the last 2 weeks, how much were you bothered by each symptom?

	Not at all	A little	Some	A lot	A whole lot
1. Pain in your stomach or abdomen (stomach aches)	0	1	2	3	4
2. Headaches	0	1	2	3	4
3. Pains in your lower back	0	1	2	3	4
4. Faintness or dizziness (feeling faint or dizzy)	0	1	2	3	4
5. Pain in your arms or legs	0	1	2	3	4
6. Your heart beating too fast (even when you're not exercising)	0	1	2	3	4
7. Nausea or upset stomach (feeling like you might throw up, or having an upset stomach)	0	1	2	3	4
8. Weakness (feeling weak) in parts of your body	0	1	2	3	4

CSSI-8 (Parent Report)

Your Child's Symptoms

Below is a list of symptoms that children and teenagers sometimes have. Read each one and circle a number telling how much your child was bothered by each symptom during the past two weeks.

In the last 2 weeks, how much was your child bothered by each symptom?

	Not at all	A little	Some	A lot	A whole lot
1. Pain in stomach or abdomen (stomach aches)	0	1	2	3	4
2. Headaches	0	1	2	3	4
3. Pains in lower back	0	1	2	3	4
4. Faintness or dizziness	0	1	2	3	4
5. Pain in arms or legs	0	1	2	3	4
6. Heart beating too fast (even when not exercising)	0	1	2	3	4
7. Nausea or upset stomach	0	1	2	3	4
8. Weakness in parts of the body	0	1	2	3	4