OVERVIEW:
The Abdominal Pain Index (API; Laird, Sherman, Smith, & Walker, 2015) is a child self-report measure that assesses characteristics of children’s abdominal pain during the previous 2 weeks. A parallel parent-report form of the API is available for parents to rate their child’s abdominal pain. The API consists of 4 items and has been validated for use in the United States (Laird et al., 2015) and the Netherlands (Oostenbrink, Jongman, Landgraf, Raat, & Moll, 2010).

CITING THE API:
Please use the following reference:

ADMINISTRATION:
Age: The API is appropriate for use with children and adolescents aged 8-18.

Format: The API may be administered to children and parents as a self-report measure. For younger youth and those with low reading ability we recommend administering the API orally, with the interviewer reading each item aloud and the respondent selecting a response from a card with the response options listed. In the case of telephone administration, the response card may be sent to the child/parent prior to the interview, or the interviewer may instruct the child (or his/her parent) to write the options on a piece of paper. The API also may be administered online (such as in REDCap).

Instructions and Rating scale: Parents or children are asked to report on the characteristics of the child’s abdominal pain during the previous 2 weeks. The frequency of abdominal pain episodes during the previous 2 weeks is rated on a 6-point scale ranging from (0) *not at all* to (5) *every day*. The typical daily frequency of abdominal pain episodes is rated on a 6-point scale ranging from (0) *none* to (5) *constant during the day*. The typical duration of pain episodes is rated on a 9-point scale ranging from (0) *none* to (8) *all day*. The typical intensity of abdominal pain in the past two weeks is rated on an 11-point scale ranging from (0) *no pain* to (10) *the most pain possible*.

Scoring: To create a composite score for the API, use the following procedure: (1) items that are not already on a 6-point scale are converted to a scale ranging from 0 to 5, (2) the mean of all four items is taken to achieve a score ranging from 0 to 5, and (3) to put this measure on the same scale as other self-reported measures of pain characteristics (Walker, Smith, Garber, & Claar, 2005; Walker, Smith, Garber, & Van Slyke, 1997), this mean is converted to a 5-point scale to yield a mean ranging from 0 to 4. See the table below for more detailed instructions for these calculations:

<table>
<thead>
<tr>
<th>Computation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>API3 x 5/8 = API3NEW</td>
<td>Item 3 is converted to a 6-point scale by multiplying its value by 5/8.</td>
</tr>
<tr>
<td>API4/2 = API4NEW</td>
<td>Item 4 is converted to a 6-point scale by dividing its value by 2.</td>
</tr>
<tr>
<td>(API1 + API2 + API3NEW + API4NEW)/4 = UNSCALEDMEAN.</td>
<td>This average is converted to a final composite score on a 4-point scale by multiplying it by 4/5.</td>
</tr>
<tr>
<td>UNSCALEDMEAN x 4/5 = APIFINAL</td>
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</table>
Populations: The API is appropriate for assessing abdominal pain among youth in both community and clinical populations. Citations are listed below (last updated on 1/19/2016).

Community and clinical populations are from several countries:
- The Netherlands (Oostenbrink et al., 2010; van Der Veek et al., 2010)
- Norway (Helgeland et al., 2011)
- Scandinavia (Gieteling et al., 2012)
- United States (Guite et al., 2007; Lipani & Walker, 2006)

Other clinical populations include:
- Chronic Abdominal Pain (e.g., Boyer et al., 2006; Greco, Freeman, & Dufton, 2007; Campo et al., 2004; Kaminsky, Robertson, & Dewey, 2006; Robins et al., 2005; Walker, Baber, Garber, & Smith, 2008)
- Crohn’s Disease (e.g., Benhanyon et al., 2013)
- Functional Abdominal Pain (e.g., Horst et al., 2014; Sherman et al., 2013; Shirkey, Smith, & Walker, 2011; van Der Veek et al., 2014, 2013; Walker et al., 2012)
- Inflammatory Bowel Disease (e.g., Szigethy et al., 2014)
- Irritable Bowel Syndrome (e.g., Gulewitsch et al., 2013)

PSYCHOMETRIC PROPERTIES:

Reliability: Laird and colleagues (2015) evaluated the psychometric properties of the API in a sample of 867 children with Functional Abdominal Pain (FAP) and 1,100 healthy controls. Cronbach’s alpha for the combined sample of children with FAP and healthy controls was .83 (.73 for children with FAP, and .84 for healthy controls). In a previous report using a subset of 843 children with FAP and their parents, Cronbach’s alpha was .75 for child report and .76 for parent proxy report (Walker, Sherman, Bruehl, Garber, & Smith, 2012).

Test-retest reliability was assessed by Laird and colleagues (2015) by examining the strengths of the correlations between API scores at baseline and all follow-up time points. Among patients with FAP, the API score at baseline was strongly correlated with the API score at 2 weeks ($r = .59$, $p < .001$), and moderately correlated with the API score at 3 months ($r = .36$, $p < .001$) and 6 months ($r = .34$, $p < .001$).

Validity: The API showed good concurrent validity for the subset of FAP patients ($N = 290$) for whom parent proxy reports were collected (Laird et al., 2015); pediatric patients’ reports of abdominal pain severity were strongly correlated with parental reports ($r = .60$, $p < .001$, $N = 290$). The API has also demonstrated good discriminant validity, as there was a statistically significant difference between the average API scores of children with and without FAP (Laird et al., 2015). Lastly, for FAP patients, the API has demonstrated good construct validity (Laird et al., 2015) via a strong correlation between composite scores on the API and self-reports of more severe pain threat on the PBQ ($r = .56$, $p < .001$), moderate correlations between API composite scores and greater self-reported disability on the FDI ($r = .36$, $p < .001$), and greater gastrointestinal somatic symptoms on the CSI ($r = .52$, $p < .001$).

Predictive validity was assessed via long-term follow-up assessments (conducted on average 8.7 years after baseline) with a subset of respondents from the combined sample (FAP and Controls) in the study by Laird and colleagues (2015). Children who went on to meet the criteria for a Functional Gastrointestinal Disorder as adolescents or adults had significantly higher baseline scores on the API, compared with those children who did not later meet the criteria for a FGID. Furthermore, greater severity of child-reported abdominal pain as assessed with the API at baseline was moderately associated with greater self-reported intensity of abdominal pain at long-term follow-up. See Laird et al., 2015 for further information on evaluation of test validity.

Sensitivity to Treatment: The API has shown sensitivity to treatment in two randomized controlled trials and one drug efficacy study. Robins and colleagues (2005) conducted a randomized controlled trial of a cognitive-behavioral family intervention for children with recurrent abdominal pain. At 3 months and 6-12 months post-treatment, the study group that received the CBT intervention showed significantly lower scores on the parent-report version of the API compared with the group that received standard medical care only. In another randomized controlled trial of a hypnotherapeutic-behavioral intervention for children with functional abdominal
pain, there was a significantly stronger reduction in children's abdominal pain symptoms on the self-report API in those who received the treatment compared with the control group (Gulewitsch et al., 2013). Lastly, in an exploratory study by Campo and colleagues (2004), children and adolescents with abdominal pain and comorbid internalizing disorders who received Citalopram treatment showed significant improvements from baseline to post-treatment in both child- and parent-reported abdominal symptoms on the API.

TRANSLATIONS:
The API is available in English and has also been translated into Dutch and Spanish. The translations may be accessed at: http://pediatrics.mc.vanderbilt.edu/interior.php?mid=5679

For permission to translate the API 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 CSI.

SELECTED REFERENCES:


Abdominal Pain Index
(Walker, Sherman, Bruehl, Garber, Smith, 2012)

Your Abdominal Pain in the Past 2 Weeks

In the last 2 weeks, how often have you had abdominal pain (stomach aches)?

____ 0. not at all       ____ 3. five or six days
____ 1. one or two days  ____ 4. most days
____ 2. three or four days  ____ 5. every day

In the last 2 weeks, how many times a day did you usually have the pain?

____ 0. none       ____ 3. four or five times a day
____ 1. once a day  ____ 4. six or more times during the day
____ 2. two or three times a day  ____ 5. constant during the day

In the last 2 weeks, when your stomach hurt, how long did the pain last?

____ 0. no pain
____ 1. a few minutes
____ 2. about half an hour
____ 3. about an hour
____ 4. between one and two hours
____ 5. three or four hours
____ 6. five or six hours
____ 7. most of the day
____ 8. all day (it never completely stops)

In the last 2 weeks, when your stomach hurt, how much did it usually hurt?

**Optional item (not used in total score)**
What is the most that your stomach hurt in the past two weeks?

<table>
<thead>
<tr>
<th>The MOST pain possible</th>
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</table>
Abdominal Pain Index
(Walker, Sherman, Bruehl, Garber, Smith, 2012)

Your Child's Abdominal Pain in the Past 2 Weeks

In the last 2 weeks, how often has your child had abdominal pain (stomach aches)?

_____ 0. not at all  _____ 1. one or two days  _____ 2. three or four days
_____ 3. five or six days  _____ 4. most days

In the last 2 weeks, how many times a day did he or she usually have the pain?

_____ 0. none  _____ 1. once a day  _____ 2. two or three times a day
_____ 3. four or five times a day  _____ 4. six or more times during the day

In the last 2 weeks, when your child's stomach hurt, how long did the pain last?

_____ 0. no pain  _____ 1. a few minutes  _____ 2. about half an hour
_____ 3. about an hour  _____ 4. between one and two hours

_____ 5. three or four hours  _____ 6. five or six hours

_____ 7. most of the day  _____ 8. all day (it never completely stops)

In the last 2 weeks, when your child's stomach hurt, how much did it usually hurt?

**Optional item (not used in total score)**
What is the most that your child's stomach hurt in the past two weeks?

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