Published in final edited form as:

Pain. 2008 October 31; 139(3): 644–652. doi:10.1016/j.pain.2008.06.022.

Validation of a self-report questionnaire version of the Child Activity Limitations Interview (CALI): The CALI-21

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Abstract

The Child Activity Limitations Interview (CALI) is a measure designed to assess functional impairment due to chronic pain in school-age children. In this study, we present a self-report questionnaire version of the CALI (the CALI-21) that extends the original interview measure. The purpose of the current study was to provide internal consistency, cross-informant reliability and construct validity of the CALI-21 on a clinical sample of children and adolescents with chronic pain conditions. One hundred fifty-five children and adolescents (65 males, 90 females; ages 8–18 years, $M = 14.31$, $SD = 2.45$) with chronic pain completed questionnaires as part of their clinic intake procedures at their consultation visit in a pediatric pain management clinic. An exploratory factor analysis was conducted to measure latent constructs within the broader domain of functional impairment. Results of the exploratory factor analysis yielded two factors representing limitation in Active and Routine activities on both parent and child report. Parent and child total CALI scores correlated with measures of pain intensity, however, different patterns of correlations emerged between age, pain intensity, depressive symptoms, and the Active and Routine factors. The CALI-21 showed good internal consistency, high cross-informant reliability, and demonstrated construct validity. The CALI-21 provides increased flexibility via the questionnaire format in the assessment of pain-related activity limitations in children. Factor analysis extends information about specific types of activity limitations experienced by children.

Pain among children and adolescents is common, with recurrent and chronic pain affecting 15–25% of youth^{18,20}. Some children develop physical limitations, psychosocial difficulties, academic problems, and peer and family disruptions^{10,11,14,19}. A subgroup experience severe chronic pain and associated disability¹⁸. Reliable and valid measures of pain-related disability among youth with chronic pain are needed in order to accurately measure the impact of pain and treatment response^{6,14}.

The Child Activity Limitations Interview (CALI) is an interview measure developed to assess functional impairment due to chronic pain in children and adolescents. The primary goal of the CALI was to advance assessment of activity limitations by creating a measure that was appropriate for diverse pediatric pain populations, and suitable for retrospective and prospective daily assessment. The CALI has adequate construct validity and reliability, is

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The authors have no conflicts of interest to disclose.

related to changes in children's pain symptoms, and previous research on the CALI has shown that it may be more specific to the assessment of pain-related impairment than the FDI. Additionally, research on the FDI has been largely limited to abdominal pain populations and does not provide a means for prospective assessment¹⁷.

The next step in measurement development was to modify the CALI as a self-report questionnaire to increase flexibility when interview was not possible (i.e., mailings). Researchers have used the CALI in this questionnaire format^{8, 13, 16}, finding similar relationships between known correlates and CALI scores. However, further validation of this modified questionnaire version (referred to herein as the CALI-21) is necessary to demonstrate adequate reliability and validity.

Measures of functional impairment, including the original CALI, assess difficulty in performing age-appropriate activities in daily life^{17, 23}. Several concepts are captured by specific items such as sleep, eating, school tasks, mobility, physical, social, and recreational activities. Despite the multidimensional concepts represented on measures of impairment, scoring by summing responses reflects a unidimensional view. Investigation of factor structure can help conceptualize different domains of pain-related impairment. We are not aware of published reports of measures of pain-related disability (e.g., FDI) that have undergone factor analysis, an important step in improving measurement of functional limitations. One aim of this study was to examine the factor structure of the CALI-21. Research has demonstrated different patterns of association between psychosocial variables and items assessing different areas of functional impairment (e.g., school attendance, social participation)^{7, 12}. We hypothesized a multidimensional factor structure with at least two factors, one representing physically vigorous activities such as running and sports, and another factor(s) representing routine activities of daily living.

We also present internal consistency, cross-informant reliability and construct validity of the CALI-21 on a clinical sample of children and adolescents with chronic pain. We hypothesized that construct validity would be supported by correlations between CALI scores and measures of pain and depressive symptoms, factors shown to relate to activity limitations¹⁰. Exploratory analyses examined whether children with different pain conditions would experience differing levels of restriction as measured by domains identified via the factor analysis.

Methods

Procedures and Participants

The sample consisted of 155 treatment-seeking children and adolescents (ages 8–18) with chronic pain conditions and their parents. This sample was selected from 188 consecutive new patients being seen for evaluation in a pediatric pain management clinic between January 2005 and January 2008. Data were obtained from retrospective record review of intake questionnaires collected at the patients' initial consultation visit to the clinic. IRB approval was obtained for conducting the chart review. Children and their parents completed a pain clinic questionnaire which included measures of pain, demographics, and activity limitations (the CALI-21). The parent- and child-report questionnaires were mailed to participants approximately 3 weeks prior to their appointment, completed at home and brought to the child's clinic appointment. Children were included in the sample if they were: between 8–18 years old, had pain present for ≥ 3 months, and had completed the CALI-21. Of the 188 potential participants, 33 were excluded: 13 did not meet age criteria, 19 did not complete either the parent- or child-report CALI-21, and 1 had a developmental disability. The final sample included 155 children who were 8–18 years old ($M = 14.31$, $SD = 2.45$), 92.4% Caucasian, and 58.1% female. Primary pain diagnoses assigned by the pain

management physician included headache ($n = 41$), abdominal pain ($n = 33$), back pain ($n = 20$), musculoskeletal pain ($n = 53$), and other pain (e.g., pain due to burns) ($n = 8$). Thirty-eight children in the sample (24.5%) had a chronic disease (e.g., cancer, arthritis). See Table 1 for sample characteristics.

When clinical concern about mood problems was raised during the initial pain clinic visit, children were assessed for depressive symptomatology using the self-report Revised Child Anxiety and Depression Scale. A subset of participants ($n = 55$) completed this questionnaire.

Measures

Demographics—Parents completed demographic information including child age, gender, ethnicity, and racial background.

Pain Intensity—Average or usual pain intensity was assessed using an 11-point numerical rating scale (NRS). Response options ranged from 0, ‘no pain’ to 10, ‘worst pain ever’. The NRS is recommended for assessment of pain intensity in adults with chronic pain due to its excellent reliability and validity⁴.

Activity Limitations—Children and their parents completed the Children’s Activity Limitations Interview – 21 (CALI-21), a new questionnaire version of the original CALI¹⁷. This measure is designed to assess pain-related activity limitations in children and adolescents (ages 8–18) via parent and child written report. The measure asks participants to report on pain-related limitations in 21 activities in a variety of domains over the previous 4 weeks, rating the difficulty in completing each activity on a 5-point rating scale, ranging from 0 ‘not difficult’ to 4 ‘extremely difficult’. The score is calculated by summing ratings for all 21 items, (possible range from 0 to 84), with higher scores indicating greater activity limitations or more impairment. This scoring differs from the original CALI, which calculates activity limitations by summing ratings for the eight most difficult items only. The original CALI has demonstrated reliability and validity in assessing pain-related activity limitation in school aged children and adolescents¹⁷. The CALI-21 Child and Parent versions are presented in the Appendix.

Depressive Symptoms—A group of children ($n = 55$) were assessed for depressive symptoms using the MDD subscale of the Revised Child Anxiety and Depression Scale (RCADS)². T-scores are calculated based on the child’s gender and grade in school. This measure has demonstrated good internal consistency ($\alpha = 0.77$ for the MDD subscale) and adequate one-week test-retest reliability. Validity has previously been established through relationships with other depression measures^{1,2}. The reliability coefficient α calculated for the current sample was .82.

Statistical Analyses

Analyses were conducted using SPSS version 15.0. Summary statistics were used to describe characteristics of the sample. Means and standard deviations were used for continuous data, and categorical items were described using frequency statistics. Group differences were tested via ANOVAs and chi-square tests, and bivariate correlations were used to explore relations among demographic variables and self-report measures. Family-wise Bonferroni corrections were applied to correlational analyses conducted within reporter. The corrected significance level was set at $p < .004$.

Item level analysis was conducted in order to identify items with poor psychometric properties for exclusion prior to factor analysis. Descriptive statistics (i.e., response

frequency, mean, SD, skew, and kurtosis) and inter-item correlations were examined. Items with poor psychometric properties were removed. An exploratory factor analysis was conducted to measure latent constructs within the broader domain of activity limitations. Items from the CALI-21 were entered into separate principal factor analyses, one each for the parent ($n = 141$) and adolescent ($n = 139$) versions. Analyses utilized direct oblimin rotation, eigenvalue set at one, and mean substitution of missing data. In each factor analysis, item values were retained if they had a primary factor loading of $>.40$ and secondary factor loadings of $<.30$. Items that loaded on two factors but had one factor loading value that was twice the other were also retained. Items were removed one at a time, and analyses were re-run. After each analysis, subsequent judgments were made as to which items showed the poorest fit on the factor loadings and these were removed until clean solutions were attained. A clean solution was achieved when all primary factor loadings were $>.40$, all secondary loadings were $<.30$, and all primary loadings were at least double secondary loadings. One, two, and three factor solutions were examined at each step to inform judgments about item removal and to ensure that a one or three factor solution was not superior to a two factor solution.

Results

Descriptive Statistics

Both parent ($M = 41.81$, $SD = 19.05$) and child reports ($M = 40.53$, $SD = 18.86$) on the CALI-21 suggested moderate levels of activity limitation. Child-reported usual pain intensity ($M = 5.52$, $SD = 2.13$, range = 0–10) indicated children were experiencing moderate levels of pain. Length of time since pain onset ranged from 3 months to 16 years ($M = 2.29$ years, $SD = 3.21$). The sub-sample of participants ($n = 55$) who had been assessed for depressive symptoms using the RCADS reported normative levels of depressive symptoms on average (MDD T -score) ($M = 53.56$, $SD = 11.29$, range = 29–76), with 16.4% having T -scores of 65 or higher. ANOVA and chi-square analyses were used to examine differences among children with five different primary pain diagnoses on age, gender, pain intensity, and length of pain problem. Results showed no significant differences between groups on any of these variables.

Item Level Analysis

Examination of individual items showed good psychometric properties for the majority of items. Two items (“working at a job” and “after school practices”) had poor response rates ($> 25\%$ missing data) in both parent-report and child-report versions and were removed prior to factor analyses. The remaining 19 items showed no floor or ceiling effects, had acceptable skewness and kurtosis, and acceptable item-total correlations.

Exploratory Factor Analysis

The exploratory analyses of the parent-report CALI-21 data yielded a 15 item solution representing two factors, Active (6 items) and Routine (9 items). The item-by-item removal process resulted in the removal of 4 additional items. When these 4 items were omitted from the original set of 19 items, the structure held, accounting for 57.46% of the variance (see Table 2). Parent-report Active and Routine factors were correlated .53. A significant Bartlett’s sphericity test ($\chi^2(105) = 731.48$, $p < .001$) and a KMO value of .89 indicating correlations between variables in the population matrix.

The exploratory analyses of the child-report CALI-21 data yielded a 13 item solution representing two factors, Active (8 items) and Routine (5 items). The item-by-item removal process resulted in the removal of 6 additional items. With these 6 items omitted from the original set of 19 items, the structure held, accounting for 57.79% of the variance (see Table

2). Child-report Active and Routine factors were correlated .44. A significant Bartlett's sphericity test ($\chi^2(78) = 677.82; p < .001$) and a KMO value of .87 indicating correlations between variables in the population matrix.

Parent and child report factor analysis results yielded similar patterns of loadings on the Active and Routine factors (see Table 2). The Active factors contained similar items in the solutions of the parent and child report data, with the exceptions being that on the child report, two additional items loaded ("playing with friends" and "housework or chores"). On the Routine factor solution, parent report included four additional items ("doing a hobby", "going to clubs/church activities", "sleep", and "being up all day without a nap or rest"). Endorsement of limitations on the Active factor (gym, sports, running) indicates children report difficulty in activities requiring vigorous physical activity. In contrast, limitations on the Routine factor (e.g., schoolwork, reading, eating regular meals) indicate children have difficulty with activities of daily living and learning tasks. One item on the Routine factor "eating regular meals" had a stronger loading on the parent report solution than in the child solution. On the Active factor, items that appeared in both the parent and child solutions loaded strongly (see Table 2).

Internal Consistency and Cross-informant Reliability

The internal consistency of the CALI-21 total score in the current sample was excellent for both parent ($\alpha = 0.96$) and child ($\alpha = 0.95$) report. Internal consistency was also excellent for the Active factor for both parent ($\alpha = 0.91$) and child ($\alpha = 0.93$) report. The Routine factor showed good internal consistency for parent ($\alpha = 0.89$) and child ($\alpha = 0.73$) reports. Significant correlations emerged between parent and child report on the total CALI-21 score ($r = .73, p = .000$; ICC = .73, $p = .000$), and both the Active ($r = .76, p = .000$) and Routine ($r = .66, p = .000$) factors indicating high cross-informant reliability.

Correlations between CALI-21 and Related Variables

Correlations between the CALI-21 (total and factor scores) and age, pain intensity, duration of pain problem, and depressive symptoms are presented in Table 3. As indicated in Table 3, these correlations were corrected for multiple comparisons, such that significance level was set at $p < .004$. As expected, significant correlations between child-reported total activity limitations on the CALI-21 and both usual pain intensity ($r = .42, p = .000$) and depressive symptoms ($r = .43, p = .002$) emerged, with more activity limitations associated with higher reports of pain and more depressive symptoms. Child report on the Active factor (10 items) was found to correlate with usual pain intensity ($r = .37, p = .000$) and depressive symptoms ($r = .43, p = .000$). Age and duration of pain problem were not significantly related to child report of CALI-21 total or factor scores.

Parent report on the factor and total scores on the CALI-21 were not significantly correlated with age or pain intensity. Child report of depressive symptoms was significantly correlated with parent reported total CALI-21 score ($r = .58, p = .000$) and parent report on both the Active (8 items; $r = .49, p = .000$) and Routine factors (6 items; $r = .54, p = .000$). Higher levels of depressive symptoms were associated with greater activity limitations. Age and duration of pain problem were not significantly related to child report of CALI-21 total or factor scores.

Group comparisons on CALI-21 total and factor scores—On the Active factor of the CALI-21, children with headache had significantly fewer limitations than children with abdominal pain, back pain, musculoskeletal pain, or other pain diagnoses as measured by parent report ($t = -3.04, p = .003$; see Table 4). In contrast, children with headache reported significantly more limitations than other participants ($t = 2.82, p = .006$) on the Routine

factor. Comparing children with ($n = 38$) and without ($n = 117$) comorbid disease (see Table 5), children with comorbid disease reported more limitations on the Active factor ($t = -2.40$, $p = .02$) than children without comorbid disease. Parent-report of limitations on both the Active factor ($t = -2.36$, $p = .02$) and the CALI-21 total score ($t = -2.26$, $p = .02$) were also significantly higher for children with comorbid disease. Effects sizes for these group comparisons were moderate (see Table 5).

Discussion

The findings from this study provide further validation of an adapted questionnaire version of the CALI (the CALI-21). Using a clinical sample of children and adolescents with a variety of chronic pain conditions, factor analysis results revealed a two-factor solution indicating that the CALI-21 can be used to assess limitations in both Active and Routine activity domains. Results of the study also revealed significant relationships between the CALI-21 and measures of pain intensity and depressive symptoms, providing further construct validity of the measure. The CALI-21 questionnaire also demonstrated excellent internal consistency, and high cross-informant reliability indicating that it is a reliable and valid measurement tool.

Further support for two underlying factors was shown by differences across the factors in associations with external correlates. In this validation sample, differences among children with different pain conditions on the Active and Routine factors emerged, suggesting that examining the Active and Routine factor scores individually may be a useful tool for identifying the specific types of activity limitations children experience. In this study, children with headache demonstrated fewer limitations on the Active factor and greater limitations on the Routine factor compared to children with abdominal pain, back pain, musculoskeletal pain, or other pain diagnoses. Similar patterns of disability in school and routine activity domains have been previously described in children with headaches⁹. The differences that emerged on the CALI-21 scores between children with and without comorbid disease also support the two underlying factors. Children with comorbid disease and their parents reported greater limitations on the Active factor, with parents also reporting higher total CALI-21 scores. These findings suggest that disease-related pain may have greater impact on children's activity limitations, particularly in vigorous physical activities. Future studies with larger samples of children with disease-related pain will support this preliminary finding and help clarify which specific chronic diseases (e.g. arthritis, sickle cell disease) are associated with functional impairment in different domains.

The CALI-21 has the advantage of providing researchers with information about specific types of activity limitations, information that cannot be obtained using the original CALI scoring system. In future studies, researchers can compare scores on Active versus Routine factors to determine in which area a child is experiencing the most pain-related limitation, to make comparisons across children with different pain conditions, or to assess response to interventions specifically designed to target active or routine limitations. Scoring instructions for the CALI-21 are listed in Appendix A. If scoring on the Active and Routine factors is desired, investigators should use sum scores for the items in Table 2 with the corresponding solution for either parent or child report.

Information about depressive symptoms was only available for a portion of the sample. As such, the results observed deserve further replication. A significant association between depressive symptoms and both the Routine and Active factors emerged, which is consistent with previous research^{10, 19}. Broad functional impairment as reflected by high scores on both the Active and Routine factors may indicate increased psychological distress, certain types of pain, or family dysfunction. Clinically this suggests that children and adolescents

endorsing broad limitations on the CALI-21 may benefit from screening for depressive symptoms.

There are several limitations to the current study. The sample was limited to a clinical population of children receiving treatment at a pediatric pain management clinic and may not be representative of community dwelling children and adolescents with chronic pain. Additionally, the sample did not include a large group of children with disease-related pain. Examining the CALI-21 in larger groups of children with specific types of chronic pain would improve the generalizability of the measure as it is possible that level of impairment and factor structure varies by type of pain. This additional research could establish norms for children with different pain conditions. Last, the CALI-21 has not been studied in healthy children, which limits the ability to determine the clinical significance or severity of level of activity limitations. Establishment of healthy norms may aid in the development of cut-off scores and in the interpretation of changes in the severity of children's activity limitations.

Future directions include conducting a confirmatory factor analysis of the measure to further validate the two-factor solution that emerged. Results of this confirmatory factor analysis will further identify unreliable items and facilitate the creation of a short form of the CALI-21. Psychological, cognitive²², and parent and family functioning¹⁵ variables should also be examined as predictors of the Active and Routine factors, as previous research has shown different patterns of relationships in the prediction of domains of functional impairment⁷. Additional aspects of reliability and validity need to be evaluated including test-retest reliability, predictive validity, and the measure's sensitivity to changes following treatment or interventions. Few measures of activity limitations have demonstrated validity in the prediction of future functioning among children with different types of pain. The FDI has shown predictive validity in children with chronic pain, but findings were limited to the prediction of future school functioning in children with abdominal pain³. Future longitudinal research will be useful for establishing the predictive validity of the CALI-21. In particular, activity limitations should be examined as prospective predictors of health status, changes in pain symptoms, and social and educational functioning⁶.

Initial support for the internal consistency and validity of a previously adapted questionnaire version of the CALI (the CALQ) has been demonstrated by another group of investigators⁸. However, this validation was conducted using a small sample ($n = 60$), and the CALQ was scored using only the highest scored 8 items, limiting the amount of activity restriction data considered in scoring. Additionally, the CALQ is scaled differently than the original CALI, which makes it difficult to make comparisons across the versions. The findings from this study support the use of the CALI-21. In contrast to the CALQ, the CALI-21 has been validated using a larger sample, and has the advantage of including all 21 items in scoring and having the same response scaling as the original version. The CALI-21 increases measurement flexibility, making it possible to assess activity limitations when no direct contact with patients or research participants is possible (e.g., postal mailings), and provides scores on two separate factors.

The questionnaire format of the CALI-21 makes it more similar to other available measures of children's pain-related impairment such as the Functional Disability Inventory (FDI),^{3,23} the Bath Adolescent Pain Questionnaire (BAPQ),⁵ physical functioning subscale, and the Pediatric Quality of Life Inventory (PedsQL)²¹, physical functioning scale. Similar items and response categories are used on each of these instruments. There are several advantages to the CALI system including availability of the prospective version (original CALI) that can be used to track daily activity limitations. In addition, the validation studies of the CALI-21 and the original CALI have been completed with children with diverse pain conditions, increasing applicability to a wide range of youth with persistent pain. Last, the

factor analysis presented in this report provides additional opportunities for examining specific domains of impairment in children with chronic pain, with the potential to more accurately describe functional impairments experienced by children and track improvements in the context of treatment.

Acknowledgments

The authors wish to thank the children and families who participated in this research, and the Pediatric Pain Management Clinic at Oregon Health & Science University's Doernbecher Children's Hospital. This research was partially supported by a grant from the Medical Research Foundation of Oregon awarded to the first author. We also thank Irina Fonareva for her invaluable assistance.

Appendix A: CALI-21 Child and Parent Report Measures

CALI-21 Child Report

Think about your activities over the last four weeks. Please rate how difficult or bothersome doing these activities was for you because of **pain**.

		Not very difficult	A little difficult	Somewhat difficult	Very difficult	Extremely difficult
1.	Going to school	0	1	2	3	4
2.	Gym	0	1	2	3	4
3.	Reading	0	1	2	3	4
4.	Schoolwork	0	1	2	3	4
5.	Sports	0	1	2	3	4
6.	Doing a hobby	0	1	2	3	4
7.	Playing with friends	0	1	2	3	4
8.	Watching TV	0	1	2	3	4
9.	Housework or chores	0	1	2	3	4
10.	Working at a job	0	1	2	3	4
11.	After school practices	0	1	2	3	4
12.	Doing things with friends	0	1	2	3	4
13.	Going to clubs/church activities	0	1	2	3	4
14.	Running	0	1	2	3	4
15.	Walking up stairs	0	1	2	3	4
16.	Eating regular meals	0	1	2	3	4
17.	Riding in the school bus or car	0	1	2	3	4
18.	Walking one or two blocks	0	1	2	3	4
19.	Sleep	0	1	2	3	4
20.	Riding a bike or scooter	0	1	2	3	4
21.	Being up all day (without a nap or rest)	0	1	2	3	4

CALI-21 Parent Report

Think about your child's activities over the last four weeks. Please rate how difficult or bothersome doing these activities was for your child because of **pain**.

		Not very difficult	A little difficult	Somewhat difficult	Very difficult	Extremely difficult
1.	Going to school	0	1	2	3	4
2.	Gym	0	1	2	3	4
3.	Reading	0	1	2	3	4
4.	Schoolwork	0	1	2	3	4
5.	Sports	0	1	2	3	4
6.	Doing a hobby	0	1	2	3	4
7.	Playing with friends	0	1	2	3	4
8.	Watching TV	0	1	2	3	4
9.	Housework or chores	0	1	2	3	4
10.	Working at a job	0	1	2	3	4
11.	After school practices	0	1	2	3	4
12.	Doing things with friends	0	1	2	3	4
13.	Going to clubs/church activities	0	1	2	3	4
14.	Running	0	1	2	3	4
15.	Walking up stairs	0	1	2	3	4
16.	Eating regular meals	0	1	2	3	4
17.	Riding in the school bus or car	0	1	2	3	4
18.	Walking one or two blocks	0	1	2	3	4
19.	Sleep	0	1	2	3	4
20.	Riding a bike or scooter	0	1	2	3	4
21.	Being up all day (without a nap or rest)	0	1	2	3	4

Scoring the CALI-21

All 21 activities are rated on a 5-point scale for difficulty from (0) *not very difficult* to (4) *extremely difficult*.

Total scores:

Difficulty scores for all 21 items are summed to tabulate a total difficulty score ranging from 0 to 84, with higher scores indicating greater levels of activity limitations.

Missing items (omitted responses) affect the summed difficulty rating for the whole scale. In order to calculate the total difficulty score when four or fewer items are missing, the score needs to be adjusted based on the missing items:

$$[\text{difficulty sum}] * ([21 \text{ items in scale}] / [\text{completed items}])$$

such that if three items were omitted, and the difficulty sum was 12, then:

$$[12] * ([21] / [18]) = 14 \text{ (new adjusted sum)}$$

If there are more than five items with missing/omitted responses, the total score may not be valid.

Factor scores:

Active factor: sum items 2, 5, 7, 9, 14, 15, 18, 20 child version; 2, 5, 14, 15, 18 & 20 parent version

Routine factor: sum items 1, 3, 4, 8, & 16 child version; 1, 3, 4, 6, 8, 13, 16, 19 & 21 parent version

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Table 1

Demographic Characteristics of the Sample

Characteristic	N(%)/ <i>M(SD)</i>
Age (years)	14.31 (2.45)
Gender	
Male	65 (41.9%)
Female	90 (58.1%)
Pain Duration (years)	2.29 (3.21)
Primary Pain Diagnosis	
Headache	41 (26.5%)
Abdominal Pain	33 (21.3%)
Back Pain	20 (12.9%)
Musculoskeletal Pain	53 (34.2%)
Other Pain Diagnosis	8 (5.2%)
Comorbid Chronic Disease	
Yes	38 (24.5%)
No	117 (75.5%)

Table 2

Exploratory factor analysis item loadings for parent and child reports

<u>CALI-21 Active Items:</u>	Parent-report Active	Parent-report Routine	Child-report Active	Child-report Routine
2. Gym	.68		.76	
5. Sports	.77		.84	
7. Playing with friends			.57	
9. Housework or chores			.61	
14. Running	.89		.89	
15. Walking up stairs	.71		.76	
18. Walking one or two blocks	.77		.68	
20. Riding a bike or scooter	.64		.66	
<u>CALI-21 Routine Items:</u>				
1. Going to school		.62		.52
3. Reading		.82		.79
4. Schoolwork		.83		.75
6. Doing a hobby		.56		
8. Watching TV		.59		.42
13. Going to clubs/church		.60		
16. Eating regular meals		.61		.36
19. Sleep		.43		
21. Being up all day		.51		
<u>Eigen value:</u>	1.95	6.67	5.71	1.81
<u>% Variance:</u>	13.03	44.45	43.91	13.89

Note: Blanks indicate secondary loadings <.30.

Table 3

Correlations among CALI-21 factor scores and other variables

	Parent-report			Child-report		
	Active Factor	Routine Factor	CALI-21 Total	Active Factor	Routine Factor	CALI-21 Total
Age	.14	.10	.14	.18	.13	.19
Depressive Symptoms ^a	.49*	.54*	.58*	.43*	.26	.43*
Usual Pain Intensity	.14	.11	.19	.37*	.25	.42*
Duration of Pain Problem	-.18	-.09	-.09	-.10	-.05	-.10

^a n = 55; Significance levels corrected such that

* p < .004

Table 4

Comparison of CALL-21 total and factor scores by primary pain diagnosis

	Total (n=155)	Headache (n=41)	Abdominal Pain (n=33)	Back Pain (n=20)	Musculo- skeletal Pain (n=53)	Other Pain Diagnosis (n=8)	F	p
Pain Intensity	5.52 (2.13)	5.30 (2.57)	5.77 (1.98)	6.21 (1.62)	5.29 (2.06)	5.43 (2.07)	.84	.50
Duration of Pain Problem (years)	2.29 (3.21)	3.01 (3.92)	1.23 (1.30)	2.52 (4.18)	2.28 (3.03)	2.42 (1.48)	1.34	.26
CALL-21 (total) Parent-report	41.81 (19.05)	40.39 (22.57)	45.25 (18.85)	44.97 (20.11)	41.12 (17.01)	32.42 (9.00)	.92	.46
CALL-21 (total) Child-report	40.53 (18.86)	37.70 (20.05)	44.51 (19.50)	43.96 (18.62)	40.26 (17.96)	29.60 (16.67)	1.20	.32
Active Factor Parent-report (6 items)	15.75 (6.53)	12.51 (7.36) ^a	16.68 (6.45)	18.57 (4.32)	16.87 (5.57)	14.97 (5.44)	3.36	.01
Active Factor Child-report (8 items)	18.43 (9.19)	15.26 (9.70)	20.72 (8.99)	20.69 (7.75)	19.05 (8.95)	14.97 (9.97)	2.06	.09
Routine Factor Parent-report (9 items)	14.98 (8.26)	16.79 (9.43)	17.08 (7.17)	15.16 (8.72)	12.88 (7.80)	11.29 (3.64)	2.07	.09
Routine Factor Child-report (5 items)	7.37 (4.44)	8.92 (4.57) ^b	8.36 (4.63)	6.69 (4.76)	6.16 (3.67)	4.17 (3.66)	3.41	.01

^aChildren with headache scored significantly lower than other groups;^bChildren with headache scored significantly higher than other groups.

Table 5

Comparison of CALI-21 total and factor scores by disease comorbidity

	Disease comorbidity <i>M(SD)</i>		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	Yes <i>n</i> = 38	No <i>n</i> = 117			
CALI-21 (total) Parent-report	48.03 (13.53)	39.76 (20.19)	-2.26	.02	.48
CALI-21 (total) Child-report	45.90 (15.71)	38.90 (19.49)	-1.86	.07	.40
Active Factor Parent-report (6 items)	18.15 (4.97)	14.97 (6.80)	-2.36	.02	.53
Active Factor Child-report (8 items)	21.83 (6.91)	17.40 (9.57)	-2.40	.02	.53
Routine Factor Parent-report (9 items)	16.80 (5.97)	14.36 (8.85)	-1.51	.13	.32
Routine Factor Child-report (5 items)	7.69 (4.38)	7.28 (4.48)	-.44	.66	.09