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Trajectories of Symptoms and Impairment for Pediatric Patients With Functional Abdominal Pain: A 5-Year Longitudinal Study

Shelagh Mulvaney, Ph.D.,

Department of Pediatrics and Center for Evaluation and Program Improvement, Vanderbilt University

E. Warren Lambert, Ph.D.,

Center for Evaluation and Program Improvement, Vanderbilt University

Judy Garber, Ph.D., and

Department of Psychology, Vanderbilt University

Lynn S. Walker, Ph.D.

Department of Pediatrics, Vanderbilt University Medical Center

Abstract

Objective—This prospective study characterizes trajectories of symptoms and impairment in pediatric patients with abdominal pain not associated with identifiable organic disease.

Method—The Children's Somatization Inventory and the Functional Disability Inventory were administered four times over 5 years to 132 patients (6–18 years old) seen in a pediatric gastroenterology clinic. Individual trajectories were empirically grouped and correlates of trajectory group membership at baseline were evaluated.

Results—A model with three unique trajectories was found to adequately fit both symptom and impairment data. Two trajectories indicated relatively long-term improvement and one indicated continued high levels of symptoms and impairment. At baseline, the long-term risk group did not have the most severe pain but had significantly more anxiety, depression, lower perceived self-worth, and more negative life events.

Conclusions—These results indicate that several distinct trajectories of relatively long-term outcomes may exist in children with functional abdominal pain. One trajectory indicated long-term risk for a high level of symptoms and impairment. Psychosocial correlates of long-term risk for physical symptoms and impairment, such as child-reported stress and internalizing symptoms, may be useful for treatment planning.

Keywords

functional abdominal pain; somatic symptoms; impairment; trajectories; longitudinal; children

Abdominal pain is one of the most common reasons for referral to pediatric primary care and gastroenterology clinics (Starfield et al., 1980). Recurrent episodes of pain over a period of several months or longer may affect as many as 10% to 24% of children and adolescents (Garber et al., 1991; Hyams et al., 1996; Oster, 1972). In many cases, recurrent abdominal

pain in children is functional—without objective evidence of organic disease (Boyle, 1997; Walker et al., 2004). Some children with persistent abdominal pain also report a variety of additional symptoms including headaches, fatigue, dizziness, and nonspecific somatic complaints (Oster, 1972), suggesting the possibility of a somatization disorder (Ernst et al., 1984; Walker et al., 1991). Moreover, abdominal pain and associated somatic symptoms can have a considerable impact on children's daily functioning both academically and socially (Claar et al., 1999).

Prospective studies have shown that many children with abdominal pain continue to complain of somatic symptoms and disability years after their initial evaluation (Apley and Hale, 1973; Christensen and Mortensen, 1975; Magni et al., 1987; Stickler and Murphy, 1979; Walker et al., 1995, 1998). For any patient population, however, the average longitudinal trajectory rarely describes all individuals. To date, subgroups of change have not been delineated for pediatric abdominal pain and the relationship between initial status and trajectories of change across time has not been investigated. Characterization of unique patterns of change is important because it may identify profiles of long-term risk that facilitate tailoring interventions for these patients.

Medical treatment for these patients typically consists of reassurance regarding the absence of organic disease and dietary or pharmacological interventions aimed at symptom relief. Because the existing empirical literature provides little guidance in the identification of patients with abdominal pain at greatest risk of poor outcomes, interventions aimed at pain reduction have been developed without knowing which patients are most likely to benefit (for reviews of treatment, see Eccleston et al., 2003; Weydert et al., 2003). Given that some patients with abdominal pain recover with typical medical care or the passage of time, it is an inefficient use of resources to provide behavioral interventions for all patients. If risk factors for poor outcomes could be identified, then it would facilitate the design of interventions specifically for patients at risk. The goal of the present study was to determine whether subgroups of patients with abdominal pain who shared common trajectories of symptoms and functional impairment over time could be identified and, if so, to describe the characteristics of individuals within those trajectories.

Somatic symptoms were selected as a primary outcome because of observations that children with abdominal pain complain of a broad range of nonspecific somatic symptoms (Astrada et al., 1981; Ernst et al., 1984; Walker et al., 1991). In selecting baseline variables that may provide unique profiles across trajectories of somatic symptoms and impairment, we focused on child and environmental characteristics that previously had discriminated patients with abdominal pain from well children or had predicted short-term outcomes for patients with abdominal pain. For example, pediatric patients with persistent abdominal pain consistently have been characterized by symptoms and diagnoses of anxiety and depression (Campo et al., 2004; Dorn et al., 2003; Garber et al., 1990; Hyams et al., 1996; Larsson, 1991; Walker and Greene, 1989; Walker et al., 1993).

In addition, although perceived self-worth does not discriminate pediatric patients with abdominal pain from well peers (Walker et al., 1993), theory and empirical evidence suggest that lower self-worth may predict poorer outcomes (Claar et al., 1999; Walker, 1999; Weiss et al., 1998). Gender differences also have been found in epidemiological studies, indicating that chronic pain and somatic complaints become more frequent in girls than boys (Brattberg, 2004; Campo et al., 1999) or that somatic complaints are more associated with emotional disorders in girls (Egger et al., 1999). We anticipated that female gender, greater anxiety, depression, and low self-worth would be differentially associated with trajectories that reflected greater maintenance of symptoms and impairment. Life stress has been associated with short-term maintenance of symptoms in abdominal pain patients (Walker

and Greene, 1991b). We predicted that higher levels of negative life events at the time of the child's medical evaluation would distinguish trajectories associated with maintenance of symptoms and impairment.

METHOD

Sample

The sample was consecutive new pediatric patients evaluated at a tertiary care center for abdominal pain and followed for 5 years. Patients between the ages of 6 and 18 years were eligible if, by parental report, they had no other chronic illness or handicapping condition. Of 302 subjects initially contacted, 16 declined, 50 did not meet eligibility, and 31 had incomplete medical examinations, resulting in a sample of 205. Only patients without evidence of organic disease (132/205; 66%) were included from that group. All of the patients had been evaluated at least once by their primary care provider who, when the pain persisted, referred the child for evaluation by a pediatric gastroenterologist. The number of participating fathers was too small for meaningful analysis.

Procedure

Parents of new patients referred for evaluation of abdominal pain were informed of the study by telephone, and if they expressed interest and met eligibility criteria, were invited to learn more at their clinic appointment. A trained interviewer met the family at the clinic before the medical evaluation and obtained informed consent using a protocol approved by the University Institutional Review Board. Questionnaires were administered to the child and parent. Follow-up assessments were conducted with children by telephone at 1.5 months, 1 year, and 5 years. Medical records were reviewed to obtain the medical diagnosis at baseline.

Measures

Child Somatic Symptoms—The Children's Somatization Inventory (CSI; Garber et al., 1991; Walker and Garber, 2003; Walker et al., 1991) assessed severity of somatic symptoms (e.g., "headaches," "feeling low in energy"). Respondents rate the extent to which they have experienced 35 symptoms during the past 2 weeks using a 5-point scale ranging from "not at all" to "a whole lot." The scale range is from 0 to 140. Three-month test-retest reliability for the CSI is 0.50 for well patients and 0.66 for patients with chronic pain (Walker et al., 1991). The average score for a large referred sample of pediatric patients ($N = 498$) on this scale was 22.7 ($SD = 14.4$; range, 3–81) with a median of 19 (Walker and Garber, 2003).

Child Impairment—The Functional Disability Inventory (FDI; Walker and Greene, 1991a) lists 15 items concerning children's self-reported impairment in physical and psychosocial functioning caused by their physical health during the past 2 weeks. Behaviors include walking up stairs, playing with friends, and doing activities in gym class. Response options range from "No Trouble" to "Impossible." Total scores are computed as the sum of responses and can range from 0 to 60. The FDI has good internal consistency and 3-month test-retest reliability estimates exceeding 0.60 for patients with chronic abdominal pain and scores on the child-report FDI correlate significantly ($r = 0.44$) with absence from school (Walker and Greene, 1991a).

Child Anxiety/Depression—Children's symptoms of anxiety were assessed using the Trait scale of the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973), a self-report scale with 20 three-point items. Total scores may range from 20 to 60. The Children's Depression Inventory (CDI; Kovacs, 1985), a 27-item self-report questionnaire, was used to assess children's depressive symptoms over the previous 2 weeks. Items are

rated on a 3-point scale. Total scores can range from 0 to 54. Reliability and validity have been reported (Kovacs, 1992). Cronbach's α on a normative sample of 1,266 children 7 to 16 years old was .86.

Maternal reports of children's anxiety and depression were assessed with the Anxiety-Depression subscale from the Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL provides a description of children's problem behaviors within the previous 6 months. It consists of 118 behavior problems, each rated by a parent or caregiver on a 3-point scale. The Anxiety/Depression Syndrome scale used in this study consists of 14 items (e.g., "nervous, tense," "fearful or anxious," "unhappy, sad, depressed").

Life Events—Mothers completed the Family Inventory of Life Events (McCubbin and Patterson, 1987), which assesses the accumulation of family life events in the previous year. Children completed the Life Events Questionnaire (LEQ; Masten et al., 1988) indicating which life events they had experienced in the previous year. The 55 negative life events were used from the LEQ.

Child Self-Worth—The Self-Perception Profile for Children (SPPC; Harter, 1982, 1985) assesses children's self-worth in various domains (e.g., academic, social, athletic) as well as their perceived global self-worth. We used the Global Self-Worth Scale (six items) because all scales assessing domain-specific competencies correlate significantly with Global Self-Worth. Global self-worth was also likely to be more relevant for more children (as opposed to the domain-specific scales). Total scores for the SPPC Global scale are computed as the sum of responses to the six items and range from 6 to 24. Harter (1982) reported adequate internal consistency, test-retest reliability, and convergent validity for the measure.

Pain Characteristics—The frequency (average number of times each day) during the previous 2 weeks and the typical intensity of the pain each were assessed. Frequency ratings could range from "none" to "constant during the day." Typical intensity of pain could range from "no pain" to "the worst pain you could imagine."

Data Analysis

Analyses were conducted in two stages. First, a semiparametric, group-based modeling strategy (Nagin, 1999; Nagin and Tremblay, 2001) identified groups of symptom and impairment trajectories. The SAS PROC TRAJ procedure (Jones et al., 2001) was used to empirically create groupings of similar trajectories. PROC TRAJ resembles a cluster analysis of cases, but sorts individual growth curves into clusters of similar shape.

The TRAJ model takes each person's scores over multiple repeated measures and estimates an individual model. Having only four time points, polynomials were limited to quadratic time. Individuals with missing observations can be included because PROC TRAJ uses all values available from each case to estimate an individual's timeline, making casewise deletion unnecessary. Model fit in PROC TRAJ is judged partly on the Bayesian information criterion (BIC), a statistic that has been likened to the adjusted R^2 because it incorporates model complexity and overall fit, penalizing complicated solutions. Values for the BIC are negative, and better fit is indicated by values closer to 0. For example, a BIC of $-2,000$ indicates better fit than a BIC of $-3,000$.

Trajectory group membership for each individual was then used as the dependent variable. One-way analyses of variance assessed whether trajectory group membership provided a distinct profile of characteristics for each trajectory group. Post hoc Scheffé tests compared means across multiple trajectory groups.

RESULTS

Descriptive Statistics

Table 1 reports the characteristics of all of the study variables for the entire sample at baseline. Sample sizes for dependent variables varied by measure and time point. For the CSI, the baseline sample was 132. Subsequent time points each had smaller sample sizes because of an inability to locate families. At time 2, the CSI sample was 124; at time 3, it was 131; and at time 4, it was 112. For the FDI, the sample size at each time point was 118, 123, 128, and 111, respectively.

Reliability of Measures

Baseline Cronbach's α reliabilities were calculated for all scales where appropriate: CSI (.92); FDI (.88); CBCL Anxiety-Depression (.83); STAIC (.88); CDI (.86); FILE (.80).

Symptom and Impairment Trajectories

To select the best trajectory solutions for CSI and FDI data, SAS PROC TRAJ was run with two to six trajectory solutions. Solutions were evaluated by significance of the difference between clusters, BIC, significance of coefficients in the solutions, and inspection of graphic model curves. Although one solution was chosen by the statistical criteria outlined above, the procedure entails judgment, much like a cluster analysis or exploratory factor analysis.

For both the CSI and FDI, solutions with four or more clusters contained groups that did not differ, so these solutions were rejected. This indicated two or three trajectory solutions as possible for both outcomes. Next, we reviewed the BIC values for each solution. Lacking a statistical test to determine significant differences in BIC (Singer and Willett, 2003), we considered a range of the best and near-best BIC estimates. Figure 1 shows BIC values for the CSI and FDI. The BIC values for the two and three trajectory solutions were similar for both outcomes. The difference between the BIC values for the two and three trajectory solution for the CSI was 9 (−2,012 versus −2,003) and for the FDI was 3 (−1,559 versus −1,562). Although the three-trajectory solution was marginally better for the FDI as indicated by the BIC, the BIC gave no clear indication for the superiority of two or three trajectories.

The two-trajectory solution was more parsimonious. The three-trajectory solution should be rejected unless it offers another advantage. Therefore, we visually inspected the plots to see which solution was more instructive. For both outcomes, the two-trajectory solution had a high-risk group with early improvement and late deterioration and a much lower risk group with a flatter trajectory. Thus, the two-cluster solution provided no new clinical insights regarding who did not improve. Although the three-trajectory solutions were less parsimonious, we chose them as the most instructive, offering a way to answer a clinically important question: Among children with more severe symptoms, what distinguishes those who remit from those whose condition is chronic? The three-trajectory solutions are shown in Figure 2. Trajectories for the CSI and FDI were nearly identical and thus could be labeled similarly. The three trajectories were interpreted as low-risk, short-term risk, and long-term risk.

PROC TRAJ provides individual fit estimates, probabilities that each child belongs to each of the three trajectory groups. Cote et al. (2002) recommend that the average probability for members of a trajectory group should be $\geq .70$. All six averages (three trajectories for CSI, three for FDI) were $> .70$. Probabilities ranged from .71 (SD = .15) for the FDI short-term risk to .96 (SD = .09) for the CSI low-risk group. These estimates suggest that the average model fit ranged from adequate to excellent for the six trajectories found.

To determine whether children were grouped similarly across the CSI and FDI, interrater reliability was calculated ($\kappa = 0.46$, $p < .001$). Kappa measures the percentage of agreement corrected for chance. This κ value suggests that the level of agreement was “fair” (Altman, 1991), but membership in trajectories across the CSI and FDI was not identical.

Baseline Trajectory Group Differences

Table 2 shows mean levels of variables by CSI trajectory group with test statistics. The CSI trajectory groups differed significantly from each other on anxiety (STAIC), depression (CDI), stressful events (LEQ), self-worth (SPPC), pain frequency, and pain intensity at baseline. The long-term risk group means indicated worse status compared with the other two trajectory groups for all significant differences. Post hoc Scheffé tests indicated that STAIC for the low-risk group was significantly lower than the short-term risk (difference, -5.79 ; $p = .015$) and the long-term risk groups (difference, -7.46 ; $p = .000$). The CDI for the low-risk group was significantly lower than for the short-term risk group (difference, -4.16 ; $p = .048$) and the long-term risk group (difference, -6.84 ; $p = .000$). For the LEQ, the long-term risk group was significantly higher than the low-risk group (difference, -4.62 ; $p = .000$). For the SPPC, the long-term risk group was significantly lower than the low-risk group (difference, 2.52 ; $p = .033$). Pain frequency was significantly lower for the low-risk group compared with the short-term risk group (difference, -1.66 ; $p = .001$). Pain intensity was significantly lower for the low-risk group than the long-term risk group (difference, -1.72 ; $p = .028$).

Table 3 shows baseline means for FDI trajectory groups with test statistics. Significant differences across the FDI trajectory groups at baseline were found for STAIC, CDI, LEQ, SPPC, Pain Frequency, and Pain Intensity. The long-term risk group means were worse than the other two trajectory groups for all significant differences. Post hoc Scheffé tests indicated that the long-term risk group was significantly worse than the low-risk group for the STAIC (difference, -6.62 ; $p = .004$) and CDI (difference, -7.35 ; $p = .000$) measures. For the LEQ, the long-term risk group was significantly worse than both low-risk (difference, -5.38 ; $p = .000$) and short-term risk (difference, -3.58 ; $p = .017$) groups. The long-term risk group was significantly worse (lower scores) on the SPPC compared with the low-risk group (difference, 3.01 ; $p = .012$). The short-term risk group was worse than the low-risk group on pain frequency (difference, -1.47 ; $p = .001$) and pain intensity (difference, -2.18 ; $p = .000$).

DISCUSSION

This study identified relatively long-term trajectories of symptoms and impairment in pediatric patients with abdominal pain without identifiable organic disease. Three distinct trajectories of change described the course of symptoms and functional impairment. The majority of patients fell into a group labeled low risk. Children and adolescents in this group initially showed relatively low levels of symptoms and impairment, improved within 2 months, and maintained those gains 1 and 5 years later. The short-term risk group began with the highest initial levels of symptoms and impairment but improved greatly during the following months, and maintained those gains at year 5. Finally, the long-term risk group initially showed high levels of symptoms and impairment and did not improve over 5 years. This group was characterized at baseline by higher levels of anxious and depressive symptoms, lower perceived self-worth, and more negative life events.

The low-risk trajectory group, which included 70% of the sample, provided clinicians with good news: The majority of pediatric patients with functional abdominal pain generally had low levels of symptoms and impairment and continued to report low levels. This trajectory had the highest percentage of males and an average profile that indicated better self-worth

and relatively low depression/anxiety. These individuals also reported the lowest intensity and least frequent levels of abdominal pain at baseline. The finding that boys were more likely to be in the low-risk trajectory group is consistent with literature indicating that boys have a lower risk for persistent pain and unexplained somatic complaints than girls (Brattberg, 2004).

The short-term risk trajectory group presented with the highest levels of somatic symptoms and impairment at baseline but improved relatively quickly and remained improved 5 years later. More than 80% of this group was female. Although they had the highest baseline levels of pain severity, they scored between the low-risk and long-term risk groups on anxious and depressive symptoms. Although this group had higher baseline levels of symptoms and impairment than the low-risk group, outcomes for these two groups were similar. Within 2 months, the short-term risk patients reported greatly reduced symptoms and impairment. High initial symptoms combined with rapid decline may characterize good prognoses.

The group with the highest levels of symptoms and impairment at year 5, the long-term risk group, reported the highest baseline levels of anxious and depressive symptoms and stressful life events, and the lowest perceived self-worth. Although only 14% of the sample was in this group, individuals in this trajectory group warrant further attention. In a pain diary study, the relationship between daily stressors and somatic symptoms was particularly strong for patients with high levels of negative affect (Walker et al., 2001). The combination of life stress with anxiety and depression in this long-term risk group may reflect patients, who, under conditions of high stress, are vulnerable to both negative affect and functional somatic symptoms.

Interestingly, neither caregiver-reported child depression/anxiety nor caregiver-reported stressful life events differentiated the long-term risk group from the other groups. In contrast, the child-report measures did differentiate the groups. It is possible that these results reflect a general negative response bias of children in the long-term risk group compared with those in the other groups. Such a response style, however, could be a substantive indicator of a tendency toward negative affectivity (Clark and Watson, 1991) and/or neuroticism (Eysenck and Eysenck, 1985). These results also highlight the importance of obtaining self-reports from children regarding internalizing symptoms.

Clinical Implications

These data indicate that about one in seven children have poor long-term outcomes in terms of somatic symptoms and health-related impairment. This subgroup with high long-term risk should have high priority for the development of targeted interventions. The data highlight the importance of psychosocial assessment in the evaluation of pediatric abdominal pain. Specifically, children's self-reports of emotional symptoms, self-worth, and life stress at baseline were associated with differential trajectories of somatic symptoms and impairment in contrast to parental report, which was not different across trajectory groups. Confirmation of these trajectory groups may facilitate development of interventions that address the specific needs of individuals at high risk of a chronic course of symptoms and impairment.

Initial levels of somatic symptoms and impairment may distinguish between the low-risk and long-term risk groups but not between the short- and long-term risk groups. Although patients at risk in the short term may be difficult for the clinician to initially identify, longitudinal assessments show that they improve within several weeks and may be differentiated from long-term risk patients by a follow-up appointment.

Limitations

This study has several limitations. Measurement frequency was weighted more heavily toward the early part of the study period. A larger sample and more frequent assessments may have detected more complex nonlinear components if present. Differences in treatment were not assessed and health services use was not documented. Further research should study the links between treatment and outcome in randomized clinical trials. Similarly, these data do not allow for statements as to the cause of functional impairment. Both physical symptoms and emotional distress may be causally related to impairment.

The statistical approach employed here was empirical in nature. The trajectory groups and their correlates need confirmation. The subjects in this study did not undergo formal psychiatric assessment and thus may not be homogeneous in terms of psychiatric diagnoses. Similarly, the groups may not be homogeneous in terms of newer gastrointestinal diagnostic systems. It is likely that patients in this sample would meet the Rome criteria for irritable bowel syndrome, functional dyspepsia, or functional abdominal pain (Walker et al., 2004). Finally, participants were patients at a tertiary care center. Different trajectories may be found among children treated in primary care settings or those who do not seek medical evaluation for pain.

There are several benefits to using group-based trajectory analyses. If we had examined a single average trajectory, then we would have concluded that patients show moderate levels of symptoms and impairment and at year 5 are still mostly improved. Those conclusions would be inaccurate for an important subgroup of patients. Another benefit of group-based trajectory analyses is that once trajectory groups are identified, the study of baseline characteristics may identify patients at risk of a chronic course. This approach has particular relevance for health services researchers, clinicians, and policymakers who are responsible for the long-term care of children.

Given these caveats, initial parameters for change trajectories were established in pediatric patients with functional abdominal pain. Ultimately, treatment may be tailored to profiles of predictors of long-term health outcomes. Characterizing trajectory subgroups will advance our ability to define functional abdominal pain positively, that is, in the context of an identified set of comorbid characteristics, instead of being identified primarily by the absence of biological disease.

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Fig. 1. Bayesian Information Criterion (BIC) values for Child Somatization Inventory (CSI) and Functional Disability Inventory (FDI) models.

Fig. 2.
Three common trajectories for Child Somatization Inventory (CSI) and Functional Disability Inventory (FDI).

TABLE 1

Characteristics of Study Variables for the Entire Sample at Baseline

Variable	Sample Mean (SD) or %	Median	Possible Range	Observed Range
Age	10.69 (3.06)	10.00	6–18	6–18
Gender (female)	64%			
CBCL Anx-Dep	0.40 (0.30)	0.36	0–2	0–1.29
STAIC	34.38 (8.00)	34.00	20–60	21–57
CDI	9.34 (6.81)	8.00	0–54	0–32
SPPC	19.67 (3.88)	20.50	4–24	6–24
FILE	7.50 (5.42)	6.00	0–24	0–24
LEQ	6.11 (4.27)	5.00	0–55	0–19
Pain frequency	2.91 (1.67)	3.00	0–5	0–5
Pain typical intensity	5.44 (2.42)	5.00	0–10	0–10

Note: CBCL Anx-Dep = Child Behavior Checklist, Anxiety-Depression Scale; STAIC = State-Trait Anxiety Inventory for Children; CDI = Child Depression Inventory; SPPC = Self-Perception Profile for Children; FILE = Family Inventory of Life Events; LEQ = Life Events Questionnaire.

TABLE 2

Comparison of Characteristics by CSI Symptom Trajectory Group

Variable	Low Risk (<i>n</i> = 94) Mean (SD)	Short-Term Risk (<i>n</i> = 17) Mean (SD)	Long-Term Risk (<i>n</i> = 21) Mean (SD)	<i>F</i> Ratio
Age	10.51 (2.98)	10.59 (3.39)	11.90 (3.23)	1.78
Gender ^a	57.4	82.4	76.2	5.56
CBCL Anx-Dep	0.37 (0.30)	0.42 (0.21)	0.49 (0.37)	1.32
STAIC	32.44 (7.20)	38.23 (7.32)	39.90 (8.57)	11.23***
CDI	7.72 (5.68)	11.88 (7.33)	14.57 (8.01)	11.65***
FILE	6.82 (5.37)	8.12 (4.42)	9.76 (5.77)	2.76
LEQ	5.14 (3.66)	6.88 (4.78)	9.76 (4.42)	12.07***
SPPC	19.47 (3.77)	20.05 (4.16)	16.95 (4.48)	4.02*
Pain frequency	2.57 (1.68)	4.24 (0.90)	3.33 (1.49)	8.83***
Pain typical intensity	5.03 (2.48)	6.75 (1.84)	6.24 (2.02)	5.12**

^a Gender = % Female, shown with χ^2 statistic.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

TABLE 3

Comparison of Characteristics by FDI Symptom Trajectory Group

Variable	Low Risk (<i>n</i> = 91) Mean (SD)	Short-Term Risk (<i>n</i> = 22) Mean (SD)	Long-Term Risk (<i>n</i> = 19) Mean (SD)	<i>F</i> Ratio
Age	10.47 (2.95)	10.73 (3.04)	12.05 (3.63)	2.08
Gender ^a	59.3	81.8	63.2	5.56
CBCL Anx-Dep	0.37 (0.31)	0.46 (0.25)	0.47 (0.34)	1.43
STAIC	32.79 (7.22)	36.59 (9.33)	39.42 (7.61)	6.98**
CDI	7.80 (5.60)	10.72 (7.34)	15.16 (8.22)	11.22**
FILE	6.95 (5.51)	7.31 (4.83)	10.00 (5.03)	2.56
LEQ	5.07 (3.72)	6.86 (3.24)	10.44 (5.14)	14.92**
SPPC	19.58 (3.71)	19.54 (4.25)	16.57 (4.47)	4.75*
Pain frequency	2.57 (1.66)	4.05 (1.25)	3.21 (1.54)	8.01**
Pain typical intensity	4.87 (2.36)	7.05 (1.73)	6.26 (2.40)	9.57**

FDI = Functional Disability Inventory.

^a Gender = % female and is shown with a χ^2 statistic.*
 $p < .01$;**
 $p < .001$.