

Teachers' Perceptions of and Responses to Adolescents with Chronic Pain Syndromes

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Objective To examine factors that influence teachers' perceptions of and responses to chronic pain in students. **Methods** Two-hundred and sixty classroom teachers responded to a vignette describing a student with limb pain. The 2×2×2 factorial design included conditions that varied by (a) the presence or absence of documented organic evidence for the pain, (b) cooperative vs. confrontational parent–teacher interactions, and (c) the presence or absence of communication from the medical team. Teachers rated pain severity and impairment, relief from classroom responsibilities, extent of accommodations the student would require in school, and sympathy for the student and family. **Results** Documented medical evidence supporting the pain was the most influential factor affecting teachers' responses to pain. Parental attitude also influenced responses. Communication from the medical team influenced teachers' decisions about relief from responsibilities but did not affect other reactions. **Conclusions** Teachers' responses to students with pain are influenced by situational factors. Efforts to increase school functioning in youth with chronic pain should incorporate attempts to help teachers respond to pain adaptively.

Key words adolescent; chronic pain; classroom; school functioning; teacher report.

Children and adolescents with chronic pain disorders experience numerous difficulties in school, including frequent absences, decreased academic performance, and impaired ability to cope with the demands of the classroom setting (Allen, Mathews, & Shriver, 1999; Palermo, 2000). School difficulties among this population can enter a downward spiral of increasing severity and intractability if not given appropriate and swift attention by all involved caretakers—including the medical team, family, and school personnel—early in treatment (Bursch, Walco, & Zeltzer, 1998). High absence rates are well documented in this population (Newacheck & Taylor, 1992). Only a few studies have examined associations between pain and academic performance, academic competence, or classroom behavior (Claar, Walker, & Smith, 1999; Palermo, 2000), but these studies suggest that the effects of chronic pain on school function are far-reaching. Given the current state of research, we lack a thorough understanding of the relationship between chronic pain and school functioning.

The biobehavioral model of pediatric chronic pain (Varni, 1989) posits that others' responses to pain can play an important role in the chronic pain cycle. Studies of parental response to children's pain behaviors clearly indicate that parental responses can serve a risk or protective function in children's ability to cope with pain, either by inadvertently reinforcing sick-role behavior or by encouraging adaptive functioning (Chambers, Craig, & Bennett, 2002; Walker & Zeman, 1992). Although not explored well in the existing literature, teachers' responses to chronic pain problems in the school setting may serve a similar protective or risk-promoting function in determining the extent to which school functioning is disrupted in youth with chronic pain syndromes. Understanding teachers' perceptions of chronic pain problems in youth and identifying factors that influence how teachers manage such problems in the classroom can enable us to develop targeted intervention efforts aimed at improving the functional abilities

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and physical and emotional well being of these children and adolescents.

The Role of Social Judgment in Responses to Illness Behavior

Research on social aspects of illness behavior has shown that individuals incorporate a range of factors into their judgments about people with illnesses and that these judgments subsequently influence behaviors toward ill people (Eisenberg, 1979). Individuals with chronic pain are particularly susceptible to negative judgments and reactions by others because of the subjective nature of chronic pain conditions and the frequent lack of external signs of illness and/or documented organic explanations for the pain. Evidence suggests that adults with chronic pain syndromes tend to be the victims of negative social judgments both by laypersons (Chibnall & Tait, 1999; Tait & Chibnall, 1994) and by healthcare professionals (Tait & Chibnall, 1997).

Past research generally suggests that children with chronic pain that is clearly linked to specific medical illnesses, such as sickle cell disease or juvenile rheumatoid arthritis, are not targets of extensive negative social judgments by teachers or peers (Noll et al., 1996, 2000). Less is known, however, about children and adolescents with chronic pain conditions not linked to specific disease. Among this group, the influence of social judgment has been studied as it applies to mothers' attributions of their children's pain symptoms (Claar & Walker, 1999) and to peer responses to children with pain (Guite, Walker, Smith, & Garber, 2000). Both parents and peers appear to be heavily influenced by the presence or absence of obvious medical explanations for pain (Guite et al., 2000; Walker, Garber, & Van Slyke, 1995). Studies in other areas of pediatric psychology such as the developmental disability field show that teachers' attitudes and responses to disability can influence the attitudes of classmates (Forlin & Cole, 1994). It is possible that similar pathways of influence shape responses to youth with chronic pain in school. Teachers' perceptions of and reactions to pain symptoms and behaviors, therefore, could potentially influence not only the child's ability and motivation to function academically but might also indirectly affect other realms of the child's functioning. It is important to address the existing gap in the literature by investigating teachers' judgments of and reactions to students with chronic pain in the classroom setting.

Social Judgments in the Teacher–Student Context

Judgments formed about individuals with chronic pain have been found to be based on three sets of variables (Chibnall, Tait, & Ross, 1997; Clark, Potter, & McKinlay, 1991): (a) characteristics of the individual with pain, (b) characteristics of the person making judgments, and (c) characteristics of the situation in which the interaction occurs. Given our interest in developing future interventions to improve school functioning among adolescents with chronic pain, particularly chronic pain without specific medical etiology, we focus the present study primarily on the most malleable set of variables, situational characteristics. The situational components used as independent variables in this study were selected based on the existing literature. Specifically, we investigate the influence of documented medical evidence supporting the pain complaints, cooperative vs. confrontational parent–teacher interactions, and communication between the medical team and the school.

Documented medical evidence for the pain and outwardly observable symptoms has been shown in both adult and pediatric studies to influence others' judgments of and reactions to individuals with chronic pain. For example, in the absence of clear evidence of organic disease, parents appear to infer psychological causes for children's misbehavior (i.e., failing grades at school and arguments with parents) and to respond more negatively than when organic disease is known to be present (Walker et al., 1995). Cooperative vs. confrontational parent–teacher interaction was included as a variable based on recent findings that teachers identify interactions with parents as a strong influence on their responses to children with chronic pain symptoms (Logan & Curran, 2005). Because research has demonstrated that school personnel dealing with chronic health conditions in their students cite the need for input from and ongoing communication with healthcare providers (Logan & Curran, 2005; Power, DuPaul, Shapiro, & Kazak, 2003; Power, Heathfield, McGoey, & Blum, 1999), the availability of direct communication with the medical team was included as a third independent variable.

The primary aim of this study was to examine factors that influence teachers' perceptions of and responses to chronic pain conditions not linked to specific medical illness in adolescent students. Specifically, we investigated the effects of three variables: (a) documented medical evidence to explain the pain (present or absent); (b) parents' attitudes and interactions with teachers (cooperative or confrontational); and (c) communication from the healthcare team (present or absent) on teachers' perceptions

and hypothetical responses toward students with chronic pain. The following hypotheses were tested:

1. Teachers will perceive pain intensity and pain-related impairment as more severe in the presence of (a) documented medical evidence indicating a biological basis for chronic pain symptoms, and (b) direct communication from the medical team. We expect that parent–teacher interaction will not influence teachers’ perceptions of pain severity or impairment.
2. Teachers will hold stronger beliefs that the child with pain warrants special treatment in the classroom in the presence of (a) documented medical evidence for the pain, (b) cooperative (vs. confrontational) parent–teacher interactions, and (c) direct communication from the medical team.
3. Teachers will report higher levels of sympathy for the child with pain and her family in the presence of (a) documented medical evidence, (b) cooperative (vs. confrontational) parent–teacher interactions, and (c) direct communication from the medical team.

Methods

Participants

The participants included 263 middle- and high-school classroom teachers from six public schools in the greater Boston area. The schools from which participants were recruited were selected by convenience and included one urban combined (7–12th grade) school, two suburban middle schools, and three suburban high schools. All permanent regular classroom teachers (of academic or special subjects) at these schools were eligible for participation. Study personnel presented the project at school staff meetings and solicited participants.

Procedures

The study was approved by the hospital institutional review board prior to any data collection and also underwent research review procedures at each participating school. An informational consent form was distributed with the other study materials, but signed consent was waived by the review boards. This form included a statement that “your completion of the study forms will indicate your consent to participate in the study.” Vignettes and questionnaires were distributed at school staff meetings or via teacher mailboxes and were returned either to project staff or to a designated school liaison (e.g., guidance counselor or administrative assistant). Participation rates varied by school, due in part to differential attendance rates at the meetings where the study was presented (see Table I for individual school participation rates). Respondents received \$10 gift certificates in appreciation for their participation.

The study utilized a cross-sectional, 2 (presence or absence of evidence of medical evidence) \times 2 (cooperative vs. confrontational parent–teacher interactions) \times 2 (presence or absence of communication from the medical team) between-subjects factorial design with random assignment to conditions. A written vignette methodology was employed to assess classroom teachers’ responses to a hypothetical scenario describing an adolescent girl who develops a chronic pain syndrome affecting her school attendance and performance. The full factorial approach required eight versions of the vignette to represent all possible combinations of the manipulated variables. Aside from the three manipulations, the rest of the vignette was held constant across conditions. The description of the student with pain was based on characteristics commonly observed in youth presenting to tertiary care pediatric pain clinics. The student was described as female, a good student academically, involved in athletics, with some mild anxiety traits. The injury involves her hand and occurs in an ambiguous situation that may or may not contain psychosocial aspects (i.e., another student slams her locker

Table I. Descriptive Data on Study Respondents by School

School	Type of school	Participation rate (%)	% female respondents	Mean years of teaching experience	Median number students with pain in career
A	Combined	84.7	57.0	19.2 (12.6)	4
B	High school	36.1	69.5	14.2 (10.5)	3
C	Middle school	22.6	91.7	15.0 (9.6)	3
D	High school	23.2	61.1	17.0 (12.4)	3
E	Middle school	40.0	100	11.4 (9.5)	2
F	High school	20.6	84.6	12.7 (11.2)	2

door against the student's hand). The description of the initial medical workup of the injury is consistent across vignettes, as is the degree of functional impairment in the school setting. Across all vignettes, the student is eventually given a diagnosis of complex regional pain syndrome, a diagnosis that is based on medical history and symptoms of the pain (Merskey & Bogduk, 1994), thus allowing us to vary the presence or absence of documented medical evidence across vignettes.

The vignettes were pilot tested on a small group of classroom teachers ($n = 16$; two teachers per condition) to ensure that they were comprehensible and that manipulations were correctly interpreted. Pilot participants also gave oral and written feedback on the vignette and the follow-up questions. Minor adjustments were made based on this feedback, but overall, pilot testing indicated that our materials were appropriate for our intended population. The following is one vignette condition used in the study; in this version, documented medical evidence is present, parents are confrontational, and communication from the medical team is present. Note: The manipulated portions of the vignette are italicized.

Samantha Green is a student in your class. She gets good grades but has to work hard to do so. She is a dedicated player on the girls' soccer team. You notice that she sometimes struggles socially and seems a bit anxious, but she has never been difficult to manage in the classroom.

One day Samantha's hand is injured when another student slams her locker door against it. Samantha is extremely distressed by the injury. Her parents take her to her pediatrician who finds no major damage, just some bruising and swelling. A week later, Samantha starts to complain of intense pain in her hand. She begins making frequent visits to the nurse's office and fails to complete her work because the pain prevents her from writing and interferes with her concentration. Eventually, as the pain persists, she begins to miss school altogether. Samantha's parents take her to an orthopedic specialist, who orders X-rays and bone scans. *Mr and Mrs Green inform you that these tests showed evidence that the nerves in Samantha's hand were functioning abnormally, and the doctor prescribed a pain medication for her.*

The Greens insist that Samantha be excused from all written assignments and that her academic workload be adjusted significantly because of her injury. After consulting with the school administration and the Guidance office, you attempt to meet the parents halfway in terms of adjustments to Samantha's workload (e.g., suggesting that Samantha receive Incompletes on her grades for the term, be permitted additional time to make up the work, and

consider transferring out of some of her very demanding honors-level classes into less stressful ones). However, Mr and Mrs Green become very upset and accuse you of failing to understand the situation. They then contact the principal, report that you are not willing to accommodate their daughter's physical disability, and ask that she be provided homebound instruction because they do not feel it is appropriate for her to be in the classroom.

After two months, during which time Samantha has continued to miss several days of school a week and been able to do little work when she does attend, the Greens inform you that they took Samantha to a pain management clinic at a local children's hospital, where she was diagnosed with complex regional pain syndrome. *You receive a letter from the pain management team describing Samantha's symptoms and explaining what complex regional pain syndrome is and how it might affect an adolescent in school. The healthcare team also includes their treatment plan and offers specific recommendations for ways to accommodate Samantha's pain problems in the school setting.*

Samantha's guidance counselor has requested a team meeting to discuss how to respond to Samantha's pain problem. The following questions seek your individual input and should be based on your own opinions/suggestions (even if you feel that you would not be expected to make individual decisions about some of these issues).

In each school, an equal number of each vignette condition was distributed to participants, although it was not possible to ensure balance in the responses returned. The cell sizes of the manipulations represented by completed questionnaires ranged in size from 24 to 39 participants. Chi-square analyses indicate that completed forms were equally distributed by school, teacher gender, years of teaching experience, personal experience with pain, and the number of students with pain encountered in one's career.

Measures

Demographic Information

Teachers completed a brief demographic information form, reporting gender, number of years of teaching experience, grade level currently taught, and estimated number of students with chronic pain they have encountered in their careers.

Manipulation Check

To determine whether the manipulations of the independent variables had the intended effects, participants were asked to respond to true-false questions regarding the

existence of medical evidence supporting the pain complaints, tenor of parent–teacher interactions, and whether the healthcare team communicated with the school. Participants whose responses did not correspond to the scenario they received were excluded from subsequent analyses (Chibnall & Tait, 1999; Guite et al., 2000).

Primary Outcome Measures

Perceived Pain Severity and Impairment

Ratings included (a) perceived pain intensity, and (b) perceived degree of functional impairment resulting from the pain. Ten-centimeter visual analog scales (VAS) were used for responses.

Responses to Pain

Responses to pain included the extent of relief from typical classroom responsibilities, extent of academic accommodations, and sympathy toward the student and parents. Question wording encouraged teachers to report how they would respond to the pain if such decisions were left up to them, recognizing that school policies might influence responses outside the hypothetical context of the vignette.

Relief. Teachers were asked, “When Samantha has pain in the classroom, how will you respond, if decisions were entirely up to you?” Response options were: Let Samantha go home; Let her rest at her desk; Send her to the nurse; Reduce her workload; Alter deadlines for assignments; Make sure other students are nice to her. Respondents could select as many choices as applied or could endorse “None of the above: treat her the same as if she were not having pain.” The number of responses endorsed (range = 0–6) was used to indicate the extent of relief the respondent would grant this student.

Accommodations. Teachers were asked, “If it were completely up to you, what is the extent of accommodations in the school setting to which this child should be entitled?” Response choices were: (a) no accommodations; she should be expected to maintain the standard course load and schedule; (b) minor accommodations, e.g., short extensions granted for completion of work, excused from a few small assignments; (c) moderate accommodations, e.g., longer extensions, significant reduction of course expectations, and/or modified grading system, some adjustment to the number of hours per week in the classroom; (d) major accommodations, e.g., she should be permitted to drop classes and should be given extensive special services, extensive reduction in the number of hours per week in the classroom; (e) full homebound instruction recommended. These responses were treated as an ordinal scale. Participants were also asked to indicate the extent of accommodations they believed the school administration would support.

Sympathy. Teachers were asked to “rate your current level of sympathy” for Samantha and for her parents. Responses on a Likert-type scale included “no sympathy,” “a little,” “moderate,” “strong,” and “very strong sympathy.” The two items were summed for an overall rating of sympathy for the family.

Results

Results are presented as follows: first, the manipulation check findings are reported, followed by background information on the sample and full sample results related to perceptions of and responses to pain. Bivariate associations between variables are briefly outlined. Finally, the results of analyses of variance (ANOVA) examining the effects of the variable manipulations on teachers’ perceptions of and responses to pain are presented.

Manipulation Check Results

Patterns of responses to our manipulation checks indicated that most participants correctly perceived parents’ attitude as cooperative or confrontational in the vignette they read, with 90% of participants responding correctly on the manipulation check. Similarly, most participants correctly perceived the presence or absence of communication from the medical team in their vignette, with 85.8% of respondents passing this manipulation check. As a group, our teacher respondents appeared to have more difficulty recognizing whether documented medical evidence supporting the pain complaints was present or absent in the vignettes they read. Only 66.2% of respondents passed this manipulation check. Those failing this check were more likely to have read vignettes in which medical evidence was not explicitly provided ($\chi^2 = 55.7, p < .001$); in other words, there was a greater tendency to interpret documented medical evidence as present when it was absent than to interpret that medical evidence was absent when it was present. About 52.2% of respondents passed all the three manipulation checks and 1.2% of the sample failed all the three checks. Demographic characteristics were examined in relation to patterns of responses on the manipulation checks, but no significant relations emerged. In subsequent analyses, we have included only participants who successfully passed the relevant manipulation check.

Overall Findings

Three participants were excluded from data analyses due to substantial missing data, resulting in a final sample size of 260. Across schools, the overall response rate was 40.9% of the total teaching staff. The sample was 68.1% females.

Participants had a mean of 16 years of teaching experience (range 1–40, $SD = 11.6$). The median number of students with chronic pain encountered in participants' careers was 3 (range = 0–100). Seventy-three percent of the sample reported some personal experience with chronic pain in either themselves or a close friend or family member. Table I reports descriptive data on respondents by school.

Across vignette conditions and with the full sample included in analyses, teachers reported a mean perceived pain severity rating of 6.0 cm ($SD = 1.7$ cm) on a 10-cm VAS. They reported a mean perceived impairment rating of 6.4 cm ($SD = 2.0$ cm). Almost all participants (95.8%) noted that they would grant the student some type of relief from regular classroom expectations (e.g., sending her to the nurse). In terms of global academic accommodations for this student, 56.8% of the sample reported that they would endorse only minor or no accommodations, with the remainder of the sample endorsing moderate or more extensive accommodations. Teachers' own endorsement of accommodations correlated significantly with the level of accommodations they believed their administration would support ($r = .54, p < .001$).

Responses differed across schools only for perceived pain severity ($\chi^2 = 390.5, df = 240, p < .05$). Results on the manipulation checks did not vary by school. Nonetheless, to control for the potential influence of more subtle school effects, and given the between-school differences in demographic traits and participation rates, we created variables to represent the school in which each individual respondent was nested and included these in the multivariate analyses.

Associations Among Variables

Bivariate Pearson correlation coefficients among the independent and dependent variables are reported in Table II. *t* test comparisons of the full sample revealed

that female teachers perceived significantly greater pain-related impairment compared to male teachers ($t = -2.1, df = 246, p < .05$). Male teachers granted more relief to the student in the classroom compared to female teachers ($t = 3.3, df = 248, p < .001$). No other demographic variables correlated significantly with the dependent variables.

Hypothesis Testing

ANOVA techniques were used to examine the effects of our three independent variables (medical evidence, parental attitude, and communication from the medical team) on our outcomes of interest (perceptions of pain severity and impairment and responses to pain). For each ANOVA, variables representing school affiliation were included as covariates to control for interschool differences. Respondents' gender also was included as a covariate for analyses predicting judgments of functional impairment due to pain and relief from responsibility. Separate analyses were conducted for the independent variable representing medical evidence including only those participants who passed the manipulation check for that variable ($n = 172$). Because our other two independent variables were intercorrelated ($r = .21, p < .05$), analyses of the effects of parental attitude and medical communication were conducted including only those participants who passed both of these manipulation checks ($n = 201$). Only main effects are reported as no interaction effects were significant (see Table III for a summary of ANOVA results).

Perceptions of Pain: Pain Severity and Impairment

Among those participants who correctly perceived whether medical evidence for the pain was explicitly provided in the vignette, the presence of medical evidence predicted teachers' perceptions of pain severity ($F = 16.05,$

Table II. Bivariate Correlation Matrix For Independent And Dependent Variables

	Medical evidence ($n = 170$)	Parent-teacher interaction ($n = 232$)	Medical communication ($n = 223$)	Perception: pain severity	Perception: impairment	Response: grant relief	Response: accommodations in class	Response: sympathy
Medical evidence	–	.06	.14	.31**	.21**	.13	.16*	.08
Parent-teacher interaction	–	–	.21*	–.01	–.03	.12	–.13	–.25**
Medical communication	–	–	–	.09	.10	.16*	–.03	–.03
Perceived pain severity	–	–	–	–	.68**	–.22**	.38**	.39**
Perceived impairment	–	–	–	–	–	–.21**	.28**	.47**
Response: relief	–	–	–	–	–	–	–.41**	–.31**
Response: accommodation	–	–	–	–	–	–	–	.40**
Response: sympathy	–	–	–	–	–	–	–	–

Note: For the correlations among the three independent variables, only those respondents who passed all the three manipulation checks ($n = 132$) were included in the analyses.

**Correlation is significant at the $p < .01$ level (two-tailed) (highlighted in bold).

*Correlation is significant at the $p < .05$ level (two-tailed).

Table III. Main Effects of Medical Evidence, Parent–Teacher Interaction, and Healthcare Team Communication on Teachers’ Perceptions of and Responses to Pain

Predictor	Outcome														
	Perceived pain severity			Perceived impairment			Relief from responsibilities			Academic accommodations			Sympathy		
	Mean (SD)	F	η^2	Mean (SD)	F	η^2	Mean (SD)	F	η^2	Mean (SD)	F	η^2	Mean (SD)	F	η^2
Medical evidence present	6.4 (1.5)	16.05***	.09	6.7 (1.8)	9.42**	.06	9.1 (1.4)	6.25**	.04	2.5 (0.6)	5.15*	.03	6.8 (1.6)	0.85	<.01
Medical evidence absent	5.2 (2.1)			5.7 (2.3)			9.6 (1.4)			2.2 (0.5)			6.5 (1.6)		
Cooperative parents	6.1 (1.8)	0.94	.01	6.5 (2.0)	0.06	<.01	9.0 (1.5)	1.83	.01	2.6 (0.7)	2.99†	.02	7.2 (1.6)	15.05***	.07
Confrontational parents	5.9 (1.8)			6.4 (1.9)			9.4 (1.3)			2.4 (0.6)			6.3 (1.6)		
Communication present	6.1 (1.6)	1.19	.01	6.6 (1.8)	1.25	.01	9.5 (1.3)	4.67*	.02	2.6 (0.6)	0.54	<.01	6.7 (1.6)	0.64	<.01
Communication absent	5.8 (1.8)			6.2 (2.1)			8.9 (1.5)			2.5 (0.7)			6.7 (1.6)		

Note: Degrees of freedom for medical evidence analyses are (1,162). Degrees of freedom for parent attitude + communication analyses are (1,191).

* $p < .05$. ** $p < .01$. *** $p < .001$. † $p = .08$.

$p < .001$). The presence of medical evidence also predicted perceived functional impairment ($F = 9.42$, $p < .01$). Interestingly, teacher gender was also a significant predictor of perceived functional impairment ($F = 5.07$, $p < .05$), with female teacher gender associating positively with perceived impairment. As expected, among participants who correctly interpreted parents’ attitudes as cooperative or confrontational, parental attitude did not predict pain severity or impairment. Contrary to expectations, the presence of communication from the medical team did not associate with perceptions of pain severity or impairment among participants who correctly perceived the presence or absence of medical communication.

Responses to Pain: Relief from Responsibility

The presence of medical evidence positively predicted the degree of relief that teachers granted the hypothetical student with pain ($F = 6.25$, $p < .01$). Parent–teacher interaction did not significantly predict the degree of relief granted. Finally, the presence of medical communication significantly and positively predicted degree of relief ($F = 4.67$, $p < .05$). In both ANOVA analyses, teacher gender was associated significantly with relief from responsibility, with male teachers granting more extensive relief ($F = 6.56$, $p < .01$ for medical evidence; $F = 3.85$, $p < .05$ for parent–teacher interaction and medical communication).

Responses to Pain: Accommodations in the Classroom

The presence of medical evidence predicted the extent of accommodations teachers endorsed for the student

with pain ($F = 5.15$, $p < .05$), with teachers endorsing more extensive accommodations when the pain was medically explained. Parent–teacher interaction showed a trend toward significance as a predictor of the extent of accommodations ($F = 2.94$, $p = .08$), with teachers endorsing higher levels of accommodations when parents were cooperative. Communication from the medical team did not significantly predict the extent of accommodations endorsed.

Responses to Pain: Sympathy

The presence of medical evidence did not predict teachers’ sympathy for the family. Cooperative parent–teacher interaction did emerge as a significant predictor of sympathy ($F = 15.05$, $p < .001$). Presence of communication with the medical team did not appear to influence sympathy ratings.

Discussion

Young patients with pain often attribute their school difficulties to a perceived lack of support or understanding of their pain on the part of teachers. Results of this study indicate that aspects of teachers’ judgments of students with chronic pain and their responses to pain in the classroom are influenced by situational factors such as the presence of documented medical evidence supporting the pain complaints and whether parents work cooperatively or confrontationally with the school to address school functioning. Direct communication from the medical team appears to affect the extent of relief from

responsibilities that teachers grant a student with chronic pain but was less influential than expected. Across the vignette conditions, teachers perceived moderate pain severity and pain-related impairment in the student described in the vignettes; however, the findings underscore that responses to pain in the classroom vary widely. This is the first known study to assess teachers' responses to chronic pain using vignette methodology. Other studies have used similar methodology to assess reactions to pain behaviors in children's peers (Guite et al., 2000) and their medical providers (Armstrong, Pegelow, Gonzalez, & Martinez, 1992). Similar to our findings, these previous studies demonstrate a link between what people are told about a child's pain and how they respond to that individual.

Interestingly, male and female teachers responded differently to the hypothetical student with pain. Female teachers perceived the student as more impaired by pain, while male teachers granted the student more extensive relief from classroom responsibilities. These two findings could be viewed as contradictory—why would teachers who viewed the student as less impaired grant more relief? Perhaps females in our sample were more sympathetic in their views of the student's impairment but were more focused on avoiding negative reinforcement of the pain behaviors. The gender of the student with pain may also be an important determinant of teachers' responses and might potentially interact with teacher gender in interesting ways, but this was not assessed in the present study.

Interschool differences in responses to pain in the classroom were anticipated, given the likely differences in school policies and environments and the potential influence of these factors on teachers' responses. Only a few such differences emerged; these were dealt with statistically by controlling for school affiliation in our multivariate analyses. These school differences are difficult to interpret without thorough knowledge of the policies and practices at each school and were therefore not explored in detail. Response rate variability could be another factor in these discrepancies; high response rates may be more representative of all teachers' responses, whereas low response rates might indicate subsamples that are more skewed in terms of teachers' experience with or knowledge of chronic pain problems. Although it does not appear that our full sample findings are unduly reflective of any one specific school in the sample, response rate differences may have had more subtle effects on the findings.

The manipulation checks revealed that many teachers believed they were presented with medical evidence

supporting the pain problem when in fact they were given vignettes in which such evidence was absent. The wording of the vignette or the manipulation check question may have contributed to this confusion. For example, providing a specific diagnostic label for the pain in the no-evidence (as well as the evidence) condition may have led respondents to believe that this constituted "medical evidence." The confusion also likely reflects the true ambiguity that teachers frequently face when they encounter chronic pain conditions in the school setting. Often, individuals who are not familiar with the biopsychosocial nature of chronic pain focus on whether the pain is "real" (i.e., whether there is specific organic etiology to the pain), but they may have widely varying criteria for determining this. It is important for clinicians to consider the possible impact that information about an individual's condition may carry and to provide as much clarity as possible in their communications. Medical and behavioral professionals treating adolescents with chronic pain should be aware that teachers, who are far less familiar with these conditions and who must balance the needs of the individual with pain with those of numerous other students in the classroom, need assistance in understanding what they are seeing and in developing appropriate plans for responding to these conditions.

The primary aim of this study was to examine the effects of medical evidence, parent attitudes, and medical communication on teachers' perceptions of and responses to chronic pain in a student. Medical evidence emerged as an important predictor of these outcomes. This is consistent with the findings of Chibnall and Tait (Chibnall & Tait, 1999; Chibnall, Tait, & Ross, 1997; Tait & Chibnall, 1994), which support medical evidence as the most powerful influence on responses to adults' pain symptoms by both laypeople and medical professionals. The findings also parallel those of Guite et al. (2000) who found medical explanations for pain to influence peers' ratings of pain severity, the perceived necessity for relief, and liking for a child with pain. Interestingly, chronic pain that is not clearly linked to medical disease may elicit different perceptions in the school setting than disease-specific chronic pain (Noll et al., 1996; Noll, Ris, Davies, Bukowski, & Koontz, 1992; Reiter-Purtill, Gerhardt, Vannatta, Passo, & Noll, 2003). As noted above, however, our findings also indicate that whether medical evidence for non-disease-related pain exists in a given case may not be entirely clear to the observer.

The one outcome not dependent on the presence of medical evidence in our sample was the extent of sympathy

for the student and family. Whether there was a medical explanation for the pain did not appear to influence teachers' emotional response toward the student and family. Teachers in our sample did not express more negative feelings toward the student in the absence of a medical explanation for the pain. In their study of peer responses to pain in children, Guite and colleagues similarly found that liking for a hypothetical child with chronic pain was less affected by the absence of organic explanation for the pain symptoms than expected. Our study provides some reassuring evidence that teachers do not form their affective responses to students with chronic pain primarily on whether the pain is clearly medically explained.

Whether parents approach the school cooperatively or confrontationally also emerged as an influence on teachers' responses to pain, although to a lesser extent than hypothesized. The findings suggest that teachers tended to feel students were entitled to more accommodations when parents interacted cooperatively with them. Not surprisingly, teachers were more sympathetic toward families when parents were cooperative. These results highlight the challenges that parents face in finding the balance between approaching schools in a collaborative manner and being assertive advocates for their child's needs. Psychologists working with pediatric pain patients can play an important role in helping parents navigate these challenges. Many parents feel helpless in the face of having a child with pain, and this helplessness can sometimes manifest as anger toward others in the child's environment such as the school. Yet, this anger can be counterproductive, as it may hinder the crucial partnership that needs to develop between families and schools in helping to restore adaptive functioning in youth with chronic pain conditions. Walker & Johnson (2004) have noted that children with pain can sometimes feel caught in conflicts that arise between parents and teachers over how to manage their symptoms in school. Given sufficient resources, psychologists may be well suited to serve as liaisons connecting the family, the school, and the medical team. Along with helping parents to learn to respond to their child's pain in ways that encourage adaptive coping and improved functioning, it may be useful for psychologists to help parents develop ways to interact with the school that will optimize positive outcomes for their child with pain.

Our findings suggest that communication from the medical team has some bearing on how teachers respond to pain, but overall this factor was less important than predicted. This contradicts what we know from focus group research, with teachers discussing actual past

experiences with students with pain (Logan & Curran, 2005). Teachers participating in focus groups emphasized that hearing directly from the medical team—for example, receiving explanations of the pain condition and recommendations for management in school—was vital to their perceptions of competence in managing these problems. Perhaps written information of the type described in the vignette is not adequate, and more direct verbal communication is required. It is also possible that simply presenting medical communication as present or absent did not convey enough information for teachers to truly evaluate this concept; in reality, communication varies in its clarity and effectiveness. More research is needed on this issue, as it may be that the importance of communication from the medical team could not be conveyed adequately through the vignette methodology used in this study. Furthermore, no research has yet explored families' preferences regarding pain-related communication between healthcare teams and schools.

This study has important implications for both healthcare providers who work with youth with chronic pain and teachers who encounter them in school. A focus on functional restoration is often warranted for these patients (Palermo, 2000). Maintaining or restoring adaptive functioning in school should be a crucial goal within this approach. Healthcare providers should be aware of the impact that a medical explanation for the pain can have on how pain is perceived and managed in school. Prior research has shown that when organic pathology is absent, physical symptoms are often interpreted as signs of emotional distress or means of obtaining secondary gain (Skelton, 1991). Our findings suggest that these effects hold true for teachers encountering chronic pain problems in school settings. Particularly when such evidence is absent and psychosocial stressors are present, the healthcare team should work closely with schools to explain how pain contains biological, psychological and social components and to help them respond to pain behaviors in ways that foster adaptive functioning. On a theoretical level, the study findings suggest that the school setting and the responses of school personnel should be integrated into our conceptual models of the important systemic influences that shape outcomes of pediatric chronic pain conditions. Models are currently being developed and refined for collaboration between pediatric psychologists and schools (Drotar, Palermo, & Barry, 2004). Psychologists working with pediatric chronic pain patients should view collaboration with schools as an integral aspect of their clinical care of these patients.

Our findings must be evaluated in light of the study's limitations. Foremost, there are inherent internal validity limitations to vignette methodology; we cannot be certain that teachers' responses to a hypothetical scenario exactly reflect "real life" responses. There are numerous potential influences on teachers' attitudes and behaviors that were not incorporated into the study, including class size and the extent of administrative support available. We also did not include the age of the child or specific grade level as a factor in our vignette; teachers' responses to students quite likely differ by the child's age and grade. The methodology limitations also include measurement issues. Some of the concepts we wished to assess were difficult to capture quantitatively. For example, in measuring the relief that teachers granted for pain, we summed the number of relief options endorsed but were not able to account for possible differences in the magnitude of various relief responses (e.g., teachers may have felt that "send[ing] Samantha to the nurse" represented a very different degree of relief from "let[ting] her go home").

The low response rates we obtained in some schools suggest that sampling bias may limit the generalizability of our results; those teachers who chose to participate may have held particularly strong feelings (positive or negative) about students with pain or had more experience working with such students. The schools included in the study were selected by convenience and cannot be presumed representative of all school settings. Finally, although pilot testing suggested that the conditions we created were clear, the final sample had difficulty determining whether medical evidence was present or absent in the various vignette conditions, and a significant number of respondents had to be excluded from the analyses involving this variable. This also limited our statistical power such that we may not have had sufficient power to detect moderate to smaller effects of the manipulated variables.

This study advances our knowledge of how pediatric chronic pain conditions are understood and managed in the school setting, an important context that has previously received little attention in the literature. Results indicate that teachers' judgments about and responses to chronic pain conditions, and their sympathy for students who experience such conditions, depend in part on whether they view the pain condition as clearly medically based or more vaguely somatic in nature. To a lesser extent, how parents approach the school and whether or not the medical team communicates with the school also affect responses to pain in school. Although the magnitude of some of these effects was modest, this study represents an important starting point for research

on pediatric chronic pain in the school setting. Future investigations should explore other aspects of the school setting, the specific pain presentation, the individual teacher, and the individual adolescent and family that may be important determinants of school-based pain management. Designing effective interventions to improve school functioning, particularly school attendance and academic performance, among youth with chronic pain is clearly an important research and clinical goal. The success of such interventions will be improved if they focus not only on the adolescent with pain but also incorporate efforts to maximize adaptive responses to pain and pain behaviors by teachers and other key personnel in the school setting.

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References

- Allen, K. D., Mathews, J. R., & Shriver, M. D. (1999). Children and recurrent headaches: Assessment and treatment implications for school psychologists. *School Psychology Review, 28*, 266–279.
- Armstrong, F. D., Pegelow, C. H., Gonzalez, J. C., & Martinez, A. (1992). Impact of children's sickle cell history on nurse and physician ratings of pain and medication decisions. *Journal of Pediatric Psychology, 17*, 651–664.
- Bursch, B., Walco, G. A., & Zeltzer, L. (1998). Clinical assessment and management of chronic pain and pain-associated disability syndrome. *Journal of Developmental and Behavioral Pediatrics, 19*, 45–53.
- Chambers, C. T., Craig, K. D., & Bennett, S. M. (2002). The impact of maternal behavior on children's pain experiences: an experimental analysis. *Journal of Pediatric Psychology, 27*, 293–301.
- Chibnall, J. T., & Tait, R. C. (1999). Social and medical influences on attributions and evaluations of chronic pain. *Psychology and Health, 14*, 719–729.

- Chibnall, J. T., Tait, R. C., & Ross, L. R. (1997). The effects of medical evidence and pain intensity on medical students' judgments of chronic pain patients. *Journal of Behavioral Medicine, 20*, 257–271.
- Clair, R. L., & Walker, L. S. (1999). Maternal attributions for the causes and remedies of their children's abdominal pain. *Journal of Pediatric Psychology, 24*, 345–354.
- Clair, R. L., Walker, L. S., & Smith, C. A. (1999). Functional disability in adolescents and young adults with symptoms of irritable bowel syndrome: the role of academic, social, and athletic competence. *Journal of Pediatric Psychology, 24*, 271–280.
- Clark, J. A., Potter, D. A., & McKinlay, J. B. (1991). Bringing social structure back into clinical decision making. *Social Science and Medicine, 32*, 853–866.
- Drotar, D., Palermo, T., & Barry, C. (2004). Collaboration with schools: models and methods in pediatric psychology and pediatrics. In R. T. Brown (Ed.), *Handbook of pediatric psychology in school settings* (pp. 299–312). Mahwah, NJ: Lawrence Erlbaum Associates.
- Eisenberg, J. M. (1979). Sociologic influences on decision-making by clinicians. *Annals of Internal Medicine, 90*, 957–964.
- Forlin, C., & Cole, P. (1994). Attributions of the social acceptance and integration of children with mild intellectual disability. *Australia and New Zealand Journal of Developmental Disabilities, 19*, 11–23.
- Guite, J. W., Walker, L. S., Smith, C. A., & Garber, J. (2000). Children's perceptions of peers with somatic symptoms: The impact of gender, stress and illness. *Journal of Pediatric Psychology, 25*, 125–135.
- Logan, D. E., & Curran, J. A. (2005). Adolescent chronic pain problems in the school setting: Exploring the experiences and beliefs of selected school personnel through focus group methodology. *Journal of Adolescent Health, 37*, 281–288.
- Merskey, H., & Bogduk, N. (Eds.) (1994). *Classification of chronic pain* (2nd ed., pp. 209–214). IASP Task Force on Taxonomy. Seattle: IASP Press.
- Newacheck, P. W., & Taylor, W. R. (1992). Childhood chronic illness: prevalence, severity, and impact. *American Journal of Public Health, 82*, 364–371.
- Noll, R. B., Kozlowski, K., Gerhardt, C., Vannatta, K., Taylor, J., & Passo, M. (2000). Social, emotional, and behavioral functioning of children with juvenile rheumatoid arthritis. *Arthritis and Rheumatology, 43*, 1387–1396.
- Noll, R. B., Ris, M. D., Davies, W. H., Bukowski, W. M., & Koontz, K. (1992). Social interactions between children with cancer or sickle cell disease and their peers: teacher ratings. *Journal of Developmental and Behavioral Pediatrics, 13*, 187–193.
- Noll, R. B., Vannatta, K., Koontz, K., Kalinyak, K., Bukowski, W. M., & Davies, W. H. (1996). Peer relationships and emotional well-being of youngsters with sickle cell disease. *Child Development, 67*, 423–436.
- Palermo, T. M. (2000). Impact of recurrent and chronic pain on child and family daily functioning: a critical review of the literature. *Journal of Developmental and Behavioral Pediatrics, 21*, 58–69.
- Power, T. J., DuPaul, G. J., Shapiro, E. S., & Kazak, A. E. (2003). *Promoting children's health: Integrating school, family, and community*. New York: Guilford Press.
- Power, T. J., Heathfield, L. T., McGoey, K. E., & Blum, N. J. (1999). Managing and preventing chronic health problems in children and youth: School psychology's expanded mission. *School Psychology Review, 28*, 251–263.
- Reiter-Purtill, J., Gerhardt, C. A., Vannatta, K., Passo, M. H., & Noll, R. B. (2003). A controlled longitudinal study of the social functioning of children with juvenile rheumatoid arthritis. *Journal of Pediatric Psychology, 28*, 17–28.
- Skelton, J. A. (1991). Laypersons' judgments of patient credibility and the study of illness representations. In J. A. Skelton, & R. T. Croyle (Eds.), *Mental representation in health and illness*. New York: Springer Verlag.
- Tait, R. C., & Chibnall, J. T. (1994). Observer perceptions of chronic low back pain. *Journal of Applied Social Psychology, 24*, 415–431.
- Tait, R. C., & Chibnall, J. T. (1997). Physician judgments of chronic pain patients. *Social Science and Medicine, 45*, 1199–1205.
- Varni, J. W. (1989). *An empirical model for the biobehavioral investigation of pediatric pain*. Invited Plenary Address at the Annual Meeting of the American Pain Society, Phoenix, AZ.
- Walker, L. S., Garber, J., & Van Slyke, D. A. (1995). Do parents excuse the misbehavior of children with physical or emotional symptoms? An investigation of the pediatric sick role. *Journal of Pediatric Psychology, 20*, 329–345.
- Walker, L. S., & Johnson, W. S. (2004). Recurrent abdominal pain and functional gastrointestinal disorders in the school setting. In R. T. Brown (Ed.), *Handbook of pediatric psychology in school settings* (pp. 299–312). Mahwah, NJ: Lawrence Erlbaum Associates.
- Walker, L. S., & Zeman, J. L. (1992). Parental response to child illness behavior. *Journal of Pediatric Psychology, 17*, 49–71.