

Running Head: TEACHER PERCEPTIONS OF CHILDREN WITH HEADACHE PAIN

Teacher perceptions of children with recurrent headache pain

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## Abstract

Teachers' understanding of and response to students with recurrent pain may affect academic and pain related outcomes. This research examines the effect of communication from a medical professional on teacher perceptions of a student experiencing recurrent headache pain. Participants were 106 teachers (88 women and 18 men) from elementary, middle, and high schools in the Halifax Regional School Board and the Chignecto-Central Regional School Board [mean teaching experience = 11.75 years ( $SD = 8.39$ ); mean grade level taught = 6.21 ( $SD = 3.41$ )]. Participants completed an online survey in which they were presented with a vignette describing a hypothetical student with headache pain. Fifty-five teachers were randomly assigned to read a letter from a hypothetical medical professional detailing the symptoms and effects of recurrent headache pain, whereas 51 teachers were randomly assigned to a control condition in which they were provided with basic information about the IWK Health Centre. Participants rated multiple dimensions of the student's pain and provided open-ended responses regarding their current knowledge of pain, as well as areas in which they would benefit from further training; these responses were analyzed qualitatively using a content analysis approach. Results indicated that teachers who received the letter perceived a higher degree of pain severity than those who did not. Teachers who received the letter were more likely to reduce the student's workload and alter deadlines for tests and assignments. Qualitative analyses indicated that teachers require more information and/or training regarding the nature of recurrent pain in children (i.e., prevalence, symptoms, medical management), as well as more information with respect to the types of physical and academic accommodations appropriate for students with recurrent pain. This research suggests that both education and health care professionals would benefit from more open communication regarding the management of students with recurrent pain. The school psychologist is in a unique position to facilitate communication and act as a liaison between children and families and the various professionals involved in their care. As such, school psychologists would benefit from training and education in the management of health-related concerns among students.

## Teacher perceptions of children with recurrent headache pain

School psychologists are increasingly becoming involved in addressing children's health and mental health concerns (Power, McGoey, Heathfield, & Blum, 1999). Chronic health problems are highly prevalent among children and youth (Power, Heathfield, McGoey & Blum, 1999), with recurrent pain being one of the most common health concerns among this population. Recurrent pains, such as headache, stomachache, and backache, are a complex set of pain conditions that can cause extreme discomfort and impairment (King, Chambers, Huguet, MacNevin, McGrath, Parker & MacDonald, in press; Stanford, Chambers, Biesanz & Chen, 2008). Prevalence rates of pediatric recurrent pain are estimated to be between 20% and 40% in school-age populations, with highest rates among adolescent girls (Logan & Curran, 2005; Stanford, et al. 2008). In a recent study by Stanford, et al. (2008), data from the National Longitudinal Survey of Children and Youth (NLSCY) was used to describe the frequency and correlates of recurrent pain among Canadian adolescents. Across 12-19 years of age, weekly or more frequent rates of recurrent pain ranged from 26.1% to 31.8% for headache, 17.6% to 25.8% for backache, and 13.5% to 22.2% for stomachache. Girls had higher rates of pain than boys for all types of pain (Stanford, et al. 2008). According to a more comprehensive review, prevalence rates of pediatric recurrent pain ranged substantially, from 8% to 83% for headache, 14% to 24% for backache, and 4% to 53% for stomachache, with prevalence rates being higher in girls and increasing with age for most pain types. Additionally, several psychosocial variables were found to impact pain, namely, anxiety, depression, low self-esteem, and low socioeconomic status (King, et al., in press). Taken together, these studies highlight the fact that pain is a pressing health

concern in child populations, as well as the importance of understanding pediatric pain from both physical and psychological perspectives.

Children and adolescents with recurrent pain range broadly with respect to the degree of disability resulting from their pain (Logan & Scharff, 2005); however, for a small but significant subgroup of these youth, recurrent pain symptoms lead to substantial functional impairment affecting many areas of life, including social functioning, sleep and other daily habits, and family relationships (Logan & Curran, 2005). One area that is often significantly affected by recurrent pain is school functioning. Children and adolescents with recurrent pain often miss a significant amount of school, experience a decline in grades, and perceive pain to interfere with their school success (Logan, Simons, Stein & Chastain, 2008). These children also often experience an impaired ability to cope with the demands of the classroom (Allen, Matthews & Shriver, 1999).

People with recurrent pain are at risk for negative judgements by others because the origins of recurrent pain and the cause and extent of disability are often not observable (Logan, Catanese, Coakley & Scharff, 2007). Thus, individuals vary in their understanding and acceptance of recurrent pain (Logan, Catanese, Coakley & Scharff, 2007). According to attribution theory, people make attributions about the cause and controllability of an event or situation that leads to inferences about responsibility. These inferences lead to emotional reactions (e.g. anger, pity) that affect the likelihood of punishing or helping behaviours (Corrigan, Markowitz, Watson, Rowan & Kubiak, 2003). For example, when presented with an event or situation such as an individual with mental illness, people make attributions about the cause and controllability of the illness (Corrigan, et al. 2003). If the cause can be attributed to forces within the individual's

control (e.g. illegal drug use) then the person is likely to be judged as being responsible for his or her condition. Conversely, if the illness is attributed to events that are outside the individual's control (e.g. genetic factors) then he or she is less likely to be judged responsible (Corrigan, et al. 2003). Attributing personal responsibility for a negative event may lead to anger and/or punishing behaviour such as segregation, whereas the belief that an individual is not responsible for his or her condition may lead to pity and/or helping behaviours (Corrigan, et al. 2003).

With regard to people with recurrent pain, influences on attributions for pain symptoms are not fully understood. Research suggests that various social variables influence observer judgements of symptoms associated with recurrent pain (Chibnall, Tait & Ross, 1997). These variables may be grouped into three categories: (a) features of the individual with pain; (b) features of the individual making the judgement; (c) features of the situation in which the interaction occurs (Chibnall, Tait & Ross, 1997; Logan, Coakley & Scharff, 2007). Interventions aimed at improving school functioning of students with recurrent pain should be focused on the third set of variables, given that situational factors are the set of characteristics which are most amenable to change (Logan, Coakley & Scharff, 2007).

The understanding of recurrent pain has progressed from a long-established medical model, in which pain was viewed as either an "organic" or "psychosomatic" phenomenon, to a biopsychosocial model, in which various factors (i.e. biological, psychological, and social) jointly shape the pain experience (Logan, et al. 2007). However, individuals tend to vary in their understanding and acceptance of this multifactorial model of pain (Logan, et al. 2007). Research suggests that individuals who

experience recurrent pain that is linked to specific medical illnesses (e.g. diabetes, arthritis) are viewed more positively than those who experience pain which is not linked to specific disease (Logan, Coakley & Scharff, 2007). In addition, the attribution of illness to physical or psychological causes also appears to have an effect on perceptions of those with recurrent pain (Logan, Catanese, Coakley & Scharff, 2007). For example, Walker, Garber, and Van Slyke (1995) assessed parent responses to descriptions of the misbehavior of children in one of four illness conditions: medically explained pain with organic etiology, medically unexplained pain, depression, and well. Participants perceived the misbehavior of children with medically explained pain as less intentional, more excusable, and due to causes that were less internal to the child compared to children from the other three groups (Walker, Garber & Van Slyke, 1995). Moreover, participants indicated that the children with medically explained pain were less responsible for their misbehavior and that they would respond to them with less anger, blame, and punishment than to children in the other conditions (Walker, Garber & Van Slyke, 1995). This study suggests that, in the absence of organic disease, pain symptoms are perceived as non-credible and parents tend to respond more negatively than when pain is linked to an organic disease (Walker, Garber & Van Slyke, 1995).

Research examining the effect of others' attributions for recurrent pain has examined parents' and peers' understanding of pain, but little research has been focused on teachers' understanding and attributions for pain. Past research generally suggests that children who have recurrent pain that is linked to specific medical conditions, such as sickle cell disease or juvenile rheumatoid arthritis, are not targets of negative social judgements by teachers (Logan, et al. 2007). However, less is known about how teachers

respond to students with recurrent pain conditions that are not linked to specific disease. Given that children spend the majority of their time in the classroom, the impact of school functioning is far-reaching in their lives (Logan, Simons, Stein & Chastain, 2008). Children and adolescents spend a significant amount of time with teachers during their formative years, so it follows that teachers' understanding of and response to students with recurrent pain may affect academic and pain related outcomes (Logan, et al. 2007). Teacher perceptions regarding the cause of students' pain are potentially important in determining whether their responses to pain encourage or discourage adaptive school functioning among students with pain (Logan, et al. 2007). For example, if students feel that their teachers fail to understand the nature of their pain, they may be less inclined to work toward attending school and completing the assigned work.

Research suggests that many teachers may not have a clear understanding of pediatric health concerns and/or feel confident in being able to meet the educational, social, or emotional needs of students with recurrent health conditions in the classroom (Nabors, Little, Akin-Little & Iobst, 2008). Clay (2004) examined teacher perceptions of their academic training for supporting children with various medical conditions, and found that more than 50% of teachers indicated that their academic training was lacking in this area. Nabors, Little, Akin-Little, and Iobst (2008) assessed teachers' and special education teachers' perceptions of their knowledge about and confidence in meeting the academic and social needs of children with chronic medical conditions. Teachers completed a survey rating their knowledge and confidence in meeting the needs of children with 13 different recurrent medical conditions. Teachers indicated having some knowledge of the various medical conditions; however, relatively few indicated high

levels of knowledge or confidence in working with these children. Special education teachers reported being more knowledgeable than regular education teachers about cerebral palsy, epilepsy, hemophilia, spina bifida, renal failure, and allergies. However, overall, mean levels of knowledge and confidence were often lower than the midpoint of the scale, suggesting that both regular and special education teachers may benefit from education aiming to increase knowledge and confidence in supporting children with chronic medical conditions (Nabors, Little, Akin-Little & Iobst, 2008).

In the absence of general knowledge about the effects of childhood recurrent pain, educators risk misunderstanding classroom behaviour and mismanaging instruction (Wodrich, 2005). Wodrich (2005) investigated how information sharing with teachers influences their understanding of students with chronic illness. Specifically, the study investigated the effects of disclosing information to teachers about epilepsy and type 1 diabetes mellitus, two common pediatric diseases. Teachers were randomly assigned to one of three experimental levels of health information (i.e. no knowledge, diagnosis only, or diagnosis and facts) and one of two health conditions (i.e. epilepsy or diabetes). Each participant learned facts about a hypothetical elementary school student in one of the conditions. Results indicated that disclosing medical diagnoses and disease-related facts lead teachers to correctly attribute classroom manifestations to health conditions (Wodrich, 2005). Even when a crucial medical diagnostic statement was provided in the student's record (i.e. diagnosis only condition) only about 20% of participants chose "health factors" as a likely source of classroom difficulties (Wodrich, 2005). It can be assumed that a teacher who has received a medical diagnosis in the absence of any



further information might be in a similar situation regarding students with recurrent pain (Wodrich, 2005).

Logan, Coakley, and Scharff (2007) examined factors that influence teachers' responses to and perceptions of recurrent pain in students using vignettes describing a hypothetical student with limb pain. The vignettes varied by the presence or absence of organic evidence for the pain, communication from the medical team, and cooperative vs. confrontational parent-teacher interactions. Results indicated that documented medical evidence for the pain was the most influential factor affecting teacher's responses to pain. Parental attitude also influenced responses, and communication from the medical team affected teachers' decisions about relief from classroom responsibilities. In another study, Logan, et al. (2007) examined teacher's attributions about the causes of recurrent pain in adolescent students. Teachers read vignettes about a hypothetical student with limb pain and were presented with a list of possible physical and psychological causes for the pain. Results indicated that teachers tended to endorse a dualistic (i.e. either physical or psychological) model for the student's pain rather than a biopsychosocial model. Moreover, teachers who attributed the pain to physical causes (either in isolation or in combination with psychological causes) responded more positively toward the student than those who attributed the pain to psychological causes (Logan, et al. 2007).

Research has demonstrated that school personnel cite the need for more information when faced with students who have recurrent health conditions (Logan, Coakley & Scharff, 2007). Brook and Galili (2001) examined teacher knowledge of chronic disease among children and adolescents. According to a questionnaire regarding common pediatric chronic conditions, teachers' level of knowledge of chronic disease

and disability was found to be 62%; however, all teachers believed that they should know details about their students' chronic conditions and 75% of teachers considered it important and mandatory to increase awareness of chronic disease and disability in the school setting (Brook & Galili, 2001). Logan and Curran (2005) employed focus group methodology to analyze school personnel's understanding of adolescent recurrent pain and to determine how school and healthcare systems can collaborate to address recurrent pain problems more effectively. Results indicated that school personnel felt under-informed about the recurrent pain conditions they had encountered in their students in the past. Furthermore, school personnel cited the need for definitions and descriptions of recurrent pain disorders and increased communication from medical professionals in order to feel more qualified to manage recurrent pain in the school setting. Some teachers indicated that written materials, such as an information package regarding the recurrent pain condition they are faced with, would be useful in developing appropriate responses to pain (Logan & Curran, 2004).

Thus, research suggests that many teachers do not have a clear understanding of pediatric recurrent pain (Brook & Galili, 2001; Clay, 2004; Nabors, Little, Akin-Little & Iobst, 2008), and, in the absence of information about recurrent pain, teachers may fail to understand the nature of their students' pain and are at risk for misunderstanding classroom behaviour and mismanaging instruction (Wodrich, 2005). Preliminary research on teachers' responses to student recurrent pain suggests that documented medical evidence for the pain, parental attitude, and the way in which recurrent pain is described to school personnel may affect how teachers understand and respond to students with recurrent pain (Logan, et al. 2007). Moreover, teachers cite a need for more education

and information from healthcare providers regarding adolescent recurrent pain (Brook & Galili, 2001; Logan & Curran, 2005). The results of the previous studies by Logan et al. (Logan, Coakley & Scharff, 2007; Logan & Curran, 2005) are based on teachers' responses to a vignette describing a hypothetical student with limb pain. It is unknown whether teachers' responses would generalize to other recurrent pain conditions, such as headache.

Headaches are one of the most common health problems reported among children and adolescents (King, et al., in press; Stanford, et al. 2008), and have been ranked fourth on a list of the most common clinical problems encountered in elementary schools (Allen, Matthews & Shriver, 1999). Headaches may be chronic (pain that lasts between 3 and 6 months) or recurrent (pain that occurs sporadically over an extended period of time) (Allen, Matthews & Shriver, 1999). The extent of disability due to headache also varies, but recurrent headache in children and adolescents can be extremely disabling and often significantly reduces quality of life (Kroner-Herwig, Morris & Heinrich, 2007; Andrasik & Schwartz, 2006). Specifically, children with recurrent headaches often have difficulties in the school setting, and studies suggest that the detrimental effects of recurrent pain on school functioning are far-reaching (Palermo, 2000). For example, recurrent headaches may cause prolonged absences from school, leading to deterioration in school performance (Allen, Matthews & Shriver, 1999). Moreover, the longer children endure pain caused by frequent headaches, the more likely they are to develop co-morbid disorders such as anxiety, depression, and other somatic complaints (Allen, Matthews & Shriver, 1999).

Teacher perceptions of and responses to children who have recurrent pain is a relatively understudied area. No studies that we are aware of have investigated teachers' perceptions of students with headache. Given that headaches are the most common pain complaint among school-age children (Stanford, et al., 2008), it is essential to investigate how teachers perceive children who are experiencing recurrent headaches so that education initiatives can be developed to help teachers understand pain and its effects on school functioning. With this in mind, the goal of the proposed research is to extend the Logan, Coakley and Scharff (2007) study to determine how teachers perceive students who experience recurrent headache pain. Because research has demonstrated that teachers cite the need for input from and ongoing communication with healthcare providers regarding students with recurrent pain (Logan, Coakley & Scharff, 2007), we wished to determine whether a letter from a medical professional would affect teachers' perceptions of a hypothetical student with headache pain with a view to educating teachers about pain management in school-age children. By further examining teachers' responses to students with recurrent pain, it may be possible to identify the factors that contribute to negative perceptions of those students, thereby leading to more favourable outcomes for children who experience recurrent pain. Given the large number of children who experience recurrent pain, it is important to support research that aims to increase understanding and acceptance of these children, especially among teachers, with whom children spend such a significant amount of time during their formative years. It was hypothesized that, in the presence of direct communication from a medical professional, teachers would perceive pain intensity and pain related impairment as more severe, hold

stronger beliefs that the child with pain warrants special treatment in the classroom, and would report higher levels of sympathy for the child with pain and her family.

A further aim of this study was to gather qualitative data regarding the type of information teachers would like to receive regarding pediatric recurrent pain.

Qualitative description is more interpretive than quantitative description, which typically relies on pre-structured means to obtain a dataset on pre-selected variables and descriptive statistics to analyse them (Sandelowski, 2000). Quantitative description limits what can be learned about the meanings participants give to events, whereas qualitative research offers a comprehensive summary of an event in the everyday terms of those events, with an effort to understand not only the manifest (e.g. means, frequencies) but also the latent content of the data (Sandelowski, 2000). Thus, in the current study, a mixed-methods approach integrating qualitative and quantitative research allows for a much richer understanding of the data than quantitative analysis alone. In addition to their responses to the survey questions, teachers were asked to respond freely to what they, as teachers, would like to learn about pediatric pain and how to better manage students with recurrent pain in the classroom. Not only will this approach provide us with better insight into teachers' concerns and needs regarding managing students with recurrent pain in the classroom, but also it will also allow us to offer more streamlined recommendations based on our results. Given that the qualitative portion of study is largely exploratory, we do not provide a specific hypothesis.

## Method

### Participants

Participants were elementary, middle, and high school teachers from the Halifax Regional School Board and the Chignecto-Central Regional School Board. For the purposes of this study, elementary school is defined as grades 1 through 5; middle school is defined as grades 6 through 9; and high school is defined as grades 10 through 12. Participants were recruited through word of mouth and advertisements placed in newsletters and websites directed at teachers. In addition, principals were contacted and asked to send the study link to teachers from their schools. The study was approved by the IWK Research Ethics Board, the Mount Saint Vincent University Research Ethics Board, the Halifax Regional School Board, and the Chignecto-Central Regional School Board.

### Measures

A survey was developed using Opinio survey software, which is hosted on Dalhousie University's Opinio Web Server. Opinio enables researchers to produce and publish surveys online. Teachers were asked to login to the survey and complete it online during their own time. Teachers first completed some brief demographic questions, such as sex, number of years of teaching experience, grade level currently taught, and the estimated number of students with recurrent pain they have encountered in their careers (see Appendix A). Next, each participant was presented with a vignette describing a hypothetical student with recurrent headache pain (see Appendix B). The vignette was a modified version of the vignettes employed by Logan, Coakley, and Scharff (2007). The description of the student in the vignette was based on characteristics commonly

observed in adolescents presenting to tertiary care pediatric pain clinics. The student was described as female, a good student academically, and involved in athletics. Participants were randomized into one of two conditions. In one condition, participants were provided with a letter from a hypothetical medical professional regarding the student in the vignette (see Appendix C). This letter was a modified version of a letter that would typically be sent from the Pain Clinic IWK Health Centre regarding children with recurrent pain and was developed with the help of a clinical nurse specialist on the pain team. The letter defined recurrent headache, described the student's specific symptoms, and explained how recurrent headache might affect an adolescent academically. Finally, the letter contained information regarding the student's treatment plan and offered specific recommendations for ways to accommodate her pain challenges in the school setting. The second condition was a control condition in which participants were provided with general information about the IWK Health Centre and the types of services offered there; this information was obtained from the IWK Health Centre website (see Appendix D).

Survey questions were designed to assess teachers' responses to the hypothetical student (see Appendix A). Questions measured the extent to which teachers would relieve the student from classroom responsibilities (e.g., "when Samantha has pain in the classroom, how will you respond?"), the extent of academic accommodations they would allow the student (e.g., "what is the extent of accommodations in the school setting to which this child should be entitled?"), and sympathy towards the student and parents (e.g., "rate your level of sympathy towards Samantha/her parents."). The questions were the same as those employed by Logan, Coakley, and Scharff (2007). Permission was

granted by Logan to use the same questions employed in her 2007 study. Before including them in the survey, a middle school teacher from the Halifax Regional School Board evaluated the final list of questions and minor changes were made based on her suggestions. Teachers were asked to rate perceived pain intensity and perceived degree of functional impairment resulting from the pain using 10-point Likert scales (1 = no pain/impairment, 10 = extreme pain/impairment). Teachers were encouraged to report how they would respond to the pain if such decisions were left entirely up to them (i.e., as though space and resources were not an issue). With respect to the qualitative analysis, teachers were asked the open-ended question, "Please take a moment to explain what, if anything, you as a teacher would like to learn about recurrent pain and/or pain management in the classroom." Finally, teachers who received the letter from a hypothetical medical professional were asked two questions regarding their level of satisfaction with the letter (i.e. "how did you find the length of the letter?" and "how did you find the level of understanding of the letter?"). These questions were answered using a scale ranging from 1 (too short/below my level of understanding) to 3 (too long/above my level of understanding).

### **Procedure**

Teachers were asked to complete the survey online on their own time. After reviewing the consent page and checking a box indicating that they agreed to participate in the study, teachers were presented with a vignette describing a hypothetical student with headache pain. Following the vignette, participants either received the letter from the hypothetical medical professional or the general information letter. Participants were then asked to answer questions regarding their response to the hypothetical student.



Altogether, the study took approximately 20 minutes to complete. To thank them for participating, teachers were entered into a draw to win one of three gift certificates (value of \$100) from Scholars Choice or Chapters (their choice).

## Results

### Quantitative Data

**Descriptive statistics.** The means and standard deviations for participant demographics are shown in Table 1. Initially, 133 participants started the survey; however, not all completed it. Therefore, the final sample consisted of 106 elementary ( $N = 47$ ), middle ( $N = 43$ ), and high school teachers ( $N = 16$ ) from the Halifax Regional School Board and the Chignecto-Central Regional School Board (88 women and 18 men). Overall, participants had a mean of 11.75 years of teaching experience (range 2-34,  $SD = 8.39$ ). The mean grade level currently taught was 6 (range 1-12,  $SD = 3.41$ ) and the mean estimated number of students with recurrent headache pain participants had encountered in their careers was 2.02 (range 0-20,  $SD = 3.39$ ). Finally, four (3.8%) participants indicated that they have had contact with the Pediatric Complex Pain service at the IWK Health Centre.

**Randomization.** Using a random number generator programmed as part of the survey, 55 participants were randomly assigned to the letter condition and 51 were randomized to the control condition. A chi-square analysis was performed to determine whether the random number generator had indeed randomized correctly. Results of this test indicated that the two test conditions did not significantly differ by sex  $\chi^2(1,106) = 0.48, p < 0.05$ . Independent samples t-tests indicated that the two conditions did not significantly differ by grade level currently taught ( $t(104) = 1.81, p < 0.05$ ), years of

teaching experience ( $t(104)=1.53, p<0.05$ ), and/or the estimated number of students with recurrent pain encountered in one's career ( $t(104)=-0.12, p<0.05$ ). See Table 1 for descriptive statistics.

**Associations among variables.** Bivariate Pearson correlation coefficients among the variables described above are reported in Table 2. Results indicated that there were several significant correlations between variables. For example, number of years teaching experience was positively correlated with perceived pain severity, extent of accommodations, sympathy for the student and her parents, and the estimated number of students with chronic pain encountered in one's career. The grade level currently taught was positively correlated with the estimated number of students with chronic pain encountered in one's career. The estimated number of students with pain encountered in one's career was positively correlated with the number of years teaching experience and grade level currently taught. Previous research in this area has included correlations between sex and dependent variables; however, given the bias toward female teachers in the current study, it was not deemed appropriate to include this analysis.

**Pain severity and impairment.** As shown in Table 2, perceived pain severity was positively correlated with perceived degree of functional impairment, relief from responsibilities, sympathy for the student and her parents, and number of years teaching experience. Perceived degree of functional impairment resulting from the pain was positively correlated with perceived pain severity and sympathy for the student and her parents.

The means and standard deviations for teachers' ratings of pain severity and impairment, relief from responsibilities, classroom accommodations, and sympathy for

the student and her parents are shown in Table 3. Results of independent samples t-tests indicated that participants who received the letter from a hypothetical medical professional perceived a higher degree of pain severity than those who did not receive the letter ( $M_{\text{Letter}} = 8.53$  ( $SD = 0.90$ );  $M_{\text{Control}} = 7.98$  ( $SD = 1.46$ );  $t(104) = 2.34$ ,  $p < 0.05$ , Cohen's  $D = .45$ ). There were no significant differences on ratings of the perceived degree of functional impairment resulting from the pain ( $M_{\text{Letter}} = 8.35$  ( $SD = 0.95$ );  $M_{\text{Control}} = 8.25$  ( $SD = 1.53$ );  $t(104) = 0.37$ ,  $p < 0.05$ , Cohen's  $D = .08$ ).

**Relief from responsibility.** As shown in Table 2, the degree of relief from classroom responsibilities was positively correlated with perceived pain severity and sympathy for the student. The presence of the letter from a hypothetical medical professional did not significantly predict the degree of relief from classroom responsibilities granted ( $M_{\text{Letter}} = 4.18$  ( $SD = 1.36$ );  $M_{\text{Control}} = 3.71$  ( $SD = 1.74$ );  $t(104) = 1.58$ ,  $p < 0.05$ , Cohen's  $D = .31$ ). However, teachers who received the letter were more likely to reduce the student's workload  $\chi^2(1, 106) = 8.03$ ,  $p < 0.05$  and alter deadlines for tests and assignments  $\chi^2(1, 106) = 6.52$ ,  $p < 0.05$ .

**Accommodations in the classroom.** As shown in Table 2, the extent of accommodations endorsed was positively correlated with sympathy for the student and her parents and number of years teaching experience. There were no significant differences in the extent of accommodations endorsed by participants who received the letter and those who did not ( $M_{\text{Letter}} = 3.00$  ( $SD = 0.51$ );  $M_{\text{Control}} = 3.18$  ( $SD = 0.74$ );  $t(104) = 1.44$ ,  $p < 0.05$ , Cohen's  $D = -0.28$ ).

**Sympathy for student and parents.** As shown in Table 2, sympathy for the student was positively correlated with perceived pain severity, perceived degree of

functional impairment, relief from responsibilities, extent of accommodations, sympathy for the parent, and number of years teaching experience. Sympathy for the student's parents was positively correlated with perceived pain severity, perceived degree of functional impairment, extent of accommodations, sympathy for the student, and number of years teaching experience. There were no significant differences in teachers' ratings of sympathy for the student ( $M_{\text{Letter}} = 4.49$  ( $SD = 0.51$ );  $M_{\text{Control}} = 4.33$  ( $SD = 0.77$ );  $t(104) = 1.26$ ,  $p < 0.05$ , Cohen's  $D = .25$ ) and/or her parents ( $M_{\text{Letter}} = 4.36$  ( $SD = 0.75$ );  $M_{\text{Control}} = 4.33$  ( $SD = 0.84$ );  $t(104) = 0.20$ ,  $p < 0.05$ , Cohen's  $D = .04$ ) by participants who received the letter and those who did not.

**Response to the letter.** When asked about their level of satisfaction with the letter, 47 out of 55 teachers (86%) indicated that the length was "just right" and eight teachers (14%) indicated that the length of the letter was too long. Fifty-one teachers (93%) indicated that the letter was at their level of understanding and four teachers (7%) indicated that it was below their level of understanding.

### Qualitative Analysis

Qualitative content analysis was performed to analyze responses to an open-ended question regarding the type of information teachers would like to receive regarding pediatric headache and how to better manage students with recurrent headache in the classroom. Qualitative content analysis is a form of analysis of data that is used to summarize the informational content of that data (Sandelowski, 2000). In contrast to quantitative data analysis, in which a pre-existing set of codes are systematically applied to the data, qualitative data analysis is data-derived: that is, codes are systematically

applied, but they are generated from the data during the course of the study (Sandelowski, 2000).

Seventy-seven teachers (73%) responded to the question, “Please take a moment to explain what, if anything, you as a teacher would like to learn about recurrent pain and/or pain management in the classroom.” Open coding was performed for the first 20 entries and, if any new data codes were introduced, coding re-started from the beginning. Eventually, overarching themes arising from the patterns of data were identified and seven distinct codes were established. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among two different raters (R. MacNevin and P. Forgeron). The inter-rater reliability for the raters was found to be very good (Kappa = 0.87,  $p < 0.001$ ). The intra-rater reliability was found to be high (Kappa = 1.00,  $p < 0.001$ ). Once coding was completed, the frequencies were calculated for each theme. The qualitative results are presented in Table 4.

The area that teachers indicated the greatest need for further information was around recurrent pain in general (e.g. prevalence, symptoms, presentation), followed by medical and psychological treatments and accommodations (both academic and physical) that would be beneficial to students with recurrent pain. Teachers were also interested in learning more about the impact of recurrent pain on academic functioning and outcome achievement and cited the need for increased communication and collaboration from healthcare professionals. Finally, teachers had concerns regarding manipulating behaviours (i.e., how to determine whether pain is real or faked) and whether specific board policies exist that pertain to students with recurrent pain conditions.

## Discussion

The goal of the present study was to determine whether direct communication from a medical professional would affect teachers' perceptions of a hypothetical student with recurrent headache pain. It was hypothesized that teachers who received a letter from a hypothetical medical professional regarding the student's pain would perceive pain intensity and pain related impairment as more severe, hold stronger beliefs that the student with pain warranted special treatment in the classroom, and would report higher levels of sympathy for the student and her family. Partial support for this hypothesis was found and results will be discussed in turn. With respect to the qualitative portion of the study, results will be discussed according to the themes that emerged from teachers' responses.

### Quantitative Findings

**Perceived pain severity.** Results indicated that teachers who received the letter from a hypothetical medical professional perceived a higher degree of pain severity than those who did not receive the letter. Research indicates that documented medical evidence for pain has been shown to influence others' perceptions of individuals with recurrent pain (Logan, Coakley & Scharff, 2007). Specifically, individuals who experience recurrent pain that is linked to specific medical illnesses (e.g. diabetes, arthritis) are viewed more positively than those who experience pain which is not linked to specific disease (Logan, Coakley & Scharff, 2007). Moreover, there is evidence to suggest that individuals perceive recurrent pain as being more severe when it is linked to a specific medical illness (Guite, Walker, Smith & Garber, 2000). In one study, Guite, et al. (2000) presented fourth- and fifth-grade students with vignettes describing a

hypothetical peer with abdominal pain. Children viewed pain symptoms with an organic etiology as more severe than those without an obvious medical explanation for the pain, even though symptom descriptions were identical across vignette conditions. In the current study, teachers who received the letter from a hypothetical medical professional may have perceived a higher degree of pain severity because the letter contained medical documentation supporting the student's pain condition. These results are consistent with those of Logan, Coakley, and Scharff (2007), who found that documented medical evidence supporting the pain was the most influential factor affecting teachers' responses to pain.

**Perceived degree of functional impairment.** Whereas teachers who received the letter from a hypothetical medical professional perceived a higher degree of pain severity, they did not perceive a higher degree of functional impairment resulting from the pain compared to teachers in the control condition. Research indicates that, in the absence of evidence of organic disease, individuals tend to infer psychological causes for the illness and respond more negatively than when organic disease is present (Logan, Coakley & Scharff, 2007). Because recurrent headache pain has few outwardly observable symptoms, teachers may be inclined to interpret pain problems as more psychological than physical in nature and, in turn, view recurrent headache pain to be less debilitating than other pain-eliciting childhood conditions. Since research indicates that recurrent headache in children and adolescents can be extremely disabling and often significantly reduces quality of life (Kroner-Herwig, Morris & Heinrich, 2007; Andrasik & Schwartz, 2006), this study underscores the need to educate teachers about the complex nature of

recurrent pain in order to help them understand and respond to it appropriately (Logan, Coakley, Catanese & Scharff, 2007).

**Relief from responsibilities.** Teachers in both conditions indicated that they would provide the student with a moderate amount of relief from typical classroom responsibilities. Teachers were not willing to let the student go home, rest at her desk, or send her to the office when she was experiencing pain; however, teachers who received the letter from a hypothetical medical professional were more likely to reduce the student's workload and alter deadlines for tests and assignments. These results indicate that, whereas teachers who received the letter were not willing to let the student miss time in the classroom, they were willing to provide her with academic accommodations to help her to complete the assigned work. This may be due in part to teachers believing that recurrent headache pain does not significantly interfere with student's lives. However, all participants indicated that they would be willing to provide the student with some form of relief from classroom responsibilities.

These results are in line with best clinical practice regarding the management of recurrent pain. Research investigating the relation between child coping strategies and pain experience suggests that children who employ passive coping strategies (i.e. orientation away from the pain) experience responses such as self-isolation, catastrophizing, and disengagement, and have reported higher levels of pain, somatic symptoms, and depressive symptoms (Simons, Claar & Logan, 2008). In contrast, accommodative coping strategies involve efforts to accept or adapt to pain (e.g. acceptance, minimizing pain, self-encouragement, distraction) and have been associated with lower pain reports, fewer somatic complaints, and lower levels of anxiety and



depression (Simons, Claar & Logan, 2008). Kaminsky, Robertson, and Dewey (2006) examined the associations between coping style, social support, self-efficacy, and depressive symptoms in children with recurrent abdominal pain and found that coping strategies such as isolating oneself from others, catastrophizing, and behavioral disengagement were associated with more child-reported depressive symptoms than accommodative coping strategies (Kaminsky, Robertson & Dewey, 2006).

Research also indicates that symptom maintenance among children with chronic illnesses may be influenced by the social consequences of illness (Walker, Claar & Garber, 2002). Relief from responsibilities, being excused from various social and school activities, and increased attention from others are examples of social consequences of illness that may serve as rewards that reinforce illness-related disability (Walker, Claar & Garber, 2002). Walker, Claar, and Garber (2002) examined the influence of social factors (e.g. attention, relief from responsibilities) on symptom maintenance among children and adolescents with recurrent abdominal pain. Results indicated that positive attention and activity restriction predicted greater symptom maintenance than negative attention and/or privileges (Walker, Claar & Garber, 2002). In the current study, teachers indicated that they would not let the student miss class time by sending her home or to the office and that they would expect her to complete the assigned work with accommodations (e.g. altering deadlines on tests and assignments). Thus, teachers indicated that they would not allow the student with pain to be relieved from classroom responsibilities and would require her to remain engaged in various school and social activities. This practice would be less likely to reinforce pain-related disability and lead to symptom maintenance among students with recurrent pain.

Parental responses to pain have also been found to play an important role in determining their children's pain experience and behaviour (Simons, Claar & Logan, 2008). Social learning theory has been used to conceptualize the relationship between a child's pain experience and family factors (Chambers, Craig & Bennett, 2002). Learning occurs through parental modeling or parental reinforcement of children's pain responses (Chambers, Craig & Bennett, 2002; Simons, Claar & Logan, 2008). For example, parental protective responses to pain, such as letting a child stay home from school, have been associated with increased somatic symptoms and greater functional disability (Simons, Claar & Logan, 2008). Given that children and adolescents spend such a significant amount of time with their teachers, it can be hypothesised that teacher responses and reinforcement of children's pain responses may have the same effect as parental responses to pain. Teachers should be educated about the various social factors that may serve to reinforce children's pain-related behaviours.

**Accommodations in the classroom.** Teachers in both conditions indicated that they would provide the student with 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) and believed that school administration would support a moderate level of accommodations as well. This is in line with the previously reported findings of the current study, in that teachers are not willing to provide the student with extensive accommodations (e.g. she should be permitted to drop classes and be given extensive special services, extensive reduction in the number of hours per week in the classroom) but they are willing to modify classwork, assignments, and deadlines. None of the participants indicated that they would provide the student with

no accommodations (e.g. she should be expected to maintain the standard course load schedule).

**Sympathy for student and parents.** Teachers in both conditions were sympathetic to the student with pain and her parents. On average, teachers in both conditions rated their sympathy level for the student and her parents to be between Strong and Very Strong. Thus, whereas teachers were only willing to provide the student with a moderate level of relief from classroom responsibilities and academic accommodations, they were very sympathetic to the student and her parents. It may be that teachers are limited by the confines of their profession; teachers must make sure students meet academic outcomes but they are willing to provide support and accommodations in order to help their students meet those outcomes.

**Appropriateness of the letter.** The letter that was provided to teachers regarding the student with recurrent headache pain was a modified version of a letter that would typically be sent from the IWK Health Centre regarding children with recurrent pain and was developed with the help of a clinical nurse specialist on the pain team. It included information about recurrent headache and described the challenges that a child who experiences recurrent pain might face. This type of letter is useful, given that the majority of teachers indicated that it was “just right” in terms of length and level of understanding. Letters from healthcare professionals to school personnel such as the one used in the current study should include definitions and descriptions of recurrent pain disorders, as well as what teachers might expect from a student with a recurrent pain condition. In Logan and Curran’s (2005) study, teachers indicated that even the most basic factual information would be helpful and might alter their approach to students with recurrent

pain. In addition, as many teachers felt frustrated at not knowing how to manage a student with recurrent pain and not being provided with clear guidelines from healthcare professionals about its management (Logan & Curran, 2005), providing teachers with a contact name and phone number in the letter would provide teachers with some guidance as well as improve communication with medical professionals regarding student recurrent pain.

### **Qualitative Findings**

**Understanding of recurrent pain.** To develop a better understanding of pediatric recurrent pain, teachers cited the need for more education about recurrent pain and its symptoms, prevalence, and treatment. For example, teachers asked, “what chronic pain is most prevalent in students in classrooms and how is it dealt with effectively?” and “what are some ways used to reduce pain... is it all medicated? Does method of breathing help? How long does the pain last (hours, days)?” More generally, another teacher commented, “it would be useful to have a clear understanding of pain, particularly how it can come and go and how it can potentially interfere with everyday life.”

Providing teachers with education about pediatric recurrent pain, including basic information about the prevalence of different pain disorders, symptoms, and strategies for coping with pain, would increase knowledge of recurrent pain among teachers and better-equip them to manage students with pain in the school setting. Moreover, providing teachers with information about recurrent pain could increase the comfort level that teachers have with these conditions and improve the effectiveness of school-based interventions for students with recurrent pain (Logan & Curran, 2005).

Teacher in-service training is often used to inform teachers and other school personnel about various topics. Jones and Chronis-Tuscano (2008) examined the efficacy of such in-service training focused on improving teacher knowledge about ADHD and use of evidence-based classroom behavior management techniques. Results indicated that the in-service had small-to-medium size effects on teacher knowledge about ADHD and, overall, teachers were very satisfied with the training and strongly recommended it to other teachers. It can be hypothesized that providing teachers with similar in-service training regarding recurrent pain may serve to increase knowledge of various recurrent pain conditions among teachers and other school personnel. Given that teachers are often the “front line” professionals who are in a position to help students manage symptoms related to recurrent pain, it would be valuable to provide them with information about the condition as well as strategies to aid them in supporting students with recurrent pain in their classroom. Developing resources to help teachers understand recurrent pain and other recurrent health conditions, much like the initiatives that are being developed in the area of mental health, would be beneficial to teachers and other school personnel when confronted with students who have recurrent health conditions.

**Increased communication.** Improving communication between teachers and healthcare providers is an important goal that may be crucial to achieving lasting gains in school success among students with recurrent pain (Logan & Curran, 2005). In the current study, teachers cited the need for increased communication from healthcare professionals when faced with students with recurrent pain. According to one teacher, “if such a situation were to occur, I would hope that there would be an open and honest line of communication between the student, parents, teachers, school administration, and the

IWK.” Another teacher indicated that teachers “need help/meetings with individuals from the IWK to help understand the full extent of the student’s difficulties.” Finally, one teacher stated, “I expect each case is different, so access to a child’s physician would be essential.”

One limitation of the aforementioned study by Jones and Chronis-Tuscano (2008) is that, similar to most in-services provided to teachers in the real world, the ADHD in-service was a “one-shot deal” (Jones & Chronis-Tuscano, 2008). Thus, there were no follow-up and/or additional consultation services provided to teachers after the one-day in-service session. Teachers have indicated that they feel relatively under-informed in the area of pediatric pain (Logan & Curran, 2005) and they have cited the need for increased communication from healthcare providers regarding recurrent pain. Continuous teaching and support for teachers may be essential to increase teachers’ knowledge and behaviors relating to students with recurrent pain. Such continuous support could be provided by school psychologists or counselors and would provide teachers with a source of support that they can rely on for feedback and advice regarding recurrent pain and how to manage students with recurrent pain in their classroom.

**Academic and physical accommodations.** One specific area in which teachers cited the need for more information is regarding school accommodations that would be beneficial to students with recurrent pain. Teachers identified the need for information regarding both academic accommodations/adaptation strategies, (e.g. “we have adaptations that we put in place for students with learning disabilities. Could chronic pain be grouped with this since it affects learning?”), and physical accommodations, (e.g. “I would be interested to learn if there is anything I can change in the classroom (lighting?

ventilation?) that would ease the pain for someone like Samantha”). These results suggest that pain conditions may need to be addressed at a policy level so that appropriate academic and physical accommodations can be made available for teachers who are involved in programming for students with recurrent pain.

**Impact of pain on academic functioning.** Teachers were also interested in learning more about the impact of recurrent pain on academic functioning and outcome achievement. For example, one teacher asked, “to what degree does chronic pain limit one’s ability to perform regular school tasks (reading, group work, etc.)?” Another teacher commented, “given the fact that adaptations may be put in place, the student would still be expected to complete all outcomes of the course – perhaps in different manners that would allow the child to be successful given the child’s current condition.” Thus, teachers are interested in learning more about how to best accommodate students with recurrent pain in the classroom.

Teachers receive education regarding students with exceptionalities and are familiarized with approaches to enabling learners with exceptionalities to be included in the regular school classroom. As part of their B.Ed. program, teachers are trained in school programming for the education of children with physical disabilities, behavior disorders, and learning disabilities. However, teachers typically do not receive much information regarding how to program for students with physical and/or mental health conditions. Thus, programming for students with various health and mental health conditions is one area that is often neglected in teachers’ education, and results of the current study indicate that teachers wish to learn more in this area in order to better accommodate students with health concerns in the classroom.

**Manipulating behaviors.** Some teachers had concerns regarding manipulating behaviors among students with pain. For example, one teacher stated, “I would like to know how to distinguish between kids with enabling parents who are being manipulated by their very intelligent children into letting them avoid school for whatever reason (pain not being real) and kids with actual physiological issues.” Another teacher asked, “when working with young children, how do I know if they are truly experiencing pain or are they tired or simply seeking our attention?” Thus, teachers may be inclined to interpret recurrent pain symptoms as manipulating behaviors in an effort to avoid certain tasks or situations and/or to seek attention. These results are consistent with those of Youssef, et al. (2007) who used a questionnaire method to evaluate perceptions of school nurses about recurrent abdominal pain. Results indicated that 47.1% of school nurses believed that children with recurrent abdominal pain were faking or seeking attention. Thus, it is evident that many teachers and other school personnel do not have a clear understanding of pediatric recurrent pain.

In actual fact, research suggests that parents are generally quite successful at detecting faked pain and that faking pain may be more difficult for children than many may assume (Larochette, Chambers & Craig, 2006). Larochette, Chambers, and Craig (2006) used an experimental paradigm to examine whether or not parents could tell when their child was hiding or faking pain and found that parents were able to correctly identify when their child was faking pain but not when he/she was hiding it. According to one healthcare professional at the Pediatric Pain Clinic in the IWK Health Centre, adolescents generally do not engage in manipulating behaviors in regards to pain and, as such, all pain should be treated (P.Forgeron, personal communication, August 10, 2011).



The goal is not to make pain disappear altogether, but rather to reduce pain enough so that function improves. Knowing that some adolescents may try to avoid certain tasks or activities, the pain team works with the student and school administration to secure accommodations around what the student believes they are capable of in the classroom (doing nothing is not considered an option). It is possible that teachers are overly concerned about students faking pain because children and adolescents are so skilled at concealing their pain (P. Forgeron, personal communication, August 10, 2011). Because research indicates that others' maladaptive responses to pain (e.g. criticism, discounting of pain) are associated with increased disability and/or somatic symptoms among children with recurrent pain (Claar, Simons & Logan, 2008), it is important to educate teachers how to respect children's pain experiences and manage pain effectively. These results underscore the need for more education for teachers regarding recurrent pain as well as increased communication from healthcare providers in order to increase understanding of recurrent pain among teachers.

**Board policies.** Finally, teachers were interested in learning more about specific board policies pertaining to students with recurrent pain: "I am interested in knowing more about board policies that may affect students with chronic pain in the classroom." The Halifax Regional School Board (HRSB) has a Severe Medical Conditions policy, which states that "the HRSB will support the health care needs of students with severe medical conditions" and will "collaborate with the IWK and the Capital Health District Health Authority to support students with severe medical conditions." However, the definition of a severe medical condition is limited to disorders that "affect a person's airway, breathing, and/or circulation, and when left untreated or improperly treated, could

lead to death.” Thus, recurrent pain conditions would not typically be included under the Severe Medical Conditions policy of the HRSB. Due to a lack of clearly defined policies regarding how to manage students with recurrent pain conditions in the classroom, teachers are often left to their own devices when confronted with students with recurrent pain. This underscores the need for addressing policy-makers at the board and/or the individual school level regarding students with recurrent pain, so that teachers and other school personnel may feel better equipped to respond to students’ pain and functional impairment at school.

### **Limitations**

There are some limitations of the current study that must be taken into consideration. First, there are inherent limitations to vignette methodology; teacher responses to the hypothetical student in the vignette may not reflect actual responses in real-life situations. For example, teachers may have responded more positively to the hypothetical student as a result of social desirability. It is also possible that teachers feel constrained by their profession and may have responded to survey questions based on accordance with school policy. Even though teachers were asked to respond to questions as if all decisions were up to them, they may not have responded solely based on their own opinions and beliefs.

Second, the age and grade of the student in the vignette was not included, but teacher responses are likely to vary depending these factors. Various other factors such as class size and the extent of educational assistant (EA) support available in the classroom also were not included in the vignette, and it is possible that these situational factors may influence teachers’ attitudes and behaviours toward a student with recurrent pain.

Participants in the study were teachers from two school boards in Nova Scotia, Canada, and cannot be presumed representative of all teachers. Additionally, responses between teachers from the two different school boards were not compared to determine whether differences exist between boards. This study required the cooperation from several ethics boards, and, when designing the survey, it was difficult to determine which boards would grant approval for the research. In fact, one school board did not grant study approval until late in the data collection process. Therefore, it was impossible to design the survey to compare responses of teachers from the different school boards. Sampling bias may limit the generalizability of the results; teachers who chose to participate in the study may be especially interested in the area of pediatric recurrent pain and/or have particularly strong feelings about children with recurrent pain (positive or negative). One-hundred-and-thirty-three participants began the survey but only 106 participants finished. It is possible that participant drop out was due to the survey being too long and/or time consuming. The sample was biased in favour of women; however, the sample may be consistent with the current male/female teacher ratio in elementary and middle schools. According to a recent study, in Ontario, Canada, men represent only one in ten elementary and middle school teachers and fewer than one in three secondary teachers (Bernard, Hill, Falter & Wilson, 2004).

The open-ended question used in the qualitative analysis was not a validated measure; that is, we cannot be entirely confident that the question was asked in the appropriate manner to elicit meaningful responses from teachers. This question was included in the study to give teachers a forum in which they could ask about pain and identify areas in which they require more training and/or information. Given the high

degree of responses to this question, future studies should consider validating other qualitative questions in order to collect more information in this area. Although it was not a validated measure, the question employed in the current study provides a good starting point to begin dialogue with teachers about their knowledge and concerns regarding pediatric recurrent pain.

Finally, Cohen's *D* calculations indicated that the effect sizes for the various outcome variables were bordering on moderate, at best. Therefore, it is possible that we did not have sufficient power to detect meaningful differences in the data. Indeed, over 1000 participants would have been required in order to find meaningful differences given the effect sizes in the current study. Unfortunately, due to time-restrictions, we were not able to collect more data to increase the power of our findings. The survey was kept open as long as possible, but was closed at the end of May, just before teachers began wrapping up their classes for summer vacation.

### **Implications for School Psychologists**

This study has several important implications for school psychologists. Recurrent health problems are highly prevalent among children and youth (Power, Heathfield, McGoey & Blum, 1999) and teachers have cited the need for more information when faced with students who have recurrent pain conditions (Logan & Curran, 2005). School psychologists are in a unique position to address the needs of children and youth with recurrent health problems and their families. Given school psychologists' understanding of school ecology and community-school relations and their expertise in addressing children's academic and mental health concerns, school psychologists are in an excellent

position to serve a broader role in the treatment, management, and prevention of recurrent health problems among students (Power, et al. 1999).

School psychologists themselves have cited the need for further diversification of their role within the school system. In a recent study, school psychologists working in Nova Scotia were surveyed to determine their current practices and preferred future roles (Corkum, French & Dorey, 2007). Although school psychologists indicated that they desired psychoeducational assessment to continue to be their main focus, it was obvious that they wanted to reduce their time spent on assessments in favour of more diversification of their services (Corkum, French & Dorey, 2007). For example, school psychologists are in a position to assist with the intervention of students with health problems by conducting functional assessments, collaborating with team members to develop intervention plans, providing assistance in the implementation of interventions, and evaluating treatment effectiveness (Power, et al. 1999). Behavioural interventions are often a critical component of multimodal intervention for recurrent health problems, and school psychologists could have a role in designing and implementing behaviour management techniques to aid in the treatment of recurrent pain (Power, et al. 1999). In addition, because children with recurrent pain are often distressed by the stigmatising aspects of their condition and may experience isolation or rejection from their peers, school psychologists may also provide supportive counselling to the student with pain (Power, et al. 1999).

School psychologists may act as liaison between the student with pain and his/her family, other school personnel, and health care professionals. Many children and adolescents with health conditions have complex needs and require interventions across

several domains of functioning (Power, et al. 1999). Thus, several professionals representing multiple systems (e.g. school, family, health, mental health) are required to address the child's needs (Power, et al. 1999). School psychologists can serve as the "common thread" among different professionals, resulting in increased collaboration and more comprehensive, integrated services for children with recurrent pain.

Teachers require information about recurrent pain as well as support and assistance in developing appropriate accommodations for students with recurrent pain in their classrooms. Education regarding pediatric health psychology should be integrated into school psychology programs so that school psychologists feel equipped to consult with teachers and school personnel about children with various health challenges. With adequate education and training in addressing the health needs of children, school psychologists could have a key role in providing health-related information to teachers and other school personnel. By providing information to teachers about recurrent health conditions, school psychologists may be able to alter preconceived irrational beliefs about students with recurrent pain among teachers (Power, et al. 1999) and provide support in the development of classroom accommodations and interventions for students with pain.

### **Future Directions**

Future investigations are required to further advance our knowledge of how student recurrent pain is understood and managed in the school setting. Past studies by Logan, et al. (2007) have focused on teachers' responses to students with limb pain, but it is unknown whether responses would generalize to other recurrent pain conditions. The student described in the vignette in the present study was female; future studies could examine whether teachers would respond differently to male versus female students with

recurrent pain. In the future, vignettes could also vary by the age and grade of the hypothetical student.

Teachers have indicated that they feel under-informed about recurrent pain conditions and cited the need for information and increased communication from medical professionals in order to better manage pain in the school setting. Future directions may focus on determining the most effective method of communication; perhaps instead of a letter from a health care professional, phone calls and/or face-to-face meetings may be more effective in influencing teachers' responses to students with recurrent pain. By further examining teachers' responses to students with recurrent pain, it may be possible to identify the factors that contribute to negative perceptions of those students, thereby leading to more favourable outcomes for children who experience recurrent and recurrent pain.

The current study advances our knowledge of how pediatric recurrent pain is understood and responded to within the school setting. Specifically, teachers who received a letter from a medical professional detailing symptoms and outcomes of recurrent headache pain perceived a student's pain intensity as more severe than teachers who did not receive the letter. Moreover, results of a qualitative data analysis indicated that teachers cite the need for more information and education about student recurrent pain. This research suggests that many teachers do not have a clear understanding of pediatric recurrent pain and, in the absence of information about recurrent pain, teachers may fail to understand the nature of their students' pain and are at risk for responding to students with pain in inappropriate and/or maladaptive ways.

Given that recurrent pain is one of the most common health concerns among children and adolescents, it is important to support research that aims to increase understanding and acceptance of these youth, especially among teachers, with whom children and adolescents spend such a significant amount of time during their formative years. By further examining teachers' responses to students with recurrent pain, it may be possible to identify the factors that contribute to perceptions of those students, thereby leading to more favourable outcomes for children who experience recurrent pain. Knowledge translation and educational initiatives stemming from results of the current study may help lead to better classroom experiences for students challenged by recurrent pain conditions, as well as the teachers who work with them.



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Table 1

*Means (SD) for demographic variables*

	Elementary School Teachers	Middle School Teachers	High School Teachers
<b>Letter from health professional (N = 55)</b>			
N	28 (27 females)	21 (15 females)	6 (5 females)
Mean number of years teaching	12.21 (8.70)	12.48 (8.72)	18.0 (9.10)
Grade currently taught	2.46 (1.40)	8.14 (1.11)	11.67 (0.82)
Estimated number of students encountered with recurrent pain	1.14 (2.26)	2.52 (4.57)	4.00 (5.51)
<b>Information about IWK Health Centre (N = 51)</b>			
N	19 (17 females)	22 (16 females)	10 (8 females)
Mean number of years teaching	8.21 (6.15)	13.91 (9.13)	7.20 (4.57)
Grade currently taught	3.58 (1.50)	7.73 (1.24)	11.0 (0.94)
Estimated number of students encountered with recurrent pain	1.37 (1.80)	2.41 (3.81)	2.60 (2.91)

Table 2  
Associations among variables

	Pain Severity	Impairment	Relief	Accommodations	Sympathy for Student	Sympathy for Parent(s)	Number of years Teaching	Grade Level Currently Taught	Estimated Number of Students with Pain
Pain Severity	-	.613**	.244*	.179	.593**	.500**	.216*	-.134	.003
Impairment	.613**	-	.138	.147	.407**	.246*	.142	-.126	.016
Relief	.244*	.138	-	.167	.199*	.075	.038	-.175	.074
Accommodations	.179	.147	.167	-	.216*	.224*	.360**	.089	.092
Sympathy for Student	.593**	.407**	.199*	.216*	-	.719**	.251**	-.122	.092
Sympathy for Parent(s)	.500**	.246*	.075	.224*	.719**	-	.209*	-.118	.068
Number of years Teaching	.216*	.142	.038	.360**	.251**	.209*	-	.137	.284**
Grade Level Currently Taught	-.134	-.126	-.175	.089	-.122	-.118	.137	-	.242*
Estimated Number of Students with Pain	.003	.016	.074	.092	.092	.068	.284**	.242*	-

Note: \*  $p < .05$ . \*\*  $p < .01$ .

Table 3

*Effects of the letter on teachers' responses to a student with recurrent headache*

	Letter present (n=55)	Letter absent (n=51)			Cohen's <i>D</i>
Outcome	M (SD)	M (SD)	<i>t</i> (104)	<i>p</i>	
Perceived pain severity (Range=1-10)	8.53 (0.90)	7.98 (1.46)	2.34	0.02*	0.45
Perceived impairment (Range=1-10)	8.53 (0.95)	8.25 (1.53)	0.37	0.71	0.08
Relief from responsibilities (Range=1-5)	4.18 (1.36)	3.71 (1.74)	1.58	0.12	0.31
Academic accommodations (Range=1-5)	3.00 (0.51)	3.18 (0.74)	1.44	0.15	-0.28
Sympathy for student (Range=1-5)	4.49 (0.51)	4.33 (0.77)	1.26	0.21	0.25
Sympathy for parents (Range=1-5)	4.36 (0.75)	4.33 (0.84)	0.2	0.85	0.04

Table 4

*Themes and frequencies of qualitative data*

Themes	Frequencies
Understanding of Chronic Pain	36
Academic Accommodations	27
Treatment	16
Physical Accommodations	15
Impact of Pain on Academic Functioning	14
Increased Communication	10
Manipulating Behaviours	4
Board Policies	4



Appendix A  
Questions

Demographic Information

Sex

Number of years teaching experience

Grade level currently taught

Estimated number of students with chronic headache pain you have encountered in career

The following questions seek your *individual* input and should be based on *your own* opinions/suggestions. We understand that many of these decisions will be made in accordance with school policy; however, we are interested to know how you would proceed if all decisions were up to you.

Perceived Pain Severity and Impairment

How intense do you think Samantha's pain is?

How much do you think Samantha's pain interferes with her day-to-day activities?

(10-point Likert scales; 1 = no pain/impairment, 10 = extreme pain/impairment)

Responses to Pain

*Extent of relief from typical classroom responsibilities*

When Samantha has pain in the classroom, how will you respond, if decisions were entirely up to you?

(Please select all that apply)

- a) Let Samantha go home.
- b) Let her rest at her desk.
- c) Send her to the office.
- d) Reduce her workload.
- e) Alter deadlines for assignments.
- f) Make sure other students are nice to her.
- g) None of the above: treat her the same as if she were not having pain.

*Extent of academic accommodations*

If it were completely up to you, what is the extent of accommodations in the school setting to which this child should be entitled?

- a) No accommodations, she should be expected to maintain the standard course load 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.

Please indicate the extent of accommodations you believe the school administration would support.

- a) No accommodations, she should be expected to maintain the standard course load 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.

*Sympathy toward the student and parents*

Please rate your current level of sympathy for Samantha.

- a) No sympathy
- b) A little
- c) Moderate
- d) Strong
- e) Very strong sympathy

Please rate your current level of sympathy for Samantha's parents.

- a) No sympathy
- b) A little
- c) Moderate
- d) Strong
- e) Very strong sympathy

How did you find the length of the letter?

How did you find the level of understanding of the letter?

Please take a moment to explain what, if anything, you as a teacher would like to learn about chronic pain and/or pain management in the classroom.

Have you ever had contact with the pain service at the IWK Health Centre?

Would you like to be entered in a draw to win one of three \$100 gift certificates to either Scholar's Choice or Chapters (your choice)?

Yes / No

Would you like to receive results of this research when they are published (this usually takes 1-2 years)?

Yes / No

If yes, please provide contact details (these details will not be linked to the responses you provided as part of the survey).

Appendix B  
Vignette

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.

Samantha repeatedly complains of headaches and seems extremely distressed by the pain. She begins making frequent visits to the nurse's office and fails to complete her work because the pain prevents her from concentrating and interferes with her attention. Eventually, as the pain persists, she begins to miss school altogether. Samantha's parents take her to her family doctor who prescribes 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 pain. After consulting with 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 and be permitted additional time to make up the work). Mr. and Mrs. Green agree to give this a try because they recognize the importance of Samantha staying in school.

After 2 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 Chronic headache. Samantha's guidance counsellor has requested a team meeting to discuss how to respond to Samantha's pain problem.

Appendix C  
Letter from a Hypothetical Medical Professional

*You receive a letter from the pain management team describing Samantha's symptoms and explaining what chronic headache is 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.*

Dear Classroom Teacher,

Samantha Green has just recently started to work with Dr. Smith. She suffers from chronic headache; a chronic pain condition that impacts her everyday life. Chronic pain is due to maladaptive nerve processing within the central nervous system.

Although Samantha has started on medication for her condition, it may take several months before there is any improvement in her pain. She still experiences moderate to severe pain on a daily basis and the pain is present most of the time in varying degrees. There are times when she is able to participate fully in school, like most adolescents, but then there are times when her ability to cope with such ongoing pain limits her activities. Adolescents who live with complex chronic pain face many challenges. Pain makes it difficult to concentrate at times and, therefore, even when Samantha is in class she may not fully comprehend the content and may need extra help on occasion. Most people with chronic pain can complete tasks, but may need more time and effort because of these effects. There are times when Samantha's pain becomes severe and occurs for no apparent reason; this is the nature of complex chronic pain. Samantha has indicated that in these situations, she may have to stay home or go home as she is no longer able to concentrate and finds resting helpful. However, if a quiet room is available where Samantha could rest or work independently, she may be able to attend the rest of her classes that day.

In discussions, Samantha has identified the following strategies that may be helpful to her so that she can meet the necessary academic outcomes. First, Samantha has identified that she can find it difficult to focus and take notes in most of her classes. We recommend that another student be provided with a carbon book so that copies of notes would be available for Samantha daily, or that the teachers could provide her with notes. Second, on occasion, Samantha may miss classes due to her pain or to attend appointments. We are aware that the School Board has a policy on the number of days missed in a term with respect to a student's successful completion of a course. We are hopeful that Samantha's health condition will be kept in mind when reviewing her absence and that she will not be penalized for her health condition.

I am very hopeful that, with continued support by the faculty at (school name) and the treatment plan, Samantha will have a successful school year. We appreciate your help in this matter and if I can be of any further assistance or if more information on chronic pain would be helpful, please do not hesitate to contact me.

Sincerely,

Dr. Smith

Appendix D  
General Information Letter about the IWK Health Centre

*Please read the following information about the IWK Health Centre.*

The IWK Health Centre provides quality care to women, children, youth and families in the Maritime provinces and beyond. The IWK is also engaged in leading-edge research; works to promote healthy lifestyles for families; and supports education opportunities for health professionals and other learners. The IWK is structured around a Program-Based Care Model. Program-based care puts people first by organizing interdisciplinary care teams around the needs of patients and families. Services provided by the Health Centre are delivered through three programs: Children's Health; Mental Health and Addictions; and Women's and Newborn Health.

The Children's Health Program provides interdisciplinary health services to children, youth, and their families throughout the Maritimes. We also provide some tertiary (specialized) services to the Atlantic region. Although our main focus is tertiary care, the Program also provides primary and secondary care services including prevention and promotion activities. In addition to the Regional Poison Centre, there is also a significant focus in promoting healthy eating and healthy living activities for children, youth, families and health professionals. Care and services are provided on an inpatient and outpatient basis, through traveling (outreach) clinics and the use of telehealth.

The Mental Health and Addictions Program serves children, youth and families throughout Nova Scotia and the other Maritime provinces. Services are provided through our traveling clinics, telehealth and access to our inpatient unit and day treatment programs. In 2006 the program expanded to include addictions and the name changed to the IWK Mental Health and Addictions Program. IWK Mental Health and Addictions is committed to providing appropriate services to the children, youth and families we work with through a continuum of care, ranging from early intervention to more intensive services. We provide service through a multi-disciplinary approach involving the appropriate clinical resources.

The Women's & Newborn Health Program offers culturally competent, family centered care to women and babies. Our women's health services provide screening, diagnosis and treatment for health issues, in order to attain optimal health. We also offer education and prevention strategies within our communities to promote health and wellness to women of all ages. Our maternity services encompass care to women and families who are trying to conceive, are pregnant, and are giving birth, as well as care for the mother and newborn up to the first six weeks of life. These services include intensive care for pregnant women and newborns from across the Maritimes.

The IWK is a respected centre for its world-class research into disorders and diseases affecting children and women. As a teaching institution, the IWK is affiliated with Dalhousie University and serves as a primary clinical resource for pediatric and obstetric teaching of a broad range of health professions including medicine, nursing, other allied health services and child life. Specialists from the IWK take their expertise to Maritime communities in the form of traveling clinics, particularly in the areas of pediatric neurology, orthopaedics, cardiology and respiratory medicine. In addition, using

computer-based videoconferencing technology, the IWK provides specialized care to Maritime families through the Children's TeleHealth Network.