

MY FRIENDS DON'T REALLY UNDERSTAND ME:
EXAMINING CLOSE FRIENDSHIPS OF ADOLESCENTS WITH CHRONIC PAIN

by

Paula A. Forgeron

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DALHOUSIE UNIVERSITY
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Dated: August 8, 2011

External Examiner: _____

Research Supervisor: _____

Examining Committee: _____

Departmental Representative: _____

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DEDICATION

To Ian, my husband, for always believing I could complete this journey. I could not have done this without your ever-present love, support, and laughter. I am forever grateful. I promise—This Is It!

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ABSTRACT

Chronic pain negatively affects all dimensions of an adolescent's life. Little is known about the social impact of chronic pain for adolescents, especially on close friendships. More is known about peer acceptance and number of friends than the characteristics and qualities of close friendships. This series of studies used mixed methods to generate knowledge regarding the impact chronic pain has on close friendships. Adolescents with and without chronic pain participated. The findings shed light on the challenges chronic pain presents in close friendships. Adolescents with chronic pain developed new friendship needs but non-pain peers may be uncertain of their knowledge and skill in how best to support a close friend with chronic pain. This gap between friendship needs and expectations versus lack of knowledge and skill may result in friendship tensions and disengagement. Findings highlight areas for interventions to maintain and improve close friendships of adolescents with chronic pain.

LIST OF ABBREVIATIONS USED

ACP	Adolescents with Chronic Pain
CES-D	Centre for Epidemiologic Studies Depression Scale
HSP	Henoch-Schönlein Purpura
HMR	Hierarchical Multiple Regression
IBS	Irritable Bowel Syndrome
IPA	Interpretative Phenomenological Analysis
JPFS	Juvenile Primary Fibromyalgia Syndrome
JCA	Juvenile Chronic Arthritis
M	Mean
r	Pearson Correlation
PedMIDAS	Pediatric Migraine Disability Assessment Scale
PI	Principal Investigator
SCD	Sickle cell Disease
SAS-A	Social Anxiety Scale for Adolescents
SIP	Social Information Processing Model
SD	Standard Deviation

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CHAPTER 1: INTRODUCTION

“It is not so much our friends' help that helps us as the confident knowledge that they will help us.” EPICURUS, 3rd century BC

Adolescents with chronic pain face many challenges. They suffer from a disease process that is not well understood, has an uncertain illness trajectory, and is not usually accompanied by obvious physical signs. As a consequence, many teens face disbelief from friends, family and health professionals (Sällfors, Fasth & Hallber, 2002; Carter, 2002). Although 25%-31% of children and adolescents may develop chronic pain at some point in their childhood/adolescence (Perquin, Hazebroek-Kampschreur & Hunfeld, 2000; Stanford, Chambers, Biesanz, Chen, 2008), only one third of these children and adolescents experience disabling chronic pain (Perquin et al., 2000). Despite the prevalence of chronic pain, children and adolescents with chronic pain seldom have peers with a similar chronic pain experience and therefore often feel isolated (Sällfors et al., 2002). These children and adolescents have an increased rate of school absence (Logan, Simmons, Stein, & Chastain, 2008; Roth-Isigkeit, Thyen, Stoven, Schwarzenberger & Schmucker, 2005), which may negatively impact their ability to engage with peers. Chronic pain also interferes with their ability to meet with friends on a regular basis and participate in leisure activities (Roth-Isigkeit et al., 2005) and thus may interfere with their ability to maintain friendships (Carter, 2002).

There are several definitions of chronic pain. For the purpose of this dissertation, chronic pain is defined as non-malignant continuous and/or frequently recurrent pain that has persisted for three months or more, regardless of the location or cause of pain (Bursch, 2000). It was the impact on friendships from the cluster of common pain experiences that was of interest in these studies, not etiology or location of the pain. Pain,

associated with diagnoses such as juvenile rheumatoid arthritis, Crohn's disease, or pain from unknown origin exerts a cluster of common experiences for individuals and it is the impact of pain on adolescent peer relationships and not its cause that is the focus of this dissertation. Although pain may lessen with disease modifying treatment, in cases where the cause of pain is known, the treatment of the pain itself is relatively generic, especially when the pain persists despite response to disease modifying treatments. Pain treatment usually includes a combination of medications, psychological, social, and physical strategies (Scascighini, Toma, Dober-Spielmann, & Sprott, 2008; Stanos et al., 2007). In many cases, these treatments do not eliminate pain but rather decrease its intensity and frequency, and promote positive coping skills. Therefore, adolescents with chronic pain must learn to manage pain in their lives on a day-to-day basis.

Although all aspects of life for adolescents with chronic pain deserve attention, peer relationships, and close friendships in particular, are understudied. A recent systematic review revealed that children and adolescents with chronic pain have fewer friends, experience interruptions in peer activities due to pain, are viewed as less likable by some peers, and are subject to increased rates of victimization (Forgeron, King, Stinson, McGrath, MacDonald, & Chambers, 2010). However, little is known about the qualities or characteristics of these peer relationships; especially close friendships. In addition, little is known about the effects that these peer relationship difficulties have on the child or adolescent's chronic pain.

Peer Relationships—Why They Are Important

Adolescence is a period marked by great change. Adolescents go through a process of developing self-identity, gaining independence from parents, identifying with peer groups, and establishing deeper friendships. Association with larger social groups is

a salient feature of adolescent social life (Brown, Eicher, & Petrie, 1986) with peers being a significant subgroup within this larger social world. Peer relationships are important as a context where adolescents can test and develop values and roles in the absence of adult monitoring (Rubin et al., 2005). These relationships appear to be instrumental in facilitating an adolescent's sense of personal identity and increasing independence from family influences (Dusek, 1991). The benefits of positive peer relationships, as measured by peer acceptance, have been linked to lower levels of loneliness (Parker & Asher, 1993), depression (Oldenburg & Kerns, 1997), and positive school adjustment (Ladd, Kochenderfer, & Coleman, 1997). As adolescents age, they usually develop more sophisticated social skills, which may allow them to maintain extensive and different types of peer relationships (Rubin et al., 2005). Friends and peers play a critical role in the development of these social skills as well as feelings of personal competence; both are essential for optimal adult functioning (Ingersoll, 1989).

Friendship (especially close friendship) is a specific type of peer relationship that is distinctly different from relationships with general peers such as classmates. Ginseber, Gottman, and Parker (1986) define friendship as a dyadic relationship based on mutual affection, whereas peer acceptance (popularity) is an individual's relative status in a peer group in terms of unilateral liking and attraction. Although overlaps between the two types of relationships exist, each type represents a distinct domain of social experience and both contribute to psychological adjustment (Erdley, Nagle, Newman, Carpenter, 2001). Peer acceptance and friendship may provide one with instrumental aid, nurturance, companionship, and contribute to positive self-worth. Peer acceptance is unique in its contribution to feelings of belongingness and inclusion (Buhrmester & Furman, 1986).

However, friendship is unique in its provision of affection, intimacy, and reliable alliance (Bagwell, Schmidt, Newcomb, & Bukowski, 2001).

Close peer friendships have been shown to ameliorate negative effects in various contexts. For example, Hodges, Boivin, Vitaro, and Bukowshi (1999) found that close friends offset the negative adjustment effects for peer-victimized children. Friendships also buffer links between negative family environment and poor self-esteem (Gauze, Bukowski, Aquan-Assee, & Sippola, 1996). Nangle, Berdley, Newman, Mason and Carpenter (2003) found that friendships, especially close friendships, act as buffers against loneliness and depression in children and quality friendships make a contribution to the predication of loneliness that is independent from popularity (Oldenburg & Kerns, 1997). Clearly, peer acceptance and friendships are crucial to the healthy development of children and adolescents. However, from a developmental perspective, Sullivan (1953) suggests that, as children age, their need for acceptance which may be fulfilled by peer group inclusion shifts to a need for a more intimate friendship. Therefore, adolescents' close friendships may become more important than peer group acceptance. Thus, psychological adjustment may be linked more to close friendships during adolescence than peer acceptance (Erdley et al., 2001).

Peer Relationships—Adolescents With Chronic Illness

Conflicting research findings make it difficult to know if, or how chronic illness impacts an adolescent's peer relationships. Vannatta and colleagues (1998) found that, even after successful treatment of brain tumors, children and adolescents continued to experience negative peer relationships. These researchers compared 28 children and adolescents between 8 and 18 years of age who had survived treatment for brain tumors with matched classmates on the following measures, the Revised Class Play questionnaire

(Masten, Morison, Pellegrini, 1985), Nomination of Three Best Friends (Bukowski & Hoza, 1989) and a Like Rating Scale (Asher, Singleton, Tinsley, & Hymel, 1979). The Revised Class Play questionnaire asks children to select other classmates from a class roster and assign them to certain roles in a play as a means to capture the behavioral reputation of the classmates. In this study, the researchers also asked children to identify the roles that they would be good at playing. The Nomination of Three Best Friends questionnaire asks children to pick their three best friends from the class roster and can be used to identify reciprocal relationships between classmates. The Like Rating Scale asks children to rate everyone on the class roster for general likeability, with 1 meaning someone they did not like to 5 meaning a classmate that they liked a lot. They found that the children and adolescents who had survived brain tumors received less friendship nominations by their peers on measures of likeability and were perceived by their peers to be more fatigued, sick, and absent from school despite completing treatment. In addition, peers, teachers, and self-report described children and adolescents who had survived brain tumors as socially isolated compared to other classmates. These findings suggest that the disruption to peer relationships resulting from illness continue after the recovery period although the mechanism for these disruptions is not known.

In contrast, Gratez and Shute (1994) conducted a similar study of 21 students with asthma, age 8 to 18 years, and matched them with control classmates. These researchers used the same measures as Vanatta et al. (1998). Unlike Vanatta and colleagues however, they found no differences between the two groups of students. Overall, children and adolescents with asthma had as many friends, were as popular, were not lonelier, nor were they rejected more compared to their healthy classmates. However, there was a tendency for children who required more hospitalizations for their asthma to experience

some negative consequences to their peer relationships. Increased numbers of hospitalizations were moderately correlated with self-reported increases in loneliness and as being viewed as a less likeable playmate and more isolated. These findings indicate that the illness itself may not be disruptive to peer relationships, but rather the amount of hospitalization or absenteeism. However, no pattern of hospitalization or absenteeism was captured so it is not clear if short frequent absenteeism impacts peer relationships differently than longer infrequent absenteeism.

Further studies show no negative difference between children and adolescents with chronic illnesses. Noll et al. (1999) studied the effects of multiple types of childhood cancer, with the exception of brain tumors, on children's and adolescents' peer relationships and social behaviors. This study involved 76 children between the ages of 8 and 15 with cancer and 76 matched classmates. They did not find any negative differences between the groups on standardized peer relationship measures such as likeability and friendship nominations. Children with cancer were assessed as more likeable and less disruptive in comparison to other classmates. The children with cancer did not assess themselves as more lonely, anxious, or depressed compared to the control group. The authors do speculate that being liked more and seen as less disruptive may be influenced by sympathy on the part of the peers. Interestingly, this did not seem to be the case for children and adolescents with brain tumors. Negative cognitive sequelae of brain tumors and their treatment, such as decreases in academic abilities and adaptive behaviors comprising of communication, daily living skills, socialization, and motor abilities (Ris et al., 2008) may explain why children and adolescents who had survived their brain tumors were not viewed in the same light with respect to likeability compared to children and adolescents with other forms of cancer.

The conflicting findings suggest that certain types of chronic illness, perhaps those with cognitive deficits, and/ or, the severity of chronic illness, may have a negative association with child and adolescent peer relationships. Precisely how and for which types of chronic illness peer relationships are negatively affected remains unclear. Two of these studies assessed peer relationships for children and adolescents with cancer (Noll et al., 1999; Vanatta et al., 1998). Cancer is a recognized life threatening condition and as such these findings are not comparable to adolescents with non-life threatening chronic pain.

In addition to the findings from the studies examining peer relationships of children and adolescents with chronic illness, chronically ill adolescents have been found to suffer from more depression, low self esteem, and increase use of alcohol, tobacco, and illicit drug use, regardless of illness, compared to healthy adolescents (Erickson, Patterson, Wall, & Neumark-Sztainer, 2005). These symptoms of psychosocial distress are attributed to the psychosocial impact of chronic illness, and not the symptoms of the illness (Erickson et al., 2005). Nevertheless, the processes that contribute to psychosocial distress for chronically ill children and adolescents remain unclear, as does the role of peer relationships in contributing to, or ameliorating these symptoms.

Although close peer friendships have been found to modify other negative factors in an adolescent's life such as harmful family environments and peer victimization (Davis, 1982; Hodges, Malone, & Perry, 1997), it is not known if peer relationships and close friendships have a protective mechanism or can modify the negative impact of chronic illness. We do not know if chronic illness impedes an adolescent's ability to develop the skills necessary to maintain peer relationships and friendships, which could hinder the establishment of protective friendships. Features of chronic illnesses, such as

hospitalization and school absence, can predispose a child to social isolation and peer rejection (Vannatta, Gartstein, Short, & Noll, 1998; Greco, Freeman, Dufton, 2006; Kashikar-Zuck et al., 2007) which suggests interference with the establishment of positive peer friendships.

Peer Relationships And Adult Chronic Pain

Chronic pain negatively impacts family relationships (Lewandowski, Morris, Draucker, & Risko, 2007; Scharff, 2005) including marital relations and social friendships of adult chronic pain patients (Smith & Osborn, 2007). Pain-related limitations negatively impact an adult's ability to keep and extend social networks (Hensing, Sverker, & Leijon, 2007). Declines in willingness to entertain people and in invitations to attend social functions contribute to friendship losses for adults with chronic pain. Snelling (1994) proposed that the changing personality of the chronic pain sufferer (their willingness to engage with others and or their need to express their distress to others), along with a perception of other people's discomfort about the amount of pain the sufferer is experiencing while out socializing, may contribute to the decline in social contact. We do not know if adolescents with chronic pain experience a decline in social contact for similar reasons. The situation may actually be worse for adolescents, as they may not have established deeper friendships that can adapt to the effects of pain on ones personality. Healthy peers may abandon attempts at social contact sooner compared to long time friends of adult pain sufferers.

Peer Relationships And Adolescent Chronic Pain

Research into peer relationships, in particular friendships, for adolescents with chronic pain is limited. A recent systematic review included a broad range of quantitative studies examining peer relationships of children and adolescents with chronic pain

(Forgeron et al., 2010). The studies in this review were categorized into four groups depending on the primary focus of the study. Of the 42 studies included in this review, peer relationships were the primary focus in only 9. However, of these 9 studies 7 of the studies identified negative consequences to the peer relationships of the participants. The remaining 33 studies captured peer relationship data as either a variable or an antecedent of a variable to explain their primary question. Fifteen studies explored the quality of life for children and adolescents with various types of pain; nine examined the association of chronic pain with various mental health factors, such as internalizing and externalizing behaviors. Nine were in the 'other' category and included population studies examining physical and behavioral correlates associated with headache to studies on mothers' attributions for the causes and remedies for their child or adolescent's abdominal pain. We concluded, from these 42 studies, that children and adolescents with chronic pain have fewer friends, are viewed as less likable by some peers, and may be subjected to increased rates of victimization (Forgeron et al., 2010). Common among all the studies was a focus on general peer relationships (peer acceptance) with a few capturing data on the number of friendships. When friendships were measured, such as in the Nomination of Three Best Friends classroom measure, it was the number of relationships that was of interest; not the qualities or characteristics of the friendships. Nevertheless, it was clear that chronic pain had a negative impact on the peer relationships and friendships of children and adolescents with chronic pain. Table 1 below, contains details of the studies contained in this dissertation chapter that focus on peer relationships and children and adolescents with chronic pain.

Table 1

Peer Relationships And Pediatric Chronic Pain Studies

Author/Year/ Country/Design	Sample/Age	Measures	Findings
Carter, Lambrenos, & Thursfield (2002) UK Participant Inquiry	Chronic pain Recruited via tertiary hospital Purposeful sample n: 5 A: 13-19 years	Focus group interview (audio-taped & transcribed) Guided activities: Key words to describe their pain, effects of pain on them, and coping with pain (recorded); Peer interviews (audio-taped & transcribed)	Theoretical coding = 4 themes -pain presented difficulties in their relationships with friend (feeling blamed for their pain, sunny day friends, pain related absence from school & activities)
Forgeron & McGrath (2008) Canada Fundamental descriptive qualitative study	Chronic pain Recruited via tertiary pediatric pain clinic Purposeful sample n: 5 A: 13-18 years Sex: 5 girls	Adolescents: Demographics and pain related data (pain intensity, location, time since onset, present treatment) Focus group using semi-structured interview (audio-taped & transcribed)	Open coding = two themes -friends essential to well being but understanding was limited -friends can provide distraction -half of the participants believed they would benefit from peer support (another with pain), those opposed felt pain too unique to the individual -some experienced disbelief and verbal abuse from non-friend peers
Greco, Freeman, & Dufton (2007) USA Case control cross sectional study	RAP n: 120 RAP: 60 Matched Healthy Controls: 60 A: M = 12.3 year (SD 1.19) Sex: 41 girls	Child: Abdominal Pain Index (API), Use of school medical services Classroom peers (including controls and child with RAP): Children's Social Experiences Questionnaire-peer report (CSEQ-PR), Teachers: Social skills rating scale (SSRS)	-children with RAP victimization > controls. -modest support for peer victimization moderating relationship between pain & school functioning.

Author/Year/Country/Design	Sample/Age	Measures	Findings
Guite, Walker, Smith, Garber (2000) USA Vignette correlation study	Healthy children (rating vignette characters with organic & non-organic RAP) n: 363 A: M = 10.15 years (SD .76) Sex: 52% girls	Child: Questionnaire created for this study: Likeability - 5 items re: how much the child liked the vignette character, Severity-2 items re: perceived symptom severity of the vignette character, Relief from Responsibility-4 items re: extent that the vignette character should be relieved from responsibilities.	-children with organic disease seen as having > severe disease & pain -boys and girls viewed RAP in boys > severe. -regardless of RAP type same sex preferences for likeability. -presence of stressors in vignettes did not impact liking ratings. -severity of symptoms mediated the relationship in some cases. Boys granted ↑ relief of responsibility to girls with; boys granted all RAP boys equal relief from responsibility; girls granted non-organic RAP girls ↑ responsibility relief (unexpected finding) but not boys with non-organic RAP.
Kashikar-Zuck, Lynch, Graham, Swain, Mullen, Noll (2007) USA Case control cross sectional study	Juvenile Fibromyalgia Syndrome (JFS) n: 110 JFS: 55 Matched classmates: 55 A: 12-18 years Sex: 52 girls with JFS and 52 matched female peers	Adolescents (JFS and controls): Revised Class Play (RCP); Three Best Friends (TBF); Like Rating Scale (LRS); 9 additional items to assess non social attributes that may be impacted by chronic illness Teachers: Teacher RCP	-teens with JFS rated as sensitive/isolated > peers by peers & self. - JFS viewed demonstrating popular/leadership behaviors < by peers & self. -received ↓ best friend nominations -viewed ↓ aggressive/disruptive by teachers.

Author/Year/ Country/Design	Sample/Age	Measures	Findings
Noll, Kozlowski, Gerhardt, Vannatta, Taylor, & Passo (2000) USA Case control, cross sectional study	Juvenile Rheumatoid Arthritis (JRA) n: 148 JRA: 74 Matched classmates: 74 A: 8-14 years Sex: JRA 40 girls, 34 boys (sex matched classmates)	Parent: Child Behavior Checklist (CBCL), Dimensions of Temperament Survey—Revised (DTS-R) Children: JRA and controls: RCP, TBF, LRS JRA: Child Depression Inventory (CDI), Roberts Apperception Test for Children, Loneliness & Social Dissatisfaction Questionnaire (LSDQ), Self-Perception Profile for Children (SPPC), Wechsler Intelligence Scale for Children—Revised Teacher: RCP	-no differences on peer relationship measures (RCP, TBF, LRS): teacher, JRA, or classmates. -mothers of children with mild JRA (53% of sample) perceived their children > socially competent on CBCL vs. more active disease. -fathers rate children with mild JRA with ↓ total behavior problems on the CBCL vs. children with active disease
Noll, Reiter-Purtill, Vannatta, Gerhardt, & Short (2007) USA Case control cross sectional study	Sickle Cell Disease (SCD) n: 86 SCD: 43 Matched classmates: 43 A: 8-15 years Sex: 26 girls SCD & 26 girls healthy classmates	Parent: Demographic questionnaire, Revised Temperament Survey (DOTS-R), Children: RCP, TBF, LRS, CDI, LSDQ, SPPC Teacher: RCP	-teachers rated students with SCD as ↑ prosocial and ↓ aggressive -children with SCD chosen ↓ as a best friend & had ↓ reciprocal friendship nominations by peers but were NOT less well liked -children with SCD viewed as ↑ sick, ↑ absent from school, and ↓ athletic by peers; overall ↑ sickness did not mediate a path between illness & outcomes for SCD on best friend or reciprocal friendship nominations.

Author/Year/ Country/Design	Sample/Age	Measures	Findings
Noll, Vannatta, Koontz, & Kalinyak (1996) USA Case control cross sectional study	SCD n: 68 SCD: 34 Matched classmates: 34 A: 8-14 years Sex: 20 girls SCD & 20 girls healthy classmates	Parent: Demographic Background Questionnaire, Revised Dimensions of Temperament Survey (DOTS-R), Children: RCP, TBF, LRS, + 3 questions on who is sick the most, tired the most, misses the most school, LSDQ, SPPC, CDI, Roberts Apperception Test for Children, Block design & vocabulary subtests of the WISC-R Teacher: RCP & student absenteeism Researcher: Chart review for disease severity	-girls with SCD viewed as ↓ sociable &/or displaying leadership behaviours, chosen ↓ often as a best friend, and received ↓ reciprocal friendship nominations, & viewed as less acceptable. -boys with SCD viewed as ↓ aggressive -compared to peers, children with SCD viewed as ↑ sick, ↑ absent from school, and “being tired a lot” compared to peers. -trend for older children with SCD to report ↑ loneliness -frequency of pain episodes captured in rating of disease severity (along with # of complications, major organ involvement, # of hospitalizations) severity of SCD was not a significant factor
Noll, Kiska, Reiter-Purtill, Gerhardt, & Vannatta (2010) USA Case control cross sectional longitudinal study	SCD: 60 Matched classmates: 60 A: 10-17 years Sex: 29 girls SCD & 29 girls healthy classmates Baseline data & repeat 2 years later	Children: RCP, TBF, LRS Teacher: RCP Caregiver: family socioeconomic status, family size, caregiver education	- compared to peers, children with SCD viewed as ↑ sick, ↑ absent from school, & less athletically skilled -no differences by peers on likeability or 3 best friend nominations. -peers rated SCD ↓ aggressive & disruptive at time 2 -teachers rated comparisons as ↑ sensitive-isolation at time 2 but not SCD

Author/Year/ Country/Design	Sample/Age	Measures	Findings
Sällfors, Fasth, and Hallberg (2002) Sweden Grounded Theory	Juvenile Chronic Arthritis (JCA) Theoretical sampling n: 22 A: 6-17 years Sex: 16 girls	Individual interviews taped & transcribed	Labeled open, axial (theoretical) & selective coding as per grounded theory (1 core theme with 4 subthemes) -felt understood by friends in JCA peer support group -feel disbelieved by classmates at times - limitations in activities at school with peers & feel left out at times
Vannatta, Getzoff, Gilman, Noll, Gerhardt. Powers, & Hershey (2008) USA Case control cross sectional study	Migraine (M) n: 138 M: 69 Matched classmates: 69 A: 8-14 years Sex: 31 girls M & 31 girl classmates	Child: RCP, TBF, LRS, migraine frequency, pain intensity (0-10 numeric scale) Teachers: RCP	-children and adolescents with migraine missed more school compared to healthy peers (7.1 days versus 4.4 days/year) -children with M had ↓ reciprocated friendships -younger children received ↓ best friend nominations & twice as likely not to have any reciprocated friendships vs. peers and middle-school participants with & without M. -boys with M viewed as ↓ aggressive & ↓ disruptive -middle-school participants with M viewed as exhibiting ↑ leadership behaviors -teachers rated participants with M as ↓ aggressive & disruptive -no correlations between M frequency or pain intensity & friendship measures (average pain intensity 6.9; frequency: younger participants 7.44 days/month & adolescents 13.66 days/month)

Author/Year/ Country/Design	Sample/Age	Measures	Findings
Wagner, Connelly, Brown, Taylor, Rittle, & Wall-Cloues (2004) USA Correlation cross sectional study	SCD n: 58 A: 8-17 years Sex: 57% girls	Parent: Demographic questionnaire (locally designed) Child: Social Anxiety Scale for Children-Revised (SASC-R), VAS pain intensity rating Medical records: SCD type, disease severity, hemoglobin	-M pain intensity 61.24; SD (29.96) on a 100 mm VAS -severe pain ratings associated with ↑ overall social anxiety in older children & adolescents but not younger children -pain x age associated with ↑ fears of negative evaluation by others -pain x age not associated with social avoidance & distress for new situations or in general situations.

Notes. n = Number of participants in the study. A = age range of participants. Studies listed in alphabetical order

Most of the studies conducted that focus on peer relationships of children and adolescents with chronic pain include participants with a physical chronic illness where pain was a major symptom (Noll et al., 1996; Noll, 2000; Noll, 2007; Vannatta, 2008; Wagner et al., 2004). Noll et al. (1996) conducted a study with children and adolescents ages 8-14 years with sickle cell disease (SCD) who were receiving care through a tertiary SCD treatment center. Healthy classmates were used as controls. Using the same measures and study design as carried out in the studies exploring peer relationships of children and adolescents with cancer and asthma described earlier (Graetz & Shute, 1994; Noll et al., 1999; Vannatta et al., 1998), several significant differences were found between children and adolescents with SCD and their healthy classmates. Girls with SCD, (a) appeared to have more disruption to their peer relationships, (b) were viewed by peers as less sociable and/or displayed fewer leadership behaviors and (c) were seen as less acceptable, chosen less often as a best friend, and received fewer reciprocal friendship nominations compared to healthy controls. The only difference for boys with SCD compared to controls was that they were viewed as less aggressive than their peers. There was also a trend for older children to report increased levels of loneliness but there was no reported sex difference meaning that older boys and girls with SCD may not experience loneliness differently. All children with SCD were identified as sicker and more fatigued than their classmates and noted to have an increased absence from school but frequency of pain episodes was not a significant factor in group differences. From this study, it appears that classmates do notice physical differences in peers with SCD but the extent that these differences relate to disruptions in peer relationships is unclear as both boys and girls were viewed similarly with respect to noticeable physical symptoms but only girls were less desired as a friend.

In a follow-up study, Noll and colleagues (2007) replicated their earlier study to determine if the findings remained constant and combined the two sets of data to increase power in statistical analysis exploring factors that may mediate the associations between social difficulties and children and adolescents with SCD. In the first phase of the follow-up study, a new group of 43 participants with SCD, aged 8-15 years were each matched with a healthy control classmate. The children and adolescents with SCD were no different on the roles classmates would select them for when casting characters in a play, likeability, reciprocal friendship nominations, or self-reported loneliness. Similar to the first study (Noll et al., 1996) children and adolescents with SCD were rated as being sick more than peers and absent from school more often; illustrating that classmates were cognizant of the visible difference between children and adolescents with SCD compared to peers. In this study children and adolescents with SCD continued to be picked less often as a best friend, but unlike the first study (Noll et al., 1996), there were no sex differences associated with being chosen less often on the naming of three best friends measure. Similar number of boys participated in both studies. Although more girls participated in both studies (58-60%) the distribution of boys to girls would most likely not be the reason for the absence of sex differences in the follow up study (Noll et al., 2007). Although the age ranges for the two studies were similar, Noll and colleagues only reported the mean age for the follow up study; thus it is unclear if age had an impact on sex differences found in the first study. In regards to analysis combining data from both studies, no mediating factors including illness characteristics were found to explain peer relationship differences. This study (Noll et al., 2007) strengthened the evidence supporting some peer relationship differences between children and adolescents with

SCD and their healthy peers. However, it remains unclear what factors are associated with these findings.

Interestingly, in a recent longitudinal study (published after completion of the systematic review) which captured data at baseline and again two years later involving children and adolescents with SCD, the only difference between control classmates and those with SCD were that participants with SCD were viewed as sicker, absent from school more and less athletically inclined (Noll, Kiska, Reiter-Purtill, Gerhardt, & Vannatta, 2010). The only difference between time 1 and time 2 was that their peers rated participants with SCD as less aggressive and disruptive at time 2. All the children were from lower SES homes in an inner city neighborhood. Although overall children and adolescents with SCD were viewed similarly to classmates at time 1 and time 2, the study focused mostly on peer acceptance, which may not be as important for the adolescents in the study compared to the children. However, not being viewed as different from a popularity perspective does little to provide understanding of the characteristics within friendships.

Noll and colleagues (2000) also conducted a study with 74 children and adolescents with juvenile rheumatoid arthritis (JRA) recruited from a referral center and classroom controls. A pediatric rheumatologist classified the participants with JRA as having mild or moderate/severe disease based on age of onset, radiographic and clinical findings, and presence of active disease (physical findings) or partial remission (no physical findings but continuing on medication). Using the same measures and similar study design as carried out in the previous two studies (Noll et al., 2007; Noll et al., 1996) and those exploring peer relationships of children and adolescents with cancer and asthma (Graetz & Shute, 1994; Noll et al., 1999; Vannatta, Gartstein, Short, & Noll, 1998), no

significant differences were found between children with active disease or those in remission for JRA compared to healthy classmates. Unlike Gratez and Shute (1994) in their study of children and adolescents with asthma, Noll et al. (2000) did not find severity of JRA to have any impact on peer ratings. This finding is consistent with their study findings of children and adolescents with SCD.

Using a similar methodology, Vanatta and colleagues (2008) explored the impact of migraines on the peer relationships of children and adolescent sufferers. Sixty-nine participants aged 8-14 years with migraine were matched with 69 healthy peers. Classmates completed the Revised Class Play questionnaire, Nomination of Three Best Friends, and a five-point peer acceptance rating to capture general likeability (see Table 1). Children and adolescents with migraine were selected less often as a reciprocal friend. Being selected less often as a reciprocal friend was more pronounced for younger children with migraine as they were twice as likely to have no reciprocal friendships compared to healthy children and older children and adolescents with migraine. Additionally, younger children also received fewer best friend nominations. Similar to the study by Noll et al. (2000), Vannatta and colleagues did not find an association between pain severity and frequency of migraine with peer relationship differences. This is of significance as the children and adolescents in this study experienced moderate pain from their migraines and frequent migraines. Although the children and adolescents with migraine missed significantly more days of school compared to healthy peers, the study did not report on the degree to which migraines interfered with other activities and therefore it is unclear if the children and adolescents with migraine missed engaging with friends outside of school absences. Therefore, the factors contributing to younger children with migraine being less acceptable as a friend remains unknown.

Wagner et al. (2004) found that illness severity, as defined by pain severity, was a factor in social adjustment for children and adolescents with SCD. These researchers examined the illness predictors of social anxiety among children and adolescents with SCD. Fifty-eight children and adolescents between the ages of 8-17 years participated. Findings indicated that there was an interaction between age and pain, illustrating older children who are experiencing more pain feared negative evaluations by peers. How this finding of increased fear of negative evaluation by peers for older children with more pain effects friendship interactions was not studied.

Noll and colleagues (2000) did not capture data on social anxiety as part of their emotional well-being measures and Vannatta et al. (2008) did not include measures of internalizing behaviors, which may explain, in part, why they did not find any differences between illness severity and social adjustment. Wagner et al.'s (2004) findings suggest that previous experiences of negative evaluation by peers, perhaps as a result of an adolescent's pain, increase an adolescent's fear of further negative evaluation over time. Children and adolescents with more severe pain may interact less with their peers and, therefore, may not feel skilled in their interactions with peers as they age and continue to experience pain. Fear of negative evaluation by peers may further disrupt friendships by adding another barrier to socially engaging with peers. Subscales that measure anxiety related to new situations and general situations were not associated with pain severity or increased age in this study by Wager et al. (2004). Thus, perception of peer reactions is another important area to explore in children with chronic pain as it may impact their self-reported social adjustment and peer relationships, even if peers rate them similarly on classroom measures used in many of these studies.

Differences between SCD, JRA, and migraine may account for some social adjustment difficulties. Increased severity and frequency of pain in SCD is associated with vascular occlusions and these individuals may suffer from cognitive deficits due to neurological injury from silent infarctions (Berkelhammer et al., 2007). However, Noll et al. (1996; 2007) excluded children and adolescents if they had previous cerebral vascular accidents or were in special education classes. Unfortunately Wager et al. (2004) did not comment on their exclusion criteria and no measure of cognitive deficits was used. Nevertheless, all the participants with SCD were able to complete the self-report measures in all three of these studies.

Hospitalization rates may be another potential factor influencing social adjustment and peer relationship differences between children and adolescents with JRA, SCD, and migraine. Although in the three studies by Noll and colleagues (1996; 2007; 2010) peers recognized that their classmates with SCD were absent from school more regularly, they did not capture actual absentee rates. Youth with severe SCD pain may be hospitalized more than those with severe JRA or migraine as treatment for painful vascular occlusions may require more intensive treatment, making frequent interaction with peers difficult. It is too early to determine the extent to which school absence, severity of pain, and underlying illness impact peer relationship differences and social adjustment.

Greco, Freeman, and Dufton (2007) studied the correlation of pain with overt and relational victimization for students between grade 5 and 10 who suffered from frequent non-specific abdominal pain, with pain free students. Both classmates and teachers completed measures. Classmates (including children with abdominal pain and controls) completed a measure to identify classmates who are the recipients of victimization. Teachers completed measures on social skills and academic competence of the

participants and school medical services use was also recorded (see Table 1 for specific measures). Children and adolescents with non-specific frequent abdominal pain were subjected to more overt and relational victimization among school peers compared to pain free peers. The effects of victimization were important as teachers reported lower levels of social skills and academic competence for children and adolescents with higher victimization ratings. Victimization impacted school medical service use. Specifically, boys in the frequent abdominal pain group were the recipients of more victimization, regardless of type, compared with girls. Both types of victimization explained additional variance in the outcome measures beyond sex, age, race, and abdominal pain. Overt victimization explained an additional 8% of the variance in scores on teacher reported academic competence, and 17% of social skills, as well as 19% of the variance on the use of school medical service. Relational victimization explained an additional 9% of teacher ratings on social skills and 8% of use of school medical service but not academic competence. Children and adolescents with high levels of frequent abdominal pain used the medical services but only if they also had high levels of victimization. Degree of abdominal pain alone did not predict the use of school medical services if victimization was also low.

Regardless of the type of victimization, the associations between victimization and the three outcome measures were most significant for youth with high levels of victimization and high levels of abdominal pain. This suggests that negative peer relationships for these youth may have harmful effects on important psychosocial development above and beyond pain. However, since no other measures of friendship were captured, we do not know if those youth with high levels of abdominal pain and lower scores on the victimization measure had a close friend. Knowing if adolescents

with high levels of abdominal pain but low levels of victimization had a close friend is important, as close friendships have been noted to lessen the effects of bullying (Hodges, Boivin, Vitaro, and Bukowshi, 1999). It is important to know more about the close friendships of adolescents with chronic pain as opposed to peer acceptance, as even one positive friendship may buffer negative effects.

Peer relationships of adolescents with juvenile primary fibromyalgia syndrome (JPFS), a chronic condition characterized by multiple symptoms including ongoing pain, were examined in comparison to healthy peers (Kashikar-Zuck et al., 2007). Similar to the format in many of the previously described class peer comparison studies, adolescents and matched classmates completed standardized measures capturing social parameters such as likeability, reciprocal best friends in the classroom, and perceptions of being socially isolated. Adolescents with JPFS rated themselves and were rated by peers as being more sensitive and having fewer reciprocal friendships compared to matched healthy classmates. Peers also rated them as less likable and less likely to exhibit leadership skills. Teachers rated the adolescents with JPFS as less disruptive or aggressive compared to their healthy classmates. However, there were no differences in the subscale measures that were designed to assess academic competence. This study included 94% females therefore it is difficult to know if the results would be different if more boys with JPFS were included. This study only included adolescent participants, therefore it is difficult to compare with the findings by Wagner et al. (2004), where an interaction between pain severity and age negatively impacted social adjustment and peer relationships. It is possible that as children age, peers view those with chronic pain more negatively.

Natvig, Albrektsen, and Qvarnstrom (2001) recruited children and adolescent participants from 10 Norwegian schools to assess whether physical pain symptoms, (headache, abdominal pain, and back pain) were predictive of victimization in school children. Participants were asked to complete self-report questions on victimization, peer and teacher support, physical symptoms, and self-efficiency. For those students subjected to victimization, the odds of experiencing all three types of pain were greater compared to non-victimized peers. The odds of experiencing these three types of pain also increased as victimization increased. However, this study did not examine whether children and adolescents who experienced more pain were perceived by bullying peers to be more vulnerable and more readily subjected to victimization versus the victimization causing the various types of pain.

Guite and colleagues (2000) conducted a study to explore how healthy children viewed hypothetical peers with explained and unexplained abdominal pain (Guite et al., 2000). Healthy children in grades 4 and 5 responded to a series of questions focusing on the likeability of a child with abdominal pain described in vignette stories. Regardless of the type of abdominal pain (explained or unexplained), same sex preferences were noted for likeability. Increased life stressors such as family issues experienced by the child with abdominal pain in the vignettes, regardless of cause, did not impact on likeability ratings. Children with organic disease were seen as having more severe disease and pain and both boys and girls viewed abdominal pain in boys as more severe regardless of cause. Many children and adolescents with chronic pain do not have a diagnosable cause and this may explain why they feel disbelieved at times. Even though girls viewed the unexplained abdominal pain of girls as less severe compared to girls with explained pain, they did grant these girls more relief from responsibilities. Boys granted the same relief of

responsibility for boys regardless of the cause of their pain and more relief for girls with explained abdominal pain compared to girls with unexplained abdominal pain. In this study it is unclear if likeability ratings of children with pain are a result of the age group, pain type, or hypothetical situation. Kashmir-Zuck and colleagues (2007) found that adolescents with JPFS were viewed as less likable by peers while Vannatta et al. (2008) found younger children with migraines received less reciprocal and best friend nominations compared to older children and adolescents with migraines. More research is warranted to determine the extent to which peer acceptance and peer friendships are impacted by pain and which specific factors (e.g. age, pain type) are associated with these two distinct types of peer relationships.

Several qualitative studies exploring the life experiences of children and adolescents with chronic pain have included descriptions of the peer relationship. However, like much of the other evidence, examination of peer relationships was not the primary purpose of the studies. Carter et al. (2002) used a workshop method to elicit adolescents' perspectives of living with chronic pain. The adolescents in this study spoke only of friendships as opposed to more general peer relationships. They voiced difficulties in maintaining friendships as a result of long periods of absence from school, inability to participate in certain activities and, in some cases, being blamed by friends for having pain. Carter and colleagues (2002) also noted that some participants felt that their friends found it hard to cope with their pain. Similarly, Snelling (1994) in her study of adults with chronic pain, suggested that adults with chronic pain may experience a decrease in social invitations partly due to others' discomfort with witnessing their pain when they are out socializing. However, we do not know if the findings from Carter et al. are based on friends of adolescents with chronic pain verbalizing their discomfort upon

witnessing the suffering of their friend with chronic pain. Participants with chronic pain may have perceived that their friends were uncomfortable when witnessing their pain, or these participants may have been uncomfortable themselves with managing their pain in the presence of others. Either or both of these reasons may have negatively impacted their engagement with friends.

Similarly, Forgeron and McGrath (2008) used a focus group consisting of adolescents with chronic pain to capture insights into their self-identified coping needs. Thematic analysis was conducted and these adolescents spoke of both friends and non-friend peer relationships. They described facing disbelief from their friends, at times, but attributed this disbelief to their friends' inability to share a similar chronic pain experience, as opposed to deliberate malice or being blamed for having chronic pain. These adolescents found it draining to have to re-explain their condition to their friends; citing that explanations usually led to further confusion. Half of the participants had friends with a chronic health condition and told stories of how these friendships were different than the relationship they had with their healthy friends. These adolescents described receiving more understanding and less questioning from the friends with a chronic illness when they were unable to engage in certain activities compared to their healthy friends. Some of the participants, including a few with friends with another type of chronic illness, were unsure if they wanted to meet other adolescents with chronic pain. In regards to non-friend peers, the participants also told stories of being subjected to questions from strangers, and being verbally abused when they ignored questions. There were also the recipients of a stranger's pity. These non-friend peer behaviors suggest that the adolescents in this study experienced stigma and relational forms of victimization.

Sällfors, Fasth, and Hallberg (2002) used individual interviews with 22 children aged 6-17 years old with juvenile chronic arthritis (JCA) to explore the life situation and psychosocial processes of living with chronic pain from JCA. Many of the participants were part of a JCA peer support group. Despite feeling understood by these peers, they described being disbelieved by classmates due to their fluctuating pain levels and needs, such as requiring crutches to walk on some days. These children and adolescents spoke of the emotional difficulty they faced related to disbelief, even when they could rationalize the reason for this disbelief. Unfortunately, no other friendship or peer relationship information was captured. Activities within the support group were listed as the sharing of their pain experiences, disease experiences and their life situation. However, outside of sharing these experiences, no other benefits were described. We therefore do not know if positive friendships were developed within the group or if they learned strategies to maintain friendships within their own social circles.

These three qualitative studies (Carter et al., 2002; Forgeron & McGrath, 2008; Sällfors et al., 2002) provide some insights into the perception of close friendships and perceived peer acceptance of adolescents with chronic pain. Peer relationships of adolescents with chronic pain are stressful and challenging. Nevertheless, none of these studies generated in-depth understanding of best friendships of adolescents with chronic pain.

Research is emerging that identifies the benefits of positive peer relationships for adolescents with chronic pain. Eccleston, Wastell, Crombez, and Jordan (2008) conducted a study to assess the impact of chronic pain on adolescent social development in relation to their peers. Specifically, these researchers were interested in which components of social development were important for adolescents with chronic pain and the relationship

of these components of social development to various psychosocial variables. One hundred and ten adolescents recruited from an outpatient pain management clinic completed a battery of standardized measures. These adolescents, between 11 to 18 years of age (73% were girls) suffered from a wide range of chronic pain conditions. The majority of adolescents reported feeling developmentally behind their peers on at least one item and more than half felt behind on four or more items. These items included aspects of adolescent life such as progress in school, overall independence, social activities without their parents, and dating. Factor analysis determined that there were three constructs of social development, independence, emotional adjustment, and identity formation. Utilizing these three constructs, further analysis revealed that strong peer relationships were positively correlated with positive self-reported assessment on all three of these constructs. However, the definition of peer relationship was not provided and it is not known if these are close/best friendships or peer acceptance, or a combination of both. This study did not include a control group therefore it is unclear if adolescents without chronic pain feel behind or ahead of peers with regards to their social development.

Adolescents with chronic pain report higher levels of emotional distress compared to healthy peers and this emotional distress was associated with catastrophizing and a decrease in these adolescents seeking social support (Eccleston, Crombez, Scotford, Clinch, & Connell, 2003). Chronic pain can result in significant school absence and decreased opportunities to participate in peer group activities (Roth-Isigkeit, Thyen, Stoven, Schwarzenberger, & Schmucker, 2005). The uncertain nature of pain exacerbations may make it difficult for an adolescent suffering from chronic pain to keep commitments with peers, which may result in a decrease in peer interaction and involvement. Adolescents with chronic pain may have multiple challenges in maintaining

positive peer relationships and friendships. Yet, we know little about the qualities or characteristics of close/best friendships and the impact of pain within these specific peer relationships. We need to know more about these important friendships.

What Do We Really Know?

To date, the findings of studies that have examined peer relationships of children and adolescents with various types of chronic pain have been inconclusive. The systematic review of peer relationships of adolescents with chronic pain revealed conflicting findings among the 42 studies in the review but concluded that children and adolescents with chronic pain have peer relationship difficulties. Studies that compared peer relationships of children and adolescents with pain conditions with healthy peers (Kashikar-Zuck et al., 2007; Noll et al., 1996; 2000; 2007; Greco et al., 2007; Vannatta et al., 2008) had several limitations. They explored how children and adolescents with various chronic types of pain (JRA, recurrent abdominal pain, SCD, juvenile fibromyalgia, migraine) are viewed by their class peers on a variety of measures in terms of likeability, social isolation, and victimization. All of these studies used classroom peers as the only measure of friends. These studies did not capture data on other friendships the child or adolescent might have outside the classroom or school. Using classroom measures may be problematic when studying adolescents in junior high and high school as class composition generally changes from class to class, and adolescents in these settings have increased opportunities to make friends in other settings. Most of these studies also focused on numbers of friendships compared to the quality or characteristics of the friendship and therefore it is unclear if being viewed as acceptable by classmates translates into deeper friendships for children and adolescents with chronic pain. These studies did not report the number of friends when differences were found; thus, it is

unknown if children and adolescents with chronic pain have one less friend than healthy peers or significantly fewer friends. In addition, most of the studies explored peer relationships for a wide age range (8-18 years of age). Given that patterns of peer relationships change as children age, the inclusion of children and adolescents may have resulted in no differences being found when some subgroup differences might exist. Since a few studies did find some interactions between pain and age of the child or adolescent, the separation of these age groups may be especially important in the pediatric chronic pain population.

The studies that examined peer relationships of children and adolescents with chronic illness, including chronic pain, and compared them to healthy peers used standardized quantitative measures originally designed for use with healthy children. These measures may not be robust in their assessment of children with chronic illness as they may lack construct validity for this population. Adams, Streisand, Zawacki, and Joseph (2002) assert that general childhood measures aimed at assessing social functioning may be problematic when applied to children with chronic illness. They note a lack of normative data for some measures and point out that clinical child measures are generally designed to differentiate psychopathology versus a continuum of function. For example, if a child with chronic illness is not picked as often for a sport team, does this truly represent their classmates' having a negative feelings about them or is this a reflection of their classmates' recognition of the ill child's limitations? These measures also may not capture the true sense of an ill child or adolescent's perception of their peer relationships.

Tak and McCubbin (2002) suggest that it may not be the measured amount of social support that is beneficial but rather one's perception of social support. Within the

pain context, perceived social support was found to be a significant positive variable in explaining pain adjustment among adults with chronic pain and independent from coping responses (López-Martínez, Esteve-Zarazaga, & Ramírez-Maestre, 2008). Thus, a child or adolescent's perception of their peer relationships is important. Therefore, characteristics of peer relationships, especially close/best friendships which are important to adolescents with chronic pain given their developmental stage may not be captured by these standard measures.

It is difficult to draw conclusions about the relationship between illness severity and peer relationships, as illness severity was not consistently measured in the studies that report on illness severity and peer relationships (Noll et al., 1996; 2007; Vannatta et al., 2002; Wagner et al., 2004). In addition chronic pain severity may not be captured adequately by a single parameter. Pain intensity, recurrent versus constant pain, characteristics, location, time since onset, and pain related disability might represent distinctive dimensions of the pain experience that may negatively impact peer relationships. Vannatta et al. (2008) did measure several pain severity parameters (time since onset of migraine, frequency of migraine, intensity of migraine, school absence) but did not find a relationship between these dimensions of migraine severity and peer relationships. These findings by Vannatta and colleagues suggests that perhaps there is either something unique to pain apart from severity that negatively impacts peer relationships or that there is another dimension to pain severity, such as pain related disability, that impacts peer relationships.

Across the quantitative studies listed in Table 1 that used comparison groups, small sample sizes may have contributed to conflicting finding between studies, as well as, perhaps not finding differences between the participants with a painful condition and

healthy peers. These studies may have been underpowered to find small effects. For many children and adolescents with a chronic pain condition it may be that differences on the components of popularity and friendship, as measured by questionnaires used in these studies, are more subtle and thus were not revealed in these studies.

Although the three qualitative studies involving adolescents with chronic pain (Forgeron & McGrath, 2008, Carter et al., 2002; Sällfors et al., 2002) revealed that peer relationships presented a challenge for these adolescents, the primary purpose of these studies was not the examination of peer relationships. As a consequence, we still know little about the qualities and characteristics of positive peer relationships, especially close friendships for adolescents with chronic pain and how these may differ compared to healthy peers. Nor do we know how adolescents perceive these relationships impacting their pain experience. Additionally, we do not know if there are unique negative characteristics of peer relationships, in particular close friendships of adolescents with chronic pain, which could be ameliorated through some form of intervention. Two of these studies (Carter et al., 2002; Forgeron & McGrath, 2008) used focus group methods and it is not known if the adolescents who did not offer comments remained silent because they had different peer experiences and felt restrained in voicing this difference in the presence of peers.

It is important to establish if and how peer relationships, in particular close friendships of adolescents with chronic pain, differ from typically developing peers before any form of intervention can be designed or recommended. Establishing the ways that adolescents perceive these friendships is essential, as positive peer relationships have been identified to correlate with more positive perceptions of social abilities of adolescents with chronic pain (Eccleston et al., 2008).

The Problem

Little is known about peer relationships in general, and friendships in particular, in adolescents with chronic pain. Existing research has precluded a deeper understanding of friendship experiences from the perspective of those adolescents. Therefore further study is warranted and 3 studies were undertaken.

Study 1 employed interpretative phenomenology to explore the friendship experiences, especially close friendships, of adolescents with chronic pain. The findings from this qualitative study informed the subsequent two studies.

In Study 2 the Social Information Processing model (SIP) (Crick & Dodge, 1994) was selected to explore judgment differences between adolescents with chronic pain and healthy peers in their evaluations of a hypothetical friend's behavioral responses to an adolescent with chronic pain. Vignette studies have successfully identified the steps of the SIP model that correlate with child and adolescent cognitions and behavioral intentions in terms of disruptive behaviors within ambiguous social situations. However, studies using the SIP model have not focused on the social situations of adolescents with chronic pain that may be perceived as supportive or not supportive. Therefore, Study 2 detailed the descriptive process used to construct and provide initial content validation for an inventory of narrative vignettes to capture steps of the SIP model targeting social situations involving adolescents with chronic pain.

The purpose of Study 3 was to determine if adolescents with chronic pain and healthy peers interpret friendship interactions differently in terms of supportive and non-supportive behaviours when reflecting on the behaviors of a healthy friend depicted in the vignettes from Study 2. Study 3 focused on the examination of three SIP model variables

(cue interpretation, response generation, and response decision) using the vignettes developed in Study 2.

All three of these studies together provide a deeper understanding of close friendships of adolescents with chronic pain.

CHAPTER 2

STUDY 1: RETHINKING THE INTERACTING SELF: LIVING WITH DIFFERENCE

Pain and friendships are both social processes; with social interaction being fundamental to the development of friendships. Not surprising, impairments in social skills are associated with poor social outcomes (Turkstra, 2002). As noted in Chapter 1, children and adolescents with chronic pain conditions have peer relationship differences compared to healthy peers. These differences include having fewer friends, increased rates of victimization, and being perceived by themselves and others as lonelier (Forgeron et al., 2010). The cause of these differences is not entirely known but chronic pain does interfere with school attendance (Logan et al., 2008; Roth-Isigkeit et al., 2005) and participation in leisure activities (Roth-Isigkeit et al., 2005), and perhaps inhibits the refinement of social skills leading to negative peer relationship differences. However, peer relationship differences may also be attributed to other factors. Adults with chronic pain identify a profound change to their sense of self (Richardson, Ong, & Sim, 2006; Osborn & Smith, 2006; Smith & Osborn, 2007) resulting from the negative impact chronic pain has on physical, psychological, and social health. It is possible that adolescents may identify similar changes to their self-identity which then influence their social interactions. Peers may also have an altered perception of an adolescent who is living with an invisible condition such as chronic pain and feel uncertain about their knowledge or skill when responding to such an individual's needs.

Pain as a social phenomenon can be understood through the Social Communication Model of Pain (Craig, 2002; 2009). This model asserts that an individual's pain expression is an iterative social process. Expression of pain depends on the pain experience; the receiver of the expression must decode the expression through an

assessment or attribution process and decide on an action to show their response. This action in response to the sufferer's pain expression is then received and decoded by the sufferer, which becomes part of their pain experience and in turn influences subsequent pain expression. As suggested by this model, peer responses to an adolescent's pain expression may impact significantly on the adolescent's pain experience either positively or negatively. Conversely, the expression of pain by the adolescent may impact their peers' interpretation and response. This cycle of pain expression, peer interpretation, peer response and then further pain expression may be as influential in the social interactions of adolescents with chronic pain as individual pain factors such as intensity. Thus, exchanges and interpretations of social exchanges between and among friends may provide insights into the ways in which chronic pain influences friendships.

Given that social interactions are the basis whereby one acquires support from friends, understanding the qualities and characteristics of closest friendship interactions is necessary to determine if adolescents with pain are able to garner the support they require from their friends. Improved understanding of friendship interactions may provide insight into the impact that supportive or non-supportive behaviors by a friend can have on one's pain experience as well as the impact chronic pain behaviors may have on close friendship experiences. This knowledge is needed to determine if adolescents with chronic pain would benefit from social interventions designed to improve or maintain close friendships.

The purpose of this study was twofold 1) to explore peer relationships and particularly close friendships of adolescents with chronic pain, and 2) to explore the qualities and characteristics of friendship interactions of healthy adolescents to enhance our understanding of the impact pain presents for adolescents. The rationale for including

a healthy group of adolescents was not to generalize or compare, but to provide insights into the everyday experiences of peer relationships and close/best friendships of healthy adolescents to gain a more in-depth and nuanced understanding of the impact chronic pain has on these relationships.

Methodology

This study used interpretative phenomenology to examine friendships of adolescents with chronic pain. Interpretative phenomenology generates knowledge through its goals to seek meaning and understanding and describe and theorize a phenomenon under investigation (Herbert & Higgs, 2004). Interpretative phenomenology increases our sensitivity to the human condition rather than provide specific theory for generalization or prediction (Crist & Tanner, 2003). Interpretative phenomenology is particularly suited to study phenomena/topics that are dynamic, contextual and, subjective and relatively understudied (Smith, 2004), with the aim of exploring in detail how individuals make sense of their personal and social worlds (Smith & Osborn, 2004). Given the paucity of research on peer relationship experiences, especially close friendships, of adolescents with chronic pain, the use of interpretative phenomenology allowed adolescents to tell their stories as a foundation upon which to build understanding.

Interpretative phenomenology, as a research methodology, has grown from the philosophical writings of Heidegger (1926). The foundation of Heidegger's philosophical writings is the meaning of being which is derived from the perspective of a person's position within time and place (Conroy, 2003). Thus, interpretative phenomenology research based on Heidegger's ontological philosophy examines the meaning of being through everyday life (Mackey, 2005). Within Heideggerian philosophy, the meaning of

being must be considered within the context of the past and present which influence future possibilities. The meaning of being and oneself is shaped in relation to and with others as well as with structures in the world. Therefore, being is never existent in isolation but a subjective lived experience of ‘being in the world’ (Heidegger, 1926).

The implication of understanding an experience that is grounded in context against a backdrop of past, present, and future possibilities is the realization that there are multiple meanings of a phenomenon. Lived experience, obtained from those who have experience of the phenomena under study, not only provides a rich description of the phenomena, but also the individual’s interpretation of this experience as he or she tells their story. Interpretative phenomenological research extends understanding by acknowledging the role of the researcher as (s)he analyzes and interprets the experiences of participants in light of his/her own lived experiences and insights and knowledge of the literature to elucidate meaning (Smith & Osborn, 2004). Participants’ interpretation of their own stories in the telling and researchers (re) interpretation of these experiences in light of the literature is referred to as a hermeneutic spiral (Conroy, 2003). Conroy (2003) describes the hermeneutic circle as “the circular form of interpretation shared between persons in their interactions” (Conroy 2003, p.9) but loosens the circle into a spiral that provides room for interpretations of others involved in the research process in order to build on each others understanding over time (Conroy, 2003).

In this study, the hermeneutic spiral occurred through multiple cycles. The first distinctive hermeneutic cycle occurred during the adolescents’ own interpretation of their peer relationships and close friendships as they relayed these experiences to the researcher through an individual interview. Ongoing hermeneutic cycles continued as a spiraling outward process that began with the principal investigator’s analysis of these

collective experiences. The cycles continued as the principal investigator delved into understanding the meanings embedded in these experiences in relation to her own experience and the literature with ongoing dialogue and brainstorming with another member of the research team. Therefore, adolescents' individual experiences with peer relationships were interpreted from the analytical lens of the principal investigator (a clinical nurse specialist who has worked with adolescents with chronic pain for the past 8 years and as an individual who has grown up with a rare metabolic disorder that causes recurrent pain), to generate meaningful insights regarding the impact of chronic pain on the social process of friendship with this participant group. The hermeneutic spiral continued outward with the committee members' reading of the analysis and their additional interpretations.

Methods

Research Questions

- 1) What is the lived experience of peer relationships, especially the closest friendships, of adolescents with chronic pain?
- 2) What insights from the friendship experiences of healthy adolescents enhance our understanding of the challenges faced by adolescents with chronic pain in their friendships?

Participants

Adolescents with chronic pain who receive care from a tertiary pediatric complex pain clinic, generally represent adolescents for whom chronic pain has contributed to disability or has the potential to do so. As a result, adolescents accessing the pediatric pain clinic are considered to be more vulnerable to disruptions in peer relationships compared to adolescents who seek pain care from other specialists or general

practitioners. Eight adolescent participants with chronic pain were recruited from the Pediatric Complex Pain Clinic at the IWK Health Centre in Halifax, Nova Scotia. A typical group of healthy adolescents, similar in age and sex to the adolescents with chronic pain, were recruited through community wide advertisements in the Halifax Regional Municipality.

A purposeful sample of 16 adolescents was sought, 8 with chronic pain and 8 healthy adolescents. All adolescents were 14-18 years of age, fluent in spoken English and did not have cognitive impairments or life-threatening illness. Recruitment for the healthy group occurred mostly after recruitment of the adolescents with chronic pain so that efforts could be made to keep the two groups as consistent as possible with respect to age and sex. Homogenous samples are recommended when conducting interpretative phenomenology (Smith & Osborn, 2004). There is no “right” sample size for interpretive phenomenological research; studies have included 1-15 participants (Smith & Osborn, 2004). The inclusion of other groups to improve understanding of a specific phenomenon in an interpretive phenomenological study has been employed by others (Conroy, 2003). This sample of 16 adolescents provided data that were rich and of sufficient depth to capture the lived experience and thus no additional adolescents were approached to participate.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Board of the IWK Health Centre in Halifax, Nova Scotia. Participation was voluntary. Adolescents and parents were given assurance of confidentiality. Aliases were assigned and or picked by the participants as part of the confidentiality strategy. See Appendix A for copy of the study explanation and consent form.

Data Collection

Data were collected in individual conversational interviews, which allowed participants to feel comfortable discussing their peer relationships without concern of how their friendships might compare to other participants. Conversational, or active interviews, are those in which it is acknowledged that both interviewers and the participants contribute to the production of the interview data with participants continually working to determine and identify the recognizable and orderly features of their everyday experiences (Holstein, & Gubrium, 2003). An interview guide (see Appendix B) provided a flexible approach to data collection as it allowed the researcher to modify questions as a result of participant responses and to probe important areas of experience (Smith & Osborn, 2003) as opposed to the more rigid structure of specific questions. The investigator reviewed the interview guide with one of the committee members (Dr. J. Evans) after the first interview to discuss if additional topics should be included. No change to the interview guide was deemed necessary as the guide allowed for additional topic discussions and reframing of questions based on individual participant needs.

Interviews were conducted by the principal investigator between August 2008 and December 2008. The interviews were between 45-90 minutes in length; all were audiotaped and transcribed. Interviews also took place in multiple locations ranging from small conference rooms in a tertiary hospital to local coffee shops. There were no noted differences in the depth of discussions with respect to where the interviews took place. Additional data came from two broad sources; field notes and literature. Field notes, which were recorded following each interview, captured body language, impressions from the interviews, and reflections of the interview by the principal investigator.

Literature sources about chronic pain and peer relationships generated additional insights as they were uncovered.

Data Analysis

Interpretative Phenomenological Analysis (IPA), as described by Smith and Osborn (2003), provides a semi-structured guide to analysis which adheres to principles and processes advocated by others (Conroy, 2003; Crist & Tanner, 2003). They add that researchers may adapt their process, as interpretative analysis is itself an interpretative work. The analysis for this study followed the steps described by Smith and Osborn (2004), but with specific modifications as noted.

IPA is committed to idiographic inquiry where each interview is examined in great detail beginning with a close interpretative read of each transcript. This first step also included listening to the audiotapes and reviewing the field notes for each interview. Listening to the audiotapes was helpful in, not only recapturing the tone of the interview, but also noting errors and omissions in the transcription. Errors and omissions are not uncommon (Poland, 1995); having said this few errors or omissions required attention. As each interview was examined, initial impressions of the text (codes) were noted. Smith and Osborn (2003) state that they find it useful to translate these initial notes into emergent themes for each case.

In this study, we used this approach for the first four interviews with each group of participants; adolescents with chronic pain and the healthy adolescents. The emergent themes identified in these interviews were then used for each subsequent case with idiographic (specific to the interview) findings in each interview being noted during the initial read of subsequent interviews. Previous interviews were also re-read to ensure that any new codes that had emerged during the completion of this initial read were noted if

present.

The next step in IPA is for the researcher to examine the emerging themes within each case in order to make connections between them, resulting in a list of primary overall themes for the case. Within the primary themes, sub themes are nested with identifying information where the support for the theme can be found in the interview transcript. Once this process of analysis has been conducted on each case, patterns are established across cases and documented in a table of themes for the group. These themes are then arranged into a narrative account supported by verbatim quotes from each participant and critically analyzed in light of the literature and field notes. In this study, categories (emergent themes) were constructed for each participant. These were then used to identify themes across participants with a list of quotes that depicted the theme.

Themes were not described for individual cases as the following definition of theme by DeStantis and Ugarriza, (2000) guided this research. “A theme is an abstract entity that brings meaning and identity to a recurrent experience and its variant manifestations. As such, a theme captures and unifies the nature of the basis of the experience into a meaningful whole” (DeSantis & Ugarriza, 2000, p. 362). Maps of the overall themes with descriptors and the nested sub-themes with descriptors were created. Refinement of the themes occurred during the writing phase and allowed for the literature sources to be more formally integrated into the themes (Crist and Tanner, 2003).

IPA advocates that at least one other researcher review the themes to ensure that they are grounded in the transcripts and represented within the data with adequate examples and quotations from the transcripts. The inclusion of additional researchers in the analysis process is also advocated by Conroy (2003) as it enlarges the hermeneutic spiral and provides the benefits of brainstorming and discussions with other researchers to

build on meaning within the study themes. In this study, the principal investigator as a content expert and novice researcher in interpretative phenomenology was responsible for the primary analysis of the transcripts and a member of the PhD committee (Dr. J. Evans), a researcher with extensive phenomenological research expertise, reviewed transcripts and themes. The inclusion of both content and interpretative phenomenology expertise has been advocated by Crist and Tanner (2003). Dr. Evans also engaged in brainstorming with the principal investigator in discussion sessions that questioned the data analysis and these opportunities helped to build on the themes that emerged. The rest of the team, as content experts, provided additional reviews of the themes.

Goodness

Rigor is the demonstration of integrity and competence to illustrate the legitimacy of the research process (Aroni, Geoman, Stewart, Sawyer, Abramson, & Thein, as cited in Tobin & Beagley, 2004). Appraisal of rigor of qualitative research is based on criteria that differ from those used to appraise quantitative research. Debate exists among qualitative researchers as to the best criteria to use when appraising the integrity and legitimacy of a qualitative study (Aguinaldo, 2004; Tobin & Begley, 2004; Sandolowski & Barroso, 2002; Sparks 2001). Within this debate are several differing criteria; for example trustworthiness and goodness (Lincon & Guba, 1985; Tobin & Begley, 2004; Arminio & Hultgren, 2002). Trustworthiness and goodness differ, however, in specific criteria used during the appraisal of rigor within a qualitative study. These differences point to the evolution of criteria designed to assess rigor in qualitative studies. It is beyond the scope of this dissertation to delve further into this debate.

Goodness has been advocated for evaluating the rigor within interpretative research (Arminio & Hultgren, 2002; Tobin & Begley, 2004) and applied during this

study. Goodness consists of six criteria. These six criteria, like any appraisal criteria for qualitative research, are not viewed along a linear trajectory but rather describe an iterative process, moving back and forth between design and implementation (Morse et al., 2002). Goodness, therefore, is interactive in nature and took place throughout the study. Table 2 lists each criteria, definition and steps taken to implement these criteria.

Table 2

Goodness Criteria

Criteria	Definition	Implementation in this study
1. Foundation	-philosophical stance used to provide context and guide the study	<ul style="list-style-type: none"> • interpretative phenomenology based on Heideggerian philosophy
2. Approach	-methodology to provide specific grounding of the study's logic steps to ensure methodological congruency	<ul style="list-style-type: none"> • congruency between IPA and methods of data collection methods and analysis. • face to face interviews • each participant's experience was examined in detail and was also inclusive of the researcher's interpretative lens.
3. Method (collection of data)	-explicitness about the data collection and management	<ul style="list-style-type: none"> • audio-taped private conversational interviews, transcribed and reviewed for accuracy, • aliases assigned or chosen by participants

Criteria	Definition	Implementation in this study
4. Representation of voice	-researchers reflecting on their relationship with participants and the phenomena under exploration.	<ul style="list-style-type: none"> quotes from each of the adolescents with chronic pain were used throughout the text. to ensure the focus remained on the participants with chronic pain, the healthy participants' narratives are presented as summative representations of their experiences with a few poignant quotes. Meetings with J. Evans (qualitative expert) provided opportunities to reflect on the meanings to date.
5. Art of meaning making	interpretation and presentation of the research	<ul style="list-style-type: none"> interpretation focused on impact of chronic pain on the friendships of ACP from the perspective of their self-identity and relation with others a range of different realities with respect to the challenges and impact chronic pain has on the friendships of ACP are presented.
6. Recommendations	discussion of implications for professional practice	<ul style="list-style-type: none"> clinical implications and suggestions for future research are found in the findings/discussion and conclusion sections

Note. ACP = Adolescents with chronic pain.

Findings And Discussion

Participants

Sixteen adolescents took part in this study, eight participants who experienced chronic pain (one male) and eight participants who did not have chronic pain (one male). The group of adolescents with chronic pain had experienced pain for at least eight months and several had experienced pain for many years. Their pain conditions varied and

included wide spread chronic pain, daily headaches, back pain, and joint pain. At the time of the interview all the participants with chronic pain were experiencing daily pain with exacerbations at least once a week or in association with increased activity. Their average pain intensity scores ranged from 4 to 8/10 with exacerbations as high as 9/10 on a 0-10 numeric scale where 0 is not pain and 10 is the worse pain imaginable (Miró, Castarlenas, & Huguet, 2009). Three of the participants had a co-morbid chronic illness (rheumatoid arthritis, Crohn's disease, irritable bowel syndrome) with pain that was not responsive to usual disease based management. All of the participants with chronic pain were in senior high school (grades 10-12) and had school absences, which ranged from 1-3 days per month to a total absence for 6 months. The healthy group of adolescents was similar in age and grade but had minimal school absences; only a couple had missed 1 day of school in the current school year

The following table lists the aliases, sex, ages, and group association of the participants.

Table 3

Aliases and Demographic Characteristic of Participants

Alias	Age (years)	Sex	Group
Elise	15 years	Female	Chronic pain
Lisa	16 years	Female	Chronic pain
Joanne	16 years	Female	Chronic pain
Sherry	15 years	Female	Chronic pain
Kelly	16 years	Female	Chronic pain
Julia	16 years	Female	Chronic pain
Jason	18 years	Male	Chronic pain
Natasha	15 years	Female	Chronic pain
Susan	16 years	Female	Healthy
Vanessa	17 years	Female	Healthy
Beth	17 years	Female	Healthy
Anne	17 years	Female	Healthy
Mark	16 years	Male	Healthy
Alicia	15 years	Female	Healthy
Karen	17 years	Female	Healthy
Melanie	16 years	Female	Healthy

Thematic Analysis

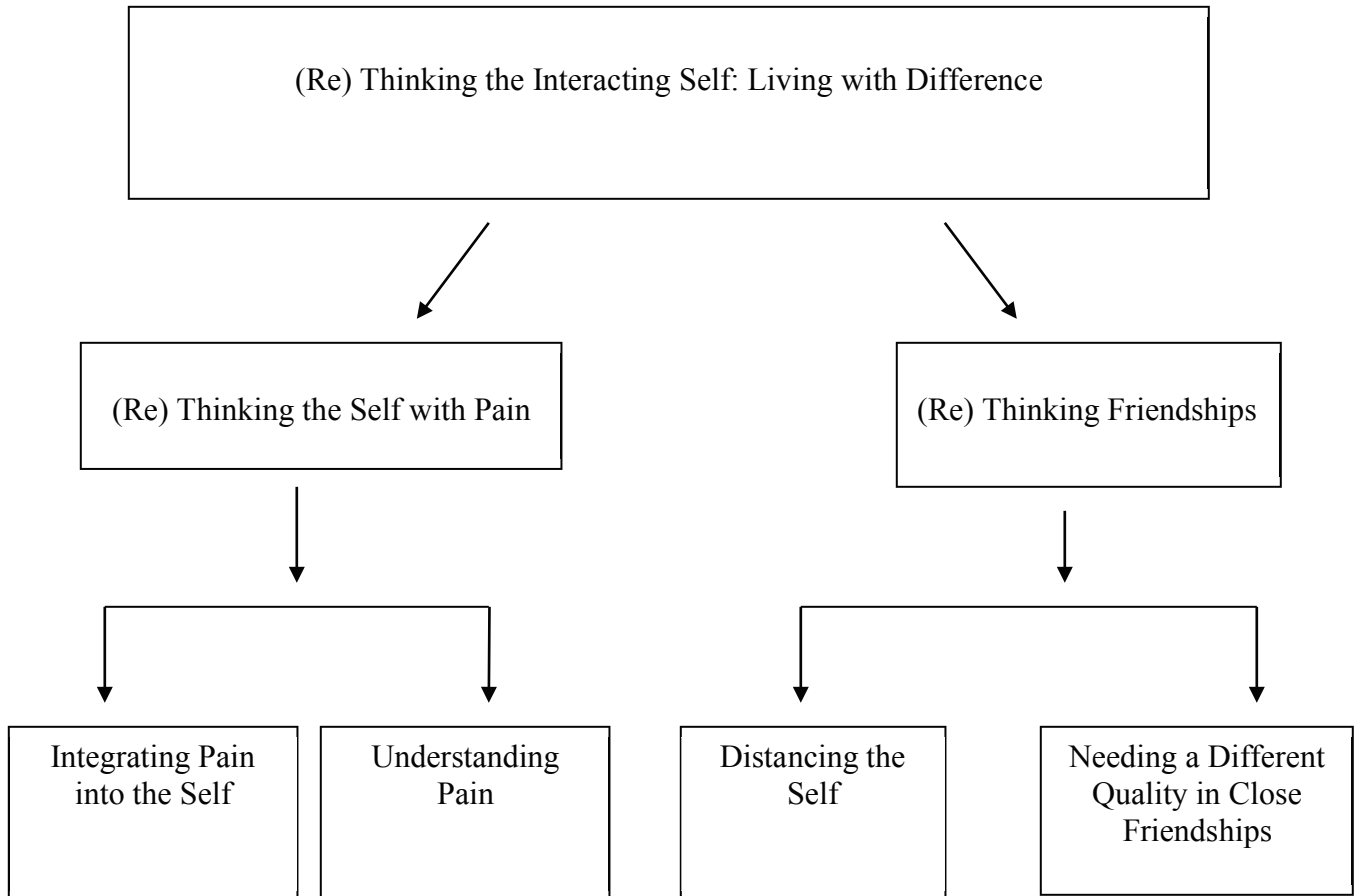
In interpretative phenomenology, the division of findings and discussion are artificial as the literature is considered a form of data and thus integral to theme identification. Therefore, what follows is a description of the themes with the relevant

implications for clinical practice and research integrated throughout. Overarching implications for clinical practice and recommendations for future research will be discussed in the conclusion section.

Pain has had a profound impact on the lives of adolescents with chronic pain and sparked a rethinking of self in terms of interacting in their social worlds. *Re-thinking the Interacting Self: Living with Difference* is the core theme that describes the lives of all the adolescents with chronic pain in relation to their engagement in the world. Two intersecting themes, *Re-thinking the Self with Pain* and *Re-thinking Close Friendships*, further described the experiences of adolescents who lived with chronic pain. Although each of these themes is unique in how they describe the impact chronic pain has on the adolescents' social self, the two themes overlap as they both contribute to the understanding of the core theme. To fully present the data each of these two themes was further divided into two sub-themes, which were then further divided into discussion headings. A diagram of the findings is presented in Figure 1.

Figure 1

Theme Diagram



Re-thinking The Self: Living With Difference captured the impact chronic pain had on the social lives of the participants with pain. Pain was intrusive in their lives from its onset and it became more insidious in its intrusion as time went on, challenging these adolescents with chronic pain to rethink the way they viewed themselves and their place in their social worlds. Pain has been found to be disruptive to the lives of adults and, for some, damaging to their self-worth (Paulson, Danielson, & Söderberg, 2002; Söderberg, Lundman, & Norberg, 1999; Osborn & Smith, 2006). Similar to adults with chronic pain, the adolescents in this study experienced disruption to their self-worth and pain made them question their future engagement in various contexts such as leisure activities, the school social environment, and romantic friendships. This is troubling as the trajectory of chronic pain in adolescents remains unknown. Some adolescents will have a resolution of their chronic pain while others may experience pain throughout their lives. Underlying etiology of the chronic pain is not necessarily a determining factor of one's chronic pain trajectory, as the nervous system undergoes changes within its structure and process. Thus pain becomes a disease itself (Brookoff, 2000). The chronic pain that the adolescents in this study experienced varied by etiology, location, frequency, and time since onset; illustrating the complex nature and range of chronic pain. Thus the negative effects of chronic pain, in terms of self-worth and social engagement, may increase as pain continues. Presently, living with difference altered engagement with friends and peers compared to their pre pain self; nevertheless, all the participants with chronic pain remained engaged with close friends.

Theme 1: Rethinking The Self With Pain

These adolescents had to rethink who and how they were in their closest friendships, peer encounters, and other social relationships in all settings as they were

constantly aware that they were different from their peers. They were no longer carefree as they engaged in social activities as pain had the potential to penetrate all activities, as described in this quote by Elise (15 years)

At school I try to be as normal as I can be. I mean some people might qualify me as the loner person, because I'm always sort of off to the side, not really in the center of things. I'm kind of reading, trying to ignore everything that's happening around me.

For participants, pain was devastating and a catalyst to questioning their worth as a person, student, and friend. Joanne (16 years) expresses the changes brought about by pain.

It's very hard to keep close friends when you can't go out every weekend, and you can't really make friends in advance per se, and you have to take pills all the time. And you can tell that people are kind of like, uneasy around it or they don't fully understand. They want to ask, but they don't, and sometimes I'll sort of bring it up to answer their questions. But it always kind of seems like a downer, and it's always about the pain.

Theme 1 Subtheme 1: Integrating Pain Into The Self

Pain disrupted the lives of these adolescents in a manner that made them question their self-identity. They all experienced changes from their pre pain self to their post pain self in terms of activities they could engage in, their role as a student, and their ability and willingness to discuss their condition with others. These changes signified a difference within themselves.

Integrating Pain Into Activities

All of the participants with chronic pain shared stories of missing out on activities they once loved and longing to be able to engage in activities as they had before the onset of pain. Julia, (age 16), talked of how she used to take dance lessons, "Well during the school year I dance, but the last semester of school I missed a lot of it, so I don't know, I probably won't be doing as much of it this year because of my pain". Here Julia discloses

her belief in the continuation of her pain's disruption to her leisure activities and how the uncertain nature of pain ('I don't know') limits her plans in the immediate future. An inability to plan, even for the immediate future, in terms of the types of leisure activities they would be able to engage in, was echoed by most of the other adolescents with chronic pain and it became a constant reminder that their pain was robbing them of the very activities that helped define who they were, or were trying to be. No longer feeling able to engage in the same activities created feelings of frustration as captured in this quote by Lisa (age 16).

[I used to do] basketball and running, and a lot of walking, and well, actually it was during school, I was trying out for cheerleading, but my knee kept giving out, and they actually told me that, that was from my nerve. Yeah, so I had to stop going to the cheerleading try outs, so that sucked.

Lisa identified her pain as the reason that she was unable to join the cheerleading team, an activity that would have allowed her to become more involved in her school community. Pain prevented Lisa, as well as other participants, from participating in typical adolescent experiences making them feel different from peers. One's inability to participate in sports and leisure activities may be significant as these activities provide opportunities for adolescents to develop self-identity (Coatsworth, Sharp, Palen, Darling, Cumsille, & Marta, 2005) with involvement also being associated with a decrease in aggressive and antisocial behaviors (Mahoney & Stattin, 2000). Disengagement from sports or other structured leisure activities may have added significance for adolescents with chronic pain compared to healthy peers. Meijer, Sinnema, Bijstra, Mellenberg, and Wolters (2000) found that both boys and girls with various forms of chronic illness reported lower levels of prosocial behavior (positive and friendly behaviors in social situations),

compared to healthy peers. How adolescents with chronic pain spend their time once they are no longer able to engage in sports or other leisure activities is not known. This quote from Joanne (age 16) illustrates that adolescents with chronic pain may not automatically re-direct time into non-physical structured activities.

I used to dance and play the piano, I did sports. I like to bike, I like to write; I like to do my schoolwork. Now I'd like to be able to sit down and actually read a book for more than five minutes".

Not all the adolescents with chronic pain abandoned all of their previous activities and some demonstrated it was possible to remain engaged in some fashion. Nevertheless, even the adolescents who remained more connected to their sports and structured leisure activities were required to make choices not faced by their healthy peers. Concerns about injuries and causing more pain were motivators in their decision making to engage or not to engage in activity, as described here by Sherry (age 15).

I did play rugby for a while, like I didn't play, but we did practices and all this stuff. I didn't get to try out, I was kind of scared, like if I did get pushed over or something, my back could get 10 times worse.

Sherry acknowledged that her pain placed limits on her ability to participate in all sports that she has an interest in and she has to rethink these activities. Nevertheless, she did participate in other low impact sports, such as swimming, which may be beneficial to the development of her self-identity and future health. Not only is involvement in sports and structured leisure activities an opportunity to develop self-identity and prosocial behaviors, but involvement in physical leisure activities during adolescence is also linked to long term with psychological well being (Sacker & Cable, 2005). Thus, when adolescents with chronic pain disengage from physical leisure activities, their pain may act as a barrier to the protective and long lasting function of physical leisure activities. To help lessen the negative impact activity disruptions can have for adolescents with chronic

pain, clinicians should explore with these adolescents ways to modify their engagement in physical leisure activities and encourage them to pursue other structured leisure activities if sports or physical pursuits are not possible.

Integrating Pain Into The Academics Of School

Given the importance of school life during adolescence, it was not surprising that many of the participants with chronic pain used academics as a way to gauge the negative impact of their pain. All the participants with chronic pain acknowledged missing school due to their pain and related health care appointments. Being absent from school created challenges both academically and socially in their role as student. The participants with chronic pain reported pain as the cause of academic difficulties in concentration, comprehension, and retention of course material with difficulty ranging from modest to extensive. For some, pain did not constantly interfere with their academic abilities, while for others it was ever-present. Kelly (age 16) clearly identified her pain as the barrier to achieving higher grades.

I studied like, every night. I study for my exams for a month in advance, I tried so hard. I passed all my courses, but not with the marks that I wanted. I think if I didn't have the pain, I would have definitely had way higher marks than that.

For Kelly, disappointment and frustration were the results of her hard work. Other participants echoed her feelings. Kelly had a desire to attend university but was concerned that she would not achieve her goal if her pain continued. Although she missed some classes, she was able to attend school the majority of the time, which suggests that absence alone does not explain the academic challenges associated with chronic pain. Bandura (1993) suggests that a student's perceived self-efficacy in terms of their ability to manage their learning and develop proficiency in academic activities effects their motivation, goals and academic success. It may be that chronic pain changes an

adolescent's self-efficacy in the academic realm and may negatively impact future aspirations.

We do know that pain can negatively affect academic performance (Dick & Pillai-Riddell, 2010), but the exact mechanisms remain illusive. Ho and colleagues (2008) found that children and adolescents with chronic pain did not differ on standard cognitive tests in comparison to healthy children and adolescents, suggesting that intelligence is not negatively affected. What may be affected, however, is an adolescent's ability to sustain the necessary focus and concentration to study and academically excel. Logan and colleagues (2008) found 44.3% of adolescents with chronic pain and their parents reported a decrease in their grades since the onset of pain. The decline in grades ranged from 1-4 levels. A 4 level change would mean, for example, a student who generally achieves 'As' would now mostly achieve 'Cs'. Thus for some, chronic pain can have a significant negative effect on academic achievement, and perhaps self-efficacy. When caring for adolescents with chronic pain, it may be important for clinicians to collaborate with teachers and advocate for academic accommodations. Such accommodations may include decreased size of assignments, focus on key concepts, provision of notes allowing the student to concentrate on lecture, and/or spacing out test or exams across courses so that adolescents with chronic pain are able to reach their full potential.

Academic accommodations may also help adolescents with pain view their teachers as taking a more positive attitude towards them and believing in their pain condition. Student perceptions of positive teacher regard have been linked to increases in academic values, achievement, and feelings of academic competency (Roeser & Eccles, 1998). Many of the adolescents in the study by Logan and colleagues (2008) had some form of accommodation in place; for students with more accommodations teachers rated

them as better adjusted to school compared to typical peers. A conclusion to be drawn is that even when chronic pain negatively impacts academic performance, the situation may be somewhat ameliorated by implementing academic accommodations to offset the negative images adolescents' perceive from their teachers and the way they perceive themselves as competent students.

Sharing information with teachers to help them develop effective communication strategies when interacting with students experiencing chronic pain is paramount. Many of the participants with chronic pain felt "singled out" from their classmates by teachers drawing attention to them. The ways in which they were singled out included: (a) Substitute teachers asking them to identify themselves in front of classmates; (b) Some teachers inquiring about their health status in front of classmates; and (c) In an extreme case, one participant was physically separated from the other students within the same classroom. Lisa (age 16) described what it was like for her to return to school after missing almost six months of grade 11.

When I went back to school they were giving me different work, like from the time that I missed, and I was [physically] separated from the class [off in a corner] I felt horrible. [The teacher] she *chose* to separate me from the class, and make me do different work, and I felt like she was treating me different because of the pain.

Lisa talked of having to tolerate being seen as different within her own class and she discussed feeling "horrible" by being separated. This illustrates one of the many ways these adolescents were faced with having to re-think their interaction with others as they lived with being different. It is remarkable that Lisa continued to attend school after being so visibly segregated within her class. Some of Lisa's desire to continue attending school may be partly attributed to the way her other teacher treated her.

I only had one other class that I was doing, and that was math, and she didn't really separate me physically from the class, but she was giving me other work,

and then once she was told that I wasn't getting graded, and I wasn't writing like any tests or exams, she let me do the work that everybody else was doing. It was difficult, but it felt better to be doing what they were doing. And my teacher really understood about my pain.

Being treated the same as her peers and having her pain believed by her teachers was extremely important and contributed to Lisa feeling positive about herself and valued as a student. Her description of the two different teaching approaches demonstrates the impact an understanding teacher can have on making a student with chronic pain feel normal in relation to their classmates. For Lisa, minimizing differences while receiving academic accommodations allowed her to integrate into the classroom in a manner that was similar to the time before the onset of pain. Logan and Curran (2005) found that teachers face many challenges when working with students experiencing chronic pain and subsequently need more information about chronic pain conditions from health care professionals, as well as guidance on how to manage pain symptoms and pain-related behaviors in school. In Lisa's situation, despite being provided with academic accommodations on her return to school, the manner in which these were provided illustrated varying degrees of understanding of a student's needs. For many of the adolescents in this study, letters had been sent to teachers advocating for various accommodations; however, ongoing dialogue between school faculty and health professionals may also need to occur to support teachers and students alike.

Integrating Pain Into The Social Context Of School

School is both an academic and social environment for adolescents. For the participants with chronic pain, school as a social context took on an additional importance. Many of these participants had decreased their involvement in structured leisure activities such that school was now one of their primary place to socially interact

with peers. However, due to pain, not all of the social interactions that took place in school were positive, adding another dimension to living with difference for these participants.

Joanne's experience as a student was somewhat different than Kelly and Lisa's, illustrating the varying ways that pain can disrupt an adolescent student's life. Joanne's (age 16) life as a student had dramatically changed since the onset of her wide-spread chronic pain. She described herself as a 'lover' of school and being a high-achieving student was a large part of her self-identity. Joanne described her personal struggle of attending school since the onset of pain.

I like school a lot, and I'm in the international baccalaureate program, so I love school and I love to work the whole day. It's just too frustrating to be there all the time, because I sit in class and am completely taunted and tortured, because everybody else can sit there and write, and I'm the only person sitting there squirming, not being able to write.

Joanne no longer completed projects or assignments due to her writing limitations and was therefore assessed solely through oral exams. She felt supported by her teachers who accommodated her specific needs and she did not have the same concerns about her grades as did some of the other students with chronic pain. Like other participants, however, she felt separate from her classmates and, despite the academic accommodations, she felt 'tortured' while in class by not being able to write and participate like her peers. Pain negatively influenced her self-perception by limiting her physical abilities in the classroom. Pain also negatively influenced the way her classmates now viewed her.

But the way people talk to me sometimes, or the way my classmates will interact with me. This really bothered me when so and so didn't even give me the chance to explain, or didn't even want to give me this part of the project because they assumed I couldn't do it.

School is an important social environment for adolescents and Joanne experienced, as did other participants with chronic pain, negative reactions from her classmates and teachers. Here Natasha describes her experience with classmates.

They [classmates] just forget or they don't care, or they don't understand really, that I gained all the weight because I was on medication [for pain] and stuff, and they just don't understand it or want to understand it, they don't care or something, they're just mean.

Teachers and peers asked questions that made some of the participants feel unsupported and judged. These questions included reasons for their absences, details about their medical conditions, and the justification for academic or physical accommodations. Participants at times also felt unwanted by classmates as partners in school projects.

In isolation, each of these various experiences may not appear dramatic. However, the cumulative impact of these experiences was that participants felt disbelieved, different, and punished for having chronic pain. Not surprisingly, real or perceived negative reactions from teachers and peers can lead to negative changes in participants' perceptions of school related activities and social relationships. The Social Communication Model of Pain (Craig 2002; 2009) states that one's pain experience is influenced by the reaction their pain expression elicits from others. For Elise (15 years), previous negative interactions with classmates left her with few expectations of classmates as she continued her studies with chronic pain, "I've learned to expect nothing from them, so ... I've definitely attained bitterness from this experience." Pain has been associated with unhappiness with school experiences (van Dijk, McGrath, Pickett. Van Den Kerkhof, 2008), negative reactions from others to one's pain may be an important factor in school unhappiness.

A change in an adolescent's perception of their social relationships with peers, such as those depicted by Joanne and Elise's experiences, is important as it may negatively impact their perception of their own social functioning. Social functioning, as measured by the subscale of the self-report measure Pediatric Quality of Life Inventory (Varni, Seid, Kurtin, 2001), has been found to mediate the relationship between school impairment and pain (Simons, Logan, Chastain, & Stein, 2010). However the nature of the social functioning rating is unclear; does pain precede low levels of social functioning or do low levels of social functioning precede chronic pain? Reaction of their peers, as experienced by the participants with chronic pain in this study, would perhaps create impaired ratings on social functioning on such measures as the Pediatric Quality of Life inventory. For example, one of the items elicits information regarding whether, 'Other kids tease me'. In this study, participants spoke about being questioned about their chronic pain by their peers in a way that made them feel judged. For adolescents with chronic pain, peers making comments or asking questions that made them feel judged could be considered a form of teasing. In this way, teasing is directly related to the existence of their chronic pain and not necessarily because they are deficient in social skills. Natasha (age 15) describes experiencing teasing in the form questioning by her classmates.

They just don't understand having pain, because I'm not getting hit or having bruises or anything, and you can't see it. So most people think you can't see, it's not there, and I'm just faking.

The situation of adolescents with chronic pain perceiving their peers' questions and comments related to their pain as judgment and ridicule, illustrates the impact of peer response to an adolescent's pain experience as predicted by the Social Communication

Model of Pain (Craig, 2002; 2009). Strategies that ameliorate negative social interactions with peers may help school performance by enhancing social functioning but more research is warranted.

Peers may not understand the types of support that would be helpful to a classmate with chronic pain. The healthy adolescents who participated in this study experienced uncertainty regarding how to respond to a classmate's health problem. Vanessa (16 years) talked about her approach to a classmate with diabetes, illustrating a belief that her classmate did not want to discuss her illness. "I think it's better for her when it doesn't seem like she's any different. So if we don't know a lot of detail about it, then it's easier for her to feel normal." Some of the healthy participants stated that if they had a health problem, they would like to keep it more private and be seen as 'normal' and not want others to ask them about their condition. Clinicians could help adolescents with chronic pain by assisting them to reframe what they perceive as negative behaviors by classmates to positive behaviors. For example, instead of thinking that their classmates are uncaring because they do not ask about their pain, adolescents with chronic pain may have a more positive self-perception if instead they realized their classmates were indeed caring, so much so, they were unsure how to show their interest. By not prying, or seeming to take an interest classmates may be trying to help the adolescent with chronic pain feel 'normal' in their social relationship with classmates.

Chronic Pain's Impact On Worldview

Chronic pain impacted participants' views of self in relation to the influence of pain on their personal leisure and academic pursuits and it was also a catalyst for the beginnings of change in their worldview. Pain caused some of the adolescents with

chronic pain to rethink personal security and their own vulnerability, as described by Elise (age 15).

You know, you're so sheltered when you're in a family, especially a family like mine, because you know, we're very close and everything, and we're upper middle class, so it's not like we experience any real turmoil. And lots of people at school, they don't really realize how much is out there until you know...you experience something like this.

Elise, like others, viewed herself as different from her classmates in that she lived with 'real' turmoil as compared to the angst attributed to typical adolescent development. She perceived engagement in the world as potentially harmful as negative events could happen without warning such as her chronic pain condition. Adolescence is marked by a sense of invincibility (Elkin, 1967). Pain may reduce this sense of invisibility and replace it with fear about the future. It may be that such a sense of vulnerability negatively effects an adolescent's development into a secure and confident young adult.

Participants also perceived that they were more mature in their view of life in comparison to their peers as a result of needing to continually manage their pain. As Natasha (age 15) described:

Adults think I'm more mature than most people my age when they talk to me, and I think that might have something to do with having to be more responsible in thinking about, well, I can't do that because that'll make that happen. I can't just go and do it, and deal with the consequences later because it's too painful. So I have to think ahead, and most people my age, they don't think ahead, they can't see this far from their face. So, but I have to do that. I have to think of the consequences, I have to remember to take my pills; I have to be more responsible. So I think that grew me up a little faster.

Natasha could not be carefree in her approach to social engagement and had to think about the consequences of her actions in a way that differentiated her from her friends. She had to manage her pain and be 'more responsible'. Jason's (age 18) changing worldview involved growing out of childish behaviors. He stated, "I feel like I grew out

of a lot of things too, yeah. Because you're not into breaking things, and stupid things like that." He described the actions of others his age as irresponsible, 'stupid', but having to deal with pain made him realize that there are more important matters in life. These adolescents described being more mature in their outlook on life in terms of social responsibility, being cognizant of their health, and realizing that they are not invincible.

When working with adolescents with chronic pain, clinicians need to remember that not all will view themselves as more mature in all aspects of their development compared to their peers. In this study, a few of the adolescents with chronic pain disclosed feeling socially immature as a result of their chronic pain condition. As described here by Joanne (age 16):

I think it's because the pain is affecting my social growth. I think it was more the pain that kind of limited me, like in high school age, just in kind of like growing more in that way. Like in more of a socially diverse group, I think that kind of kept me back more.

From the interviews, it was unclear what impact, if any, perceived maturity or immaturity had on participants' ability to engage and understand their healthy peers. Nevertheless, many, but not all, of these adolescents with pain voiced a lack of patience with the challenges of typical adolescent development. They viewed their peers' challenges as insignificant compared to the challenges they faced daily in living with pain. They also expressed little patience with peers who complained about schoolwork and or aches and pains. Some also found certain discussion topics of their peers to be meaningless as identified in this quote by Elise (15 years).

If you really listen at school, you don't really hear anything of consequence – if you listen to the conversations that people are having, they're more concerned about their clothes, and you know, what someone else said about them, and it just doesn't really seem that big of a thing.

These adolescents have changed in some of the ways they viewed themselves in relation to their peers but we do not know if these particular changes in perception translate into actual behaviors that impact their social interactions. Researchers in the UK found that adolescents with chronic pain generally rated themselves ahead of peers in their ability to deal with problems; they also rated themselves behind their peers on self-identity formation and independence (Eccleston et al., 2008). Adolescents with chronic pain who reported more positive peer relationships rated themselves more positively on independence, identity formation, and emotional adjustment. It is possible that peer relationships act as a protective buffer against the negative effects of chronic pain on one's development of self. Conversely, it is possible that a change in an adolescent's perception of their development as a result of chronic pain is disruptive to peer relationships. Friendships are reciprocal relationships; if adolescents with chronic pain no longer identify with the interests of their peers, their acceptance by peers may be compromised. More research is needed to determine if perceiving oneself as either behind or ahead of peers on various domains of development negatively impacts peer relationships. Research is also needed to explore strategies to mitigate potential negative effects of perceiving oneself differently than one's friends as a result of chronic pain.

Despite the challenges of living with pain, participants were able to draw on an inner strength that was not discussed by healthy participants. They spoke with pride as they talked of finding their way forward. This process developed over time and was related to strength of self as opposed to a decrease in pain intensity. Julia (age 16) described her experience of moving forward, an experience that was similarly expressed by other participants.

I could be handling this whole situation differently, like I could just sit at home and be very depressed. I could be very depressed about this, but I'm not, because I can't. Because if I do that, it kind of puts an end to trying to get better. I'm still trying to figure things out, and I'm still trying.

Julia was clear about the alternative of not continually trying to participate in her various social roles. For her, this was depression and the end of hope and recovery. Adolescents with chronic pain face many challenges and much disbelief on a day-to-day basis. They are deserving of commendations as they work at remaining engaged in their various social roles. Such work is not without goals such as feeling normal and being included. Supporting goals of particular importance to adolescents may be an important aspect of their care.

Theme 1 Subtheme 2: Understanding Chronic Pain

In this study the adolescents with chronic pain struggled to fully understand the mechanisms of pain, treatment objectives, and the trajectory of such a complex condition. Without sufficient understanding, these adolescents were faced at times with an inability to effectively communicate pain related information to others. They were also constantly trying to balance disclosure with privacy as they explained and defended their pain condition while also minimizing their difference from peers in order to be seen as a person—not a person with pain.

Understanding Chronic Pain Themselves

Even though these adolescents attended an interdisciplinary chronic pain clinic and received both formal and informal education from various clinicians, an understanding of their conditions remained superficial. Their superficial understanding of chronic pain may be attributed to the complex nature of pain, the cognitive abilities of adolescents in relation to basic anatomy and physiology and frequent exposure to

misconceptions about chronic pain within society at large. Julia (age 16), who lives in constant pain, described her understanding of her pain condition.

I don't really know what I have because we're still trying to figure it out. Well yeah, I mean I have something, like I don't really have anything, like I've done all kinds of tests and it shows that everything's fine with my stomach, but I guess I just have super sensitive nerves, so I guess that's what I have but there's no name for it. But I don't really believe it. And that's basically it I guess, that's all I really know about it.

Julia had been through many tests with normal findings. Although she could identify that a disruption in the way her nerves transmit pain resulted in her continuous pain, she had trouble believing this was why she experienced pain. She had no vocabulary to describe her comprehension of the pathophysiology that is producing her pain. Her superficial understanding of pain physiology leaves her to question the credibility of this explanation of her pain. "Well all the doctors call it IBS, irritable bowel syndrome, which I mean I know I have that, but I think that there's something else that could be fixed." The meaning adolescents with chronic pain associate with 'sensitive nerves' is unknown and open for interpretation. For Julia 'sensitive nerves' meant she 'does not know' what was wrong. Julia was not alone in her limited understanding of her condition. Kelly disclosed, after the formal taped interview, that she did not understand why she experienced pain, how the medications worked, or the course of treatment despite receiving explanations from her clinicians. She asked for clarification after the interview as she felt uncomfortable admitting to her clinicians that their explanations were not helpful.

With or without an understanding of chronic pain, the adolescents in this study were faced with integrating chronic pain into their self-identity, as their pain was ever present. Studies involving adults suggest that a diagnosis enhances one's ability to integrate chronic illness into one's self-identity thus improving the ability to move past

the uncertainty associated with an undiagnosed condition to symptom management (Whitehead, 2006). If adolescents with chronic pain do not understand or believe in the pathology of their chronic pain condition, such as expressed by Julia and Kelly, it may be difficult for them to comprehend their treatment expectations, which in turn may negatively impact their willingness to participate fully in their treatment. Unfortunately, at this time, due to multiple factors such as the sensitivity of diagnostic tests and individuality of pain, a more precise diagnosis other than chronic pain is often not possible. Even when the adolescents have an underlying condition such as Irritable Bowel Syndrome, if the pain they experience is beyond what they expect, an additional diagnosis of chronic pain is difficult for them to comprehend and accept. Given the magnitude of dealing with and learning about their pain condition, adolescents may well be overwhelmed. Therefore, although adolescents likely receive information about their pain condition, they do not necessarily understand it and may need to hear the information repeatedly using common language.

Having said this, adolescents with chronic pain may need more than information about chronic pain to understand and believe in their condition. Jason (age 18), like many of the participants with chronic pain in this study, underwent repeated procedures and treatment trials without any perceived benefit. He described the toll this has taken.

Yeah, it's just annoying me, all the doctors doing things and I'm coming here like every month, and they were just doing the same thing over and over again. Nothing was helping, and it's been like two or three years, so I just gave up on it. Yeah. When you think, when they say it's going to help and it doesn't. It's like being lied to.

Being subjected to repeated procedures and treatments (that he did not perceive as helpful) contributed to Jason losing hope in any treatment being beneficial. He felt deceived by clinicians who suggested alternative treatments, extolling their benefits

which were never achieved to reduce his pain. It was unclear if Jason will totally disengage from treatment as he still does attend the chronic pain clinic, but for how long is unknown. The experience of Jason and other participants indicates a need to understand ways to help adolescents with chronic pain so that they not only understand their chronic pain condition, investigations and treatment objectives, but also that they understand the associated limitations of tests and treatments in a manner that makes them feel supported by their health care team.

One factor affecting willingness to ask questions to improve their understanding and engagement in care are the experience an adolescent may encounter while seeking medical care for chronic pain. Like many adolescents seeking pain care, Jason had been referred to several clinicians before being seen by the clinicians in the chronic pain clinic. Here, Jason explained his encounters with some of these physicians.

Yeah, while I've had HSP (Henoch-Schönlein Purpura), I've told all the doctors that I feel pain, and they said there wasn't anything broken, so we ignored it for like two years and it's got really bad. And then it [HSP] got better and I told them that I really got so much pain; I don't know what to do anymore.

Goffman (1963) defines stigma as a process through which the reaction of others spoils normal identity. Findings from a study of adults with chronic low back pain (Holloway, Sofaer-Bennett, & Walker, 2007), suggested that by the time adults with chronic pain attend a pain clinic for care, they had been subjected to subtle and overt forms of stigmatization by many individuals including health professionals. Being the recipient of subtle and overt forms of stigmatization may affect one's attitudes and behaviors towards those offering pain care (Holloway et al., 2007). Perhaps Jason's feelings of being "lied to" may, in part, be a reflection of the various interactions he had with health care professionals along his road in getting to the pain clinic. Perhaps previous experiences of

stigmatization contribute to some of the adolescents feeling uncomfortable questioning their clinicians when they did not understand physiologic explanations or treatment expectations. This situation points to the importance of clinicians creating an accepting environment so that opportunities are provided where an adolescent with chronic pain may question their diagnosis and express their uncertainty so that specific and factual information can be provided.

Society's Understanding Of Chronic Pain

It is possible that, if the adolescents with chronic pain had a deeper knowledge of their condition and associated treatments, they would still encounter skepticism on the part of others despite explaining their situation. The general public has limited knowledge of chronic pain and reports of chronic pain in the public domain have not all been favorable. For example, opioid treatment for non-cancer chronic pain makes news headlines when medications are diverted for inappropriate use by non-pain patients, or when individual chronic pain patients experience opioid addiction. Addiction to opioids receives significant attention considering the actual occurrence rate, which has been found to be as low as 0.19% for individuals with no previous aberrant drug use history (Fishbain, Cole, Lewis, Rosmoff, & Rosomoff, 2008). Conversely, little press is given to the pain reducing and return to function benefits for the proportion of chronic pain patients who respond to opioid treatment. This disproportionate reporting is discriminatory and contributes to a negative public image of the chronic pain sufferer. Furthermore, previous debates over the validity of pain related diagnoses, such as fibromyalgia (Bohr, 1995), and the attribution of chronic pain as solely a mental health issue, add to the lack of understanding and negative view towards chronic pain sufferers. Pain within society is generally acknowledged as a symptom of a disease or injury and is

viewed within an acute pain paradigm. Therefore many individuals believe that once the underlying cause of pain is remedied, the pain ceases to exist. This acute pain view of the more global pain phenomena disadvantages the person with chronic pain as their pain continues despite tissue healing or diagnostic evidence of an underlying condition. Therefore, when chronic pain sufferers confront many of the individuals in their social world, their single story presents a contrary view of many people's understanding of pain. Adults with chronic pain report that negative views of chronic pain sufferers contribute to their feelings of stigmatization (Marbach, Lennon, Link, & Dohrenwend, 1990; Holloway et al. 2007). For the adolescents in this study, the situation is compounded by their limited knowledge and doubts about the accuracy of their chronic pain diagnosis.

Unfortunately adolescents with chronic pain are not protected from misconceptions about chronic pain held by the general public. The adolescents with chronic pain attributed these misconceptions in part due to the invisible nature of chronic pain and they rationalized that to truly understand their feelings and situation one would have to experience chronic pain themselves. For Joanne (age 16), stigmatization was expressed as feelings of being judged and ridiculed. She described being subjected to overt and repeated criticism by a teacher for using the elevator at her school despite the fact that her pain condition made climbing stairs extremely difficult for her.

This one teacher calls me the elevator mafia, And it doesn't matter how many times I talk to him or that the guidance counselor talks to him, like he thinks he's being funny and like that's great and wonderful, but you have to be able to differentiate funny from mean. Like I don't want to hear it. But it's annoying to have to say that to yourself, like – I do care what people think, I do care, because kids kind of look at me, why are you on the elevator?

Even though Joanne had gained permission from school administrators to use the elevator, a teacher continually questioned her. Despite displaying maturity in advocating

for herself in an attempt to resolve the issue, the teacher continued to make degrading comments about her elevator use. She clearly was troubled by this experience. She wanted to fit in with her fellow students but she found this difficult as the teacher's remarks led to questioning looks from other students. This teacher degraded her in a very public way and her attempts to stop this teacher were unsuccessful. Joanne endured this public questioning of the validity of her condition, but this did not mean that she was confident in her own self-image during these encounters given the stigmatization she experienced.

For participants with chronic pain, challenges to the existence of their pain condition followed them beyond the school. Many adolescents in Canada engage in part-time work which offers opportunities for them to develop skills and behaviors they will need during their adult working life. Part-time employment may also expose adolescents to work life situations that may influence career choices. However, for some of the adolescents in this study, their pain condition created unique employment related challenges. Kelly (age 16) provided an account of the added stress her chronic pain created in the work place.

Yeah, one day at work one of the managers pretty much told me, like, you can do this, you can't do this, you can do certain things and you can't do certain things, why can't you just go on cash for 10 minutes? And then I was like, I have pain, and she goes, well how do I even know you have pain? And she pretty much made it seem like I didn't, and I actually broke down, I was so frustrated. I was like, I wish I could switch places with you for two minutes so you could see what I go through on a daily basis. And then she felt really bad, and she apologized to me later that night. But it takes something like that [crying], like it just frustrates me that some people don't understand that I have pain. I haven't had the same relationship with her since she said that to me either.

Slade and colleagues (2009) found that adults with low back pain were consistently subjected to negative reactions of others which made them feel intimidated, judged,

blamed, guilty, and disbelieved about their pain. These experiences resulted in negative views of self. Kelly ended up in tears before she received any understanding from her employer and she was made to feel as though her contribution in the work place was inadequate due to her chronic pain condition. Although any adolescent may experience a negative work environment, adolescents living with chronic pain may be exposed to attitudes and behaviors that make them question their abilities as a direct result of their health status as opposed to their knowledge or skill related to the task at hand. Such stigmatizing attitudes may thus negatively impact their identity. It is unclear the effect continually being subjected to disbelief by others may have on the self worth of an adolescent with chronic pain over time. Kelly disclosed that she no longer had the same relationship with her employer, and this relationship had not changed for the better, identifying an immediate impact in the way Kelly viewed her employer. Kelly's work experience does not have to be the typical experience for adolescents with chronic pain. Lisa worked part-time but her employer was willing to provide her with shorter work shifts to accommodate her pain condition. In these two differing situations, Kelly experienced not being valued as an employee, whereas Lisa had a positive first time work experience. It is unclear if such differences in experience will have any effect on their view of working relationships in the future.

Before the onset of chronic pain, these adolescents did not experience stigmatization, signifying yet another change in their social world as a result of their chronic pain condition. A general lack of understanding and resulting lack of empathy for the plight of those with chronic pain may have negative effects on adolescents feeling valued as people. Holloway et al. (2007) found that stigmatization, actual or perceived, of adults living with chronic low back pain challenges their sense of self-identity and self-

worth. The social interactions described by the adolescents with chronic pain in this study reflect similar experiences to those of the adults in the Holloway et al. and Slade et al. (2009) studies.

Communicating About The Invisible

Communication is intrinsic to every social encounter. Nonetheless, the adolescents with chronic pain in this study did not have the language to describe their condition and treatments in ways that others always regarded as credible. Hence, they often felt annoyed and frustrated when others did not seem to understand. The invisibility of their chronic pain condition did not help matters, as Elise, (age 15) succinctly stated, “It’s like an invisible enemy that no one really sees.” Living with an ‘invisible enemy’, aptly describes the predicament of these adolescents. As an enemy, it takes away their ability to be a typical developing adolescent and causes them to be viewed with skepticism by others. Pain also followed them everywhere; it was now a part of their being from which they cannot escape and they must somehow come to terms with it. The invisible nature of chronic pain had two implications. First, the invisibility of pain allowed them to maintain some sense of normalcy, which they found helpful, as most people could not tell that they had a chronic pain condition, thus minimizing their difference in social settings. Julia (age 16) liked the fact that, when she walked down the hall in school, her fellow students could not tell that she had a chronic pain condition. However, the second implication of pain invisibility was that it created tension within her friendships, as she described in this quote:

Like the biggest thing that I wish is just that I could just show them [closest friends] what it’s like, just make them realize what’s happening to me every day. It’s every day, like it’s all the time. So it’s really starting to take over my life and I don’t even know if they realize that.

Here Julia acknowledged that her friends were unable to see what was happening to her. She wished she could ‘show’ them. Julia earlier talked about having ‘sensitive nerves’ and questioned the accuracy of her chronic pain diagnosis, signifying both her limited understanding of her chronic pain condition and continued questioning the etiology of her condition. In the quote directly above, the results of not having a vocabulary to describe what was actually happening separated her from her friends. Simply telling them that her pain was taking over her life was perceived as insufficient to garner their understanding and support.

Although non-verbal communication can be as powerful or even more powerful than the spoken word, many individuals with chronic pain live their lives without facial expressions typically associated with acute pain. As the body physiologically accommodates to the presence of pain, facial expressions dissipate over time. Even with exacerbations of chronic pain many have learned to hide their suffering from others. Perhaps this lack of non-verbal expression of pain may contribute to the under-appreciation of their suffering. Research has shown that humans instinctively are able to differentiate facial characteristics of pain from no pain. For example, Deyo, Prkachin, and Mercer (2004) found that children as young as 5 years of age were able to distinguish facial characteristics of pain from no pain indicating that humans are able to determine this difference early in life. This research may also indicate that if facial expression is limited, the intensity of pain is considered less. Therefore, when adolescents with chronic pain no longer show facial characteristics associated with acute pain, healthy peers may not perceive their verbal expressions of chronic pain as credible. This gap between the intensity of pain an adolescent is experiencing and their peers perception of the pain

intensity may result in adolescents with chronic pain not receiving pain empathy from their peers.

Determining when and where to disclose their pain was a continual learning curve. Part of understanding and integrating their pain into who they were was gaining an understanding of what was socially acceptable to share. Goffman (1963) describes the tension of the discreditable person (someone with a stigma that is not necessarily detectable upon meeting) in social situations as these discreditable individuals were constantly aware that they might disclose information that would separate them from the 'normals' in the society and thus be subjected to stigmatizing responses. The adolescents with chronic pain in this study, like the discreditable individuals described by Goffman, were cautious about sharing information about their pain condition. Sharing information depended on where they were and who was present.

Although their pain was invisible to the outside world, some of these adolescents stated that their closest friends could sometimes tell when they were having an especially difficult time with their pain by: 1) the look on their face (possibly a typical facial expression of pain at times and in keeping with the more widely recognized acute pain expression); 2) noticing that they were tired or irritable; 3) interpreting emotional cues such as shedding tears when the pain is really bad; and 4) taking note of behavioral cues such as limping, walking slowly, or by wearing certain clothes. Joanne (age 16) described the way she and a close friend used behavioral cues to know if the other was having a good day.

I have a friend, she has endometriosis, and we have a joke with each other, because if the other is wearing sweat pants or a dress, it's a bad day. But we're always just like yeah, it's a good day when we're wearing jeans.

Joanne and her close friend shared an inside joke which made them feel connected through a shared experience. Sharing experiences with friends is a characteristic of friendship which builds mutual ties to each other. Chronic pain was not an experience that was easily shared, as most participants did not know someone else with chronic pain. Thus, for the majority of the adolescents with chronic pain in this study, disclosing or communicating their pain verbally and non-verbally was not easy or always desirable.

Contextual factors influenced the balance between disclosure and privacy as well as pain intensity, tiredness, and pain affect on a given day. Although the adolescents realized that many individuals did not understand their pain, they did not feel it was their duty to disclose private information to combat this lack of knowledge. Explaining chronic pain to others was not necessarily helpful, especially when they were faced with disbelief. Kelly (age 16) exemplified the common experience of trying to explain her chronic pain condition highlighting the negative side to the invisibility of pain.

Like if I had a cast on or something, they'd be like, okay, yeah, we understand. But when I don't have anything, it's like, I'm in pain, I don't expect you to understand a hundred percent, but I expect you to at least understand what I'm saying to you when I tell you like 50 times.

Kelly did not expect everyone to believe and understand everything each time she talked about her pain, but she did need and expect acknowledgement and empathy when she said she was in pain. Despite all of the participants with chronic pain experiencing similar skepticism from others, they did not link their own limited understanding of chronic pain to issues of credibility.

Passing As Normal

Although all the adolescents with chronic pain were learning to balance privacy with disclosure, there were a few for whom privacy was paramount. They did not like to

reveal their pain condition to anyone and tried to hide their suffering from teachers, peers, and even family members. This preference for privacy demonstrated that living with pain can be as individual as the pain experience itself. It may also reflect attempts to pass as normal and minimize being stigmatized by others. Jason (age 18), talked of keeping his feelings about his pain private.

A lot of times I hold in anger and stuff, like when I feel angry, I hold it in and not show people that I'm angry, I'd be happy and joke around. It's all bottled in. I know that it's not healthy".

It was important to Jason that he be viewed as a strong male, the same as before pain. "I'll [like] to stick out for being myself—the nicest, meanest, coolest guy anybody can know". Therefore, hiding his pain from everyone but his very closest friend was important for his sense of self. There could be risks to maintaining such privacy as Jason acknowledged that hiding his pain-related anger might have negative consequences. He admitted to not disclosing these feelings to his parents, as he was concerned they would not allow him to go out if they knew how troubled he was about his pain condition. In relationships with others, Jason presented as a confident adolescent male projecting an image of self-control. Despite his image, he voiced concern over his anger and what might happen if he allowed it to surface. What the experience of Jason teaches us is that even when adolescents with chronic pain appear to be functioning well, they may be battling an inner turmoil that is frightening and perhaps harmful to them. Their suffering continues even when they appear to be managing.

Jason's understanding of pain and his experience with clinicians left him with a sense of being deceived. Adolescent boys may be quieter about their feelings in the clinical area and may not want to appear weak at a time in their development when the socially constructed definition of masculinity is based on stereotypical traits such as

power, strength, and independence (MacLean, Sweeting, & Hunt, 2010). This may put pressure on adolescent boys with chronic pain to measure up to the masculine norm and not demonstrate vulnerability, weakness or a need for help. It may be particularly important to provide adolescent boys with chronic pain opportunities to share their fears and concerns in an environment that allows them to retain a positive masculine image. Many chronic pain clinics are interdisciplinary and an integrated team often sees patients. Being seen by the team members at the same time instead of with each individual clinician has many benefits for patients, families, and clinicians; however it may be critical to allow a session with an individual professional with whom the adolescent can feel comfortable disclosing their concerns and feelings about their pain. Without knowing effective ways to deal with his pain-related anger, Jason was left to figure out ways to deal with his anger and pain on his own.

For Sherry (age 15), who had been experiencing chronic pain for years, questions about her pain had become irritating, “It’s not worth the effort, I just don’t feel like it. I’ve explained it to so many people so many times, I just don’t want to do it again”. Sherry had chronic pain from a very early age and had explained her pain to others in multiple contexts; however, instead of feeling as though she had mastered her ability to explain her condition, she felt frustrated at the repetitiveness of questions and explanations. Sherry pushed herself to engage in all activities as she had a strong desire to be viewed as ‘normal’ and the same as her peers. As she stated, “I’m like, whatever, just do it anyways, who cares if it hurts.” Nevertheless, even though she pushed herself, repeated questions by others publicly confirmed her difference.

For adolescents with chronic pain, it was not only the repeat questions that affected their decision making when determining if they should disclose or remain

private. Lisa (age 16) talked about why she decided to remain more private in her discussions with her classmates.

I don't really explain about the pain, I'd rather not put it out there, and then – because people change things around and they'd probably make up weird stories about me. I don't really like to talk to them about it, because I don't know, I kind of have the fear that if I do they're going to treat me different. And I don't want that.

Lisa had already been made to feel different and separate from her peers when one of her teachers physically separated her in the classroom. Here, she was concerned that by disclosing pain related information, she will highlight this difference even more. She was also concerned that others will alter the details so that their stories no longer reflect her truth. The adolescents with chronic pain in this study wanted understanding from others but at the same time they needed to maintain an image of being the same as their peers. Passing as normal is a strategy to decrease stigmatization. Hence, the adolescents with chronic pain had to think carefully about the details they shared.

Summary Of Theme 1: Re-thinking The Self With Pain

Overall, the impact of pain on these adolescents created a view of being different compared to who they were before the pain. They were different in terms of who they were as people, students, and employees as pain limited their activities and ability to focus. These adolescents struggled to understand their pain and found communicating with others challenging at times. Their sense of self changed as they integrated chronic pain into their lives. Rethinking and experiencing the self with pain impacted social engagement decisions which included a withdrawal from activities. It also impacted their social exchanges and created tension between disclosing their pain and maintaining their privacy. Employing strategies such as keeping their anger to themselves or not explaining their pain to others, to minimize their differences from peers was helpful in assisting them

to pass as normal. Although minimizing differences allowed adolescents with chronic pain to pass as normal it also disadvantaged these adolescents by acting as a barrier to garnering empathy.

Theme 2: Re-thinking Close Friendships

Chronic pain creates disruptions to close friendships. Adolescents with chronic pain had limited contact with close friends as a result of school and leisure activity absences. These adolescents experienced changes to their friendships after the onset of pain, making them, at times, feel different from their friends during social interactions. To counter these feelings of difference most adolescents with chronic pain placed limits on engagement with close friends. These changes in their time spent with friends contributed to adolescents with chronic pain re-thinking who their close friends were and the characteristics they desired in close friendships. As a result of the impact of chronic pain on their lives and the responses they received from close friends and others within their social network, new friendship needs emerged.

Theme 2 Subtheme 1: Distancing The Self

As participants talked about their lives and the impact of pain on their friendships, they described a practice of avoiding spending time with friends, even close friends. Pain came into their lives as an acute illness but transitioned into a chronic condition over time. Not joining in on sports and other leisure activities, missing school, and having to go to appointments occurred as it would in any acute illness. Thus, avoiding these situations began as a need to retreat from regular activities until their pain had resolved. However, for adolescents with chronic pain in this study, returning to a pre pain self was not possible. Avoiding activities took on a different meaning as participants continued to live a life with pain and they began to distance themselves from their friends. Distancing

is defined as placing or keeping at a distance whereas isolating is defined as setting apart from others (Merriam-Webster, 2008). The distinction between these two terms is noteworthy as the participants with chronic pain spoke of keeping themselves away from their friends in some situations where they did even try to remain engaged. Distancing the self by decreasing social encounters with friends provided protection from questioning, disbelief, and fear of feeling rejection. Various types of distancing practices have been identified by Goffman (1963) as a mechanism through which the discreditable individual is able to avoid situations in which they may be obliged to divulge their difference. However, for the adolescents with chronic pain in this study, distancing the self was not solely to protect themselves, but also to protect their friends from witnessing their suffering. For these participants, distancing was viewed as positive, a way to control their life and not be constantly reminded of their difference. Nevertheless, in some situations and for some of the adolescents, social distancing led to isolation and feelings of loneliness. Social distancing and isolation had a negative impact on their lives, as they were separate from even their close friends.

Distancing Decision-Making

The experience of distancing oneself varied for each individual participant over time, as well as, between participants depending on multiple factors. Types of distancing practices included: staying home instead of going out with friends; decreasing, or no longer engaging in specific activities such as school dances; and, delaying or avoiding romantic relationships. In addition to pain, adolescents cited poor sleep and social factors that impacted the timing and degree of distancing. The social factors included peers involved in the activity, the nature of the activity, the location of the activity, and the potential impact of participation on their friends and peers. As a result of these factors,

distancing involved complex decision-making. Joanne's (age 16) explanation of why she declined an invitation from friends illustrates the thought processes that these adolescents engage in when deciding to participate in social settings with their friends.

[My friend called and said] well let's go see the girls in prom dresses. And I was like, I'd love to, but I don't want to be a damper on everyone else's great day. I don't want to walk around. I'm not going to be good. I'm going to be complaining, and nobody wants to hear that on their prom day. So I was like I don't want to go and I know it's going to be worse for other people, even though they care about me, I'm like, I don't want to. There's no point putting them through that too. Sometimes it's easier, and for myself too, sometimes I have that pain, I go walk around, even though it'd be great to see all those girls dressed up, I don't really need to put myself through more pain to see that.

In making the decision to decline the invitation to go out with friends, Joanne balanced the enjoyment of the social outing against the pain she knows she will experience. She talks about her friends being caring but she does not want to burden them by complaining when she is not feeling 'good'. Like other participants, Joanne had to consider her physical discomfort and the likelihood that she will verbally express her discomfort in a way that will negatively impact her friends' enjoyment and ultimately her own. Nevertheless, declining social invitations distances her from her friends, even if only for a short period of time. Socializing with others at this stage of development helps enhance an adolescent's sense of self as a unique or special person (Adams & Marshall, 1996). By distancing themselves from social interactions with friends, the experiences of the participants with chronic pain suggests that instead of developing a sense of self that is positive, they view themselves as negatively unique and different. Mastering a sense of self as distinctive and autonomous is important for self-esteem (Adams & Marshall, 1996) and highlights the importance of exploring the impact of distancing behaviors as a form of coping in adolescents with chronic pain.

Other participants spoke of purposefully avoiding specific activities to guard against friends trying to push them beyond their abilities. Lisa (age 16) talked of spending lots of time with her close friends but she never attended dances “because they’d [*friends*] all drag me out to dance” which was something she felt unable to do. It was easier for Lisa not to attend dances despite previously enjoying this activity. Participants with chronic pain expressed concern that they would not be able to deal with an increase in their pain brought on by a physical activity, especially in the presence of others, both of which would lead to a public display of difference. Julia’s (age 16) comments capture this fear and its distancing implications in her life.

I get those [episodes of escalations in pain intensity] a lot, but that’s why it’s all so scary because it’s just the worst situation to be in if you’re not at your house. If you’re somewhere else and you’re having like 10 [out of 10] pain, like it’s bad, so I always want to be at home if that’s going to happen. I just kind of want to get out of wherever I am. I wish I could, and I’d love to be that type of person, like just do whatever, but I’m very close to my house a lot.

Julia spoke of tension between who she wanted to be, a person who could do whatever she wanted, versus who she now was, a person tied to her home in fear of the next escalation in her pain. Staying home for most of the adolescents was clearly the ‘safer route’ as managing exacerbations of their pain in social situations was a major worry. These adolescents felt unable to manage an escalation in their pain outside the safety of their homes and without the support of their parents. They needed to feel safe when pain was severe as they were afraid of the consequences. Similar to Theme 1, these participants did not truly understand the reason for their pain and, for some, they continued to be concerned that something else was happening. Fear of pain has been identified as a factor in pain-related disability in children and adolescents with chronic pain (Martin, McGrath, Brown, Katz, 2007). However, given that the healthy participants

talked of not being skilled in supporting a friend with a chronic illness, let alone a condition that is misunderstood such as chronic pain, it is understandable why the adolescents with chronic pain felt safer at home with their parents. Perhaps if adolescents with chronic pain felt confident in their abilities to manage their pain, they would be less fearful of an exacerbation while they are socializing and more apt to socialize.

Both participants with chronic pain and healthy participants identified the amount of time they spent with close friends as a key characteristic of their closest friendships compared to other friendships. Thus, as important factor in close friendships, quantity of time had significance for the adolescents with chronic pain in this study as they experienced decreased time with their friends. Decreasing the time they spent with their friends may be in direct opposition to what their closest friends desire. As a result, adolescents with pain are likely at risk of having fewer close friends and feeling isolated. Having fewer friends and being viewed as more isolated were noted in a recent systematic review of social functioning and peer relationships for children and adolescents with chronic pain although causal links have not been identified (Forgeron et al., 2010). Strategies that increase the amount of time adolescents with chronic pain can spend with their closest friends may have important meaning in maintaining close friendships.

Many adolescents, regardless of health conditions, make decisions about engaging in social activities based on their anticipated enjoyment of the activity. For the adolescents with chronic pain in this study, prospective enjoyment was continually balanced against the actual or perceived fear of pain escalations, as well as ridicule and put-downs. As pointed out by Natasha (age 15), “Yeah, they just think we’re like weak or something, and have low pain tolerance and they just think you’re a wuss [weak].” The need to protect against suspicion and ridicule was evident when declining social

invitations. For Kelly (age 16) and others, making excuses became an effective distancing strategy.

I'll call them and I'll say, I'll make an excuse as to like, my mom said I can't go out tonight, or like I'll make an excuse as to why I couldn't go, Yeah, like, no, I just don't want to do it, so I would rather say that [instead of my pain].

Weighing the joys of social interactions against the suffering of pain has been found in other studies of adolescents with chronic pain (Forgeron & McGrath, 2008; Carter et al., 2002). Although children and adolescents with chronic pain are subjected to more victimization than healthy peers (Forgeron et al., 2010), fear of ridicule and victimization by close friends has not been found in previous studies. Ridicule or victimization by close friends is worrisome, as perceptions of being questioned and ridiculed can be viewed as negative close friendship qualities. High levels of negative close friendship qualities, such as feeling excluded and pressured, were found to predict greater feelings of depression and social anxiety in healthy adolescents (La Greca & Harrison, 2005). Even if close friends did not regard teasing and questioning as negative, the stories shared by the participants with chronic pain in this study revealed that they perceived these comments negatively. For these adolescents, the tension associated with constant strategizing to participate or not, along with experiencing comments by friends as ridicule and put downs, contributed to social distancing and isolating practices. Adolescents excluded themselves by choosing to stay home and by eventually being excluded by friends. Therefore, adolescents with chronic pain may be at risk for developing social anxiety or depression not only from decreased engagement in leisure activities but also from the teasing or ridicule they experience from close friends.

Distancing The Self, Progressing To Isolation

The need to distance and isolate from friends and their greater social worlds was not expressed by any of the healthy participants in this study. In fact, healthy participants spoke of planning events, socializing, and working with others. Spending time with friends was described as being central to their adolescent lives. Yet, due to the high demands of their increasing social worlds (organized leisure and sport activities, work commitments, time for romantic partners), much of the daily close friendship interactions for the healthy adolescents occurred during the school day. This quote from one of the healthy participants, Beth (17 years), illustrated that even when they think they are always together, this togetherness occurs predominately during school. “Oh yeah, we hang out all the time, we’re always together. Not really [after school] that often, we’re just more together all the time at school”. When not attending school, adolescents with chronic pain are perhaps predisposed to more isolation as a result of being ‘out of sight out of mind’ in the increasingly busy lives of their healthy friends. Although participants with chronic pain in this study understood that their close friends may have other plans, the unavailability of their close friends when they were ready to re-engage was frustrating and contributed to further self-isolation at times. As described by Natasha (age 15).

I call them but then, since I haven’t talked to them for a long time, they’re busy and they can’t do anything, and then I just kind of separate. So I’m kind of like by myself, and then I try to call them. I actually called some of them last night and they couldn’t do anything, but it’s kind of annoying because then you get to the point where you don’t want to do anything, and you don’t want to call anybody, and you don’t want to do a thing but watch TV. And you just get in like a rut, and you don’t want to do a thing.

The result of continuing to distance oneself from social interactions had detrimental effects as distancing led to isolation. Joanne (age 16) previously described complex decision making processes involved in her staying home rather than going with

friends to see peers in their prom dresses. Unfortunately, decisions to stay home may protect an adolescent in the short term but at what cost. Here Joanne discloses how she feels when she does stay home.

Now I'm usually alone with me, myself and I. And usually I just end up completely internalizing everything, because there's no way to write it down, or to paint or be, there's no way to get any frustrations out, but speaking them. So usually I'm just like with myself. But it's when I'm by myself is when I'm the saddest.

For some adults with chronic pain, social isolation becomes extremely profound as the pain continues and extends to the avoidance of brief social encounters (Smith & Osborn, 2007). Both Joanne and Natasha described negative consequences from isolating themselves from their friends, and they experienced spiraling down to not wanting to do anything but watch television and be alone. Their stories suggested giving up on engaging socially and they frame re-engaging as challenging. Although used as a strategy to protect herself, Joanne was the saddest when she was alone. This situation points to the complexity of the social lives of adolescents with chronic pain and the need to understand and work with these adolescents to mitigate the factors that lead to this downward spiral. Socializing is important in the development of one's sense of mattering and in forming a collective identity (Adams & Marshall, 1996). By removing themselves from socializing with friends, adolescents miss key opportunities to develop this sense of social connectedness.

Many of the other adolescents with chronic pain expressed similar experiences, feeling both supported and challenged by friends while also needing to use distancing strategies to protect themselves. However, not all of these individuals practiced self-distancing to the extent that they verged on isolating themselves. Presently, evidence on the effectiveness of social interventions for working with adolescents with chronic pain is

lacking despite the significant challenges and alterations that pain exerts on the social lives of these adolescents. It may be important for adolescents who encounter repeated negative qualities within their close friendships to improve their interpersonal functioning so that they can engage more actively in their close friendships. Remaining actively engaged with close friends may prevent depression, social anxiety (La Greca & Harrison 2005) and further isolation. These protective benefits offered by close friendships may be especially salient as their pain continues, given the association of higher depression ratings (Long, Palemro, & Manees, 2008) and higher anxiety scores (Varni et al., 1996) for children and adolescents with various types of chronic pain.

Remaining Engaged To Pass As Normal

Self-distancing was not a uniform experience. Two of the eight adolescents with chronic pain in this study with chronic pain (Sherry and Jason) fought to remain engaged with their friends. Although these two missed activities and school due to their pain and pain care related appointments, they did not acknowledge engaging in protective distancing in close friendships. Their stories were filled with how they pushed themselves to remain connected with close friends regardless of how they felt. Being seen as normal (the same as their friends) and being accepted by friends was integral to how they viewed themselves and it was essential to their well-being. Sherry (age 15) decided that she would rather endure pain and push herself to engage with friends, rather than being alone or feel different as a result of not spending time with friends and participating in activities with them.

Well it [pain] has [prevented engagement] before, but I try my best not to let it do that because I don't want to miss out on anything just because of that. I'm like, whatever, just do it anyways, who cares if it hurts.

Jason (age 18) also talked about the importance of staying connected with his friends but he acknowledged that this was not always easy. He talked of hiding his feelings on bad days so that his friends did not know the amount of pain he was experiencing.

If I was having a bad day, nobody would know because I like to hold it in. Sometimes when I want to blow up, I'll just think that they don't deserve me to treat them like that, and it feels bad, I shouldn't beat them up for it [being in pain], so I'll just end up saying a joke or something, calm myself down, go driving around with someone. Yeah, I like to be around lots of friends.

Hanging out and being with friends was critical in Jason's world. Wearing a mask of normalcy was key. Benenson and Christakos (2003) suggest that male friendships, compared to female friendships in childhood and adolescence are characterized by greater involvement in physical activities and less exchange of personal information. Mark's (16 years, healthy male participant) close friendship experience supported this finding by Benenson and Christakos, when he described what he and his close friends do together, "One of them, I play video games and listen to music, and the other one, I discuss the Twilight series (novel series)". Thus, for Jason, negotiating pain within his friendships was manifested as practices of hiding his negative feelings and pushing himself to be physically present, like other adolescent males, regardless of the inner turmoil it created.

Even when they were struggling with pain Sherry and Jason found being with their friends immensely helpful. It remains unclear how these two adolescents were able to achieve a high level of social engagement similar to healthy teens, given that both experienced long-standing and severe daily pain. Other participants with chronic pain did not share this experience. An observation based on Sherry and Jason's of their stories points to a difference between these two adolescents and other participants with pain; both described initiating contact with friends regardless of whether they had been absent

for short or long periods of time. Thus, a reciprocal relationship between contacting and being contacted by friends was established. Jason, in particular, lived on a First Nation reserve which he described as a very small and close-knit community in which caring, support, and looking out for one another were core values. The extent this influenced his continued connection with friends is unknown.

Distancing The Self In Romantic Friendships

Distancing the self was also evident in many of the stories of the adolescents with chronic pain when they talked of romantic relationships. The majority of North American adolescents will have approximately four romantic relationships before leaving high school (Seiffet-Krenke, 2000). For some of the participants in this research, pain either prevented them from moving along the normal adolescent trajectory of establishing romantic relationships or added a dimension of complexity not experienced by the healthy peers. Romantic self-distancing ranged from being protective and guarded in self-disclosure about their pain within the relationship to total avoidance of this type of friendship.

For participants with chronic pain involved in romantic friendships, pain produced anxiety because it resulted in questioning if their romantic friend would accept them if he/she knew about their pain condition. Some adolescents managed their fears of rejection by placing limits on their honesty about pain and by not spending time with their romantic friend when their pain was intense or might become intense in the social context. The following quote from Julia (age 16) reflects the added vulnerability that she experienced in relation to having a boyfriend.

I have a boyfriend now, which is kind of difficult but at the same time it's good. Like when I know I'm going to have a bad day, I won't hang out with him. Well because I just don't want him to know. It's just embarrassing.

As Julia's narrative indicates, embarrassment is associated with feelings of unease about the validity of her pain and her ability to hide her suffering when in pain. She employs strategies that distance her boyfriend to protect her secret by not drawing attention to her difference from other girls. These strategies also allowed her to hide or pass as normal because her boyfriend does not know or see she is having a bad day. Collins' (2003) argues that adolescent romantic experiences are important friendships for maturation of intimacy, sexuality, autonomy, affiliation and identity. Therefore, it would be important to know more about the challenges and limits pain exerts on these positive development experiences. For example, since romantic friendships in adolescents are thought to include feelings of desire and sexual attraction (Tolman, 2002), a question is whether living with pain decreased an adolescent's feeling of self-worth in terms of their self-perceived desirability as a romantic partner.

Even though pain presented fears about disclosure in romantic friendships, not all adolescents kept their pain condition a secret. Sherry (age 15) eventually disclosed her chronic pain condition to her boyfriend. Her fear of rejection did not come to fruition, and as a result her disclosure, may be proactive against engaging in self-distancing and the need to constantly be guarded and protective in this particular friendship.

I was scared to tell him [boyfriend]. I was like, what's he going to say? And he was like, he said he didn't care, it doesn't bother him. I was like, YEAH, it was good."

Differences in romantic friendships during adolescence have been noted. Girls tend to focus on emotion sharing and caretaking whereas boys focus more on sexuality (Shulman & Scharf, 2000). Sherry was able to have her emotion sharing needs met, as she was able to share intimate details of herself and receive positive feedback from such disclosure. She also realized that her pain condition did not make her less desirable as a

romantic partner. Given that male adolescents value the attractiveness of a romantic partner, it would be key for adolescent girls to know their desirability is not necessarily decreased as a result of chronic pain.

When working with adolescents who have chronic pain and who are also involved in romantic friendships, it may be critical to help them strategize ways to disclose pain information to their romantic friend and discuss possible reactions to this disclosure. High frequency of pain talk in romantic (spousal) relationships is not necessarily considered negative (Newton-John, 2006). Although adolescent romantic relationships are significantly different than spousal relationships (e.g. in terms of the level of maturity of the individuals, length of time in the relationship, depth of commitment, emotional attachment and expectations of one's spouse), findings in adult literature may be helpful when discussing fear of pain disclosure by an adolescent to their romantic friend (Newton-John, 2006). Adults with chronic pain who are in marriages in which they feel able to discuss their pain often with their spouse, report higher levels of marital satisfaction. In comparison, spouses of chronic pain sufferers are equally as satisfied in their marriages regardless if their spouse with chronic pain discusses their pain often or not. It appears that high frequency of pain talk by a spouse was not averse to marital satisfaction (Newton-John, 2006). A cautionary note in extending this finding to adolescent romantic relationships, apart from the differences in these two types of relationships, is that Newton-John did not comment on the type of pain talk engaged in by the spouses with chronic pain. For example, it is unknown if non-pain spouses view high frequency of complaining versus planning and strategizing differently and how these different types of pain talk impact relationship satisfaction (Newton-John, 2006). Adolescents with chronic pain may continue to live with pain for a long period of their

lives. Understanding how to balance disclosure and talk about pain in a romantic friendship will be important in preparing them to better understand and adapt disclosure of their condition with an intimate partner as they develop into adulthood.

The foray into romantic relationships is associated with concerns for healthy adolescents (Connolly & McIsaac, 2009; Shulman et al., 2005), but as revealed in this study, pain resulted in some adolescents not even thinking about establishing such friendships. The extreme of distancing in this social context was isolating the self from romantic relationships. The narratives of these adolescents revealed that they put life on hold in the hopes and dreams of full recovery. Their stories also illustrated that romantically isolating the self was a protective strategy. Elise (age 15) described and defended her decision to isolate herself from romantic friendships.

I'm interested in guys, but I'm like, I don't really want to deal with that right now, and so I'd like to think that I'm getting better before any of it happens. How would someone like that react to it?

Elsie described the hopes of getting better, despite living with pain for the past two years. In this way she was putting her life, or at least this part of it on hold. Since chronic pain does not follow a well-established illness trajectory, waiting until pain is resolved may be unrealistic. She viewed a romantic friend in a negative light and pain having negative consequences for potential romantic friendships. By isolating herself from this type of friendship, Elsie missed the opportunity to develop understanding and skills needed to negotiate and 'be' within a more intimate relationship.

Joanne (age 16) has decided isolating herself from romantic friendship experiences. Although she does not openly state that she is waiting until she is pain-free, she does talk about the future and is concerned about the impact that her pain would have on a potential romantic friend.

I don't feel right making a relationship about my pain or having that, like for a teen boy, he doesn't have to worry about my illness all the time. And there's time for that.

Joanne described 'making' a relationship about her pain. She did not see herself as outside of her pain; pain was tightly integrated into her view of self. What is most concerning about both Joanne and Elise's decisions to isolate themselves from romantic friendships, is that their pain and their sense of being different resulted in feelings of being unworthy and unlovable. It may be that Elise and Joanne equate being worthy and loveable with being fun to be around and they saw their pain as a barrier to fun. For young people just embarking on the time in their lives when romantic friendships begin, feelings of unworthiness and being a burden are concerning as they may prevent them from engaging in a romantic friendship. If they do not engage in these early romantic relationships, they may not learn to share themselves in an intimate relationship.

Being grounded in adolescent life and sharing a sameness with the healthy participants with respect to not yet having a romantic friendship experience was the reality for a few of the adolescents with chronic pain. These adolescents cited a lack of opportunity or interest in selecting a romantic friend as the reason for the absence of a romantic relationship, versus purposefully delaying this sort of friendship due to concerns about their worthiness. Further research is needed to understand what causes some adolescents with chronic pain to have a shared experience with healthy peers while others avoid or engage in guarded romantic friendships.

Theme 2 Subtheme 2: Needing A Different Quality In Close Friendships

For adolescents with chronic pain, the importance of close friendships was revealed in their stories as they talked about the positive and negative effects of close friends on their pain coping. Pain was a pervasive presence in their friendship experiences

creating a tension between a need for ‘special’ considerations and balancing this need with ‘normal’ friendship considerations reflecting their need to re-think their social self. The sensory (physical) components of pain and some close friends’ responses to their pain changed what they now desired from their close friends. The adolescents with chronic pain needed friends to be more understanding of their situation and willing to accommodate pain related limitations. They also needed their friends to make them feel worthy as a friend by increasing efforts to stay connected such as calling them when they were not in school. Loyalty within the friendship became a priority. At the same time as needing more understanding, adolescents with chronic pain also wanted to feel they were being treated the same as before they experienced pain. Yet, to attain these needs and prevent misunderstandings, the participants were challenged to communicate their pain needs to others. Differences in the illness/injury experience between the adolescents with chronic pain and healthy peers added to the complexity of the situation. The healthy adolescents expressed minimal understanding of the needs a close friend with a chronic illness may require and questioned their skills to meet these needs beyond what was required within typical adolescent friendships.

Friendship Loss

A loss of close friendships for the adolescents with chronic pain was a stimulus for rethinking the characteristics of quality friendship. All but one of the participants talked of some form of social loss since developing their chronic pain condition. These social losses were significant and were described as a change in the closeness of a friendship, to the loss of a close friend(s), to the extreme experience of social loss and isolation. These losses were frustrating, disappointing, hurtful, and perceived as unfair as

they were the result of the pain that came into their lives without permission, leaving them with no perceived control over the close friendship losses they experienced.

Two participants experienced extreme social loss with chronic pain which one described in terms of 'social death'. Their stories shared a similarity as they both described being completely shut off socially by their close/best friends with no ability to stop this social segregation. Joanne (age 16) talked of being discarded by her longtime friends and, although she has moved on and found new friends, the memories of this experience are raw and continue to evoke emotional distress.

Well those kids, they let me die an emotionally social death, they just skewered me and slapped me around by the fire. None of them talk to me, and it's still like, it irks me and it's very painful, because I've known those kids for a decade, like lived with them, danced with them, we were best friends. And there were only four of us in the class. So we were very, very close, and then I was completely alienated.

Without close friends, children and adolescents are predisposed to loneliness and at increased risk of developing depression (Nangle et al., 2003). Joanne experienced rejection by close friends at a time when she needed support. It is unknown what happens when an adolescent experiences such a dramatic severing of friendship, especially during a time of crisis. It may be that their ability to move forward in developing trusting relationships outside of the home is diminished. In Joanne's case, despite finding new close friends, she remained somewhat distant from her friends and spent much of her time alone, which may impact negatively on her self-esteem. Sadly, her experience of alienation was not singular in this study. Elise (age 15) also experienced a complete severing of close friendship ties.

Well I certainly found my good friends during this, because I mean, I did have a lot of friends before, and you know, I had a couple other best friends who were actually in my grade. I ended up going to school for a couple of hours each day just to try and, you know, not really for the school work, just to go [be part of the

social group], and well sort of when that happened [ignored by best friends], it kind of just fell apart. I'm not quite sure what happened. I mean, the people that I never really hung out with started talking to me. Yeah. They were the ones who were actually really nice to me.

School is a significant social site. The healthy participants identified social exchanges with close friends as predominately occurring in school. Elise described her need to maintain close friendships and so she went to school in an attempt to stay connected with her friends, only to be rejected by them. Her lack of success is compounded by feelings of rejection as well as gratification that some people were nice to her. Reasons for Elise being rejected are unknown; it is possible her close friends viewed her as different on her return to school. If so, they may have been concerned about being identified as different by association. Goffman (1963) identified public schools as an environment in which stigma learning occurs and stigma learning is often accompanied by taunts, teasing, and ostracism. Therefore, when chronic pain is perceived as stigma, the rejection Elise experienced may have been anticipated. Defined in this way, stigma may occur more often by adolescents with chronic pain than is documented. However, there may have been other factors contributing to Elise's social exclusion. Neither of the participants who experienced extreme social loss (Elise and Joanne), talked about their behaviors while in class or at dance so it is unclear if there were any outward pain behaviors that might unknowingly have contributed to their rejection. Nevertheless, for Elise, the situation remained poignant, and she described her confusion over the events and was at a loss to understand why her close friends rejected her. The situation may have contributed to her present description of 'loyalty' as the core characteristic of a closest friend.

Regardless of the factors that contributed to Elise's and Joanne's social rejection by close friends, these experiences had the potential to be devastating in several ways. This degree of social rejection may make one question their value as a person and worth as a friend, and question their ability to maintain control over their social lives as a result of pain. Social rejection may also act as a barrier to a successful return to school and it is therefore important for clinicians who work with adolescents with chronic pain to understand such barriers and their significance. It may be that when those with chronic pain push themselves to engage and are rebuffed by close friends, a new barrier to re-engaging in school emerges adding to increases in school absence. In a vicious cycle, increases in school absences create another barrier to re-engaging with peers in this important social site, which in turn, create a barrier to maintaining or establishing close friendships. The cycle may be difficult to break.

Changing Friendships

Other participants voiced changes in their close friendships that were less severe but nevertheless distressing. Kelly (age 16) captured these experiences of social loss, "I'd say since I've had my pain, I've probably lost a couple of friends, that I thought were my good friends, obviously aren't". During mid to late adolescence, more trusting exclusive relationships form as adolescents develop friendships towards greater intimacy. However, even during this time, many healthy adolescents' close friendships change (Branje et al., 2007). It may be that the changing nature of their close friendships is not especially different but instead within a normal developmental trajectory of adolescence. Helping adolescents with chronic pain realize that changes in close friendships are a normal part of adolescence may help them reframe some of these social losses.

However, even if the rate of close friendship changes in adolescents with chronic pain is found to be similar to healthy adolescents, the reasons for these changes are most likely different. The descriptions embedded within the stories of the participants with chronic pain identify these changes in friendships as distressing, even devastating, and attributed these changes in friendship to the existence of their pain as opposed to other social factors. This perception reinforces the view that they are different from their peers. Viewing oneself as different, or being viewed as different as a result of living with chronic pain, may be important when considering the reasons for friendship losses. Branje and colleagues (2007) found the quality of potential alternative (new) friends among typical adolescents to be the most predictive factor of a change in close/best friends, as opposed to other factors such as satisfaction in the friendship, investment in the friendship, or commitment to the friendship. It is unclear if previously close friends of the participants with chronic pain pulled back from the friendship as a result of finding peers they considered to be a quality alternative. If adolescents with chronic pain are not viewed as a quality alternative, it may negatively impact their social lives by making it challenging to develop new close friendships, thus negatively impacting their self-worth.

Exchange and equity theories of friendship propose that friendships are based on a cost benefit ratio with the continuation of mutual beneficial exchanges being necessary to maintain the friendship (Kelley & Thibaut, 1978; Walster, Walster, & Berscheid, 1978). These theories suggest that it is not just the rewards that influence the friendship. Investment in the relationship, how one's outcomes compare with their relationship partner's outcomes, one's past outcomes from this relationship, and how these factors compare with other friendships available also influence the continuation of the friendship (Perlman & Fehr, 1987). Therefore, it may be inevitable that when an individual is not

perceived to be rewarding or of benefit to their friends, friendships are lost. Joanne, Elise, and Kelly conceptualized their friends' practices as mean. Joanne and Elise were no longer part of the friendship circle and felt discarded. Kelly felt abandoned when her friends would not change their plans to accommodate her needs. Despite these feelings, these adolescents did not feel that they had severed their friendships. It may be that when a close friend is absent from school or unable to participate in social activities, as is the case with adolescents with chronic pain, the healthy friend who is left alone more may seek alternative friendships to satisfy their own social needs. Devaluing of the non-present adolescent with chronic pain may or may not be the issue or the intent. Therefore, strategizing ways to help adolescents with chronic pain be physically present may be beneficial in maintaining and /or establishing new close friendships. Research is needed to explore the impact of chronic pain on the number of and reasons for close friendship changes and losses to know if these friendship changes are different than those experienced by healthy adolescents.

Despite facing changes to their closest friendships as a result of their chronic pain condition, adolescents spoke of positive aspects of their experiences such as understanding who amongst their circle of friends were their true friends. They demonstrated courage and a desire to move forward and not succumb to negative experiences. Elise (age 15), an adolescent who had been socially excluded by her closest friends, asserted, "I think of it as I really found my friends, and that it probably wasn't worth my time if they [previous close friends] would have dropped me that quickly." Other participants who experienced changes to their friendships voiced similar sentiments. Kelly (age 16) stated "Some of them I've drifted apart with, and some of them I've gotten closer with". The resilience of these adolescents to reframe lost

friendships was striking and it may be an important strength to build on when helping adolescents cope with the social impact of their chronic pain condition.

Interestingly, Jason (age 18) denied experiencing any friendship changes. He described his friends as still loyal and committed, “Yeah, like [they did] not ignore me for not being, like out for months at a time, and still being as close with them when I come back out. They’d just come over [to visit when out of school]”. Although Jason was absent from school and not able to participate in many activities, he did not feel rejected, and described ‘not being ignored’. This raises the question regarding what factors contributed to Jason being included despite his physical absence from school. Although Jason is the only male participant with chronic pain, sex may be a factor in his not feeling rejected by friends. Clark and Bittle (1992) suggest that girls expect more conventional morality, loyalty, commitment, and empathic understanding from their friends than do boys. Girls, more often than boys, report having friendships characterized by higher levels of these factors. Jason’s expectations of his friends may have been different than the expectations of the girls in this study. Girls may have greater emotional needs and expectations of their friends. Jason, therefore, may not perceive being ignored or rejected by the same display of friendship behaviors compared to the girls in this study. This difference in friendship interactions was noted in a previous study involving adolescents with chronic pain. The male participant in that study stated that his friends were mainly interested in his ability to join in sports again and he did not discuss personal coping or an emotional impact of his chronic pain (Forgeron & McGrath, 2008).

Friendship expectations alone were not the reason that Elise and Joanne felt ignored and rejected by their once close friends, as they clearly experienced being ostracized. Nevertheless, sex differences may provide insights into why all but one of the

girls with chronic pain experienced changes to their close friendships. Additionally, the presence of quality alternatives has a more profound impact on the friendships of girls, as girls with high quality alternatives were more likely to experience changes to their close friendships compared to boys (Branje et al., 2007). Jason also lived in a small community making the existence of quality alternatives less likely. Thus sex and geographical differences between Jason and the other adolescents with chronic pain may have enabled him to remain engaged with friends despite his pain. The support he experienced from his close friends allowed him to see himself as a worthy friend and perceive his social world as virtually unchanged.

Qualities Of Close Friendships

Friendship changes and losses as a result of their chronic pain condition added another complexity to the social lives of these adolescents as it forced them to rethink the characteristics they valued in quality friendships. The list of characteristics of close friendships cited by healthy participants and those with chronic pain were similar. They included: shared interests, more intimate disclosure, emotional support and companionship, all of which are described in the literature (Rubin et al., 2005; Buhrmester, 1990). A noted difference is that adolescents with chronic pain emphasized trust, dependability, non-judgmental support, and empathy regarding their chronic pain condition over compatibility and spending time together. These characteristics are at the forefront of how Elise (age 15) talked about her best friend.

I think they're [close friends] there for you more, I mean, one quality is they're extremely loyal, and they just don't – if you're in need or troubled or something, they'll listen to you instead of just being there out of convenience. It's really good to have her [best friend], and it's really good to know that she's there.

The importance of these friendship characteristics (trust, dependability, and non-judgmental support) was evident from the participants' with chronic pain descriptions of supportive their close friend interactions. Close friends were an important resource for these adolescents in their daily pain coping. However, at the same time, close friends could be a source of stress resulting in exacerbations of their pain. Kelly (age 16) explained this dual effect as:

Some days when I'm with them and I kind of like, it helps me think about other things instead of sitting there thinking about my pain, and other times when I'm stressed or arguing with one of them or something like bad [happens], then it bothers me and the pain gets worse. Like they can have a positive effect on it or a negative effect on it.

These adolescents may never be quite sure if a particular social situation with close friends will be a helpful distraction or a stressor that escalates their pain. Although all adolescents experience misunderstandings and stressful situations with friends, these do not have the physical consequences described by the participants with pain in this study. Thus, when working with adolescents living with pain, helping them develop skills to anticipate situation in which friends may be helpful versus unhelpful may assist them to make good choices regarding when to initiate engagement. For example, Sherry (age 15) noted that she found friends calling when she missed school helpful and she clearly identified that she desired to be kept informed about the social activities she had missed. These conversations provided her with both distraction from her pain and confirmation that she was important to her friends.

I love being called anyways, but, that just makes it 10 times better because you're like, oh look, somebody's calling me, how nice. I don't want to talk about what's wrong, I just want to talk about, what did you guys do today, what was fun, what was some funny stuff that happened?

Being included and cared about was associated with a sense of belonging; this was central to what all participants desired from their friends. Unfortunately, most participants with chronic pain felt that their closest friends did not always display behaviors that they perceived as caring and inclusive of them.

Included in the descriptions of friendship interactions was a need to sometimes discuss their pain with their friends, as the angst of living with such pain became unbearable at times. This is highlighted by Elise and echoed by others.

If everything's getting to be too much, you know, we'll [close friend and Elise] go for a walk or something. I mean, I just kind of lay everything on her, and then we'll just kind of sit there and ...it helps.

The significance of knowing someone is willing to provide emotional support is important. Not having to always hide their pain from close friends for fear of being rejected suggests an ability to establish trusting and safe close friends despite previous social losses. At the same time, fear of disclosure to even close friends contributed to self-distancing practices described in Theme 1, revealing the personal tension experienced by these adolescents.

Empathy Needs From Friends

Interestingly, the adolescents with chronic pain were able to state what they wanted from their close friends, but they were unable to express these needs to their close friends. Several of the adolescents wanted their close friends to stay in contact more often when they were absent from school. They also wanted their close friends to acknowledge their difficulty in living with chronic pain. Julia (age 16) poignantly described the conflict between understanding her close friends' behavior and her own desire for her close friends to affirm her pain.

There's been lots of time when I want someone to understand, it's a lot better, but it's not really their fault. You know what I mean? It's not really their fault; they don't have the pain so they don't have to worry about it. But sometimes I just want someone to come up to me and be like, I know you're having a hard time right now, but that doesn't really happen.

Julia, and others, did not blame their friends for their apparent lack of understanding which points out that adolescents with chronic pain were not necessarily judgmental of their friends when they failed to meet their needs. They understood why their close friends did not and could not empathize about their pain but, nevertheless, desired understanding from their close friends. Julia desperately desired her friends to simply acknowledge her difficulty in living with pain but clearly they did not support her in this way. Despite this, Julia did not talk about her efforts to discuss her pain with her friends in the above quote. When she discussed talking about pain with others elsewhere in her interview, she admitted that she found this difficult. She experienced tension in keeping this somewhat secret as a means of retaining some semblance of sameness, or 'normalcy' with her closest friends; yet at the same time needed them to understand her new life situation which was far from normal for an adolescent.

Empathy for their pain and suffering was a friendship quality that the adolescents with chronic pain desired. Empathy includes both cognitive and affective components, as well as, the ability to convey empathy. Cognitive components include one's ability to identify with and understand another's perspective while the affective component includes the tendency to experience feelings of concern or sympathy towards another (Davis, 1994). The experiences of the healthy participants in this study suggested that an understanding of chronic pain, which is in contrast to their own experience of acute pain, might be a barrier to demonstrations of empathy by healthy peers. If a peer is unable to fully understand the experience of living with chronic pain, their responses most likely

would not meet the needs of adolescents with chronic pain. For example, the predominate strategy offered by the healthy participant group describing how they would like to be treated by friends if they had a chronic condition is highlighted by Anne (16 years): “I don’t know, I think I’d like them to react as normal as they could, even if I couldn’t do certain things or go certain places. I’d want them to act the same way”. Anne did not know what would be helpful and she could only imagine that she would want to be treated the same as before. Although the adolescents with chronic pain valued being treated as before, they also needed other supports such as acknowledgement, which may not be readily understood or communicated by their friends.

Pivotal in perceived understanding and empathy by close friends was the acknowledgement of their pain as a legitimate condition. Natasha (age 15) described this need for acknowledgement and identified friendship activities she would find supportive. She admits that her friends did not meet these needs. Her story and Julia’s, is representative of other participants.

Well it’d be kind of nice if they would call or come over to just watch a movie or something. It’d be kind of nice for that, but I can’t make them do things. I mean, I’ll talk to them on the computer or send an e-mail or whatever, and say I’ll be back next week or whatever, and they’ll e-mail back, like yeah, you should come back, you’re missing so much, and just kind of contact like that. [But] when I’m out sick [with pain] I wish they would acknowledge more that I’ve been sick, because when I come back it’s just like someone’s had the flu or something.

Natasha clearly identified a gap between her healthy friends and herself with regard to how she viewed her illness compared to her friends. She needed them to understand that her illness was different from the acute illness or injury they may have experienced. She also needed and wanted them to understand that when she was unable to come to school, she had ongoing friendship needs in the presence of continued pain that influences her ability to join in activities.

Strong interdependent friendships are described as those in which friends have an awareness of each other's needs and feel that their individuality is accepted more by their friends than those in disengaged friendships (Selfhout et al., 2009). The descriptions above offered by Julia and Natasha illustrate that their healthy friends may lack awareness for their feelings and needs. Perhaps lack of pain empathy on the part of their healthy friends may put adolescents with chronic pain at risk for disengaged friendships. This is concerning, as interdependent friends showed higher mean levels and greater increases in constructive problem solving compared to disengaged friends (Selfhout et al., 2009). Disengaged friendship styles may contribute to adolescents with chronic pain using distancing practices and experiencing reservations discussing new friendship needs with their healthy friends. It is troubling if adolescents with chronic pain experience more disengaged friendships as the constructive problem solving skills developed in interdependent friendships could be helpful as they encounter barriers in school, work, and society.

Challenges In Securing New Friendship Needs

Many of the adolescents with pain had either very limited discussions or never discussed how their pain impacted their lives and what sorts of things would be helpful to them in their ongoing friendships. Some became frustrated when their friends did not seem to acknowledge their pain condition. These adolescents assumed that their friends would know what to do for them, such as altering plans so they could be included, initiating contact when they were absent from school, and updating them about what they missed at school both academically and socially. Kelly (age 16), described a situation in which her friends were unwilling to alter lunch plans to accommodate her needs.

There's a pizza place like a seven minute walk up the road, and then there's Subway [sandwich shop], which I like a lot, but Subway is about a 15 minute walk up the road or even longer than that sometimes, and some days I'm just like, can we just go to get a piece of pizza, please? And they're just like, no, I want Subway, like I don't want pizza today. And I'm like, well I don't want pizza either but I don't want to, like, I just cannot walk today, and then they'll argue with me and they'll be like, I don't know why you have to be so stubborn Kelly. I just go and I'm in pain that night, and I'm just like, I just wish you would understand why I don't want to walk to Subway today.

The consequences of her friends not being willing to alter their lunch plans was that Kelly experienced an increase in her pain and felt misunderstood, even maligned, by her friends. The need to be included is powerful. Kelly went with her friends knowing she would pay a price. However, the price is less than staying behind alone, and feeling rejected. Blaming her friends for being insensitive would not be unreasonable here but it may be that her friends become confused when she described being unable to walk to the restaurant farther away but then does. It is unclear if her friends understood the consequence of increased pain for Kelly because of her joining them.

Feeling cared about, valued and included were central to the new friendship needs of adolescents with chronic pain. When these needs are not met the adolescents with chronic pain felt socially neglected and rejected. Social pain, defined as being socially rejected or neglected, shares some neural centers in the brain with sensory pain (Eisenberger & Lieberman, 2004). Recent research has shown a decrease in sensory pain thresholds in healthy participants when they experience social neglect (Eisenberger, Jarcho, Lieberman, Naliboff, 2006), which may help to explain why these adolescents identified that friendship stress or conflict could increase their pain. It may be that when an individual suffers from chronic pain, the impact of being neglected is even more profound.

Through the stories of all participants, it became clear that the adolescents with chronic pain experienced a change in how they perceived and evaluated their close friendship interactions. They developed a ‘chronic pain’ lens through which they viewed the world and this new lens was considerably different from the acute illness/injury lens of the healthy participants. In contrast to the participants with chronic pain, the healthy adolescents had little illness experience and the experiences they did have situated illness/injury along a short lived knowable trajectory that ended in full recovery as noted by Susan (15 years):

Yeah, a couple of years ago I got kind of sick. I had a throat infection so I missed about a week of school. Yeah, it wasn’t that bad. I just went back to school, and at the time I was in middle school and so, I could miss a lot more time in middle school than high school, and it’s easier to make up for it. So it was pretty easy going back.

These different lenses are important to consider as they may provide a framework for understanding the changes that occur in the closest friendship experiences of adolescents with chronic pain and perhaps provide suggestions to help these adolescents achieve their new friendship needs.

Healthy adolescents’ knowledge and skills in providing support to a close friend with chronic pain is outside of their experiential world. The healthy participants in this study talked about being able to provide emotional support and advice for common or ‘normal’ adolescent experiences such as friendship difficulties, school issues, romantic partner problems, and family conflict. When discussing their own illness/ injury history and how they would support a friend with a chronic condition, a gap was revealed between the stories of the healthy participants and those participants with chronic pain. This gap was between the desires and needs of the participants with chronic pain and the skills and knowledge of healthy participants with regards to chronic conditions. The

healthy adolescents were apprehensive about their ability to understand and discuss the issues of a friend with a chronic condition. Susan (age 15), one of the healthy participants, illustrates this apprehension:

I feel more comfortable talking to my friends about like, relationships and stuff like that because they're going through it as well. But health problems, that's, I don't know. I'd just feel a little embarrassed if I was talking to my [close friends]— I'm not really sure.

Like the majority of adolescents in society at large, the healthy participants in this study did not have chronic conditions in the forefront of their daily lives and thus they were unsure about what supportive behaviors would encompass. These participants stated that they would most likely wait for their ill friend to contact them, as this would signal when their friend was feeling well enough to re-engage socially. They were skeptical as to whether they would initiate conversations with their friends about their health condition as they would want them to feel 'normal'. They would wait subsequently until a chronically ill friend raised the subject first.

Most of these adolescents with chronic pain did not consider that their close friends might be treating them as they always did, as a means to making them feel normal. Close friends may not realize that their friend with chronic pain may have new friendship needs. Therefore, it was not surprising that the adolescents with chronic pain voiced a need for different qualities in their close friendships as their needs contrasted with the skills, abilities, and assumptions of the healthy participants. In addition, adolescence may contribute to the complexity created by these different lenses or gaps in experience between adolescents with chronic pain and healthy friends. Adolescence is characterized by an 'imaginary audience' as an adolescent believes (s)he is the focus of attention despite this not being the case in actual social situations (Elkin, 1967). This

'imaginary audience' may explain why adolescents with chronic pain believed that their friends should, at times, understand their new friendship needs without having to discuss these needs with their friends. Conversely, healthy adolescents may not be as aware of the needs of their friend with chronic pain as their focus is on their own needs. These findings may be useful in helping reframe some of the behaviors of close healthy friends and may help counter the feelings adolescents with chronic pain have of being neglected by their closest friends. Thus, assisting adolescents with chronic pain with ways to communicate their new friendship needs to their close friends may assist these adolescents to secure the support they require from friends.

Peer Support

In determining the sorts of social interventions that might provide adolescents experiencing chronic pain with some of their new friendship needs, it was interesting that only a few of the adolescents expressed interest in meeting another adolescent with chronic pain. In their struggle for legitimacy, these adolescents wondered if knowing another would be reaffirming. Forgeron and McGrath (2008) found mixed interest in peer support for adolescents with chronic pain with those not interested citing the idiosyncratic nature of chronic pain as a barrier. The idiosyncratic nature of pain may suggest a belief by adolescents that their pain experience is unique and therefore not likely to be shared by another. It may also be that, for some adolescents, friendships based on their chronic pain condition re-emphasized their difference. Ambivalence with being part of special groups has been noted by Goffman (1963) in his essay on stigma and the management of spoiled identity. Goffman acknowledged that "the nature of an individual, as he himself and we impute it to him, is generated by the nature of his group affiliations" (p. 38). Thus aligning oneself with other adolescents with chronic pain is in opposition to how some of

these adolescents want to be viewed. They want their close friends to view them like they view other close friends, not as a person who has ‘special pain friends’.

Apart from meeting someone with a shared experience and learning about their disease process, there is little evidence in the pediatric literature that establishes precisely what peer support groups offer adolescents that is not attainable in positive friendships. The adolescent peer support literature that does exist is descriptive in nature and assesses informational needs met and sharing of coping strategies through peer support but does not identify actual differences in coping as a result of the peer support group (Gorynski & Knight, 1992; Conway, Thompson, & Caldwell, 1996; Telfair & Gardner, 2000). In fact, there may be some concerns in establishing peer support groups.

Rose (2002) and colleagues (2007) explored the concept of co-rumination, the excessive discussing of problems, in adolescent friendships and reported that increases in co-rumination predicted increases in anxiety and depression for adolescent girls. Boys who suffered from anxiety or depression were found to engage in co-rumination in their friendships compared to boys who did not have these internalizing issues. Although the adolescents in this study did discuss their problems with friends, they limited these discussions because their friends did not always fully understand their pain condition and because their friendships were about more than their chronic pain. Given that peer support groups are a venue to meet peers with similar problems, relationships established in these venues seem primed for frequent episodes of co-rumination. Additionally, since there is an increased incidence of internalizing behaviors such as anxiety and depression in adolescents with chronic pain compared to other adolescents (Campo et al., 2004; Varni, et al., 1996), engaging in peer support groups may be more problematic for adolescents

with chronic pain compared to adolescents with other chronic conditions as these internalizing conditions were linked to increase rates of co-rumination.

Regardless of the potential benefits and negatives of meeting another adolescent with chronic pain interest in participating in a peer support group is essential. Jason (age 18) provides an insightful explanation of why he is not interested in meeting other adolescents with chronic pain.

It wouldn't make a difference really [meeting other adolescents with chronic pain], be probably in the same boat for not knowing what to talk about because we know that we feel the same way anyway. I think it would just be an awkward feeling, nobody would know where to start, just they'd talk, you'd just listen and you're just agreeing, yeah, that's how I feel too. So it'd be one person talking, everybody agreeing and that's about it.

Jason does not envision any other activities in a peer support group (such as sharing coping strategies) apart from discussing and sharing problems and feelings. For him, sharing in such an environment would be uncomfortable and not beneficial. When listening to the stories of all the adolescents with chronic pain, it became clear that they were most interested in securing their new friendship needs from their existing close friends. It may be important in future research to determine ways to help adolescents maintain close friendships within their social network. Alternatively, research into the positive and negative factors of peer support groups for adolescents with chronic pain would be important, as well as the actual peer support activities that make a positive impact on the lives of adolescents living with chronic pain.

Summary Of Theme 2: Rethinking Close Friendships

Overall, the adolescents with chronic pain maintained close friendships despite previous social losses. However, these close friendships took on a qualitative difference as the participants with chronic pain tended to use self-distancing practices even with

their closest friends. The long-term effects of distancing themselves from their close friends are unknown. In the short term, distancing practices protected the participants with chronic pain from feeling rejected or different when displaying pain in front of their close friends. Nevertheless, decreased engagement with close friends prevented them from engaging in typical adolescent life and resulted in loneliness.

The participants with chronic pain acknowledged that close friendships were a powerful source of support but that they were also a source of stress and anxiety. Close friendships provided both pain focused support and support during typical adolescent experiences. Pain focused support included: a willingness on the part of friends to change plans to accommodate limits on their abilities during pain exacerbations; maintaining contact when they were absent from school; and acknowledgement of the struggles they encountered because of their pain. When these new friendship needs were withheld, close friends became a source of stress and anxiety resulting in the adolescents with chronic pain feeling uncared for and not worthy of friendship.

Conclusions

The overall theme *Re-thinking the Interacting Self: Living with Difference* revealed the meaning of engaging with others for the adolescents with chronic pain. Feeling different than peers was a common experience for adolescents with chronic pain across a wide range of personal and social situations. Chronic pain was disruptive to the development of self for adolescents who participated in this study as it interrupted the formation of self-identity and perhaps self-efficacy. These participants were no longer able to engage in many of the physical and leisure activities that they once enjoyed and, for some, they did not have any structured leisure activities to take their place. School became a great source of stress that consistently reminded them of their differences. For

many, their grades decreased and they required academic accommodations to achieve success. Teachers and classmates could facilitate or hinder their experience as a student in ways that healthy adolescents do not experience. Despite these challenges, all of the participants with chronic pain were actively attending school in some capacity and some were still engaged in structured activities, such as committees or sports, from which they could derive joy.

For the participants with chronic pain in this study their experience with pain changed their view of the world in various ways. They described a vulnerability that is generally not associated with adolescence, as they no longer felt invincible. They perceived themselves as more mature in some aspects of adolescent development, such as problem solving, but, at the same time, many felt that they were immature in social development compared to their peers. Although they took pride in acknowledging their perceived mature view of the world it also reminded them that they were different than their peers and, for some, this meant they no longer shared many interests with peers.

The adolescents' understanding of their chronic pain condition presented additional challenges in diminishing their differences from peers. Not only were they unsure of their condition, treatment, and the trajectory of their pain condition but they also described difficulty in garnering empathy from others, even close friends. Society's understanding of chronic pain may have created barriers to being seen as credible when they did try to explain their chronic pain condition. The positive and negative responses these adolescents received from others became integrated into their self-perception and their pain experience. Feeling stigmatized by others was a significant concern. Stigmatizing experiences ranged from confrontations with employers, ridicule by teachers, to disbelief in their condition by close friends. These experiences left these adolescents with chronic

pain feeling uncared for, blamed for their pain condition, and unwilling to engage in social situations where they could experience rejection.

Perceptions of close friendships by the adolescents' with chronic pain were changed as a result of exposure to attitudes and behaviors of close friends. These experiences influenced the ways they interacted with close friends including limiting contact. Pain caused a change in the priority of close friendship characteristics. Trust, dependability, loyalty, understanding, inclusion, and non-judgmental behaviors were essential in addition to characteristics of close friendships.

The participants with chronic pain also developed new friendship needs, which were not inconsequential. These new friendship needs included, acknowledgement and understanding of pain and related daily struggles, willingness to include them in activities or change plans to include them, and initiate contact when they are absent. When these new needs were not met, close friends contributed negatively to an adolescent's pain experience. However, when close friends did meet these new friendship needs, they were perceived by the adolescent with chronic pain to be supportive and they made living with pain more bearable.

Support from peers has been conceptualized as providing informational, emotional, and appraisal functions. Support from peers has also been identified as improving health outcomes through numerous actions including reinforcing help-seeking behaviors, encouraging effective coping, promoting social comparisons, and aiding self esteem (Dennis, 2003). Although these functions were generally attributed to peer support by a peer with the same health condition, it was clear that a close healthy friend may serve many of these functions. Thus, one's closest friends were described as an important

source of support for coping with chronic pain as well as coping with typical adolescent experiences.

Delving into the peer and close friend relationships of adolescents with chronic pain provided insights into the qualities of peer and friendship interactions in a pain context and helped determine the characteristics of these relationships that contributed to positive and negative pain coping. As suggested by the Social Communication Model of Pain (Craig, 2002), the behaviors expressed by classmates and closest friends were integrated into their pain experience by the participants with chronic pain and influenced their expression of pain within school and friendships. Their pain expression ranged from doing their best to appear the same as others while in school, to not wanting to share information about their pain experience with peers, to deciding not to engage with their closest friends at times.

The challenges associated with living with chronic pain were always against the backdrop of adolescent development. Adolescence is a time of inner turmoil and tension as one develops identity, self-efficacy, and self-worth. During this time adolescents increase their independence from family and develop a larger social network. Thus, the adolescents with chronic pain in this study faced all the same challenges as their peers but with the additionally burden of chronic pain. The healthy adolescents described their lives as increasingly busy with activities that helped them develop their self-identity and independence. Although close friendships were central to their lives, these friendships were among healthy adolescents with similar experiences. Pain created a gap in knowledge, needs, and experiences between adolescents with chronic pain and their healthy peers. The healthy adolescents acknowledged uncertainty about their knowledge and skill in supporting a friend with a chronic illness as this was outside their experience.

This gap in experience may have accounted for the attitudes and behaviors that many of the adolescents with chronic pain perceived as negative or uncaring.

However, the experience of living with chronic pain is not uniform and reflects the complex interplay of individual social factors in each adolescent's life. Some adolescents engaged in self-distancing practices as a way to decrease exposing their difference to others. Some of the adolescents with chronic pain did not feel confident in managing an intense pain episode in the presence of others; they feared questioning, disbelief, and rejection from others. Yet, distancing from friends was not part of everyone's life as they moved forward living with pain. It may be that sex plays a role in one's need for distance or in the perception of a friends' behavior as questioning or rejection. Both within the literature and this study, adolescent males described close friendships based on physical presence and engagement in shared interests, whereas girls described a need for more emotional sharing. Nevertheless, social engagement was acknowledged to be central to adolescents with chronic pain and they were learning ways to protect themselves while attempting to remain engaged.

Clinical Implications

A major challenge for clinicians is determining the best ways to help adolescents with pain engage with their close friends and to feel positive about their close friends. Their stories described thought processes that are different than their healthy peers as they now have questions and concerns about who they are as a result of living with chronic pain and how they engage with friends. It is evident that they are experiencing challenges to full engagement with their friends in a way that healthy peers do not, causing them to rethink close friendships. Clinicians need to remember the numerous challenges adolescents with chronic pain experience on a regular basis as the cumulative nature of

these social experiences may add to the social burden of the pain they experience.

Supporting efforts aimed at helping them engage in school and other activities (where they would naturally be interacting with close friends and peers) may be important for developing self-identity and self-efficacy.

Health care professionals can help adolescents with chronic pain understand their own friendship needs. First, clinicians must be open and acknowledge that chronic pain can be disruptive to close friendships of adolescents with chronic pain. Once clinicians acknowledge this possibility, they can help adolescents identify the factors that impact their comfort or ability to disclose versus socially distancing themselves. By identifying these factors, adolescents may be able to engage with friends with more confidence in their abilities to cope with their pain in a given social situation and, therefore, may engage with friends in a more predictable manner.

Clinicians need to be mindful of the various ways adolescents with chronic pain may experience disruptions in friendships. The degree to which adolescents with chronic pain experience friendship disruptions varies and therefore clinicians need to be aware that some of these adolescents may need more help with problem solving and strategizing social situations than others. Sex may also impact the close friendship experiences of chronic pain, especially in terms of seeking social support. Although it is important that all adolescents with pain remain physically engaged with friends, it may be that this is especially important for boys, as their friendships are dominated by engaging in activities together. Adolescent girls may require more strategies aimed at reframing expectations of close friends in terms of emotional sharing given that a friend may feel uncertain in their abilities to provide support. Therefore, for some adolescent girls it may be that their friendships benefit from a decrease in the frequency of their pain disclosure. Regardless

of the type of social support (passive or active), adolescents with chronic pain must be able to maintain or establish close friendships, spend time with their closest friend(s), perceive these friendships as helpful to benefit from the positive effects of social support.

Stigma can be experienced in many settings. Strategies to help these adolescents improve their own understanding of chronic pain and then articulate their pain condition and treatment to others may help them gain control in situations where they are met with skepticism. Clinicians need to understand that their behaviors may be stigmatizing to the adolescent with chronic pain as well as the behaviors of others within society. Advocacy on behalf of adolescents with chronic pain, be it with teachers, family members, other health professionals, or society at large, is needed. Advocacy on behalf of adolescents with chronic pain needs to become part of a clinician's role if myths and misconceptions are to be corrected and if access to care is to be improved.

Future Research

Chronic pain can disrupt many aspects of an adolescent's social life. Given the paucity of research in this area, further examination is warranted. We need to understand more about close friendships of adolescents with chronic pain before social interventions, can be designed and evaluated. Some specific future research directions have been discussed throughout the findings and discussion section of this chapter. However there are some overall directions that are needed.

Development of personal identity and self-efficacy are hallmarks of adolescence. This study suggests that chronic pain disrupts the normal trajectory of adolescent development. Longitudinal studies are needed to determine if, how, and what factors associated with chronic pain negatively impact the development of personal identity and self-efficacy as adolescents grow into young adults.

Stigmatization is an area that requires further exploration. This study touched on experiences that were characterized as stigmatizing; however studies are needed that specifically examine the stigmatizing experiences of adolescents with chronic pain. Additionally, studies that explore societal and health professionals' attitudes, beliefs, and behaviors towards an adolescent with chronic pain are also needed to more fully understand the role of stigmatization in the chronic pain experience for adolescents.

Friendship changes and losses were identified in this study. Research into the immediate and long-term effects of these friendship changes and losses of adolescents with chronic pain needs is warranted. Close friendships of adolescent girls and boys differ in some ways and, therefore, research that examines the differences in close friendships and the impact chronic pain has on these relationships is needed. This study focused on the close friendships of adolescents with chronic pain. Although a few of the participants had close friends that were of the other sex, the closest friend of all participants was same sex. Thus, little is known about the impact of chronic pain on cross-sex friends that are not romantic in nature and if chronic pain negatively impacts these friendships.

Adolescents with chronic pain in this study described themselves as more mature in some components of their development but behind in others. More research is needed to determine if perceiving oneself as either behind or ahead of peers on various domains of development negatively impacts peer relationships along with exploring strategies to mitigate potential negative effects.

Finally, adolescents with chronic pain developed new friendship needs. However, there was also a gap in communication, understanding, and perhaps, pain related empathy, which may have resulted in adolescents with chronic pain not perceiving responses from their friends as positive. Studies that identify the factors that contribute to

adolescents with chronic pain perceiving close friends' responses as non-supportive are needed. Findings from such studies could be used to design interventions aimed at helping adolescents understand their close friend behaviors and perhaps change their own behaviors within social interactions to gain more understanding and support and at the same time minimize their differences.

CHAPTER 3
STUDY 2: FRIENDSHIP INTERACTIONS OF ADOLESCENTS WITH
CHRONIC PAIN: DEVELOPMENT OF NOVEL SOCIAL INFORMATION
PROCESSING VIGNETTES

Chronic pain in children and adolescents results from “a dynamic integration of biological processes, psychological factors, and sociocultural context considered within a developmental trajectory” (Bursch, 2000). Social interactions with friends are imbedded within the social context and thus impact pain. From the findings in Study 1, Chapter 2, we proposed that divergent life experiences between adolescents with chronic pain and healthy adolescents resulted in friendship interactions that had both negative and positive effects on the pain experience of these adolescents. Both chronic pain and friendships have been separately explored as social processes (Crick & Dodge, 1994; Craig, Lilley, & Gilbert, 1996). The Social Communication Model of Pain described in Chapter 2 recognizes pain as a social process by asserting that further expression and subsequent pain experience is not only based on sensory and cognitive input but also on the reception a child receives from those around them (Craig et al., 1996) including their close friends and peers. Although the Social Communication Model of Pain is helpful in understanding pain from a social stance, it does not rigorously examine cognitive processes or affective dimensions within a specific interaction.

Advances in understanding child and adolescent cognitions during peer social interactions, such as in friendships and other peer relationships, have emerged from examining these interactions as social processes. Studies within this area have provided knowledge needed to design effective treatment strategies for children and adolescents with social adjustment difficulties due to disruptive behavioural problems (Fontaine, Burks, & Dodge, 2002; Mikami, Lee, Hinsha, & Mullin, 2002; Moore, Hughes, &

Robinson, 1992). Research suggests that adolescents must be able to understand the intentions of others and accurately interpret a variety of complex situational variables such as social context and available social information to perform appropriately (Dodge & Price, 1994).

Social Information-Processing Model

The Social Information-Processing (SIP) model proposed by Dodge and colleagues (1986), and advanced by Crick and Dodge (1994), was chosen as a model to explore cognitive processing in friendship interactions of adolescent with chronic pain. This model details six iterative steps in a child/adolescent's cognitive processing during a social interaction. These six steps are (1) encoding of cues, (2) interpretation of cues, (3) clarification of goals, (4) response construction or generation of a response, (5) response decision, and (6) behavioural enactment (Crick & Dodge). All of these steps apply whether the exchange is between two or more people. Appraisal of several factors occurs at each step and involves accessing the adolescent's cognitive database (comprised of stored memories from previous interactions, acquired rules, social schemas, and social knowledge) to guide decisions at each step. Poor reasoning at any step in the social encounter may have a detrimental effect on processing at subsequent steps. However, research does not have to begin at step one but can examine any step in the process and the steps chosen for study do not have to in direct order (personal communication, Kenneth Dodge, April 2, 2009).

According to the SIP model, the first step (encoding of cues) includes both internal (sensations and perceptions) and external factors that impact attention and focus. These factors influence the selection of items that a particular adolescent may attend to within the social interaction (Crick & Dodge, 1994).

Step two (interpretation of cues) may include one or more independent processes. These include: the personal mental representations of situational cues stored in an adolescent's cognitive database; causal attribution of the events that have occurred in the situation; inferences about the perspective of others; inferences about the meaning of previous exchanges and the present exchange for the adolescent and the particular peer; assessment of whether the goal for previous social interactions was met; and, the evaluation of the accuracy of the outcome expectation and self-efficacy predications made during previous exchanges with the particular peer.

In step three (clarification of goals), Crick and Dodge (1994) propose that an adolescent selects a goal or desired outcome for the present social interaction. Some of the factors that might impact the selection of goals include such things as staying out of trouble or making a new friend. Goals in this step are defined as "focused arousal states that function as orientations toward producing (or wanting to produce) particular outcomes" (Crick & Dodge, 1994, p. 76). Adolescents are thought to bring goal directed tendencies to a social situation; however, goals are subject to modification in response to the social stimuli encountered. An adolescent accesses his/her cognitive database to help with revision or construction of a new goal. For example, adolescents with chronic pain may broach the subject of their pain condition with their close friends in the hopes that their close friend will alter plans to make it possible for the adolescent with pain to participate.

Step four (response construction or generation), involves the adolescent determining a list of possible responses to the present social situation (Crick & Dodge, 1994). This list is generated from past experience in similar situations and/or with the

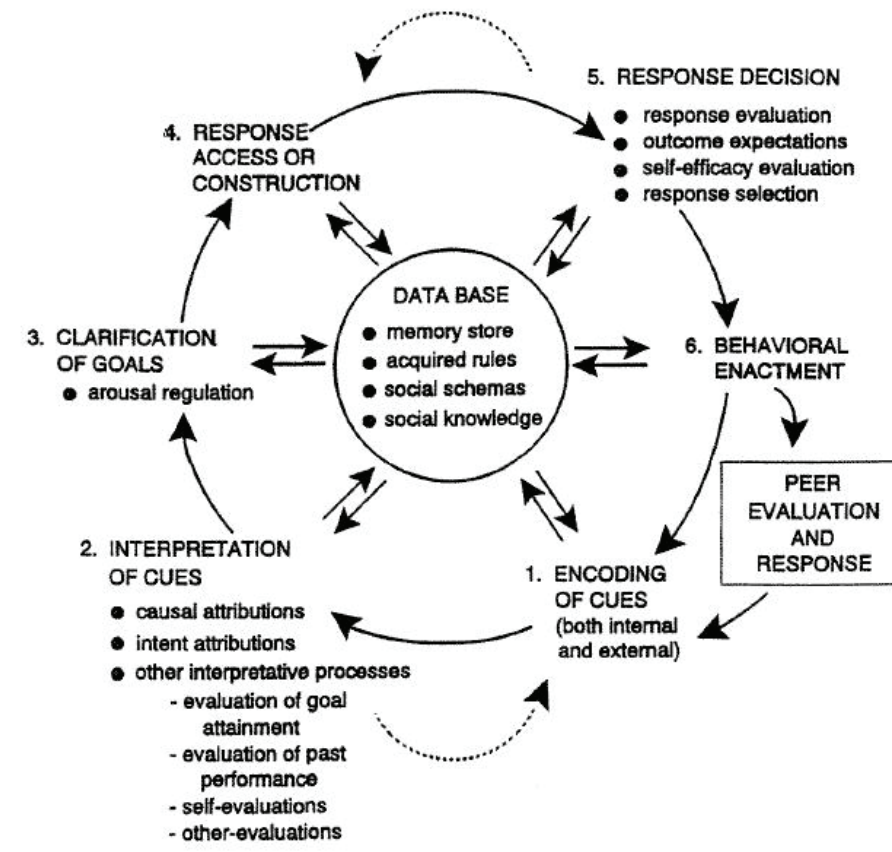
particular peer. If the situation is new, the adolescent may generate new responses to the immediate social cues based on their social schema, social knowledge, and acquired rules.

According to Crick and Dodge (1994), step five (response decision), involves the adolescent's appraisal of the responses from step four to determine the best behaviour in a given social interaction. This appraisal is based on several antecedents which include the response that best matches the adolescent's goal for the social interaction, knowledge and skill in executing the behaviour and desired outcome of the situation.

Finally, step six (behavioural enactment), is when the adolescent executes the behaviour from step five. Thus, the cycle begins again and is ongoing throughout the social interaction. Figure 2 illustrates the iterative nature of the SIP model.

Figure 2

Social Information Processing Model (Crick and Dodge, 1994). A Review and Reformulation of the Social Information-Processing Mechanisms in Children's Social Adjustment. Psychological Bulletin, 115 (1) 74-101. Reprinted with Permission.



The SIP model provides direction for hypothesis testing. Studies testing various aspects of this model have been instrumental in increasing the understanding of problematic social information processing for children and adolescents with social adjustment difficulties, including aggression and attention deficit disorder (Andrade, 2007; Dodge et al., 1986; Fontaine, Burks, & Dodge, 2002; King, S. 2007; Mikami et al., 2002; Moore, Hughes, & Robinson, 1992). For example, Dodge and Coie (1987) found that children with aggressive difficulties tended to interpret ambiguous social situations as

aggressive, indicating an aggressive tendency (hostile attribution) in cue interpretation (step 2 in the SIP model). Other researchers (Fontaine, Dodge, Pettit, & Bates, 2009) have investigated the response generation and decision steps of the SIP model (step 4 and 5) and found that adolescents with antisocial behaviour responded to an ambiguous situation in an aggressive manner compared to typically developing adolescents. The adolescents with antisocial behaviours viewed aggressive behaviours more positively than non-aggressive participants.

Although the SIP model has not been tested with children or adolescents living with chronic illness, qualitative findings from the first study in this dissertation suggest that it may be transferable to the adolescent chronic pain context. For example, adolescents with chronic pain did not always interpret their friends' behaviours as supportive, because their friends did not initiate conversations about their pain or call them when they had been absent from school. Adolescents with chronic pain also perceived some questions by their friends about their pain condition as a form of disbelief with respect to the existence of their pain. The healthy participants in Study 1 expressed uncertainty regarding what behaviours would be appropriate towards a friend with chronic illness. These findings indicated that the SIP model could be adapted to explore the social information processing factors that may impact the friendship interactions of adolescents with chronic pain by examining supportive and non-supportive situations and determining if differences exist. For example, do adolescents with chronic pain have non-supportive tendencies (negative bias) in their interpretation of ambiguous social situations with close friends? Such insights would be important in designing social interventions for adolescents with chronic pain. Dodge concurred with our assumptions about the

applicability of the SIP model to explore friendship interactions within a chronic pain context (personal communication April 2, 2009).

Vignette studies have been used extensively to explore the six steps of the SIP model. However, the vignettes for these studies have been constructed for children and adolescents with disruptive behavioural problems (Andrade, 2007; Dodge & Price, 1994; Dodge et al., 1986). Therefore, it was necessary to create vignettes to capture the social exchanges of adolescents with chronic pain and their peers (personal communication Dr. K. Dodge, April 2, 2009). The design of vignettes for use in exploring social information processing of adolescents with chronic pain in their interactions with their close friends was informed by previous SIP research. In the majority of research based on the SIP model using vignette methods, researchers assessed child or adolescent interpretation at the end of the depicted social situation. Although this research has been valuable in improving understanding and targeting treatment for children and adolescents with disruptive behavioural problems, it is unclear if aggressive tendencies were mainly due to the outcome of the social situations or generally present throughout the interaction. Separating the intentions of a friend from the outcome of the social situation may add another dimension to discerning the factors that are important in understanding social interactions of adolescents with chronic pain and their close friends.

Andrade (2007) separated intent attribution from outcome attribution in a study examining the social information processing of children ages 6 to 12 years with ADHD in comparison to healthy controls in a variety of social situations (positive intent and outcome, negative intent and outcome, ambiguous intent and outcome). Children in the ADHD group relied more on peer intent when analyzing social situations compared to controls, suggesting that the children with ADHD focused more on their opinion of what

was taking place in the situation as opposed to the actual events depicted within the vignettes. There was also a difference between the children with ADHD and the healthy controls when analyzing the outcome attribution of the vignettes. Children with ADHD were less likely than the children in the healthy control group to cite information contained within the outcome of the vignette when determining if the peer in the vignette was being nice or mean. The children in the healthy group were more likely to use situational cues and outcome information when making judgments of the vignettes. Thus, separating the intentions and outcomes of a social situation may provide additional insights regarding one's cognitive interpretation within a given social exchange.

The SIP model holds promise to systematically explore if, and where, interpretation differences exist within the social exchanges between adolescents with chronic pain and their friends. Such information would be important in increasing our understanding of the friendship experiences of adolescents with chronic pain and assist with development of social interventions specifically aimed at this population.

The Study

Purpose

The purpose of this study was to develop novel vignettes based on the SIP model and to conduct initial content validation of these vignettes in order to study close friendship interactions of adolescents with chronic pain.

Overall Methods

Despite the wide use of vignette studies, little research exists to describe a validation process for vignette development. Two studies using SIP theory were found that explained a descriptive validation process for vignette development (Andrade, 2007; Dodge & Price, 1994). The methodology and methods were guided by these two studies

and discussions with SIP researchers Dr. Kenneth Dodge, Dr. Brendan Andrade, and Dr. Sara King. This study used a descriptive survey approach to vignette validation. There were three phases to this study. The first phase was vignette construction. The second phase used a paper-based survey focusing on face validity with an expert panel. The third phase used an online survey focused on overall agreement with category ratings with health professionals and researchers working with adolescents. Each phase is described in detail below, along with data collection, analysis, and results.

Phase 1 Vignette Construction

The first phase was to develop and construct vignettes. Vignettes were constructed to represent a variety of activities and settings in which social interactions with close friends take place. The results from Study 1 guided vignette construction as the adolescents with chronic pain talked of varying social encounters with their close friends and these encounters resulted in them feeling both supported or included by their close friends or unsupported or excluded from the social situation. Specific scenarios that adolescents with chronic pain described (e.g. their need to have friends acknowledge their pain condition, call them when they are absent from school, make accommodations to plans so that they can participate, and the context in which these various situations occur) were integrated into the scenarios. Scenarios were also developed to reflect the uncertainty expressed by the healthy participants in Study 1 with respect to their knowledge and skill in meeting the needs of a friend with a chronic condition. Thus the scenarios represented the communication challenges and new friendship needs identified in Study 1, as well as perspectives from an acute illness/injury versus chronic pain lens. In addition to the results in Study 1, other qualitative research studies (Forgeron & McGrath 2008; Carter et al., 2002; Sällsfor et al., 2002) and clinical experiences from Ms.

Forgeron's (PI) work as a Clinical Nurse Specialist caring for adolescents with chronic pain for the past eight years, also informed vignette development. Forty-one vignettes were developed. As this was a novel adaptation of the SIP model, a large number of vignettes were necessary to ensure that an ample set of vignettes would receive initial content validation through this study process.

The vignettes were constructed as short stories of one paragraph or less and described a social interaction between an adolescent with chronic pain and their healthy close friend(s) in a variety of contexts. Although previous vignette research guided by the SIP model focused mainly on ambiguous social situations, given the novel context of using SIP to study the close friendship interactions of adolescents with chronic pain, it was essential to include a variety of social situations. Therefore, four categories of vignettes were developed supportive, non-supportive, ambiguous, and mixed. Supportive intent or supportive outcome vignettes were those in which the typically developing healthy teen's behaviours were considered to be supportive or inclusive of the friend with chronic pain from the perspective of a typically developing healthy adolescent. Unsupportive intent or unsupportive outcome vignettes were those in which the behaviours of the typically developing healthy adolescent were considered to be unsupportive or exclusive of the friend with chronic pain from the perspective of a typically developing healthy adolescent. Ambiguous intent or ambiguous outcome vignettes were those in which the behaviours of the typically developing healthy adolescent could be considered neutral, supportive, or unsupportive towards the friend with chronic pain. Mixed intent or mixed outcome vignettes were those in which the behaviours of the typically developing healthy adolescent consisted of both supportive/inclusive and unsupportive/exclusive behaviours.

In addition to the four categories of vignettes, the vignettes were created so that the intent (what the healthy friend meant to do) of the vignette was separate from the outcome (the result of the healthy friend's behaviour for the adolescent with chronic pain). This approach was similar to the approach taken by Andrade (2007). Dividing the vignettes in this way would provide an opportunity to explore the possibility that adolescents with chronic pain may have a negative tendency or anticipation when they approach social interactions with close friends. This negative anticipation may be the result of previous negative experiences with pain expression to others or with the particular friend. Therefore, vignettes with supportive, ambiguous, non-supportive, and mixed (both supportive and non-supportive components) intent and with supportive, ambiguous, and non-supportive, and mixed outcome were created.

Ethical Considerations

The IWK Health Centre Research Ethics Board approved the expert panel review and the initial content validation with health professionals and researchers. Consent from the expert panel was assumed by the completion of the paper-based questionnaire. Consent for the initial content validation with health professionals was obtained at the beginning of the on-line survey. Those who agreed to participate were permitted entry into the online survey; those who did not agree were automatically directed to a thank you page and were unable to enter the survey.

Phase 2: Validation Process: Expert Panel Review

The second phase of the validation process involved a panel of experts reviewing the vignettes for face validity, clarity of the vignettes, and offering suggestions for improvement.

Phase 2: Participants

Five experts comprised the panel. Four were members of Ms. Forgeron's PhD committee and the fifth member was a post-doctoral fellow with expertise in vignette based SIP model research. Although most members of the panel were also co-investigators on this study, they were not involved in the creation of the novel vignettes, nor did they review the novel vignettes prior to rating them. This was done to decrease the risk of biased feedback in this phase of the study.

Phase 2: Methods And Data Collection

The panel participants completed a paper-based survey to rate the clarity of the vignettes, whether the vignette was easy to understand or confusing, and to provide feedback on improvements to enhance clarity. Face validity was assessed by asking the panel to determine if the scenario depicted a response that was plausible from a typically developing adolescent and to rate their interpretation of the close friend's behaviour as supportive, non-supportive, ambiguous, or mixed. Counts of these ratings were summed across panel members for each of the 41 vignettes and these counts were converted to percentages.

Phase 2: Analysis And Results

Vignettes with category ratings of less than 60% agreement were reviewed with the panel. These vignettes were rated as either ambiguous or mixed by the panel. The nuances between ambiguous or mixed were determined to be too difficult to rate effectively. A new category of ambiguous or mixed vignettes was created. This action improved the ratings of 17 vignettes. Four of the vignettes therefore had intention or outcomes with category ratings of less than 60%, which did not improve with the collapsing of the ambiguous and mixed category. These four vignettes were subsequently

dropped from further analysis. Thirty-seven, of the original 41, vignettes proceeded to phase 3 of this study.

Minor changes were made to improve vignette clarity and two vignettes required minor word changes, such as changing ‘pissed off’ to ‘ticked off’. Once the wording and category selection for the vignettes was confirmed, a Flesch-Kincaid Grade Level score was completed on each vignette. A Flesch-Kincaid Grade Level score is a readability score that approximates the reading comprehension of an average student in the same grade as the score (Mayer, 2009; DuBay, 2004). This score is based on the United States school system, so that a Flesch-Kincaid Grade Level score of 8 equates to the reading comprehension of an average 8th grader in the United States. We were unable to find a Canadian equivalent readability scoring system. For several vignettes, minor changes such as changing a long sentence to two shorter sentences was done to decrease the reading level. All the vignettes that moved on to phase 3 had a Flesch-Kincaid grade level of 8 or below, with the majority being 6 or below. Given that these vignettes were developed for use with adolescents aged 13-18 years, a grade 8 reading level was determined to be appropriate.

Phase 3 Validation Process: Initial Content Validation With Health Professionals And Researchers

The purpose of the third phase of this study was threefold: to determine whether (a) the vignettes were understandable, (b) agreement on the overall intent and outcome behaviors of the healthy friend in the vignette, and (c) to elicit suggestions for further vignette improvement from a wider audience (see Appendix C for a shortened version of the health professional survey). The survey was hosted on Dalhousie University’s on-line survey service, “Opinio” (http://its.dal.ca/services/other_services/online_surveys/).

Phase 3: Participants

Participants for phase 3 of the validation process were recruited from email lists of known colleagues from a variety of health related disciplines. All potential participants either worked with adolescents living with chronic pain or were adolescent peer relationship experts and could read and write English. The sample size required for this phase was difficult to ascertain. The only other two studies that described validation of vignettes for studies using the SIP model have included 14 - 40 adults to determine if the vignettes were understandable and if the intent of the protagonist was clear (Andrade, 2007; Dodge & Price, 1994). Given the small number of experts in pediatric chronic pain, a target of 20 participants was sought. All of the professionals who were approached were known to the PI and/or the members of Paula Forgeron's PhD committee and were experienced in the research process. Coercion to participate was therefore not a concern and each individual in the group was sent a direct email inviting them to participate. Direct email invitation has been found to have superior response rates compared to other invitation notifications (Bosnjak, Neubarth, Couper, Bandilla, & Kaczmirek, 2008). Fifty-eight individuals were sent email invitations. An automatic reminder email was sent 2 weeks later and the survey was hosted for 3 weeks. A total of 38 individuals linked to the website, 31 agreed to participate, and 21-28 individuals rated the vignettes. Table 4 shows the number of participants who completed ratings of each vignette.

Table 4

Number Of Participant Ratings Per Vignette

Vignette Number	Number of Participant Ratings
1	28
2	27
3	27
4	26
5-12	25
13-14	24
15	23
16-17	22
18-37	21

Phase 3: Methods

The invitation email (Appendix D) served as an information letter introducing the study, the reason for the study, invitation to participate, and the hyperlink to the website where the consent form was posted. The hyperlink not only connected potential participants to the consent form but also, if they agreed to participate; allowed them access to the data collection survey. Internet based surveys are described as a practical and effective means of capturing data from populations who regularly use the Internet (Sills & Song, 2002). Efficiency of an Internet based survey was another important feature, as the invited participants for this phase of the study lived in a variety of Canadian provinces as well as other countries making regular mail impractical.

Phase 3: Data Collection

Data were collected between September 30, 2009 and October 21, 2009. Opinio had several security and confidentiality features. First, the data were stored on a separate secured server, which was only accessible to Opinio staff. Second, data were encrypted using Secured Socket Layer (SSL) providing both security and data integrity over the Internet. Third, the survey was designed so that responses were anonymous.

Participants were asked to complete the survey, which included vignettes with a category rating scale. The category rating scale was similar to the one used by the expert panel in phase two however, instead of four categories the category scale now consisted of three categories (supportive intent or outcome, non-supportive intent or outcome, and ambiguous/mixed intent or outcome). Participants were also asked to answer a dichotomous question about how easy or confusing the vignette was to understand and to provide any written suggestions for improving the vignettes.

Phase 3: Analysis And Results

The intent of the categorizing ratings was to develop vignettes that have 70% agreement on the behaviours of the healthy friend (supportive, non-supportive, ambiguous/mixed) in the vignette. This was a higher rating than from phase two as the goal of phase three was to determine which vignettes were rated with the most consistency; thus adding to content validity above face validity. Data from partially completed surveys were used when tallying category ratings for those vignettes. Similar to phase two, counts of the category rating for each vignette were tabulated across participants and then converted to percentages. Twenty-two vignettes had ratings of 70% or over: 17 of these were supportive vignettes, 3 were non-supportive vignettes, 2 were ambiguous or mixed vignettes. However, to develop an inventory of supportive, non-supportive, and ambiguous/mixed vignettes, a selection of non-supportive vignettes and ambiguous/mixed vignettes that had less than 70% agreement were selected. A large vignette tool was built with the following breakdown, 4 supportive, 4 non-supportive, and 9 ambiguous/mixed vignettes. The four supportive vignettes with the highest category ratings were selected and had a vignette rating of 95% agreement or more for either the intent or outcome. Three of the four non-supportive vignettes that were selected for

inclusion in the final set of vignettes had a category agreement of 76% or higher for the intent or outcome. The fourth non-supportive vignette had a category rating of 66.67%.

The ambiguous/mixed vignettes were the vignettes that received less agreement in their ratings. Nine vignettes from this category were selected for inclusion in an initial vignette questionnaire. Two of these nine vignettes had a category rating of over 70%. The other seven vignettes did not meet the original 70% agreement. However, the majority of category ratings for these seven vignettes were in the ambiguous/mixed category with the remaining ratings split between supportive and non-supportive behaviours. For example, one of the ambiguous/mixed category vignettes that did not meet the 70% agreement had an ambiguous/mixed category rating of 64%. The remainder of this vignette's category rating was split almost evenly between supportive and non-supportive categories indicating that this vignette most likely consisted of both supportive and non-supportive behaviours on the part of the healthy friend. The other ambiguous/mixed vignettes that did not reach 70% agreement had similar distributions of their category ratings.

Several of the participants from phase 3 provided suggestions to improve a few of the vignettes. These suggestions were minor and included increasing the use of apostrophes to make the vignettes more conversational and to change colloquial wording. None of these changes altered the intent or readability of the vignettes.

Since our *a priori* decision to use vignettes with category ratings of 70% was not fully reached, a larger vignette tool was developed and pilot tested with adolescents as part of Study 3. Refinements and reductions to the vignette tool were made based on the pilot outcomes (see Chapter 4 for Study 3 pilot results).

Discussion

We took steps to create vignettes that would illustrate realistic social interactions for adolescents with chronic pain and their close friends. Detailing the process used to create an inventory of vignettes to use in future research provides a transparent approach towards establishing validity of the vignettes. Few studies described the process of designing vignettes to use in research, especially studies guided by the SIP model. This study therefore added to the literature in several ways:

First, the vignettes were based on actual situations described by adolescents with chronic pain and/or healthy peers ensuring that these social interactions were embedded in the everyday occurrences of adolescent friendships. Second, we developed vignettes that extended the use of the SIP model to a new area of research beyond adolescents with disruptive behavioural problems to include the friendship interactions of adolescents with chronic pain.

Third, no adults in phase 3 had difficulty with rating the intentions of the healthy friend depicted in the vignettes separately from the outcome of the vignettes. This illustrated that separating the intent from the outcome was not confusing to the adults. Even for vignettes that consisted of the same category for both intent and outcome, the percentage ratings for the intent and outcome were not the same, suggesting that intent and outcome can be viewed as two different processes within cue interpretation. Separating a friend's intent from the outcome provides an opportunity to examine if adolescents with chronic pain, like the children with ADHD in the study by Andrade (2007), are more likely to focus their information processing on their perceptions of their friend's intent instead of focusing on the outcome and situational information contained in the vignettes.

Fourth, the process resulted in an inventory of vignettes that depicted supportive intent, non-supportive intent, and ambiguous/mixed intent, as well as, vignettes with supportive outcome, non-supportive outcome, and ambiguous/mixed outcome. Including vignettes that depict positive (supportive), negative (non-supportive), and ambiguous/mixed social situations allows for a wider understanding of context in the social information processing differences that may exist between adolescents with chronic pain and their healthy peers. It is important to know if differences exist, as this information may be helpful in targeting interventions aimed at improving close friendship interactions of adolescents with chronic pain.

Study Limitations

There are several limitations to this study. First, the vignettes were rated by a relatively small number of participants. Although this group was larger than those in one of the studies describing a vignette validation process (Andrade, 2007), it was smaller than that described in the other (Dodge & Price, 1994). Second, simple descriptive statistics were used to determine the category of the intent and outcome of the vignettes.

Third, not all the vignettes selected as part of the vignette inventory met our *a priori* category agreement rating of 70%. This is different than the other two studies describing a vignette development process (Andrade, 2007; Dodge & Price, 1994). However, previous studies describing the validation process for vignettes depict social situations with a negative or positive outcome such as being bumped by a classmate and having a drink split on you or being welcomed by a peer to join a group. These vignettes are generally used in research focusing on social information processing of children and adolescent at risk for disruptive behavioural problems. Social rules regarding aggressive responses may be more obvious than those regarding more subtle supportive or non-

supportive behaviours of friends. This inventory of vignettes was to be used with adolescents with and without chronic pain. Therefore, if systematic differences exist, despite less than 70% *a priori* category ratings for some of the ambiguous/mixed vignettes, this may indicate that adolescents with and without chronic pain do differ on their social information processing with respect to what sorts of behaviours are interpreted as supportive or non-supportive.

Conclusions

In conclusion this study suggested that an additional step in validating the social situations depicted in the vignettes as supportive, non-supportive, or ambiguous/mixed was required prior to a full-scale study using these vignettes (see Study 3, Chapter 4). Pilot testing was planned as part of Study 3, Chapter 4, to provide an additional opportunity to select vignettes that may illustrate the nuisance differences in interpreting social interactions between adolescents with chronic pain and their healthy peers if such a differences exists.

CHAPTER 4
STUDY 3: FRIENDSHIP INTERACTIONS OF ADOLESCENTS WITH
CHRONIC PAIN: ARE THEY DIFFERENT?

Adolescents with chronic pain may experience disruptions to their peer relationships (Carter, Lambrenos, & Thursfield, 2002; Forgeron & McGrath, 2008; Sällfors, Fasth, & Hallberg, 2002). However, most knowledge is at the peer group level and refers predominately to popularity (Forgeron et al., 2010). Consequently, we know little about the characteristics of their close friendships.

Study 1 in this dissertation suggested that there is a gap between adolescents with chronic pain and healthy peers in terms of perceptions and expectations within close friendships. Divergent life experiences between adolescents with chronic pain and healthy peers resulted in challenges to friendship interactions for the adolescents with chronic pain. These challenges were profound in that the adolescents with chronic pain had to rethink who they were from a social perspective.

To understand more about the challenges faced by adolescents with chronic pain in their close friendship interactions, further study is needed. This study focused on understanding specifics of how, or if, the identified gap in perceptions and expectations from Study 1 impact social exchanges between adolescents with chronic pain and close friends. The Social Information-Processing (SIP) model proposed by Crick and Dodge (1994) and detailed in Chapter 3, Study 2 guided this study.

Conceptual Model

As previously described, the SIP model consists of six iterative steps that describe cognitive processes during social interactions. We proposed that adolescents with chronic pain may have impaired social skills resulting from the sensory experience of pain, stored experiences from various individuals' responses to their pain, social rules governing the

display of pain, and the effects of social isolation as sequelae of their pain. Thus, the pain experience of these adolescents would contribute to differences in stored memory, social schema, and social knowledge within their cognitive database and may cause a biased interpretation style (step two) in their social information processing during exchanges with their friends. Misinterpretations, or a biased interpretation style in these social exchanges, may contribute to feeling excluded or unsupported by their friends resulting in further isolation, which may lead to impaired social skill development. Social distancing and isolation, even if self-imposed, may contribute to loneliness by limiting the friendship interactions of these adolescents. Limited dyadic friendship experiences (both in terms of quantity and quality) have been found to be a factor in the development of feelings of loneliness and depression (Nangle et al., 2003).

Conversely, the friends of adolescents with chronic pain may lack the cognitive expertise to understand chronic pain or chronic illness and substitute acute pain and illness schemas to fill in their knowledge gaps. Acute illness or pain schemas may result in misinterpreting chronic illness or chronic pain cues within these social interactions, and in constructed responses that do not meet the needs of an adolescent with chronic pain, contributing to negative social experiences for both parties. The significance of negative experiences during social interactions is important as other studies suggest that negative past experiences are more likely to result in negative or biased interpretation styles (Crick & Dodge, 1994; Prinstein, Cheah, & Guyer, 2006) leading to engagement in inappropriate social behaviours, which ultimately elicit a negative (unsupportive) reaction from others.

Other steps within the SIP model may also be impacted by differences in cognitive databases. For example, response construction or generation (step four) is when a child accesses their cognitive database to determine a list of possible behavioural

responses during the interaction. The list is determined by past experience, skill, and understanding of what is social acceptable within a given context. This list of possible behavioural responses is then considered and a decision is made on which of the behaviours the adolescent will enact (step five). The response construction and decision process of healthy adolescents within a specific social interaction with an adolescent with chronic pain may not only be negatively impacted by misinterpretation of cues, but also as a result of the healthy adolescent's evaluation of their ability to carry out a given response. Some of the healthy adolescents in the first study in this dissertation talked of not having the experience, knowledge, or skill to support a peer with chronic pain or chronic illness. Therefore, even if a healthy adolescent correctly interprets the cues from a friend with chronic pain, they still may respond in a manner that does not meet the needs of the adolescent with chronic pain due to the healthy adolescent questioning their knowledge and/or skill in carrying out a particular response. Hence, we hypothesized that the divergent life experiences of adolescents with chronic pain and their healthy peers impact their cognitive database resulting in differences in interpreting each other's social cues and the construction and decision of responses in a given social exchange.

In the reformulated SIP model, Crick and Dodge (1994) proposed that affect is an important factor in processing but they did not identify specific emotional factors within each of the steps. Instead, they provided several examples of how emotions may impact the various steps. They suggested that emotions in cue interpretation (step two) may influence the individual's interpretation of a particular situation such that prior-existing arousal states may alter an adolescent's accuracy in making social interpretations. Conversely, an adolescent's interpretation of a peer's intent, such as being hostile, may lead to feelings of fear or anger. Affect may also impact cognitive processing during

response construction (step four). For example, the type of responses constructed may be influenced by a need to facilitate easing of emotional distress, such as responses that might enable an adolescent to remove him or herself from the social situation if they were fearful. In addition, affect may impact response decision (step five) by evaluating a peer's emotional response to a particular behaviour. One might decide on a more altruistic behaviour by determining that those in the social interaction would view this positively and, therefore, make the individual feel good about themselves.

In advancing the research exploring the relationship between cognitive processes in SIP and affect, Crick, Grotpeter, and Bigbee (2002) explored the relationship between cue interpretation (attribution bias) and feelings of emotional distress in children who were physically and relationally aggressive and their response to instrumental and relational provocation contexts. Physically aggressive children exhibited hostile attribution biases and reported more distress for instrumental provocation contexts; whereas, relationally aggressive children exhibited hostile attribution biases and reported more distress for relational provocative contexts. Not all aggressive children are the same; interventions need to be based on the type of aggressive behaviour as well as attention to how a child feels in a particular context as well as their thoughts associated within the context.

As little is known about the friendship exchanges of adolescents with chronic pain and their healthy peers, we explored the relationship between negative emotions and the type of social interaction (ambiguous, supportive, non-supportive) to determine if adolescents with chronic pain attributed more negative emotions and distress to such social interactions. Determining if there were differences between the two groups provided preliminary understanding of the influence emotions play in SIP in relation to

social exchanges between adolescents with chronic pain and close friends, and may provide direction for future study. It is possible that a relationship between a pre-existing tendency to negative affect and cognition for adolescents with chronic pain might account for negative interpretations of their healthy friends' actions.

The purpose of this study was to explore in detail the social information processing steps using a series of written vignette stories (developed in Study 2, Chapter 3) to capture data, on step two, four and five (cue interpretation, response construction/generation, and response decision) of the SIP model. We have developed two versions of the vignettes, as there are differences between same-sex friendships and mixed sex friendships, with most close friendships of children and adolescents' being with a same-sex peer (Brendgen, Little, & Krappmann, 2000). Therefore, not to confound the variables under study, the female participants were asked to rate behaviours of female-to-female characters and males were asked to rate the behaviours of male-to-male characters. Additionally, both the number of chronic pain participants needed to increase the number of variables under study, as well as, the length of the vignette tool to capture both same-sex and mixed-sex friendships in one study were limiting factors. It was beyond the scope of this study to assess the mixed sex friendships of adolescents with chronic pain and healthy adolescents.

Individual Characteristics And SIP And Chronic Pain

Several individual characteristics have been found to influence SIP and are associated with chronic pain in adolescents. Internalizing behaviour problems, specifically social anxiety, depression, loneliness, and low self-esteem, have been studied in both contexts (Campo et al., 2004; Prinstein, et al., 2006; Quibble et al., 1992; Varni et al., 1996). Age and sex have also been noted to be associated with SIP differences.

Chronic pain in childhood has been found to be more prevalent in early to late adolescences and to affect girls more than boys after the onset of puberty (Perquin et al., 2000; Stanford et al., 2008).

Internalizing Symptoms And SIP

In a study using vignettes, Quibble et al. (1992) found that depressed children reported experiencing the negative situations depicted in the vignettes more often than non-depressed children. These authors also found that children with depression attributed a hostile intent to another for the negative situation; however, they would respond passively, preferring withdrawal to assertive behavioural responses. Children with depression tended to expect more positive outcomes for withdrawal, suggesting that although emotionally aroused from negative situations, they would behave passively. Similarly, Pössel, Seemann, Ahrens, and Hautzinger (2006) found that adolescents with depression differed from non-depressed adolescents such that they generated more negative responses to the situation and selected more withdrawal behaviours for enactment.

In addition to depression, Prinstein et al. (2006) conducted two cross-sectional studies to examine the influence of self-esteem, social anxiety and loneliness on SIP processing. Their first study examined attribution biases (component of step 2, cue interpretation) of young children (5-6 years of age) who were identified as being less socially preferred, sad, victimized, and withdrawn by classmates and self, as well as, teacher ratings on several measures to examine children's internalizing symptoms. Children with a negative self-referent attribution style (internal, negative attributions) to provocative vignette situations also scored higher on peer-reported peer rejection, teacher reported withdrawal and depressive affect, and self-reported loneliness and victimization.

Their second study examined internalizing symptoms and SIP processing with respect to attribution style in provocative situations in a group of adolescents (15-17 years of age). Self-report measures were used to assess depression (Children's Depression Inventory, Kovacs, 1981), social anxiety (Social Anxiety Scale for Adolescents, LaGreca & Lopez, 1998), self-esteem (global subscale of the Self-Perception Profile for Adolescents, Harter, 1988), and loneliness (Loneliness Scale, Asher, Hymel, & Renshaw, 1984), as well as peer nominations capturing social preference, depressive affect, anxious, and withdrawn behaviours. Critical self-referent attribution to provocative situations with an ambiguous intent were consistently associated with internalizing symptoms across studies. Specifically, critical self-referent attribution was associated with depression, loneliness, negative self-esteem and peer-reported depressive affect but there was no association with social anxiety. Additionally, after controlling for self-reported depression, critical self-referent attribution (cue interpretation) was associated with peer reported low social preference, victimization, and self-reported loneliness. The only significant sex effect was noted for boys; the association between critical self-referent attributions predicted peer victimization for boys but not girls. Overall, depression influences SIP and loneliness may also contribute to differences in intent attribution in step 2 (encoding of cues) of the SIP model.

Internalizing Symptoms And Chronic Pain

In a recent systematic review, Forgeron et al. (2010) found that co-morbid mental health concerns increased the rate of peer relationship difficulties in children with chronic pain. However, a significant number of children and adolescents without a co-morbid mental health condition also experienced negative peer relationships, suggesting that mental health difficulties may not be the primary determinant of peer difficulties in

children and adolescents with chronic pain. Nevertheless, it would be important to assess internalizing symptoms found to impact SIP and associated with adolescent chronic pain.

Depression is more prevalent in adolescents who have an ongoing or recurrent pain condition. Campo and colleagues (2004) found that 43% of children and adolescents with recurrent abdominal pain had a depressive disorder compared to 8 % of the case control group. In a recent study by Long, Palermo, and Manees, (2008), adolescents (12-18 years of age) with chronic pain had higher scores on the major depressive disorder subscale of the Revised Child Anxiety and Depressive Scale (Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000) compared to the healthy control group. However, despite higher scores, there was no suggestion that adolescents with chronic pain suffered from clinical depression. Depression was also noted to be higher in a population sample of 14-16 year old students who concurrently reported recurrent or ongoing pain compared to the rate of depression in the adolescents who did not report pain. The rate of depression was higher for girls than boys regardless of pain types (headache, stomach-ache, low back pain and neck or shoulder pain) and, compared to the same sex classmates without pain, depression rates were more than double for adolescents reporting one of the types of pain (Härmä, Kaltiala-Heino, Rimpelä, & Rantanen, 2002). Regardless of the studies that describe increased rates of depression in adolescents with chronic pain, there was no evidence that depression caused chronic pain and it is as likely that chronic pain may cause depression, with its restriction on friendship and physical activities, disruptions of sleep, and negative sensory experiences. The relationship between chronic pain and depression may also be bidirectional.

Adolescents with chronic pain may also score higher on depression measures concentrating more on somatic symptoms as a result of the symptoms associated with

their pain and not necessarily be linked to depressed mood. In this study, we used the Centre for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) as the CES-D may offer advantages when used with adolescents who have chronic pain compared to other measures of depression. The CES-D focuses primarily on cognitive and affective symptomology whereas the Beck Depression Inventory concentrates more on somatic symptoms (Wilcox, Field, Prodromidis, & Scafidi, 1998).

Nevertheless, chronic pain is also associated with three symptoms captured within the CES-D (interference with sleep, difficulty concentrating, and loss of appetite). All depressive mood inventories reviewed contained some physical and/or pain related symptoms within the measure. Therefore, it is possible that adolescents with chronic pain may score higher on the CES-D as a result of these three items, erroneously suggesting the presence of depressed mood. To assess this possibility, we examined the CES-D scores with and without pain related symptom items.

Varni and colleagues (1996) found that maladaptive coping strategies, which include socially withdrawing, were correlated with lower self-esteem ratings and higher pain intensity for children and adolescents with rheumatologic disorders. Study 1 also revealed that adolescents with chronic pain experienced loneliness and social isolation. Loneliness has not been directly linked to adolescents with chronic pain or illness, but children and adolescents with chronic pain are perceived by themselves and others as more isolated and withdrawn (Kashikar-Zuck et al., 2007), and subjected to higher rates of victimization (Greco, Freeman, and Dufton, 2007, Natvig, Alberktsen, Qvarnstrom, 2001; Barbarin, Whitten, & Bonds, 1994). Adolescents with chronic pain may have fewer interactions with peers (Merlijn et al., 2003) and thus loneliness may be a factor in

the social lives of adolescents with chronic pain. Therefore, loneliness and or self-esteem may influence SIP in adolescents with chronic pain.

Anxiety has varying associations with peer relationships of children and adolescents with chronic pain (Forgeron et al., 2010). Varni and colleagues (1996) found that maladaptive coping strategies (resting and social withdrawal) were correlated with higher scores on trait and state anxiety measures and higher pain ratings for children and adolescents with rheumatologic conditions. Anxiety and depression symptoms in late childhood were also found to help predict pain in adolescents across time (Standford, et al., 2008). Specific to social anxiety, Wagner et al. (2004) found an association between greater pain ratings and greater overall social anxiety for adolescents with sickle cell disease suggesting that adolescents experiencing greater pain feared negative evaluation by others. Thus, social anxiety in the chronic pain context is important to include in examining SIP difference between adolescents with chronic pain and healthy peers.

Age Differences In SIP And Chronic Pain

Age differences have been noted in SIP. Generally, processing patterns become more sophisticated with age (Dodge & Price, 1994). Specifically, encoding of both hostile and non-hostile cues improve with age (Dodge & Price). Endorsement of overt provocation responses decreased with age however relational provocation responses did not (Crick et al., 2002). Regardless of age, those who had an overt aggressive style of responses seemed to maintain a more aggressive style compared to those who are not as aggressive (Fontaine et al., 2002).

Incidents of chronic pain increase with age (Perquin et al., 2000) and, between the ages of 12-14 years, there is an increase in the prevalence of recurrent pain (Stanford et

al., 2008). We do not know if age is a factor when adolescents with chronic pain interpret friendship behaviours as supportive or non-supportive.

Sex Differences In SIP And Chronic Pain

Boys viewed hostile responses more favourably compared to girls (Fontaine, Burkes, & Dodge, 2002), Crick, and colleagues (2002) found that when vignettes varied to capture SIP in both relational provocation situations as well as physical overt provocation situations, there were no sex differences. However, as previously noted, Prinstein et al. (2006) did find a sex difference between boys and girls in their study of internalizing symptoms and SIP; critical self-referent attributions predicted peer victimization for boys but not girls.

Adolescent girls have been found to experience increased rates of chronic pain compared to adolescent boys, especially after 12 years of age (Perquin et al., 2000). Being female is also predictive of both increased pain (headache, stomach ache, and backache) over time and higher intensity of pain across time in adolescent Canadians (Stanford et al., 2008). We do not know if there are any sex differences in adolescents with chronic pain and their interpretation of supportive or non-supportive behaviour of friends.

Summary Of Literature Review

Overall, adolescents with chronic pain experience peer and friendship difficulties. More is known about the number of close friends as opposed to the actual quality of these friendships (Forgeron et al., 2010). Qualitative research findings reveal that adolescents with chronic pain find close friends both helpful and stressful in living their lives with pain (Forgeron & McGrath, 2008; Carter et al., 2002). Study 1 suggests that this dual function of friends (helpful and stressful) may be imbedded in the differences in life experiences between adolescents with chronic pain and their healthy friends and the

changing friendship needs of adolescents with chronic pain. The SIP model by Crick and Dodge (1994) identifies specific steps through which social interactions occur and has been instrumental in understanding the cognitive processing of children and adolescents with social difficulties due to behavioural issues. This model has started to identify a relationship between negative affect (emotional distress) and cognitive processing (Crick et al., 2002). The SIP model was used to explore if having chronic pain was associated with differences in processing a variety of friendship interactions.

Vignette studies have been used extensively in SIP research and a repertoire of vignettes had been developed for this study. Other factors (i.e. age, loneliness, social anxiety, depression, and negative self-worth) have been identified as affecting social information processing. These factors have been associated with chronic pain in adolescents, although a causal relationship is not known. In this study we will explore three steps of the SIP model to investigate if there is a correlation between the SIP variables and the presence of chronic pain, demographic factors, internalizing factors, and emotional distress.

METHODS

Purpose

The overall purpose of this study was to determine if adolescents with chronic pain and healthy peers interpreted friendship interactions differently in terms of supportive and non-supportive behaviours and if so, were there demographic characteristics or internalizing behaviours associated with these differences. Additionally, a pilot study was completed prior to the main study. The purpose of the pilot study was to assess the participants' understanding and ease in completing the measures, specifically the vignette questionnaire.

Research Question and Primary Hypotheses

The primary research question was: Is having chronic pain associated with differences in interpreting hypothetical social interactions with close friends? Nine separate primary hypotheses were specifically investigated.

H1. There would be a positive association between negative ratings of ambiguous intent attribution (non-supportive intent of vignette friend character) and measures of chronic pain.

H2. There would be a positive association between negative ratings of ambiguous outcome attribution (non-supportive intent of vignette friend character) and measures of chronic pain.

H3. There would be a positive association between the construction of more inclusive behavioural responses (inclusive alternatives to the behavioural response of vignette friend character) and measures of chronic pain. Participants will be asked to identify a list of alternative behaviours that the vignette friend character could have displayed within the vignette.

H4. There would be a positive association between more inclusive behavioural response decisions (inclusive alternatives to the behavioural response of vignette friend character) and measures of chronic pain. For example, the participants with chronic pain would decide on behaviours that ensured that the character with chronic pain would be included in the situation depicted in the vignette (e.g. suggesting that the healthy adolescent in the vignette should walk her friend with chronic pain home versus staying behind with a group of friends and having the adolescent with chronic pain walk home alone). Specifically, participants will be asked to identify which response (behaviour) they would enact if they were the

healthy friend in the vignette. The possible responses will be those from the list generated in hypothesis three above, as well as the behaviour depicted by the healthy character in the vignette.

H5. Adolescents with chronic pain would refer more to internal cues in rating the intent and outcome behaviours of the healthy characters in the vignettes.

H6. Chronic pain would be associated with negative emotional distress ratings when participants are asked to envision themselves as the chronic pain character depicted in each vignette.

H7. Chronic pain will not be associated with negative emotional distress ratings when participants are asked to envision themselves as the healthy friend depicted in each vignette.

H8. Negative affect (e.g. emotional distress ratings when envisioning oneself as the chronic pain character and the healthy characters in the vignettes) would correlate with scores on SIP related variables (i.e. intent attribution, outcome attribution, response construction, and response decision). Higher emotional distress scores would be positively associated with less supportive ratings on SIP variables.

H9. Chronic pain would contribute to explaining more variance on SIP variable scores compared to internalizing behaviours and above and beyond sex and age.

Secondary Research Hypotheses

H10. There will not be a positive association between the intent attribution ratings of supportive vignettes and chronic pain.

H11. There will not be a positive association between the outcome attribution ratings of supportive vignettes and chronic pain.

H12. There will not be a positive association between the intent attribution ratings of non-supportive vignettes and chronic pain.

H13. There will not be a positive association between the outcome attribution ratings of non-supportive vignettes and chronic pain.

Study Design

This study was a non-experimental correlational design with a control group. The presence of chronic pain was used as the criterion to differentiate the two groups of adolescents. Each group completed the same standard measures and vignette tool (described in detail below). In addition, the group with chronic pain completed two measures, one to assess pain intensity, and another to assess pain related disability.

Setting

This study took place at three sites in Canada: the IWK Health Centre in Halifax, Nova Scotia, the Alberta Children's Hospital in Calgary, Alberta, and the Stollery Children's Hospital in Edmonton, Alberta. Recruitment of adolescents with chronic pain was conducted through the Pediatric Complex Pain Clinic at each of these sites (see Appendix E for consent and assent forms). The study was begun at the IWK Health Centre, however due to limited recruitment potential it was expanded to include the two sites in Alberta, Canada.

Sample

Stratified sampling was used to recruit a sample of adolescents with chronic pain from the three Pediatric Complex Pain clinics and the healthy control group of adolescents within the general public in the three cities.

Inclusion Criteria

Chronic pain group included adolescents who:

1. Were 13-18 years of age
2. Had a diagnosis of chronic pain (as identified in the protocol) and were attending a tertiary chronic pain clinic.
3. Were able to read and write English
4. Were appropriate school grade for age as measured by self report

Healthy group included adolescents who:

1. Were 13-18 years of age
2. Were able to read and write English
3. Were appropriate school grade for age as measured by self report

Exclusion Criteria

Chronic pain group. Adolescents who were:

1. Pain free
2. Cognitively impaired

Healthy group. Adolescents who were:

1. Diagnosed with a major chronic illness (including ongoing or chronic pain)
2. Cognitively impaired

Measures

Demographic Data

Healthy adolescent participants completed a 3-item demographic form developed by the investigator (Appendix F). The three items captured the participants' age, sex, and present school grade level. The adolescents with chronic pain completed these items on the demographic data and pain assessment form described below.

Demographic Data And Pain Assessment Form

Adolescents with chronic pain completed a demographic data and pain assessment form developed by the investigator (Appendix G) to capture age, sex, present school grade level, pain intensity, location of pain, and pain frequency. Pain intensity was measured using the numeric rating scale (NRS-11), with 0 meaning no pain and 10 meaning the worse pain imaginable. The NRS-11 has been found to be reliable with children 8 years of age and older (von Baeyer, Spagrud, McCormic, Choo, Neville, Connelly, 2009; Miró, Castarlenas, & Huguet, 2009).

Pain Related Disability

The Pediatric Migraine Disability Assessment (PedMIDAS) (Appendix H) is a 6 item self-report scale developed to assess social role disability (i.e. school and activity interference) in children 6 to 18 years of age with persistent headache (Hershey, Powers, Vockell, LeCates, Kabbouche, & Maynard, 2001; Hershey, Powers, Vockell, LeCates, & Kabbouche, 2004). A two-week test/retest assessment found the PedMIDAS to be stable over this time frame (Hershey et al., 2001). Most importantly, the PedMIDAS demonstrated positive but moderate correlations with other parameters of pain assessment such as location, intensity, duration, and frequency of headache suggesting that the

PedMIDAS adds to the overall pain assessment related to persistent headaches (Hershey et al., 2001).

Scores can range from 0 to 260. Hershey, Powers, Vockell, LeCates, Segers, & Kabbouche (2004) established a grading for the PedMIDAS scores. Scores of 10 or less indicate little to no pain related disability. A score of 11 to 30 indicates mild pain related disability. A score of 31 to 50 indicates moderate disability. Scores above 50 indicate severe pain related disability.

Although the PedMIDAS has not been used extensively with non-headache chronic pain it has been recommended for use in pediatric pain clinical trials (McGrath et al., 2008). The focus on social role related interference due to a persistent form of pain provided a domain of pain assessment different than average pain intensity and the dichotomous variable chronic pain/no pain. The brevity of the scale was another important factor given the number of scales that participants were asked to complete.

Social Anxiety

The Social Anxiety Scale for Adolescents (SAS-A) (La Greca & Lopez, 1998) (Appendix I) is a 22-item self-report instrument to assess social anxiety and was used to assess social anxiety in all participants. There are 4 filler questions that capture information on hobbies and 18 questions that capture information on three domains of social anxiety: fear of negative evaluation by others support; social avoidance and distress, new situations; social avoidance and distress, general (La Greca & Lopez, 1998). Scores can be summed to represent subscale scores or total score. The population used to examine construct validity of the scale included 250 adolescents from 10th to 12th grade with means for these groups available for comparison (La Greca & Lopez, 1998) as well as normative data from a study with over 2900 adolescents (Inderbitzen-Nolan & Walters,

2000). The scale has been used to capture social anxiety data with adolescent participants to examine the association between social anxiety and SIP (Pristein et al., 2006) and prior studies have demonstrated good test-retest reliability ($r = .70$) (La Greca, 1999) and internal consistency ($r = .90$) (Prinstein et al., 2006).

Loneliness

The Loneliness Scale (Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985) (Appendix J) was used to assess feelings of loneliness of the participants. This 24-item self-report 5-point Likert scale consists of 16 loneliness items and 8 filler items. The items include statements to assess loneliness at school, an important context in adolescent life. The 8 filler questions ask about the adolescent's hobbies. The scale has been used with adolescents from African American and Hispanic-American (Bagner, Storch, & Roberti, 2004) backgrounds as well as Caucasian children and adolescents (Asher et al., 1985). Each item is rated on a 5-point scale from 1 (not true at all) to 5 (always true). The scores on the 16 primary items are then summed to produce a total score with some items being reversed scored. Scores range from 16 to 70 with higher scores reflecting greater loneliness. The scale has been used with adolescents to assess loneliness scores and their association with SIP with alpha of 0.75 between measurement times (Prinstein et al., 2006)

Self-Esteem

The Rosenberg Self-Esteem Scale (SES) (Appendix K) is a 10 item self-report measure to assess self-esteem in adolescents (Rosenberg, 1965). The SES has been studied widely, including validation with Spanish adolescents (Tomás & Oliver, 1999). The scale ranges from 0 (disagree strongly) to 3 (agree strongly). Four items are negatively worded to assess negative self-image requiring reversed scoring when

calculating the total score. Total scores range from 0 to 30 with higher scores indicating higher self-esteem. All participants were given this measure to assess their self-esteem.

Depression

The Centre for Epidemiologic Studies Depression Scale (CES-D) (Appendix L) (Radloff, 1977) was used to assess depression. This 20 item self-report measure was originally designed to assess current level of depression in the general population (Radloff, 1977) and has been validated with adolescents (Radloff, 1991). Recently, Phillips, Shadish, Murray, Kubik, Lytle, and Birnbaum (2009) conducted a confirmatory factor analysis on the CES-D with 3878 seventh graders in the US from a diverse background (white, African American, Asian or Pacific Islander, Multiracial, Hispanic/Latino, Native American) and found that the standard one total scoring of the CES-D is justified with adolescents as long as the “I felt that everything I did was an effort” item is removed. Therefore, we used a 19-item questionnaire to assess depressive symptoms for the analysis in our study. Higher scores indicate more depressive symptomology. The four positively worded questions are reverse scored and then the scores for each item are summed to produce a total score.

Different researchers have suggested different cut-off scores for using the CES-D, ranging from 16, to indicate mild depression, to 28 to indicate severe depression (Radloff, 1977; Radloff, 1991). Husaini, Neff, Harrington, Huges, and Stone (1980) suggest that a score of 17 indicates a possible case of depressed mood whereas 23 suggests a probable case of depressed mood in a community sample of adults. Roberts et al., (1991) found that a cut-off of 22 with male adolescents and 24 with female adolescents are indicative of moderate depression on the CES-D 20. Given the variation in cut-off scores and the recommendations by Roberts et al. (1991), we used a score of 21 on the traditional 20-

item scale as a cut off which ensured that adolescents with potentially significant depression would be contacted. Scores on the CES-D 20 of 21 or greater were reviewed with Dr. Patrick McGrath, PhD (registered psychologist and the principal investigator's PhD supervisor), Dr. Torie Carlson, PhD (registered psychologist and site investigator at the Alberta Children's Hospital Calgary, Alberta), or Dr. Bruce Dick, PhD (registered psychologist and site investigator at the Stollery Children's Hospital, Edmonton, Alberta).

Vignette Questionnaire

The Vignette Questionnaire was developed by the investigator (see Chapter 3, Study 2 for details on initial content validity) and was administered as a face-to-face structured interview to ensure that adolescents understand the questions, how to use the 5-point Likert scale, and to record the answers to questions if desired by the participant. The vignettes contained in this questionnaire were as follows: 4 supportive intent/supportive outcome, 4 non-supportive intent/non-supportive outcome, and 8 ambiguous intent/ambiguous outcome. There were two different versions, one for female participants (Appendix M) and one for male participants (Appendix N).

Procedures

Ethical Considerations

The research ethics boards at the IWK Health Centre in Halifax, Nova Scotia, Alberta Children's Hospital in Calgary, Alberta, and the Stollery Children's Hospital in Edmonton, Alberta approved the study prior to recruitment and data collection. Participation was voluntary. A unique study identification number was used on the data collection tools to ensure confidentiality and anonymity of the participants.

Data Collection

The administration of the measures and structured interview was conducted in private either at the IWK Health Centre, Alberta Children's Hospital, or Stollery Children's Hospital, or in a place selected by the participant. The participants were given the choice to complete all the paper-based measures on their own or with the PI or research assistant. Instructions for each measure were given prior to each measure being completed. For adolescents who preferred to complete the vignette tool on their own, the first vignette was completed with the PI or research assistant to ensure that the adolescent understood the instructions. Data collection took approximately 60 minutes per participant.

Data Analysis

All statistical analyses were performed with SPSS 17.0 computer software. The SIP related variables (intent attribution, outcome attribution, response construction, response decision, and cue interpretation style) served as dependent variables. Scores for intent attribution and outcome attribution were computed by summing the scores on the Likert scale (1 non-supportive to 5 very supportive) of the Vignette Questionnaire.

Response construction was computed by tallying the number of behaviours listed that ensure inclusion (support) of the chronic pain vignette character by the friend character depicted in the vignette. Response decision scores were computed by tallying all the inclusive (supportive) response decisions in the series of vignettes. The coding scheme for response construction and response decision are found in Appendix O.

Cue interpretation style was coded as either situational cues (those depicted in the vignette) or self-schema cues (those based on a judgment or past experience). For example, situational cues included responses that focused on cues contained in the

vignette such as “the friend said she was going to call her later”, “the friend wanted to go shopping and not pick up the homework”. Self-schema cues included responses that implied a meaning of the event, such as “the friend does not understand what it is like to be in pain”, “the friend was just being a normal teenager”, “this situation happened to me before”, “that was just a mean thing to do”. A point for situational and one for self-schema was given if the responses contained both types of responses. Scores for each participant were tallied across vignettes for both situational and self-schema and for both intent and outcome attributions. The coding scheme for cue interpretation is found in appendix P.

There were three chronic pain related variables in this study. First, chronic pain was assessed at the categorical level so that adolescents with chronic pain were coded as 1 and healthy adolescents were coded as 0. Pain related disability, as captured by the PedMIDAS, was a continuous variable ranging from 0 to 260; the control group did not complete this measure and received a score of 0. Similarly, average pain intensity was an ordinal variable captured on a numeric pain rating scale and ranged from 0 to 10. All participants in the control group received a score of 0 for pain intensity.

The PI was responsible for the coding of response generation, response decision, and cue interpretation. The intra class coefficient (ICC) is suggested as the appropriate measure for assessing reliability between and within raters for continuous data (Howell, 2007) and therefore was used in this study. Inter-rater reliability for the coding of cue interpretation, response generation, and response decision was assessed by having approximately 10 % of the data (data from 10 participants) coded by an individual naïve to the study. Intra-rater reliability was assessed by having the PI recode approximately 10% of the data (data from 10 participants).

Prior to coding, the PI developed a coding scheme for response generation and decision as well as one for situational and self-schema cue interpretation. Additions to the coding schemes were made for clarification and consistency in coding when answers to questions were not covered by the a priori coding scheme. Two-way random ICC for absolute agreement was used to assess inter-rater reliability (Holmefur, Krumlinde-Sundholm, & Eliasson, 2007; Shrout & Fleiss, 1979). One-way random effects model for absolute agreement was used to assess intra-rater reliability (Holmefur et al., 2007; Shrout & Fleiss, 1979). Inter-rater reliability coefficients of 0.7 and above are acceptable when making group level comparisons and coefficients as low as 0.6 may be sufficient (Polit & Hungler, 1991). The ICCs are presented in the following tables.

Table 5

ICCs For Response Construction And Response Decision

Code	ICC intra-rater	ICC inter-rater
Response construction	0.886	.769
Response decision	0.897	.860

Table 6

ICCs For Intra And Inter Rater Reliability For Cue Coding

Code	ICC intra-rater	ICC inter-rater
Situational Cues Intent	0.865	0.717
Situational Cues Outcome	0.918	0.685
Self Schema Cues Intent	0.946	0.853
Self Schema Cues Outcome	0.957	0.816

Simple correlations were computed to determine the association between distress scores, demographic characteristics, internalizing factors, chronic pain variables, and SIP variables. A series of hierarchal multiple regression (HMR) analyses were conducted to determine if internalizing behaviours, and level of distress when envisioning themselves

as the chronic pain character in the vignettes contribute above and beyond chronic pain with respect to the five SIP related variables (intent and outcome attributions, cue interpretation style, response construction and response decision). Sex and age were entered in the first step of the regressions when applicable, chronic pain in step two, internalizing behaviours (social anxiety, loneliness, self-esteem, and or depression) and distress score when envisioning themselves as the vignette character with chronic pain in step three.

Sample size was calculated to ensure power for the analysis of the primary outcomes that represented three steps (five variables) from the SIP model (ambiguous intent and outcome attribution, cue interpretation, response construction, and response decision) using eight independent variables. Tabachnick and Fidell (2007) suggest the following calculation for determining sample size for multiple regression: $104 + \text{number of variables}$, which would be 112 participants for this study. The target sample size for this study was 112 participants. Secondary outcomes, intent and outcome attributions for supportive and non-supportive vignettes, were also explored. Following the recommendations of Perneger (1998) and Rothman (1990), a family wise error rate was not used; instead we report the actual significant tests performed.

Missing Data

Missing data were not replaced. One chronic pain participant's pain intensity score and four chronic pain participants PedMIDAS scores were missing. Since there were fewer adolescents with chronic pain in the study compared to healthy adolescents, pair-wise deletion would allow for the remainder of an individual's data to be used in the analysis. This was deemed appropriate, as there were minimal missing data points.

Data Inspection

The internalizing variables were examined as both grouped and ungrouped data for outliers and normal distribution. Analysis of variance (ANOVA) was conducted to determine if there were statistically significant differences between the group of adolescents with chronic pain and the control group with respect to the four different internalizing measures (F statistic and p values are reported).

SIP variables were inspected as ungrouped data, first as univariate variables and then within the multivariate context in the regression analysis. The following were the screening procedures used for screening of the regression analysis. To assess the underlying assumptions of multiple regression inspection of the residual scatter plot were used to assess normality, linearity, and homoscedasticity (Tabachnick & Fidell, 2007). Mahalanobis and Cook's distances were used to check for multivariate outliers (Tabachnick & Fidell, 2007) along with the inspection of residual scatter plots for extreme data points. The Chi square statistic, with the number of predictor variables as the degrees of freedom (df) at a p -value of .001, was used to determine the critical value for Mahalanobis distance. Mahalanobis distances greater than the Chi square statistic may be indicative of multivariate outliers (Tabachnick & Fidell, 2007). Cook's distance over 1 is suggestive of a multivariate outlier (Howell, 2007; Tabachnick & Fidell, 2007).

Assessment of multicollinearity was done using the three strategies suggested by Field (2009). First, predictor variables were examined to ensure that each variable had the majority of their variance loading on a different dimension. Those that shared significant loadings on the same dimension indicated the possibility of multicollinearity and that one of the variables should be removed from the analysis. Second, the variance inflation factor (VIF) should be less than 10 and the average VIF should not be substantially

greater than 1. Third, tolerance below 0.1 is suggestive of a serious problem and below 0.2 is suggestive of potential for problem.

Transformations were computed where necessary. Transformations can make data interpretation more difficult, however transformations add to the robustness of the analysis especially when some variables are skewed and others are not, and when some variables are skewed negatively and some are skewed positively prior to transformation (Tabachnick & Fidell, 2007). Additionally, Tabachnick and Fidell (2007) recommend data transformations when the analysis involves ungrouped data and when the scoring system is somewhat arbitrary. Ungrouped data use each participant score on each variable to determine the regression equation whereas analysis using grouped data uses group means. According to the Central Limit Theorem, group means are from the sampling distribution of means for that population and therefore these means are normally distributed. Thus issues pertaining to normal distribution are not as dramatic on analysis using grouped data as they are on analysis using ungrouped data (Tabachnick & Fidell, 2007). The analyses for this study used mostly regression and therefore analyses were more sensitive to issues affecting normal distribution.

When the scoring system is somewhat arbitrary, one is concerned more with the contribution of the variable to the variance explained in the model than in the ability to predict an individual's score on the particular variable from the model's equation. Given that the scoring system was designed specifically for this study and thus somewhat arbitrary, and since multiple regression uses ungrouped data, transformations were applied when necessary. In this data set, some of the variables were markedly positively skewed while others were markedly negatively skewed. Base 10 log transformations were used throughout as one has to apply the same transformation to all variables if they are to

be used in the same analysis (Field, 2009) and log transformations are helpful when variables are markedly positively skewed (Howell, 2007). Several of the variables were negatively skewed so a reverse score transformations by subtracting each score from the highest score obtained plus one so that the lowest score did not equal 0, was applied to these variables (Field, 2009) before the base 10 log transformation.

RESULTS

Pilot Study

A pilot study consisting of three female adolescents (16-18 years of age) with chronic pain and four healthy adolescents, three females and one male (14-18 years of age), was conducted prior to the full-scale study. Participants in the pilot were asked if the vignette stories were easy to read and understand. Five vignettes were removed from the vignette questionnaire as it was reported by the seven pilot participants to be too long and several of the vignettes were deemed to be repetitive. All the vignettes were reported to be easy to read and understand. All participants stated the activities in the vignettes depicted typical social situations for adolescents.

Participants' ratings of the healthy characters' behaviour for the intent and outcome of the vignettes using the Likert scale contained in the questionnaire were used to determine which of the vignettes to remove. Mean scores for each group (adolescents with chronic pain and healthy adolescents) were computed for each intent and outcome portion of all 17 vignettes. The vignettes with the smallest difference between means were deleted. The following table provides the details and the differences between means of the vignettes that were removed.

Table 7

Differences Between Group Mean Scores For Removed Vignettes

Intent	Mean Group Difference	Outcome	Mean Group Difference
Supportive	0.0	Supportive	0.75
Non-supportive	0.5	Non-supportive	0.58
Ambiguous	0.33	Ambiguous	0.08
Ambiguous	0.11	Supportive	0.11
Ambiguous	0.34	Non-supportive	0.34

The deletion of these five vignettes resulted in a revised vignette questionnaire containing 3 supportive intent and outcome vignettes, 3 non-supportive intent and outcome vignettes, and 6 ambiguous intent and outcome vignettes.

From the pilot study, it was deemed best to allow participants to complete the internalizing measures on their own, if desired, with instructions for each measure reviewed by the investigator or research assistant just prior to the completion of each measure. Completing the vignette tool was left to the discretion of the participant. Only one participant in the pilot study group wanted to complete the vignette measure on her own after completing the first vignette with the investigator. This participant stated that going over the instructions and completing the first vignette together provided clarity so that she could complete the remainder of the vignette tool herself. Therefore, part of the instructions for the main study was that all participants completed at least the first vignette with the investigator or research assistant and then, if they preferred, they could complete the remainder of the vignette tool on their own. The data from the pilot was not used in the main study.

Main Study

Participants

Participants were 45 adolescents with chronic pain and 62 adolescents without chronic pain or chronic illness. They ranged from 13-18 years of age. The majority of the participants were females (n= 85). The tables below provide the descriptive statistics for the participants, as well as, the distribution of participants by site.

Table 8

Participant Demographics

	Chronic Pain Group (n= 45) M (SD)	Control Group (n=62) M (SD)
Age (years)	15.40 (1.8)	14.96 (1.6)
Female	41 (91.1%)	44 (71%)
Male	4 (8.9 %)	18 (29%)

Note. M = mean. (SD) = standard deviation.

Table 9

Distribution Of Participant Sex And Group By Site

Sex and Group	IWK Halifax	Alberta Children's Calgary	Stollery Children's Edmonton	Total
Female & Pain	24	5	12	41
Male & Pain	2	1	1	4
Female & Control	40	1	3	44
Male & Control	16	1	1	18
Total	82	8	17	107

Although both groups consisted of more females than males, the group of adolescents with chronic pain was 91% female whereas the control group was 70% female. The sex difference between groups was significant (Chi-square $p = .011$). All participants were in the appropriate school grade for age. The median school grade was grade 9; three

participants were in grade 7 and two participants had just completed grade 12. The majority of participants were recruited through the IWK Health Centre in Halifax, NS. Given that the three sites were similar in terms of urban centres within Canada, this recruitment difference was not considered to present systematic concerns regarding differences in friendships interactions of Canadian adolescents across provinces and no obvious differences were found in the recorded data from these sites.

Results for Pain Related Measures

All but one of the adolescents with chronic pain provided average pain intensity ratings over the past week based on the numeric 0 to 10 pain intensity rating scale. Pain intensity ranged from 2 to 10 with a mean rating of 6.14 (SD 1.64), which is representative of moderate pain. The one missing value was due to the participant stating she was unable to rate her pain and reported that she has always had difficulty assigning a number to her pain.

PedMIDAS scores ranged from 6 to 251, with a mean score of 107.65 (SD 66.34). There were four missing data points, due to loss to follow up. The PedMIDAS was added to the study after data collection had commenced. Four attempts were made to telephone contact the one participant at the Stollery Children's site in Edmonton, Alberta and the three participants from the IWK site to complete the PedMIDAS. However these contact attempts were not successful. There was only one adolescent with chronic daily headaches who was recruited outside of the Pediatric Complex Pain Clinic at the IWK. Her score was similar to others in the chronic pain group. Two participants scored less than 10 indicating little to no pain related disability. Two participants had scores between 11 and 30 indicating mild pain related disability. Six participants had scores between 31 and 50 indicating moderate pain related disability and 31 (73.2%) of the participants who

completed the PedMIDAS had scores over 50 indicating severe pain related disability. This suggests that overall the group of adolescents with chronic pain had a significant degree of pain related disability as assessed by the PedMIDAS.

Results for Internalizing Behaviour Measures

Social Anxiety

All participants completed the SAS-A (La Greca & Lopez, 1998). Although the SAS-A is comprised of three subscales, the total score was used in this study as each subscale was highly correlated with the total. Scores ranged from of 18 to 90 with a mean of 45.19 (SD14.50); higher scores indicate more social anxiety. This variable was normally distributed amongst the whole participant group. The mean score for the control group was 43.26 (SD 13.86) and the mean for the chronic pain group was 47.84 (SD 15.08). Each group contained one outlier at the right end of the scale (increased degree of social anxiety). The scores for these participants were included in all analyses as their scores are plausible within the population. Participant 89 was from the adolescents with chronic pain group and had a total anxiety score of 88. Participant 57 was from the control group and had a score of 90. Removal of these two outliers did not change the distributions when examined by group as both were normally distributed from inspection of histogram and only slightly positively skewed. Analysis of variance (ANVOA) results indicated that the two groups did not significantly differ on mean social anxiety scores ($F = 2.68$; $p = .107$ with both outliers).

Loneliness

All 107 participants completed the Loneliness Scale (Asher, Hymel, & Renshaw, 1985; Asher & Wheeler, 1985). Loneliness scores ranged from 15 to 67 with a mean of 30.90 (SD11.321); higher scores indicate more loneliness (Asher et al., 1984). This variable was positively skewed so a log transformation was performed which improved the distribution on both inspection of the histogram as well as bringing the standard error for skewness closer to 0 using a z-score distribution (Tabachnick & Fidell, 2007). Inspection of loneliness scores by group illustrated that the distribution of loneliness within the control group was positively skewed indicating that overall the adolescents in the control group experienced low levels of loneliness. Loneliness scores in the chronic pain groups were normally distributed suggesting that adolescents with chronic pain vary in the amount of loneliness they experience. These findings were not surprising as healthy adolescents were not expected to be lonely and adolescents with chronic pain have been found to be lonelier than their peers in a systematic review (Forgeron et al., 2010). Nevertheless, the extent that loneliness affects all adolescents with chronic pain is unclear and therefore the normal distribution of the loneliness scores for this group suggested that some adolescents with pain are lonelier than their healthy peers while others were not. The mean loneliness score for adolescents with chronic pain was 34.20 (SD11.76) whereas the mean of the healthy group was 28.5 (SD 10.44). ANOVA was calculated on the transformed loneliness scores and the between group mean difference was significant ($F = 7.77; p = 0.006$). In this sample the adolescents with chronic pain were lonelier than the adolescents in the control group.

Self-esteem

All participants completed the Rosenberg Self-Esteem Scale (Rosenburg, 1965). Self-esteem scores were normally distributed and did not require transformation when viewed as a total participant group or divided into control and chronic pain groups. Scores ranged from 4 to 30 with a mean of 19.89 (SD 6.35); higher scores indicated greater self-esteem. When inspected by group, the mean score for those in the control group was 21.822 (SD 5.23) while the mean score for the adolescents in the chronic pain group was 17.244 (SD 6.85). ANOVA demonstrated that the difference in means was statistically significant ($F=15.34$; $p \leq 0.001$) meaning that for this sample, adolescents with chronic pain had lower self-esteem than adolescents in the control group.

Depression

All participants completed the 20-item CES-D (Radloff 1977; 1991). According to Phillips et al., (2009), removing question 7 (see discussion under measures section in methods) improves the factor structure in the adolescent population. Pearson's correlation of the CES-D with all 20 questions and the CES-D with 19 questions was .992 ($p < .001$). Regardless which scores were used (19 questions or 20 questions), distribution of this variable was positively skewed. To improve the robustness of the analyses using CES-D scores, a log transformation was applied. This transformation greatly improved the distribution of this variable.

Scores on the CES-D with question 7 removed are reported when used throughout the remainder of the analysis, except when discussing the cut off scores. The scores ranged from 0 to 44 with a mean of 13.76 (SD 11.05). Differences between groups existed; the mean CES-D 19 score was 20.06 (SD 12.39) for the adolescents with chronic pain between groups, whereas the control group had a mean CES-D 19 of 9.195 (SD

7.14). ANOVA results revealed a significant between group difference ($F = 24.52$; $p \leq .001$) with adolescents with chronic pain having higher scores on the CES-D 19.

Approximately 46% (21/45) of the adolescents in the chronic pain group had CES-D 20 scores above 21, 19 of these 21 participants had CES-D scores 24 and above which is suggestive of moderate depression in adolescent girls (Roberts et al., 1991).

Approximately 6.4% (4/62) participants in the healthy adolescent group scored above 21 on the CES-D 20, with all four of these participants scoring 24 or higher.

Furthermore, even when the physical symptom-related questions on the CES-D 19 were removed from the CES-D scores, the adolescents in the chronic pain group continued to have significantly higher depressed mood scores compared to the control group (ANOVA $F = 20.635$; $p \leq 0.001$). The mean score for the adolescents in the chronic pain group was 15, which is 5.06 points lower than the mean for the CES-D 19; whereas for the control group, the mean CES-D scores when the three physical items were removed was 7.20 compared to 9.195. Although the CES-D scores for the adolescents in the chronic pain group benefited more from the removal of the physical items compared to the adolescents in the control group, this was expected. It is beyond the scope of this study to determine if these physical symptoms were attributed solely to chronic pain for this sample as opposed to depression.

Twenty-one was used as a cut-off score to indicate a potential clinically significant depressed mood on the CES-D 20. After reviewing the scores, all adolescents with scores above the 21 cut-off score were contacted and provided with information about accessing appropriate health services in their region for further assessment and avenues to seek emergency mental health care for potential crises in the future. Twenty-five adolescents (23 females; 21 adolescents with chronic pain) and four healthy

adolescents were contacted to inform them that their CES-D scores were 21 or higher. None of these adolescents required emergency mental health care.

Results For SIP Vignette Variables

The SIP variables (intent and outcome attribution, response construction, and response generation) from the vignette questionnaire were examined as an entire participant group. Scores for ambiguous intent and supportive outcome were positively skewed and required log transformation, which significantly improved their distribution. Scores for response construction, response decision, and non-supportive outcome were all negatively skewed and therefore reduction (by subtracting the largest value plus one) was performed prior to log transformation (Field, 2009).

Bivariate Pearson’s Correlations

A correlation matrix for bivariate correlations was examined for all the variables measured. For clarity, only significant correlations are presented and are arranged in separate tables.

Correlations For Chronic Pain Related Variables

The three pain related measures; dichotomous variable chronic pain/no chronic pain, PedMIDAS scores, and average pain intensity, were all highly correlated.

Table 10

Bivariate Correlations Matrix For Chronic Pain Variables

	Chronic pain	PedMIDAS	Pain intensity
Chronic pain	1	.787**	.945**
PedMIDAS		1	.765**
Pain intensity			1

Note. ** $p \leq .01$.

Although a high correlation was expected, as each of these variables was measuring dimension of chronic pain, the nature of the correlations suggested that they are not all assessing the same dimension of the chronic pain experience. Pain intensity and the dichotomous variable of chronic pain/no chronic pain were highly correlated, which suggests that the adolescents with chronic pain had similar pain intensity scores. However, a moderately high versus a high correlation between PedMIDAS with chronic pain/no chronic pain and with pain intensity suggested that disability is a somewhat different dimension of the chronic pain experience. Nevertheless, including all three, or any combination of two of these chronic pain variables, may inflate the size of the error term and weaken the analysis, as the bivariate correlations of these independent variables was greater than 0.7 (Tabachnick & Fidell, 2007). The dichotomous variable chronic pain/no pain was used in the multiple regressions for two reasons. First, there were no missing values for this variable. Second, the dichotomous chronic pain variable had a slightly higher correlation with the criterion variables compared to the PedMIDAS and average pain intensity scores.

Correlations For Chronic Pain, Demographic And Internalizing Behaviours

The following correlation matrix depicts the bivariate correlations between chronic pain, demographic, and internalizing behaviour variables. Transformed variables are used throughout the analysis.

Table 11

Bivariate Correlation For Chronic Pain, Demographic Characters, And Internalizing Behaviours

	Chronic pain	Age	Sex	CES-D	SAS-A	Lonely	Self-esteem
Chronic pain	1.	.123	.246*	.435**	.157	.263**	-.372**
Age		1.0	.137	.291**	.217*	.231**	-.252**
Sex			1.0	.137	.218*	.062	-.219*
CES-D (19 item)				1.0	.584**	.556**	-.736**
SAS-A					1.0	.619**	-.679**
Lonely						1.0	-.513**
Self-esteem							1.0

Note. * $p \leq .05$. ** $p \leq .01$ (all significant tests are 2-tailed).

Chronic pain was significantly correlated with sex, which may be reflective of the fact that more girls with chronic pain participated compared to boys with chronic pain.

Although there was an increase rate of chronic pain in girls after the onset of puberty, the proportion of girls with chronic pain in this study (91%) was higher than the distribution within other studies accessing adolescent participants from pediatric chronic pain clinics, which range from 62% (Hechler et al., 2010) to 72.7% (Eccleston et al., 2008).

Social anxiety (SAS-A total score) was the only internalizing behaviour that was not significantly correlated with chronic pain. Even when separated into the three subscales (fear of negative evaluation, social anxiety in new situations, social anxiety in general), there were no significant correlations with any of the three chronic pain variables. This was in contrast to the study by Wagner et al. (2004) in which higher pain intensity was associated with social anxiety for a clinical group of adolescents with sickle cell disease.

Depression, loneliness, and self-esteem were correlated with chronic pain but none of these were highly correlated with chronic pain. Higher depression and loneliness

scores were positively associated with chronic pain in this sample, whereas self-esteem was negatively correlated with chronic pain. Similar associations have been found in other studies of adolescents with chronic pain (Campo et al., 2004; Forgeron et al., 2010).

Bivariate Correlations For SIP Variables

According to Crick and Dodge (1994), the steps within the SIP model are related but distinct. Overall, the measures used to assess the SIP related variables (intent and outcome attribution, cue interpretation style, response construction, response decision) as operationalized within this study, illustrated that some, but not all, of these variables are significantly correlated with each other. Table 12 shows an example of the correlations of the SIP variables with response decision, as response decision was the one SIP variable that had the most significant correlations with the other SIP variables. These significant correlations were mostly low or moderate level, except in areas where high correlation would be expected (between cue interpretation styles and between response decision and response construction) suggesting that they assess a distinct construct within the SIP model.

Table 12

Bivariate Correlations Of Selected SIP Variables

	Total Intent attribution	Total Outcome attribution	Response construction	Response decision	Total Situational cue	Total Self-schema cues
Response Decision	-.262**	-.186	.317**	1	-.312**	.257**

Note. ** p value ≤ 0.01 . Response decision and response construction were reduced prior to being transformed.

Emotional distress ratings when envisioning themselves as the adolescent with chronic pain were correlated with many of the SIP variables but not any of the chronic

pain variables. The distress ratings when envisioning themselves as the healthy adolescent were not significantly correlated with any of the SIP variables or chronic pain variables (see Table 12 below).

Table 13

Bivariate Correlations Of SIP Variables And Emotional Distress

	DCP	DHF	Intent attribution	Outcome attribution	Resp C	Resp D	Cue situation	Cue schema
DCP	1	.304**	.463**	.477**	-.085	-.259**	.219*	-.095

Note. * $p \leq .05$. ** $p \leq .01$.

DCP: emotional distress when envisioning oneself as chronic pain character.

DHF: emotional distress when envisioning oneself as the healthy friend character.

Resp C: response construction (reduced and transformed variable).

Resp D: response decision (reduced and transformed variable).

The correlations between intent and outcome for each type of vignette (supportive, ambiguous, and non-supportive) ranged from low to moderately high. Interestingly, supportive intent and supportive outcome were not correlated with the other two types of intent and outcome, except for a low correlation between supportive intent attribution and ambiguous outcome attribution. Perhaps the lack of correlation between supportive vignettes and the other two types suggest that adolescents view supportive social interactions distinctly differently than the other two types of interactions.

Significant correlations between the intent and outcome attributions for each of the three types of social situations suggest that the adolescents rate them similarly but not exactly the same. In fact, the correlation between supportive intent and supportive outcome was only moderately correlated. This may suggest that adolescents interpret these two stages of a social interaction differently, but perhaps this difference is more pronounced depending on the type of social interaction. Nevertheless, we do not know if one influenced the other. For example, if one rated the intent as somewhat supportive, did

that influence their rating on the outcome? Nor do we know if their interpretation of the outcome versus intent had more influence on the other steps in SIP. Therefore, we examined the intent and outcome of the three types of vignettes separately as they may be conceptualized as related but distinct components of social processing. Table 14 shows the correlations between the three types of vignettes and the two types of attributions.

Table 14

Bivariate Correlations For The Three Types Of Vignettes

	Sup Int	Ambig Int	Non-sup Int	Sup Out	Ambig Out	Non-sup Out
Sup Int	1	.114	-.098	.393**	.294**	.011
Ambig Int		1	-.426**	.038	.733**	-.346**
Non-sup Int			1	.083	-.434**	.791**
Sup Out				1	-.058	.083
Ambig Out					1	-.333**
Non-sup Out						1

Note. ** $p \leq .01$. Sup Int = Intent attribution for supportive vignettes. Ambig Int = Intent attribution for ambiguous vignettes. Non-sup Int = Intent attribution for non-supportive vignettes (variable reduced). Sup Out = Outcome attribution for supportive vignettes. Ambig Out = Outcome attribution for ambiguous vignettes. Non-sup Out = Outcome attribution for non-supportive vignettes (variable reduced).

Primary Research Hypothesis: Correlations Of Criterion Variables And Predictor Variables

Examination of the bivariate correlations (Pearson r) between the criterion variables (SIP variables) and predictor variables (pain related measures, demographic measures, internalizing behaviours, and emotional distress scores) were used to determine which predictor variables to include in the series of multiple regression analyses. Initially we hypothesized that that we could use hierarchical multiple regression (HMR) to determine the amount of explained variance attributed to chronic pain above and beyond age and sex, as well as examine the variance attributed to the four internalizing

behaviours and emotional distress after accounting for chronic pain. However, not all of these planned predictor variables were correlated with the criterion variable, nor was chronic pain (chronic pain/no chronic pain, PedMIDAS, or pain intensity) correlated with all the SIP variables.

Ambiguous Attributions

Intent and outcome attributions of ambiguous vignettes were not significantly correlated with any of the pain related measures, nor any of the other predictor variables with the exception of a significant correlation between the ambiguous vignette intent and outcome attributions with emotional distress ratings when envisioning oneself as the character with chronic pain. Ambiguous intent attribution and this emotional distress variable were positively correlated at .449 ($p \leq .01$) and ambiguous outcome attribution and this emotional distress variable were positively correlated at .440 ($p \leq .01$). Although this means that two of our primary research hypotheses (H1 and H2) were not supported as adolescents with chronic pain did not rate the ambiguous vignettes as more unsupportive than the control group, a regression analysis was performed with the ratings for emotional distress when envisioning oneself as the chronic pain character variable (see Table 15 and 16). Since these two regressions were univariate, inspection for outliers had occurred when all variables were assessed for normal distribution. Transformations, where necessary, had been applied. However, residual scatter plots were also inspected and these did not reveal any points that may be outliers, nor were there any other patterns of concern.

Table 15

Regression Analysis Predicting Ambiguous Intent Attribution From Negative Affect If Chronic Pain Character In The Vignettes

Ambiguous Intent Attribution				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.201***			
Constant			1.117	1.224
Negative Affect		.449***	.002	.005

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. Negative Affect = Negative Affect (emotional distress) if chronic pain character in the vignettes.
*** $p \leq .001$.

Table 16

Regression Analysis Predicting Ambiguous Outcome Attribution From Negative Affect if Chronic Pain Character in the Vignettes

Ambiguous Outcome Attribution				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.227***			
Constant			25.21	32.45
Negative Affect		.447***	.168	.354

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. Negative Affect = Negative Affect (emotional distress) if chronic pain character in the vignettes.
*** $p \leq .001$.

These two regression analyses revealed that approximately 20% of the variance in the rating of the ambiguous intent and outcome attributions was explained by negative affect as measured by the emotional distress scores when envisioning oneself as the

chronic pain character. Thus, as a participant’s emotional distress score increased so did the ratings of the ambiguous intent and outcome attributions. Higher scores on intent and outcome reflect more unsupportive ratings. However, the mean rating for the ambiguous intent attribution was 20.46 (SD 3.28) and the mean rating for ambiguous outcome attribution was 20.17 (SD 3.27), which meant that the average rating on the Likert Scale was just over three. A rating of three on this scale had the verbal and written descriptor as neutral/unsure of the healthy character’s intentions towards their friend.

Response Construction

Response construction (which has been reduced before being transformed) was not significantly correlated with any of the chronic pain variables. However, there were several significant correlations with other predictor variables as shown in Table 17.

Table 17

Response Construction And Predictor Variables

	Response Construction	Age	Sex	CES-D	Self - Esteem
Response Construction	1	-.350**	-.208**	-.203**	.212*

Note. * $p \leq .05$. ** $p \leq .01$ (two tailed test).

This correlation matrix suggests that there is a moderate association between adolescents’ age and number of supportive/inclusive responses such that older adolescents provided a larger number of supportive/inclusive responses. The correlation between sex, depressed mood, and self-esteem and number of supportive response was low. Nevertheless, these correlations suggested that being female, scoring higher on the CES-D, and having a lower score on the self-esteem measure were associated with more supportive responses.

Prior to reviewing the results of the HMR for response construction, inspection for the assumptions of multiple regression was conducted as described above. There were no patterns within the residual plot that raised concern, nor were any data points suggestive of being a multivariate outlier. Critical value for Mahalanobis distance was 16.266 and the largest Mahalanobis distance in this regression was 10.03, far below the significant value of 16.266. The largest Cook's distance value in this regression was 0.115, well below 1. There were no concerns of multicollinearity as each variable had the majority of its variance load onto a different dimension; average VIF was close to 1 (1.03 to 1.104) and tolerance was well above .1 (.906 to .971). The HMR analysis revealed that age was the only significant predictor of response construction. As age increased, the number of supportive responses provided in this step of SIP increased and the first step of the model explained 14.9 % of the variance in response construction (see Table 18).

Table 18

Hierarchical Multiple Regression Analysis Predicting Response Construction From Age, Sex, CES-D

Response Construction				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.149***			
Constant			1.404	1.893
Age		-.328***	-.045	-.013
Sex		-.163	-.131	.007
Step 2	.008			
Constant			1.406	1.894
Age		-.302**	-.044	-.010
Sex		-.154	-.128	.011
CES-D		-.094	-.115	.039

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. *** $p \leq .001$.

Response Decision

Response decision (which has been reduced before being transformed) was significantly correlated with chronic pain and several other predictor variables as shown in Table 19.

Table 19

Bivariate Correlation For Response Decision

	Response Decision	Sex	Chronic Pain	CES-D
Response Decision	1	-.257**	-.371**	-.291**

Note. ** p value $\leq .01$

HMR analysis was conducted to determine which of these predictor variables was significant in predicting scores on response decision. Prior to reviewing the results, inspection for the assumption of multiple regression was conducted. There were no patterns within the residual plot that raised concern, nor were there any data points that suggested a multivariate outlier. Critical value for Mahalanobis distance was 18.467 and the largest Mahalanobis distance in this regression was 12.500. The largest Cook's distance value in this regression was 0.13, well below 1. There were no concerns of multicollinearity as each variable had the majority of its variance load onto different dimension; average VIF was close to 1 (1.06 to 1.29) and tolerance was well above .1 (.775 to .938).

Table 20 displays the output of the HMR analysis for response decision. Chronic pain was a significant predictor of response decision such that adolescents with chronic pain decided on more inclusive behaviours more often towards the chronic pain character in the vignette. Ten percent of the variance explained by this model was attributed to chronic pain. Although the amount of total variance that this represents is small, as the full model only represents 19.2% of the total variance, chronic pain predicted more of the variance than the other three predictors combined. Negative affect (emotional distress ratings when envisioning oneself as the adolescent with chronic pain in the vignettes) explained no more than 5% of the variance. Chronic pain remained significant in the full model. There was no significant interaction between chronic pain and emotional distress scores when envisioning oneself as the chronic pain character ($p = .508$) or between chronic pain and depression on response decision ($p = .414$).

Table 20

Hierarchical Multiple Regression Analysis Predicting Response Decision From Sex, Chronic Pain, Negative Affect if Chronic Pain Character, CES-D

Predictors	ΔR^2	β	Response Decision	
			LL	UL
Step 1	.066**			
Constant			.491	.690
Sex		-.257**	-.265	-.042
Step 2	.101***			
Constant			.524	.715
Sex		-.176	-.214	.004
Chronic Pain		-.328***	-.250	-.071
Step 3	.056*			
Constant			.669	1.101
Sex		-.138	-.190	.026
Chronic Pain		-.265**	-.225	-.033
Negative Affect		-.190*	-.011	.000
CES-D		-.133	-.209	.039

*Note. Note. Note. N = 107. Negative Affect = Negative Affect (emotional distress) if chronic pain character in the vignettes. $\Delta R^2 = R$ Square Change. CI = confidence interval. *** $p \leq .001$.*

Cue Interpretation Style

As one of the primary research hypotheses, it was hypothesized that adolescents with chronic pain would list more self-schema cues (those cues such as past experiences, social schema, and judgments) as the bases for their ratings on the vignettes. Bivariate correlations revealed significant moderately high correlations between situational cues for intent and outcome and self-schema cues of intent and outcome (see Table 23). Although this was expected, these correlations are not in the very high category and perhaps suggest that there may be something different in the interpretation between cues in the

intent and outcome portions of the vignettes. Therefore, four HMR were planned to determine the relationships between these SIP variables and the predictor variables.

Table 21

Bivariate Correlations For Cue Interpretation

	Situational Cue Intent	Situational Cue Outcome	Self-schema Cue Intent	Self-schema Cue Outcome
Situational Cue Intent	1	.731**	-.766**	-.721
Situational Cue Outcome		1	-.752**	-.844**
Self-schema Cue Intent			1	.782**
Self-schema Cue Outcome				1

Note. ** $p \leq .01$.

The next step was to explore the bivariate correlations between these four criterion variables and the predictor variables of interest (demographic characteristics, chronic pain variables, internalizing behaviours, and emotional distress scores) to determine which variables should be entered into the HMR analysis. Situational cue interpretation for the intent portion of the vignettes had low but significant correlations with sex ($r = .263^{**}$), chronic pain ($r = .191^*$), and with the emotional distress ratings when envisioning oneself as the chronic pain character ($r = .252^*$). Self-schema cue interpretation for the intent portion of the vignettes did not have any significant correlations with any of the predictor variables, including any of the chronic pain variables. Situational cue interpretation for the outcome portion of the vignettes was significantly correlated with chronic pain ($r = .267^{**}$) and the emotional distress ratings when envisioning themselves as the chronic pain character in the vignette ($r = .192^*$). Self-schema cue interpretation for the outcome portion of the vignettes was significantly correlated with chronic pain ($r = -.240^*$) but not

with any of the other predictor variables. All of these correlations are small and further interpretation of analysis must proceed with caution. However, given the exploratory nature of this study, regression analysis to explore if chronic pain is a predictor for the type of cue interpretation style used for the intent and outcome portions of the vignettes may suggest some nuances within the social information processing for adolescents with chronic pain compared to their peers.

The HMR for situational cue interpretation for intent portion of the vignette (sex in step 1, chronic pain in step 2, emotional distress score in step 3) showed that only sex was significant at any step of the model, indicating that girls used more situational cues than boys. The summary table for this HMR was not included as chronic pain was not a significant predictor variable in the regression and sex as a predictor must be interpreted with caution given the significantly greater number of girl participants.

Table 22 and Table 23 provide the output from the regression analyses for the situational cue interpretation style for the outcomes and self-schema cue interpretation style for the outcomes of the vignettes. Chronic pain was a significant predictor variable in both of these analyses.

Prior to reviewing the results, inspection for the assumption of multiple regression was conducted for both situational and self-schema cue interpretation for outcomes of the vignettes. No patterns were detected in the residual plots for either of these criterion variables that would indicate violation of the underlying assumptions of multiple regression. The critical value for Mahalanobis distance for situational cue interpretation 13.816 and the largest Mahalanobis distance in this regression was 8.76. The largest Cook's distance value in this regression was 0.116. There were no concerns of multicollinearity for the situational cue interpretation regression. Since the regression

analysis for self-schema cue interpretation style for outcome attributions was not of a multivariate nature, previous screening procedures had not found a univariate outlier and thus only the residual scatter plot was examined to ensure that assumptions of normality were met.

Table 22

Hierarchical Multiple Regression Analysis Predicting Situational Cue Interpretation Outcome Attribution From Chronic Pain, Negative Affect if Chronic Pain Character

Situational Cue Interpretation Outcome Attribution				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.072**			
Constant			5.835	7.100
Chronic Pain		.267**	.423	2.374
Step 2	.029			
Constant			2.241	6.705
Chronic Pain		.254**	.361	2.296
Negative Affect		.172	-.004	.111

Note. $N = 107$. Negative Affect = Emotional distress if chronic pain character. $\Delta R^2 = R$ Square Change. CI = confidence interval. ** $p \leq .01$.

Table 23

Multiple Regression Analysis Predicting Self-Schema Cue Interpretation Outcome Attribution From Chronic Pain, Negative Affect if Chronic Pain Character

Self-Schema Cue Interpretation Outcome Attribution				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.057**			
Constant			6.099	7.223
Chronic Pain		-.240**	-1.972	-.239

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. ** $p \leq .01$.

Secondary Research Hypotheses

The secondary research hypotheses of this study were to determine what factors impacted SIP for both the intent and outcome portions of the supportive and non-supportive social situations as depicted in the vignettes. Thus, there were potentially four criterion variables. First, bivariate correlations between the criterion variables and the predictor variables of interest are presented and then the HMR analysis.

Supportive Attributions

The only significant bivariate correlation for intent attribution ratings for supportive vignettes was with emotional distress scores when envisioning oneself as the chronic pain character in the vignettes ($r = -.209^*$). Thus, adolescents who were not as distressed when envisioning themselves as the chronic pain character had lower scores on the intent attribution for supportive vignettes. Lower scores on the Likert scale for this study indicate a more supportive rating for the healthy character's actions. Given that chronic pain was not significantly correlated with this criterion variable and there was no significant correlation between the chronic pain variables and the emotional distress ratings when envisioning oneself as the chronic pain character in the vignette, a regression analysis was not conducted.

There was only one significant bivariate correlation between the ratings of outcome attribution for supportive vignettes and the predictor variables of interest. Chronic pain and this outcome rating were correlated at ($r = -.195^*$) which is low and therefore, not surprisingly, this regression analysis was found to explain 2.9% of the variance found in the model. Even though this finding is statistically significant, it suggests that chronic pain is not really predictive of scores on the ratings of the outcome attributions of supportive vignettes.

Non-Supportive Attributions

Bivariate correlations for intent attributions of non-supportive vignettes (this variable was reduced prior to transformation) revealed correlations for this variable and chronic pain ($r = -.221^*$) as well as with emotional distress when envisioning oneself as the chronic pain character in the vignette ($r = -.544^*$). Therefore, a HMR was performed with chronic pain in step 1 and emotional distress in step 2. Prior to reviewing the results of the HMR, the residual plot was reviewed, which raised no concerns. Critical value for Mahalanobis distance was 13.81 and the largest Mahalanobis distance in this regression was 8.767. The largest Cook's distance value in this regression was 0.213, which indicated no multivariate outliers. The two variables had the majority of their variance loading on different dimensions, the tolerance value was .994 and the average VIF 1.006 and as such there were no concerns of multicollinearity.

Table 24

Hierarchical Multiple Regression Analysis Predicting Intent Attribution For Non-Supportive Vignettes From Chronic Pain, Negative Affect If Chronic Pain Character

Intent Attribution Non-Supportive Vignettes				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.065**			
Constant			.392	.518
Chronic Pain		-.254**	-.230	-.035
Step 2	.175***			
Constant			.736	1.143
Chronic Pain		-.221**	-.204	-.027
Negative Affect		-.420***	-.018	-.008

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. ** $p \leq .01$
*** $p \leq .001$.

This HMR illustrates that having chronic pain is predictive of adolescents rating the intent attribution of the non-supportive vignettes as more unsupportive than adolescents in the control group. There was no interaction between chronic pain and negative affect for non-supportive intent attribution ($p = .417$).

There were only two predictor variables that had significant bivariate correlations with the ratings on the outcome attribution for the non-supportive vignettes. Outcome attribution rating for non-supportive vignettes was reduced before being transformed, thus the interpretation of the correlation with chronic pain ($r = -0.254^{**}$) and with emotional distress ratings when envisioning oneself as the chronic pain character ($r = -0.437^{**}$) are reversed. A HMR analysis (see Table 25) was conducted to determine if chronic pain and emotional distress ratings when envisioning oneself as the chronic pain character were associated with the ratings on non-supportive outcome attribution. There were no patterns within the residual plot that raised concern. Critical value for Mahalanobis distance was 13.81 and the largest Mahalanobis distance in this regression was 3.796. The largest Cook's distance value in this regression was 0.10. There were no concerns of multicollinearity.

Table 25

Hierarchical Multiple Regression Analysis Predicting Outcome Attribution For Non-Supportive Vignettes From Chronic Pain, Negative Affect If Chronic Pain Character

Outcome Attribution Non-Supportive Vignettes				
Predictors	ΔR^2	β	95% CI	
			LL	UL
Step 1	.049*			
Constant			.628	.709
Chronic Pain		-.221*	-.135	-.011
Step 2	.279***			
Constant			.935	1.178
Chronic Pain		-.180*	-.112	-.077
Negative Affect		-.530***	-.014	-.007

Note. $N = 107$. $\Delta R^2 = R$ Square Change. CI = confidence interval. ** $p \leq .01$ *** $p \leq .001$.

Similar to the results of the regression examining non-supportive intent attributes, the findings of this HMR illustrate that chronic pain is a significant variable associated with the ratings on the outcome of non supportive vignettes but with modest contribution to the explained variance (4.9%). The negative affect variable (emotional distress when envisioning oneself as the chronic pain character) provided a greater contribution explaining 27 % of the variance. However, there was no significant interaction between chronic pain and negative affect ($p = .261$).

DISCUSSION

The purpose of this study was to determine if chronic pain was associated with differences in social information processing with respect to hypothetical social situations depicting ambiguous, supportive, and non-supportive social situations among a group of adolescents. It was hypothesized that chronic pain would explain variance above and

beyond that explained by demographic characteristics and more than the variance explained by internalizing behaviours. It was also hypothesized that negative affect (emotional distress when envisioning oneself as the chronic pain character in the vignettes) would be associated with SIP processing differences. Specifically, our primary hypotheses were that chronic pain would be associated more with differences in SIP for intent and outcome attribution ratings in ambiguous social situations, in cue interpretation styles, and in constructing and deciding on more supportive/inclusive behaviours. Our secondary hypotheses were that there would be no positive associations between intent and outcome attributions for supportive and non-supportive social situations and chronic pain. Some, but not all of these hypotheses were supported.

SIP Variables And Chronic Pain

Intent And Outcome Attributions

In this study, we separated the intent and outcome attributions to explore the possibility that adolescents may interpret various portions of a social situation differently and perhaps those with chronic pain may come to a situation with a bias due to previous negative friendship interactions. Although bivariate correlations indicated that the intent and outcome portions of the vignettes were moderate to moderately high in their correlations, these findings were not consistent and may indicate that differences existed in how information was processed during a social interaction. Andrade (2007) found differences in intent and outcome attribution processing between children with aggressive behavioural disorders and controls. This study adds to the evidence that suggests there may be differences in intent and outcome attributions in step two of the SIP model but how appraisal during the intent portion influences the appraisal of the outcome portion remains unknown.

Hypotheses 1 and 2 were not supported. Chronic pain did not contribute to differences in intent or outcome attributions for ambiguous vignettes, nor did demographic characteristics or internalizing behaviours. One reason for not finding a positive association between the ratings on the intent and outcome attributions for ambiguous vignettes may be due to the nature of chronic pain. Unlike children and adolescents with aggressive behaviours, the adolescents with chronic pain usually have established typical friendships and developed cognitive processing within social situations similar to healthy peers prior to the onset of chronic pain. Onset of aggressive behaviours (i.e. Attention Deficit Disorder, Oppositional Defiant Disorder) usually occurs at a much earlier age than the usual onset of a chronic pain condition. For example, Stewart, Copland, and deBlois, (1988) found in a study examining the age of onset for Aggressive Conduct Disorder, that age of symptom onset was between one and three years of age whereas the onset of chronic pain generally occurs in late childhood or adolescence (Perquin et al., 2000). Therefore, it may be the early onset of a condition that interferes with this antecedent of step two in SIP, or it may be the length of time since onset. However, age of onset and time since onset of chronic pain were not captured in this study.

Two of our secondary hypotheses (H12 and H13) with regards to intent and outcome attributions were also not supported, as chronic pain was positively associated with both intent and outcome attributions for non-supportive vignettes. Although the amount of variance explained by chronic pain was modest for these two criterion variables, adolescents with chronic pain rated both the intent and outcome portions of non-supportive vignettes as more non-supportive than the adolescents in the control group. This finding was not hypothesized *a priori* but on reflection this finding may have

been expected. In the first study of this dissertation, some adolescents with chronic pain noted that when they had stressful interactions with their friends it increased their pain, but when friends were supportive their pain did not change. When adolescents with chronic pain are faced with a potentially non-supportive social situation, they may appraise these situations quickly as non-supportive due to other non-supportive reactions they have experienced from close friends in the past. In fact, chronic pain explained slightly more variance for the intent attribution of non-supportive vignettes compared to the outcome attributions of non-supportive intent, suggesting that adolescents with chronic pain do appraise non-supportive situations quickly. Thus, it may be that non-supportive situations have a more dramatic impact on the pain experience of adolescents compared to supportive and ambiguous social situations. As mentioned in Study 1 Eisenberger and colleagues (2004) found an overlap in underlying neuromatrices for physical pain distress and social rejection within healthy participants. It may be that this relationship is even more pronounced for adolescents with chronic pain such that adolescents with chronic pain are prompted to determine non-supportive social situations so that they can take steps to protect themselves from further pain.

Cue Interpretation Style

Situational and self-schema cue interpretation styles were also explored to determine if adolescents with chronic pain focus more on self schema cues, such as previous experience and judgments in social situations. Chronic pain was only significant in the predication of cue interpretation style for outcome attributions. Although the results of these two regressions were modest, it appears that adolescents with chronic pain use more situational cues and less self-schema cues when interpreting the outcome portions of vignettes.

Although we hypothesized that adolescents with chronic pain would focus more on self-schema cues (H5), chronic pain was in fact associated more with situational cue interpretation style for outcome attributions. Perhaps adolescents with chronic pain relied more on what actually happened and less on judgments as they had experienced similar social situations in their past. Comparatively, the healthy adolescents used social schema and judgments to fill in gaps in their knowledge regarding what would be supportive or unsupportive behaviours in these social situations. A preference for situational cues may indicate that adolescents with chronic pain do not carry a negative bias into their social interactions with a close friend. Nevertheless the small effect size makes it difficult to say this with confidence.

Response Construction And Response Decision

Step four and five of the SIP model, response construction and response decision, were also explored. Contrary to our *a priori* hypothesis (H3), response construction was not correlated with chronic pain. Adolescents with chronic pain did not list more inclusive/supportive behaviours when determining alternatives to the behaviour displayed by the healthy character in the vignettes compared to the adolescents in the control group.

However, as hypothesized, response decision was predicted by chronic pain in the HMR (H4), meaning that adolescents with chronic pain indicated that they would have displayed inclusive/supportive behaviours more often than adolescents in the control group if they had been the healthy friend character in the vignettes. Similar to the other steps of the SIP model, internalizing behaviours were not associated with response decision rates. The amount of variance explained for response decision within this model was just over 19%, nevertheless over half of this (10%) was associated with chronic pain. Taken together, the findings on response construction and response decision suggest that

healthy adolescents are able to determine the behaviours that would be helpful to a close friend with chronic pain but still may not enact those behaviours in a social situation. The reasons for not enacting these behaviours are unknown, it may be related to inadequate skill and/or knowledge, or it may be other reasons such as wanting to pursue their own interests or activities.

Despite sex being significant in the first step of the regression with response decision, it was no longer significant in the presence of chronic pain. This must be interpreted with caution due to the low number of males in the study, especially in the chronic pain group. Therefore, future studies should determine if sex has an impact on supportive/inclusive response decisions and if this is dependent on the type of social situation. Researchers have found that there are friendship differences between males and females (Benenson & Christakos, 2003). Females share more intimate details of their life and focus on emotional sharing and support in same sex friendships, whereas male same sex friendships are characterized more by physical companionship and less on personal and emotional sharing (Benenson & Christakos, 2003). Although the vignettes in this study depicted both emotional sharing and physical companionship, it was beyond the scope of this study to explore these types of vignettes separately.

Another factor that may influence supportive/inclusive responses by close friends is the degree of disruption that chronic pain may exert on the activities of close friends. Qualitative data from this study, in terms of the comments written in open answer areas of the vignette collection tool, indicated that some of the adolescents in the control group gave the character with chronic pain in the vignettes the benefit of the doubt when making supportive/inclusive response decisions. Comments made indicated that if the chronic pain participant was unable to join in an activity or asked for assistance (such as

picking up their homework when absent from school) on a regular basis they may not always provide the more supportive/inclusive behaviour. Thus, future studies need to explore the differences in close friends' appraisal and response when chronic pain demands on close friends have been ongoing.

Affect And SIP

Adolescents with chronic pain have reported stressful interactions with close friends and others (Forgeron & McGrath, 2008; Carter et al., 2002) and in Study 1 of this dissertation, these negative emotions at times influence limitations on further interactions with friends. We hypothesized that chronic pain would correlate with higher ratings of emotional distress when envisioning oneself as the chronic pain character (H6), but not when envisioning oneself as the healthy character in the vignettes (H7). We also hypothesized that negative affect (emotional distress ratings when envisioning oneself as the chronic pain character and when envisioning oneself as the healthy character in the vignettes) would be associated with SIP variables. Chronic pain did not correlate with either of the negative affect scores, thus hypothesis 6 was not supported but hypothesis 7 was supported.

Hypothesis 8 was partially supported as the negative affect (emotional distress ratings) when envisioning oneself as the chronic pain character in the vignettes correlated with SIP variables (intent and outcome attributions of non-supportive vignettes and response decision), regardless whether the participants themselves had chronic pain as opposed to being significant for only the participants with chronic pain. Perhaps the relationship between negative affect and SIP is such that the negative affect must be at a certain level to influence the steps in the SIP model. The degree of emotional distress when envisioning oneself as the healthy character in the vignettes may not been

sufficiently high to impact SIP. Interestingly, there was no interaction between chronic pain and negative affect (emotional distress when envisioning oneself as the chronic pain character in the vignette) in relation to either of these SIP variables, meaning that negative affect made a unique contribution, as did chronic pain, to the intent and outcome attribution ratings on non-supportive vignettes and response decision.

The unique role of emotional distress ratings when envisioning oneself as the chronic pain character in the vignettes is of interest. This may be a reflection of the role of empathy in SIP. Derntl et al., (2010) found that females recruit more emotion-related regions of the brain in tasks associated with three core components of empathy (emotion recognition, perspective taking, and affective responsive) compared to males. Males engaged areas of the brain associated with cognitive evaluation, mentalization, and behaviour anticipation. In their study, Derntl and colleagues used a hypothetical situation showing two individuals engaged in a social interaction and ask participants how they would feel if they were in the situation, much as we did in this study. Thus, the ratings of emotional distress in our study may be tapping into the affective response component of empathy. If so, the greater percentage of females in this study may have contributed to the role that emotional distress when envisioning oneself as the chronic pain character had on the SIP variables. Therefore, the relationship between this particular rating of emotional distress and SIP variables may be different for males with and without chronic pain compared to females.

Despite the emotional distress rating when envisioning oneself as the healthy character in the vignettes not being associated with variables of interest, the qualitative responses for the rationale for these ratings may be of interest in future work. Adolescents were requested to provide their reason for the distress ratings if they were the healthy

character in the vignette. Adolescents in the chronic pain group made comments such as “my friend may be pissed at me as I asked them to get my work”, “Oh there she is complaining about her pain again”. Participants in the control group made comments like, “I would feel bad that my friend is missing out on activities”, “I would be upset that my friend is being asked all these personal questions”. Unfortunately, coding of these responses to determine if there were differences between the two groups of participants was not possible as the majority of participants were not consistent in how they answered this question. Despite receiving both written and verbal instructions, most of the participants switched back and forth between providing a rationale for how they would feel or think if they were the healthy friend in the vignette to providing what they believed the healthy character in the vignette was feeling and thinking. Determining the extent of these differences between adolescents with chronic pain and close friends may provide insights in designing strategies targeted at improving the friendships of adolescents with chronic pain. However, to determine these differences requires further research such as providing a list of reasons for their ratings as opposed to open-ended questions.

Study Limitations

This study had several limitations. First, although initial content validation for the vignette questionnaire was conducted in Study 2 (Chapter 3), the ambiguous vignettes included in the questionnaire did not receive the same level of agreement as both the supportive and non-supportive vignettes in that study. Therefore, the failure to find differences between adolescents with chronic pain and the healthy adolescents on the ratings for ambiguous intent and outcome social situations in this study may be related to measurement error, as opposed to there being no relationship between chronic pain and

the attribution ratings on ambiguous vignettes. Further validation of ambiguous vignettes would be important prior to use in future research.

Second, the types of adolescents from the community who would volunteer to participate in a study on friendships may represent a sample selection bias as adolescents with greater interest in close friends and perhaps more empathy towards others. Third, data were collected face to face so a social response bias cannot be excluded from participant answers. However, several steps were taken to decrease social bias. First, participants were given the opportunity to complete all the measures on their own. Second, by asking for both positive and negative alternative behaviours for response construction participants may have felt more at ease stating a less supportive/inclusive behaviour in response decision. Third, open-ended questions were used as opposed to providing a list of answers to avoid prompting the adolescents to the most supportive answers in a list. Fourth, at the outset of data collection, each participant was informed that in order for this research to be useful they should answer the questions as honestly as possible. Nevertheless, social bias may be a factor, and if so may have decreased the effect size.

The fourth limitation of this study was that it examined hypothetical situations with adolescents who have chronic pain and healthy adolescents who do not have a close friend with chronic pain. Therefore, it was unknown if healthy adolescents would respond differently in actual friendship situations with an adolescent who has chronic pain. Although Fishbein and Ajzen (1975) found that the single best predictor of a person's behaviour is a measure of one's intention to perform this behaviour, the correlation between behavioural intent and enactment ranged from 0.34 to 0.89. These researchers attributed the range of correlation rates to several factors such as time between stating

their intentions and the actual event. Therefore, differences may be more pronounced in a real situation when personal needs and desires take precedence over a hypothetical situation and when the impact of chronic pain on the friendship has been ongoing for a period of time.

Fifth, due to the lower number of males in this study, especially in the chronic pain participant group, the absence of differences needs to be interpreted with caution. Males with chronic pain still may experience differences in SIP processing compared to their same-sex close friends but greater numbers of adolescent males in research is essential to more completely understand their unique experiences.

Study Strengths

There are several strengths to this study. First, to our knowledge no other study has been conducted to quantitatively examine the processes of social interactions of adolescents with chronic pain and healthy peers. By examining the processes during interactions differences in close friendships were identified. Second, the SIP model used to guide this study provided clear steps to evaluate differences in the interpretation of social situations. Thus, specific steps that may cause disruptions (misperceptions and miscommunications) in close friendships were identified which may be modified by interventions. Third, due to the differences in friendships as children develop by only including adolescents we ensured that developmental stage did not confound the findings. A fourth strength is that participants were from three different health centres across Canada, increasing the generalizability of the findings to adolescents with chronic pain from other tertiary centres.

Future Research

The SIP model provided a theoretical foundation to test hypotheses focusing on the differences in social processing between adolescents with chronic pain and healthy peers in a variety of social situations. Although emotional distress ratings when envisioning oneself as the healthy peer were not found to be different between the groups, the rationale provided for the rating may be different. Future studies that explore differences between adolescents with chronic pain and healthy peers with respect to the reasons for the distress ratings provided for the healthy character depicted in the vignettes may add to knowledge. For example, the differences in the reasons for the distress ratings may illustrate that adolescents with chronic pain hold misconceptions as to why their healthy friends may be distressed in social situations. This knowledge could be integrated into educational strategies aimed at improving friendships of adolescents with chronic pain. Additionally, other steps of the SIP model were not explored in this study. Knowing if there are goal differences (step three of SIP) in social interactions between adolescents with chronic pain and close friends would add to the literature.

Although this study did not find differences between adolescents with chronic pain and healthy peers in ambiguous situations, reasons for this should be explored in future studies. For example, determining if differences exist in an ambiguous situation based on context (public place versus private, other peers present in the situation, a physical interaction versus emotional sharing, etc.) may provide further insights into the sorts of social situations that contribute to differences between adolescents with chronic pain and healthy peers.

Negative affect was found to be a predictor for non-supportive vignette ratings as well as contributing modestly to the variance explained for response decision. Future

study should focus on more specific relationships between negative affect and individual SIP variables in a chronic pain context. For example, pain factors such as age of onset, years since onset, continuous versus recurrent pain, location, and causation may exert varying effects on a relationship between affect and individual SIP variables. In addition to pain specific factors, chronification of pain has been linked to negative cognitive styles including pain catastrophization (Crombez et al., 2003), neuroticism, negative fear of failure, and less social acceptance (Merlijn et al., 2003) and it would be helpful to know if SIP differences exist more for adolescents with chronic pain who score high on these factors.

In this study, chronic pain was not associated with the scores on response construction but was associated with the scores on response decision. Also, chronic pain did not correlate with emotional distress when envisioning oneself as the chronic pain character. It may be that peers are capable of both the cognitive and affective components of empathy for chronic pain but this does not necessarily equate to peers enacting supportive responses towards a friend with chronic pain. The role of empathy has not been raised in previous SIP studies, but those studies focused on aggressive behaviours rather than behaviours as subtle as supportive behaviours in various social situations. Research that captures empathy as a predictive variable would be important to determine if empathy differences for chronic pain exist between adolescents with chronic pain and healthy adolescents. Studies are also needed to examine the role of cognitive and affective components of empathy and their influence on a close friend actually providing support to a friend with chronic pain. Observational and prospective studies would help determine if empathy for chronic pain translates into actual supportive behaviours and what factors contribute to the enactment of supportive behaviours by a healthy friend.

Although internalizing behaviours were not significant predictors in SIP in this study, the rate of depressed mood among adolescents with chronic pain warrants further consideration in future studies. A significant percentage of the adolescents with chronic pain (approximately 46%) scored above the cut off on the CES-D 20 and most were in the range suggestive of moderate depression (Roberts et al., 1991). This percentage of adolescents with chronic pain with possible clinical depression was significantly higher than the expected adolescent prevalence rate of 5% (Angold & Costello, 2011). This difference adds to the growing body of evidence indicating that adolescents with chronic pain suffer an increased rate of depressed mood compared to healthy adolescents. Adolescents at risk for depression have a tendency to ruminate, be pessimistic in their view of the world and lack control to change their situation (Abramson, Alloy et al., 2002; Kaslow, Abramson, & Collins, 2000). Additionally, the rate of depression doubles in girls around the age of 13 years (Angold and Costello, 2011). Given that the rate of chronic pain increases in girls after the onset of puberty and that the rate of depression doubles at around the same age for girls, continuing to explore how depression impacts close friendships may be even more pertinent for girls with chronic pain. Regardless of sex, cognitive characteristics such as a pessimistic outlook that predispose one to depression, may mean that adolescents with chronic pain who also have depressed mood may have more difficulty in using communication strategies aimed at improving their friendships. However, strategies aimed at improving communication with friends, reframing the intentions of close friends from being uncaring to unknowing how to be supportive, and perceived ability of adolescents with chronic pain to secure supportive friendship needs may positively impact their depressed mood scores. Future research

should continue to include depressed mood as a factor in close friendships of adolescents with chronic pain.

Finally, although adolescent males and females participated in this study the majority of participants were female, especially in the chronic pain group. Therefore, more research is needed to understand same sex friendship nuances of adolescent males and females with chronic pain.

Conclusions

Differences in social information processing existed between adolescents with chronic pain and healthy peers. This study sheds light on some of the SIP steps associated with these differences, as well as the broad types of social situations in which these differences may occur. Surprisingly, demographic characteristics and internalizing behaviours were not significant factors in predicting the differences in SIP steps found in this study. It may be that age was not a major factor as all the participants were adolescents within a five-year age range. Absence of sex related effects might be due to the disproportionate number of females in this study. Nevertheless, apart from age predicting response construction scores, demographic characteristics were not predictive of scores on SIP variables. Although there was a significant difference between group means (adolescents with chronic pain and controls) on depression, loneliness, and self-esteem scales, these factors were not correlated with SIP processing in this study.

Chronic pain and negative affect (when envisioning oneself as the chronic pain character) were the only two variables that significantly predicted scores on SIP variables. Although the effect size with which these variables predicted SIP variables were relatively small, it is important to note that chronic pain was significantly associated with several SIP steps and that demographic characteristics and internalizing behaviours were

not. Even though negative affect when envisioning oneself as the chronic pain character in the vignette was associated with several of the SIP steps, there was no interaction with chronic pain on these SIP outcomes. There appears to be something unique to the chronic pain experience and this one type of negative affect that results in SIP differences. Even though the effect size may be small, small differences may have a large impact on adolescents with chronic pain, if interpretations of these differences result in adolescents with chronic pain feeling uncared for, excluded, or uncomfortable within a social interaction.

Close friendships of adolescents with chronic pain are important relationships. The results of this study suggest that strategies to offset SIP differences between adolescents with chronic pain and their close friends may be helpful in maintaining these relationships. More research is needed to determine if there are other steps in the SIP model, sex differences, and/or specific forms of ambiguous social situations that contribute to friendship challenges for adolescents with chronic pain.

CHAPTER 5

CONCLUSIONS: INTEGRATED SUMMARY OF FINDINGS

This dissertation used across method triangulation to examine close friendships of adolescents with chronic pain, with a focus on understanding the factors that contributed to the quality of these important peer relationships. Three separate studies, using different methodologies and methods, were conducted to add to the body of knowledge on close friendships of adolescents with chronic pain. Triangulation is a broad term used to define the use of two or more theories, methodologies, methods, and modes of data collection to study a single phenomenon (Denzin, 1989). Methods triangulation, or mixed-methods, allows for the combination of qualitative and quantitative methodologies both within a single study and across studies (Begley, 1996; Foss & Ellefsen, 2002; Shih, 1998). Foss and Ellefsen (2002) assert that diverse approaches such as interpretative phenomenology and *a priori* hypothesis prediction are not incompatible, but rather different positions on a continuum of knowledge. Thus, the knowledge gained from such diverse approaches provides a broad and in-depth understanding of complex phenomenon.

In this dissertation mixed-methods were used across studies and the three studies were carried out in adherence to theoretical and methodological assumptions associated with each study. Each study contributed new knowledge with study specific findings, however there were shared findings across Studies 1 and 3. Shared findings supported each other across the studies and were integrated to provide a more comprehensive understanding. The purpose of this chapter was to integrate and summarize these major shared findings, discuss overall clinical implications, and future research directions.

The majority of the findings were generated from Study 1 and 3. Study 2 participants were not adolescents and the purpose of Study 2 was to capture initial

validation of the vignette questionnaire as opposed to exploring adolescent friendships themselves. Both Study 1 and Study 3 found that chronic pain presents challenges in close friendships of adolescents. These challenges may at times be obvious in terms of overt social rejection, but often, these social differences are more nuanced. Challenges with close friends may be attributed more to specific types of social situations, perceived support within social situations, and misconceptions on the part of both close friends and adolescents with chronic pain in terms of their perceptions of the other's intentions or needs.

The qualitative findings in Study 1 found that adolescents with chronic pain were changed from their pre-pain self and had to re-think their interaction with close friends. The changes generated by the chronic pain experience resulted in new friendship needs. Most of the adolescents with chronic pain did not communicate these new needs to their close friends, which compromised their ability to secure these new needs. Healthy participants in Study 1 expressed concern over their comfort, knowledge, and skill in providing support to a close friend with a chronic illness, thus a gap in understanding is created between adolescents with chronic pain and their healthy friends. We attributed this gap to the different lenses through which adolescents with chronic pain and their close friends viewed the world.

Re-thinking the Interacting Self-Living With Difference meant that adolescents with chronic pain had developed a chronic pain lens, whereas their close friends may still have an understanding of pain reflective of an acute illness/injury lens. The acute illness/injury lens may negatively affect the ability of healthy adolescents to empathize with a close friend with chronic pain. Healthy adolescents may believe treating a friend the same as they always did before the onset of chronic illness would make their friend

feel normal. Although this may in fact be true, it is only true in part, as adolescents with chronic pain also needed acknowledgement of their challenges from their close friends as well as other supportive and inclusive behaviours. The consequences of these different lenses may result in unrealistic friendship expectations on the part of both groups contributing to misunderstandings and feelings of estrangement within close friendships.

Consistent with these findings from Study 1, Study 3 found that adolescents with chronic pain indicated that they would enact inclusive/supportive behaviours more often across the three broad types of social situations depicted in the vignettes compared to the healthy participants. Selecting more inclusive/supportive behaviours adds to the evidence that there is a gap between some of the friendship needs of an adolescent with chronic pain and their healthy peers. Study 3 tempered the findings of Study 1 as chronic pain explained a modest amount of the variance (10%) in the selection of inclusive/supportive behaviours suggesting that close friends may provide supportive behaviours more often than suggested by Study 1.

Nevertheless, Studies 1 and 3 support the possibility that new friendship needs exist as a result of chronic pain and close friends may not always provide the support expected or needed by adolescents with chronic pain. The participants with chronic pain in Study 1 revealed that they used self-distancing practices with friends for a variety of reasons, such as fear of not being able to manage their pain while out socializing or close friends pushing them to participate beyond their abilities. Therefore, of critical importance may not be the effect size attributed to chronic pain in explaining the variance in one's intentions to enact inclusive/supportive behaviors but rather the impact these differences may have on an adolescent with chronic pain decisions to engage with close friends. Given that healthy adolescents indicated that they would enact

inclusive/supportive behaviours less often, it is likely that an adolescent with chronic pain has experienced social interactions in which their close friends did not meet their needs and that these experiences have led to using distancing practices to protect oneself in particular social situations.

Some of the adolescents in Study 1 described experiencing increased pain intensity from negative interactions with close friends. These adolescents identified the distress from these interactions as the trigger for the increase in their pain intensity. Participants with chronic pain in Study 1 did not describe positive social situations as contributing to a decrease in their pain but instead encouraged them to engage with close friends. Chronic pain, as a predictor variable in Study 3, was associated with rating non-supportive vignettes as more unsupportive, whereas chronic pain did not contribute to explaining the variance found in the intent or outcome attribution ratings of supportive or ambiguous social situations. The combined findings from these two studies suggest that non-supportive interactions may have a more negative meaning for adolescents with chronic pain compared to healthy friends.

Negative affect, as measured by emotional distress ratings when envisioning oneself as the chronic pain character in a vignette, was also a significant predictor of rating non-supportive vignettes as more unsupportive. This finding was regardless of the presence of chronic pain, suggesting that close friends may be capable of the emotional component of pain empathy in their interactions with adolescents with chronic pain in non-supportive social situations. However, the relationship was small between increased negative affect (emotional distress) and the enactment of more inclusive/supportive responses. Emotional distress when envisioning oneself as the chronic pain character explained no more than 5.6% of the variance in response decision scores. Other factors,

revealed in Study 1, such as perceived self-efficacy on the part of the close friend to provide supportive responses and behaviours, may also impact a close friend's enactment of inclusive/supportive behaviours towards their friend with chronic pain. Many of the healthy adolescents in Study 1 described being unsure if they would be comfortable in discussing chronic disease related topics, as these topics were outside of their typical adolescent experiences. Another factor that remains unanswered is whether continued exposure to witnessing pain in their friend increases or decreases the likelihood of close friends enacting more inclusive/supportive behaviour. The open-response reasons for the ratings on intent and outcome attributions in Study 3 hint that continued need on the part of the adolescent with chronic pain may decrease willingness on the part of the healthy friends to continually enact supportive behaviours.

Study 3 revealed significant differences between the group of participants with chronic pain and the control group on measures of depression, self-esteem, and loneliness. Although these factors were not associated with the scores on the SIP variables, we did not study if the consequences of negative friendship interactions contributed to lower scores. The findings in Study 1 suggested that this is a possibility. Adolescents with chronic pain discussed being different from their close friends, feeling uncared for by even close friends, feeling unworthy as a romantic friend, and at times feeling disbelieved about their pain by close friends. Although other factors related to pain, such as a changed view of self and feelings of stigmatization by non-friend peers and others, may also contribute to negative internalizing behaviours, the reaction by close friends cannot be discounted as a contributing factor.

Across the two main studies (Study 1 and Study 3), age was not found to be a factor in understanding close friendships of adolescents with chronic pain. This was

somewhat surprising as Sullivan (1953) states that as children age they develop more intimate friendships. Erdley et al. (2001) adds that close friendships are more important during adolescences than peer acceptance. However, the age range of participants across the two main studies in this dissertation expands the age ranges in adolescence (14-18 years of age in Study 1 and 13-18 years of age with a median age of 15 years in Study 3) suggesting that there may be more similarities in the close friendship needs across the age ranges in adolescence than there are differences.

Implications

Theoretical Implications

Both the Social Communication Model of Pain (Craig, 2002; 2009) and the Social Information Processing Model (Crick & Dodge, 1994) provided conceptual understanding to examine close friendships of adolescents. The Social Communication Model of Pain enhanced understanding by describing the dynamic factors and processes that may impact pain expression by an adolescent with chronic pain and the pain decoding and receptive behaviors of a close friend. The Social Information Processing Model guided hypothesis testing by detailing the individual cognitive processes that influence behaviors during an interaction between an adolescent with chronic pain and a close friend.

Specifically, SIP provided a theoretical model through which to explore differences in how adolescents with chronic pain and healthy peers interpret various stages of a social interaction. We did find differences in some of the steps in the model. However, the absence of positive findings for chronic pain explaining attribution ratings for ambiguous situations may be related to the results in Study 2 as much as to the absence of difference. Although Study 2 was helpful in selecting vignettes to use in Study 3, there were limitations to this descriptive approach. The agreement ratings on

ambiguous vignettes were below the *a priori* cut off and thus may have attributed to measurement error. Nevertheless, the ambiguous vignettes used did receive the majority of their ratings in the ambiguous category with the remainder almost evenly split between the supportive and non-supportive categories. In addition, the ambiguous vignettes were designed to provide a range of social situations, so it may be that the inclusion of diverse ranges of ambiguous situations led to no differences being found as opposed to the vignettes not being representative of ambiguous situations.

Future studies using vignettes should separate the types of ambiguous situations (emotional sharing versus physical presence) to determine if the type of ambiguous situation is a factor. SIP holds promise as a model to explore the quality of close friendships of adolescents with chronic pain as it discriminated differences between the two groups and illustrate subtle differences between adolescents with chronic pain and healthy peers.

The Social Communication Model of Pain (Craig, 2002; 2009) was briefly discussed in Study 1 and provides a framework to understand how one's pain experience and subsequent pain expression is influenced by multiple factors, including the reaction of others to one's pain. Both Study 1 and Study 3 suggest that the pain experience and pain expression of adolescents with chronic pain is influenced by their close friends' reactions.

In Study 1, adolescents with chronic pain talked about the reaction of their close friends to disclosures about their pain and subsequent decisions to engage or not engage friends. For example, if adolescents with chronic pain felt that they had to down play their distress to their close friends they may decide not to engage in an activity, or they may lie

to their close friends as to the reason for not engaging to avoid reactions of close friends to pain related information.

Study 3 found that the participants in the control group did not interpret non-supportive social interactions as unsupportive to the same degree as the participants with chronic pain and the healthy adolescents would not display inclusive/supportive behaviours as often in the various social situations. This may indicate that their reactions to expressions of pain are not only different than what may be expected by an adolescent with chronic pain but, in addition, these reactions may impact further pain expression. Therefore the Social Communication Model of Pain may be helpful in guiding intervention studies by exploring factors within the model that may be manipulated to improve close friendships.

Clinical Implications

Many clinical implications have been discussed in each study. However, in light of integrating the findings of all the studies in this dissertation, the main clinical implications from these integrated findings will be discussed.

Implications For Clinicians

It is clear that close friendships play a role in the pain experience for adolescents with chronic pain. However, clinicians must bear in mind the support that close friends may offer these patients. Discussing close friendships is therefore of importance in clinical care. Clinicians working with adolescents with chronic pain need to acknowledge that close friendships can be negatively impacted by chronic pain, but the degree to which close friendships are negatively impacted is not uniform across all adolescents or in all social situations. Discussing the various ways in which chronic pain can impact friendships may allow patients to identify the individual challenges they face. Strategies

to offset the challenges they face can then be discussed. For example, non-supportive social interactions have a more significant meaning for adolescents with chronic pain compared to healthy peers, therefore, adolescents with chronic pain may benefit from clinicians helping them strategize ways to cope with and respond to potentially non-supportive social situations.

Implications For Adolescents And Their Families

Differences exist across the studies in this dissertation between the friendship needs desired by adolescents with chronic pain and the behaviours their friends may be comfortable providing in various contexts. Although adolescents with chronic pain identified in Study 1 that it is difficult for close friends to understand chronic pain as they lack that experience, adolescents with chronic pain may not realize that this lack of experience may result in close friends making incorrect assumptions about what someone with chronic pain may find supportive. Study 1 suggested that some adolescents with chronic pain believe that their friends do not care about them based on comments, behaviours, or lack thereof. However, this most likely is not the case. Healthy participants in Study 3 had a similar degree of emotional distress, as did the participants with chronic pain, when envisioning themselves as the vignette character with chronic pain. This finding combined with the reasons provided by the healthy participants for the emotional distress ratings when they envision themselves as the healthy character in the vignettes (i.e. they would be upset if their friend with chronic pain was asked personal questions by others) suggest that close friends are capable of the affective component of pain empathy.

Awareness of these results may help an adolescent with chronic pain correct misconceptions of the reasons they attribute to their close friends' reactions and it may make them feel more cared for by their friends. Understanding that their friends may not

actually know what would be supportive may help adolescents with chronic pain take control of these friendship challenges by discussing with friends the behaviours they find helpful and/or most distressing. Thus, working with these adolescents to build their comfort with communicating with their close friends about their condition may help maintain positive friendships and help adolescents with chronic pain secure some of their new friendship needs.

Implications For Knowledge Translation

Although more research is needed to understand the impact of chronic pain on adolescent friendships and evaluate strategies designed to ameliorate negative effects, the findings of this dissertation need to be disseminated. These studies identified that close adolescent friendships may be altered by chronic pain and that both positive and negative friendship experiences matter and affect the chronic pain experience. The findings from this dissertation also suggest factors within the process that may benefit from intervention. Thus, researchers and clinicians will be targeted for dissemination of the findings.

In addition to traditional dissemination (publication in research journals and presentations at scientific conferences), forwarding the findings to researchers and clinicians actively working with this population through the Pediatric Pain List Serve is planned, as this would increase timely access to the findings. The PI is a trainee in the Canadian Institutes of Health Research, Pain In Child Health Strategic Training Program and plans on presenting these findings in one of the monthly web-based meetings. The attendees of these monthly web-based meetings are researchers and trainees specializing in pediatric pain. By increasing their awareness of the findings, further dissemination among those working in this area will be facilitated.

In addition to the PI, several members involved in this research are practicing researchers and clinicians and will be incorporating the findings into their practice. A press release of the findings (once published) may provide an opportunity to increase the dissemination of the findings to other researchers and clinicians, as well as to the general public. The lack of understanding of chronic pain by the general public was identified as a contributing factor to the stigmatization experiences of adolescents with chronic pain. Thus, increasing the general public's awareness of the negative effects of chronic pain for adolescents is warranted.

Future Research

This dissertation included both qualitative and quantitative studies. Each methodology provided insights that the other could not and hence provided a more comprehensive understanding of close friendships for adolescents with chronic pain. The qualitative study provided an in-depth understanding of chronic pain's impact on an adolescent's sense of self in relation to their social life. The quantitative study illustrated that, although the impact of chronic pain may be profound in an adolescent's social life, this may vary across individuals, situations, and may be subtle in nature. Both methodologies provide direction for further research on the social lives of adolescents with chronic pain and their close friendships.

Specifically, the studies in this dissertation included healthy peers who did not have a friend with chronic pain. It is not known if close friends of adolescents with chronic pain become more skilled in their ability to support an adolescent with chronic pain or if continued needs of the adolescent with chronic pain become taxing on their abilities to support their close friend. Future studies need to include close friends of adolescents with chronic pain.

Few males participated in Study 1 and Study 3, thus findings must be interpreted with caution for the friendship experiences of adolescent males with chronic pain. Male friendships are more about physical presence and camaraderie compared to personal or emotional sharing (Benenson & Christakos, 2003) so it was surprising that sex did not significantly correlate with distress ratings for either envisioning themselves as the teen with chronic pain or healthy character. Only 20.6 % of the participants in Study 3 were male so this study may be underpowered to show this relationship. Therefore, studies that either focus on male adolescents with chronic pain and their same sex friendships or studies with increased numbers of male participants are needed.

Although both males and females were included in this dissertation, the focus of all the studies was on same sex close friendships. As adolescents age, mixed sex and romantic friendships become more prevalent and important (Collins, 2003; Darling, Dowdy, Van Horn, & Caldwell, 1999) and would be another important area to explore in addition to same sex friendships.

Stigmatization, as conceptualized by Goffman (1963), was experienced by all the adolescents with chronic pain in Study 1 as evidenced by the described comments and behaviours of others (teachers, non friend peers, employers, and close friends) towards them. These adolescents also experienced feelings of stigmatization through their own reflections on their differences from peers, as they no longer felt part of their 'normal' peer group. The negative feelings from both of these forms of stigma tempered their desire for certain types of social interactions. Further research focusing on the stigmatization experienced by adolescents with chronic pain is warranted.

Intervention studies need to be designed to determine if social strategies, such as reframing perceptions of close friends behaviors, improving an adolescents ability to

articulate their condition and treatment, role-playing discussions with friends about supportive behaviors, etc., suggested from the findings in this dissertation make a positive impact on close friendships of adolescents with chronic pain. Intervention studies also need to evaluate the best methods of delivering these interventions and by whom.

Conclusion

In conclusion, by including diverse methodologies and methods in this dissertation, we found that chronic pain interrupts an adolescent's social development but the ways in which this is experienced in close friendships may be nuanced in nature. Although chronic pain changes the view of self, and adolescents with chronic pain must incorporate new views of self along with new friendship needs into their close friendships, not all adolescents with chronic pain will experience the same degree of close friendship disruption. Processes within social interactions are helpful in identifying where friendship disruptions may occur and suggest process steps amendable to intervention. Close friends can be a source of support for these adolescents and helping them maintain these relationships is of clinical importance. Further study to improve our understanding of the factors that contribute to challenges within close friendships, as well as the factors that sustain close friendships is needed if we are to develop social interventions that improve chronic pain and pain coping for adolescents.

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Appendix A
Information, Consent and/or Authorization Form

Peer Relationships of Adolescents with Chronic Pain: Do they describe them differently compared to normative peers?

The following researchers are conducting this study:

Principle Investigator: Paula Forgeron RN MN
Interdisciplinary PhD student
Dalhousie University

Co-investigators: Dr. Patrick McGrath PhD
Professor of Psychology
Dalhousie University
Vice President of Research
IWK Health Centre
Dr. McGrath is Paula Forgeron's PhD supervisor

Dr. Joan Evans RN PhD
Associate Professor School of Nursing
Director, Communications Skill Program, Faculty of Medicine
Dalhousie University

Dr. Bonnie Stevens RN PhD
Professor Faculty of Nursing and Medicine
University of Toronto
Associate Chief of Nursing, Research
The Hospital for Sick Children

Dr. G. Allen Finley MD FRCPC
Professor Anaesthesia and Psychology
Dalhousie University
Medical Director Pediatric Complex Pain Management
IWK Health Centre

This study has is being funded by a grant from the IWK Health Centre and the Canadian Institutes of Health Research through a Doctoral Fellowship to Paula Forgeron.

Introduction:

You are being invited to take part in the research study named above. This form provides information about the study. Before you decide if you want to take part, it is important that you understand the purpose of the study, risks, benefits, and what you will be asked to do. You do not have to take part in this study. Taking part is entirely voluntary (your choice). Informed consent starts with the initial contact about the study and continues until the end of the study. A member of the research team will be available to answer any questions you have. You may decide not to take part or you may withdraw from the study at any time. This will not affect the care you or your family members will receive from the IWK Health Centre in any way.

Why are the researchers doing the study?

Peer friendships are important for teenagers, as these friendships provide opportunities to test and develop values and beliefs without adult monitoring. When teenagers spend time with people their own age they develop a sense of personal identity and gain independence from family influences, which is all part of growing up. As teens age they learn how to behave and act in social settings. This is necessary so that they can make more and different types of friendships. However, teenagers who suffer from chronic pain miss school and other social activities because of their pain. Having fewer opportunities to spend time with friends may lead to social isolation. We do not know if teenagers with chronic pain have fewer friends, or if their friendships are different than other teenagers. This study will help us find out how teenagers with chronic pain talk and think about their friendships. We will also compare what they say with teenagers who do not have a chronic health problem. Knowing how friendships of teenagers with pain are different is important so that we can plan ways to help offset any negative differences in their relationships with other teenagers.

How will the researchers do the study?

This study will use a qualitative approach to understand the ways that teenagers with chronic pain and teenagers without a chronic health condition think and talk about friendships. Qualitative research is designed to increase understanding about an issue through the experiences and voices of those who have the experience. Paula Forgeron (the principal investigator listed above) will interview teenagers face-to-face and in private about their friendships. The interviews can take place in the teenager's home or a place that the teenager identifies in their hometown. For teenagers who live in Halifax the interview can take place in a private room at the IWK. Teenagers from the 3 Maritime Provinces are invited to participate. Eight teenagers with chronic pain and 8 teenagers who do not have a chronic health condition are needed for this study.

A second interview by telephone will be done within 6 months after the first interview. Both interviews will be audio recorded and the interviews will be typed up for analysis. The teenager's name and the names of their friends will be removed when the audio recordings are typed. The audio recordings and the typed version will be reviewed by Paula Forgeron first to determine what issues the teenagers say are important and then to look for similarities and differences between teenagers with chronic pain and teenagers without any chronic health conditions. Dr. Joan Evans (co-investigator listed above) will then review the typed versions and any audio recordings that are necessary to analyze the

interviews in the same way. Dr. Evans and Paula Forgeron will review their results together to check for accuracy in what they found, and to develop the questions for the telephone interviews. The telephone interviews will be shorter than the face-to-face interviews and will ask questions to help clarify any issues from the first interviews. The other three co-investigators will review the drafts of the findings from both interviews only after the two interviews are completed. Rechecking the findings in this way helps check for accuracy. The other three co-investigators will only be given the typed versions of the interviews, which will not contain any of the teenagers' names.

What will I be asked to do?

You will be asked to take part in a private interview with Paula Forgeron. This interview will last about 1 hour and be audio recorded. You will be asked to fill out a short form before the start of the interview. This form will ask for some basic information such as your age and grade level at school. The information on the demographic form is to help describe the group of participants and specific information will not be asked (such as the name of your high school). You will then be asked some questions about friendships. Some examples of questions you might be asked are: Can you tell me about your friends?; How important is it to have a really close or best friend?; What sorts of things do you talk about with your best friend?; etc.

Even if you decide to be interviewed you do not have to answer any of the questions and can stop the interview at any time. Just because you take part in the first interview does not mean you have to take part in the second follow-up interview. Paula Forgeron will contact you within 6 months of your first interview to find out if you are interested in taking part in the second interview. If you do want to take part in the second interview it will be done over the phone instead of in person. The questions for the second interview will help clarify any points raised in the first interview or to ask questions that might be important but were not asked in the first interview. Even if you take part in the second interview, you can decide not to answer some of the questions or stop the interview at any time.

If you are a teenager who attends the Pediatric Complex Pain Management clinic and Paula Forgeron is your Clinical Nurse Specialist she will be the only member of the clinic staff that will know if you took part because she is conducting the interviews. She is not allowed to discuss the findings with any of the other members of the Pediatric Complex Pain Management clinic in a way that they can identify you. Dr. Finley will not be given the names of who took part. He will not be given the names of the teenagers who take part. He will not be given the audio recordings to listen to or the demographic form. He will only be given a copy of the typed interview, which no longer contains your name.

You should read this consent form. If you feel you understand fully and are comfortable with the information, you may sign the Information, Consent and Authorization form (last page) yourself. If you do not fully understand this form or would be more comfortable having your parents involved, you should ask them to read this form and sign the last page if you decide together that you would like to take part in this study. The Assent form may help you understand the study better.

What are the burdens, harms, and potential harms?

There are minimal potential harms to this research. Some teenagers may become upset when talking about friendships. If this occurs they will be asked if they want to stop the interview, to skip the question, or take a break from the interview.

What are the potential benefits?

Taking part in this study may be of no help to you personally. It is hoped that what is learned will be of future benefit to other teenagers with chronic pain.

What alternatives to participation do I have?

Participation is voluntary. If you decide not to participate in this study your care or the care your family receives from the IWK will not be affected in any way.

You may decide to participate in the first interview but not in the second follow-up telephone interview.

You may decide to participate but not answer all of the questions during the interview.

Can I withdraw from the study?

You can withdraw from the study at any time. If you decide to participate and sign this consent form you may still withdraw from the study. Withdrawing from the study will not affect the care that you or your family receives at the IWK.

If you decide not to participate in the second interview the information from the first interview will still be used in the study analysis.

There are no risks in withdrawing from this study at any time.

Will the study cost me anything and, if so, how will I be reimbursed?

The study will not cost you. If you live in the city of Halifax and decide to travel to the IWK for the interview, you will be reimbursed for your mileage and parking. If you prefer, the researcher will come to your home to conduct the interview. If you live outside of the city of Halifax the researcher will travel to where you live to conduct the interview. If you decide to take part in the second interview, which will be conducted by telephone, the researcher will call you so you will not have any long distance charges.

Teenagers will receive a movie pass worth 10.00 dollars after each interview. If you start an interview but decide to stop it part way through you will still receive the movie pass. In the case of the telephone interview, the movie pass will be mailed to your home.

There are no other reimbursements for this research.

Are there any conflicts of interest?

There are no conflicts of interest associated with this study.

What about possible profit from commercialization of the study results?

There are no possible commercial profits from the results of this study.

How will I be informed of the study results?

Once the two interviews have been analyzed a letter containing the findings will be sent to interested participants regardless if they participated in one or both of the interviews. If any of the participants would like to discuss the findings they are invited to contact Paula Forgeron (the principal investigator) at any time after they receive the letter with the results.

Would you like to receive a summary of the study results? Yes ____ No ____

Please provide your address _____

How will my privacy be protected?

If you are a teenager who receives care through the Pediatric Complex Pain Clinic at the IWK, none of the health professionals on the team that are involved in your care will be notified if you take part in the study or not. They will not be given the specific information on any of the participants. They will only receive a summary of the results and copies of any publications. Dr. Finley will not know the identity of the participants, as he will not have access to the consent forms, demographic data sheet, or audio recordings. He will only have access to the typed interviews, which will no longer contain your name.

All records will be kept in a locked cabinet in the Centre for Pediatric Pain Research. Only the principal investigator will have a key.

The professional transcriber (person who will type the audio-recorded interviews) will sign a confidentiality agreement stating that she will not tell anyone about the discussions she types and she will delete the copy of the transcriptions from her computer once they have been given to the principal investigator.

After Paula Forgeron and Dr. Joan Evans have confirm accuracy of the typed interviews, the audio recordings will be destroyed.

Your name and identifying information will not be used in any presentation of the results of this study. Direct quotes may be used in the presentation of the results but your name will not be used.

The typed interviews, consents, and demographic forms will be stored at a locked secured site for five years and then destroyed.

All information revealed during the interviews will be kept private. However, if at any time you share information that includes thoughts about hurting yourself, or, if someone else is hurting you, it may be necessary to tell someone.

What if I have study questions or problems?

If you have any questions or problems related to this study you may contact Paula Forgeron. She is available by email at any time or by phone Monday to Friday 9am to 5pm. Her contact information is as follows:

Paula Forgeron
Telephone: (902) 470-6350 Email: pforgero@dal.ca

What are my Research Rights?

Your signature on the form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigator(s), sponsors, or involved institution(s) from their legal and professional responsibilities. You are free to withdraw from the study at any time without jeopardizing the health care you are entitled to receive.

If you have any questions at any time during or after the study about research in general you may contact the Research Office of the IWK Health Centre at (902) 470-8765, Monday to Friday between 9am and 5pm.

Future contact/future research/other use.

If you would like to be notified in the future of any other research that a member of the research team is conducting please indicate by checking the appropriate box. Even if you allow us to contact you about future research projects you are under no obligation to participate or receive information about the future study.

Would you like to be contacted in the future about upcoming research projects?

Yes _____ No _____

Please provide your address if you are interested in being contacted in the future about upcoming research projects.

Signature Page

Study title: Peer Relationships of Adolescents with Chronic Pain: Do they describe them differently compared to normative peers?

Participant ID:

Participants INITIALS:

Participant Consent

I have read or have read to me this information and consent form and have had the chance to ask questions which have been answered to my satisfaction before signing my name. I understand the nature of the study and I understand the potential risks. I understand that I have the right to withdraw from the study at any time without affecting my care in any way. I have received a copy of the Information, Consent and Authorization Form for future reference. I feely agree to participate in this research study.

Name of Participant (Print)

Participant Signature:

Date: _____ Time:

Participant Authorization

I have read or have read to me this information and consent form and have had the chance to ask questions which have been answered to my satisfaction before signing my name. I understand the nature of the study and I understand the potential risks. I understand that I have the right to withdraw my child from the study at any time without affecting my child's care in any way. I have received a copy of the Information, Consent and Authorization Form for future reference. I freely agree to allow my child to participate in this research study.

Name of Child Authorized to Participant (Print):

Name of Parent Authorizing Participation (Print):

Participant Signature:

Date: _____ Time:

STATEMENT BY PERSON PROVIDING INFORMATION ON THE STUDY.

I have explained the nature and demands of the research study and judge that the participant named above understands the nature and demands of the study.

Name: (Print)

Signature: _____ Position:

Date: _____ Time:

STATEMENT BY PERSON OBTAINING CONSENT

I have explained the nature of the consent process to the participant and judge that they understand that participation is voluntary and that they may withdraw at any time from participating.

Name: (Print)

Signature: _____ Position:

Date: _____ Time:

Appendix B Interview Topic Guide

Thank you for agreeing to participate in this study on adolescents and their relationships with other teenagers. This interview will last about one hour and we will be audio-taping it. If there are any questions that you do not want to answer, or if you want to stop the interview at anytime that is OK. Although this is being recorded and will later be typed up, your name and that of your friends will be removed before sharing any of the findings with others. If you are unsure what I am asking in a question, please just tell me and I will reword the question. Are you ready to get started?

1. Can you tell me about yourself?

Probes:

- How old are you?
- Tell me about your family, do you have siblings, cousins?
- What sorts of family activities do you do?
- What sorts of hobbies do you have? (Sports, clubs, shopping, movies)

2. Can you tell me about school?

Probes:

- Can you tell me what it is like for you as a student?
- How often do you attend school?
- Things you do outside of school? With whom?

I would like to know more about your friends and other people your own age that you know.

3. Can you tell me about your friends?

Probes:

- What word best describes the group you are part of? (i.e. “jocks”, “brains”, druggies, etc.)
- What kind of things do you and your friend(s) do together?
- Are these friends all part of the same group?
- Where did you meet your friends?

4. How important is it to have a really close or best friend?

Probes:

- How many of your friends are best friends?
 - How do you feel about this?
- How are best friends different from other friends?
- What sorts of things do you talk about with your best friend(s)?
- Is this different than what you would talk about with your parents, siblings, or others in your family?
- What would you not talk to your friends about?

Only for adolescents with chronic pain

- How has your pain affected your friendships? How have your friendships affected your pain?
 - How do your friends know you are having pain?
 - What do your friends do when you are having pain?
 - How does this make you feel?
 - What do you do in response?
5. Can you tell me about a time when your friend(s) were supportive?
Probe: How did this make you feel?
6. Can you tell me about a time when your friend(s) were not supportive?
Probe: How did this make you feel?
7. Is there anything that you would like your friends and classmates to do for you that they are not doing?
8. Is there anything that we didn't discuss about relationships with people your own age that is important to you?

Thank you

Appendix C
Social Information Processing Vignettes:
Friendships of Adolescents with Chronic Pain
Sample of Online Survey

Thank you for taking part in this survey to determine the content validity of a set of vignettes. The vignettes will eventually be used to determine the perceptions of adolescents with and without chronic pain about common interactions with close friends. The following vignettes are focused on a group of friends in High School. Sue is an adolescent with chronic pain. Mary, Jane, and Samantha are Sue's closest/best friends. After each vignette you will be asked to rate the behaviours of the specified friend towards Sue (the adolescent with chronic pain) in the vignette. You will be asked to rate the intent the friend's behaviours and the outcome of the behaviours separately. Please base your answer from the perspective of a typically developing healthy adolescent for both the intent and outcome, not an adolescent with chronic pain. You will notice that the vignettes are about female characters. Name changes will be made for male-based vignettes as well as minor details to depict male activities.

Please use the following definitions as guidelines for making your ratings. Please do not over analyze the situation but think from the perspective of a typically developing healthy adolescent.

Behaviours of the specified friend:

Supportive: Intentions of the friend are supportive towards, or inclusive of, their friend with chronic pain. These behaviours would generally be perceived as supportive from a typically developing healthy adolescent's perspective.

Unsupportive: Intentions of the friend are unsupportive towards, or excluding of, their friend with chronic pain. These behaviours would generally be perceived as unsupportive from a typically developing healthy adolescent's perspective.

Ambiguous: Intentions of the friend are unclear, the behaviours could be considered either supportive or unsupportive. These behaviors may have aspects that are both supportive and unsupportive behaviors towards the friend with chronic pain.

You will also be asked if the vignette is easy to understand or confusing. Please also provide comments with regards to wording of the vignettes or thoughts for improving the vignettes in the comment section.

1. Pretend you are Samantha (a healthy teenager) in this scenario.

Intent: Sue (your friend with chronic pain) has been struggling in math class because she has missed a lot of class time. During class Sue says to Samantha that she does not have a clue what the teacher is talking about. Sue also says that she is sure she will fail the course because she has missed so many classes. Samantha whispers back to Sue that if Sue wants, they can get together on Sunday and go over the math together but that she has to pay attention right now.

Please rate the intent of Samantha's behavior:

1. Supportive ____
2. Unsupportive ____
3. Ambiguous/Mixed

Outcome: After class Samantha and Sue arrange a time on Sunday to go over the math.

Please rate the outcome of Samantha's behavior:

1. Supportive ____
2. Unsupportive ____
3. Ambiguous/Mixed ____

Clarity of the vignette: 1. Easy to understand ____
2. Confusing ____

Comments for vignette improvement:

2. Pretend you are Jane in the scenario.

Intent: Sue has been out of school for over a week due to her pain. She calls Jane to see if she wants to come over. Jane has made other plans and is going out to a house party. She asks Sue if she would like to come but Sue is not feeling good enough to go to a party.

Please rate the intent of Jane's behavior:

1. Supportive ____
2. Unsupportive ____
3. Ambiguous/Mixed ____

Outcome: Jane goes to the party. Sue stays at home.

Please rate the outcome of Jane's behavior:

1. Supportive ____

2. Unsupportive ____
3. Ambiguous/Mixed ____

Clarity of the vignette: 1. Easy to understand ____
2. Confusing ____

Comments for vignette improvement:

Appendix D
Email Invitation

Dear Colleague,

As a leader in working/researching with adolescents we would like to invite you to participate in our research project, entitled “*Friendship Interactions of Adolescents with Chronic Pain: Validation of Vignettes.*” This study is part of Paula Forgeron’s PhD studies and is a critical step in designing future research to explore the factors that contribute to positive and negative social interactions between adolescents with chronic pain and their close friends. The purpose of this study is to develop a repertoire of vignettes to be used in subsequent studies based on the Social Information Processing theory by Crick and Dodge (1994). Knowledge of this theory is not necessary in order to participate in this present study.

The online survey will take approximately 30-45 minutes. You will be asked to rate each vignette story for clarity, is the story easy to understand or confusing, and suggestions for improving the vignette so that it is less confusing. You will also be asked to rate the behaviours of the healthy friend in the vignette towards their friend with chronic pain; were they supportive, non-supportive, or ambiguous. We are trying to construct vignettes that represent behaviours a typically developing healthy adolescent might display in these situations.

Your participation is greatly appreciated. If you are interested in participating please click on the URL at the bottom of this invitation, which will bring you to Opinio, Dalhousie University’s online survey service. You will be required to review the information and consent form. You do not have to complete the survey in one sitting; you have 3 weeks to complete the survey. If you choose to complete the survey over time, click the ‘save’ button at the bottom of the page you are currently on, Opinio will prompt you for your email address and a reminder with a link to your specific survey will be sent. If you have questions after reading the information and consent form please contact either Paula Forgeron or Dr. Patrick McGrath (contact information below). If you questions while completing the survey please contact Paula Forgeron.

We have set-up the survey tool so that participation is anonymous; therefore if you are interested in receiving the results of this study please send an email to Paula Forgeron and a summary of the findings will be emailed to you at the completion of the study.

Thank you in advance for your participation,

Paula

Paula Forgeron RN MN
Phone: (902) 448-0749
Email: pforgero@dal.ca

Pat

Patrick McGrath PhD, OC
Phone: (902) 470-7901
Email: patrick.mcgrath@iwbk.nshealth.ca

Appendix E
Information, Consent and/or Authorization Form

Friendship interactions of adolescents with chronic pain: Are they different?

The following researchers are conducting this study:

Principle Investigator: Paula Forgeron RN MN
Interdisciplinary PhD student
Dalhousie University

Co-investigators: Dr. Patrick McGrath PhD
Professor of Psychology
Dalhousie University
Vice President of Research
IWK Health Centre
Dr. McGrath is Paula Forgeron's PhD supervisor

Dr. Joan Evans RN PhD
Associate Professor School of Nursing
Director, Communications Skill Program, Faculty of Medicine
Dalhousie University

Dr. Bonnie Stevens RN PhD
Professor Faculty of Nursing and Medicine
University of Toronto
Associate Chief of Nursing, Research
The Hospital for Sick Children

Dr. G. Allen Finley MD FRCPC
Professor Anaesthesia and Psychology
Dalhousie University
Medical Director Pediatric Complex Pain Management
IWK Health Centre

This study has is being funded by a grant from the IWK Health Centre and the Canadian Institutes of Health Research through a Doctoral Fellowship to Paula Forgeron.

Introduction:

You are being invited to take part in the research study named above. This form provides information about the study. Before you decide if you want to take part, it is important that you understand the purpose of the study, risks, benefits, and what you will be asked to do. You do not have to take part in this study. Taking part is entirely voluntary (your choice). Informed consent starts with the initial contact about the study and continues until the end of the study. A member of the research team will be available to answer any questions you have. You may decide not to take part or you may withdraw from the study at any time. This will not affect the care you or your family members will receive from the IWK Health Centre in any way.

Why are the researchers doing the study?

Peer friendships are important for teenagers, as these friendships provide opportunities to test and develop values and beliefs without adult monitoring. When teenagers spend time with people their own age they develop a sense of personal identity and they gain independence from family influences, which is all part of growing up. As teens age they learn how to behave and act in social settings. This is necessary so that they can make more and different types of friendships. However, teenagers who suffer from chronic pain miss school and other social activities because of their pain. Having fewer opportunities to spend time with friends may lead to a teenager being alone most of the time. We do not know if these experiences change the way teenagers with chronic pain think about their interactions with their friends. This study will help us find out if teenagers with chronic pain view a variety of social interactions with friends differently than healthy teenagers. Knowing if there is a difference in how healthy peers and teenagers with pain feel about and view social interactions is important so that we can plan ways to help offset any negative differences in their relationships with other teenagers.

How will the researchers do the study?

This study will use a quantitative approach (results represent teenagers in general) to understand how teenagers with chronic pain and healthy teenagers view a variety of social interactions with friends. This research study is designed to compare the responses from the teenagers with chronic pain with those of healthy teenagers to see if there is a difference between the groups. Individual responses are not compared. The paper based research tool is like a questionnaire and Paula Forgeron will conduct the questionnaire interview in a face-to-face meeting. One of the questionnaires consists of short stories (paragraph) of a social interaction between friends and the teenager will be asked to rate their views of the situation on a scale from 1 to 5. The adolescents without chronic pain will also complete four other questionnaires at this time. The adolescents with chronic pain will also complete five other questionnaires at this time. The four questionnaires that all adolescents will complete are to help find out if there are other reasons for any difference between the groups besides chronic pain. These four questionnaires are very short and collect data on social anxiety, depressed feelings, loneliness, and self-esteem. The scores on all the questionnaires will be used in the analysis to determine if there is a difference between the group of teenagers with chronic pain and the healthy teenagers with how they view social interactions with friends. The fifth questionnaire, that the only the adolescents with chronic pain will complete, is a very short questionnaire (6 questions). This questionnaire is to help determine how much chronic pain interferes with

your daily life. The questionnaire interview is done in person so that Paula can provide clarifications or answer any questions you may have. There are no correct answers for any of these questionnaires. The interviews can take place in the teenager's home or a place that the teenager identifies in their hometown. For teenagers who live in Halifax the interview can take place in a private room at the IWK.

Teenagers from the 3 Maritime Provinces, Alberta Children's Hospital, and the Stollery Children's Hospital in Edmonton are invited to participate. A total of 112 teenagers are needed for this study. Some of these teenagers will have chronic pain and some will not have chronic pain. We plan on enrolling 80 adolescents are expected to be recruited through the IWK Health Centre with the other 32 adolescents recruited through the Alberta Children's and Stollery Children's Hospitals.

The scores from the questionnaires will not contain any identifying information; in fact the questionnaires will not contain the teenagers name so that no one but Paula Forgeron will know your answers.

What will I be asked to do?

You will be asked to take part in and complete the questionnaires in private with Paula Forgeron. It will take about 45 to 60 minutes to complete the questionnaires. Even if you decide to participate you do not have to answer any of the questions and can stop at any time.

If you are a teenager who attends the Pediatric Complex Pain Management clinic none of your health care providers will know if you are part of the study. Dr. Finley is the only member of the Pediatric Complex Pain Management clinic who is involved in your care and is also a researcher on this study. Dr. Finley will not be given the names of the teenagers who take part. He will not be given the completed questionnaires. He will only be given a copy of the scores once they are calculated, which will not contain any personal identifying information.

If you are a teenager who attends any of the other clinics at the IWK none of your health care providers will know if you are part of the study.

You should read this consent form. If you feel you understand fully and are comfortable with the information, you may sign the Information, Consent and Authorization form (last page) yourself. If you do not fully understand this form or would be more comfortable having your parents involved, you should ask them to read this form and sign the last page if you decide together that you would like to take part in this study. The Assent form may help you understand the study better.

What are the burdens, harms, and potential harms?

There are minimal potential harms to this research. Some teenagers may become upset when completing the forms about friendship interactions. If this occurs they will be asked if they want to stop, to skip the question, or take a break from the questionnaire administration.

What are the potential benefits?

Taking part in this study may be of no help to you personally. This research may change how teens with chronic pain are cared for in the future.

What alternatives to participation do I have?

Participation is voluntary. If you decide not to participate in this study your care or the care your family receives from the IWK will not be affected in any way.

You may decide to participate but not answer all of the questions during the interview.

Can I withdraw from the study?

You can withdraw from the study at any time. If you decide to participate and sign this consent form you may still withdraw from the study. Withdrawing from the study will not affect the care that you or your family receives at the IWK.

If you decide not to complete all the questionnaires and withdraw from the study the questionnaires that you completed will be used in the study analysis. This is important as the research is designed to represent teenagers in general and therefore we need to know if there are any differences between the teenagers who complete the study and those who stop part way through.

There are no risks in withdrawing from this study at any time.

Paula may stop the interview if answering the questions upsets you.

Will the study cost me anything and, if so, how will I be reimbursed?

The study will not cost you. If you live in the city of Halifax and decide to travel to the IWK for the interview, you will be reimbursed for your mileage and parking. If you prefer, the researcher will come to your home to conduct the interview. If you live outside of the city of Halifax the researcher will travel to where you live to conduct the interview.

Teenagers will receive a movie pass worth 10.00 dollars after the interview. If you start the questionnaires but decide to stop it part way through you will still receive the movie pass. There are no other reimbursements for this research.

Are there any conflicts of interest?

There are no conflicts of interest associated with this study.

What about possible profit from commercialization of the study results?

There are no possible commercial profits from the results of this study.

How will I be informed of the study results?

Once the data from the questionnaires has been analyzed a letter containing the findings will be sent to interested participants. If any of the participants would like to discuss the findings they are invited to contact Paula Forgeron (the principal investigator) at any time after they receive the letter with the results.

Would you like to receive a summary of the study results? Yes ___ No ___

Please provide your address _____

How will my privacy be protected?

If you are a teenager who receives care through the Pediatric Complex Pain Clinic at the IWK, none of the health professionals on the team that are involved in your care will be notified if you take part in the study or not. They will not be given the specific information on any of the participants. They will only receive a summary of the results and copies of any publications. Dr. Finley will not know the identity of the participants, as he will not have access to the consent forms or questionnaires. He will only have access to the scores from the questionnaires, which will no longer contain your name.

All records will be kept in a locked cabinet in the Centre for Pediatric Pain Research. Only the principal investigator will have a key.

Your name and identifying information will not be used in any presentation or publication of the results of this study.

The completed questionnaires (which do not contain your name or initials) will be stored at a locked secured site for five years and then destroyed.

All information revealed during the questionnaire interviews will be kept private. However, if at any time you share information that includes thoughts about hurting yourself, or, if someone else is hurting you, it may be necessary to tell someone. If your score on the depression questionnaire identifies that you may be clinically depressed you will be notified and a referral to your family doctor or mental health services in your area will be offered.

What if I have study questions or problems?

If you have any questions or problems related to this study you may contact Paula Forgeron. She is available by email at any time or by phone Monday to Friday 9am to 5pm. Her contact information is as follows:

Paula Forgeron

Telephone: (902) 470-3927. Email: pforgero@dal.ca

What are my Research Rights?

Your signature on the form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigator(s), sponsors, or involved institution(s) from their legal and professional responsibilities. You

are free to withdraw from the study at any time without jeopardizing the health care you are entitled to receive.

If you have any questions at any time during or after the study about research in general you may contact the Research Office of the IWK Health Centre at (902) 470-8765, Monday to Friday between 9am and 5pm.

Future contact/future research/other use.

If you would like to be notified in the future of any other research that a member of the research team is conducting please indicate by checking the appropriate box. Even if you allow us to contact you about future research projects you are under no obligation to participate or receive information about the future study.

Would you like to be contacted in the future about upcoming research projects?

Yes _____ No _____

Please provide your address if you are interested in being contacted in the future about upcoming research projects.

Signature Page

Study title: Friendship Interactions of Adolescents with Chronic Pain: Do They Interpret Social Cues and Responses Differently Than Healthy Peers?

Participant ID:

Participants INITIALS:

Participant Consent

I have read or have read to me this information and consent form and have had the chance to ask questions which have been answered to my satisfaction before signing my name. I understand the nature of the study and I understand the potential risks. I understand that I have the right to withdraw from the study at any time without affecting my care in any way. I have received a copy of the Information, Consent and Authorization Form for future reference. I feely agree to participate in this research study.

Name of Participant (Print)

Participant Signature:

Date: _____ Time:

Participant Authorization

I have read or have read to me this information and consent form and have had the chance to ask questions which have been answered to my satisfaction before signing my name. I understand the nature of the study and I understand the potential risks. I understand that I have the right to withdraw my child from the study at any time without affecting my child's care in any way. I have received a copy of the Information, Consent and Authorization Form for future reference. I freely agree to allow my child to participate in this research study.

Name of Child Authorized to Participant (Print):

Name of Parent Authorizing Participation (Print):

Participant Signature:

Date: _____ Time:

STATEMENT BY PERSON PROVIDING INFORMATION ON THE STUDY.

I have explained the nature and demands of the research study and judge that the participant named above understands the nature and demands of the study.

Name: (Print)

Signature: _____ Position:

Date: _____ Time:

STATEMENT BY PERSON OBTAINING CONSENT

I have explained the nature of the consent process to the participant and judge that they understand that participation is voluntary and that they may withdraw at any time from participating.

Name: (Print)

Signature: _____ Position:

Date: _____ Time:

Appendix F
Healthy Adolescent Group—Demographic Sheet

1. Age:

2. Grade:

3. Sex:

Appendix G
Chronic Pain Group—Pain & Demographic Data Sheet

1. Age:

2. Grade:

3. Sex:

4. How often do you experience pain?

5. Where is your pain located?

6. Please rate the intensity of your pain (how much does it hurt) from 0 (meaning no pain) to 10 (meaning the worst pain you can imagine).

Appendix H
PedsMIDAS

Pain Related Disability.

The following questions try to assess how much your pain is affecting day-to-day activity. Your answers should be based on the last three months (in the case of summer vacation please use the last three months of school for the school related questions). There are no 'right' or 'wrong' answers so please put down your best guess.

1. **How many full school days of school were missed in the last 3 months due to pain?** _____
 2. **How many partial days of school were missed in the last 3 months due to pain (do not include the full days counted in question 1)?** _____
 3. **How many days in the last 3 months did you function at less than half your ability in school because of pain (do not include days counted in question 1 and 2)?** _____
 4. **How many days over the last 3 months were you not able to do things at home (i.e. chores, homework, etc.) due to pain?** _____
 5. **How many days over the last 3 months did you not participate in other activities due to pain (i.e. play, go out, sports, clubs, etc.)?** _____
 6. **How many days over the last 3 months did you participate in these activities, but functioned at less than half your ability (do not include the days counted in question 5)?** _____
- Total PedMIDAS Score** _____
- Pain Frequency** _____
- Pain Severity** _____

Appendix I
Social Anxiety Scale for Adolescents

On the following pages are some questions about your thoughts and feelings. We would like you to first read the instructions, and then answer each question as honestly as possible.

Answer every question even if some are hard to decide. Do not circle two answers for the same sentence. This is not a test, there are no right or wrong answers. Only you can tell us how you think and feel about yourself. Please answer each item as honestly as you can.

Use these numbers to show how much you feel the statement is **true** for you.

- 1 = not at all
- 2 = hardly every
- 3 = sometimes
- 4 = most of the time
- 5 = all of the time

Now let's try these sentences first. How much does each describe how you feel?

- a. I like summer vacation... 1 2 3 4 5
- b. I like to eat spinach... 1 2 3 4 5

Now please answer the next 22 questions.

- 1. I worry about doing something new in front of others. 1 2 3 4 5
- 2. I like to do things with my friends. 1 2 3 4 5
- 3. I worry about being teased. 1 2 3 4 5
- 4. I feel shy around people I don't know. 1 2 3 4 5
- 5. I only talk to people I know really well. 1 2 3 4 5
- 6. I feel that peers talk about me behind my back. 1 2 3 4 5
- 7. I like to read. 1 2 3 4 5
- 8. I worry about what others think of me. 1 2 3 4 5
- 9. I'm afraid that others will not like me. 1 2 3 4 5
- 10. I get nervous when I talk to peers I don't know very well 1 2 3 4 5
- 11. I like to play sports. 1 2 3 4 5

12. I worry about what others say about me. 1 2 3 4 5
13. I get nervous when I meet new people. 1 2 3 4 5
14. I worry that others don't like me. 1 2 3 4 5
15. I'm quiet when I'm with a group of people. 1 2 3 4 5
16. I like to do things by myself. 1 2 3 4 5
17. I feel that others make fun of me. 1 2 3 4 5
18. If I get into an argument, I worry that the other person will not like me. 1 2 3 4 5
19. I'm afraid to invite other to do things with me because they might say no. 1 2 3 4 5
20. I feel nervous when I'm around certain people. 1 2 3 4 5
21. I feel shy even with peers I know well. 1 2 3 4 5
22. It's hard for me to ask others to do things with me. 1 2 3 4 5

Thank you for answering this questionnaire.

Appendix J
Loneliness Scale

On the following pages are 24 questions about your thoughts and feelings. We would like you to first read the instructions, and then answer each question as honestly as possible. Answer every question even if some are hard to decide. Do not circle two answers for the same sentence. This is not a test, there are no right or wrong answers. Only you can tell us how you think and feel about yourself. Please answer each item as honestly as you can.

Use these numbers to show how much you feel the statement is **true** for you.

- 1 = always true
- 2 = true most of the time
- 3 = true sometimes
- 4 = hardly ever true
- 5 = not true at all

- | | | | | | |
|--|---|---|---|---|---|
| 1. It's easy for me to make new friends at school. | 1 | 2 | 3 | 4 | 5 |
| 2. I like to read. | 1 | 2 | 3 | 4 | 5 |
| 3. I have nobody to talk to. | 1 | 2 | 3 | 4 | 5 |
| 4. I'm good at working with people my age. | 1 | 2 | 3 | 4 | 5 |
| 5. I watch TV a lot. | 1 | 2 | 3 | 4 | 5 |
| 6. It's hard for me to make friends. | 1 | 2 | 3 | 4 | 5 |
| 7. I like school. | 1 | 2 | 3 | 4 | 5 |
| 8. I have lots of friends. | 1 | 2 | 3 | 4 | 5 |
| 9. I feel alone. | 1 | 2 | 3 | 4 | 5 |
| 10. I can find a friend when I need one. | 1 | 2 | 3 | 4 | 5 |
| 11. I play sports a lot. | 1 | 2 | 3 | 4 | 5 |
| 12. It's hard to get other people my age to like me. | 1 | 2 | 3 | 4 | 5 |
| 13. I like science. | 1 | 2 | 3 | 4 | 5 |
| 14. I don't have anyone to hang out with. | 1 | 2 | 3 | 4 | 5 |
| 15. I like music. | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|--|---|---|---|---|---|
| 16. I get along with other teenagers my age. | 1 | 2 | 3 | 4 | 5 |
| 17. I feel left out of things. | 1 | 2 | 3 | 4 | 5 |
| 18. There's nobody I can go to when I need help. | 1 | 2 | 3 | 4 | 5 |
| 19. I like art. | 1 | 2 | 3 | 4 | 5 |
| 20. I don't get along with other people my age. | 1 | 2 | 3 | 4 | 5 |
| 21. I'm lonely. | 1 | 2 | 3 | 4 | 5 |
| 22. I am well liked by my classmates. | 1 | 2 | 3 | 4 | 5 |
| 23. I like to play computer games a lot. | 1 | 2 | 3 | 4 | 5 |
| 24. I don't have any friends. | 1 | 2 | 3 | 4 | 5 |

Appendix K
Rosenberg Self-Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

- | | | | | | |
|-----|---|----|---|---|----|
| 1. | On the whole, I am satisfied with myself. | SA | A | D | SD |
| 2. | At times I think I am no good at all. | SA | A | D | SD |
| 3. | I feel that I have a number of good qualities. | SA | A | D | SD |
| 4. | I am able to do things as well as most people. | SA | A | D | SD |
| 5. | I feel I don't have much to be proud of. | SA | A | D | SD |
| 6. | I certainly feel useless at times. | SA | A | D | SD |
| 7. | I feel like I am a person of worth, at least on an equal plane as others. | SA | A | D | SD |
| 8. | I wish I could have more respect for myself. | SA | A | D | SD |
| 9. | All in all, I am inclined to think I am a failure. | SA | A | D | SD |
| 10. | I take a positive attitude toward myself | SA | A | D | SD |

Thank you for completing this questionnaire.

Appendix L
Center for Epidemiologic Studies Depression Scale

The 20 items below refer to how you have felt and behaved during the **last week**. Choose the answer that best matches you.

1. I was bothered by things that don't usually bother me.
 Rarely or none of the time (< 1 day)
 Some or a little of the time (1-2 days)
 Occasionally or a moderate amount of the time (3-4 days)
 Most or all of the time (5-7 days)

2. I did not feel like eating; my appetite was poor.
 Rarely or none of the time (< 1 day)
 Some or a little of the time (1-2 days)
 Occasionally or a moderate amount of the time (3-4 days)
 Most or all of the time (5-7 days)

3. I felt that I could not shake off the blues even with the help of my family or friends.
 Rarely or none of the time (< 1 day)
 Some or a little of the time (1-2 days)
 Occasionally or a moderate amount of the time (3-4 days)
 Most or all of the time (5-7 days)

4. I felt that I was just as good as other people.
 Rarely or none of the time (< 1 day)
 Some or a little of the time (1-2 days)
 Occasionally or a moderate amount of the time (3-4 days)
 Most or all of the time (5-7 days)

5. I had trouble keeping my mind on what I was doing.
 Rarely or none of the time (< 1 day)
 Some or a little of the time (1-2 days)
 Occasionally or a moderate amount of the time (3-4 days)
 Most or all of the time (5-7 days)

6. I felt depressed.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
7. I felt everything I did was an effort.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
8. I felt hopeful about the future.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
9. I thought my life had been a failure.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
10. I felt fearful.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
11. My sleep was restless.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)

12. I was happy.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
13. I talked less than usual.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
14. I felt lonely.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
15. People were unfriendly.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
16. I enjoyed life.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)
17. I had crying spells.
- Rarely or none of the time (< 1 day)
 - Some or a little of the time (1-2 days)
 - Occasionally or a moderate amount of the time (3-4 days)
 - Most or all of the time (5-7 days)

18. I felt sad.

- Rarely or none of the time (< 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

19. I felt that people dislike me.

- Rarely or none of the time (< 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

20. I could not get “going”.

- Rarely or none of the time (< 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

Thank you for completing this questionnaire.

Appendix M
Friendship Interactions of Adolescents with Chronic Pain
Vignette Questionnaire (Female Version--Example)

The following short stories are about a group of friends in High School. Sue is a teenager with chronic pain. Mary, Jane, and Lisa are Sue's closest/best friends. After each short story you will be asked to score the behaviors of one of Sue's friends (either Mary, Jane, or Lisa) towards Sue (the teenager with chronic pain) in the story and answer a couple of questions about what else Sue's friends could have done. You will also be asked to rate how bothered (distressed, frustrated, upset, disappointed, etc.) you would be if you were Sue and if you were the friend in the given situation. There are no right or wrong answers. Please base your answers from your perspective. So in other words, what you would be thinking or doing in the same situation, not what you believe adults would want you to say or do.

Please use the following numbers to score your answers. Circle the number you that matches your answer. If you forget what the numbers mean you can ask, or refer to this key while completing the questionnaire.

- 1= intentions or behaviors of the friend are very supportive towards or including of Sue
- 2 = intentions or behaviors of the friend are somewhat supportive towards or including of Sue
- 3 = unsure if the intentions or behaviors are supportive towards or including of Sue (neutral).
- 4 = intentions or behaviors of the friend are somewhat unsupportive towards or excluding of Sue
- 5 = intentions or behaviors of the friend are very unsupportive towards or excluding of Sue

The following scale is the one to use when asked how bothered (distressed, upset, frustrated, or disappointed) you would be if you were Sue in the situation or if you were the friend in the situation.

1	2	3	4	5
not at all bothered/upset		somewhat bothered/upset		really bothered/upset

If at anytime you need clarification or are not sure what you are being asked to rate just ask.

Thank you!

1. Pretend you are Lisa (a healthy teenager) in this scenario.

Intent: Sue (your friend with chronic pain) has been struggling in math class because she has missed a lot of class time. During class Sue says to Lisa that she does not have a clue what the teacher is talking about. Sue also says that she is sure she will fail the course because she has missed so many classes. Lisa whispers back to Sue that if Sue wants, they can get together on Sunday and go over the math together but that she has to pay attention right now.

a) Please rate what you think Lisa's intentions or behaviors are:

1	2	3	4	5
very	somewhat	unsure/	somewhat	very
supportive	supportive	both	unsupportive	unsupportive

How did you decide on your rating?

Outcome: After class Lisa and Sue arrange a time on Sunday to go over the math.

b) Please rate what you think Lisa's intentions or behaviors are:

1	2	3	4	5
very	somewhat	unsure/	somewhat	very
supportive	supportive	both	unsupportive	unsupportive

How did you decide on your rating?

c) What other outcome behaviors could Lisa have displayed? List as many as you can think of.

d) Out of this list and Lisa's outcome behavior, which would you most likely have done if you were Lisa?

e). If you were Sue is this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

f). If you were Lisa in this situation how much would this have bothered you?

1	2	3	4	5
not at all bothered/upset		somewhat bothered/upset		really bothered/upset

Why?

2. Pretend you are Mary in this scenario.

Intent: Sue sees Mary at school. They are hanging by their lockers when Joe, Jason, and Beth come over (part of their peer group but not close friends). Joe starts asking Sue where she has been lately and why she did not come to the party on Friday night. Before Sue answers, Mary says, “Sue, it’s getting late and I need to drop this form off at the Student Council Office. If you want to walk with me to class, we really have to go now.”

Please rate what you think Mary’s intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

Outcome: Sue and Mary walk off to class before Sue answers Joe’s question.

Please rate what you think Mary’s intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

c) What other outcome behaviors could Mary have displayed? List as many as you can think of.

d) Out of this list and Mary’s outcome behavior, which would you most likely have done if you were Mary?

e). If you were Sue is this situation how much would this have bothered you?

1	2	3	4	5
not at all bothered/upset		somewhat bothered/upset		really bothered/upset

Why?

f). If you were Mary in this situation how much would this have bothered you?

1	2	3	4	5
not at all bothered/upset		somewhat bothered/upset		really bothered/upset

Why?

3. Pretend you are Jane in this scenario.

Intent: It is Friday evening and a group of friends are going to the movies.

Sue was planning on going but she calls Jane and says, "I'm not feeling well."

Jane wants Sue to come so she says, "Please come, if your pain gets worse I'll leave with you."

a) Please rate what you think Jane's intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

Outcome: Sue doesn't know what to do.

b) Please rate what you think Jane's intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

c) What other outcome behaviors could Jane have displayed? List as many as you can think of.

d) Out of this list and Jane's outcome behavior, which would you most likely have done if you were Jane?

e). If you were Sue is this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

f). If you were Jane in this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

Appendix N
Friendship Interactions of Adolescents with Chronic Pain
Vignette Questionnaire (Male Version--Example)

The following short stories are about a group of friends in High School. Mike is a teenager with chronic pain. Jack, David, and Ryan are Mike's closest/best friends. After each short story you will be asked to score the behaviors of one of Mike's friends (either Jack, David, or Ryan) towards Mike (the teenager with chronic pain) in the story and answer a couple of questions about what else Mike's friend could have done. You will also be asked to rate how bothered (distressed, frustrated, upset, disappointed, etc.) you would be if you were Mike and if you were the friend in the given situation. There are no right or wrong answers. Please base your answers from your perspective. So in other words, what you would be thinking or doing in the same situation, not what you believe adults would want you to say or do.

Please use the following numbers to score your ratings of the friend's behavior or intentions towards Mike. Circle the number you that matches your answer.

- 1= intentions or behaviors of the friend are very supportive towards or including of Mike
- 2 = intentions or behaviors of the friend are somewhat supportive towards or including of Mike
- 3 = unsure if the intentions or behaviors are supportive towards or including of Mike (neutral).
- 4 = intentions or behaviors of the friend are somewhat unsupportive towards or excluding of Mike
- 5 = intentions or behaviors of the friend are very unsupportive towards or excluding of Mike

The following scale is the one to use when asked how bothered (distressed, upset, frustrated, or disappointed) you would be if you were Mike in the situation or if you were the friend in the situation.

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

If at anytime you need clarification or are not sure what you are being asked to rate just ask.

Thank you!

1. Pretend you are Jack (a healthy teenager) in this scenario.

Intent: Mike (your friend with chronic pain) has been struggling in math class because he has missed a lot of class time. During class Mike says to Jack that he does not have a clue what the teacher is talking about. Mike also says that he is sure he will fail the course because he has missed so many classes. Jack whispers back to Mike that if Mike wants, they can get together on Sunday and go over the math together but that he has to pay attention right now.

a) Please rate what you think Jack's intentions or behaviors are:

1	2	3	4	5
very	somewhat	unsure/	somewhat	very
supportive	supportive	both	unsupportive	unsupportive

How did you decide on your rating?

Outcome: After class Jack and Mike arrange a time on Sunday to go over the math.

b) Please rate what you think Jack's intentions or behaviors are:

1	2	3	4	5
very	somewhat	unsure/	somewhat	very
supportive	supportive	both	unsupportive	unsupportive

How did you decide on your rating?

c) What other behaviors could Jack have displayed in the outcome section? List as many as you can think of.

d) Out of this list and Jack's outcome behavior, which would you most likely have done if you were Jack?

e) If you were Mike is this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

f) If you were Jack in this situation how much would this have bothered you?

1	2	3	4	5
not at all bothered/upset		somewhat bothered/upset		really bothered/upset

Why?

2. Pretend you are Ryan in this scenario.

Intent: Mike sees Ryan at school. They are hanging by their lockers when Joe, Jason, and Beth come over (part of their peer group but not close friends). Beth starts asking Mike where he has been lately and why he did not come to the party on Friday night. Before Mike answers, Ryan says, “Mike, it’s getting late and I need to drop this form off at the Student Council Office. We really have to go now if you coming to class with me.”

a) Please rate what you think Ryan’s intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

Outcome: Mike and Ryan walk off to class before Mike answers Beth’s question.

b) Please rate what you think Ryan’s intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

c) What other behaviors could Ryan have displayed in the outcome section? List as many as you can think of.

d) Out of this list and Ryan’s outcome behavior, which would you most likely have done if you were Ryan?

e) If you were Mike is this situation how much would this have bothered you?

1	2	3	4	5
---	---	---	---	---

not at all
bothered/upset

somewhat
bothered/upset

really
bothered/upset

Why?

f) If you were Ryan in this situation how much would this have bothered you?

1
not at all
bothered/upset

2
somewhat
bothered/upset

3
4
5
really
bothered/upset

Why?

3. Pretend you are Jack in this scenario.

Intent: It is Friday evening and a group of friends are going to the movies.

Mike was planning on going but he calls Jack and says, "I'm not feeling well."

Jack wants Mike to come so he says, "Come, if your pain gets worse I'll leave with you."

Please rate what you think Jack's intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

Outcome: Mike doesn't know what to do.

Please rate what you think Jack's intentions or behaviors are:

1	2	3	4	5
very supportive	somewhat supportive	unsure/ both	somewhat unsupportive	very unsupportive

How did you decide on your rating?

c) What other behaviors could Jack have displayed in the outcome section. List as many as you can think of.

d) Out of this list and Jack's outcome behavior, which would you most likely have done if you were Jack?

e) If you were Mike is this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

f) If you were Jack in this situation how much would this have bothered you?

1	2	3	4	5
not at all		somewhat		really
bothered/upset		bothered/upset		bothered/upset

Why?

Appendix O
Response Construction/Decision Coding Sheet

V1—Supportive/Supportive

Supportive responses: (outwardly helpful)

- Tried to help in class
- Helped right after class
- Provide notes

Non-supportive comments (outwardly not helpful)

- Could have not offered to help
- Ignored comment

Ambiguous comments (could be considered either helpful or not)

- Directed her towards another person
- Showed a bit more sympathy (not sure how this would help)
- Reassure her/him he won't fail (no way to know this)
- Tell the teacher to help Mike/Sue
- Gone with Sue to the teacher (should be up to Sue to determine if she needs to see the teacher not a friend telling you what to do—could be sort of supportive if she was going with Sue to get the material to cover during the tutoring, not very supportive it was to find another solution as I would be too busy to help her)

V2—Ambiguous/Ambiguous

Supportive responses:

- Ask if Sue feels like going to the office
- Wait for Sue
- If Sue wanted to tell them, stay with Sue for support
- Let Sue answer for herself—if she doesn't want to than that is different but rude to interrupt her.
- Say to Sue “you don't need this”
- Look at Sue to see if she is comfortable with answering or not (if not comfortable do what Mary does to get out of the situation)
- Tell him/her to back off/mind your own business but not nasty

Non-supportive responses:

- Left on his own

Ambiguous responses:

- Be nasty to the peers with the probing questions
- Stayed and talked with the group (without letting Sue answer for herself)
- Made up an excuse for Sue
- What Mary does
- Ask group to go to the office together

- Answer for Mike

V3—Supportive/Ambiguous

Supportive responses:

- Offer to go to her place and hang out instead of going to the movie
- Suggest something else to do.

Non-Supportive responses:

- Whined/bugged about Sue not going to go—pushed
- Not offered to leave
- Not called

Ambiguous responses:

- Jane could go with the others
- Said no problem we can go another day but not go over so Sue still alone (therefore not coded as very inclusive or supportive)
- Said OK, and not pressured him to go, tell him to get better
- Same as Jane in the story (give Sue the choice)

V4—Ambiguous/Ambiguous

Supportive responses:

- Ask at the end of the conversation about her medical appointment
- Asked at the beginning of the conversation and then talked about Mark

Non-supportive responses:

- Could not have called
- Shrug off the appointment with a dismissive comment

Ambiguous responses:

- Could have forgotten about the appointment and then felt guilty
- Asked what is new and exciting with her (given she has been to the MD this may not be an empathetic question)

V5—Ambiguous/Ambiguous

Supportive responses:

- Stopped the questioning
- Helped Sue leave the situation (go get a drink)
- Changed the subject
- Told “Kelly” to lay off and leave
- Said something to help out—explain to David

Non-supportive responses:

- Left the situation without Sue/Mike
- Blow off Sue’s condition

Ambiguous responses:

- Later said something to David
- Answer for Sue about her pain
- Said something to David earlier
- Angry with David
- Started to ask Mike questions too
- Butted in and asked questions as well—? seem supportive
- Get mad at Mary for spreading Sue's private information

V6—Ambiguous/Supportive

Supportive responses:

- Taken a couple of minutes to quickly catch up
- Ditched doing homework and talk for a long time with Sue
- Text Mike again
- What Lisa does
- Gone over to Sues
- Could say I will call you back when I finish my homework
- Called or visited during the weekend

Non-supportive responses:

- Ignore Mike's original text
- More pissed off at Sue during the conversation

Ambiguous responses:

- Suggest do homework together over the phone (if Sue needed to do the same work)
- Lied to not make Mike feel bad about missing out on the weekend
- Make plans for the next weekend (doesn't give time to Sue/Mike in the moment)
- Email her when finished my homework

V7—Non-supportive/Non-supportive

Supportive responses:

- Let Sue talk first about their pain concerns and then talk about healthy friends issue as it is important as well
- Talked about the pain
- Talked about the girlfriend stuff after the pain conversation
- Understood that Sue was not in the right frame of mind because of the pain and not pushed her to talk
- Ended the conversation without being pissed off
- Asked Sue if it would be OK to call her back later so that she could get some rest.
- Ask if I could help with anything

Non-supportive responses

- Could have become even angrier with Sue (Sue your always complaining)
- Could have hung up without saying goodbye

Ambiguous responses:

- Told Sue to help with Mary issue then she would help with pain issue
- Wrote down 'Helped friend' but no reason or behavior given as to 'how' to help friend
- Think of Mike with no response of what this action would include
- Listen to Sue for a sec
- Talk to Mike but doesn't say what about (not sure if it is about Mike's pain or the weather??)
- More sympathetic on the phone but no indication of how
- Told her I hope she was better soon (not really helpful when someone needs to talk and or unlikely given the chronic nature of the condition).

V8—Non-supportive/Non-supportive

Supportive responses:

- Offer to see if the package is ready earlier (and find a friend to pick it up if you can't)
- Could offer to go back and pick it up
- Arrange for another friend to pick it up

Non-supportive responses:

- Told Sue she needed to pick up the homework herself

Ambiguous responses:

- Could have suggested another one of their friends pick up the homework package
- I'll try but if not ready, you can pick it up when you get back to school.
- Tried to pick it up (note: not sure what would be the next step if unsuccessful in picking it up).
- Apologize for not being able to help
- Invite him to go mountain biking (ambiguous because Mike has been unable to go to school so doubtful that he could go mountain biking and still needs someone to pick up his homework)

V9-- Non-supportive/Non-supportive

Supportive responses:

- Gone for pizza
- Stay in the cafeteria all together (if that sore she probably doesn't want to go out at all)
- Looked for a ride to subway
- Ask what Sue really would like to do and do that
- Offer to go pick up Subway for the 2 of them, bring it back so they can eat together.

Non-supportive responses:

- Badgered Sue to go

Ambiguous responses:

- See if someone else will go with Sue
- Compromise on a different location
- Asked to go to Subway next day instead (note: not sure what happens if Sue cannot go the next day and if this means they will go for pizza today).

V10-- Ambiguous/Ambiguous

Supportive responses:

- Ask Sue/Mike if they are going to the dance
- Try and bring them into the conversation (i.e. Tell Mike what was going on)
- Could have not talked about the dance
- Change the subject
- Strategize ways for Sue to go to the dance
- Offer to do something with her instead of going to the dance
- Invite Sue to come over to get ready for the dance—(strategize ways to get her to come and brings her into the conversation)

Non-supportive responses:

- Ask why she is not excited about the dance (when they know she most likely cannot go).

Ambiguous responses

- Be more mindful of Sue (not sure what that means or would look like)

V11-- Ambiguous/Ambiguous

Supportive responses:

- Later when alone ask about the appointment
- Ask how Sue/Mike are doing generally—not specifically about appointment so that if they don't want to talk about it at MacDonald's don't have to but at least you show you care about them.
- Ask about the appointment at MacDonald's (query move to supportive—ask next chronic pain participants)

Non-supportive responses:

Ambiguous responses:

- Comfort her (but no indication of how)
- Ask what is new and exciting (asking but doubtful that chronic pain teen would find an appointment new and exciting)

V12-- Supportive/ Supportive

Supportive responses:

- Suggest another activity by saying she was bored giving Sue a chance to rest if needed
- What Mary did—kept playing
- Ask her again after basketball how she is doing (or tell her if she needs a break let me know but keep playing)
- Apologize for upsetting Sue
- Simply ask if he wants to stop playing without bringing up pain.

Non-supportive responses:

- Could have replied “Ok, you don’t have to get upset with me.”
- Tried to play ‘mom’ I don’t think we should keep playing
- Could have stopped playing or suggested they stop
-

Ambiguous responses:

- Could not have brought up the pain topic in the first place-ignored his friend’s pain
- Could have probed more about why the pissed off response to the question
- Could have asked her again while playing if she was OK
- Asked if something else is annoying her
- Could have said, don’t want to play as I don’t want you to get hurt
- Watch to see if she was in pain
- Comfort her but no indication of how (could be mothering not supportive)
- Kept playing without asking

Appendix P
Cue Interpretation
Coding Sheet

Responses by the adolescents for how they decided on the ratings they selected for the healthy character's behavior in the vignette to be coded as either situational cues or self-schema and past experience cues. For example, situational cues would include responses that focused on actual events contained in the vignette such as the friend said she was going to call her later, the friend had plans to go shopping. Self-schema and past experience cues would include responses that implied a meaning of the event, such as the friend does not understand what it is like to be in pain, the friend was just being a normal teenager, the friend might not know how to be more supportive, they were just being selfish.

Some cues may contain elements of both situational and self-schema. In these situations a point for each type of cue will be scored. These can happen in any of the vignettes. This is not an exhaustive list but a guide for situational and self-schema cues. Many of the self-schema cues are cross vignettes.

V1—Supportive/Supportive

Situational Cues

- Offered to help with math/ offers to help friend
- Lisa offers to help her friend

Self-Schema Cues

- Being nice to friend
- That's what we do for friends
-

V2—Ambiguous/Ambiguous

Situational Cues

- Needs to go to the office before class
- Asks Mike/Sue to go to the office with him
- Got her away from peers

Self-Schema Cues

- Depends on Mary's intention—does Sue like the guy?
- Maybe Sue/Mike doesn't want to talk about it (their pain)
- Sue/Mike may do or say something to embarrass Mary/Ryan
- Trying to get Sue/Mike out of the situation
- Depends on Mary's intention—does Sue like the guy?
- All about Mary's needs and not letting Sue talk to her peers and receive support
- Trying to get Sue away from situation (going to student council office when it is not mentioned that Sue wants to get away)

- Don't always want to talk about the pain (hear normal things is good) but also want someone to care

V3—Supportive/Ambiguous

Situational Cues

- Trying to encourage her to go by being willing to leave/generous offer to leave
- Very supportive to offer to leave

Self-Schema Cues

- Being nice to friend
- That's what we do for friends
- Wants her friend to go to the movie
- Doesn't want to go to the movie by herself/himself
- Guiltting her into going to the movies/ Not letting Sue off the hook
- Sue may want to stay home
- Slight push might be good (sometimes with pain you need a push)

V4—Ambiguous/Ambiguous

Situational Cues

- Did not ask where she was or about the appointment
- Friends know where she is (when out sick—even if the vignette does not specifically say that—the info is there that they did not call)
- Telling his/her friend what they missed at school
- Excited that she/he is asked out

Self-Schema Cues

- Normal situation
- Not thinking about their friend
- Selfish/rude only talking about himself/herself
- Doesn't want to talk, thinks friends not interested

V5—Ambiguous/Ambiguous

Situational Cues

- Letting Sue handle the situation (such as not butting into a conversation directed at Sue but also not helping Sue leave the situation)
- Did not support her/him just shrugged her/his shoulders (shrugged it off)
- Didn't come to bat—didn't say anything

Self-Schema Cues

- Sue unsure what to do
- If it was me I would like to offer an answer but my friend might not realize this
- Not revealing her friends secret (but yet nothing of this 'secret' in the vignette)

- Making light of the situation or doesn't care that Todd is teasing her friend.

V6—Ambiguous/Supportive

Situational Cues

- Friends know where she is (when out sick—even if the vignette does not specifically say that—the info is there that they did not call)
- Offered to walk to school next day
- Had homework to do

Self-Schema Cues

- Not caring about Sue
- He/she could have ignored Sue/Mike
- Not sympathetic immediately

V7—Non-supportive/Non-supportive

Situational Cues

- Lisa/David think their problem is worse
- Stopped conversation with friend/left friend
- Did not listen to friend

Self-Schema Cues

- All about “Lisa” (making judgment about the friends intentions)
- Not caring about Sue/Mike; being very rude

V8—Non-supportive/Non-supportive

Situational Cues

- Could pick up homework
- Had plans (shopping/mountain biking)

Self-Schema Cues

- Did not help friend
- Selfish

Combination/both (for example)

- My friends would pick up my homework (really both as the character does not pick up homework but there is judgment based on what participants friends would do)
- Not that difficult to grab the homework from one teacher (both as there is a judgment that it is not difficult to do but also talks about the homework that needs to be picked up)

V9-- Non-supportive/Non-supportive

Situational Cues

- Left her friend alone
- Did not care that Sue/Mike could not walk (or did not care about their pain)
- Picked a sandwich over her/his friend

Self-Schema Cues

- Not caring about Sue/healthy character is being rude and selfish
- Seems like Sue is complaining again
- Maybe disbelief from Mary

V10-- Ambiguous/Ambiguous

Situational Cues

- Friends know she/he has not been to a dance/hockey game all year—not being considerate
- Just a normal situation to talk about the dance or hockey

Self-Schema Cues

- No malice intended by friend
- Mary/Ryan oblivious to Sue/Mike not joining in
- I would be pissed if friends talking about things I cannot do

V11-- Ambiguous/Ambiguous

Situational Cues

- Friends know where she is
- At McDonald's not private
- Sue/Mike not talking about it and friend not pushing
- Friend not sure how to approach or how

Self-Schema Cues

- No malice intended by friend
- Not caring about Sue
- Normal conversation
- Should ask questions to give the chance to talk
- Maybe Sue/Mike don't want to talk about it maybe a private matter
- Don't like to be asked all the time about my pain
- Doesn't want to talk, thinks friends not interested
- Friend not sure how to approach or how
- Don't always want to talk about the pain (hear normal things is good) but also want someone to care

V12-- Supportive/ Supportive

Situational Cues

- Wanting to help out—(asks friend how they are doing)
- She is being caring about her friends condition (when she is actually asking about how she is feeling in the vignette)
- Taking an interest when the character actually asks Sue/Mike something in the vignette
- Continuing to play ball

Self-Schema Cues

- Friend may not want to start a fight
- Not trying to sound like a jerk
- Don't always have to comment, listening is supportive helping to vent
- Shows he/she cares