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Chronic Pain Profiles and Past Bullying Experiences

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CHRONIC PAIN PROFILES AND PAST BULLYING EXPERIENCES

By

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CHRONIC PAIN PROFILES AND PAST BULLYING EXPERIENCES

By

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Abstract

The biopsychosocial model of chronic pain posits that chronic pain is influenced by factors such as depression, somatization, and psychological trauma (Gatchel, Peng, Peters, Fuchs, & Turk, 2007). Being bullied in childhood is one such factor that has been shown to be associated with chronic pain (Sigurdson, Wallander, & Sund, 2014; Voerman et al. 2015). Furthermore, those with chronic pain fit into one of three distinct psychological profiles (Williams, Urban, Keefe, Shutty, & France, 1995). The purpose of the current study was to examine the relationship between chronic pain profiles and reports of past bullying experiences. It was hypothesized that individuals in *Profile 1*, whose profile is characterized by significant psychological distress, would report the highest frequency and severity of bullying in primary and secondary school. The hypothesis was partially supported. The results indicated that males in *Profile 1* reported being bullied more physically and verbally in primary school than males in *Profile 3*. This study furthers the understanding of how being bullied impacts chronic pain, and creates avenues for future research.

Keywords: bullying, chronic pain, pain, profiles, somatization

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CHAPTER I

Introduction

Bullying is an issue among adolescents and young adults in intermediate schools and high schools across the country. It is estimated that 10.6% of children in grades six through ten are victims of bullying (Nansel et al., 2001). This means that one in ten children from ages eleven to sixteen fall victim to bullying at school. Bullying is defined as repeated aggressive acts made by one or more individuals with the intent to harm someone physically or emotionally (Vaillancourt, 2008). Although much focus has been placed on the immediate effects of being bullied, being bullied can continue to impact the individual into adulthood. Young adults who have been bullied in childhood are more likely to be financially poor, struggle to maintain employment (Copeland, Wolke, Angold, & Costello, 2013), and are more likely to experience strained social relationships (Woke et al., 2013). In addition to financial and social adversities, those who have been bullied can also experience adverse psychological and physical effects (Sigurdson, Wallander, & Sund, 2014; Voerman et al., 2015).

Being bullied has been associated with chronic pain in adolescence and adulthood (Sigurdson, Wallander, & Sund, 2014; Voerman et al., 2015). The research indicates that chronic pain may be the product of the child's experience of trauma, his or her body's biological reaction to stress, and psychological factors (Gatchel, Peng, Peters, Fuchs, & Turk, 2007). However, it is not fully understood how being bullied influences one's

experience of chronic pain. The purpose of this study was to explore the relationship between one's experience of chronic pain and reports of being bullied in school. The results of this study will emphasize the importance of bullying intervention services provided by school psychologists, by illustrating the long-standing physical impact of being bullied.

CHAPTER II

Literature Review

Chronic Pain

Chronic Pain is defined as a persistent pain lasting at least three months in duration (Gatchel, Peng, Peters, Fuchs, & Turk, 2007). Past research has shown that approximately 11.2% of people experience chronic pain every day (Nahin, 2015). The prevalence of chronic pain contributes to people missing work about two more days than those without chronic pain, in addition to seeking medical services (Gaskin, & Richard, 2012). It is estimated that between 261 billion to 300 billion dollars are spent annually on health care related services for chronic pain (Gaskin & Richard, 2012). When combining the cost of health care with a loss of productivity from people missing work, the total cost of chronic pain ranges from 560 billion to 635 billion dollars annually (Gaskin & Richard, 2012). These numbers indicate that chronic pain is a serious issue that has vast physical and monetary costs.

Psychological Factors and Chronic Pain

The biopsychosocial theoretical model is the current leading framework used to understand the different factors that contribute to chronic pain. The biopsychosocial model explains that perception and recovery from painful injuries are moderated by biological, psychological, and social factors, whereas previous models viewed pain as a

completely biological event (Gatchel et al., 2007). For instance, depression is recognized as an important factor that influences

the development and recovery from chronic pain (Gatchel et al., 2007). It is estimated that the prevalence rate of depression in adults with chronic pain ranges between 30 and 54 percent (Banks & Kerns, 1996), which is substantially higher than the prevalence rate of 7% among the general population (American Psychiatric Association, 2013). Lerman, Rudich, Shalev, & Shahar (2015) conducted a study examining the longitudinal relationship among chronic pain, disability due to chronic pain, and depression. The results indicated that more than half of participants reported symptoms of depression. Similarly, Uebelacker et al., (2015) examined the relationship among chronic pain, depression, substance use, mental health treatment, and pain treatment. The results indicated that participants in the moderate-severe chronic pain group were more likely to have higher levels of depressive symptoms than participants in the no chronic pain group. Participants in the moderate-severe chronic pain group were also more likely to be taking antidepressant medication than participants in the mild chronic pain group. Moreover, Atkinson, Slater, Patterson, Grant, & Garfin (1991) examined the temporal onset of depression and chronic pain to determine if chronic pain preceded the depression or if the depression preceded the chronic pain. The results indicated that the prevalence rate of depression was 32% for the chronic low back pain group, whereas the prevalence rate of depression in the control group was only 16%. In the chronic low back pain group 58.1% of the participants' depression followed the onset of their chronic low back pain. The results of these studies indicate that individuals with chronic pain are likely to

experience depression, supporting the idea that biological and psychological factors interact in the development and maintenance of chronic pain.

Another psychological factor related to chronic pain is somatization (Fishbain, Lewis, Gao, Cole, & Rosomoff, 2009). Somatization is defined as the manifestation of psychological distress as physical complaints (Gatchel et al., 2007). Fishbain et al. (2009) conducted a comprehensive review of the literature related to somatization and chronic pain. The researchers found that 57 empirical articles met their criteria and were included in the review. This was done by calculating the percentage agreement between each article and the 15 criteria. Studies with a score below 65% were excluded from the review. The results of the 57 studies indicated that those who experience chronic pain are significantly more likely to experience somatization.

McGregor et al., (1996) is one of the many studies reviewed by Fishbain et al., (2009) that suggests somatization is associated with chronic pain. Pain was measured using a visual rating scale commonly used within the field of pain research. Results indicated that participants with a chronic pain disorder had a significantly higher somatization score than participants in the healthy control group. Research has also revealed that somatization is also related to one's pain experience (Willson, Dworkin, Whitney, & LaResche, 1994). Wilson et al., (1994) found that those with a chronic pain disorder who experience greater somatization have a higher pain intensity. Furthermore, participants with higher somatization scores were 3 times more likely to experience pain when placebo sites were stimulated. The results of these studies support the idea that somatization is related to one's experience of pain. Therefore, according to the

biopsychosocial model, depression, anxiety or somatization, are examples of stressful states that can lead to chronic pain (McBeth et al., 2005; McLean et al., 2005).

The Pain Personalities

The Minnesota Multiphasic Personality Inventory- 2nd edition (MMPI-2) is a test commonly used to determine the psychological characteristics of pain patients (Masters et al., 2003; Riley, Robinson, Geisser, & Wittmer, 1993; Riley et al., 1995). For instance, Riley et al. (1993) used the MMPI-2 to characterize pain patients into different profiles. Riley et al. (1993) analyzed 201 chronic low back pain patients. Results indicated four main profiles were formed based on participants' responses. Profile 1 was considered the neurotic triad. On this profile, patients exhibited elevated scores on the Hypochondriasis, Depression, and Hysteria subscales. Profile 2 was considered the depressed-pathological cluster. On this profile, patients exhibited elevated scores in many clinical scales. The three highest clinical scales were Schizophrenia, Psychasthenia, and Depression. Profile 3 was considered the "within normal limits" profile. On this profile, participants did not exhibit any elevated scores on any scales. Profile 4 was considered the "v-type". On this profile, patients exhibited elevated Hysteria and Hypochondriasis scales which were significantly above the Depression scale. The data supports the assertion that four distinct groups of chronic pain patients can be identified based on MMPI-2 scores.

Riley et al., (1995) built upon the findings of Riley et al., (1993) by using the four profiles to predict surgery outcomes of low back pain patients. The participants were 71 patients who had received a spinal fusion surgery for chronic lower back pain. The results indicated that patients in the Within Normal Limits and the Triad cluster were

significantly more satisfied with the results of the surgery than participants in the V-type cluster. Participants in the Triad cluster also gave significantly higher ratings on their perception of surgery outcome than participants in the V-type cluster. There were no significant differences across clusters on the level of pain. The results also indicated that participants in the Within Normal Limits cluster were significantly more likely to return to work and have a higher level of physical activity than participants in the V-type cluster. Unfortunately, often clinicians and researchers do not use the MMPI – 2 because it is a lengthy assessment (Helmes & Reddon, 1993).

Another measure that is often used to identify different chronic pain profiles is the Symptoms Checklist 90 – Revised (SCL90-R; Williams, Urban, Keefe, Shutty, & France, 1995). The SCL90 – R is a much shorter measure than the MMPI-2 and much easier to score. The SCL90 – R is a symptoms inventory composed of different subscales that measure a number of different psychopathologies such as somatization and anxiety. Similar to the MMPI-2, the SCL90 – R has been used to categorize pain patients into psychological profiles. Williams et al. (1995) conducted a hierarchical cluster analysis to categorize participants into profiles. Participants in profile 1 had the highest scores across subscales, whereas participants in profile 3 had the lowest scores across subscales and participants in profile two were between those in profile 1 and 3. Participants in profile 1 had the most pain, depression, and somatization compared to the other two groups, whereas participants in profile 2 had lower scores than those in profile one but higher scores than those in profile 3. Results also indicated some sex specific differences. For females, the profiles differed in the amount of physical activity. Participants in profile 1

reported the least amount of physical activity compared to the other two profiles. For males, ratings on the SCL90-R were significantly related to use of opioids. Specifically, males who rated themselves as experiencing more psychological distress also reported taking more medications. Overall, these studies suggest that individuals with chronic pain may belong to one of three distinct chronic pain profiles, which is associated with level of pain as well as sex specific differences among physical activity and narcotics use.

Conclusion

The biopsychosocial model suggests that different biological and psychological factors influence one's chronic pain (Gatchel et al., 2007). Therefore, chronic stress could be due to psychological traumas may be the cause for some people developing chronic pain. Additionally, research supports the idea that there are distinct profiles among those who suffer from chronic pain (Riley et al., 1993; Riley et al., 1995; Williams et al., 1995), and these chronic pain profiles differ in level of physical activity, recovery from pain, and how pain is experienced.

Childhood Trauma and Chronic Pain

It is possible that chronic stressors early in life may be more impactful because children are less equipped to cope with such events. Psychosocial factors, such as trauma in childhood, have been often associated with chronic pain in adulthood (Finestone et al., 2000; Goldberg, Panchas, & Keith, 1999; 2000; Spetus, Yehuda, Wong, Halligan, & Seremetis, 2003). Goldberg et al., (1999) found that at least 48% of all pain groups reported some type of childhood abuse.

On the other hand, Finestone et al., (2000) indicated that 69% of women who had been sexually abused reported a chronic painful condition compared to the nurse control group (48%) and the psychiatric control (39%). Women who had been sexually abused reported more doctors' visits for pain in the last six months than both control groups combined. Boisset – Pioro, Esdaile, and Fitzcharles's (1995) indicated that participants who experienced a chronic pain disorder were significantly more likely to report having been physically and sexually abused in childhood (17%) compared to those in the healthy control group (5%). Similarly, Alexander et al., (1998) indicated that significantly more participants with chronic pain reported having been sexually and or physically abused (57%) compared to a group of healthy controls (27%).

Yet, physical traumas, such as sexual and physical abuse, are not the only kind of trauma that can lead to chronic pain. Van Houdenhove et al., (2001), one of many studies, found that emotional neglect and emotional abuse are more prevalent in individuals with chronic pain. On the contrary, Imbierowicz and Egle (2003) found that individuals with a chronic pain disorder were more likely to report experiencing different childhood adversities in addition to extreme traumas such as physical and emotional abuse. In their study, participants who had the chronic pain disorder were significantly more likely to report having experienced weak emotional relationship with both parents, parents that physically fought, and a mother that struggled with substance abuse. In addition to somatization, studies have also shown that childhood trauma is associated with psychopathologies in adulthood. Spetus et al., (2003) conducted a study examining whether childhood abuse and neglect are significant predictors of psychological and

somatic symptoms in women. Physical and sexual abuse were significant predictors of physical and psychological symptoms.

These studies illustrate how a psychological trauma in childhood can manifest into physical and psychological issues in adulthood. Physical, sexual, and emotional abuse in childhood is associated with chronic pain in adulthood (Alexander et al., 1998; Boisset – Pioro et al., 1995; Finestone et al., 2000; Spetus et al., 2003; Taylor et al., 1999). In addition to chronic pain, these individuals are more likely to experience greater somatization and psychopathologies such as depression and anxiety (Spetus et al., 2003). These findings are consistent with the biopsychosocial model, which suggests that chronic stress can physically manifest into chronic pain and somatization (Gatchel et al., 2007).

Bullying and Chronic Pain

Research has shown that bullying is also associated with chronic pain. Voerman et al. (2015) found that out of students who rated the frequency of bullying they experienced in the past three months, 9.2% reported experiencing chronic pain. The results also indicated that those who experienced chronic pain were significantly more likely to report being bullied than those who did not experience chronic pain.

Research indicates that the relationship between bullying and chronic pain could maintain in early adulthood. Sigurdson et al. (2014) examined the relationship between bullying involvement as an adolescent and general health as a young adult. Out of the full sample, 12% of participants were categorized as being bullied, 3% of participants were categorized as bully-victims, 7% of participants were categorized as aggressive

towards others, and 78% of participants were categorized as non-involved. The follow

up occurred in 2012, and participants then answered questions indicating their general

level of health and whether or not they experienced any pain. The results indicated that

those being bullied and bully-victims were at an increased risk of poor general health and

higher levels of pain when compared to those categorized as non-involved. These results

of the above studies, suggest a strong relationship between being a victim of abuse, or

bullying, and experiencing chronic pain later in life.

Summary, Rationale, Purpose and Hypotheses

Chronic pain is best conceptualized using the biopsychosocial model, which

asserts that biological, psychological, and social factors interact to contribute to one's

chronic pain (Gatchel et al., 2007). Studies have shown that psychological trauma, such

as emotional, physical, and sexual abuse, can lead to chronic pain in adulthood

(Alexander et al., 1998; Boisset – Pioro et al., 1995; Finestone et al., 2000; Goldberg et

al., 1999; Imbierowicz and Egle 2003; Van Houdenhove et al., 2001). The SCL90 – R is

a psychological measured used to determine pain outcome based three distinct

psychological profiles (Williams et al., 1995). These three chronic pain profiles have

been shown to differ on the amount of pain experienced. The purpose of the current

study was to if chronic pain profiles can be differentiated by the number and type of

bullying experiences. The current study is based on the recommendations by Williams et

al., (1995) three pain SCL90 profiles. The hypotheses were as follows:

- Participants in profile 1, those experiencing significant psychological distress, will report the highest levels of pain, compared to participants in profile 3, those who experience low levels of psychological distress, who will report the lowest levels of pain, and participants in profile 2, those experiencing moderate psychological distress, will report levels of pain between those of profile 1 and 3.

- Secondly, participants in profile 1, those experiencing significant psychological distress, will report the highest levels of bullying, compared to participants in profile 3, those who experience low levels of psychological distress, who will report the lowest levels of bullying, and participants in profile 2, those experiencing moderate psychological distress, will report levels of bullying between those of profile 1 and 3.

CHAPTER III

Method

Participants

Recruitment

Participants were recruited using Mechanical TURK on mturk.com. Mechanical Turk is an Amazon company that allows researchers to pay individuals cents for participation in a study. Mechanical Turk allows anyone in the United States to take the survey, which has been shown to provide a representative national sample (Clifford, Jewell, & Waggoner, 2015). Participants were recruited in two different groups: first we recruited a group of participants who indicated pain lasting for longer than three months (i.e. Chronic Pain group), then we recruited participants who indicated <u>no</u> pain lasting longer than three month (i.e. Comparison group). All participants 18 years of age or older were invited to participate. All participants read the informed consent, and provided consent by selecting the option that said "I agree". After completing the survey participants were given a code to enter in MTURK to receive credit for taking the study. Participants who successfully completed the study received $.10. The study was approved by the Stephen F. Austin State University Institutional Review Board.

Groups Descriptions

Chronic Pain Sample. Data were collected on a total of 633 participants who were recruited to participate as part of the Chronic Pain group. For this sample, participants

were excluded for: not providing consent (n = 2), reporting they did not have chronic pain (n = 100), taking the survey more than once (n = 42), spending less than half of the time expected to complete the survey (n = 227; see Appendix A), for not completing the survey (n = 27), and being under the age of 18 (n = 4). The total chronic pain sample was 231.

Comparison Group Sample. Data were collected on 706 participants who were recruited to participate in the Comparison group. For this group, participants were excluded for: not providing consent (n = 2), reporting they had chronic pain (n = 369), taking the survey more than once (n = 104), taking less than half the amount of time expected to complete the survey (n = 164), and not completing the survey (n = 3). The total comparison group sample was 64.

Materials

Demographics. The survey completed by the participants included three demographic questions. Particpants were asked to provide their age, sex, and racial identity.

Symptom Checklist 90 – Revised (SC90 – R). The SCL90 – R is a 90-item survey that asks the participant to list the extent of discomfort caused by certain symptoms within the past week. The SC90 – R is composed of nine different subscales: Somatization (SOM), Obsessive Compulsive (OC), Interpersonal Sensitivity (IS), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY). The survey asks participants "For the past week, how much were you bothered by: (list symptom)". Participants then rated on a scale of 0 (Not At All) to 4 (Extremely) how much the specific symptom disturbed them in the previous week. The

SC90 – R takes approximately 12-15 minutes to complete. The SC90 – R has a Cronbach's alpha between .80 and .90 (Derogatis, 1983).

McGill pain questionnaire short form (MPQSF). The MPQSF is a 17-item survey that assesses the respondent's level of pain. There are three different scales: the descriptors, the present pain inventory (PPI), and the visual analog scale (VAS). Items one through fifteen are the descriptors scale. Symptoms are listed and the respondent rates the extent to which they experience the symptom from 0 (i.e none) to 3 (i.e. severe). The VAS is a 10 cm line with two anchors from No Pain to Worst Possible Pain. The respondent indicates where his or her pain falls on the line. For the current study the VAS was adjusted to be administered online. The participant used a slider to indicate where his or her pain fell from 0 (i.e. No Pain) to 100 (Worst Possible Pain). The PPI is a six-point scale that has the respondent rate his or her current level of pain from 0 (i.e. no pain) to 5 (i.e. excruciating). The MPQSF takes approximately 10 minutes to complete and has a Cronbach's alpha of .89 (Grafton, Foster, & Wright, 2005).

Retrospective Bullying Questionnaire (RBQ). The RBQ is a 44-item measure assessing past experiences of being bullied. The RBQ asks questions pertaining to experience in primary and secondary school. The RBQ asked about the frequency and severity of physical, verbal, and indirect bullying the individual experienced in school. Examples of questions on are, "Were you physically bullied at primary school? Yes or no?" and "How serious did you consider these bullying attacks to be?" (rated from "I wasn't bullied at all" to "extremely serious"). The RBQ takes about 30 minutes to take and has a reliability of .88 for the primary school portion and .87 for the secondary school

portion. For the purposes of the current study, responses for primary and secondary school were analyzed separately (Schafer et al., 2004).

SCL90-R Coding and Profile Assignment

Participants were coded into one of three chronic pain profiles according to the algorithm created by Williams et al. (1995). The Williams et al. (1995) sample consisted of 443 (241 women & 192 men) from a pain clinic. According to William et al. (1995), this algorithm correctly profiled 85% of participants their clinical sample. Williams et al. (1995) analyzed men and women separately to see how they differed across their responses. Therefore, the scoring guidelines created by Williams et al. (1995) were based on the participants' subscale scores and their sex. The scoring guidelines will be identical to those of William et al., (1995), and will be as follows:

Guidelines for Men

Profile 1: If the patient has a score $\geq$ 1.5 on any 5 or more scales, then he is classified in cluster 1.

Profile 3: If the patient has a score $\leq$ 1.5 on any 7 or more scales and has a score of <1.5 on OC and DEP, then he is classified in cluster 3.

Profile 2: If the patient is not classified as belonging to clusters 1 or 3, then he is classified as belonging to cluster 2.

Guidelines for Women

Profile 1: If the patient has a score > 2.5 on SOM and OC and a score < 2.0 on IS, then she is classified as belonging to duster 1.

Profile 3: If the patient has an OC score < 2.0 and scores < 1.5 on any 7 or more scales, then she is classified as belonging to cluster 3.

Profile 2: If the patient is not classified as belonging to clusters 1 or 3, then she is classified as belonging to cluster 2.

CHAPTER IV

Results

Preliminary Analyses

Sample Description

The combined sample was composed by adults between the ages of 18 and 69 (M_{age} = 35 years; SD = 11.50). Females comprised 62.70% (n = 185) of the sample. The total sample was primarily White (56.60%, n = 167) and Asian (23.70%, n = 70), followed by Black (9.80%, n = 29), Hispanic (6.40%, n = 19), and Other (3.40%, n = 10). In regards to pain variables, the chronic pain sample the $M_{descriptors}$ = 2.21 (SD = .64), the M_{VAS} = 57.74 (SD = 20.84), and the M_{PPI} = 3.86 (SD = 1.01). For the healthy control sample, the $M_{descriptors}$ = 1.54 (SD = .69), the M_{VAS} = 19.46 (SD = 22.81), and the M_{PPI} = 1.84 (SD = 1.07).

Replicability of SCL90-R Profiles

X^2 goodness of fit tests were used to test the assumption that the current profiles composition was similar to Williams' et al. (1995) clinical sample. Based on the findings of Williams et al., (1995), it was expected that 5% of the current sample would be classified in *Profile 1*, 18% would be in *Profile 2*, and 77% would be in *Profile 3*. For the current sample, 25% of participants were in *Profile 1*, 51% were in *Profile 2*, and 23% were in *Profile 3*. Results indicated that the percentages in profile were significantly different from the Williams et al. (1995) sample(X^2 (2) = 412.14, $p < .001$).

Given that Williams' et al. (1995) study indicated that there are gender differences in the response to the SCL90 – R, we tested whether gender proportions in each profile for the current non-clinical sample were similar to those found in the Williams et al. (1995) clinical sample. It was expected that 68% of those in *Profile 1* would be male, 55% of those in *Profile 2* would be male, and 60% of those in *Profile 3* would be female (Williams et al., (1995). For the current sample 88% of those in *Profile 1* were male, 90% of those in *Profile 2* were female, and 67% of those in *Profile 3* were female. Results indicated that the proportions of males and females in *Profile 1* (X^2 (1) = 10.59, p = .001) and *Profile 2* (X^2 (1) = 100.59, $p < .001$) were significantly different from those found in Williams et al. (1995). There were no significant differences in sex proportions in *Profile 3* in the current non-clinical sample and that of the Williams et al. (1995) clinical sample.

Furthermore, a X^2 test of independence was conducted to test the assumption that males and females were distributed equally within each profile. Results indicated a significant relationship between sex and profile membership (X^2 (3) = 103.44, $p < .001$). Males were more likely to be in *Profile 1* (87.9%), while females were more likely to be in *Profile 2* (89.8%). These results indicate that males and females are not represented equally in each of the profiles, suggesting that Williams et al. (1995) criteria, when applied to a non-clinical chronic pain population, is gender biased. Given that our sample does not align with the Williams et al.'s gender make-up, the SCL90 – R profiles and bullying outcomes for males and females were analyzed separately.

SCL90-R Profiles by Gender

Males. A multivariate analysis of variance (MANOVA) was conducted for males to determine profile differences in SCL90 – R subscale scores. The no chronic pain *Comparison Group* was included in analysis. Results indicated there was a significant difference among the groups on SCL90-R subscale scores, F (27, 286.85) = 5.50, p <.001. *Table* 1 displays the individual ANOVA and post hoc results for males of all three profiles as well as the no chronic pain healthy control group. As can be seen, *Profile 1* scored significantly higher than the other profiles on the SCL90 – R subscales. However, there were few subscales on which all three chronic pain profiles differed significantly. In addition, *Profile 1* differed from the *Comparison Group* on all subscales, indicating that this profile is not common among the general population. *Profile 2* scores significantly higher than *Profile* 3 on the obsessive compulsive (OC), depression (DEP), hostility (HOS), and paranoia (PAR) subscales. *Profile 2* scored similarly to the *Comparison Group*, except for the interpersonal sensitivity (IS), anxiety (ANX), phobia (PHOB), PAR, and psychotic (PSY) subscales where the healthy control scored higher than *Profile* 2. The *Comparison Group* scored significantly higher than *Profile 3* on the SCL90-R subscales. Figure 1 displays the SCL90-R mean subscales for males of all three profiles as well as the *Comparison Group* in graph form.

Females. A multivariate analysis of variance (MANOVA) was conducted for females to determine profile differences in SCL90-R subscale scores. The no-chronic pain *Comparison Group* was included in the analysis. Results indicated there was a significant difference among the profiles on SCL90-R subscale scores, F (27, 506.89) =

102.08, $p < .001$. Table 2 displays the individual ANOVAs and post hoc results for females of all three profiles as well as the *Comparison Group*. As can be seen, *Profile 1* score significantly higher than the other profiles only on the SOM and OC subscales of the SCL90-R. In addition, *Profile 2* scored significantly higher than *Profile 3* on the SCL90-R subscales. As can be seen in Table 2, *Profile 1*, *Profile 2*, and the *Comparison Group* gave similar ratings on all subscales except the SOM and OC subscales, in which *Profile 1* scored higher, and the ANX subscale, in which *Profile 1* and *Profile 2* scored higher. It should be noted that all analyses of females were severely underpowered due to the low number of participants classified by the algorithm as *Profile 1*. Figure 2 displays the SCL90-R mean subscales for females of all three profiles as well as the *Comparison Group* in graph form.

Table 1

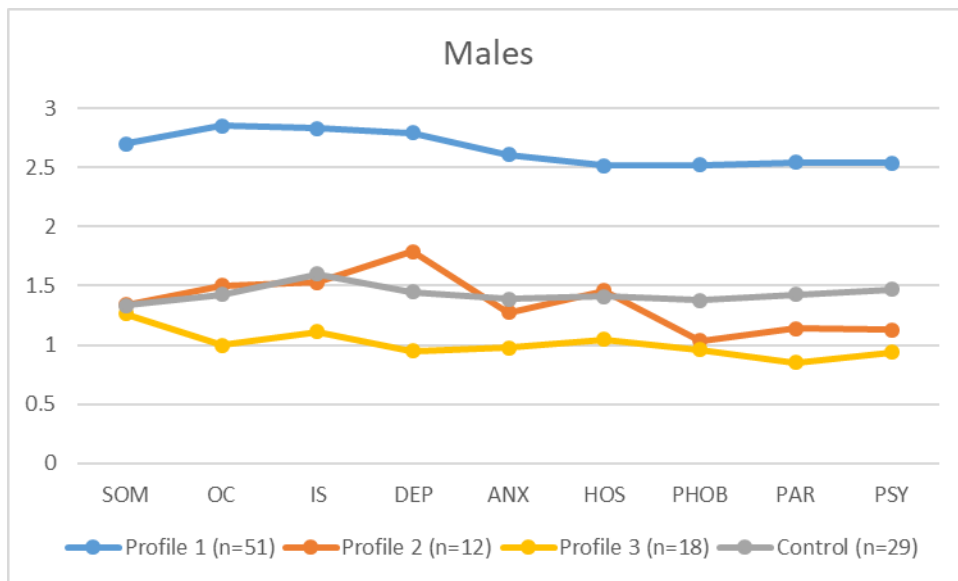*Male SCL90-R Subscale Averages for all groups*

SCL90-R Subtest	Profile 1 (n=51) M (sd)	Profile 2 (n=12) M (sd)	Profile 3 (n=18) M (sd)	Comparison Group (n=29) M (sd)	F	P	Eta^2
SOM	2.70 (.82)[a]	1.34 (.36)[b]	1.26 (.54)[b]	1.34 (.79)[b]	31.98	<.001	.48
OC	2.85 (.71)[a]	1.50 (.38)[b]	1.00 (.27)[c]	1.43 (.79)[b,c]	51.80	<.001	.60
IS	2.83 (.82)[a]	1.53 (.50)[b,c]	1.11 (.26)[b]	1.60 (.84)[c]	34.25	<.001	.49
DEP	2.79 (.82)[a]	1.79 (.47)[b]	.95 (.19)[c]	1.45 (.77)[b]	40.63	<.001	.54
ANX	2.61 (.79)[a]	1.28 (.33)[b]	.98 (.20)[b]	1.39 (.82)[b]	35.95	<.001	.50
HOS	2.51 (.96)[a]	1.46 (.42)[b]	1.05 (.24)[c]	1.41 (.82)[b,c]	21.80	<.001	.38
PHOB	2.52 (.95)[a]	1.04 (.19)[b,c]	.96 (.15)[b]	1.38 (.79)[c]	28.58	<.001	.45
PAR	2.54 (.92)[a]	1.14 (.22)[b]	.85 (.27)[c]	1.43 (.91)[b]	28.81	<.001	.44
PSY	2.54 (.86)[a]	1.13 (.21)[b,c]	.94 (.21)[b]	1.47 (.87)[c]	29.67	<.001	.46

Note. SOM = somatization; OC = obsessive-compulsive; IS = interpersonal sensitivity; DEP = depression; ANX = anxiety; HOS = hostility; PHOB = phobic anxiety; PAR = paranoid ideation; PSY = psychoticism. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Figure 1

Male SCL90-R Subscale Scores

Note. Error bars were not included for aesthetic purposes. Standard deviations are provided in Table 1.

Table 2

Female SCL90-R Subscale Averages for all groups

SCL90-R Subscale	Profile 1 (n=7)	Profile 2 (n=106)	Profile 3 (n=37)	Comparison Group (n=35)	F	P	Eta^2
	M (sd)	M (sd)	M (sd)	M (sd)			
SOM	3.41 (.46)[a]	2.28 (.71)[b]	1.35 (.29)[c]	1.64 (.95)[c]	28.87	<.001	.32
OC	3.00 (.33)[a]	2.26 (.78)[b]	1.06 (.31)[c]	1.75 (.99)[d]	29.19	<.001	.33
IS	2.05 (.78)[a,b]	2.31 (.86)[a]	1.14 (.26)[b]	1.85 (.94)[a]	20.30	<.001	.25
DEP	2.89 (.75)[a]	2.40 (.81)[a]	1.12 (.33)[b]	1.80 (.99)[c]	28.93	<.001	.32
ANX	2.50 (.85)[a]	2.06 (.86)[a]	.98 (.18)[b]	1.67 (.90)[a,c]	19.50	<.001	.24
HOS	1.80 (.52)[a]	1.98 (.91)[a]	1.04 (.24)[b]	1.61 (.95)[a]	12.41	<.001	.17
PHOB	1.49 (.68)[a]	1.85 (.94)[a]	.97 (.22)[b]	1.67 (1.04)[a]	9.80	<.001	.14
PAR	1.71 (1.00)[a,b]	1.92 (.99)[a]	.87 (.33)[b]	1.52 (1.02)[a]	12.67	<.001	.17
PSY	1.77 (.63)[a]	1.70 (.81)[a]	.95 (.18)[b]	1.52 (.94)[a]	9.58	<.001	.14

Note. SOM = somatization; OC = obsessive-compulsive; IS = interpersonal sensitivity; DEP = depression; ANX = anxiety; HOS = hostility; PHOB = phobic anxiety; PAR = paranoid ideation; PSY = psychoticism. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Figure 2

Female SCL90-R Subscale Scores
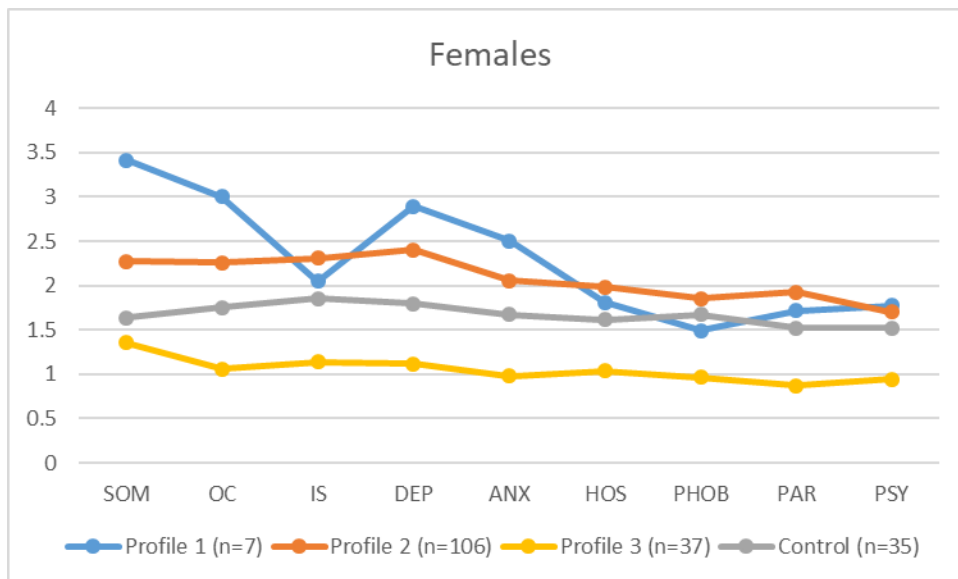
Note. Error bars were not included for aesthetic purposes. Standard deviations are provided in Table 2.

Profile's Age and Pain-Related Variables by Gender

Males.

Age

A one-way ANOVA was conducted to determine possible SCL90-R profile differences on age. Results indicated a significant difference between groups on age, F (3, 106) = 5.21, p = .002. Results indicate that males in Profile 2 were significantly older than participants in the other profiles.

Pain

A MANOVA was conducted to determine possible SCL90-R profile differences on pain. Results indicated a significant difference between groups on pain, F (9, 253.6) = 11.55, p <.001. Table 3 displays the individual ANOVAs and post hoc results for males of all three profiles as well as the *Comparison Group*. Participants in *Profile 1* rated their pain significantly higher than participants in the other profiles only on the descriptors portion of the MPQSF. There were no significant differences between the pain profiles on pain ratings using the Visual Analog Scale (VAS) or the Present Pain Inventory (PPI). These results may suggest that the SCL90-R profiles differ in perception of pain as opposed to level of pain.

As expected, participants in the *Comparison Group* rated their pain significantly lower than participants in all three chronic pain profiles on the VAS and the PPI. However, on the descriptors portion, participant's pain ratings in the *Comparison Group* were similar to participants' pain ratings in profile 3, only differing significantly from profiles 1 and 2. The lack of statistical significance on pain scales among the profiles may be due to variability among groups. As indicated in Table 3, although not statistically significance, the mean scores for all profiles and the *Comparison Group* are trending in the hypothesized direction.

Females.

Age

A one-way ANOVA was conducted to determine possible SCL90-R profile differences on age. Results indicated a significant difference between groups on age, F (3, 181) = 3.23, p = .024. Results indicate that participants in *Profile 3* were significantly

older than participants in the *Comparison Group*. Participants in *Profile 1* and *Profile 2* did not differ significantly in age from participants in *Profile 3* or the *Comparison Group*.

Pain

A MANOVA was conducted to determine possible SCL90-R profile differences on pain. Results indicated a significant difference between groups on pain, F (9, 435.79) = 14.91, $p <$.001. Table 4 displays the individual ANOVAs and post hoc results for females of all three profiles as well as the *Comparison Group*. Participants in *Profile 1* and *Profile 2* rated their pain significantly higher than participants in *Profile 3* and the *Comparison Group* on the Descriptors portion of MPQSF. There were no significant differences between the pain profiles on pain ratings using the Visual Analog Scale (VAS) or the Present Pain Inventory (PPI). Again, these results mays suggest that the profiles differ in perception of pain as opposed to level of reported pain.

Table 3

Males Age and Pain Variables

Age & Pain Variable	Profile 1 (n=51) M (sd)	Profile 2 (n=12) M (sd)	Profile 3 (n=18) M (sd)	Control (n=29) M (sd)	F	P	Eta^2
Age	30.04 (8.25)[a]	39.67 (5.65)[b]	38.44 (13.78)[a]	35.62 (11.92)[a]	5.21	.002	.13
Descriptors	2.45 (.59)[a]	1.90 (.36)[b]	1.82 (.68)[b,c]	1.40 (.58)[c]	20.92	<.001	.37
VAS	62.27 (21.70)[a]	48.50 (19.04)[a]	46.5 (22.03)[a]	14.31 (15.94)[b]	35.15	<.001	.50
PPI	3.98 (1.18)[a]	3.50 (.52)[a]	3.39 (1.09)[a]	1.76 (.99)[b]	27.42	<.001	.43

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. VAS = Visual Analog Scale, PPI = Present Pain Inventory. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Table 4

Females Age and Pain Variables

Age & Pain Variable	Profile 1 (n=7) M (sd)	Profile 2 (n=106) M (sd)	Profile 3 (n=37) M (sd)	Control (n=35) M (sd)	F	P	Eta^2
Age	36.43 (9.36)[a,b]	34.63 (11.41)[a,b]	40.78 (13.28)[a]	33.06 (11.14)[b]	3.23	.024	.05
Descriptors	2.88 (.50)[a]	2.25 (.60)[a]	1.87 (.59)[b]	1.70 (.77)[b]	12.04	<.001	.17
VAS	75.00 (16.71)[a]	57.81 (19.52)[a]	56.51 (21.02)[a]	24.34 (26.57)[b]	25.74	<.001	.30
PPI	4.57 (.98)[a]	3.92 (.97)[a]	3.76 (.90)[a]	1.91 (1.12)[b]	40.08	<.001	.40

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. VAS = Visual Analog Scale, PPI = Present Pain Inventory. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Profile's Bullying Reports in Primary School by Gender

     Males.

       A MANOVA was conducted to determine differences between SCL90-R profiles and the *Comparison Group* on frequency and severity of physical, verbal, and indirect bullying experiences in primary school. Results indicated a marginal difference between groups on bullying experiences in primary school, $F (18, 286.16) = 1.59$, $p = .061$. Table 5 displays the individual ANOVAs and post hoc results for males of all three profiles as well as the *Comparison Group. Profile 1* experienced a significantly higher frequency of physical bullying in primary school than *Profile 3*. Although the individual ANOVA indicated a statistically significant difference between groups on severity of physical bullying, this effect was not found in the post hoc analysis. The post hoc analysis revealed that the significant *p* value was most likely due to a marginal difference in ratings between *Profile 1* and *Profile 3*. *Profile 1* experienced a significantly higher frequency of verbal bullying in primary school than participants in profile 3 and the healthy control group. Furthermore, participants in *Profile 1* considered the verbal bullying to be significantly more severe than participants in *Profile 3*. Participants in *Profile 1* experienced a significantly higher frequency of indirect bullying in primary school than participants in the *Comparison Group*.

     Females.

       A MANOVA was conducted to determine differences between SCL90-R profiles and the *Comparison Group* on frequency and severity of physical, verbal, and indirect bullying experiences in primary school. Results indicated no significant difference

between groups on bullying experiences in primary school, F (18, 498.29) = 1.38, p =

.135. Table 6 displays the individual ANOVAs and post hoc results for females of all

three profiles as well as the *Comparison Group*. As indicated in Table 5 there were no

significant differences between groups.

Table 5

Males Bullying Experiences in Primary School by Profiles and Comparison Group

Bullying Variable	Profile 1 (n=51) M (sd)	Profile 2 (n=12) M (sd)	Profile 3 (n=18) M (sd)	Comp. (n=29) M (sd)	F	P	Eta^2
Physical Bullying							
Frequency	2.43 (1.03)[a]	2.00 (1.13)[a,b]	1.61 (.85)[b]	2.00 (.76)[a,b]	3.79	.013	.10
Severity	3.29 (1.08)	2.50 (1.16)	2.39 (1.38)	2.76 (1.22)	3.62	.016	.09
Verbal Bullying							
Frequency	3.16 (1.12)[a]	2.92 (1.24)[a,b]	2.22 (1.26)[b]	2.28 (1.03)[b]	5.25	.002	.13
Severity	3.37 (1.10)[a]	2.75 (.97)[a,b]	2.39 (1.34)[b]	2.76 (1.30)[a,b]	3.88	.011	.10
Indirect Bullying							
Frequency	2.82 (1.24)[a]	2.42 (1.17)[a,b]	2.11 (1.13)[a,b]	2.00 (1.04)[b]	5.02	.014	.10
Severity	2.96 (1.13)	2.33 (1.07)	2.22 (1.11)	2.45 (1.30)	2.58	.057	.07

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Table 6

Females Bullying Experiences in primary School by Profiles and Comparison Group

Bullying Variable	Profile 1 (n=7) M (sd)	Profile 2 (n=106) M (sd)	Profile 3 (n=37) M (sd)	Comp. (n=35) M (sd)	F	P	Eta2
Physical Bullying							
Frequency	1.71 (.95)	1.98 (1.17)	1.81 (.10)	2.11 (1.11)	.57	.638	.01
Severity	2.14 (1.46)	2.64 (1.40)	2.62 (1.30)	2.60 (1.46)	.29	.838	.01
Verbal Bullying							
Frequency	2.29 (1.25)	2.86 (1.36)	2.68 (1.23)	2.46 (1.04)	1.20	.310	.02
Severity	2.29 (1.25)	3.01 (1.40)	2.78 (1.29)	2.71 (1.13)	1.05	.373	.02
Indirect Bullying							
Frequency	2.71 (1.11)	2.89 (1.35)	2.43 (1.32)	2.54 (1.15)	1.40	.244	.02
Severity	3.29 (.76)	3.09 (1.31)	2.54 (1.43)	2.57 (1.24)	2.64	.051	.04

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Profile's Bullying Reports in Secondary School by Gender

  Males.

    A MANOVA was conducted to determine differences between SCL90-R profiles and the *Comparison Group* on frequency and severity of physical, verbal, and indirect bullying experiences in secondary school. Results indicated no significant difference between groups on bullying experiences in secondary school, F (18, 498.29) = .62, p = .897. Table 7 displays the individual ANOVAs and post hoc results for males of all three profiles as well as the *Comparison Group*. As indicated in Table 6 there were no significant differences between groups.

  Females.

    A MANOVA was conducted to determine differences between SCL90-R profiles and the *Comparison Group* on frequency and severity of physical, verbal, and indirect bullying experiences in secondary school. Results indicated no significant difference between groups on bullying experiences in secondary school, F (18, 498.29) = .97, p = .494. Table 8 displays the individual ANOVAs and post hoc results for females of all three profiles as well as the *Comparison Group*. As indicated in Table 7 there were no significant differences between groups.

Table 7

Males Bullying Experiences in Secondary School by Profiles and Comparison Group

Bullying Variable	Profile 1 (n=51) M (sd)	Profile 2 (n=12) M (sd)	Profile 3 (n=18) M (sd)	Comp. (n=29) M (sd)	F	P	Eta^2
Physical Bullying							
Frequency	2.08 (1.16)	1.83 (.84)	1.72 (.96)	1.72 (1.07)	.91	.442	.03
Severity	2.43 (1.32)	2.33 (1.23)	2.17 (1.38)	2.03 (1.35)	.60	.616	.02
Verbal Bullying							
Frequency	2.29 (1.10)	2.33 (1.07)	2.00 (.97)	1.97 (1.12)	.81	.493	.02
Severity	2.43 (1.29)	2.58 (1.08)	2.33 (1.14)	2.28 (1.36)	.20	.894	.01
Indirect Bullying							
Frequency	2.33 (1.28)	2.17 (1.03)	1.72 (1.07)	1.79 (1.11)	1.93	.129	.05
Severity	2.57 (1.29)	2.33 (1.16)	2.06 (1.31)	2.07 (1.36)	1.24	.300	.03

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

Table 8

Females Bullying Experiences in Secondary School by Profiles and Comparison Group

Bullying Variable	Profile 1 (n=7) M (sd)	Profile 2 (n=106) M (sd)	Profile 3 (n=37) M (sd)	Comp. (n=35) M (sd)	F	P	Eta2
Physical Bullying							
Frequency	1.43 (.79)	1.86 (1.27)	1.59 (.87)	1.69 (.87)	.80	.479	.01
Severity	1.71 (1.25)	2.17 (1.47)	2.14 (1.49)	2.00 (1.28)	.31	.818	.01
Verbal Bullying							
Frequency	2.00 (1.00)	2.65 (1.40)	2.41 (1.21)	2.23 (1.09)	1.40	.245	.02
Severity	2.29 (1.25)	2.84 (1.42)	2.62 (1.42)	2.34 (1.08)	1.43	.235	.02
Indirect Bullying							
Frequency	2.57 (1.40)	2.69 (1.46)	2.24 (1.30)	2.17 (1.10)	1.79	.151	.30
Severity	2.71 (1.25)	2.72 (1.37)	2.27 (1.33)	2.43 (1.20)	1.22	.303	.02

Note. Profile 1 is comprised of individuals experiencing significant amounts of psychological distress, while those in Profile 2 experience moderate amounts of psychological distress, and those in Profile 3 experience minimal amounts of psychological distress. Different superscripts indicate pairwise comparison significance using the Games-Howell test (α = .05).

CHAPTER V

Discussion

Before testing the hypotheses, preliminary analyses were conducted to test the assumption that the current non-clinical sample was similar to the clinical sample of Williams et al. (1995). The current non-clinical sample did not meet this assumption. The preliminary analyses indicated that the current non-clinical sample yielded different proportions in each profile from that of the Williams et al. (1995) clinical sample. This finding could indicate that more individuals in *Profile 1* and *Profile 2* exist within the general population as opposed to the clinical population. Furthermore, Williams et al. (1995) found that the majority of males and females in the clinical sample belonged to *Profile 3*. The current non-clinical sample found most males to be in *Profile 1*, and most females to be in *Profile 2*. Moreover, in the current non-clinical sample, participants' sex predicted profile membership. In addition, the current study found no statistical differences between males and females in levels of somatization (this analysis was done as post-hoc) a finding that further differentiates the current sample from Williams et al. sample.

In the current sample, males in *Profile 1* differed significantly from males on the other two profiles across the SCL90-R subscale scores. For males, it appears that *Profile 2* and *Profile 3* are the same profile. For females, only *Profile 3* differed significantly from the other two profiles across the SCL90-R subscale scores. It appears that among

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females, *Profile 1* and *Profile 2* are the same profile. These findings possibly suggest that only two profiles exist for both genders in non-clinical populations.

The first hypothesis was that participants in *Profile 1* would report higher levels of pain than participants in *Profile 2*, *Profile 3*, and the *Comparison Group*. This hypothesis was partially supported by the data. For males and females participants in *Profile 1* gave higher ratings of pain only on the descriptors portion of the MPQSF. The descriptors portion of the MPQSF has the participant rate adjectives that describe his or her pain. Giving higher ratings only on the descriptors portion, suggests that participants in *Profile 1* differ from the participants in the other profiles in their subjective experience of pain. Past literature has shown that psychological distress influences one's subjective experience of pain.

A recent study using the MMPI2-RF found that a chronic pain profile high in psychological distress reports greater subjective pain, greater disability, poor surgery recovery, and is less likelihood to return to work (Aguerrevere et al., 2017; Riley et al., 1993). Williams et al. (1995) found similar results, which showed that female participants in *Profile 1*, who experienced significant psychological distress, reported significantly lower amounts of time spent being physically active compared to the other profiles. Yet, this relationship between perception and pain can have a far greater impact on a person than just one's level of physical activity.

The second hypothesis was that participants in *Profile 1* would report having experienced more bullying in school, and report these bullying experiences as more severe, than participants in *Profile 2*, *Profile 3*, and the *Comparison Group*. The results

indicated that male participants in *Profile 1* were physically and verbally bullied more in primary school than participants in *Profile 3*. Participants in *Profile 1* were also bullied more indirectly than participants in the *Comparison Group*. These results indicate that participants in *Profile 1* were hit, punched, and kicked, as well as called names, more than participants in *Profile 3*. In regard to the severity of the bullying, the results indicated participants in *Profile 1* who were verbally bullied thought that the bullying was more severe than participants in *Profile 3*. For males experiences in secondary school and females experiences in primary and secondary school, there were no significant differences between groups on the frequency of being bullied or bullying severity.

The specifics of this relationship are unknown, yet it is possible that the relationship between past bullying experiences and one's chronic pain profile is driven by the relationship between bullying and somatization[1] (Imbierowicz and Egle, 2003; Spetus et al., 2003; Van Houdenhove et al., 2001). This argument has found support in the current study given that males in *Profile 1* did report a higher frequency, and higher severity, of bullying in the primary school years. Yet, past research has shown that there is a type of individual that is more likely to be bullied (Brockenbrough, Cornell, & Looper, 2002; Glew, Fan, & Katon, 2005; McNamara & McNamara, 1997). Victims of

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[1] Bullying was a significant predictor of somatization scores on the SCL90-R for the current sample. Note that these results are not presented in the document as it does not relate to the hypotheses tested, the interested reader can find the results on Appendix B.

bullying tend to do poorly in school (Glew et al., 2005), tend to be more aggressive than their same-aged peers (Brockenbrough et al., 2002), and tend to have difficulty physically protecting themselves (McNamara & McNamara, 1997). Therefore, it could be that certain characteristics of a person predispose them to certain experiences such as being bullied and having chronic pain.

A plausible explanation of the findings of the current study, is that the variable driving the relationship between past bullying experiences and one's chronic pain profile is perception. Just as perception has been shown to influence levels of subjective pain, disability, and recovery from surgery (Aguerrevere et al., 2017; Riley et al., 1993; Williams et al., 1995), it is possible that the perception of participants in *Profile 1* influenced their reports of bullying experiences. The same negative perception that yields higher subjective pain ratings, might also yield higher reports of bullying experiences in primary school. However, given the nature of self-report studies, it is important to take into consideration that false memories may influence reports of being bullied and psychological pain (Hyman, Husband, & Billings, 1995). Whether or not the participant reports are accurate representation of their bullying experiences, these reports can have important implications for pain-related outcomes. For instance, bullying reports may predict level of disability, surgery outcome or likelihood to return to work. One recent study has developed an algorithm to screen chronic pain patients for spinal surgery recovery using reports of traumatic experiences (Marek, Block, & Ben-Porath, 2017). In this screener, different points are assigned for various experiences such as whether or not the individual has been, or is being, abused; then the individuals point total determines if

he or she is likely to recovery and is fit for surgery (Marek et al., 2017). With more research, frequency and severity of bullying in childhood could be potentially used as a surgery screener to improve its predictive validity. Future research should explore the connection between past bullying experiences and recovery from pain and recovery from surgery. Future studies should also seek to use more objective measures of pain and past bullying experiences. Research connecting past bullying experiences to surgery outcomes, has the potential to add past bullying experiences to a surgery screener, much like the Marek et al. (2017) screener. Doing so would further aid in preventing individuals from undergoing surgery from which they will not be able to recover.

Limitations

The current study is not without limitations. The current study did not use objective measures of pain or bullying. It is possible that objective measures of pain, such as pain sensitivity measured using a thermode, might yield different results compared to the subjective ratings used in the current study. This study was also limited by the sampling technique. While, MTURK provides access to a national sample, it is possible MTURK participants could not be motivated to provide appropriate responses. A large majority of the sample was excluded from analysis for taking the survey more than once, rushing through the survey, and or not answering all of the questions in the survey. This undoubtedly significantly limits the conclusions that can be drawn from the analyses. Research has shown that individuals sampled from MTURK tend to experience more anxiety and interpersonal issues than the general population (Chandler & Shapiro, 2016). So, it is possible that our results target a population composed by individuals with

significant psychopathology. Furthermore, using the algorithm provided by Williams et al. (1995) for determining profile membership proved to be a limitation. The disproportionate amount of individuals in certain profiles (i.e. *Profile 1* for males and *Profile 2* for females) suggests that the algorithm cannot be generalized to a non-clinical sample. The disproportionate distribution among the profiles called for analyzing males and females separately which significantly impacted the conclusions that could be drawn from the group as a whole.

Conclusion

The purpose of the current study was to examine the relationship between one's chronic pain profile, using the SCL90-R, and one's past experiences of being bullied. The results indicated that males who belonged to *Profile 1*, which is characterized by significant psychological distress, reported being hit and called names in primary school more than males in *Profile 3*. Although it is possible that these ratings are driven by false memories (Hyman et al., 1995), the relationship between one's chronic pain profile and ratings of past bullying experiences is most likely driven by perception. This is consistent with the current study's findings on level of pain among the profiles as well as past research. The results of the current study support the idea that a relationship exists between past bullying experiences and one's chronic pain profile in adulthood.

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Appendix A

Qualtrics

Qualtrics is an online survey tool that allows individuals to create and distribute custom surveys. Data collected from participants was confidential and was stored in an online account that was password protected. Qualtrics estimates the amount of time participants will take to complete the survey based on the total number of questions. The estimated completion time for the current study was 31 minutes. Outliers for completion time could not be calculated because the data were positively skewed. An attempt was made to normalize the data by calculating the inverse of the completion times, yet the distribution remained positively skewed. Therefore, the participants that completed the survey in less than 15.5 minutes were excluded from data analysis to avoid responses from individuals that were considered to have rushed through the survey.

Appendix B

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.182	.214		.853	.394
	Descriptors_AVG	.801	.076	.621	10.504	.000
	Sex:	-.023	.073	-.012	-.318	.751
	VAS	.002	.002	.068	.940	.348
	PPI	-.002	.044	-.002	-.038	.970
	Frequency of Physical Bullying in Primary School	.126	.049	.148	2.552	.011
	Severity of Physical Bullying in Secondary School	-.072	.044	-.106	-1.641	.102
	Frequency of Verbal Bullying in Primary School	.002	.052	.003	.035	.972
	Severity of Verbal Bullying in Primary School	.029	.054	.041	.532	.595
	Frequency of Indirect Bullying in Primary School	-.021	.060	-.029	-.346	.730
	Severity of Indirect Bullying in Primary School	.067	.060	.094	1.109	.268
	Frequency of Physical Bullying in Secondary School	.131	.056	.159	2.312	.022
	Severity of Physical Bullying in Secondary School	-.085	.047	-.130	-1.808	.072

Severity of Verbal Bullying in Secondary School	.057	.009	.108	.914
Frequency of Indirect Bullying in Secondary School	.059	.061	.705	.482
Severity of Indirect Bullying in Secondary School	.055	.036	.449	.654
Age:	-.009	.003	-.120	-3.125	.002

VITA

After graduating from Clear Springs High School in 2012, Stephen completed his Bachelors of Science in Psychology with a minor in Rehabilitation at Stephen F. Austin State University in 2016. During his time as an undergraduate, he volunteered as a Research Assistant and presented research at national research conferences across the country. He was accepted into the School Psychology Master's and Doctoral program in the Fall of 2016. Stephen worked as a Graduate Assistant for Dr. Luis Aguerrevere in the Human Neuroscience Laboratory where he collected and analyzed data for neuropsychological research. Currently, Stephen is studying at Stephen F. Austin State University where she seeks a Masters of Arts in School Psychology.

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