THE MODERATING EFFECTS OF POSITIVE RELIGIOUS/SPIRITUAL COPING ON TEACHERS' PAIN AND STRESS

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THE MODERATING EFFECTS OF POSITIVE RELIGIOUS/SPRITUAL COPING
ON TEACHERS’ PAIN AND STRESS

By

DAWN R. GREEN, Specialist in School Psychology

Presented to the Faculty of the Graduate School of
Stephen F. Austin State University
In Partial Fulfillment
Of the Requirements
For the Degree
Of Doctor of Philosophy in School Psychology

STEPHEN F. AUSTIN STATE UNIVERSITY
August 2017
THE MODERATING EFFECTS OF POSITIVE RELIGIOUS/SPIRITUAL COPING
ON TEACHERS’ PAIN AND STRESS

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ABSTRACT

The objective of this internet-based survey was to investigate the effects of positive religious or spiritual coping strategies on teachers’ chronic pain reports. Teachers in the United States may represent a vulnerable group due to a high prevalence of risk factors for chronic pain conditions. Teachers have been identified to experience high stress (Johnson, et al., 2005; Kyriacou, 2001) and report poor job satisfaction (Wang, Hall, & Rahimi, 2015), which are associated with development of chronic pain conditions (Kopec & Sayre, 2004). Religious coping strategies have been associated with beneficial associations with stress and health (Reutter & Bigatti, 2014). The internet-based survey of U.S. public school teachers (N = 377) was distributed primarily through social media. Included were items related to demographic information, religious/spiritual and other coping strategies, work-related stressors and physical demands, health history, and job satisfaction. Results indicate positive religious/spiritual coping strategies moderated pain reports for teachers reporting high levels of stress; however, at lower levels of stress, positive religious/spiritual coping was associated with increased pain reports. Chronic pain was associated with higher stress, older age, lower job satisfaction, and increased physical demands for the sample. High levels of stress, chronic pain, anxiety, and depression are present in this population. Conclusions included the need to identify strategies for reduced stress and improved health outcomes. Psychological/mental health
services for teachers should be considered for treatment and prevention of stress-related chronic pain.
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CHAPTER I

Introduction

Chronic pain in the United States is a widespread phenomenon. In a recent internet-based survey conducted by Johannes, Le, Zhou, Johnston, & Dworkin (2010), over 30% of respondents indicated some form of chronic pain. According to the Medical Expenditure Panel Survey, in 2008, about 100 million adults in the United States were affected by chronic pain (Gaskin & Richard, 2012). Over 52% of the U.S. workforce is estimated to have a painful condition such as back pain, headache, arthritis, and other musculoskeletal ailments (Pizzi, et al., 2005). Individuals in pain work fewer days and earn less per hour than those without pain (Gaskin & Richard, 2012). With regard to the national economy, annual productivity losses are estimated at nearly $300 billion for the U.S. (Gaskin & Richard, 2012), with disability compensation estimates nearing the $20 billion mark (Turk & Theodore, 2011).

Teachers may represent an at-risk population for chronic pain. The teaching profession is well known as a high-stress occupation (Johnson, et al., 2005; Kyriacou, 2001) and occupational stress is often considered a risk factor for the development of chronic pain (Kopec & Sayre, 2004). Teachers reported worse-than-average scores on measures of psychological well-being, physical health, and job satisfaction, placing
teaching as one of the most stressful occupations (Johnson, et al., 2005). In a recent national survey of 1,201 K-12 U.S. teachers on teacher stress and coping strategies, 40% of teachers were classified as “disheartened” versus “contented” or “idealists” (Johnson, Yarrow, Rochkind, & Ott, 2009). Teachers are also losing ground economically in comparison to similarly educated professionals (Allegretto & Tojerow, 2014). Increased classroom demands and loss of economic capital may contribute to low job satisfaction (Wang, Hall, & Rahimi, 2015). By virtue of factors such as high stress and decreasing satisfaction in the field, teachers may be uniquely vulnerable to pain conditions.

Religious coping strategies have been associated with decreased pain-related disability and improved mood (World Health Organization, 2006). Additionally, both religiosity and spirituality have reported beneficial associations with stress and health (Reutter & Bigatti, 2014). Religious or spiritual activities are common in the U.S. population (Barnes, Powell-Griner, McFann, & Nahin, 2004) and may confer benefits for those involved in the utilizing the practices. The primary purpose of the current study is to investigate the effects of religious or spiritual coping strategies on teachers’ chronic pain after a painful injury. Specifically, the study will investigate whether religious or spiritual coping moderates the relationship between teacher-related factors (e.g., stress, assignment, gender, etc.) and the report of chronic pain.
Additionally, factors that contribute to chronic pain conditions for K-12 teacher will be identified.
CHAPTER II

Literature Review

Chronic Pain

Chronic pain is considered to be at an epidemic level in the United States (Hardt, Jacobsen, Goldberg, Nickel, & Buchwald, 2008; Johannes, Le, Zhou, Johnston, & Dworkin, 2010). Estimates of prevalence are uniformly high. Johannes et al. (2010) conducted an internet-based survey of 35,718 US adults in which chronic pain was reported by 30.7% of respondents. Back pain was the condition most often reported. Data analyses completed by Hardt, et al. (2008) for respondents to the 1999-2002 National Health and Nutrition Examination Survey indicated lower rates of chronic pain, though reports exceeded 10% for back pain. In a face-to-face interview procedure, 5,692 US adults provided information regarding pain disorders, other physical disorders, and mental disorders. Results indicated a 1-year prevalence rate for chronic spinal pain of 19% with the majority (87.1%) of those also reporting other chronic pain conditions (Von Korff, et al., 2005).

Chronic pain conditions affect the United States national economy. In a large survey of over 15,000 participants, Gaskin and Richard (2012) estimated the annual cost of lost productivity due to pain to be greater than that of heart disease, cancer, or diabetes and exceeding $299 billion. Turk and Theodore (2011) computed one of the indirect
costs of pain, namely disability compensation, at 18.9 billion dollars for 2010. Costs per employer were estimated at approximately 2.1 million dollars annually through an analysis of the MEDSTAT Health and Productivity Management database for employers contributing to the database (Pizzi, et al., 2005). Moreover, low income correlates with a higher risk of developing chronic pain conditions. In a study by Gaskin and Richard (2012) a sample of 15,945 working-age adults with moderate pain worked 2.1 days fewer annually than those with no pain. Individuals with pain were also noted to earn less per hour than those with no pain.

Substantial research indicates chronic pain negatively impacts daily life in a variety of domains. Breivik, et al. (2006) conducted a large-scale computer-assisted telephone survey of adults in 15 European countries and Israel. Of 46,394 respondents, 19% reported suffering pain for over six months and 21% reported having a diagnosis of depression. Of these, 61% of participants were less able or unable to work outside the home, 19% lost employment, and 13% had changed jobs due to pain. Similarly, in a survey of 1,208 chronic pain patients referred to a European university pain clinic, participants reported low quality of life in all domains assessed by the Rand-36 health-related quality of life survey. Domains included physical functioning, role limitations caused by physical health problems, role limitations caused by emotional problems, social functioning, emotional well-being, energy/fatigue, pain, and general health perceptions. Those reporting pain in the lower back combined with multiple localizations indicated the lowest quality of life scores (Lamé, Peters, Vlaeyen, Kleef, & Patijn, 2005).
These results indicate that chronic pain is a significant health condition that affects a substantial number of individuals in the U.S. and around the world.

For research purposes, chronic pain has been variously defined as pain-related discomfort lasting beyond healing time, (DeMuri & Maletic 2016) 3 months or longer (Asmundson & Norton, 1995; Bouhassira, Lantéri-Minet., Attal, Laurent, & Touboul, 2008; Verhaak, Kerssens, Dekker, Sorbi, & Bensing, 1998) or occurring intermittently over a long period of time (Andersson, 1999). Chronic pain is biologically non-functional because it does not resolve after the injured tissues have healed. In some instances, it may even occur without an identified injury (Ashburn & Staats, 1999). Put simply, there is no medical/biological value or reasonable explanation or for the pain to persist. In contrast, acute pain, such as that resulting from a cut or burn, is regarded as having a purpose, such as serving a warning to the organism (Helms & Barone, 2008). Therefore, chronic pain is a long-lasting condition associated with psychological states that has no biological function.

The course of treatment for chronic pain further distinguishes it from acute pain. Acute pain is treated by addressing the underlying cause and interrupting the pain signals that occur exclusively during healing time. Dissimilarly, chronic pain endures and is treated through ongoing management rather than cured (Grichnik & Ferrante, 1991). In fact, treatment of chronic pain includes multiple therapeutic modalities (e.g., medication,
surgical intervention, psychological, etc.) and it is expected to include continuing, long-term care (Turk & Okifuji, 2002).

Chronic pain can be further conceptualized as primarily nociceptive, as distinguished from neuropathic pain. Nociceptive pain results from activity in neural pathways following tissue damage. It is often described as sharp, aching, or throbbing. Nociceptive pain may be also produced by stimuli not typically related to tissue damage (e.g., psychosomatic) (Krumova, Geber, Westermann, & Maier, 2012). Surveys of chronic pain sufferers consistently indicate back pain as the most commonly reported nociceptive condition (Breivik, et al., 2006; Tsang, et al., 2008). Other common chronic pain conditions are musculoskeletal pain, spine pain, osteoarthritis, and headaches (Pöhlmann, Tonhauser, Joraschky, & Arnold, 2009; Rosenberg, 2017). Neuropathic pain, on the other hand, is initiated by nervous system lesions or dysfunction. It is often described as burning, heaviness, or numbness along the pathway of the affected nerves. Neuropathic pain is characterized by spontaneous ongoing or shooting pain (Baron, Binder, & Wasner, 2010). Diabetes and cancer are two of the most common etiologies of neuropathic chronic pain (Nicholson, 2006).

Biopsychosocial Model of Pain

The first modern theory to attempt to explain the development and maintenance of pain conditions is known as Specificity Theory. This theory holds that specific pain receptors transmit signals to a "pain center" in the brain that produces the perception of
pain. Charles Bell (1811) credited with developing Specificity Theory, postulated there is a dedicated fiber that leads to a dedicated pain pathway in the brain. Bell proposed that neurons had specialized functions designed to detect different types of stimuli, including pain (Moayedi & Davis, 2013). In 1965, Melzack and Wall proposed Gate Control Theory that emphasized the complex interplay of the central nervous system and the peripheral nervous system. In this theory, before impulses reach the brain, pain messages encounter gates in the spinal cord that facilitate or impede transmission based on a variety of factors. When gates are open, pain messages are easily transmitted and pain is experienced as more intense. When gates are closed, pain messages are impeded and pain is experienced as less intense. The theory included the concept of windup that explained the progressive nature of pain response and the reason that pain may endure beyond the expected time frame (Helms & Barone, 2008).

Overall, the above biomedical theories assume the involvement of an objective and observable link between injury/illness and pain. Thus, these theories assume a readily explainable origin for pain. However, it has been long recognized that physical factors alone do not account for the entirety of the pain experience (Dersh, Polatin, & Gatchel, 2002; Gatchel, 2004; Turk & Okifuji, 2002). Therefore, George Engel (1977), proposed integrating psychological and social variables into prevailing models of disease, and proposed what he called the “Biopsychosocial Model” (Lindau, Laumann, Levinson, & Waite, 2003). The model provides a more comprehensive explanation of pain outcomes.
George, et al. (2008) indicated pain is believed to be influenced by social, cultural, environmental, psychological, and genetic factors. Since then, substantial research has supported the Biopsychosocial Model of pain (Covic, Adamson, Spencer, & Howe, 2003; Drossman, 1998; López-Martínez, Esteve-Zarazaga, & Ramírez-Maestre, 2008).

**Demographic Characteristics of the Subject**

Among demographic factors that may contribute to chronic pain are age and sex (Johannes, et al., 2010; Von Korff, et al., 2005). In a large study of pain patients (n=1434), factors including medical diagnosis, gender, age, and ethnicity were considered to assess relationships between pain processing and demographic factors. Age alone had a large effect size with respect to affect and illness behavior. Contrary to expectations, older adults manifested less emotional suffering and lifestyle disruption as a result of their pain. Authors concluded that older adults viewed their pain as less “threatening,” resulting in less suffering, possibly because they are less likely to be working or supporting children (Wade & Price, 2000).

Sex-related differences in the experience of pain have been also widely reported, with females at greater risk for chronic pain conditions (Hardt, et al., 2008). Females typically demonstrate lower pain tolerance (Edwards, Doleys, Lowery, & Fillingim 2003; Kowalczyk, Evans, Bisaga, Sullivan, & Comer, 2006) and a greater incidence of back pain (Schneider, Randoll, & Buchner, 2006). Among the underlying mechanisms proposed to account for these differences are factors such as muscle strength (Chiu &
Lam, 2007), sex role beliefs, pain coping strategies, and hormonal differences (Fillingim, 2000). Results of experimentally-induced cold-pressor pain, caused by immersing a hand or forearm in very cold water, conducted at various points during female participants’ menstrual cycles suggest that hormonal fluctuation affects pain tolerance. Individual participants demonstrated differences in tolerance that correlated with cyclical hormonal changes (Kowalczyk, et al., 2006). Sex-related differences for pain indicate women are more likely to report pain at younger ages, but that men show an increasing trend with age (LeResche, 1999).

Psychological Characteristics of the Subject

Life stress and psychological dysfunction are strongly linked to the development of chronic pain conditions (Bruns & Disorbio, 2013). In an empirical study, Polatin, Kinnedy, Gatchel, Lillo, and Mayer (1993) assessed 200 chronic low-back pain patients for current and lifetime psychiatric disorders with a structured psychiatric interview to make DSM-III-R diagnoses. They showed that 77% of chronic pain participants met lifetime diagnostic criteria and 59% of these participants exhibited current symptoms for one or more psychiatric diagnosis. Among these, major depression, substance abuse, and anxiety disorders were the most commonly related to chronic pain maintenance. The prevalence of major depression in patients with chronic low back pain, for example, is approximately three to four times greater than the general population (Sullivan, Reesor, Mikail & Fisher, 1992). In addition, depression and chronic pain share similar emotional
states: hopelessness, reduced energy, disturbed sleep, negative affect, and reduced social role performance (Von Korff & Simon, 1996).

Anxiety is also often negatively associated with recovery from pain conditions (Wade & Price, 2000). Anxiety sensitivity refers to a fear of anxiety-related bodily sensations that is based on the belief that these sensations will have harmful social, somatic and/or psychological consequences. Asmundson and Norton (1995) reported that chronic back pain patients with high anxiety sensitivity, despite equal levels of pain severity, are more likely to be negatively affected by their pain experiences than those with medium and low anxiety sensitivity. Participants in the study were individuals referred for interdisciplinary treatment due to chronic back pain of unexplained origin. Patients with high anxiety sensitivity, when compared to low anxiety sensitivity patients, exhibited greater pain sensitivity, cognitive disruption in response to pain, greater fear of negative consequences of pain, and greater negative affect.

Pain catastrophizing is a concept that demonstrates the important relationship between anxiety sensitivity, pain behaviors, and pain-related recovery (Lackner & Quigley, 2005). Pain catastrophizing refers to the characterization of pain as awful, horrible and unbearable. For individuals with high levels of pain catastrophizing tend to augment or enhance perception of pain by increasing attention to the painful stimuli and intensifying emotional response to pain (Gracely, et al., 2004). High catastrophizing
ratings are associated with longer and more frequent hospitalizations, increased over-the-counter analgesics, and increased disability due to pain (Sullivan, et al., 2001).

Social Factors Influencing the Subject

Among social factors often associated with the development of disability after a painful injury are lower income and job dissatisfaction (Bruns & Disorbio, 2013; Johannes, Le, Zhou, Johnston, & Dworkin, 2010). Milijkovic et al. (2014) assessed the relationship between socioeconomic status and chronic pain variables. Results indicated that lower socioeconomic status was associated with lower pain tolerance and narrower pain tolerance interval, though not pain threshold, even when controlling for age, gender, and psychological variables. In efforts to determine prevalence of chronic pain, Freburger, et al. (2009) conducted a cross-sectional telephone survey regarding chronic low back pain that included over 4,000 households. The survey was originally conducted in 1992, then again in 2006. Results for both years were consistent in indicating low income is associated with increased prevalence of low back pain. Though low income and manual labor do indicate a positive relationship, the association between low income and physical labor alone does not adequately explain the increased incidence of low back pain for individuals reporting chronic pain (Waddell & Burton, 2001).

Low job satisfaction has been identified as a risk factor for low back pain conditions (Valat, Goupille, & Védere, 1997). The link between job dissatisfaction and increased prevalence of chronic pain was likewise supported by a study by Ratinaud,
Chamoux, Glace and Coudeyre (2013). Authors conducted an internet-based survey of over 5,000 individuals. Out of these responses, they found that poor job satisfaction was associated with a higher prevalence of chronic pain conditions. This association remained significant after controlling for severe depressive symptoms (Ratinaud, Chamoux, Glace and Coudeyre, 2013).

The work of Johnson, Cooper, Cartwright, Donald, Taylor, & Millet (2005) on levels of stress across occupations identified factors that predict a high-stress profession. Psychological well-being, physical health, and job satisfaction were shown to be important indicators contributing to occupational stress. Across 26 different occupations, six occupations were reported to garner worse-than-average scores for all three factors: teacher, police officers, ambulance workers, social services, customer service workers, and prison workers. Work overload, lack of control of work issues, emotional demands, and threat of workplace violence were proposed as possible contributors to occupational stress (Johnson, et al., 2005). Consistent with this finding, Van Droogenbroeck, Spruyt, & Vanroelen, (2014) reported teachers are most susceptible to burn out among contact professions studied (e.g., nurses, physicians, social workers, and teachers).

Demographic, psychological, and social factors are consistently found related to pain conditions identified in literature. Some professions may be especially vulnerable to the development of chronic pain conditions. Professions characterized by high levels of stress, poor job satisfaction, and that are comprised by a high percentage of females have
high number of risk factors for chronic pain conditions. When viewed in the context of the current economic and educational environments, it is possible that the combination of factors may position the teaching profession among the most stressful of occupations (Johnson, et al., 2005).

The Indirect Link between the Teaching Profession and Chronic Pain

Teachers may be at high risk to develop chronic pain in comparison to the general population (Bogaert, et al., 2014). Factors contributing to teachers’ susceptibility to involvement in painful injuries are awkward postures (Yue, Liu, & Li, 2012) and nursing care (e.g., carrying, lifting, transferring, providing toileting assistance) (Claus, et al., 2014). Teachers working in specific fields such as early childhood, music, and with individuals having physical disabilities, show an increased risk to have pain injuries due to physical demands such as manual assistance to students and repetitive movements (Claus, et al., 2014; Erick & Smith, 2011). Secondary school teachers may have increased pain as a result of the demands of lengthy standing, overhead writing, and sitting with a head-down posture, such as when grading student work (Bogaert, De Martelaer, DeForche, Clarys, & Zinzen, 2014; Chiu & Lam, 2007).

The demographic factors of sex and age may contribute to the pain conditions among teachers (Claus, et al., 2014). Educators are disproportionately female. Snyder and Dillow (2015) reported that 76% of public school teachers in the United States are female. The higher risk of developing pain conditions for females may be due to
relatively lower muscle strength in comparison to males. Muscle strength has demonstrated a positive relationship with pain threshold. It is likely that lower strength yields lower pain thresholds and results in higher rates of pain for females (Chiu & Lam, 2007). Additionally, because females are generally shorter than males, their size may represent a disadvantage where positioning is concerned (Erick & Smith, 2011). Age is a factor consistently associated with chronic pain in the general population (Von Korff, et al., 2005) and in teacher populations (Erick & Smith, 2011). Considering over 56% of U.S. teachers were over the age of 40 for school year 2011-12 (Snyder, de Brey, & Dillow, 2016), teachers are likely to be a vulnerable population.

Salaries, a factor often tied to job satisfaction, of elementary and secondary school teachers in the U.S. have not been commensurate with that of other professionals and the disparity is growing. Public and private teacher pay, in comparison to other college graduates, has not kept pace. A 2008 study of public school teachers’ salaries showed they earned an average of 15% less than comparable workers during the year 2006. Historical trends indicate that from 1960-2000, public school teachers’ earnings fell from a wage advantage of 14.7% (1960) to a disadvantage of 13.2% (2000) (Allegretto & Tojerow, 2014), when compared with comparably educated workers. Not surprisingly, higher salaries are associated with higher retention rates for teachers at all stages of their careers (Borman & Dowling, 2008). Presumably, higher salaries increase job satisfaction, leading to improved retention.
A body of research suggests teacher satisfaction is associated with a variety of non-monetary characteristics (Kyriacou, 2001). Data suggest both physical resources (e.g., facilities, textbooks) and organizational culture (e.g., decision-making influence, administrator support, safety, relationships with parents and colleagues) significantly affect teachers’ decisions to remain in a particular position (Darling-Hammond, 2007). These other factors are salient as survey data indicates that teaching is a high stress profession. When teachers rate their experience of stress at work about 25% typically regard teaching as a ‘very or extremely stressful’ job. A study based on 160 interviews with high school teachers in Switzerland found that among the most common reasons for leaving teaching were fatigue, nervous tension, frustration, wear and tear, difficulties in adapting to pupils, personal fragility and routine (Kyricou, 2001). Prolonged stress can lead to teacher burnout (Richards, 2012).

Organizational and occupational factors associated with increased teacher stress include the concepts of educationalization and intensification (Van Droogenbroeck, Spruyt & Vanroelen, 2014). Educationalization refers to the increasing responsibility of the education system for addressing social problems (e.g., drug abuse, health education, etc.) and concerns formerly considered within the purview of families. Intensification refers to the increasing external pressures teachers feel from policymakers, supervisors, parents, and experts and the expansion of teachers’ professional duties that include an increase in nonteaching-related (largely administrative) workload, with less
time for social contact with colleagues and in private life. Excessive pressure and weak administrative support have been identified as factors that contribute to teacher demoralization (Jo, 2014).

While organizational factors influence teacher stress, personal factors are also of interest. Jo (2014) studied the impact of teachers’ emotions on their relationships with students, colleagues, and organizational commitment. An online survey was completed by 448 elementary, middle, and high school teachers in South Korea. Findings included favorable teacher-student relationships were associated with positive emotions and supported increased job satisfaction. Additionally, excessive pressure due to increasing workload, was found to weaken student-teacher relationships and enhance the likelihood of feelings of guilt and shame. The implication indicated was that increased workload reduced time available to foster satisfactory relationships with others and negatively affected teachers’ perceived efficacy (Jo, 2014).

In a study on the nature and influences of teacher identity, researchers recognized the tension between personal and professional aspects of teachers’ lives (Day, Kington, Stobart, & Sammons, 2006). Based on existing literature and a study of 300 English teachers, the authors commented that teachers’ inability to fulfill both internal and external standards resulted in feelings of pressure, guilt, and inadequacy. Additionally, teacher’s perceptions of alienation from authorities (e.g., school, local education agency, governmental body) were noted to result in discord between personal and professional
identities that led, in some instances, to leaving teaching positions. Because of their substantial emotional investment in their careers, teachers experience negative emotions when standard practices and principles are questioned, when esteem from parents and the public is reduced, and external evaluation takes place. Feelings of vulnerability, inadequacy, fatigue, and anxiety often result (Day, Kington, Stobart, & Sammons, 2006).

Teachers pursue a career in the field for the personal satisfaction of teaching and end up overwhelmed by demands (Van Droogenbroeck, Spruyt, & Vanroelen, 2014). In an online study of 631 teachers employed in public education in the southwestern U.S., teachers reporting feeling less efficacy reported greater intentions to leave their positions (Martin, Sass, & Schmidt, 2012). The study included measures of efficacy, stress, management (behavior and instructional), job satisfaction, and intent-to-leave. As expected, the majority of teachers were females (78.8%). Elementary, middle, and high school assignments were well-represented and ages of participants ranged from 22-78 with a mean of almost 43 years of age. Middle and high school teachers indicated lower levels of job satisfaction in comparison to elementary teachers. Among factors associated with intent-to-leave were high stress from student behaviors, high emotional exhaustion, and low personal accomplishment. Female educators report both higher emotional exhaustion and lower personal accomplishment (Martin, Sass, & Schmidt, 2012; Van Droogenbroeck, Spruyt, & Vanroelen, 2014). These are factors of great importance given the aforementioned prevalence (76%) of female teachers in the U.S.
Studies investigating individuals who may be particularly susceptible to the pressures of teaching identified unique variables that are likely contributors. Schlichte, Yssel, and Merbler (2005) identified novice teachers as likely to leave the field due to lack of personal satisfaction, feeling overwhelmed by professional responsibilities, and lack of mentoring. Other researchers suggested that senior teachers may be unusually vulnerable due to changes in the field related to increased accountability and a constant requirement to prove competence that serves to undermine professional self-confidence (Van Droogenbroeck, Spruyt, & Vanroelen, 2014). Work overload and the emotional labor involved were cited by Johnson, et al. (2005) as factors likely contributing to the high stress of teaching.

In a study addressing job strain in teaching, 1,028 Finnish teachers were surveyed through a paper-based questionnaire (Santavirta, Solovieva, &Theorell, 2007). Researchers investigated the interaction of job demands and decision authority as it related to emotional exhaustion (e.g., overload and inefficiency), emotional well-being (e.g., depression, anxiety, happiness) and vitality (e.g., physical health, fatigue). The representative sample was obtained by mailing the survey to nearly all teachers in the country and consisted of 25% male participants and 75% female participants. Approximately 1/3 were from each level (primary, lower secondary school, and upper secondary school). Mean age was 43 years with an average of 17 years teaching experience. Results indicated 27% of all teachers reported they were unable to recover
sufficiently from work over the weekend and 24% reported chronic disease. Vitality values reported by teachers were low in comparison to the general population for Finish women. High work demand was shown to represent a greater risk factor than low decision authority alone; however, the interaction effect of high demands and low decision authority (i.e., autonomy), was shown to have the most deleterious effects on all three outcome measures (e.g., emotional exhaustion, emotional well-being, vitality). Implications indicated by the authors included reducing demands on teachers while improving decision-making authority. Additionally, authors commented on the relevance of epidemiological studies indicating the relationship between job demands, job control and negative health outcomes, specifically with regard to musculoskeletal disease (Santavirta, Solovieva, &Theorell, 2007).

Ceballos & Santos (2015) constructed a Well-Being-At-Work scale to address affect and satisfaction related to work in the field of teaching. Their work indicated low scores were associated with increased pain in the neck, shoulders, and ankles/feet. The same authors reported a Common Mental Disorders indicator as positively associated with multiple types of pain including pain in the neck, shoulders, hands/wrists, lower back, and ankles/feet. Factors including increased length of work time (Ceballos & Santos, 2015) and elements related to lower job satisfaction (Wang, Hall, & Rahimi, 2015) are associated with increased pain and other health-related concerns for teachers.
According the U.S. Department of Education’s Center for Educational Statistics (Snyder, de Brey, & Dillow, 2016), the number of full-time public school teachers in the United States was over 3 million in 2015. Of these, 76% were female and 56% were over the age of 40. Their classes averaged just over 21 students at the elementary level and near 27 students at the secondary level. For the 2011-12 school year, 8% of public school teachers left the profession. Of the leavers for school year 2012-13, 51% reported their work load was more satisfactory in subsequent employment than in teaching and 53% reported improved working conditions (Goldring, Taie, & Riddles, 2014).

International studies suggest teachers actually experience an increased rate of chronic pain in comparison to the general population (Bogaert, et al., 2014). In a study of existing literature, Erick & Smith (2011) reviewed 33 articles from the MEDLINE and EMBASE databases reporting on prevalence and/or risk factors for musculoskeletal disorders (e.g., neck pain, shoulder pain, upper limb pain, upper back pain, lower back pain) among teachers. Data included studies of teachers from countries around the world, including Turkey, China, Australia, Germany, US, Sweden, Estonia, Japan, Malaysia, and Brazil. Teaching assignments varied greatly and included music, physical education, special education, early childhood, primary, secondary, and high school. The reviewers included studies from years 1981-2011. Overall, a high prevalence of musculoskeletal disorders was indicated. When comparing assignments among teachers, those in physical education were at decreased risk while those in early childhood/nursery school, music,
and working with physically disabled students were at increased risk of musculoskeletal disorders. Individual risk factors reported included female gender and long working hours. Equivocal results were noted for age and length of employment. Data was interpreted as suggesting that 1) those new to the field may have difficulty adapting to demands of the occupation and 2) cumulative effects of working may increase musculoskeletal problems. Postures of kneeling, stooping, squatting, and bending were associated with chronic pain for Japanese and U.S. preschool teachers. Psychosocial factors consistently associated with chronic pain include high perceived stress, high demand, low job control, monotonous work, and low job satisfaction. Reviewers concluded that teachers represent a population at risk for musculoskeletal chronic pain (Erick & Smith, 2011).

Among the studies included in this review was a study by Chiu and Lam (2007) conducted in Hong Kong. Surveys were sent to schools selected through a computer-generated random list of secondary schools. Information on background, health history, pain, coping strategies, physical risk factors, and psychosocial risk for selected teachers was collected through use of a 5-point Likert scale. Researchers analyzed the 3,100 returned surveys and reported a one-year prevalence of neck pain of 66.7%. Additionally, one-year prevalence of upper limb pain was reported at 35.8% for the teachers. Significant differences for one-year prevalence were found between male teachers and female teachers for both neck pain (47.4% vs. 68.8%) and upper limb pain (24.3% vs.
One-year prevalence of neck pain was highest for teachers age 31-35 while upper limb pain was highest for teachers \( \geq 46 \). Physical behaviors of head down posture (such as when correcting assignments), writing overhead, and working with a computer, were risk factors for pain. Psychosocial factors associated with increased neck and upper limb pain identified in the study included high work load, high job stress, high anxiety, low colleague support, low job satisfaction, and low family support. Less experienced teachers (0-5 years) reported the highest life-long prevalence of neck pain, which researchers postulated may be related to difficulty adapting to the physical and mental demands of the occupation (Chiu & Lam, 2007).

Recently, Korkmaz, Cavlak, and Telci (2011), conducted a study of 900 Turkish teachers. Participants were recruited from across different regions of the country in efforts to represent the teacher population as a whole. Primary, secondary, and high school teachers from state and public schools were included. The teachers completed questionnaires during the school day under the supervision of a physiotherapist. The reported rate of musculoskeletal pain for the sample was 51.4%. Female teachers were noted to report increased back pain (upper and lower) and wrist pain in comparison to males. Females reporting pain were likely to indicate multiple sites (74%) and were also more likely (78.8%) to use pain killers than their male counterparts. Researchers reported awkward position, especially reaching overhead, is associated with pain, and this
is most relevant for females due to lower mean height (Korkmaz, Cavlak, and Telci, 2011).

Teachers in the U.S. may be prone to develop chronic pain after a painful injury (Bogaert, et al., 2014). Psychosocial factors consistently associated with chronic pain include high perceived stress, high demand, low job control, and low job satisfaction. These same factors are noted as highly prevalent in the teaching profession. Demographics (e.g., high prevalence of female gender, majority over age of 40), physical demands (e.g., awkward positions such as overhead reaching, repetitive movements, head down posture), occupational factors (e.g., high workload, time pressure, pay dissatisfaction, low autonomy), and psychological factors (e.g., guilt, fatigue, nervous tension, frustration, emotional exhaustion) may contribute to teachers’ at-risk status.

Both research conducted internationally for teachers and identified risk factors for pain suggest that U.S. teachers are likely to be at increased risk in comparison to the U.S. general population. The combination of occupational and demographic factors common for U.S. teachers may result in increased reports of chronic pain.

Religiosity/Spirituality and Health

According to the Pew Research Center (Smith & Cooper, 2015), slightly over 70% of Americans indicate a religious preference. Spirituality/religiosity coping may be an important contributor to overall quality of life (World Health Organization, 2006). Religious or spiritual strategies to cope with pain include prayer, seeking spiritual
support, church attendance (Bussing et al, 2009), meditation techniques, and reading a religious specific text (Koenig, Larson, & Larson, 2001). These religious beliefs and practices are widely believed to provide health and wellness benefits to those who employ them. Koenig, Larson, and Larson (2001) reported that nearly 850 studies addressed the relationship between religious involvement and mental health indicators and that the “vast majority” indicated benefits including lower rates of depression and anxiety.

In general, individuals with physical health concerns often report using religious/spiritual coping strategies to deal with symptoms. In a study conducted with over 31,000 U.S. individuals, prayer was the most commonly reported complementary way of dealing with their health concerns. When asked about prayer for health, 43% of the sample reported use of prayer for own health, 24.4% reported use of prayer by others for own health, and 9.6% reported participation in a prayer group for health-concerns (Barnes, Powell-Griner, McFann, & Nahin, 2004).

Similar results were obtained in a study examining prevalence and patterns of use of prayer. McCaffrey, Eisenberg, Legedza, Davis, and Phillips (2004) conducted a national survey of 2,055 participants to determine use of prayer, use of conventional medicine, use of complementary and alternative medicine. Using multivariate logistic regression, factors associated with increased use of prayer included higher age, female sex, education beyond high school, and having a condition such as depression, chronic
pain, and back/neck pain. Over one-third (35%) of participants reported using prayer for health concerns, with 69% of those indicating the practice was “very helpful” (McCaffrey, Eisenberg, Legedza, Davis, & Phillips, 2004).

Maselko & Kubzansky (2006) analyzed a sample of 1,445 non-institutionalized English speaking adults (ages 18-65) who completed a Spirituality/Religiosity module of the 1998 U.S. General Social Survey. Participants were asked about public religious activity (e.g., frequency of church attendance, choir practice, Bible study), private religious activity (e.g., frequency of religious meditation, prayer outside church, reading the Bible), and spiritual experiences (e.g., feeling inner peace, feeling “touched by the beauty of creation”). Participants also answered questions regarding health and well-being. The majority of participants were Protestant (57%) or Catholic (39%). Because the questions reflected a Judeo/Christian emphasis, analyses did not include those reporting religious affiliations of Hindu, Buddhist, Muslim, Native American, or Other. For men, results indicated public religious activity powerfully predicted improved health and well-being, private religious activity was associated with increased happiness and improved health, and spiritual experiences were associated with increased happiness. For women, both public religious activity and spiritual experiences were associated with greater health and well-being. Private religious activity was associated with increased happiness. Religious or spiritual activities indicated by various researchers include prayer, seeking
spiritual support, church attendance, (Bussing et. al, 2009), meditation techniques, reading the Bible and reading the Koran (Koenig, Larson, & Larson, 2001).

It seems that not all religious/spiritual coping strategies yield perceived benefits. Allport (1950), commented on the nexus of religion and psychology and noted the variation in the health outcomes of individuals with intrinsic (i.e., reflecting altruistic ideals) versus and extrinsic (i.e., reflecting self-serving ends) motivations. He suggested that only intrinsically motivated religiosity was associated with positive health outcomes. Supporting Allport’s hypothesis, increased thoughts of suicide have been associated with negative religious coping style (e.g., such as feeling as if punishment is warranted) (Trevino, Balboni, Zollfrank, Balboni, & Prigerson, 2014). Among individuals associated with an organized religious institution, religious coping styles have been shown to differ. Pargament et al., (1988) studied religious coping approaches in 197 Presbyterian and Lutheran church members from the Midwestern U.S. Participants were classified by church leadership as more active or less active. Fifty from each group were contacted by church leaders and asked to take part in the survey. In a group format at their home church, participants completed an anonymous questionnaire measuring level of religiosity, competence and problem-solving. Researchers noted three types of coping approaches: a) the self-directing approach in which people rely on their God’s given resources; b) the deferring approach in which people relinquish the responsibility for problem solving to God; and 3) the collaborative approach in which people partner with
God in the problem-solving process. Results indicated styles had distinctive correlates: self-directing approach was linked to higher self-esteem and greater sense of personal control; the deferring approach was linked to lower self-esteem, greater sense of control by chance, lower personal control, poorer problem solving skills and greater intolerance for differences between people; and the collaborative approach was linked with greater self-esteem, greater sense of personal control, and a lower sense of control by chance. Additionally, researchers indicated that an individual may alternate between the different coping styles depending upon the nature of the stressor (e.g., personally controllable, out of sphere of influence) experienced at a given time.

Pargament, Smith, Koeniz, and Perez (1998) examined results of both positive and negative religious coping approaches on managing stress. A sample of adults ranging from college age to elderly individuals completed a 14-item scale sampling both positive and negative religious coping strategies. The positive approaches included benevolent religious appraisals of negative situations, collaborative religious coping, seeking spiritual support from God, seeking support from church leader or congregation, religious service to others and religious forgiveness. Use of positive religious coping was associated with lower psychosomatic symptomology. Negative religious coping included questioning the power of God, expressing discontent with church leader and congregation members, ascribing punitive intent to negative situations and evil religious appraisals. The use of negative religious coping was associated with poorer physical health and
higher psychosomatic symptomology (Pargament, Smith, Koeniz, & Perez 1998).

Overall, this study suggests that the type of religious approach a person takes will have an impact on health outcomes. With regard to chronic pain patients, religious coping strategies have been associated with benefits including improved mood (World Health Organization, 2006).

In a review of literature on religious/spiritual coping in the chronic pain population, Rippentropp (2005) indicated that the relationship between religion-spirituality and health has been documented and generally found to be salutary. The author went on to explain that religious and spiritual beliefs may have cognitive and emotional influences that alter pain perception. Cross-sectional studies that measured general religious-spiritual coping strategies and pain-related outcomes revealed mixed results. In contrast, studies differentiating between positive religious-spiritual coping strategies and negative religious-spiritual coping strategies revealed that positive religious-spiritual coping strategies were related to positive affect. Longitudinal studies indicated individuals use of religious-spiritual coping strategies vary over time, but that religious-spiritual coping was related to lower levels of pain, better mood, and increased social support. An experimental design study was also reported, though methodological concerns were expressed. In the experimental design a religious-spiritual treatment involving a combination of intercessory prayer and laying on of hands/healing touch was provided to participants in the treatment group for a 3-day period. Results indicated the
group had fewer swollen joints and less disability in comparison to the control group.

Conclusions of the study suggest that health care personnel should talk with their patients to understand how their religious-spiritual beliefs may impact health (Rippentropp, 2005).

In summary, positive religious/spiritual coping strategies are frequently employed and believed to be helpful. Positive religious coping such as prayer, seeking the support of God and other people, and attending church services, seem to be associated with less depression and anxiety, improved quality of life, and more positive affect among chronic pain patients. On the other hand, negative religious coping, such as ascribing punishment from God, are associated suicidal ideation, poorer physical health and higher psychosomatic symptomology (Pargament, et al., 1998). In general, religiosity and/or spirituality has been shown overall beneficial effects (Rippentropp, 2005).
Rationale, Purpose and Hypotheses

Demographic and social factors may increase the likelihood that teachers develop stress-related health concerns including chronic pain. It is essential to investigate the factors that predict the development of chronic pain in teachers given the increased presence of psychosocial risk factors for the group. It is also imperative to determine if there are coping strategies that decrease pain effectively for teachers. In particular, religious/spiritual coping strategies are of interest.

The purpose of the study is to investigate the relationships between stress, chronic pain, and positive religious/spiritual coping in a particular population: public school teachers. Specifically, the current study will investigate whether factors that predict chronic pain in the general population also predict chronic pain in teachers. Additionally, the study will determine whether positive religious/spiritual coping strategies moderate the relationship between teachers’ stress and pain. It is hypothesized that 1) stress will significantly predict the report of chronic pain in teachers as measured by their reported pain conditions, level of pain catastrophization and number of injury and illnesses; 2) positive religious/spiritual coping strategies will moderate the relationship between teacher stress and report of chronic pain as measured by the same variables.
CHAPTER III

Method

Participants

Participants were recruited primarily through social media forums designed for teachers. The primary researcher joined groups designed for teachers in multiple states and with various specialties (e.g., secondary math, kindergarten, art, etc.) Links to the survey were included with a brief request for participation. Additionally, email was used to share the survey link to professional contacts with a request to distribute. Participants were self-reported employed public teachers currently assigned to a pre-kindergarten through 12th grade position in the United States. The study was approved by the Institutional Review Board (IRB). A total of 337 teachers completed 90% or more of the items on the survey were initially included in the study. Demographic analysis of the full sample indicates the age of participants ($M = 39.87, SD = 10.31$) was similar to the population of teachers in the U.S. ($M = 42.2$) (Coopersmith, 2009). The sample was comprised primarily of females (96.7%). Males (0.9%) and Other/Unspecified (2.4%) comprised the remainder of participants. Most participants reported having several years' experience in teaching ($M = 11.95, SD = 8.79$). Participants reported a variety of ethnicities including American Indian or Alaska Native (2.4%), Black or African American (1.2%), Hispanic/Latino (3.6%), Native Hawaiian or Pacific Islander (0.3%).
White (97.3%), and Other (0.9%). Grade/levels taught were represented as follows: Early Childhood/PreK-K (46.8%), Elementary/grades 1-5 (33.1%), Middle-Junior High/grades 6-8 (10.3%), Secondary-High School/grades 9-12 (9.7%). Teachers whose primary assignment was in general education comprised the majority of the sample (77.5%), with special education teachers (22.2%) also adequately represented. Participants indicated the highest degree held as Bachelors (50.2%), Masters/Specialist (48.6%), Doctorate (0.3%) or Other (0.9%).

Participants reported physical demands are common to the field of teaching. Teachers reported the following at a rate of Often or Very Often: lifting or carrying heavy loads (75.96%), lifting or positioning students (10.09 %), work or reach overhead (28.27 %), work in a head-down position (58.08 %), stand for extended periods of time (82.49 %).

Measures

Demographics. Demographic information was evaluated to determine suitability for inclusion in the study. The demographic/medical history survey tool was researcher-generated and developed through review of similar questionnaires widely available on insurance and physician web-sites. The primary consideration for demographics was current employment in a teaching capacity in a public school. Exclusionary criteria included primary assignment other than teaching (e.g., speech therapist, administrator, etc.), reported age that appeared unreasonable for a presumed college graduate (e.g., 18 years) and completion of less than 90% of the survey. Additional information collected
included gender, age, length of employment in same/similar position, and nature of assignment (e.g., special education, general education, physical education, music, elementary, etc.).

**Medical History:** Health history as well as nature and frequency of recent health service utilization was also collected through the aforementioned researcher-generated questionnaire. Health history related to pain conditions was collected. Examples of data requested included number of visits to medical or mental health providers (e.g., physician, psychologist, counselor), number of times hospitalized, previous and current diagnoses (e.g., anxiety, depression, fibromyalgia, etc.), use of medications and substances (e.g., prescription, over-the-counter, alcohol, marijuana), and surgical intervention. Responses to injury and illness questions were utilized to determine the nature of injuries causing pain (e.g., falls, repetitive use), site(s) of pain (e.g., lower back, neck, shoulder, leg) and treatments provided (e.g., surgery, prescription pain medication, injections). Additionally, data regarding the location site of treatment/services (e.g., hospital, primary care provider, emergency room) and number of visits to providers was collected. In order to reflect the responses to pain-related questions, aggregate variables were created. Responses to items related to the presence of pain were grouped to reflect the variable named *Total Pain (TotPain).* Responses to items related to injuries and illnesses were grouped to reflect the variable named *Total Injury and Illness (TotInjIll).*
Physical Demands. A physical demands measure consisting of a five-item scale was used to describe the sample. Participants were asked to indicate the frequency (never, rarely, sometimes, often, very often) with which they engaged in activities such as carrying or lifting heavy loads, lifting or positioning students, working overhead, working in a head-down position, and standing for extended periods. The items were developed through the primary researcher’s familiarity with common physical demands involved in teaching.

The Brief RCOPE (Pargament, Feuille, & Burdzy, 2011) was used to measure the extent and nature of religious coping activities. The 14-item survey is divided into two subscales, each consisting of seven items, which identify clusters of positive religious coping (PRC) and negative religious coping (NRC) methods. A four-point Likert scale ranging from 0 (“not at all”) to 3 (“a great deal”) measures extent of coping activity. The median alpha for the PRC scale was 0.92. The median alpha reported for the NRC scale was 0.81 (Pargament, Feuille, & Burdzy, 2011). This value is not specific to the current sample. For the purpose of this study, only the positive religious coping method was used as a predictor because this variable is associated with improved health-related outcomes (Koenig, Pargament, & Nielsen, 1998).

The Pain Catastrophizing Scale (PCS) (Sullivan, Bishop, & Pivik, 1995) was employed to measure the construct of pain catastrophizing, which assesses the exaggerated negative mental set brought to bear during actual or anticipated painful
experience. The PCS consists of 13 statements related to pain each rated from 0 (Not at all) to a 4 (All the time) on a Likert scale, according to the degree felt during painful experiences. Internal consistency reliability is as follows: Cronbach’s α coefficient for the Total score-0.87; Rumination-0.87; Magnification-0.66; Helplessness-0.78. Cronbach’s α is non-sample specific. This measure was selected because PCS scores correlate with chronic pain, and significantly predict surgical outcome (Sullivan, Bishop, & Pivik, 1995).

The Teacher Stress Inventory (TSI) (Fimian, 1988) was used to assess perceived sources of stress among teachers. The TSI is a 49-item, 10-factor instrument that assesses the degree of strength of occupational stress experienced by American teachers in the public schools. Items are rated on a Likert scale from 1 (no strength; not noticeable) to 5 (major strength; extremely noticeable). The TSI includes 10 subscales, 5 of which measure sources of stress and 5 that measure manifestations of stress, that contribute to the Total Stress scale. Cronbach’s α coefficient is .93 for the combined scale. The Cronbach’s α reported is not specific to the current sample.

Job Satisfaction. A job satisfaction measure consisting of a four-item scale was used. The items were: “I enjoy working as a teacher,” “I look forward to going to school every day,” “Working as a teacher is extremely rewarding,” and “When I get up in the morning, I look forward to going to work.” This scale, used by Skaalvik and Skaalvik (2011) to investigate teachers’ job satisfaction and intent to leave the profession, was
found to have good reliability. Cronbach’s $\alpha$ for the scale was .91 (Skaalvik & Skaalvik, 2011). The Cronbach’s $\alpha$ reported is not specific to the current sample.
CHAPTER IV

Results

Chronic Pain in the Sample

Before conducting the analyses, the current sample of teachers was described in terms of pain-related variables. Table 1 presents a description of chronic pain in the current sample. In specific, this table presents the reports of chronic pain, symptoms/conditions, pain-related injuries and illnesses and pain catastrophization. Results indicate about 40% of teachers report pain at any given time. Participants also reported several pain conditions with high frequencies. More than 50% of participants reported headaches, shoulder pain, neck pain, lower back pain, and anxiety. Participants were more likely to report injuries and illnesses with an obvious association to teaching (e.g. repetitive use, overuse, standing) than those with less direct links (e.g., falls, sports, unknown etiology). In fact, injuries or illnesses related to repetitive use/overuse and/or standing were reported by about 35% of participants. Therefore, pain-related problems affect a substantial proportion of teachers in the current sample. However, on average, the sample scored low on the PCS 8.92 ($sd = 11.45$). These scores indicate that on average the sample demonstrated less psychological disturbance compared to the norm of individuals with chronic pain who demonstrate an average PCS score of 20 (Sullivan, Bishop, & Pivik, 1995).
Table 1


<table>
<thead>
<tr>
<th>Symptoms</th>
<th>n</th>
<th>%</th>
<th>Injury/Illnesses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>337</td>
<td>77.7</td>
<td>Falls</td>
<td>337</td>
<td>11.3</td>
</tr>
<tr>
<td>Shoulder pain</td>
<td>336</td>
<td>53.6</td>
<td>Repetitive use/repetitive strain/overuse</td>
<td>337</td>
<td>20.5</td>
</tr>
<tr>
<td>Joint pain</td>
<td>335</td>
<td>48.4</td>
<td>Sports injury</td>
<td>337</td>
<td>5.6</td>
</tr>
<tr>
<td>Swollen/inflamed joints</td>
<td>335</td>
<td>31.0</td>
<td>Lifting</td>
<td>337</td>
<td>9.8</td>
</tr>
<tr>
<td>Hip pain</td>
<td>337</td>
<td>27.9</td>
<td>Standing</td>
<td>337</td>
<td>14.8</td>
</tr>
<tr>
<td>Knee pain</td>
<td>335</td>
<td>34.6</td>
<td>Other work-related reasons</td>
<td>337</td>
<td>10.1</td>
</tr>
<tr>
<td>Neck pain</td>
<td>335</td>
<td>55.2</td>
<td>Unspecified or unknown etiology</td>
<td>337</td>
<td>8.0</td>
</tr>
<tr>
<td>Lower back pain</td>
<td>334</td>
<td>59.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper back pain</td>
<td>328</td>
<td>38.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leg pain</td>
<td>335</td>
<td>26.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone pain</td>
<td>332</td>
<td>9.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle weakness</td>
<td>330</td>
<td>13.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of motion problem</td>
<td>337</td>
<td>16.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic fatigue syndrome</td>
<td>332</td>
<td>25.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>331</td>
<td>38.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>332</td>
<td>38.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>330</td>
<td>55.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current chronic pain</strong></td>
<td></td>
<td></td>
<td></td>
<td>337</td>
<td>39.5</td>
</tr>
<tr>
<td><strong>Chronic pain within past year</strong></td>
<td></td>
<td></td>
<td></td>
<td>337</td>
<td>42.4</td>
</tr>
</tbody>
</table>

N=337

In addition, bivariate correlations were conducted for the pain-related variables (i.e. total number of pain symptoms, total number of injuries and illnesses, and levels of catastrophization) to confirm if these variables correlate with each other without demonstrating collinearity. A positive significant correlation between Total Pain and PCS ($r = .371$, $p < .001$), between Total Pain and Total Injury and Illness ($r = .283$, $p < .001$),
and between PCS and Total Injury and Illness ($r = .145, p<.05$) was noted. Results suggest that teachers who report more pain symptoms also have more pain-related injuries and have more pain-related cognitive consequences, as suggested by the literature.

**Assumptions**

Prior to the main analyses, the statistical assumptions of normality and linearity were checked. Variables Total Teacher Stress Inventory (TSI), Positive Religious Coping (PRC), Total Pain (TotPain), Total Injury and Illness (TotInjIll), and Pain Catastrophization Scale (PCS) were included. Results indicated normal distributions for TSI, TotPain, and PRC. Two variables were characterized by non-normal distributions. The PCS distribution demonstrated high kurtosis ($M = 2.40, SE = 0.32$) and positive skewness ($M = 1.71, SE = 0.16$) while TotInjIll was characterized by high kurtosis ($M = 3.15, SE = 0.32$) and negative skewness ($M = -1.75, SE = 0.16$). Because the sample represents an employed, and presumably sufficiently healthy to work, population, the PCS distribution is not unexpected. Results indicated an observed acceptable linearity for all bivariate relationships. Finally, univariate outliers were tested. Cases were classified as outliers when there was a score of + or - 3 $sd$ on 2 or more variables (Ratcliff, 1993). Based on these criteria, no cases were excluded. The final sample consisted of 337.

**Hypothesis 1**
Regression analyses were conducted to test hypothesis 1, that is, to determine whether teacher stress predicted pain-related characteristics. Table 2 displays the results of regression analyses. Teacher stress significantly predicted both pain and catastrophization but failed to predict injury and illness. Therefore, hypothesis 1 was partially supported. Results suggest that stress relates to reports of pain and cognitive appraisals of pain, but not to the number of injuries and illnesses experienced. Please note that subsequent moderation analysis included pain and catastrophization only as injury and illness was not predicted by stress.

Table 2

Direct Relationships between Teacher Stress and Pain-Related Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
<th>F</th>
<th>R²</th>
<th>p≤</th>
</tr>
</thead>
<tbody>
<tr>
<td>TotPain</td>
<td>.40</td>
<td>48.82</td>
<td>.16</td>
<td>.001</td>
</tr>
<tr>
<td>PCS</td>
<td>.31</td>
<td>26.16</td>
<td>.09</td>
<td>.018</td>
</tr>
<tr>
<td>TotInjIll</td>
<td>.44</td>
<td>.54</td>
<td>.00</td>
<td>.461</td>
</tr>
</tbody>
</table>

Note: TotPain= Pain Total; PCS= Pain Catastrophizing Scale; TotInjIll= Total Injury and Illness

Hypothesis 2

Moderation analyses were conducted to determine if use of positive religious coping strategies moderated the relationship between teacher stress and chronic pain variables (hypothesis 2). Table 3 shows the relationship between teacher stress (TSI) and
pain (TotPain) was significantly moderated by use of positive religious coping strategies (PRC). However, use of positive religious coping strategies did not moderate the relationship between scores on teacher stress (TSI) and pain catastrophization (PCS) as shown in Table 4. These results partially support hypothesis 2 by indicating that positive religious coping strategies statistically moderates only the relationship between teacher stress and reports of pain.

Table 3

**Moderations with Positive Religious Coping with Dependent Variable Pain Total**

<table>
<thead>
<tr>
<th>Moderations</th>
<th>Coeff</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>.337</td>
<td>.145</td>
<td>2.330</td>
<td>.021</td>
<td>.052</td>
<td>.622</td>
</tr>
<tr>
<td>T0TSI</td>
<td>.087</td>
<td>.019</td>
<td>4.564</td>
<td>.000</td>
<td>.050</td>
<td>.125</td>
</tr>
<tr>
<td>Interaction</td>
<td>-.002</td>
<td>.001</td>
<td>-2.087</td>
<td>.038</td>
<td>-.004</td>
<td>.000</td>
</tr>
</tbody>
</table>

**DV: Pain Total**
Table 4

*Moderations with Positive Religious Coping with Dependent Variable PCS*

<table>
<thead>
<tr>
<th>Moderations</th>
<th>Coeff</th>
<th>se</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>.1396</td>
<td>.4630</td>
<td>.3016</td>
<td>.7632</td>
<td>-.7722</td>
<td>1.0515</td>
</tr>
<tr>
<td>ToTSI</td>
<td>.1342</td>
<td>.0604</td>
<td>2.2218</td>
<td>.0272</td>
<td>.0152</td>
<td>.2532</td>
</tr>
<tr>
<td>Interaction</td>
<td>-.0009</td>
<td>.0031</td>
<td>-.2979</td>
<td>.7660</td>
<td>-.0071</td>
<td>.0052</td>
</tr>
</tbody>
</table>

**DV: PCS**

**Slopes Analysis**

Given that PRC moderated the relationship between TSI and TotPain, simple slopes analysis was performed to follow up on the significant moderating effect of positive religious coping (PRC) on reported pain (TotPain). Figure 1 indicates the simple slopes equations of the regression of pain on positive religious coping at three levels of teacher stress. The slopes were unexpectedly bidirectional. Significant positive relationships were demonstrated between reported pain and use of positive religious coping strategies when teacher stress is at both low, $b = .067, 95\% \text{ CI } [0.046, 0.088], t = 6.22, p = <.001$, and medium $b = .051, 95\% \text{ CI } [0.037-0.066], t = 6.96, p = <.001$ levels. However, when teacher stress is high, there is a significant negative relationship between reported pain and use of positive religious coping strategies, $b = .036, 95\% \text{ CI } [0.015-0.056], t = 3.48, p = <.001$. See Figure 1.
Figure 1. Simple Slopes Equations of the Regression of Pain at Three Levels of Stress

Post hoc Analyses

A post-hoc multiple regression analysis was conducted to evaluate how some theoretical factors of teacher’s stress (i.e. job satisfaction, age, and physical demands of the job) predicted the chronic pain for teachers. As a model, these three factors significantly predicted the number of pain conditions reported, $F(3, 299) = 13.2, p < .001$. 
The model indicated that approximately 12% of the variance of chronic pain can be accounted for by job satisfaction, age, and physical demands. Table 5 indicates that individuals with lower job satisfaction, older and with more physical demands are more likely to report pain conditions.

Table 5

*Coefficients for Job Satisfaction, Age, and Physical Demands Predicting Chronic Pain*

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>19.708</td>
<td>1.694</td>
<td>11.634</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>-0.231</td>
<td>0.068</td>
<td>-3.408</td>
<td>0.001</td>
</tr>
<tr>
<td>Age</td>
<td>0.062</td>
<td>0.020</td>
<td>3.123</td>
<td>0.002</td>
</tr>
<tr>
<td>Physical demands</td>
<td>0.273</td>
<td>0.063</td>
<td>4.322</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Discussion

Chronic pain in the U.S. and worldwide is both widespread and costly. Many international studies indicate a high prevalence of pain conditions among teachers compared to other professions. U.S. teachers, however, have received insufficient attention and are a potentially vulnerable population due to a concentration of biopsychosocial risk factors. The current study investigated the relationship between stress and chronic pain in U.S. teachers. The data indicated a high prevalence of chronic pain among teachers. As working professionals, teachers reported high rates of current chronic pain (39.5%) and chronic pain occurring in the last year (42.4%). Additionally, and likely related, were the high prevalence rates for mental health concerns of depression (38.0%) and anxiety (55.5%). These data are consistent with the findings of international studies that suggest that U.S. teachers are vulnerable to chronic pain conditions (Erick & Smith, 2011).

The current study also assessed if job related stress predicted chronic pain, and whether positive religious strategies moderate this relationship. The hypotheses of this study were as follows: (1) stress will significantly predict the report of chronic pain in teachers as measured by their reported pain conditions, level of pain catastrophization and number of injury and illnesses; and (2) positive religious/spiritual coping strategies will moderate the relationship between teacher stress and report of chronic pain as measured by the same variables.
Hypothesis 1

The first hypothesis was partially supported. Stress functioned as a significant predictor for both reports of pain symptoms and catastrophization, however, it failed to significantly predict the number of injuries and illnesses the participants reported. Job stress and chronic pain have been frequently associated in working populations. For employed individuals with chronic pain conditions, higher daily job stress has been associated with increased pain throughout the work day (Fifield, Mcquillan, Armeli, Tennen, Reisine, & Affleck, 2004). In a longitudinal study of working adults with no pain at baseline, work stress was independently associated with pain in the neck and shoulders at follow-up. More pronounced effects were reported for those experiencing high stress more frequently (Fanavoll, Nilsen, Holtermann, & Mork, 2016). High occupational stress among teachers has been reported by various researchers for a number of years (Collie, Shapka, & Perry, 2012; Kyriacou, 2001).

Pain catastrophization, or the tendency to over-estimate and over-attend to pain, is associated with a number of poor outcomes. Higher levels of pain catastrophization predict increased anxiety, depression, disability status, use of analgesics, longer hospitalizations (Sullivan, 2009) and unemployment status (Sullivan, Stanish, Waite, Sullivan, & Tripp, 1998). In previous studies and in this study, higher catastrophizing levels were found to be associated with increased pain severity, increased incidence of development of chronic pain, and poorer quality of life after surgery (Khan et al., 2011).
Individuals with higher catastrophizing scores have also been shown to have increased difficulty with rehabilitation and returning to work (Besen, Young, & Shaw, 2015). Recent studies suggest an association between workplace psychological stressors and pain catastrophization (Karpinski, Dzurec, Fitzgerald, Bromley, & Meyers, 2013). Extremera and Rey (2014) reported higher catastrophizing was associated with a lower mental-physical health composite. Results of the current study support an association between teacher stress and health-related outcomes, suggesting that teachers who have a greater emotional burden also report more physical symptoms. Given that teachers are subject to increased pressures and responsibilities (Van Droogenbroeck, Spruyt & Vanroelen, 2014), it is possible that health-related complaints will also increase.

On the other hand, the current study found that injury and illness reports may not consistently correspond with reports of stress or pain. While increased stress and risk of occupational injury have shown a positive association (Bedno, et al., 2014; Nakata, et al., 2006), the report of pain is not consistently associated with physical injury (Severeijns, Vlaeyen, Jvan den Hout & Weber, 2001). Further, recalling specific injuries in retrospect could be considered more challenging than reporting current stressors or pain conditions. Individuals with higher levels of catastrophizing and stress may experience continuing pain after an injury, perhaps increasing pain reports without the expected report of injury.
Hypothesis 2

The second hypothesis was also partially supported. As hypothesized, positive religious/spiritual coping (PRC) strategies did demonstrate a moderating effect between teacher’s stress and pain symptoms. However, PRC did not moderate the relationship between teacher’s stress and pain catastrophizing on the stress-pain relationship. In regards to pain symptoms report, PRC moderating effects functioned differently across various levels of stress. For teachers experiencing high levels of stress, PRC strategies showed a beneficial effect. For teachers experiencing moderate stress or low stress, however, advantages were not indicated. At moderate-to-low level of stress, PRC demonstrated an unanticipated moderating effect of increasing reports of pain.

This surprising result raises some questions about the role of positive religious coping strategies on the relationship between stress and pain symptom reports. One possibility suggested in the literature is that when stress is lower, PRC strategies are less likely to be used. Pargament (2002) indicated religion may be most helpful when individuals are pushed to the limits of their resources. In the current study, results of an independent samples t-test indicated teachers with lower stress (n = 184) reported decreased positive religious coping ($M = 17.63, SE = 0.54$) in comparison to teachers with higher stress (n = 143) ($M = 18.02, SE = 0.66$); however, this difference was not statistically significant -0.40, 95% CI [-2.061, 1.270], $t(325) = -0.47, p = .640$, and effect size was small, $d = .05$. It is also possible that the RCOPE was not sufficiently sensitive
to different types of PRC strategies. Another possibility is that participants with lower levels of pain feel positive religious/spiritual coping strategies are unnecessary as other strategies, such as medication, are readily available. Illustrating this point, in a group of individuals experiencing pain in the past two weeks, 75% sought medical attention (Shi, Langer, Cohen, & Cleeland, 2007). Other strategies reported to decrease pain include relaxation techniques, applying heat, and distraction (Kwekkeboom, 2001). Injured workers were found to engage in positive self-talk to cope with pain symptoms (Phillips, Carroll, Voaklander, Gross, & Beach, 2012). When individuals perceive they have active, untried remedies available, they may be less likely to utilize religious coping strategies.

It may also be that individuals with severe/unexplained symptoms are more likely to rely on religious coping more than those with less severe conditions. In fact, it has been reported that prayer is less likely in the absence of chronic illness (Jors, Bussing, Christian Hvidt, & Baumann, 2015). In a large study of individuals reporting conditions of fibromyalgia, back pain, migraine headaches, and chronic fatigue syndrome, psychological well-being was assessed as it related to spirituality and religion (Baetz & Bowen, 2008). Chronic pain and fatigue sufferers were more likely to use prayer and spiritual coping than the general population. A combination of religion and spirituality was associated with better psychological health and use of positive coping strategies for chronic pain and fatigue sufferers.
Positive religious coping strategies may provide benefits only to those with severe pain complaints. Though a number of studies on religion and spirituality indicate health effects, including altered pain perception (Rippentropp, 2005), results of our study suggest that the reduced pain benefit may apply to a small subset of teachers. Teachers reporting chronic pain are likely to be in this category.

The current study further indicates that positive religious coping strategies are associated with increased reports of pain for some individuals. This is consistent with the work of Rapp, Rejeski, and Miller (2000), who reported increased pain, functional impairment, self-reported disability associated with elevated scores on some measures of religious coping. Private or individual spiritual practices have not been as closely associated with health benefits as public activities (Harrison, et al., 2005). Private or individual prayer may increase attending to pain. Bussing, et al. (2009) reported enhanced outcomes for individuals involved in more public religious activities (e.g., church attendance, choir practice) versus private (e.g., prayer, meditation) activities. A potential explanation for this association is that praying has been linked with catastrophizing in some studies (Rapp, Rejeski, & Miller, 2000).

In sum, although religion and spirituality have been associated with a number of beneficial outcomes, current results found that this association only occurred in teachers with very high stress. Among outcomes associated with positive religious coping strategies are reduced cardiovascular disease (Powell, Shahabi, & Thoresen, 2003),
longer life (McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000), improved immune
function and lower blood pressure (Seeman, Dubin, & Seeman, 2003). Among outcomes
associated with mental health are life satisfaction, happiness, positive affect, higher
morale (Koenig & Larson, 2001) well-being (Willits & Crider, 1988), and improved
recovery from depression (Razali, Hasanah, Aminah, & Subramaniam, 1998). The
particular mechanisms through which benefits are conferred, however, are not well
understood. Various researchers have proposed that religion can serve as a protective
factor through encouraging healthy diet, reducing stress, improving immune response,
activating lymphocyte cells that acts to contain cancerous cells, etc. (Koenig & Cohen,
2002). Others commented that religion is more beneficial for some (e.g., marginalized
groups, those with higher religious commitment, the poor, older persons) than others. Just
as the Biopsychosocial Model of Pain suggests pain is influenced by social, cultural,
environmental, psychological, and genetic factors, it is possible that religion and
spirituality influences health-related outcomes in a manner too nuanced for a measure of
pain to detect.
Implications

This study found a number of risk factors related to chronic pain in the general population seem to be concentrated in the teacher population. Among those risk factors are demographic factors (e.g., female sex) occupational factors (e.g., high stress levels, job satisfaction) and psychosocial factors (e.g., depression and anxiety). This confluence of factors has potential for impact across systems and individuals. School districts may bear the repercussions of a stressed and unhealthy teacher workforce. It is possible that expenditures related to both worker’s compensation claims for occupationally-related chronic pain conditions and replacing teachers who choose to retire or leave for health reasons could have considerable economic impact. Teacher attrition, whether through retirement, disability, or other reasons, is costly in terms of monetary losses conservatively estimated at $8 to $9 thousand per teacher (Barnes, Crowe, & Schaefer, 2007). With the high cost of attrition school districts may be best served by caring for the teachers they have rather than hiring replacements for those who have succumbed to stress-related pain conditions.

Equally as important for schools, the effects of teacher attrition and absenteeism are associated with poorer outcomes for students. Ronfeldt, Loeb, and Wyckoff (2013) conducted a longitudinal analysis and reported lower achievement for both math and
English-language arts for students affected by teacher turnover. The negative impact was shown to be disproportionately higher for minority students and there was an overall negative impact on the school climate. Teacher absenteeism, which can reasonably be presumed associated with health conditions, has also demonstrated a relationship with decreased student achievement. Substitute teachers typically do not have the skill set of classroom teachers, which may result in reduced achievement sufficient to result in students failing to meet state minimum standards for achievement (Miller, Murnane, & Willett, 2008).

School psychologists may be uniquely situated to provide a variety of mental health related services to teachers. Education on reducing stress, providing information on resources outside the school/workplace, and direct services are areas for consideration as school psychologists endeavor to benefit teachers in their schools. Given the prevalence of mental health concerns reported by teachers, specifically depression and anxiety, the expansion of mental health services to teachers is an ethical imperative. Additionally, collaboration between school psychologists and school nurses, who frequently act as consultants to teachers as well as students, is indicated. Because of the relationship between stress and pain, the involvement of the campus health care provider, the school nurse, may be beneficial to teacher health outcomes.

Administrators and trainers working in the field of education should collaborate within their spheres of influence to recognize teacher stressors amenable to change and
enact initiatives to reduce them. A review of TSI subscales suggests teachers are experiencing a great deal of stress due to a lack of time to do their work, which compromises their leisure time and is demoralizing. This finding supports the work of researchers including Jo (2014) and Van Droogenbroeck, Spruyt, and Vanroelen (2014) who indicated the strain of paperwork, documentation, and increased scrutiny from the public is among top concerns for teachers. Lastly, teacher education programs may wish to include enhanced information on self-care and stress management to students intending to work in the field of education.
As for limitations to the study, the sample was comprised almost exclusively of participants (98.8%) recruited through social media. There is a possibility that less technology-savvy, and perhaps older, teachers were less likely to participate. The sample was overrepresented for females, preK-K teachers, and whites. Despite these factors, demographics for the sample indicated similarities to the U.S. teacher population in mean age (e.g., 42.3 years), gender (e.g., overwhelmingly female), and ethnicity (e.g., 83.1% white) (Coopersmith, 2009). The sample size is reasonably large ($N = 337$), and the majority of states are represented to the extent that the study may be considered representative of teachers nationally.

A limitation that may have had a more direct impact on the results involved the lack of a measure of integration for PRC into daily life. The current did not measure aspects of religious/spiritual coping such as integration or public vs. private nature of such activities. Individuals who prioritize religious or spiritual activities may experience enhanced outcomes for stress and pain than those who never or rarely utilize these strategies (Harrison et al., 2005; Wiech, et al. (2008)).
The use of survey format for data collection represents another limitation of the study. Problems including wording of questions, length (Bradburn, et al, 1992), sample bias, retrospective self-report (Arvey, & Cavanaugh, 1995), and self-selection bias (Wright, 2005) have the potential to influence results of surveys. It is possible that the use of social media as the primary vehicle for the survey may also have effects related to the demographics of social media users and characteristics of individuals more inclined to participate in online surveys. Some research indicates women, African Americans, Latinos, younger persons, and those residing in urban areas are increasingly likely to access social media (Duggan & Brenner, 2013). Other research indicates that while the self-selection bias inherent to online-based surveys is sufficient to influence results, unit nonresponse bias may not be problematic (Hudson, Seah, Hite, & Haab, 2004). In other words, though the participants themselves may influence results, alteration of the survey manner (e.g., online vs. mail) may not impact results. With regard to data on pain, data collected within close chronological proximity to injury and/or obtained through interview may be preferable.

As for future directions, the available data may be of use in investigating teachers’ use of opioid medication to control pain. As a working population reportedly experiencing high levels of stress and chronic pain, there may be coping strategies that some teachers are utilizing effectively to remain in the workforce that could be identified.
As for reducing stress, participants provided valuable information via an available text response box. When asked to indicate strategies used to cope with stress that were not listed, a number of participants reported using exercise. Since exercise has been associated with reduced stress (Austin, Shah, & Muncer, 2005) and reduced pain (Chiu, Lam, & Hedley, 2005), this particular avenue is ripe for additional research. The relationship of TSI scores to other health-related outcomes, such as prevalence rate of surgeries and specific mental health concerns (e.g., depression and anxiety) is also of interest. Finally, potential connections between teacher stress, pain, and attrition bears further attention.
Conclusion

Overall teachers report high levels of stress and chronic pain. Stress has been shown to be related to chronic pain conditions. Positive religious/spiritual coping strategies have been identified as having an effect on the relationship between teachers’ stress and chronic pain, however, this was not found to be beneficial under all conditions. It is at the highest levels of stress, arguably when needed most, that positive religious/spiritual coping strategies serve to effectively moderate chronic pain reports. Teachers, as a population, present with a number of risk factors for chronic pain. Additional research is warranted to investigate additional strategies aimed at reducing stress and improving health outcomes. This at-risk group requires access to enhanced psychological/mental health services in order to preserve and promote their welfare.
REFERENCES


Footnotes

While chronic pain is usually referred to a result of an injury, chronic pain may also occur with no identifiable precipitating event.

In efforts to address a potentially culturally sensitive topic and clarify terminology, readers are enjoined to note the following: References to the Judeo-Christian tradition were prominent in the studies reviewed. References to God, as indicated in the review of literature, reflect the language of the authors cited. The terms religion and religiosity, and related, connote the Judeo-Christian conceptualization of an omnipotent being. The term spiritual and spirituality, and related, are more consistent with a general conceptualization of a higher power and less equated with formal or institutionalized systems of beliefs.
APPENDIX A

Demographic and Health History

DEMOGRAPHIC INFORMATION

Are you a currently a public school teacher (preK-12 in the United States? YES NO

In which state do you teach? ________________(all states and DC)

Number of years you have taught? ___________(dropdown )

What level do you primarily teach? Early Childhood (PreK-K)  Elementary (1-5)  Jr. High/ Middle (6-8)  Secondary/High School (9-12)

What is your primary assignment?  General Education  Special Education  Other

Do you teach music? YES NO

Do you teach physical education or coach? YES NO

Which is your most advanced degree? Bachelors  Masters/Specialist  Doctorate  Other

Your age: ______ (dropdown 18-80)

Your sex: Male  Female  Prefer not to answer

Your ethnicity/race:  American Indian or Alaska Native  Asian  Black or African American  Hispanic/Latino  Native Hawaiian or Pacific Islander  White  Other  Prefer not to answer

Marital Status: Single  Married  Divorced  Widowed  Separated
HEALTH HISTORY & CARE UTILIZATION

Please answer the following to the best of your recollection. If you are unsure, please estimate.

<table>
<thead>
<tr>
<th>Location and Frequency of Health Services</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How many times did you visit the hospital/clinic in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many times did you visit the private doctor in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many times did you visit an emergency room in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many times did you have to stay overnight in the hospital in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many times did you use a web-based or phone-based health provider in the last 6 months?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**At any time during the past 12 months, have you experienced the following on an ongoing or routine basis? (check all that apply)**

<table>
<thead>
<tr>
<th>Condition</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoulder pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swollen/inflamed joints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knee pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neck pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower back pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper back pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leg pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle weakness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of motion problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic fatigue syndrome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☑ all applicable

☑ If so, did you access health care such as a physician, hospital, nurse practitioner
<table>
<thead>
<tr>
<th>Depression</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panic attacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>At any time during the past 12 months, have you experienced pain as a result of the following?</strong></td>
<td>☑</td>
<td>all applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If so, did you access health care such as a physician, hospital, nurse practitioner</td>
</tr>
<tr>
<td>Falls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetitive use/repetitive strain/overuse (tendinitis, carpal tunnel syndrome, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other work-related reasons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified or unknown etiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do you currently or have you in the past used the following methods to deal with pain?</strong> (Check all that apply)</td>
<td>☑</td>
<td>all applicable</td>
</tr>
<tr>
<td>Surgery (back, neck, spine, shoulder, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injections (cortisone, trigger point, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TENS unit, electrical nerve stimulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription medication (muscle relaxers, Lyrica, Flexoril, morphine, codeine, Neurontin, Percocet, Vicodin, hydrocodone, Zoloft, Zanax, Tramadol, Prozac, or other)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the counter medications (Tylenol, Advil, Icy Hot, liniments, Motrin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary health approaches such as chiropractic, massage therapy, acupuncture, Complementary health approaches such as supplement systems (Plexus, Advocare, Thrive, etc.) or essential oils.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: Please specify________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pain History</strong></td>
<td>☑</td>
<td>all applicable</td>
</tr>
<tr>
<td>Are you currently experiencing pain that has lingered for 3 months or more?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the last year have you experienced pain that lingered 3 months or more?

At any time during the past 12 months, how often have you used the following methods to deal with emotions? (select all that apply)

<table>
<thead>
<tr>
<th>Method</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatric services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substances (e.g. tobacco, alcohol, illegal drugs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription medication (Prozac, Depakote, Xanax, Risperdal, Abilify, Seroquel, mood stabilizers, antidepressants, anti-anxiety drugs, lithium, Valium, other)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over-the counter medication or supplements (St. John’s wort, Benadryl, other)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary health approaches such as chiropractic, massage therapy, acupuncture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary health approaches such as supplement systems (Plexus, Advocare, Thrive, etc.) or essential oils</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
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</tbody>
</table>
APPENDIX B

Brief RCOPE

Think about how you try to understand and deal with major problems in your life. To what extent is each involved in the way you cope?

1 – not at all 2 – to a slight degree 3 – to a moderate degree 4 – to a great degree

Positive S/r coping subscale items
1. Looked for a stronger connection with God/a higher power.
2. Sought God/a higher power’s love and care.
3. Sought help from God/a higher power in letting go of my anger.
4. Tried to put my plans into action together with God/a higher power.
5. Tried to see how God/a higher power might be trying to strengthen me in this situation.
6. Asked forgiveness for my sins/wrongdoing.
7. Focused on religion to stop worrying about my problems.

Negative S/r coping Subscale Items
8. Wondered whether God/a higher power had abandoned me.
9. Felt punished by God/a higher power for my lack of devotion.
10. Wondered what I did for God/a higher power to punish me.
11. Questioned God/a higher power’s love for me.
12. Wondered whether my church/fellow followers had abandoned me.
13. Decided the devil/evil forces made this happen.
14. Questioned the power of God/a higher power.
APPENDIX C

Pain Catastrophization Scale

Everyone experiences painful situations at some point in their lives. Such experiences may include headaches, tooth pain, joint or muscle pain. People are often exposed to situations that may cause pain such as illness, injury, dental procedures or surgery.

We are interested in the types of thoughts and feelings that you have when you are in pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are experiencing pain.

<table>
<thead>
<tr>
<th>0 – not at all</th>
<th>1 – to a slight degree</th>
<th>2 – to a moderate degree</th>
<th>3 – to a great degree</th>
<th>4 – all the time</th>
</tr>
</thead>
</table>

When I’m in pain...
1. I worry all the time about whether the pain will end.
2. I feel I can’t go on.
3. It’s terrible and I think it’s never going to get any better.
4. It’s awful and I feel that it overwhelms me.
5. I feel I can’t stand it anymore.
6. I become afraid that the pain will get worse.
7. I keep thinking of other painful events.
8. I anxiously want the pain to go away.
9. I can’t seem to keep it out of my mind.
10. I keep thinking about how much it hurts.
11. I keep thinking about how badly I want the pain to stop.
12. There’s nothing I can do to reduce the intensity of the pain
13. I wonder whether something serious may happen.
Teacher Stress Inventory

TEACHER CONCERNS INVENTORY

The following are a number of teacher concerns. Please identify those factors which cause you stress in your present position. Read each statement carefully and decide if you ever feel this way about your job. Then, indicate how strong the feeling is when you experience it by circling the appropriate rating on the 5-point scale. If you have not experienced this feeling, or if the item is inappropriate for your position, circle number 1 (no strength; not noticeable). The rating scale is shown at the top of each page.

Examples:

I feel insufficiently prepared for my job.

If you feel very strongly that you are insufficiently prepared for your job, you would circle number 5.

I feel that if I step back in either effort or commitment, I may be seen as less competent.

If you never feel this way, and the feeling does not have noticeable strength, you would circle number 1.

<table>
<thead>
<tr>
<th>HOW STRONG?</th>
<th>1 no strength not noticeable</th>
<th>2 mild strength barely noticeable</th>
<th>3 medium strength moderately noticeable</th>
<th>4 great strength very noticeable</th>
<th>5 major strength extremely noticeable</th>
</tr>
</thead>
</table>

TIME MANAGEMENT

1. I easily over-commit myself. 1 2 3 4 5
2. I become impatient if others do things to slowly. 1 2 3 4 5
3. I have to try doing more than one thing at a time. 1 2 3 4 5
4. I have little time to relax/enjoy the time of day. 1 2 3 4 5
5. I think about unrelated matters during conversations. 1 2 3 4 5
6. I feel uncomfortable wasting time. 1 2 3 4 5
7. There isn't enough time to get things done. 1 2 3 4 5
8. I rush in my speech. 1 2 3 4 5
Add items 1 through 8; divide by 8; place your score here:

**WORK-RELATED STRESSORS**

9. There is little time to prepare for my lessons/responsibilities. 1 2 3 4 5
10. There is too much work to do. 1 2 3 4 5
11. The pace of the school day is too fast. 1 2 3 4 5
12. My caseload/class is too big. 1 2 3 4 5
13. My personal priorities are being shortchanged due to time demands. 1 2 3 4 5
14. There is too much administrative paperwork in my job. 1 2 3 4 5

Add items 9 through 14; divide by 6; place your score here:

**PROFESSIONAL DISTRESS**

15. I lack promotion and/or advancement opportunities. 1 2 3 4 5
16. I am not progressing my job as rapidly as I would like. 1 2 3 4 5
17. I need more status and respect on my job. 1 2 3 4 5
18. I receive an inadequate salary for the work I do. 1 2 3 4 5
19. I lack recognition for the extra work and/or good teaching I do. 1 2 3 4 5

Add items 15 through 19; divide by 5; place your score here:

**DISCIPLINE AND MOTIVATION**

I feel frustrated...
20. ...because of discipline problems in my classroom. 1 2 3 4 5
21. ...having to monitor pupil behavior. 1 2 3 4 5
22. ...because some students would better if they tried. 1 2 3 4 5
23. ...attempting to teach students who are poorly motivated. 1 2 3 4 5
24. ...because of inadequate/poorly defined discipline problems. 1 2 3 4 5
25. ...when my authority is rejected by pupils/administration. 1 2 3 4 5

Add items 20 through 25; divide by 6; place your score here:

**PROFESSIONAL INVESTMENT**

26. My personal opinions are not sufficiently aired. 1 2 3 4 5
27. I lack control over decisions made about classroom/school matters. 1 2 3 4 5
28. I am not emotionally/intellectually stimulated on the job. 1 2 3 4 5
29. I lack opportunities for professional improvement. 1 2 3 4 5

Add items 26 through 29; divide by 4; place your score here:

**EMOTIONAL MANIFESTATION**

I respond to stress...
30. ...by feeling insecure.  
31. ...by feeling vulnerable.  
32. ...by feeling unable to cope.  
33. ...by feeling depressed.  
34. ...by feeling anxious.  
35. ...by sleeping more than usual.  
36. ...by procrastinating.  
37. ...by becoming fatigued in a very short time.  
38. ...with physical exhaustion.  
39. ...with physical weakness.  
40. ...with feelings of increased blood pressure.  
41. ...with feeling of heart pounding or racing.  
42. ...with rapid and/or shallow breath.  
43. ...with stomach pain of extended duration.  
44. ...with stomach cramps.  
45. ...with stomach acid.  
46. ...by using over-the-counter drugs.  
47. ...by using prescription drugs.  
48. ...by using alcohol.  
49. ...by calling in sick.  

Add items 30 through 34; divide by 5; place your score here: 

**FATIGUE MANIFESTATIONS**  
I respond to stress... 
35. ...by sleeping more than usual.  
36. ...by procrastinating.  
37. ...by becoming fatigued in a very short time.  
38. ...with physical exhaustion.  
39. ...with physical weakness.  

Add items 35 through 39; divide by 5; place your score here: 

**CARDIOVASCULAR MANIFESTATIONS**  
I respond to stress... 
40. ...with feelings of increased blood pressure.  
41. ...with feeling of heart pounding or racing.  
42. ...with rapid and/or shallow breath.  

Add items 40 through 42; divide by 3; place your score here: 

**GASTRONOMICAL MANIFESTATIONS**  
I respond to stress... 
43. ...with stomach pain of extended duration.  
44. ...with stomach cramps.  
45. ...with stomach acid.  

Add items 43 through 45; divide by 3; place your score here: 

**BEHAVIORAL MANIFESTATIONS**  
I respond to stress... 
46. ...by using over-the-counter drugs.  
47. ...by using prescription drugs.  
48. ...by using alcohol.  
49. ...by calling in sick.  

Add items 46 through 49; divide by 4; place your score here: 

**TOTAL SCORE**  
Add all calculated scores; enter the value here ______.  
Then, divide by 10; enter the Total Score here ______.
Demographic Variables

Your sex:

Number of years you have taught? _____

Your age: ______

How many students do you teach each day? _____

What level students do you teach? (circle the rest of your answers)
  Elementary          Middle School          Secondary

With what type of students do you work?
  General Education        Special Education

Which is the most advanced degree you have?
  Bachelors           Masters           Doctorate           Other

Do you and your peers support one another when needed?  Yes  No

Do you and your supervisors support one another when needed?  Yes  No
APPENDIX E

Job Satisfaction Scale

*With regard to your position as a teacher, please respond to the following items related to job satisfaction:*

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>to a slight degree</th>
<th>to a moderate degree</th>
<th>to a great degree</th>
<th>all the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy working as a teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I look forward to going to school every day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working as a teacher is extremely rewarding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I get up in the morning I look forward to going to work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

Job Demands Scale

Please comment on the physical demands involved in your position as a teacher.

My position as a teacher requires me to engage in lifting or carrying heavy loads.

Never     Rarely     Sometimes     Often     Very Often

My position as a teacher requires me to engage in lifting or positioning students.

Never     Rarely     Sometimes     Often     Very Often

My position as a teacher requires me to work/reach overhead.

Never     Rarely     Sometimes     Often     Very Often

My position as a teacher requires me to routinely work in a head-down position. (Includes activities related to grading papers, using instructional equipment, other applicable.)

Never     Rarely     Sometimes     Often     Very Often

My position as a teacher requires me to stand for extended periods of time.

Never     Rarely     Sometimes     Often     Very Often
APPENDIX G

Correlations between Selected Variables

<table>
<thead>
<tr>
<th></th>
<th>Job Sat</th>
<th>Phys Dem</th>
<th>Level</th>
<th>PRC</th>
<th>TSI</th>
<th>Pain</th>
<th>PCS</th>
<th>InjIll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.047</td>
<td>-.081</td>
<td>.075</td>
<td>.158**</td>
<td>-.053</td>
<td>.140*</td>
<td>-.053</td>
<td>.102</td>
</tr>
<tr>
<td>Assign</td>
<td>-.042</td>
<td>.184**</td>
<td>.396**</td>
<td>-.156**</td>
<td>-.007</td>
<td>.004</td>
<td>.077</td>
<td>-.004</td>
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<tr>
<td>TSI</td>
<td></td>
<td></td>
<td>-.019</td>
<td>.073</td>
<td>.395**</td>
<td>.305**</td>
<td>.044</td>
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<tr>
<td>Job Sat</td>
<td>-.075</td>
<td>-.057</td>
<td>-.067</td>
<td>.031</td>
<td>-</td>
<td>-.206**</td>
<td>-.204**</td>
<td>-.042</td>
</tr>
<tr>
<td>Phys Dem</td>
<td></td>
<td></td>
<td></td>
<td>.048</td>
<td>.368**</td>
<td>.234**</td>
<td>.103</td>
<td>.110*</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
<td></td>
<td>.020</td>
<td>-.020</td>
<td>.069</td>
<td>-.063</td>
<td></td>
</tr>
</tbody>
</table>

**indicates p<.01  *indicates p<.05

Note: JobSat = Job Satisfaction; PhysDem = Physical Demands; PRC = Positive Religious Coping TSI = Teacher Stress Inventory; Pain = Pain Total; PCS = Pain Catastrophizing Scale; InjIll = Total Injury and Illness
**APPENDIX H**

Means and Standard Deviations for Selected Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Stress Inventory (total scale)</td>
<td>27.92</td>
<td>6.18</td>
</tr>
<tr>
<td>Time Management</td>
<td>3.47</td>
<td>0.61</td>
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<tr>
<td>Work Related Stressors</td>
<td>3.66</td>
<td>0.81</td>
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<tr>
<td>Professional Distress</td>
<td>3.24</td>
<td>0.96</td>
</tr>
<tr>
<td>Discipline and Motivation</td>
<td>3.31</td>
<td>1.00</td>
</tr>
<tr>
<td>Professional Investment</td>
<td>2.54</td>
<td>0.89</td>
</tr>
<tr>
<td>Emotional Manifestations</td>
<td>2.89</td>
<td>1.05</td>
</tr>
<tr>
<td>Fatigue Manifestations</td>
<td>2.83</td>
<td>0.94</td>
</tr>
<tr>
<td>Cardiovascular Manifestations</td>
<td>2.34</td>
<td>1.10</td>
</tr>
<tr>
<td>Gastronomical Manifestations</td>
<td>1.92</td>
<td>1.07</td>
</tr>
<tr>
<td>Behavioral Manifestations</td>
<td>1.76</td>
<td>0.78</td>
</tr>
<tr>
<td>Job satisfaction scale</td>
<td>14.20</td>
<td>3.04</td>
</tr>
<tr>
<td>Brief Religious Coping Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>17.80</td>
<td>7.59</td>
</tr>
<tr>
<td>Negative</td>
<td>9.33</td>
<td>3.66</td>
</tr>
<tr>
<td>Pain Catastrophization Scale</td>
<td>8.92</td>
<td>11.45</td>
</tr>
</tbody>
</table>
VITA

Dawn Green resides in Nacogdoches, Texas. She may be reached at 2100 North Raguet Street, P.O. Box 13019, SFA Station, Nacogdoches, Texas 75962. Dawn graduated from Quitman High School in Quitman, Texas, in 1987. In 1992, she received her Bachelor of Arts with a degree in History from the University of North Texas in Denton, Texas. After serving in the United States Army, Dawn entered the field of teaching in 1996. While working as a teacher, she entered graduate school at the University of Houston and earned a M.Ed. in Educational Psychology in 2001. While continuing her career in public schools as an assessment professional, Dawn returned to graduate school at the University of Houston at Clear Lake to earn her Specialist in School Psychology degree in 2011. After working for several years as a Licensed Specialist in School Psychology, she entered the doctoral program for school psychology at Stephen F. Austin State University in Fall 2013. Dawn will receive her Doctor of Philosophy in School Psychology in August 2017.

Style manual designation: American Psychological Association – modified in order to meet graduate school requirements

This dissertation was typed by Dawn Green