NOT JUST A PLAYGROUND ISSUE: BULLYING AMONG OLDER ADULTS
AND THE EFFECTS ON THEIR
PHYSICAL HEALTH

by

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I am dedicating this dissertation to my husband, Simon. His unselfish support, love, and constant encouragement through so much, for so long, enabled me to get here. I thank him for being my rock- always.

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ABSTRACT

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This dissertation examined associations between peer bullying and physical and psychological health problems for a community dwelling population of older adults (≥ 60 years). Participants’ age ranged from 60-99 years ($M = 74, SD = 8.27$). Frequency and severity of physical health problems were measured while controlling for retrospective reports of past health problems and past victimization. Approximately 24% of older adults reported being bullied by their peers. Current victimization predicted physical health problems and somatic complaints, but the magnitude of the effect was stronger for men than it was for women. Current victimization also predicted both internalizing and externalizing problems, especially for men. Current social support was examined as a potential buffer against negative health outcomes while co-rumination was thought to aggravate the negative outcomes associated with victimization. Contrary to expectations these measures did not support a) that social support buffers victimization effects and b) that co-rumination exacerbates the victimization-physical health link. Although social support did not moderate the influence of victimization on health, it
did have an additive effect such that poorer support contributed to more health problems. In addition, co-rumination did exacerbate reports of internalizing problems. This research was the first to examine the victimization-physical health link in independent living senior adults and suggests that peer bullying and the negative outcomes associated with it do not wash out with age.
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CHAPTER 1
INTRODUCTION

Researchers have long argued that belonging to social groups is a fundamental human need, and people strive to maintain complex and rewarding social relationships with others (Baumeister & Leary, 1995; Bowlby, 1973; MacDonald & Leary, 2005; Maslow, 1968; Taylor, 2007; Williams & Zadro, 2001). This dissertation examined whether disruptions to these interpersonal relationships through peer victimization are associated with poorer health outcomes for older citizens (60+ years). This study considered peer bullying as a social stressor which should influence health. As people reach 60 years of age, many begin to concentrate on their futures away from the workplace. Thus, 60 years of age was adopted as the cut-off age and considered as a transition into late adulthood (Baltes, 1993; Willis & Schaie, 2006). This paper did not focus on social stressors in the workplace, and therefore did not include older adults in full-time employment. Developmental psychologists organize the multi-faceted components of individual change into different periods and adult development and aging is often broken into four “ages”. Third age, or late adulthood, according to Baltes & Smith (2003) is generally the developmental period that begins in the sixties or seventies and lasts until death. Late adulthood has the longest span of any developmental period and is a significant phase of adjustment to social roles as well as changes in physical and cognitive health and strength. As the number of individuals within this age group has been increasing dramatically, evidence suggests that particularly between the ages of 60-79 years people are healthier, and often more socially and cognitively active than their predecessors from earlier generations (Willis & Schaie, 2006). Although there are a growing number of senior citizens who are very socially active past their working years, little seems to be known about their relationships with regard to
dysfunctional interpersonal behaviors and how these negative relationships might influence health.

As there is little information on this phenomenon within the older community-dwelling population, this dissertation is unique as it not only assessed bullying effects on an older community-dwelling population (when victimization is traditionally considered a defunct phenomenon), it also examined whether victimization was associated with physical, psychological and memory problems. This project was based on a well-documented, empirically-based stress model that includes measures of victimization, social support, physical and psychological problems, and memory problems within a single project. Victimization is considered to be a chronic social stressor. The stress associated with being bullied is thought to lead to a series of biological, behavioral, and psychological changes, which in turn could produce a variety of health problems (Barnet, Spence, Manuck, & Jennings, 1997; Ben-Eliyahu, Page, Yirmiya, & Shakhar, 1999). The model (Figure 1.1) demonstrates a pathway linking a social stressor (being bullied) with potentially profound health consequences in older adults. The model includes the sympathetic nervous system and HPA axis as a mediator of health which is not addressed in this paper directly.

Figure 1.1 General Model of Potential Bullying Influences on Physical Health Outcomes with the HPA Axis Acting as a Mediator.
The present study (Figure 1.1) focused on whether being bullied potentially interfered with physical, psychological, and memory problems. In its simplest form, the model posits stress as a mechanism by which stressors set in motion bodily changes that can affect physical and psychological health. In the current model, which is consistent with models presented by other researchers (e.g. Dougall & Baum, 2001; Anderson, Kiecolt-Glaser & Glaser, 1994; Lazarus & Folkman, 1984), the stressor is bullying, and is hypothesized to be associated with changes in biological functioning, and moderated by social support to influence health.

Bullying Defined

Bullying is not a new problem and a certain degree of exposure to aggressive behaviors is likely to be normal for most individuals. However, bullying involves repeated and intentional aggressive actions of one or more peers designed to intimidate or physically harm another person who is perceived to be unable to defend him/herself (Olweus, 1978, 1993). Being the target of bullying is often referred to as victimization. This type of victimization does not include an isolated episode of equal status peers arguing or fighting with one another, nor does it
include individuals who are teasing each other in a good-natured manner. Instead, victimization requires that the peer harassment or abuse (direct or indirect, relational, physical or verbal) happen repeatedly (Crick, 1995), and can be considered as a continuum from no abuse to being the target of severe peer abuse. Peer victimization, or being bullied, has been shown to be a stable phenomenon over extended time frames, often starting in preschool, peaking in early adolescence (Brendgen, Vitaro, Bukowski, Doyle, & Markiewicz, 2001; Nansel, Haynie, & Simons-Morton, 2003), and often remains stable throughout high school (Williams & Guerra, 2007).

**Bullying and Psychological Problems.** Bullying has been associated with the development of internalizing and externalizing problems (Olweus, 1991, 1993; Perry, Kusel, & Perry, 1988; Rigby & Slee, 1993) and is a prominent form of social rejection that cuts across age, race, gender, and socioeconomic status (Juvonen, Graham, & Schuster, 2003). Internalizing problems consists of factors related to personal distress, self-control, and behavioral inhibition (e.g. anxiety depression, somatization, and social withdrawal). Conversely externalizing problems consists of factors related to outward aggressive behaviors, arguing, and general misconduct (Weiss, Jackson, & Susser, 1997). Research has repeatedly identified chronic bullying being associated with anxiety, depression, aggression, rule-breaking behaviors and delinquency (Crick & Grotpeter, 1995; Egan & Perry, 1998; Forero, McLellan, Rissel, & Bauman, 1999; Hodges & Perry, 1996; Kupersmidt, Coie, & Dodge, 1990; Olweus, 1978). Bullied individuals can also experience low self-esteem, greater loneliness, and suicide ideation (Parker & Asher, 1987; Rigby, 2000; van der Wal, de Wit, & Hirsing, 2003). Despite this known link among children, adolescents, and young adults there are no known empirical studies that have examined whether the same phenomenon exists for community living senior adults.

**Bullying, memory and performance.** Peer victimization and rejection has also been repeatedly linked with poorer academic performance in school-age children and adolescents (Eisenberg, Neumark-Sztainer, & Story, 2003; Juvonen, Nishina, & Graham, 2000; Nishina,
Juvonen & Witkow, 2005). Indeed, low peer acceptance has been associated with lower grades and lower scores on achievement tests (in K through 5th grade children) and lower graduation rates that have been found from childhood through college age (e.g., Buhs, Ladd & Herald, 2006; Zettergren, 2003). These findings may imply that bullying not only affects the social dynamics of the academic setting, but also potentially interferes with memory and cognitive processes associated with learning. Bullied adolescents not only perform more poorly in school, but also show poorer cognitive flexibility and attention resources compared to their non-bullied peers (Rex-Lear, Knack, Iyer, Jensen-Campbell, 2010). Bullying may even have deleterious effects on brain function given that chronic stress can lead to changes in grey matter volume, in some cases smaller hippocampal regions, and memory and learning impairments (Issa, Rowe, Gauthier & Meaney, 1990; Lupien, Mc Ewan, Gunnar & Heim, 2009; Sapolsky, Romero, & Munck, 2000). In addition, Mc Ewen and Sapolsky (2003) reported that prolonged exposure to stress can result in neuron loss, particularly in the hippocampus, which is crucial for declarative memory. These findings support other research claims that high stress levels (bullying is considered a social stressor here) have been associated with poorer memory and altered cognitive functioning across the lifespan (Lupien et al., 1998). There has been little direct research on the effects of bullying and memory function in any age group so this dissertation attempted to identify potential links in older adults.

Bullying and physical health. Finally, a growing body of research is finding that being bullied in childhood, adolescence, and early/middle adulthood is associated with greater physical health problems. For example, victimized children and adolescents are more likely to report somatic complaints such as headaches, sore throats, and abdominal pain (Knack et al., in press; Nishina, et al., 2005; Williams, Chambers, Logan, & Robinson, 1996; Rigby, 1998; Wolke, Woods, Bloomfield, & Karstadt, 2001). More recent attention has been paid to what happens after high school graduation as it has become very apparent that bullying does not end there. Indeed, Knack, Iyer and Jensen-Campbell (in press) reported that bullying among college
age students was related to increased health problems over time and, moreover, increases in victimization led to increases in health problems (and not vice versa). There is also evidence linking chronic stress to decreased immune functioning (Miller et al. 2004); furthermore maltreatment and peer victimization of children has shown an imbalance in hormone activity (cortisol) compared to non-maltreated peers (Hart, Gunnar, & Chichetti, 2003; Knack, Jensen-Campbell & Baum, in press). Peer bullying considered as a social stressor has the potential to affect individuals on many levels. This may not only lead to physical, cognitive, or psychological problems, but more importantly reduce individuals’ abilities to deal with future stressors, which in turn could lead to even more long term problems.

**Bullying Beyond the Schoolyard**

Although bullying may peak in adolescence, there is ample evidence to suggest that it extends beyond the schoolyard and enters college, the workplace, and other social domains (Chapell, Casey, De La Cruz, Ferrell, & Forman, et al., 2004; Straight, Harper & Arias, 2003). Along with age changes, the terms of victimization also change across the lifespan. What was once considered teasing in kindergarten grows into bullying during adolescence, harassment in adulthood (bullying or mobbing in the workplace), and social isolation or elder abuse (aggression) for older individuals. Adult bullying is a complex phenomenon and is reported to affect between 10-20% of people in institutional settings (Bonifas, 2011). This often includes physical abuse and sexual harassment, which are outside the scope of this paper (they are considered a separate phenomenon for purposes of this current study).

Workplace bullying is comparable to school peer victimization, where an employee is persistently picked on or humiliated by fellow employees or supervisors, and has been recorded in several work domains (Einarsen & Raknes, 1995; Einarsen & Skogstad, 1996). This phenomenon also cuts across all age groups within workplace environments (Hallberg & Strandmark, 2006; Hansen et al., 2006; Kaukiainen et al., 2001). In line with the child and adolescent literature, several studies of workplace bullying have identified a variety of
psychological detriments in adult individuals including apathy, anxiety, panic attacks, anger, and loss of confidence (Adams, 1992; Leymann, 1990, Hoel, Zapf, & Cooper, 2002). Furthermore, Leymann (1992) concluded that cognitive effects including problems with memory and concentration were also significantly related to those individuals being bullied.

In support of the lifespan approach to bullying, and corroborating findings with children and adolescents, current victimization research also shows consistent relationships between adult bullying and increased levels of reported somatic complaints (e.g., Hoel, Faragher, & Cooper, 2004; Kaukiainen et al., 2001). Additionally, workplace bullying has been linked with increased risk of chronic illness development such as fibromyalgia (Kivimäki et al., 2004). More generally, dysfunctional interpersonal relationships have been associated with a greater incidence of diabetes, cardiovascular disease, chronic pain syndromes, and gastrointestinal illnesses (e.g., Kendall-Tackett, 2009). Although there is increasing evidence for workplace bullying and negative health outcomes there is still a dearth of victimization data on physical health outcomes in older adult populations who are no longer working but still living independently.

**Aggression among Older Adults**

Research on victimization among older adults has concentrated on elder abuse and crimes against the elderly (Fisher, & Regan, 2006; Lachs, Bachman, Williams, & O’Leary, 2007) while very little work has looked at interpersonal bullying strategies and outcomes among older individuals. There is only a small body of research addressing peer aggression among independently living older adults (Walker & Richardson, 1998). The term aggression is used in the same context here as bullying and may be defined as any behavior intended to harm another (Baron & Richardson, 1994), in this case repeatedly. Aggression like bullying can take the form of physical, relational, direct or indirect actions and may well have the same outcomes as adolescent and younger adult bullying (Richardson & Green, 2003).
According to Carstenson’s socioemotional selectivity theory (1995), older people may be more selective in their social circles and evidence of older individuals’ relationships indicates that quality, not just quantity of one’s social life is related to an individual’s wellbeing (Nezlek, Richardson, Green, & Schatten-Jones, 2002). Peers and friends play an increasingly important socialization role as older people spend more time with them (especially women) than with spouses or close relatives (Walker, Richardson & Green, 2000), hence poor interpersonal relationships are likely to occur on some level. Adults (like children) will use physical and relational aggression in calculated and systematic ways to gain control over those they perceive to be weaker (Voyer, et al., 2005; Walker & Richardson, 1998). In order to manipulate and control individuals within their social circles, indirect aggression has been found to be prevalent in older adults when they are involved in large and loosely connected networks of acquaintances (Walker et al., 2000). In these types of situations, indirect aggression is more advantageous for friendships as they are more vulnerable to threat and disruption, so direct confrontation is less advisable (Richardson & Green, 2006). Older individuals will employ the least costly of techniques and use adaptive strategies to maximize the effects of bullying, but minimize personal risk (Walker & Richardson, 1998). It is clear that older individuals still aggress against one another and are likely to be presented with challenges that may well impact their physical and psychological well-being if they are the victim of that aggression.

Gender Differences in Experiencing Bullying

As males and females experience their social surroundings and peers somewhat differently it is likely that bullying effects may differ between them, and it is widely accepted that males and females experience health differently across the lifespan. In the child bullying literature, there is some evidence that boys and girls cope differently under stress, thus different types of bullying may have differential relations to social adjustment and personal health outcomes (Crick & Bigbee 1998; Vaillancourt et al., 2008). Boys often report greater frequency and severity of somatic problems, such as headaches and backaches than girls do, and girls
report more psychosomatic or psychological disturbances, such as nervousness or sleep disturbances (Kumpulainen et al., 1998; Rigby 1998). Craig (1998) and Sourander et al. (2007) also found that exposure to peer victimization led to more reported depression in adolescent girls than boys. Recent work by Vaillancourt, deCatanzaro, Duku, and Muir (2009) found sex differences in the way stressful situations are interpreted and processed, as well as differences in stress hormone production (cortisol) and reactivity when experiencing relational aggression (Vaillancourt et al., 2008). Vaillancourt and colleagues posit that this sex difference may be due to different perceptions of poor interpersonal relations and differing coping strategies employed by males and females under bullying stress. Females’ social goals tend to value social inclusion and peer evaluation more than males do, while males tend to value dominance more than females do. (Block, 1983; Maccoby, 2000). Differing health outcomes are likely as a result of this as girls tend to internalize abuse, whereas boys will tend to externalize their abuse by becoming more aggressive themselves. Consequently peer abuse, especially relational aggression, may be perceived as more stressful and damaging for adolescent girls than it is for boys (Crick, 1995; Crick & Grotpeter, 1995; Paquette & Underwood, 1999).

Much like the pattern of results that emerges in the child and adolescent literature, poor interpersonal relations does have significant effects on physical and mental well-being across different age groups, even throughout adulthood. Men often report greater deficits in physical health outcomes than women do (Zapf, Dormann & Frese, 1996). Even among non-victimized individuals, men experience more types of physical impairment (life threatening diseases and physical impairment), while women generally report more symptoms (more frequent illness) over the lifespan (Verbrugge, 1985). It has also been suggested that women experience more psychological distress (e.g., anxiety, guilt) on a day-to-day basis across the lifespan than men do (Everyday Health, 2011). These gender differences in emotional processing and response may have direct consequences on physical and emotional health of men and women. This dissertation examined the relationship between gender differences and self-reports of physical
and psychological health as outcomes of bullying for senior adults to add to the extant literature on bullying across the lifespan.

The Importance of the Elderly Population

As late adulthood has the longest span of any developmental period the senior years are a period of extensive change from many perspectives. Understanding how or why psychosocial factors influence physical health outcomes may be important in ensuring older individuals live longer and happier lives. The views held of aging are often colored by the prevailing culture and many do not hold older individuals in very high esteem, often ignoring and isolating them from social interactions (Degnen, 2007). This is important because factors that may exacerbate or ameliorate health vulnerabilities associated with peer victimization in non-institutionalized senior citizens still active within society, appears to have been dismissed. According to the U.S. Census Bureau (2008) 23.4% of US citizens are over 55, 17.4% are over 60 and 12% (approximately 36 million) are 65 or older. Furthermore U.S. Census bureau data claims 81% of householders older than 65 own their own home (including those in varying types of retirement communities) and only 5% of older adults live in nursing homes.

As people begin to leave the workforce their social circles usually change or diminish, and they may experience feelings of rejection and or isolation (Williams, 2001, 2007). A recent meta-analysis found rejection can negatively affect self-esteem and overall mood states (Gerber & Wheeler, 2009). In turn, lowered self-esteem following rejection suggests a readiness for action, potentially to satisfy the need for belonging, control, or meaningful existence (Baumeister & Leary, 1995; Gerber & Wheeler, 2009). Thus, successful aging, according to Activity Theory (Cumming & Henry, 1961), occurs when people maintain and actively pursue similar, replacement, or same interests they pursued during earlier years. Consequently, older individuals forging new avenues of social interactions may be vulnerable to peer bullying. These potential changes may have important implications on abilities to cope with peer aggression.
Two Sides of Social Support

Not all individuals who are the targets of bullies experience such negative outcomes. One of the goals of this research was to explore the role of social support as a buffer system for behavioral and physiological responses to bullying. Research suggests that social support from others, especially friends, seems to shield the individual from the negative influences of peer abuse (e.g., Bollmer et al., 2006; Hodges, Boivin, Vitaro, & Bukowski, 1999; Nezlek, Richardson, Green, & Schatten-Jones, 2002; Malone & Perry, 1995; Malcolm, Jensen-Campbell, & Rex-Lear, 2006; Pressman et al., 2005). Theorists also indicate that older individuals actively regulate their social interactions. It is suggested that they are more selective in choosing rewarding social interactions and relationships, and avoiding unrewarding or aversive relationships (Carstenson, Issacowitz & Charles 1999; Lang, 2001: Wrosch, Bauer, & Scheier, 2005). Social integration plays an important role in the lives of many older adults (Rohr & Lang, 2009) and the idea that social support can buffer against social stressors is not a new idea. The stress-buffering hypothesis is the most frequently studied and accepted theory addressing the effects of social support (Fleming, Baum, Gisriel, & Gatchel, 1982; Knack, Waldrip, & Jensen-Campbell, 2007). According to this hypothesis, social support is most important during stressful situations and seems to help individuals cope with social stressors (DeLongis & Holtzman, 2005; Eisenberger et al., 2007; Taylor, 2007; Uchino, Cacioppo & Kiecolt-Glazer, 1996). As such, one would expect that high quality support (not quantity) from friends would protect individuals from the negative consequences of victimization (Brendgen et al., 2001; Nezlek, Richardson, Green, & Schatten-Jones, 2002).

However, this management of social situations may not always be possible and poor interpersonal relationships are still likely to occur on some level. Older persons may avoid using social support when dealing with bullying stressors because they feel ineffectual. Even the most well intentioned social support can be perceived as intrusive, not needed, and seen as an insult to ones’ independence. Furthermore, social network member’s actions are not always positive.
and may instead include criticism, neglect, demand, and other insensitive or negative behaviors (bullying) that detract from overall health and well-being (Pressman et al., 2005; Rook, 2000; Taylor et al., 2000). This misdirected support can have detrimental effects on an individual’s overall well-being and ability to cope with particular stressors (DeLongis & Holzman, 2005). As part of overall social support this study considered whether the quality of older people’s social support from friends or significant people moderated the victimization-health association.

Some support, namely co-rumination, may not be beneficial because individuals excessively and repeatedly discuss problems with friends and focus on negative feelings (Rose, 2002). However, while co-rumination is linked to increased feelings of closeness within relationships (for girls), it has also been implicated in increased internalizing symptoms, such as feelings of depression and anxiety, and increased cortisol levels (Byrd-Craven, Geary, Rose & Ponzi, 2008; Ciesla & Roberts, 2007; Nolen-Hoeksema & Morrow, 1991; Rose et al., 2007). Recent work by Haggard, Robert, and Rose (2010) has shown that co-rumination also exists in the workplace, but has both positive and negative adjustment outcomes, especially among women. These findings suggest that this process of over-discussing personal life stressors may well amplify psychological problems rather than mitigate them. The present study explored further whether older adults engage in the same or similar co-rumination processes, and examined bullying and co-rumination in relation to poorer health outcomes. This will help in understanding how social relationships become a useful and an important resource for physical and psychological health in the older generation when a chronic social stressor might be present.

**Present Study**

The goal of the present study was to extend the work of Richardson and colleagues to elaborate on the construct of bullying within an older population. This dissertation suggests that bullying does not wash out in the senior years, but manifests itself within older adults social circles. Furthermore, this set of behaviors may be a major source of stress that can influence
the development of negative physical, psychological, and memory problems. The term peer victim refers to those who were consistently targets of aggression by their peers.

Specific hypotheses for this dissertation were:

Hypothesis 1a. It was predicted that bullied older adults would exhibit poorer physical health outcomes than non-bullied individuals. Specifically, this study investigated the relationships between peer bullying with somatic complaints and the frequency and severity of reported health outcomes as well as Body Mass Index (BMI) and central adiposity.

Hypothesis 1b. In addition, the study examined whether bullying influenced reports of psychological maladjustment (e.g. internalizing and externalizing problems). It was expected that bullied older adults would report more anxious/depressed symptoms, more worrying, and more irritable/disorganized behaviors than their non-bullied peers.

Hypothesis 1c. Finally, victimization was expected to have deleterious effects on the cognitive functioning of older adults (i.e., self-reported memory problems, attention span, working memory). Bullied older adults were expected to report more memory problems and have poorer attention spans and working memory than their non-bullied peers.

Hypothesis 2. It was also posited that gender would influence health outcomes. More specifically, the influence of bullying may manifest itself differently in men and women. For example, bullied men may report more physical health and externalizing problems than will bullied women, whereas bullied women may report more internalizing problems than bullied men. There were no expected gender differences for memory problems but they were examined for completeness.

Hypothesis 3. Social support was expected to moderate the effects of victimization on physical, psychological health, and memory problems. In particular, social support is often a powerful buffer in negative social situations and has been consistently shown to be negatively related to stress responses, and positively related to well-being. As such, it was expected that bullied adults who have high quality support would have fewer health and memory problems.
than bullied adults with lower quality support. However, older adults who are victims of peer bullying may not be able to use social support systems effectively. Indeed, co-rumination in friendships is associated with higher social support, but also with increases in psychological problems, especially depression and anxiety over time (Rose, 2002). As such, friendships/relationships that involve co-rumination may actually exacerbate health problems, specifically internalizing problems.
CHAPTER 2

METHOD

Participants

Senior adults (N = 111) from the Dallas-Fort Worth Metroplex volunteered for a two part study. Participants (68 women) aged between 60 and 99 years (M = 74, SD = 8.27) took part in the study. The racial composition included 93% White, 1% Black/African American, 3.7%, Hispanic/Latino, and 2.8% Other. All participants were individually recruited within the Dallas/Fort Worth Metroplex from the general community, local retirement housing communities, and community senior centers. Participation was on a voluntary basis and there was no compensation. All participants were independently living in a variety of settings including group retirement apartments, independent retirement communities, and own homes. None worked (fulltime) but many participated in volunteer activities; all were fluent in English and were not in mental health decline. During screening processes no participants were excluded due to using psychotropic medication, any diagnosed psychiatric condition, previously diagnosed cognitive impairment (e.g., Alzheimer’s disease, dementia), or dementia as assessed by the Blessed Test.

Recruitment efforts included (1) meeting with individuals at their place of living (e.g., private homes, or community homes) to discuss the study; (2) contacting individuals via mail or phone from information lists that group homes provided; (3) and direct meetings with groups during local functions (e.g. retired social groups, and local fitness centers that had specific fitness programs for older adults). It was stated that the study would recruit adults with either negative or positive social experiences. In the past, this type of request has attracted a proportionally larger percentage of bullied individuals. Victimization percentages were only calculated via the self-report surveys – post data collection. I did not explicitly solicit bullied
individuals as it can provoke unnecessary anxiety or stress and can inhibit research participation (e.g., Jensen-Campbell & Rex-Lear, unreported; Vaillancourt et al., 2008). Prior selection can also create a confound if those entering the study specifically know the criteria before participating, or if the researcher knows the identity of the victim. Permission was obtained from the individuals and the relevant institutions prior to research solicitation. I arranged dates to go into each location and provided individuals with consent forms which I explained and collected personally.

Materials

Assessments. Figure 2.1 provides a summary of selected measures for each construct of interest which are discussed below. Measures were treated as continuums and were completed by each participant.

![Figure 2.1 Summary of Scales](image-url)
Control Measures

Cognitive Competency. As a pre-screen to control for mental competency, individuals completed the Blessed Test (Katzman et al., 1983). The Blessed Test is a 6-item scale that has been validated as a reliable measure of cognitive competency and has been shown to discriminate between mild, medium, and severe dementia ($\alpha = 0.89$). These tests have been deemed suitable as they are quick and easy to administer by both professionals in the mental health arena and naïve raters. The aim was to identify any persons with recognizable cognitive deficits so that they were excluded from the study. There were three assigned mental functioning categories (normal cognition = 0-4; questionable impairment = 5-9; 10 or more = impairment consistent with dementia) (Morris et al., 1989). No participants in this dissertation were excluded from the behavioral measures as normal cognition was scored between 0 - 4 ($M = 1.24$, $SD = 2.09$).

General Cognitive Function. I specifically hypothesized that chronic bullying, as a stressor, may interfere with working memory which is the cognitive system that allows for temporary storage and manipulation of information. To explore the possible effects of poor interpersonal relations on general cognitive function, in particular auditory attention span, short term memory capacity and attentional switching abilities I adopted three measures that emphasized different cognitive strategies.

Self Reported Memory (OASR, Achenbach & Rescorla, 2004) is a problem syndrome scale from the OASR that included 9 items (e.g., I have trouble concentrating/paying attention” or “I forget people’s names”) on a 3 point Likert type scale, $0 = $ not true to $2 = $ very true.

The Forward Digit Span from Wechsler Adult Intelligence Scale-Revised (WAIS-R) is designed to assess working memory by exposing the individual to increasingly larger amounts of information (digits). While these tests require short term working memory they are more strongly associated with attention and the capacity to hold information long enough for immediate recall, as in this case, efficiency of auditory attention (Kaufman, McLeon, &
Reynolds, 1991). The normal range of recall according to Miller (1956) is $7 + 2$ for components of information, and the ability to process information is widely believed to shrink with age. Research suggests that age itself only minimally affects forward digit span recall above 65-70 years (Craik & Jennings, 1992; Craik, 1994). However, task complexity and levels of anxiety can reduce the number of digits recalled (Craik & Byrd, 1982). The test comprised of eight pairs of random number sequences that expanded in length that were read to the participant in a consistent tone of one second intervals. The participant then repeated each sequence back in the exact order provided. The researcher stopped reading when the participant could no longer recall either pair of digit sequences accurately. The dependent variable was the total number of correct repetitions of digit sequences. This study found digit recall to be within typical digit recall performance even with older individuals ($M = 6.48$, $SD = 1.22$). Gender, age, and education were not correlated to digit span $r_s = .02, .01, .07, ps = .87, .90, .48$, respectively.

**Trail Making A and B** are two similar tests that assess general cognitive function and are sensitive to cognitive decline with dementia (Bradford, 1992; Lezak, Howieson, & Loring, 2004). Participants were required to draw lines between circles in ascending order (“connect the dots”). Trail Making Part A (TMTA) required the participants to connect the numbers from 1-25. Trail Making B (TMTB) required subjects to alternate between numbered and lettered circles in ascending numerical/alphabetical order (e.g., 1-A-2-B, etc.); both tests were timed. Trail A provided a baseline for motor and visual control and speed, whereas Trail B examined the cost, in time, of executive control. Subsequently a greater time indicated more difficulty in connecting the trails. In other words I hypothesized that chronic victimization would result in slower completion times. Subjects were corrected if they had difficulties finding the connections but timing was continued throughout the trial (Trail A, $M = 43.96$, $SD = 20.14$; Trail B, $M = 106.43$, $SD = 64.55$). I found that both Trail A and Trail B were significantly correlated with the Blessed Test, $r_s = 0.26$ and 0.39, $ps < 0.01$, respectively. Although men were faster overall in completion times; men Trail A, $M = 41.96$, $SD = 17.50$; women $M = 45.17$, $SD = 21.61$; for Trail B men $M =$
96.71, $SD = 48.93$ and for women $M = 112.37, SD = 72.18$, there were no significant differences between men and women for TMTA or TMTB, $t(107) = -.80, -1.22$, $SE = 3.99, 12.77$, $ps = 0.42, 0.22$, respectively. The TMT-ratio was created to examine the relationships between performance on Trail A and Trail B (Arbuthnott & Frank, 2000). Slowed performance on Trail B relative to Trail A would indicate some cognitive impairment. However, in this study the TMT-ratio showed no relationships to any victimization or health scores. Furthermore, there were no relationships among the demographic variables and scores on Trail A and Trail B, or the Trail Ratio to suggest that either age or education was significantly correlated with performance.

**Victimization Measures**

**Brief Retrospective Bullying Questionnaire.** First, participants completed this 9-item Likert-style questionnaire that measures frequency of experiencing bullying at different life stages including childhood, adolescence, and during working age (e.g., “how often you were ever verbally/physically/socially bullied?”) on a scale of 1 (never) to 5 (many times per week). I then averaged across the three time periods to create a composite score for past victim, and used this score for subsequent analyses. Childhood victimization was significantly correlated with adolescent and working age adult victimization, $rs = .75, .66, p <.001$. In addition, adolescent and adulthood bullying were significantly related to each other, $r = .57, p <.001$. This provided a framework of bullying behavior across their lifespan and was collapsed across time periods to create an overall measure of bullying prior to older adulthood. Although this measure is similar to ones frequently used by Vaillancourt and colleagues this has not been tested for reliabilities previously within this age group. However, decent reliabilities were found in this study (See Table 2.1 for descriptive and reliabilities).

**Adult’s Self-Experiences Questionnaire-Self-Report (ASEQ-SR).** A revised version of the Children’s Self Experiences Questionnaire was adapted to assess current peer-related victimization (Crick & Grotpeter, 1995). This questionnaire comprised of 21 questions measuring 1 subscale of prosocial behavior (e.g., “How often does a peer give you help when
you need it?”) and two subscales of victimization: Overt (e.g., “How often do other people yell at or argue with you?”) and relational victimization (e.g., “How often do other people spread rumors behind your back?). Each subscale is comprised of six and nine items which measure how frequently participants experience a particular event (e.g., being ignored/overlooked) on a scale of 1 (never) to 5 (all the time). Each of the subscales demonstrated high reliability in previous work with college age adults and as expected moderate to high reliabilities were found with this older adult sample (overt $\alpha = 0.67$ and relational $\alpha = 0.85$ (prosocial $\alpha = .80$) (See Table 2.1 for descriptives$^1$).

**Direct and Indirect Aggression Scales - Victim Version (DIAS).** The DIAS (Bjorkqvist, Lagerspetz, & Osterman, 1992) was also used to assess current levels of victimization and comprises a 24-item measure which consists of three subscales that assess physical (e.g., “How often are you hit by other people?”), verbal (e.g., “How often are you insulted by other people?”), and indirect victimization (e.g., “How often are you ignored by other people?”). Each of the subscales has demonstrated high reliability with adolescents and younger adults, ($\alpha$s = 0.87, 0.81, 0.91 for physical, verbal, and indirect victimization, respectively). For this study I found moderate reliabilities ($\alpha$s = 0.74, 0.79, and 0.89) for physical, verbal, and indirect victimization, respectively for the older adults.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness (Std. Error)</th>
<th>Kurtosis (Std. Error)</th>
<th>$\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosocial</td>
<td>21</td>
<td>9</td>
<td>30</td>
<td>22.18</td>
<td>3.79</td>
<td>-0.01 (0.23)</td>
<td>0.38 (0.45)</td>
<td>0.80</td>
</tr>
<tr>
<td>Overt</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>7.24</td>
<td>1.26</td>
<td>1.66 (0.23)</td>
<td>4.04 (0.45)</td>
<td>0.67</td>
</tr>
<tr>
<td>Relational</td>
<td>16</td>
<td>9</td>
<td>25</td>
<td>12.73</td>
<td>2.97</td>
<td>1.17 (0.23)</td>
<td>1.26 (0.45)</td>
<td>0.85</td>
</tr>
</tbody>
</table>

$^1$ All values of skewness and kurtosis were within an acceptable range for all variables. Where values were high, supplemental analyses were conducted using transformed data, which produced virtually identical results. As such, non-transformed data are reported in this dissertation.
Table 2.1 continued

<table>
<thead>
<tr>
<th></th>
<th>Physical</th>
<th>Verbal</th>
<th>Indirect</th>
<th>Total Victimization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>16</td>
<td>24</td>
<td>9.12</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>5</td>
<td>12</td>
<td>6.12</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>21</td>
<td>36</td>
<td>15.25</td>
</tr>
<tr>
<td></td>
<td>7.76</td>
<td>8.43</td>
<td>18.34</td>
<td>8.34</td>
</tr>
<tr>
<td></td>
<td>1.44</td>
<td>3.48</td>
<td>5.27</td>
<td>1.86</td>
</tr>
<tr>
<td></td>
<td>2.74(0.23)</td>
<td>1.17(0.23)</td>
<td>2.91(0.22)</td>
<td>1.52(0.22)</td>
</tr>
<tr>
<td></td>
<td>0.74</td>
<td>0.79</td>
<td>0.89</td>
<td>0.75</td>
</tr>
</tbody>
</table>

**Distal/Past (RVIC) Victimization**

<table>
<thead>
<tr>
<th></th>
<th>Relational</th>
<th>Physical</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>2.79</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>4.35</td>
<td>3.54</td>
<td>4.27</td>
</tr>
<tr>
<td></td>
<td>1.69</td>
<td>1.16</td>
<td>1.60</td>
</tr>
<tr>
<td></td>
<td>1.82(0.22)</td>
<td>2.91(0.22)</td>
<td>2.35(0.22)</td>
</tr>
<tr>
<td></td>
<td>4.75(0.45)</td>
<td>11.11(0.45)</td>
<td>8.43(0.45)</td>
</tr>
<tr>
<td></td>
<td>0.76</td>
<td>0.67</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Note: *p < 0.05; **p < 0.01

**Creation of current victimization of composite.** Although I assessed different dimensions of current victimization (e.g., overt, relational) I was interested in participants' total current victimization experience regardless of exactly what type of victimization had occurred. Moreover, principal component analyses using VARIMAX rotation revealed that there was only one unique factor that emerged from the five current victimization composites, which accounted for 63.25% of the variance. Therefore, I collapsed across all measures of victimization to create a total victimization score (alpha = 0.85). In previous work the dimensions have been shown to be highly correlated (rs > 0.50), and one composite score for total victimization has demonstrated meaningful results. Indeed dimensions for this study were also highly correlated (See Table 2.2). As well as the collapsed total victimization dimension, I also examined the effects of the separate dimensions in several analyses. For example, indirect aggression appeared to be the highest related factor to current physical health status. (r = 0.25 p = 0.01) (See Table 3.3).
Peer victimization was also treated as a continuous variable in all main analyses because keeping victimization as a continuous variable allows the researcher to (1) prevent loss of information and prevent introducing a new source of measurement error that may occur with treating victimization as a categorical variable; (2) increase/maintain the power of the statistical test, which is particularly important given the generally low power for tests of interactions; and (3) prevent spurious findings that can occur when two predictors are treated as being independent when in fact they are correlated (e.g., social support and victimization are negatively correlated) (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2002).

Table 2.2 Correlations Between Self Reported Victimization Variables

<table>
<thead>
<tr>
<th></th>
<th>Overt Victimization</th>
<th>Relational Victimization</th>
<th>Physical Victimization</th>
<th>Verbal Victimization</th>
<th>Indirect Victimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relational</td>
<td>0.55**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>0.50**</td>
<td>0.44**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal</td>
<td>0.54**</td>
<td>0.53**</td>
<td>0.40**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td>0.57**</td>
<td>0.76**</td>
<td>0.46**</td>
<td>0.62**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: * p < 0.05; ** p < 0.01

Social Support Measures

Harter’s (1985) Social Support Scale. A modified version of Harter’s (1985) Social Support Scale for Children assessed the perceived support from four different relationship types for older adults, namely spouse/significant other, close friends, other relatives, acquaintances. There are 25 Likert-type items (e.g., I don’t get asked to social activities very often) with a response a scale of 1(very true) to 4 (very untrue). Twelve items were reverse coded. Moderate to high reliabilities have been found for child/adolescent responses (e.g., classmate $\alpha = 0.78$; friend $\alpha = 0.83$). Although this scale has not been tested with this age group I found high reliability of $\alpha = 0.94$. (See Table 2.4 for descriptives). In addition, this measure of social support...
showed high convergence with friendship quality (OASR), being the target of prosocial help (ASEQ-SR), and spousal support (OASR) (See table 2.3).

Table 2.3 Zero Order Correlations for Prosocial Behaviors

<table>
<thead>
<tr>
<th></th>
<th>Social Support</th>
<th>Pro-Social Help</th>
<th>Friends</th>
<th>Spouse</th>
<th>Co-Rumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td>1</td>
<td>0.47**</td>
<td>0.62**</td>
<td>0.29*</td>
<td>0.30**</td>
</tr>
<tr>
<td>Pro-Social Help</td>
<td>1</td>
<td>0.36**</td>
<td>0.17</td>
<td></td>
<td>0.28**</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>0.08</td>
<td></td>
<td></td>
<td>0.34**</td>
</tr>
<tr>
<td>Spouse</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>-0.29*</td>
</tr>
</tbody>
</table>

Co-Rumination Scale (Rose, 2002, Rose et al., 2007). An adult adapted version of a Rose’s co-rumination scale has 9 Likert-type items which assessed repeated and negative discussion of social stressors (e.g. when I have a problem my friend always tries really hard to keep me talking about it) on a scale of 1 very true- 4 very untrue. This scale demonstrated high reliability when tested in the workplace and consistency with application in younger audiences as well (α = 0.91). For this sample this scale provided high reliability (α = 0.93). (See Table 2.4 for descriptives).

Table 2.4 Descriptive Statistics for Self-Reported Social Support Measures and Co-Rumination

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness (Std. Error)</th>
<th>Kurtosis (Std. Error)</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Co-Rumination</td>
<td>35.00</td>
<td>9.00</td>
<td>44.00</td>
<td>18.75</td>
<td>8.60</td>
<td>0.93(0.23)</td>
<td>0.32(0.45)</td>
<td>0.93</td>
</tr>
<tr>
<td>Prosocial Help (ASEQ)</td>
<td>21</td>
<td>9</td>
<td>30</td>
<td>22.18</td>
<td>3.79</td>
<td>-0.01(0.23)</td>
<td>0.38(0.45)</td>
<td>0.80</td>
</tr>
<tr>
<td>Social Support</td>
<td>45.00</td>
<td>55.00</td>
<td>100.00</td>
<td>77.06</td>
<td>10.35</td>
<td>0.47(0.23)</td>
<td>0.13(0.46)</td>
<td>0.94</td>
</tr>
<tr>
<td>Friendship Support</td>
<td>10</td>
<td>2</td>
<td>12</td>
<td>8.24</td>
<td>2.66</td>
<td>-0.67(0.23)</td>
<td>-0.31(0.46)</td>
<td>0.70</td>
</tr>
<tr>
<td>Spouse Support (N=64)</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>6.48</td>
<td>1.73</td>
<td>-1.29(0.29)</td>
<td>1.18(59)</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Numbers in parentheses are the standard errors
Physical and Psychological Health Measures.

Three measures of physical health were collected, namely past health problems, everyday health complaints, and current chronic illnesses (within the past month). (See Table 2.5 for all descriptives for the three health measures). For all three scales, items that participants identified were rated on a Likert-type scale from 1 (not all) to 4 (all the time/unbearable pain) for both frequency and severity. (see Appendix B for the scales).

Retrospective Health Measure. The retrospective health measure (past health) asked participants to rate the frequency and severity of health problems that occurred between the ages of 25 and 60 years. The scale had 39 items which were adapted from general medical practice surveys and listed common physical health complaints as well as chronic physical diseases/ailments (e.g., migraine headaches, allergies, cancer, and liver disease).

Everyday Health Measure. This scale included 28 items that asked participants to identify frequency and severity of any common somatic complaints that they chronically experienced (e.g., stomach aches, colds, ear infections, allergies) now. This time the age restriction was removed so that participants could report on their general health (i.e., everyday health).

Current Health Measure. This measure included the same 39 item checklist as the retrospective measure and was re-administered in phase II, except participants were asked to report on the frequency and severity of health problems for the previous month only.
Table 2.5 Descriptive Statistics for Health Outcome Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness (Std. Error)</th>
<th>Kurtosis (Std. Error)</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Past Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>51</td>
<td>38</td>
<td>89</td>
<td>49.74</td>
<td>8.62</td>
<td>1.43(0.23)</td>
<td>3.28 (0.45)</td>
<td>0.82</td>
</tr>
<tr>
<td>Severity</td>
<td>36</td>
<td>38</td>
<td>74</td>
<td>45.20</td>
<td>6.86</td>
<td>1.59(0.23)</td>
<td>2.66 (0.45)</td>
<td>0.82</td>
</tr>
<tr>
<td><strong>Present (Everyday) Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>27</td>
<td>28</td>
<td>55</td>
<td>42.14</td>
<td>6.57</td>
<td>0.14(0.23)</td>
<td>-0.86(0.46)</td>
<td>0.81</td>
</tr>
<tr>
<td>Severity</td>
<td>29</td>
<td>28</td>
<td>57</td>
<td>34.13</td>
<td>5.52</td>
<td>1.30(0.23)</td>
<td>2.15(0.46)</td>
<td>0.86</td>
</tr>
<tr>
<td>Visits</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>0.58</td>
<td>0.28(0.23)</td>
<td>0.99(0.46)</td>
<td></td>
</tr>
<tr>
<td><strong>Current (1 month) Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>37</td>
<td>39</td>
<td>76</td>
<td>48.04</td>
<td>7.13</td>
<td>1.41(0.22)</td>
<td>2.68(0.45)</td>
<td>0.76</td>
</tr>
<tr>
<td>Severity</td>
<td>27</td>
<td>38</td>
<td>65.</td>
<td>42.53</td>
<td>4.67</td>
<td>1.67(0.22)</td>
<td>4.22(0.45)</td>
<td>0.81</td>
</tr>
<tr>
<td>API</td>
<td>29</td>
<td>5</td>
<td>34</td>
<td>8.21</td>
<td>6.44</td>
<td>2.19</td>
<td>4.51</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Numbers in parentheses are the standard errors

**Health Markers.** To assess the participant’s body mass index (BMI) and waist and neck circumference for central adiposity actual height and weight measures were collected by a research assistant using a calibrated digital scale and a 1”x 16’ tape measure. Researchers measured participant’s waists with clothes on, and then the neck circumference (without obstructions e.g., scarves, high neck sweaters). Neck circumference has been recognized as a non-invasive screening tool for identifying overweight individuals (Ben-Noun, Sohar, & Laor, 2001; Nafiu, et al., 2010). These health markers are important because there is considerable evidence documenting the interactions between stress, visceral obesity, and metabolic
syndrome (e.g., Tsigos, 2006). Potentially bullied individuals who are overweight may be at
greater risk for developing metabolic, cardiovascular, and other complex diseases. (See Table
2.6 for descriptives).

Definitions of overweight and obesity can vary, although scientific and professional
groups including pediatricians, health professionals, and researchers generally use a
measurement called percentile of Body Mass Index (BMI; calculated as weight in kilograms
divided by height in centimeters squared). The BMI is a single number determined by evaluating
an individual's weight in relation to his/her height. It does not measure body fat directly, but
research has shown that BMI correlates to direct measures of body fat (Mei, Grummer-Straun,
Pietrobelli, Goulding, Goran & Dietz, 2002). The references for overweight can vary, but the
most accepted cut points state a BMI of 25 and above is defined as overweight and a BMI of 30
and above is defined as obese for adults. For this study BMI was calculated using a
standardized computer program available from the AARP website. Worth noting here is that the
mean BMI in this study fell into the overweight/obese category as cited by the AARP (2011). Of
the 106 participants who reported weight, 44% of women were overweight and 19% were
obese. For men who reported weight, 28% were overweight and 15% were obese according to
standard BMI cut points.

Table 2.6 Descriptive Statistics for Health Markers: BMI, Waist, and Neck Circumference

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness (Std. Error)</th>
<th>Kurtosis (Std. Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>26.20</td>
<td>17.20</td>
<td>43.40</td>
<td>28.09</td>
<td>5.15</td>
<td>0.77(0.23)</td>
<td>0.61(0.46)</td>
</tr>
<tr>
<td>Waist (cm)</td>
<td>97.20</td>
<td>40.00</td>
<td>137.20</td>
<td>98.57</td>
<td>15.08</td>
<td>-0.37(0.23)</td>
<td>1.42(0.47)</td>
</tr>
<tr>
<td>Neck (cm)</td>
<td>61.20</td>
<td>15.00</td>
<td>76.20</td>
<td>39.19</td>
<td>6.52</td>
<td>1.54(.23)</td>
<td>10.78(0.47)</td>
</tr>
</tbody>
</table>

Numbers in parentheses are the standard errors

Older Adult Self-Report (OASR; Achenbach & Rescorla, 2004). The OASR
measures overall psychological adaptive functioning and problems in adults from 60-90+ years
and contains a broad range of scales. There are 127 questions broken into three core areas each with subscales assessing a range of psychological and physical health outcomes: 1) Adaptive Functioning Scales includes Friends; Spouse/Partner; Personal Strengths; 2) Syndrome Scales include: Anxious/Depressed; Worries; Somatic Complaints; Functional Impairment; Memory/Cognition Problems; Thought Problems; and Irritable/Disinhibited; and 3) DSM-oriented Scales include: Depressive Problems; Anxiety Problems; Somatic Problems; Dementia Problems; Psychotic Problems; and Antisocial Personality Problems. For this dissertation, I specifically examined internalizing behavior (i.e., subscales of anxious/depressed behavior and worries). These two scales included 28 Likert-type items (20 for anxious depressed) (e.g., “I am fearful or anxious, restless or fidgety” and “I worry about my family/appearance/too much about my health”) with a response a scale of 1 (not true) to 4 (very true). These items had a reliability of $\alpha = .92$, and .69 for anxious depressed and worries ($Ms = 5.69, 4.21, SDs = 4.99, 2.48$), respectively\(^2\). I also examined externalizing problems (i.e., irritable/disorganized behavior) which included 20 items (e.g., “I am not liked by others or “I am stubborn, irresponsible”) with the same Likert scale ($M = 4.81, SD = 3.68$).

**Procedure**

This study involved two separate phases: The first phase lasted approximately one hour and each participant was individually interviewed. This included the prescreen measure to ensure mental stability. Participants also completed a packet of surveys on their own time that were collected on the follow up visit. In the second phase the participants were met for 30-45 minutes to complete more questionnaires and to collect basic health measures.

**Phase 1 – Prescreen -Data Collection**

The study was explained but the word bullying was never used to avoid potential biases. Consents were explained and read out loud. They were then signed and collected by

\(^2\) The anxious/depressed and worries scales, although both internalizing measures, were analyzed separately for completeness as this research was exploratory in nature.
research assistants. First, I administered the Blessed Test. While this was scored manually the participants completed the Direct & Indirect Aggression Scales (DIAS), the Adult Social Experiences Questionnaire (A-SEQ), the Retrospective Victimization Scale (RVIC) and the Past Health Questionnaire. No participants were excluded on the results of the Blessed Test. The participants then completed the questionnaires in a self-paced paper-and-pencil format. They were also explicitly told that they had the right to withdraw at any time without penalty - none did.

**Document Packet**

Participants were left with a packet of questionnaires to complete in their own time and a second meeting was arranged at that point. The packet included the Social Support Scale; the Co-Rumination Scale (Rose, 2002, Rose et al., 2007), the Older Adult Self-Report (OASR; Achenbach, Newhouse, & Rescorla, 2004), and the Everyday Health questionnaire.

**Phase 2 Data Collection**

Phase I data packets were collected and participants completed the Abdominal Pain Index, and reported on their Current Physical Health status. Research assistants also collected actual height and weight, waist, and neck circumference. At the conclusion of the study, participants were thanked and any general queries addressed.

As part of a larger project that will not be addressed in this paper, I also collected a total of eight cortisol samples for participants over two socially interactive days to assess any physiological changes associated with victimization. I simultaneously collected self-reported measures of general health and well-being specifically for those two days as control measures for the cortisol. These will be analyzed at a later date.
CHAPTER 3

RESULTS

Missing Data

To address any missing data missing value analyses (MVA) were conducted for each scale in SPSS. The Little MCAR tests were not significant, indicating that the missing data points were missing completely at random (MCAR; Little, 1988) (e.g., $\chi^2 = 728.58$, $162.34$ dfs = 731, 194, $p$s = .52, .95, for victimization and health measures respectively). The MCAR indicated that any missing data were not related to other variables. Thus, I used the expectation maximization (EM) method (a two-step iterative process) which substituted estimated expectations of missing data for the missing data points and then ran maximum likelihood estimation with the included substitutions. The second step calculated the maximum likelihood estimates of the parameters based on the values that were calculated in the first step. Once convergence was reached, the final data set (with the imputed values) with no missing values was used for all analyses. Only individual data points were imputed if a participant had missed a question. However, if an entire scale was not collected for any individual this was excluded, hence the degrees of freedom vary for some scales. I also examined all variables of interest for skewness and kurtosis and ascertained that that transformations did not improve the data significantly so were not adopted for this dissertation.

Gender and Age Differences

No sex or age differences were found in health or victimization variables of interest, except males reported more abdominal pain than females: ($Ms = 9.29$, $7.62$, $SDs = 8.44$, 4.76), respectively; greater somatic problems than women ($Ms = 3.80$, $3.26$, $SDs = 4.32$, 2.58), respectively; and less friendship support ($Ms = 7.40$, $8.45$, $SDs = 2.79$, 2.46), respectively. (See table 3.1 for sex differences only). In addition, developmental literature has ascertained that co-
rumination is more common among girls than boys, and suggests that girls engage in this behavior as a way of seeking and offering support (Rose, 2002; Rose & Rudolph, 2006; Rose, Carlson, & Waller, 2007). The present study found no sex or age differences between victimization, social support measures or health measures (See tables 3.1 and 3.2).

Table 3.1 Sex Differences for Health and Memory

<table>
<thead>
<tr>
<th>Males</th>
<th>Females</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday Health</td>
<td>Frequency</td>
<td>42.90</td>
<td>7.36</td>
<td>41.68</td>
<td>6.05</td>
<td>0.92</td>
<td>0.09</td>
</tr>
<tr>
<td>Everyday Health</td>
<td>Severity</td>
<td>33.90</td>
<td>5.05</td>
<td>34.27</td>
<td>5.82</td>
<td>-0.33</td>
<td>0.53</td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td></td>
<td>9.28</td>
<td>8.44</td>
<td>7.62</td>
<td>4.75</td>
<td>1.33</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Somatic</td>
<td></td>
<td>3.80</td>
<td>4.32</td>
<td>3.26</td>
<td>2.58</td>
<td>0.81</td>
<td>0.03</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>Worries</td>
<td>4.83</td>
<td>4.89</td>
<td>6.21</td>
<td>5.00</td>
<td>-1.40</td>
<td>0.50</td>
</tr>
<tr>
<td>Irritable/Disorganized</td>
<td></td>
<td>3.80</td>
<td>2.81</td>
<td>4.45</td>
<td>2.25</td>
<td>0.99</td>
<td>0.23</td>
</tr>
<tr>
<td>Blessed Score</td>
<td></td>
<td>4.85</td>
<td>4.09</td>
<td>4.79</td>
<td>3.43</td>
<td>0.43</td>
<td>0.11</td>
</tr>
<tr>
<td>Digit Span</td>
<td></td>
<td>1.69</td>
<td>2.54</td>
<td>1.13</td>
<td>1.76</td>
<td>-1.31</td>
<td>0.49</td>
</tr>
<tr>
<td>TMT A</td>
<td></td>
<td>6.45</td>
<td>1.29</td>
<td>6.49</td>
<td>1.20</td>
<td>-0.79</td>
<td>0.89</td>
</tr>
<tr>
<td>TMT B</td>
<td></td>
<td>17.49</td>
<td>45.17</td>
<td>21.61</td>
<td>-2.60</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>TMT Ratio</td>
<td></td>
<td>96.71</td>
<td>48.93</td>
<td>112.37</td>
<td>72.18</td>
<td>-0.22</td>
<td>0.51</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td>2.38</td>
<td>0.77</td>
<td>2.57</td>
<td>1.06</td>
<td>0.92</td>
<td>0.09</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td></td>
<td>27.97</td>
<td>4.56</td>
<td>28.17</td>
<td>5.53</td>
<td>-0.33</td>
<td>0.53</td>
</tr>
<tr>
<td>Neck Circumference</td>
<td></td>
<td>99.72</td>
<td>16.12</td>
<td>97.87</td>
<td>14.49</td>
<td>1.33</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td></td>
<td>41.10</td>
<td>7.04</td>
<td>37.96</td>
<td>5.90</td>
<td>-1.40</td>
<td>0.50</td>
</tr>
</tbody>
</table>
Table 3.2 Sex Differences for Victimization and Social Support

<table>
<thead>
<tr>
<th></th>
<th>Males (n=42)</th>
<th>Females (n=69)</th>
<th>t score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Past Victimization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>past relate</td>
<td>4.52</td>
<td>4.25</td>
<td>0.79</td>
<td>0.45</td>
</tr>
<tr>
<td>past physical</td>
<td>3.81</td>
<td>3.54</td>
<td>1.19</td>
<td>0.24</td>
</tr>
<tr>
<td>past verbal</td>
<td>4.40</td>
<td>4.18</td>
<td>0.69</td>
<td>0.49</td>
</tr>
<tr>
<td><strong>Total Victimization</strong></td>
<td>0.04</td>
<td>-0.02</td>
<td>0.43</td>
<td>0.11</td>
</tr>
<tr>
<td>overt</td>
<td>7.26</td>
<td>7.22</td>
<td>0.13</td>
<td>0.89</td>
</tr>
<tr>
<td>relate</td>
<td>12.77</td>
<td>12.70</td>
<td>0.09</td>
<td>0.92</td>
</tr>
<tr>
<td>verbal</td>
<td>8.43</td>
<td>8.42</td>
<td>0.01</td>
<td>0.99</td>
</tr>
<tr>
<td>indirect</td>
<td>18.60</td>
<td>18.19</td>
<td>0.39</td>
<td>0.70</td>
</tr>
<tr>
<td>physical</td>
<td>7.63</td>
<td>7.84</td>
<td>-0.73</td>
<td>0.47</td>
</tr>
<tr>
<td>Co-Rumination</td>
<td>17.35</td>
<td>19.58</td>
<td>-1.31</td>
<td>0.49</td>
</tr>
<tr>
<td>Social Support</td>
<td>76.02</td>
<td>77.68</td>
<td>-0.79</td>
<td>0.89</td>
</tr>
<tr>
<td>Friendship Support</td>
<td>7.40</td>
<td>8.75</td>
<td>-2.60</td>
<td>0.42</td>
</tr>
<tr>
<td>Spouse Support</td>
<td>6.43</td>
<td>6.53</td>
<td>-0.22</td>
<td>0.51</td>
</tr>
</tbody>
</table>

What Percentage of Seniors are Bullied?

I began by examining the number of peer-victims that were present in my senior sample using a two-step classification process that is thought to lead to a more valid and robust pattern (Steele & Aylward, 2007). First, I used agglomerative hierarchical cluster analyses (Ward’s method), which begins by treating each person as a “group” and then combining them with other persons/groups that are closest in proximity to one another. The five dimensions of victimization (from the ASEQ and DIAS) were standardized and used to establish the initial cluster solution. Using the agglomeration coefficients and dendogram, I determined that the appropriate number of groups involved two clusters based on the percentage of change from
each stage of clustering. That is, there was a large change in the agglomeration cluster when combining the last two clusters, which indicated that two heterogeneous clusters were being combined.

I then used k-cluster means analysis (with normalized Euclidean distance) to confirm the solution. The cluster means for the five victimization dimensions from the hierarchical cluster analysis were used as the initial cluster centers for the k-means clustering. The cluster solution converged in two iterations (which is excellent). In addition, 99.10% of the participants were classified in the same groups for both methods. In other words, only one participant was classified differently using the two methods. Hierarchical analysis classified 85 individuals as non-victims and k-cluster identified only 84 non-victims (and classified the 85th person as a victim). In sum, senior adults clustered into a non-victimized group (n = 85) and a victimized group (n = 27, female = 18). The victimized group (n = 27) were significantly more victimized (M = 1.08, SD = 0.79, than the nonvictimized group (n = 85; M =-0.33, SD = 0.30) on the overall composite of victimization, F (1, 109) = 186.54, p = 0.01, $\eta^2_{\text{partial}} = 0.63$. This senior sample also matched previous adolescent studies such that 24% of the senior adults reported being victimized. Furthermore, these seniors clustered based on the severity of their victimization and not the type of victimization that they endured (matching my principal components analysis reported earlier). Although I initially identified two distinct clusters in order to ascertain whether this sample included victimized individuals, for completeness I considered victimization as a continuous measure for all further analyses.

**Do Victimized Seniors Report Greater Physical Health Problems (Hypothesis 1a)?**

It was predicted that bullied older adults would exhibit poorer physical health outcomes than non-bullied individuals. To assess physical health outcomes, the self-reported frequency and severity of health problems for past, recent/every day, and current (within the last month) time points were assessed. In addition, somatic complaints (OASR), abdominal pain, BMI, and neck/waist circumference were used as dependent measures.
When I examined the relationships between victimization and health both overall victimization, and in particular, relational victimization were significantly related to all self-reported health outcomes across all three reporting time frames. Past victimization was only associated with past severity of health problems $r = 0.21$, $p = 0.02$ (See Table 2.5 for descriptives and Table 3.3 for correlations). Victimization (except physical and overt) was related to abdominal pain, BMI, and neck circumference (see Table 3.4).

**Table 3.3 Correlations Between Past Victimization, Current Victimization, and Self Reported Physical Health Outcomes**

<table>
<thead>
<tr>
<th></th>
<th>Current Health</th>
<th>Past Health</th>
<th>Every Day Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Severity</td>
<td>Frequency</td>
</tr>
<tr>
<td>Overt</td>
<td>0.21*</td>
<td>0.16</td>
<td>0.24*</td>
</tr>
<tr>
<td>Relational</td>
<td>0.22*</td>
<td>0.22*</td>
<td>0.21*</td>
</tr>
<tr>
<td>Physical</td>
<td>0.11</td>
<td>0.12</td>
<td>0.24*</td>
</tr>
<tr>
<td>Verbal</td>
<td>0.16</td>
<td>0.11</td>
<td>0.20*</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.25**</td>
<td>0.22*</td>
<td>0.15</td>
</tr>
<tr>
<td>Total Victimization</td>
<td>0.24*</td>
<td>0.21*</td>
<td>0.24*</td>
</tr>
<tr>
<td>Past Victimization</td>
<td>0.18</td>
<td>0.16</td>
<td>0.16+</td>
</tr>
</tbody>
</table>

Note: * $p < 0.05$; ** $p < 0.01$

**Table 3.4 Correlations Between Victimization and Physical Health Markers**

<table>
<thead>
<tr>
<th></th>
<th>Abdominal Pain</th>
<th>Somatic</th>
<th>BMI</th>
<th>Neck</th>
<th>Waist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt</td>
<td>0.18</td>
<td>0.45**</td>
<td>0.14</td>
<td>0.08</td>
<td>0.04</td>
</tr>
<tr>
<td>Relational</td>
<td>0.28**</td>
<td>0.33**</td>
<td>0.11</td>
<td>0.16+</td>
<td>0.05</td>
</tr>
<tr>
<td>Physical</td>
<td>0.11</td>
<td>0.33**</td>
<td>0.06</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>Verbal</td>
<td>0.21*</td>
<td>0.32**</td>
<td>0.12</td>
<td>0.19+</td>
<td>0.16</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.21*</td>
<td>0.31**</td>
<td>0.14</td>
<td>0.12</td>
<td>0.11</td>
</tr>
<tr>
<td>Total Victimization</td>
<td>0.29**</td>
<td>0.41**</td>
<td>0.18+</td>
<td>0.22*</td>
<td>0.12</td>
</tr>
<tr>
<td>Past Victimization</td>
<td>0.28**</td>
<td>0.23**</td>
<td>0.19+</td>
<td>0.27**</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Note: * $p < 0.05$; ** $p < 0.01$
To control for previous victimization and health problems, I ran a linear regression with past victimization and past health (either severity or frequency) entered on the first step as control variables. Next, I entered current victimization as a predictor on the second step. The frequency and severity of recent/every day and current (within one month) health problems were my outcome measures (i.e., there were four outcome measures). Current victimization predicted the frequency of recent health problems even after controlling for past frequency of health problems and past victimization, $\Delta F(1, 101) = 4.87, p = .03, \Delta R^2 = .036$ (see Figure 3.1). In addition, past health problems predicted the frequency of recent health problems, $b = 0.33, t(101) = 4.35, p < .001, sr = 0.37$. Past victimization was no longer related to everyday health problems, $b = -1.62, t(101) = -1.36, p = .18$.

However, current victimization did not predict the severity of recent problems after controlling for past severity of problem and past victimization, $\Delta F(1, 101) = 1.44, p = .23, \Delta R^2 = .01$. Past severity of health problems continued to predict recent severity of health problems, $b = 0.26, t(101) = 2.97, p = .004, sr = 0.28$. Finally, current victimization no longer was related to health problems within the past month after controlling for past health problems and victimization, $bs = 0.44, -0.41, t(101) = 0.36, -0.52, p = 0.72, 0.61, sr = 0.02, 0.03$, for frequency and severity respectively.
Finally, I ran a series of linear regressions with past victimization entered on the first step and current victimization as a predictor on the second step for the final set of health measures that did not have retrospective reports as control measures. Past and current victimization together predicted abdominal pain ($F(2, 108) = 5.10, p = .008, R^2 = 0.09$), somatic complaints ($F(2, 103) = 12.27, p < .001, R^2 = 0.19$), and neck circumference ($F(2, 101) = 4.02, p = .02, R^2 = 0.07$). Current victimization uniquely predicted somatic complaints, $b = 2.99, t(103) = 3.99, p < .001, sr = 0.35$. However, neither victimization time-point uniquely predicted abdominal pain or neck circumference. There was no evidence that victimization predicted BMI or waist circumference. Overall, being bullied was a predictor of the frequency of recent health problems, somatic complaints, abdominal pain, and neck circumference suggesting that victimization is related to health problems in senior adults.

Do Victimized Seniors Report Greater Psychological Health Problems (Hypothesis 1b)?

In addition, the study examined whether being bullied influenced self-reports of psychological maladjustment (e.g. internalizing, externalizing problems). Internalizing problems included two subscales: anxious/depressed and worries a lot. Externalizing problems was
assessed by the irritable/disorganized subscale. Current victimization was associated with both internalizing and externalizing problems (See Table 3.5 for correlations). In addition, past victimization was associated with current externalizing problems.

Table 3.5 Correlations Between Victimization, Internalizing, and Externalizing Measures

<table>
<thead>
<tr>
<th></th>
<th>Anxious/Depressed</th>
<th>Worrying</th>
<th>Irritable/Disorganized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt</td>
<td>0.34**</td>
<td>0.24*</td>
<td>0.39**</td>
</tr>
<tr>
<td>Relational</td>
<td>0.24*</td>
<td>0.23*</td>
<td>0.22*</td>
</tr>
<tr>
<td>Physical</td>
<td>0.29**</td>
<td>0.37**</td>
<td>0.21*</td>
</tr>
<tr>
<td>Verbal</td>
<td>0.25**</td>
<td>0.19</td>
<td>0.40**</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.17</td>
<td>0.15</td>
<td>0.29**</td>
</tr>
<tr>
<td><strong>Total Victimization</strong></td>
<td><strong>0.28</strong></td>
<td><strong>0.20</strong></td>
<td><strong>0.34</strong></td>
</tr>
<tr>
<td>Past Physical</td>
<td>0.10</td>
<td>0.02</td>
<td>0.21*</td>
</tr>
<tr>
<td>Past Verbal</td>
<td>0.18</td>
<td>0.07</td>
<td>0.16</td>
</tr>
<tr>
<td>Past Relational</td>
<td>0.10</td>
<td>-0.04</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Total Past Victimization</strong></td>
<td>0.14</td>
<td>0.01</td>
<td><strong>0.21</strong></td>
</tr>
</tbody>
</table>

Note: * p < 0.05; ** p < 0.01

To control for previous victimization, I ran a linear regression with past victimization entered on the first step as a control variable. Next, I entered current victimization as a predictor on the second step. Current psychological problems were the outcome measures (i.e., anxious/depressed, worries a lot, and irritable/disorganized). Unfortunately, I had no measures of previous psychological problems due to time constraints associated with the study. Current victimization predicted anxious/depressed problems even after controlling for past victimization, \( \Delta F(1, 103) = 10.60, p = .002, \Delta R^2 = .09 \). In addition, current victimization was related to worrying after controlling for past victimization, \( \Delta F (1, 103) = 15.57, p < .001, \Delta R^2 = .13 \). Finally, current victimization predicted irritable/disorganized problems after controlling for past victimization.
Past victimization was no longer related to current irritable/disorganized problems, $b = -1.27$, $t(103) = -1.80$, $p = .075$, $sr = -0.16$. Overall, current victimization was positively related to both internalizing and externalizing problems in senior adults.

**Do Victimized Seniors Experience Greater Cognitive Problems (Hypothesis 1c)?**

Victimization was predicted to be negatively related to cognitive functioning (i.e., attention span, working memory). Cognitive function was assessed using the Trail Making Tests (TMT) A and B, and the trail making ratio (B/A ratio); however, only TMTA was associated with past and current relational victimization $r's = -0.21$, $p = 0.03$. Moreover, this relationship was in the opposite direction to what was expected (i.e. increased performance times were negatively related to relational victimization). In addition, current relational and indirect victimization were associated with the Digit Span Test. Past and current physical victimization were positively associated with memory problems (OASR). (See table3.6).

<table>
<thead>
<tr>
<th></th>
<th>TMTA</th>
<th>TMTB</th>
<th>TMT Ratio</th>
<th>Digit Span</th>
<th>OASR Memory</th>
<th>Blessed Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relational</td>
<td>-0.21*</td>
<td>-0.14</td>
<td>0.00</td>
<td>*<em>-0.20</em></td>
<td>0.10</td>
<td>0.05</td>
</tr>
<tr>
<td>Verbal</td>
<td>-0.12</td>
<td>-0.12</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.07</td>
<td>-0.10</td>
</tr>
<tr>
<td>Indirect</td>
<td>-0.13</td>
<td>-0.05</td>
<td>0.03</td>
<td><strong>-0.24</strong></td>
<td>0.13</td>
<td>-0.04</td>
</tr>
<tr>
<td>Physical</td>
<td>-0.08</td>
<td>0.03</td>
<td>0.10</td>
<td>-0.17</td>
<td>*<em>0.20</em></td>
<td>-0.06</td>
</tr>
<tr>
<td><strong>Total Victimization</strong></td>
<td><strong>-0.18+</strong></td>
<td>-0.13</td>
<td>-0.01</td>
<td>-0.16</td>
<td>**0.17+</td>
<td>-0.11</td>
</tr>
<tr>
<td>Past Relational</td>
<td><strong>-0.21</strong>*</td>
<td>-0.17</td>
<td>-0.09</td>
<td>-0.09</td>
<td>0.13</td>
<td><strong>-0.19</strong>*</td>
</tr>
<tr>
<td>Past Verbal</td>
<td>-0.12</td>
<td>-0.15</td>
<td>-0.07</td>
<td>-0.10</td>
<td>0.10</td>
<td><strong>-0.19</strong>*</td>
</tr>
<tr>
<td>Past Physical</td>
<td>-0.18</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.13</td>
<td>*<em>0.21</em></td>
<td>-0.10</td>
</tr>
<tr>
<td><strong>Past Victimization</strong></td>
<td>-0.13</td>
<td>-0.14</td>
<td>-0.04</td>
<td>-0.12</td>
<td>0.16</td>
<td><strong>-0.18+</strong></td>
</tr>
</tbody>
</table>

Note: * $p < 0.05$; ** $p < 0.01$
Again, to control for previous victimization, I ran a linear regression with past victimization entered on the first step as a control variable³. Next, I entered current victimization as a predictor on the second step. Current cognitive function measures were the outcome measures (i.e., Trail-making ratio, digit span performance, and general memory impairment (from OASR)). Also, I had no measures of previous cognitive function problems as anyone with pre-diagnosed cognitive disorders or diagnosed dementia would have been excluded from participating in the current study.

Current victimization did not predict working memory capacity (digit span), or setswitching capabilities $\Delta F(1, 108) = 1.47, p = .23, \Delta R^2 = .01$; working memory (TMT A & B) $\Delta F(1, 105) = 0.26, p = .61, \Delta R^2 = .00$; or memory problems (OASR) after controlling for past victimization, $\Delta F(1, 103) = 0.27, p = .61, \Delta R^2 = .00$.

**Supplemental Analyses.** I further examined whether past victimization interacted with current victimization to produce health outcomes. In other words, it is possible that individuals who had both past and current victimization experiences would have the worst outcomes. There was no evidence of a past X current victimization interaction for any of my health measures. Furthermore, only current victimization consistently predicted health outcomes. However, past victimization involved retrospective reporting. Moreover, current and past victimization measures were highly correlated ($r = 0.86, p < .001$).

**Does Gender Affect the Victimization-Health Links (Hypothesis 2)?**

It was also posited that gender would influence health outcomes. More specifically, men and women might experience similar types of stressors but they would be affected in different ways. Multiple regression analyses using sex, and current victimization, and their interactions (sex X victimization) as predictors were run. Where possible past victimization and past health were used as control variables. For the overall model, unweighted effect codes were used.

³ Supplementary analyses that controlled for age as well as past victimization produced virtually identical results.
Dummy coding was then used for testing pair-wise differences between the two sexes (see Aiken and West, 1991, for details). Given the low power to detect interaction effects, marginal interactions were explored for completeness (Aiken & West, 1991).

**Physical Health Problems.** After controlling for past health frequency and past victimization, there was a marginal sex X victimization interaction ($B = -0.98$, $t(99) = -1.71$, $p = .09$). Current victimization predicted the frequency of recent/everyday health problems for men ($B = 5.51$, $t(99) = 3.35$, $p = .001$, $sr = 0.28$). However, there was no relationship between victimization and frequency of health problems for women ($B = 1.25$, $t(99) = 1.10$, $p = 0.275$, $sr = 0.09$).

After controlling for past victimization, there was a sex X victimization interaction for self-reported somatic problems (ASEBA) ($B = -0.43$, $t(101) = -2.46$, $p = 0.016$, $sr = -0.21$) (See Figure 3.2). For men, victimization predicted their current somatic complaints ($B = 4.47$, $t(101) = 5.70$, $p < .001$, $sr = 0.47$). Victimization also predicted somatic complaints for women, but the magnitude of the effect was smaller ($B = 1.57$, $t(101) = 1.98$, $p = 0.05$, $sr = 0.16$). There was also a sex X victimization interaction for abdominal pain after controlling for past victimization ($B = -1.21$, $t(106) = -2.07$, $p = 0.04$, $sr = -0.19$). Victimization was related to abdominal pain for men ($B = 3.65$, $t(106) = 2.21$, $p = 0.03$, $sr = 0.20$). There was no evidence that victimization predicted abdominal pain for women ($B = -0.26$, $t(106) = -0.16$, $p = 0.88$, $sr = -0.01$).

After controlling for past victimization and health (where possible), there was no evidence of a sex X victimization interaction for BMI ($B = -0.53$, $t(101) = -1.03$, $p = 0.31$, $sr = -0.10$), waist circumference ($B = -0.45$, $t(98) = -0.30$, $p = 0.77$, $sr = -0.03$), or severity of recent/everyday health problems ($B = -0.30$, $t(99) = -0.57$, $p = 0.57$, $sr = -0.05$). Although there was a sex X victimization interaction for neck circumference ($B = -1.27$, $t(99) = -2.05$, $p = .04$, $sr = -0.19$), neither of the simple slopes were significantly different than zero (Men: $B = 1.10$, $t = 0.64$, $p = 0.52$; Women: $B = -1.47$, $t = -0.81$, $p = 0.42$).
Overall, the relationship between victimization and health problems was stronger for older men than it was for older women.

Figure 3.2 Interaction Between Sex, Victimization and Somatic Health Outcomes

**Psychological Problems.** I further examined whether current victimization interacted with sex to produce psychological health outcomes. After controlling for past victimization, there was a significant interaction for anxious/depressed (B = -1.09, t(101) = -2.44, p = 0.02, sr = -0.22). Victimization predicted anxious/depressed symptoms in men (B = 5.30, t(101) = 4.18, p < .001, sr = 0.37). Contrary to my predictions, victimization was not related to anxious/depressed symptoms in women (B = -1.74, t(101) = 1.84, p = 0.07, sr = -0.16). There was no evidence of a sex X victimization interaction for worrying, (B = -0.22, t(101) = -0.99, p = 0.33, sr = -0.09). Bullied men and women were equally likely to report more worrying than their non-bullied counterparts (B = -1.57, t(101) = -3.23, p < .01, sr = 0.30).

There was a significant sex X victimization interaction for irritable/disorganized problems (B = -0.64, t(101) = -1.93, p = 0.056, sr = -0.18) (see Figure 3.3). Victimization predicted irritable/disorganized symptoms in men (B = 3.71, t(101) = 3.92, p < .001, sr = 0.36). Victimization also predicted irritable/disorganized symptoms in women, but the magnitude of the effect was smaller (B = 2.19, t(101) = 2.28, p = 0.025, sr = 0.21).
Again, results suggest that the magnitude of the relationship between victimization and psychological problems was stronger for older men than it was for older women, with the exception of worrying.

Figure 3.3 Interaction Between Sex, victimization and Psychological Health Outcomes

Memory Functioning. There was no evidence of any sex \( \times \) victimization interactions for self-reported memory problems (ASEBA) \( (B = -0.47, t(101) = -1.73, p = .086, sr = -0.17) \), digit span \( (B = 0.06, t(106) = 0.49, p = .62) \), TMT-A \( (B = -2.31, t(104) = -1.20, p = .24) \), TMT-B \( (B = -4.27, t(104) = -0.38, p = .50) \), or TMT-ratio \( (B = 0.02, t(104) = 0.25, p = .80)^2 \). As stated previously, there were also no main effects for being bullied predicted memory functioning.

Does Social Support Moderate the Victimization-Health Link (Hypothesis 3)?

Finally, I investigated whether social support moderated the effects of victimization on health and memory. In particular, social support is often a powerful buffer in negative social situations and has been consistently shown to be negatively related to stress responses, and positively related to well-being.

---

2 Supplementary analyses controlling for social support produced virtually identical sex \( \times \) victimization interactions.
Social support was negatively related to both frequency and severity of health problems at different periods in time as well as abdominal pain and self-reported somatic health problems (see tables 3.7-3.8). In addition, it was positively associated with requests for help (ASEQ), friendship quality (ASEBA), and quality of spousal relationships (ASEBA), $rs = .47, .62, ps < .001$, and $r = .29, p < .05$, respectively. However, it was also positively related to co-rumination ($r = 0.30, p = .002$), which has been negatively associated with health outcomes in previous research (Rose, 2002).

Table 3.7 Correlations Between Social Support and Physical Health Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Past Health</th>
<th>Every Day Health</th>
<th>Current Health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Severity</td>
<td>Frequency</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.07</td>
<td><strong>-0.23</strong></td>
<td><strong>-0.26</strong></td>
</tr>
<tr>
<td>Pro-Social Help</td>
<td>0.11</td>
<td>0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>Friends</td>
<td>-0.01</td>
<td>-0.07</td>
<td>-0.15</td>
</tr>
<tr>
<td>Co-Rumination</td>
<td>0.08</td>
<td>0.07</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

Table 3.8 Correlations Between Social Support and Physical Health Markers

<table>
<thead>
<tr>
<th></th>
<th>Abdominal Pain</th>
<th>Somatic</th>
<th>BMI</th>
<th>Waist</th>
<th>Neck Circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td><strong>-0.25</strong></td>
<td><strong>-0.25</strong></td>
<td>-0.15</td>
<td>-0.17</td>
<td>-0.18</td>
</tr>
<tr>
<td>Pro-Social Help</td>
<td>-0.16</td>
<td>-0.07</td>
<td>-0.10</td>
<td>-0.17</td>
<td><strong>-0.29</strong></td>
</tr>
<tr>
<td>Friends</td>
<td><strong>-0.22</strong></td>
<td>-0.14</td>
<td>-0.12</td>
<td><strong>-0.22</strong></td>
<td><strong>-0.37</strong></td>
</tr>
<tr>
<td>Co-Rumination</td>
<td>0.08</td>
<td>0.07</td>
<td>0.05</td>
<td>0.02</td>
<td>0.03</td>
</tr>
</tbody>
</table>

As such, I wanted to examine whether social support buffered against the negative influence of victimization. Using regression analyses, I controlled for past victimization, gender of participant, and for frequency and severity of health problems (I controlled for previous health
problems where possible). I then centered and entered victimization, social support, and their cross-product. Overall, there was no consistent evidence that social support buffered against the deleterious effects of victimization (See Table 3.9). For physical health problems, there is a trend suggesting that more social support weakened the victimization-health link. However, for psychological health problems, high social support appeared to exacerbate the link between victimization and health. In addition, there was no evidence that social support moderated the relationship between victimization and memory problems.

After controlling for the effects of victimization, social support was still related to anxious/depressed problems (B = -1.00, t(96) = -1.92, p = .058), abdominal pain (B = -1.30, t(99) = -1.81, p = .073), Digit Span (B = 0.37, t(99) = 2.65, p = .009), memory problems (B = -0.62, t(96) = -1.91, p = .059), frequency of health problems (B = -1.31, t(95) = -1.96, p = .053), and severity of health problems (B = -2.16, t(95) = -3.65, p < .001). In addition, victimization continued to predict frequency of recent health problems, somatic complaints, anxious/depressed problems, worrying, and irritable/disorganized problems after controlling for social support (see Table 3.9). In sum, although social support did not buffer against the influence of victimization, there were additive effects such that older adults who were victimized and had low social support would have the worse health problems.

Table 3.9 Relation (B-Weights) of Victimization to Health as a Function of Social Support

<table>
<thead>
<tr>
<th>Combination of measures</th>
<th>Level of Social Support</th>
<th>Simple Slopes (B)</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-1 SD 0 SD +1 SD</td>
<td>t-Value   p-value</td>
</tr>
<tr>
<td><strong>Victimization X</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Health Problems</td>
<td>3.78* 2.29* 0.80</td>
<td>-1.74 0.09</td>
<td></td>
</tr>
<tr>
<td>Severity of Health Problems</td>
<td>1.56 0.17 -1.44</td>
<td>-2.17 0.03</td>
<td></td>
</tr>
<tr>
<td>Somatic Complaints (ASEBA)</td>
<td>3.34** 2.78** 2.21*</td>
<td>-1.25 0.22</td>
<td></td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td>2.19 0.78 -0.64</td>
<td>-1.52 0.13</td>
<td></td>
</tr>
</tbody>
</table>
Table 3.9 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>-0.08</td>
<td>0.83</td>
<td>1.73</td>
<td>1.11</td>
<td>0.27</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td>-0.32</td>
<td>1.52</td>
<td>3.36</td>
<td>0.77</td>
<td>0.44</td>
</tr>
<tr>
<td>Neck Circumference</td>
<td>-0.93</td>
<td>-0.39</td>
<td>0.15</td>
<td>0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>2.71*</td>
<td>3.66*</td>
<td>4.60*</td>
<td>1.40</td>
<td>0.17</td>
</tr>
<tr>
<td>Worrying</td>
<td>1.78**</td>
<td>2.54**</td>
<td>3.29**</td>
<td>2.19</td>
<td>0.03</td>
</tr>
<tr>
<td>Irritable/Disorganized</td>
<td>2.11*</td>
<td>3.07**</td>
<td>4.04**</td>
<td>1.88</td>
<td>0.06</td>
</tr>
<tr>
<td>Memory Problems (ASEBA)</td>
<td>0.05</td>
<td>0.27</td>
<td>0.50</td>
<td>0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>Digit Span</td>
<td>-0.24</td>
<td>-0.10</td>
<td>0.05</td>
<td>0.79</td>
<td>0.43</td>
</tr>
<tr>
<td>TMT-A</td>
<td>-8.64</td>
<td>-9.89+</td>
<td>-11.14</td>
<td>-0.42</td>
<td>0.68</td>
</tr>
<tr>
<td>TMT-B</td>
<td>-6.86</td>
<td>-10.58</td>
<td>-14.31</td>
<td>-0.38</td>
<td>0.71</td>
</tr>
<tr>
<td>TMT-Ratio</td>
<td>0.17</td>
<td>0.17</td>
<td>0.18</td>
<td>0.03</td>
<td>0.98</td>
</tr>
</tbody>
</table>

Note: *p < .05, **p < .01, +p < .10

Does Co-Rumination Moderate the Victimization-Health Link?

Although social support seemed to exacerbate the victimization-psychological health link, social support is also positively correlated with co-rumination (r = 0.30, p = 0.002). That is, people who co-ruminated also reported having support from others. As such, I examined whether co-rumination exacerbated the link between victimization and health after controlling for overall social support. Past victimization, sex of participant, social support, and past health (where applicable) were controlled. I centered and entered victimization, co-rumination, and their cross-product. Overall, there was no consistent evidence that co-rumination exacerbated negative effects of victimization (See Table 3.10). Contrary to previous research, there is a trend suggesting that greater co-rumination buffered against the victimization-health link for frequency of health problems and somatic complaints. However, there were no significant interactions for severity of health problems, BMI, waist circumference, and neck circumference. Although there was a significant interaction for abdominal pain, none of the simple slopes were significantly different from zero. In addition, there was no evidence that co-rumination
moderated the relationship between victimization and memory problems. For internalizing 
problems, there was a clear trend suggesting that co-ruminating aggravated the victimization-
internalizing problem association, which was similar to previous research findings (Rose, 2002, 
2007). Overall, co-rumination did not appear to strengthen the victimization-health problems 
link, with the exception of internalizing problems.

Table 3.10 Relation (B-Weights) of Victimization to Health as a Function of Co-Rumination

<table>
<thead>
<tr>
<th>Combination of measures</th>
<th>Simple Slopes (B)</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1 SD</td>
<td>0 SD</td>
</tr>
<tr>
<td>Victimization X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Health Problems</td>
<td><strong>4.47</strong></td>
<td>2.75+</td>
</tr>
<tr>
<td>Severity of Health Problems</td>
<td>1.97</td>
<td>0.64</td>
</tr>
<tr>
<td>Somatic Complaints (ASEBA)</td>
<td><strong>4.18</strong></td>
<td><strong>1.58</strong></td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td>2.83</td>
<td>0.86</td>
</tr>
<tr>
<td>BMI</td>
<td>0.67</td>
<td>0.24</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td>2.08</td>
<td>0.21</td>
</tr>
<tr>
<td>Neck Circumference</td>
<td>-2.22</td>
<td>-1.25</td>
</tr>
<tr>
<td>Anxious/Depressed</td>
<td>2.13</td>
<td><strong>3.14</strong></td>
</tr>
<tr>
<td>Worrying</td>
<td><strong>1.34</strong></td>
<td><strong>1.99</strong></td>
</tr>
<tr>
<td>Irritable/Disorganized</td>
<td>2.35</td>
<td><strong>2.59</strong></td>
</tr>
<tr>
<td>Memory Problems (ASEBA)</td>
<td>0.23</td>
<td>0.14</td>
</tr>
<tr>
<td>Digit Span</td>
<td>-0.43</td>
<td>-0.23</td>
</tr>
<tr>
<td>TMT-A</td>
<td>-8.29</td>
<td>-9.45+</td>
</tr>
<tr>
<td>TMT-B</td>
<td>1.50</td>
<td>-5.55</td>
</tr>
<tr>
<td>TMT-Ratio</td>
<td>0.31</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Note: *p < .05, **p < .01, +p < .10

Supplementary analyses. Given that sex of participant moderated the victimization-
health links, I further examined whether sex of participant would moderate the victimization X 
support and co-rumination interactions. In other words, it is possible that social support and /or 
cor-rumination may buffer against the negative effects of victimization for one sex but not for the 
other sex. As such, I first examined whether there were any significant sex of participant X
victimization X social support interactions for my dependent measures. Then I examined whether there were any significant sex of participant X victimization X co-rumination interactions for my dependent measures. Past victimization and past health problems (where appropriate) were used as control variables. Sex of participant was coded using unweighted effects codes. Victimization and social support (and co-rumination) were centered and entered into the respective model. Finally the cross-products for the three predictors were entered in the model. There was no evidence of any sex X victimization X social support (or co-rumination) interactions for any of my dependent measures.

Of the 15 dependent measures, there were only 3 significant interactions (somatic problems, digit span, and neck circumference) and these interactions did not cluster around a particular problem area (e.g., physical health problems versus psychological health problems).
CHAPTER 4
DISCUSSION

The purpose of this dissertation was to examine the link between victimization and physical health within an older community population. Previous research on peer bullying has concentrated on the child and adolescent years. Although evidence suggests that this phenomenon continues throughout adult years, any potential effects on senior adults’ physical and psychological health as well as memory has to date been ignored. This dissertation was a first attempt to replicate and extend these findings between the victimization and health link for non-working older adults.

Does bullying exist in community living seniors?

I first examined whether peer victimization actually existed in this community sample and found this senior sample matched prevalence rates in other age groups. Adolescent research has reported between 10-30% for bullying prevalence (Grills & Ollendick, 2002; Limber & Small, 2003; Slee & Rigby, 1993), an estimated 10-20% of people in institutional settings such as assisted living retirement communities are likely to have experienced some form of elderly bullying (Bonifas, 2011), and 30-55% of employees report either being involved in or witnessing bullying within workplace settings. Nearly one out of every four seniors in this dissertation reported being a frequent target of peer aggression over multiple dimensions of victimization (i.e. overt relational, indirect, verbal and physical). Furthermore, the victimized group was significantly more victimized than the nonvictimized group. Given the negative outcomes associated with being bullied for children, adolescents, and the working population this is quite an alarming number.
Is Being Bullied related to Poorer Health Outcomes?

Next, I examined whether being victimized as a senior adult was related to similar negative outcomes found in younger samples. After I controlled for retrospective reports of past health and past victimization, current victimization predicted 4% of variance in the frequency of recent/everyday physical health problems. Although current victimization did not uniquely account for abdominal pain and neck circumference when controlling for past victimization, the two in combination were related to these health problems. Past victimization was highly related to current victimization (r = .86) and often had additive effects on current health problems (e.g., abdominal pain). These findings support previous research that found relationships between working age adults, poor interpersonal relations, and both somatic and chronic physical health problems (Hoel, Faragher, & Cooper, 2004; Kaukiainen et al., 2001; Kendall-Tackett, 2009). However, I found no evidence that victimization was related to health problems reported within the previous month after controlling for past health problems. The current health scale may have been too proximal to collect any meaningful information for this age group in that there may not have been changes in health or the development of chronic illness within the last month.

Current victimization was also associated with current psychological problems in senior adults. In particular, being bullied was associated with being anxious/depressed, worrying more frequently, and being more irritable/disorganized. This finding matches the child/adolescent literature and emphasizes that bullying is still a part of older adults’ social networks. As previously mentioned negative outcomes associated with being a victim of peer bullying are numerous and well documented. For children and adolescents the body of research suggests that these individuals are at higher risk of diminished adult adjustment compared to their non-victimized peers. Along with problems such as delinquency and low self esteem, these individuals are significantly more depressed, cry easily, are withdrawn, anxious and lonely (see Crick & Grotspeter, 1995; Egan & Perry, 1998; Forero, McLellan, Rissel, & Bauman, 1999;
Hodges & Perry, 1996; Hodges & Perry, 1998). Indeed, Slee (1995) found that adolescent peer victimization among both sexes was highly related to depression and current statistics suggest anywhere from 14%-55% of suicides among 14-16 year olds may be related to bullying (and bullied adolescents are 3.3 times more likely to report suicidal behavior than non-bullied peers (Wyatt Kaminski & Fang (2009). The present study suggests that some of these issues may be prevalent to those senior adults who are recipients of peer bullying.

Third I examined the possibility that being bullied by one’s peers would be negatively associated with cognitive function, namely, attention span and working memory. The Trail making and digit span tests have been reliably determined as valuable measures of neuropsychological and executive function (Arbuthnott & Frank, 2000). There was some evidence that victimization, namely relational victimization, was associated with attention span as assessed by the Digit Span. In addition, overall victimization was related to self-reported memory problems. However, once I controlled for previous victimization current victimization no longer predicted cognitive problems. This finding was contrary to previous research that suggests stress damages neuronal circuits linked to memory, in particular the hippocampus, which is vital to the encoding functions of working memory (McEwen & Sapolsky, 2003). There is ample evidence in cognitive aging research documenting that older adults show deficits in task response when they have to divide attention between tasks, and age related decrements are consistently found in visual search (Craik, 1977). Even though the hippocampus can lose an estimated twenty percent of its nerve cells with advancing age stress may contribute to memory deficits. In some older adults stress hormones are continuously produced instead of being regulated and a continuous stream of hormones can affect the hippocampus reducing performance on attention tests and memory (Sapolsky, 1992).

However, for this study the hypothesis that bullying would affect cognitive ability may not have been supported because the measures adopted for this project may not have been sensitive enough to tease out victimization related deficits over and above any normative
changes. There is much debate over when and what changes occur in normative aging, (e.g., response slowing, changes in attention resources) and further research should include more sensitive measurements of memory while also considering severity of peer abuse and not just its frequency. Although there is very little published research on elderly bullying its existence is acknowledged, particularly in institutional settings (Bonifas, 2010). It will be important for future research to identify those people who might be especially vulnerable to being the targets of bullies as they transition into assisted living environments, and may experience physical, psychological, and cognitive decline.

**Does Gender Influence the Victimization Health Link?**

Much of the literature on bullying has focused on the different outcomes for males and females as previously discussed. Boys and girls report differences in victimization experiences (e.g., physical bullying versus relational or indirect) and differences in health outcomes (e.g., physical versus psychological. There is some evidence that boys and girls cope differently under stress thus different types of bullying may have differential relation to social adjustment and individual health outcomes (Crick & Bigbee, 1998: Vaillancourt et al., 2008).

I found no differences in reports of victimization for men and women. Men and women reported that they were equally physically, verbally, relationally, indirectly, and overtly abused. However, victimization differentially predicted health outcomes in men and women. Current victimization predicted 7% of the variance for the frequency of self-reported health problems for men but not for women (1%). For men current victimization also predicted 22% of variance for somatic health problems (albeit a smaller effect was found for women (3%). The finding that men reported experiencing more somatic health issues than women corroborated findings in the workplace (Zapf, Dormann, & Frese, 1996) and schoolyard (Rigby, 1998) where bullied men and boys tended to report more physical symptoms as a main effect of victimization than did girls and women.
With regard to psychological health outcomes the magnitude of effect was smaller for women than men in both internalizing and externalizing behaviors. As anticipated, current victimization predicted 13% of the variance in externalizing behaviors for men. The magnitude of effect was smaller for women (4%). However, there were unanticipated findings for internalizing problems. Previous research with younger participants would suggest that bullied women would report more internalizing problems than bullied men (Zapf, Dormann & Frese, 1996). Conversely, I found that men reported more internalizing problems (anxious/depressed) than did women when they were bullied. In addition, men and women worried equally when abused by their peers. Recent research has described several adaptive strategies that individuals might employ as they age and resiliency is of particular interest here. Considered important for successful psychosocial adjustment resilience is referred to as an individual characteristic that influences the ability to recover from adverse situations, in this case bullying (Wagnild & Young, 1990). It is a unique construct that captures the hardness and stability in well-being among older women (Nygren, Alex, Jonsén, Gustafson, Norberg & Lundman, 2005). The present study further supports findings on resilience in coping among older women who seem to get more resilient when faced with adversity as they age (Stark-Wroblewski, Edelbaum, & Bello, 2008). It is possible that as women age they become better at coping with poor interpersonal interactions overall than men do.

It is also well documented that social relationships often have positive effects on health in later life by providing support (e.g. Adam, Hawkley, Kudielka & Cacciopo., 2006). In other words, as women age they may actively choose peers who are more beneficial to their overall well-being than men do. However, this study found no gender differences in the amount of quality support provided. Future research needs to attempt to replicate this finding and more carefully explore possible mechanisms for these gender differences.
Does Social Support and Co-rumination Moderate the Effects of Victimization on Health?

In corroboration with previous research (Knack, in press; Rose, 2002), I found that social support was highly correlated with being the target of prosocial behaviors (ASEQ) \((r = .62)\), and positively associated with quality of friendships and spousal relationships. Similar research with children and peer relations has found that friendship quality has positive buffering effects on friends who may be experiencing victimization from peers (Hodges, Boivin, Vitaro, & Bukowski, 1999; Malcolm, Jensen-Campbell, & Rex-Lear, 2006). As such, one would expect that high quality support (not quantity) (i.e., friends) would protect individuals from the negative consequences of victimization in late adulthood (Brendgen et al., 2001; Nezlek, Richardson, Green, & Schatten-Jones, 2002). Social support and positive social networks have been found to buffer against the negative influences of social stressors in adulthood and has been determined as a key factor in stress management (Suls & Wallston, 2003, Carstenson, 1995).

Perceived social support in this study was negatively related to frequency and severity of health problems, abdominal pain, and somatic symptoms as expected. In addition, there was a trend that social support weakened the influence of victimization on the frequency and severity of health problems and somatic complaints. Social support was also still related to health outcomes after controlling for victimization. In other words, social support has a potential additive effect, such that, individuals with the worst outcomes would have little social support and higher levels of victimization.

Although social support seemed to exacerbate the victimization-psychological health link, social support was positively related to co-rumination, (the excessive, repeated discussion of problems with friends that focus on negative feelings). Previous research by Rose (2002) found that co-rumination was positively associated with social support. In senior adults, co-rumination appeared to aggravate the negative psychological outcomes associated with victimization. Specifically, victimization was not related to anxious/depressed problems and worrying when co-rumination was low. However, when co-rumination levels were at medium
and high levels, victimization was related to internalizing problems. This echoes Rose, Carlson, & Waller’s (2007) work that found co-rumination among victimized adolescent girls led to increased feelings of depression and anxiety. There was no evidence that co-rumination influenced the victimization-health link for externalizing problems, physical health problems, and memory problems.

Even among older adults with strong social networks, not all social support is positive and interpersonal tensions can lead to high levels of emotional distress (Rook, 1984). Supportive relationships have repeatedly been associated with positive outcomes in stressful situations and facilitating adaptation to life’s stressors (Diener & Seligman, 2004; Uchino, et al., 1996). Conversely, reports of negative social exchanges have been related to poorer psychological health including higher levels of depression, lower positive emotional well-being, and worse self-reported health (Rook, 1998). This dissertation supports existing literature suggesting that some social relationships may indeed be toxic for some of these older adults.

**Future Directions**

Although the results of this study lend confidence to the conclusion that peer victimization exists in senior adults and influences their health outcomes, there were also some weaknesses of the present study that future work should address. First, the sample used in this study included predominantly white individuals, of which 22% had post high school education and 25% had post BA graduate education. Future research would need to obtain an ethnically diverse sample from all educational and socioeconomic statuses to examine the ability to generalize these findings.

Second, past measures of victimization and health were retrospective in nature. Retrospective self-reporting is prone to substantial distortions. These distortions can arise from: a) selection of representative events — it is difficult for most people to store and retrieve detailed information about repetitive or mundane events in long term memory; b) Recall of event characteristics are subject to distortions of (e.g., recollection biases) or motivated defense
mechanisms (e.g., selective perception, or dissonance reduction which may be particularly salient in victimization linked memories); and c) aggregation across multiple events can be skewed by atypical events (e.g. bullying) (Reis & Wheeler, 1991). As I did not collect retrospective data for psychological problems the relationships I found between current victimization and internalizing and externalizing problems could wash out if previous psychological problems were controlled. Future research needs to follow participants prospectively to control for confounds related to retrospective reporting.

Third, the data were collected concurrently, which did not allow for the definitive cause-and-effect inferences. For example, individuals who have internalizing problems have been found to be more likely to be victimized (Egan & Perry, 1998), which in turn leads to greater internalizing problems. Few studies are able to control for previous or existing levels of mental or physiological functioning before assessing bullying effects on physical or psychological health outcomes. Ideally, longitudinal research would provide a clearer picture of how previous conditions might interplay with current poor interpersonal relationships. It will be important to understand the continuous link between environmental, heritable, and physiological conditions, and under what conditions they combine to influence health outcomes over time (Fekkes et al., 2006; Knack, et al., (in press)). With better controls we can move in the direction of understanding why the victimization-poor health link remains robust over the years. However, this dissertation provided a critical first step in showing how being bullied was associated with health contemporaneously. Although this dissertation cannot be used to determine the causal sequence of the relations specified in my theoretical model, it did allow me to examine important model-based predictions. In other words, even though this study was correlational in nature it provided a first glimpse at the interplay between poor social relations and the effects on physical as well as psychological health for community dwelling senior adults.

Finally, the mechanisms that link bullying to poor health outcomes need to be better examined in all age-groups. It is well accepted that physical and social stress engages the
Hypothalamic-Pituitary-Adrenal (HPA) axis (Dickerson & Kemeny, 2004; Eisenberger et al., 2007; Purvis & Cross, 2006) and much of the research on stress and health has focused on functioning and alterations in this system based on stressful environmental inputs (Dougall & Baum, 2001). A major contribution of stress research has been the recognition that the human brain’s plasticity allows it to adapt to environmental change. It is possible that when environmental stressors tax the plasticity of biological systems an individual’s normal course of development and endocrine function is altered (Cicchetti & Tucker, 1994), which may also render those individuals more vulnerable to future negative experiences (Dersh et al., 2002). Both occasional and frequent verbal abuse by peers has been associated with changes in HPA activity and consequently, older individuals who are bullied should exhibit abnormal neuroendocrine functioning (above and beyond what might be associated with normal aging processes) as assessed by cortisol. As a next step, research should examine whether diurnal endocrine response patterns mediate the link between bullying and physical health markers (e.g., self-reports of sore throats, headaches, arthritis inflammation). Specifically, dysregulation of the neuroendocrine system should serve as intermediate pathways from the psychosocial stress caused by bullying to physical health problems.

**Concluding Remarks**

This dissertation was an initial step in trying to understand whether peer victimization continued to exist in an older community living population, and whether being bullied was associated with negative health outcomes. Indeed, the major contribution of this dissertation was the ability to examine the interplay between victimization and self-reported physical and psychological health outcomes in older adults. Psychological effects were replicated and new insight into potential physical health issues above and beyond those that occur with aging were identified. This dissertation provided important initial evidence that bullying effects do not necessarily wash out with age and for some continue into the twilight years.
APPENDIX A

VICTIMIZATION SCALES
Direct and Indirect Aggression Scales – Victim Version (DIAS)
Bjorkqvist, Lagerspetz, & Osterman (1992)

How do other people act toward you when they have problems with or get angry with you? Answer each question by choosing the answer that seems to most closely describe how others behave toward you, using the scale below:

0 = Never
1 = Seldom
2 = Sometimes
3 = Quite often
4 = Very often

1. How often are you hit by other people?
2. How often are you shut out of a group by other people?
3. How often do other people yell at or argue with you?
4. How often do other people become friends with another person as a kind of revenge?
5. How often are you kicked by other people?
6. How often are you ignored by other people?
7. How often are you insulted by other people?
8. How often do other people who are angry with you gossip about you?
9. How often are you tripped by other people?
10. How often do other people tell bad or false stories about you?
11. How often do other people say that they are going to hurt you?
12. How often do other people plan secretly to bother you?
13. How often do other people shove you?
14. How often do other people spread rumors behind your back?
15. How often do other people call you names?
16. How often do people tell others, “Let’s not be with him/her!”?
17. How often do other people take things from you?
18. How often do other people tell your secrets to a third person?
19. How often are you teased by other people?
20. How often do other people write notes where you are criticized?
21. How often are you pushed down to the ground by other people?
22. How often do other people criticize your hair or clothing?
23. How often do other people physically pull or push you?
24. How often do other people who are angry with you try to get others to dislike you?
Modified Adult Social Experiences Questionnaire – Self Report (A-SEQ)
Modified from Crick & Grotpeeter (1995)
Here is a list of things that sometimes happen to people your age. How often do they happen to you in social situations or at your place of residence? Please respond using the following scale:

1 = Never
2 = Almost never
3 = Sometimes
4 = Almost all the time
5 = All the time

1. How often does one of your peers give you help when you need it?
2. How often does one of your peers hit, slap, or punch you?
3. How often are you intentionally excluded from participating in group activities?
4. How often does one of your peers yell at you and call you demeaning names?
5. How often does one of your peers try to cheer you up when you feel sad or upset?
6. How often does one of your peers who is angry with you seek revenge by excluding you from his/her social group?
7. How often do you get pushed or shoved by one of your peers?
8. How often does one of your peers do something that makes you feel happy?
9. How often does a workmate/neighbor tell lies and/or spread rumors about you to make others not like you anymore?
10. How often are you involved in a confrontation in which one of your peers kicks you or pulls your hair?
11. How often does one of your peers threaten to exclude or ignore you unless you do what they want you to do?
12. How often does one of your peers say something positive to you?
13. How often does one of your peers try to keep others from liking you by making insulting or judgmental remarks about you?
14. How often does one of your peers threaten to physically harm you if you don’t do what they want you to do?
15. How often do other peers let you know that they care about you?
16. How often are you the victim of “cyber bullying”? (i.e., derogatory or false information about you posted on Facebook, MySpace, websites, or blogs; cruel e-mails)
17. How often do you feel you are in physical danger due to an overly aggressive driver? (i.e., being a victim of “road rage”)
18. How often does someone hold open a door, or hold the elevator, for you?
19. How often do people give you the cold shoulder?
20. How often does another person rebuff your attempts to interact with them?
21. How often does another person snub you?
Retrospective Brief Bullying Questionnaire (RVIC)

Scale: Never
Once or a few times
Two or three times a month (every month)
Every week
Many times per week

1) In middle school, how often were you ever physically bullied (e.g. hit, kicked, punched, slapped, spat on, or otherwise physically hurt)?

2) In middle school, how often were you ever verbally bullied (e.g. said mean/rude things to you, called you names, verbally threatened you)?

3) In middle school, how often were you ever socially bullied (e.g. left out of things on purpose, refused to play or talk to you, said bad things behind your back, persuaded others not to like you)?

4) In high school, how often were you ever physically bullied (e.g. hit, kicked, punched, slapped, spat on, or otherwise physically hurt)?
   Never

5) In high school, how often were you ever verbally bullied (e.g. said mean/rude things to you, called you names, verbally threatened you)?

6) In high school, how often were you ever socially bullied (e.g. left out of things on purpose, refused to play or talk to you, said bad things behind your back, persuaded others not to like you)?

7) During young adulthood or at work, how often were you ever physically bullied (e.g. hit, pushed, slapped, spat on, or otherwise physically hurt)?

8) During young adulthood or at work how often were you ever verbally bullied (e.g. insulted or called names, verbally threatened you)?

9) During young adulthood or at work, how often were you ever socially bullied (e.g. left out of things on purpose, refused to include you in meetings or discussions, said bad things behind your back, and persuaded others not to like you)?
People in My Life

(Social Support Scale)

Directions: We are interested in several types of people in your life. This is a survey, not a test. There is no right or wrong answers. I want you to answer as honestly as possible.

Scale  1 very true  2 true  3 untrue  4 very untrue

1. My friends don’t really understand me
2. My family doesn’t really understand me.
3. My friends like me the way I am.
4. My family like me the way I am.
5. I have a close friend with whom I can tell my problems to.
6. My friends don’t seem to want to hear about my problems.
7. My family doesn’t seem to want to hear about my problems.
8. I have neighbors who I can become friendly with.
9. I have a close friend who really understands me.
10. My friends care about my feelings.
11. My family cares about my feelings.
12. I have friends who sometimes make fun of me.
13. I have a close friend who I can talk to about things that bother me.
14. I have a close family member who I can talk to about things that bother me.
15. My friends treat me like a person who really matters.
16. I have friends who pay attention to what I say.
17. I have (a) family member(s) who pay attention to what I say.
18. I don’t have a close friend who I like to spend time with.
19. I don’t have a close family member who I like to spend time with.
20. My friends like me the way I am.
21. I don’t get asked to attend social activities very often.
22. I don’t have a close friend who really listens to what I say.
23. My friend(s) don’t act like what I do is important.
24. I often spend my time being alone.
25. I don’t have a close friend who cares about my feelings.
When We Talk About Our Problems  
(Co-Rumination Scale) Adapted from Rose (2002)

Directions: Think about the way you usually are with your best or closest friends who are **females** if you are female or who are **male** if you are male and circle the number for each of the following statements that best describes you.


1. When I have a problem at work or home, my friend and I talk to each other about it for a long time.

2. If I have a problem at work or home, we will spend our time together talking about it, no matter what else we could do instead.

3. When my friend has a problem, I always try really hard to keep my friend talking about it.

4. When I have a problem, my friend always tries to get me to tell every detail about what happened.

5. When we talk about a problem that I have at work or home, we will talk about every part of the problem over and over.

6. When we talk about a problem that I have at work or home, we talk a lot about the problem in order to understand why it happened.

7. When we talk about a problem that I have at work or home, we talk a lot about all the different bad things that might happen because of the problem.

8. When we talk about a problem that I have at work or home, we try to figure out everything about the problem, even if there are parts we might never understand.

9. When we talk about a problem that I have at work or home, we spend a long time talking about how mad or sad I feel.
Directions: Rate the frequency and severity of the following ailments or complaints that applied to you in the past – specifically between the ages of 25-60 years.

Scale: Frequency: Not at all Sometimes Often All the time
Scale: Severity: Did not hurt at all Hurt a little Hurt a lot Unbearable pain

___MIGRAINE HEADACHES
___ALLERGIES/HAYFEVER
___GLAUCOMA
___ASTHMA
___EMPHYSEMA
___HISTORY RHEUMATIC FEVER
___HIGH BLOOD PRESSURE
___PREVIOUS HEART ATTACK
___HEART DISEASE
___FREQUENT HEARTBURN
___DIVERTICULITIS
___CROHN'S DISEASE
___IRRITABLE BOWEL SYNDROME (IBS)
___HEPATITIS
___LIVER DISEASE
___HISTORY OF ULCERS
___MEMORY LOSS
___STROKE
___KIDNEY STONES
___BACK TROUBLE

___SWOLLEN JOINTS
___FREQUENT/PERSISTENT ACHING
___MUSCLES/JOINTS
___GOUT
___ARTHRITIS
___OSTEOPOROSIS
___DIABETES
___CHRONIC COUGH
___FREQUENT IRREGULAR HEARTBEAT
___CHEST PAIN/TIGHTNESS IN CHEST
___HEART MURMUR
___HISTORY OF ENLARGED HEART
___THYROID PROBLEMS/DISEASE
___SUSPECT SERIOUS DISEASE OR CANCER
___EXCESSIVE FATIGUE
___ANEMIA
___DIAGNOSED FIBROMYALGIA
___TUBERCULOSIS
___SEIZURES
Everyday Health (Somatic Complaints)

**Directions:** Rate the frequency and severity of the following health symptoms.

**Scale:**

Frequency: not at all sometimes often all the time

Severity: does not hurt at all hurts a little hurts a lot unbearable pain

1. Extreme fatigue (feeling extremely tired)
2. Allergic reaction
3. Sleep problems
4. Stomach ache
5. Nausea/vomiting (sick to your stomach/throwing up)
6. Diarrhea
7. Muscle aches and pains
8. Headaches or migraine
9. Weight gain of 5 or more pounds
10. Weight loss of 5 or more pounds
11. Respiratory congestion (cold in your chest)
12. Runny nose
13. Coughing
14. Sore throat
15. Sneezing
16. Blocked nose
17. Fever or chills
18. Dizziness
19. Double or blurred vision
20. Trouble catching breath
21. Having a cold
22. Chest pains
23. Numbness or tingling
24. Low energy
25. Ear infections
26. Getting sick
27. Heart beating too fast
28. Visits to the doctor
29. When you were a child, how frequently did you get sick?
30. Do you smoke? (yes/no)
   If yes- how long have you smoked? __________________
   If yes – how frequently do you smoke? __________________
31. Do you drink alcohol? (yes/no)
   If yes, how frequently (be specific)______________
32. Are you currently taking any medication? Yes/no

If so, please state what medication (or what the medication is for, e.g., blood)
Current Health Phase 2

**Directions:** Rate the frequency and severity of the following ailments or complaints that apply to you now or in the past 1 month only.

<table>
<thead>
<tr>
<th>Frequency:</th>
<th>Not at all</th>
<th>Sometimes</th>
<th>Often</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity:</td>
<td>Does not hurt at all</td>
<td>Hurts a little</td>
<td>Hurts a lot</td>
<td>Unbearable pain</td>
</tr>
</tbody>
</table>

___ MIGRAINE HEADACHES
___ ALLERGIES/HAYFEVER
___ GLAUCOMA
___ ASTHMA
___ EMPHYSEMA
___ CHRONIC COUGH
___ FREQUENT IRREGULAR HEARTBEAT
___ CHEST PAIN/TIGHTNESS IN CHEST
___ HEART MURMUR
___ HISTORY OF ENLARGED HEART
___ HISTORY RHEUMATIC FEVER
___ HIGH BLOOD PRESSURE
___ PREVIOUS HEART ATTACK
___ HEART DISEASE
___ FREQUENT HEARTBURN
___ DIVERTICULITIS
___ CROHN’S DISEASE
___ IRRITABLE BOWEL SYNDROME
___ HEPATITIS
___ LIVER DISEASE
___ ULCERS
___ MEMORY LOSS
___ STROKE
___ KIDNEY STONES
___ BACK TROUBLE
___ SWOLLEN JOINTS
___ FREQUENT/PERSISTENT ACHING
___ MUSCLES/JOINTS
___ GOUT
___ ARTHRITIS
___ OSTEOPOROSIS
___ DIABETES
___ THYROID PROBLEMS/DISEASE
___ SUSPECT SERIOUS DISEASE OR CANCER
___ FATIGUE
___ ANXIETY
___ ANEMIA
___ DIAGNOSED FIBROMYALGIA
___ DEPRESSION
___ TUBERCULOSIS
___ SEIZURES
APPENDIX C

COGNITIVE MEASURES
Blessed Memory Test

SHORT ORIENTATION- MEMORY- CONCENTRATION TEST
Name: ________________________________
Rater Name: __________________________
Date: ________________________________

Instruction

Score 1 error for each incorrect response, to maximum for each item.

<table>
<thead>
<tr>
<th>No. Question</th>
<th>Weight</th>
<th>Maximum error x</th>
<th>Score x</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What year is it now?</td>
<td>1</td>
<td>_____ x 4</td>
<td></td>
</tr>
<tr>
<td>2. What month is it now?</td>
<td>1</td>
<td>_____ x 3</td>
<td></td>
</tr>
<tr>
<td>Repeat this phrase:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Brown,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 Market Street,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicago</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. About what time is it? (Within one hour)</td>
<td>1</td>
<td>_____ x 3</td>
<td></td>
</tr>
<tr>
<td>4. Count backwards 20 to 1</td>
<td>2</td>
<td>_____ x 2</td>
<td></td>
</tr>
<tr>
<td>5. Say the months in reverse order</td>
<td>2</td>
<td>_____ x 2</td>
<td></td>
</tr>
<tr>
<td>6. Repeat the phrase just given</td>
<td>5</td>
<td>_____ x 2</td>
<td></td>
</tr>
</tbody>
</table>

Total error score = _____/28
TRAIL MAKING PART A

SAMPLE

End
8

Begin
1

15
17
21
20
19
16
18

13
14
12
7
8
10
2

11
9

24
23
25

Begin
1
End

TRAIL MAKING
PART B

SAMPLE

Begin
1

D
4

A

B

2

C

3

End.

End
13

B

9

B

4

1

D

3

7

H

12

G

11

L

F

K

A

J

E

5

C

10
**DIGIT SPAN TEST**

**INSTRUCTIONS:** You read each line of digits one at a time at the rate of one per second in a monotone voice. Each sequence will be presented twice. You stop when RP can no longer repeat back the numbers in correct order.

Read: I will read sets of random numbers to you and each sequence will be repeated twice. After each set of numbers you will recall those numbers back to me in correct order. For example: 1, 3 -- then you repeat 1, 3. Do you have any questions?
Ok, let's begin
Check ✓ if correct OR X if wrong
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<td>8</td>
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REFERENCES


Leymann, H. (1992), Fraån mobbning til utslagning i arbetslivet, (From Bullying to Expulsion from Working Life), Publica, Stockholm.


BIOGRAPHICAL INFORMATION

Madeline Rex-Lear completed her Bachelor of Arts degree in Psychology (summa cum laude) at the University of Texas at Arlington in 2005. She decided to pursue a graduate career in psychology at The University of Texas at Arlington in 2005. Under the supervision of Dr. Lauri A. Jensen-Campbell, Madeline received a Master’s of Science degree in experimental psychology in 2007 and her Doctoral degree in experimental psychology in 2011.

Madeline’s interests are mainly in normal and abnormal development. She is especially interested in factors affecting healthy psychological development in children and senior adults. Madeline plans to pursue a career combining teaching and eventually counseling in order to give something back to the community.