DISTAL AND PROXIMAL INFLUENCE OF TRAUMA EVENTS ON THE WELL-BEING OF CENTENARIANS

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CHAPTER I

INTRODUCTION

During the coming decades, the United States will encounter unprecedented demographic growth in the old-old adult population (He & Muenchrath, 2011). This is attributed to several factors including biomedical technologies aimed at treating and preventing disease, biogenetic interventions used to slow aging processes, and a growth in the number of Baby Boomers turning 65. It is anticipated that nearly half of all Baby Boomers will likely survive to age 90 and beyond (Olshansky et al., 2009; Vaupel, 2010) with an estimated 815,000 persons reaching 100 years of age or older by 2050 (Olshansky et al., 2009). It can be anticipated that the next generation of long-lived individuals will have been exposed to a higher frequency of unique traumatic events, linked to natural disasters, terrorism, illicit substance abuse, and sex crimes that were previously unexperienced and unreported among previous age cohorts (Cherry, Silva & Galea, 2009; Gfroerer, Penne, Pemberton & Folsom, 2002; Shmotkin, Shrira, & Palgi, 2011). Contemporary trauma has manifested into catastrophic events involving large-scale injury or loss of human life. Trauma exposure equates into a large number of persons who need appropriate care provisions

and mental health services (e.g., counseling, family therapy, psychopharmaceuticals) to sustain quality of life.

Future geriatric clinicians, practitioners, and service providers will need to develop and implement well-being services and programming that enhances quality of life among a growing number of older persons who have encountered a catastrophic trauma, yet, managed to survive beyond the normative limits of human life expectancy. Therefore, the purpose of the current study was to determine how trauma experiences are associated with life satisfaction. One key aim involved determination of how socio-demographic characteristics, psychosocial resources, and lifetime exposure to trauma is associated with perceived satisfaction with life at 100 years of age and beyond.

Subjective well-being represents a paradox. The longer persons live, the happier they become (Yang, 2008). In other words, happiness remains linear across time (e.g., increases with age). However, life satisfaction gradually increases through middle adulthood but declines after 70 years of age (Baird, Lucas, & Donnellan, 2010). In turn, life satisfaction represents a curvilinear process (e.g., gradual increase followed by decreases in life satisfaction with age). Persons surviving to 100 years of age and older are believed to harbor genetic or environmental factors that contribute to the delay or avoidance of major age-related diseases, acute and chronic illnesses, or lifetime disability that contribute to change in well-being (Evert et al., 2003). Thus, quality of life at 100 years and beyond is believed to be a source of resilience.

Yet, most centenarians are challenged by multiple impairments such as vision and hearing deficits, social losses, and mobility restrictions (Poon et al., 2010). Some investigators have cited an accelerated drop or decline in life satisfaction after 100 years of age (Gerstoff et al., 2010; Palgi et al., 2010). This decrease resembles pronounced age-associated loss in functional capacity that becomes more pronounced and leads to equivalent perceived losses in life quality (Riegel et

al., 1972). Although some researchers have acknowledged age-associated impairments as contributing to a terminal loss of life satisfaction in extreme old age (Gerstoff et al.), others have suggested that physical and functional declines may have little to do with the derivation of life satisfaction among old-old persons (Shomtkin, Berkovich & Cohen, 2006). Instead, the ability to appraise and accept suffering stemming from past trauma may provide a more salient link in how long-lived persons gauge current life satisfaction. In other words, looking back on one's life and with little to no reservations contributes to a positive perception of life in the present.

CHAPTER II

REVIEW OF LITERATURE

Feeling satisfied is essential to the well-being of long lived persons (Poon et al., 2010). The quest for a satisfying life often comes in the form of good health, financial security, and enduring social ties (Poon et al., 2010). Life satisfaction is a cognitive-affective process in which persons contemplate and appraise the quality of their life as satisfying or dissatisfying (Diener, Eunkook, Lucas & Smith, 1999). By the time persons enter very old age, they generally feel emotionally happy (Yang, 2008) but report greater dissatisfaction with life (Baird & Lucas, 2010; Gerstof et al., 2010; Mroczek & Spiro, 2005). One plausible explanation for diminished life satisfaction involves the onset of multiple and often simultaneous age-associated declines in psychosocial resources including perceived health status, economic sufficiency, and social provisions. However, gerontologist have reported evidence that the timing or occurrence of exposure to lifetime trauma may contribute to significant and associated declines in life satisfaction above and beyond psychosocial provisions in very old age (Krause, 2004; Shmotkin, 2011). Therefore, a key aim of this study was to examine whether trauma experiences reported by centenarians (persons

100+ years old) maintain a long-term or short-term association with life satisfaction. Determination of this association has implications relative to improving how geropsychologists, geriatric counselors, social workers, and other gerontological professionals develop clinical services and case management practices to improve quality-of-life for long-lived persons.

Conceptualizing Life Satisfaction.

For over 50 years, gerontologists have attempted to conceptually define life satisfaction. Life satisfaction has been recognized as an essential element of "psychological wealth" (Diener & Diener, 1995). This implies that satisfaction with life is based on the extent to which the individual meets life expectations. In other words, life satisfaction may be conceived as "a global assessment of a person's quality of life according to his chosen criteria" (Shin & Johnson, 1978, p.478). This evaluation has long been considered a unidimensional attribute of subjective well-being in which persons consider the recent circumstances of life relative to judging the life-long quality of living (Diener & Diener). For purposes of this study, life satisfaction may best be defined as a global appraisal of life as satisfying versus dissatisfying.

Relative to recent theoretical advancement, life satisfaction has been theorized as an evolutionary component of subjective well-being (Ryan & Deci, 2001). From this perspective, discrepancy in human survival and flourishing has been proposed as consisting of hedonistic and eudaimonic attributes. Hedonic elements of well-being include the assessment of everyday life experience as being emotionally pleasurable or psychologically disturbing (Ryan & Deci), whereas eudaimonic characteristics entail global appraisal of meaning assigned to life-long experiences. Diener (1994) posited that hedonic conditions represent the short-term impact of daily life events on life satisfaction, where as eudaimonic conditions reflect long-term rumination of lifetime experiences. Together, hedonic and eudaimonic judgments constitute a satisfactory life of distal and proximal life events, especially those perceived as traumatic, and are believed to have a detrimental impact

on life satisfaction into very old age (Krause, 2004). This later impact or lingering effect posits that the rumination of earlier life adversities is an associated predictor of life satisfaction among long-lived survivors.

Health, Economics, and Social Provisions

Life satisfaction in very old age is much less about perceiving life as enjoyable or pleasing, and more indicative of how persons report congruence between life domains. Gerontologists have concluded that there are three domain predictors of current life satisfaction in old and very old age: health, social support, and socioeconomic status. Relative to health, Westerhoff and Barret (2005) reported that life satisfaction in very old age is determined to the extent that very old persons experience further decline in existing impairments (e.g. vision, hearing, mobility, chronic illness, etc.) or current functional ability (e.g., cognitive, walking/movement). In other words, life satisfaction is experienced based on the extent to which old-old adults perceive individual or physical health abilities. Persistent impairment during old-old age further reduces life satisfaction (Westerhoff & Barret). In addition, life satisfaction represents a complex cumulative phenomenon.

Economic resources appear to be a second viable indicator of life satisfaction in very old age (Silverman, Hecht & McMillian, 2000). Economic capacity in very old age often translates into financial dependence and subsequently decreases fulfillment in achieving financial independence (Krause, 1993; Krause & Bastida 2011). Investigators have noted that economic security shares a direct association with life satisfaction among persons who manage to live beyond the limits of normative life expectancy (Bishop et al., 2010). Tornstam (1989) theorized that old-old persons may be most content with having just enough to afford the basic necessities of life rather than worrying about their past achievement or failure in achieving economic independence. Thus,

economic security most likely has a current salient association with life satisfaction in very old age.

It is also important to highlight relevance of social resources. Old and very old adults seek social provisions (e.g., social support) to counter the strain of life experiences or personal traumas (Krause, 2001). Krause (2004) noted that the deleterious effects of lifetime trauma on life satisfaction are significantly reduced among old-old adults who receive viable emotional support from family members and close friends. Long-lived persons who maintain ties have been reported to have greater life satisfaction (Berg, Hassing, Mcclearn, & Johansson, 2006). Krause (1997) described anticipated support which is the anticipation that significant others are willing to provide assistance in the future if the need arises. In the sense of social support this encourages older adults to care for themselves and enhance feelings of independence while reducing feelings of burden for support providers. This type of support is beneficial to the well-being and life satisfaction of older adults.

Trauma, Life Satisfaction, and Centenarians

Wheaton (1994) defined traumatic events as life experiences that are "… spectacular, horrifying, and just deeply disturbing experiences" (p. 90). Traumatic events are differentiated from stressful life events by their ascribed seriousness. Included among primary traumatic experiences are sexual and physical abuse, witnessing a violent crime, the premature loss of a parent, and participation in combat (Krause, 2004). Traumas are defined criteria within the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 2000). The DSM-IV uses similar criterion to diagnose Posttraumatic Stress Disorder (PTSD) following exposure to an extreme traumatic stressor. Criterion A1 characteristics include direct personal experience or witnessing of an event that involves actual or threatened death. The American Psychological Association (APA) uses the following diagnostic criteria for PTSD:

> A person has been exposed to a traumatic event in which both of the following were present: (1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others; and (2) the person's response involved intense fear helplessness, or horror (p.467).

Centenarians represent persons who have witnessed a century of social, historical, and economic change. There are noticeable longitudinal effects in surviving distal childhood events involving natural disasters, warfare, socio-political uprisings, or economic depressions that can contribute to noticeable effects on individual well-being (Bolin & Klenow, 1983; Cherry, Silva, & Galea, 2009; Cohen & Shmotkin, 2007; Danieli, 1997; Elder, 1974; Martin, MacDonald, Margrett, & Poon, 2010; Yehuda, Kahana, Schmeidler, Southwick, Wilson, & Giller, 1995). Cumulative traumatic experiences early in life have a reported association with lower life satisfaction in old and very old age (Krause, 2004). Centenarians represent persons who have indirectly or directly encountered numerous macro-level or socio-historical adversities (e.g., Great Depression, WWII), as well as lived through a lifetime of micro-level or individual or personal adversities and traumas (e.g., natural disasters, child abuse) that occurred in the distal past. In addition, some long-lived adults have managed to survive extreme adversity despite on-going threats in psychosocial (e.g., health impairment, reduced functional autonomy, social losses) well-being. In effect, some investigators have concluded that the remaining years of old-old age pose some the most adverse and traumatic challenges any individual could experience (Martin, da Rosa, & Poon, 2011). One aim of this study was to clarify the degree to which the distal or proximal impact of cumulative trauma is associated with life satisfaction in very old age.

Exposure to traumatic events has been hypothesized to have differential associations on subjective well-being (Yang, 2008). In particular, rumination of traumatic experiences may be heightened in very old age due to a "lingering effect" (e.g. PTSD; Shmotkin, Berkovich, &

Cohen, 2006). In other words, depending on the magnitude and emotional intensity of the experience, emotion connected to a trauma experience that occurred early in life may resonate or linger well into old-old age (Wheaton, Roszell, & Hall, 1997). Old-old adults typically recall positive distal memories to improve feelings of life satisfaction (Aberg et al., 2005). However, this often conceals deleterious life experiences including trauma exposure, current health impairments, or false feelings of happiness (Aberg et al.). In other words, the judgment of life as satisfying in old-old age may be predominately associated by underlying experiences that linger from the past into one's present perceptions of life.

It should also be noted that the accumulation of lifetime traumas has unintended consequences in mental health functioning in very old age. In particular, lifetime trauma has been reported to increase depression and emotional dissatisfaction (Krause, 2004). Based in tenets of socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999), older adults possess an affect-regulatory system in which they effectively avoid reoccurring negative emotional stimuli (e.g., past trauma) by directing attention toward positive emotional happening (e.g., current events). This may explain why noticeable declines in emotional satisfaction may be largely due to age-associated declines in functional abilities rather than resolution of negative emotional states (Kessler & Staudinger, 2010). However, Shmotkin (2011) acknowledged that trauma has both direct and indirect associations with socio-emotional outcomes. This depends on the degree to which proximal psychosocial resources may promote positive well-being. Thus, consideration of covarying attributes such as psychosocial resources warrants investigations on life satisfaction.

Purpose

The purpose of this study was to explore the association between centenarians' reported lifetime trauma and life satisfaction. The key objective was to determine the association between distal and proximal trauma occurrences on current life satisfaction relative to three main hypotheses:

H_1: Cumulative traumatic experiences were hypothesized to have a significant and direct negative association with life satisfaction.

H_2: It was hypothesized that the marital status, educational attainment, race, and gender would have a negative and direct association with life satisfaction.

H_3: It was hypothesized that distal and proximal traumatic events would have a significant and direct negative association with life satisfaction.

CHAPTER III

METHODOLOGY

Participants for this study originated from the Oklahoma Centenarian Project and IRB approval was obtained for use of the data for this study. This investigation was initiated August 2008 and completed August 2010. Data was collected from a convenience sample of N = 154 participants, aged 99 and older (114 women, 40 men, Mage = 101 years old, S.D. = 1.72) residing across private community dwellings and long-term care settings in Oklahoma. Participants participated in a face-to-face interview session. All participants were required to be cognitively intact. The Short Portable Mental Status Questionnaire (SPMSQ; Pfeiffer, 1975) was used to screen all participants for cognitive impairments. The SPMSQ is a brief 10-item interview that tests short- and long- term recall of information. Pfeiffer established a cut-off score of three or more incorrect answers on the SPMSQ as indicative of cognitive impairment. For purposes of this study, participant answers were rated as correct or incorrect based on immediate response or no response. Items in which participants failed to respond correctly after three attempts were recorded as incorrect. Scoring of SPMSQ is typically adjusted to reflect educational level of

participants. Therefore, participants with less than high school education were allowed one additional error. Thus, participants making less than 4 errors were included within the final sample. Those who did not meet cognitive screening criteria were asked to be represented by a proxy (participant's family member, friend, or caregiver) and were not included in this study. Proxy informants were asked to answer questions particularly related to socio-demographic characteristics of the individual.

Measures

Socio-demographics. Single-item indicators were used to assess socio-demographic characteristics. In particular, participants were asked to report their current age, gender, race/ethnicity, marital status, and education.

Covariates. Perceived health status, economic security, and social support served as covarying variables. First, *perceived health* status was evaluated using a single-item from the Subjective Health Perceptions Scale from the Older Americans Resources and Services Procedures (Fillenbaum, 1998*)*. This item was used to assess the degree to which persons feel positively or negatively about their current health state. This item included: "How would you rate your overall health at the present time?" Participants were asked to respond on a 4-point Likert scale *(1 = Poor, 2 = Fair, 3 = Good, 4 = Excellent)*. The average perceived health score across sample participants was M = 2.06, S.D. = .76.

Second, six self-report items from the Duke Older Americans Resources and Services Procedures (OARS; Fillenbaum, 1998*)* were used to assess perceived *economic security*. Items included: (1.) "Are your assets and financial resources sufficient to meet emergencies?" *(0 = No, 1 = Yes);* (2.) *"*Are your expenses so heavy that you" *1 = Cannot meet payments, 2 = Barely meet payments, or 3 = Payments are no problem*?; (3.) *"*How well are you doing financially compared to other people your age?" *(1 = Worse, 2 = Same, 3 = Better);* (4.) *"*How well does the amount of money

you have take care of your needs?" *(1 = Poorly, 2 = Fairly well, 3 = Very well);* (5.) "Do you usually have enough to buy those little "extras," that is some luxuries?" *(0 = No, 1 = Yes);* and (6.) "At the present time do you feel that you will have enough for your needs in the future?" *(0 = No, 1 = Yes)*. A summary score was calculated so that a high score equaled high economic security, whereas a low score represented low economic security. Original Cronbach's alpha across the six economic security items in the OARS has been reported to be satisfactory (α = .72) (Fillenbaum). Alpha reliability in this study was α = .59.

Third, the Social Provisions Scale (SPS; Cutrona & Russell, 1987) is a 24-item scale and was used to assess the degree to which respondent's *social support* provides guidance (e.g., "There is a trustworthy person I could turn to for advice, if I were having problems"), reassurance (e.g., "I have relationships were my competence and skills are recognized"), social integration (e.g., "There are people who enjoy the same social activities I do"), attachment (e.g., "I have close relationships that provide me with a sense of emotional security and well-being"), nurturance (e.g., "I feel personally responsible for the well-being of another person"), and reliable alliance (e.g., "There are people I can depend on to help me, if I really need it"). Participants were asked to indicate their level of agreement with each statement using a 4-point Likert scale (*1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree*). Higher scores reflect a greater degree of social support. A summary score was calculated so that a high score equals high social support, whereas a low score represents low social support. Cutrona and Russell reported the original reliability of the full SPS scale to be high at α = .92 Alpha reliability in this study was α = .76.

Lifetime Trauma. Lifetime trauma was assessed using the Brief Trauma Scale (BTS; Schnurr, Vielhauer, & Weathers, 1995). This is an adapted self-report index consisting of 10 trauma events designed to access traumatic exposure according to Criterion A of the DSM-IV. It is derived from the Brief Trauma Interview (BTI; Schnurr et al.) and consists of items reflective of trauma as experienced via: service in a war zone or noncombat job, serious car accident or

accident at work, major natural or technical disaster, life-threatening illness, physically punishment/injury by a parent, caretaker, or teacher before age 18, attacked, beaten, or mugged, pressured into having some type of unwanted sexual contact, seriously injured or feared injury or death, and had a close family member or friend die violently. Lastly, they were asked if they have ever witnessed a situation in which someone was or feared would be seriously injured or killed. Scores were summarized into a cumulative count or total number of reported lifetime traumatic events. A high total number was indicative of greater life event trauma, whereas a lower score will reflect less life event trauma. Among sample participants in this study, there was an average of M = 2.07, S.D. = 1.39. A total of 18 persons did not report experiencing any trauma events, therefore; a total of 136 participants (97 women, 39 men) reported experiencing one or more items on the BTS.

Life Satisfaction. Life satisfaction served as the primary outcome of interest and was measured using the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS consists of five items measuring life satisfaction. Sample items include: (1.) "In most ways my life is close to ideal" and (2.) "The conditions of my life are excellent". Participants were asked to indicate their level of agreement with each statement on a 7-point Likert scale (1 = *Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neither Agree or Disagree, 5 = Slightly Agree, 6 = Agree, 7 = Strongly Agree)*. The range of possible scores is from a very low satisfaction with life (5) to a very high satisfaction with life (35). A summary score was calculated so that a high score equals high life satisfaction, whereas a low score represents low life satisfaction. This scale has an original alpha reliability coefficient of .80. Alpha reliability coefficient in the present study was .72. The average perceived life satisfaction score across sample participants was M = 27.75, S.D. = 6.13.

Analysis

IBM/SPSS 19.0 was used that analyze the data. Two primary analyses were conducted. First, descriptive statistics including frequencies, means, and standard deviations, relative to descriptive analyses of reported occurrences of traumatic experiences was assessed. Martin and Martin (2002) operationalized distal events as traumatic experience occurring during or before early adulthood, whereas proximal events typically involve recent exposure to traumatic losses in very old age. For purposes of this study, the BTI (Schnurr et al., 1995) was adapted to include participant responses of when events occurred during their life course. Responses were then categorized and coded as 1 = greater than 70 years ago, 2 = greater than 30 years ago, 3 = greater than 10 years ago, and/or 4 = less than 10 years ago. Reporting experiencing a trauma was coded as 1 = yes and 0 = no. Second, hierarchical regression analysis was conducted to determine the association between socio-demographic characteristics, covariates (e.g. psychological resources), and lifetime trauma on life satisfaction. Procedural steps taken in conducting the hierarchical regression analysis included: (a) Model 1: Inclusion of socio-demographic characteristics; (b) Model 2: Addition of covarying variables controlling for socio-demographic variables, and; (c) Model 3: Addition of cumulative trauma occurrence controlling for socio-demographic and covarying variables.

CHAPTER IV

FINDINGS

Reported frequencies, percentages, means, and standard deviations pertaining to sample demographics have been summarized in Table 1. Relative to race/ethnicity of participants, 134 (87%) reported being White-Caucasian, 11 (7.1%) indicated they were multi-racial, 6 (3.9%) responded as being African-American Black, and three (2.0%) acknowledged being American Indian. Participants were also asked to indicate their current marital status. A majority of participants indicated they were currently widowed (132; 85.7%). Another 11 (7.1%) reported being married, seven (4.6%) indicated they were divorced, and four (2.6%) acknowledged being never married. Most participants also reported some college education (41; 26.6%), 40 (26%) reported completing grade school, 35 (13%) reported earning a high school diploma and college degree, 15 (9.7%) reported completing some high school, 12 (7.8%) reported earning a graduate degree, four (2.6%) reported completing some post-graduate work, and two 1.3% reported earning an associate's degree. Table 2 displays the frequencies and percentages of self-reported distal and proximal trauma occurrences. A majority of participants (71; 46%) reported trauma

Table 1

Frequencies, Means, and Standard Deviations of Sample Socio-demographics

Variable	Frequency	Percentage	Mean	S.D.
Age			101	1.72
Gender				
Male	40	26.0		
Female	114	74.0		
Race				
White	134	87.0		
Black	6	3.9		
American Indian	3	2.0		
Multi-Racial	11	7.1		
Marital Status				
Never Married	4	2.6		
Married	11	7.1		
Divorced	7	4.6		
Widowed	132	85.7		
Education				
Grade School	40	26.0		
Some High School	15	9.7		
High School Diploma	20	13.0		
Some College	41	26.6		
Associate Degree	2	1.3		
College Degree	20	13.0		
Some Post-Graduate Work	4	2.6		
Graduate Degree	12	7.8		

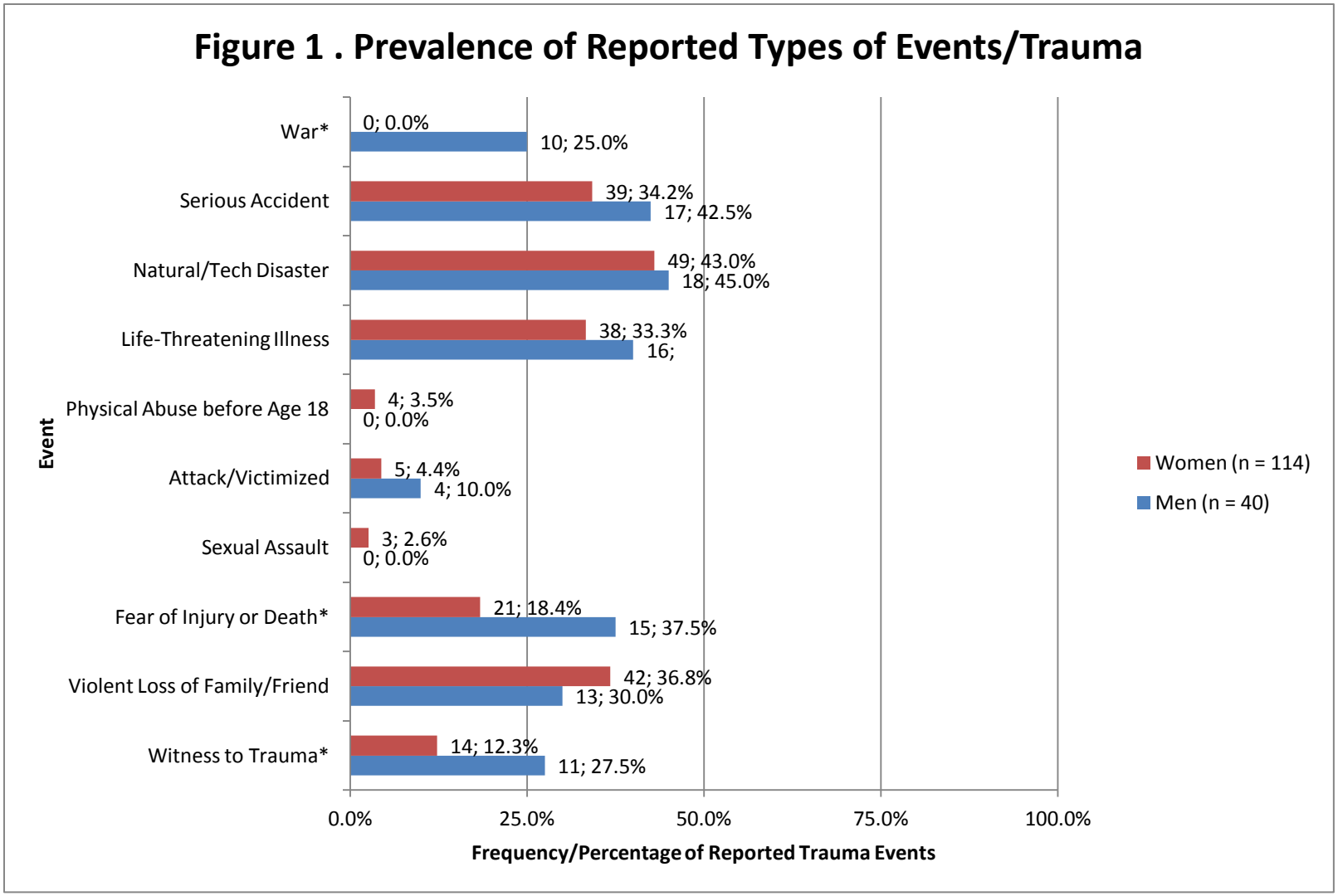
Table 2

Prevalence of Reported Distal and Proximal Trauma Occurrences

Trauma Occurrence	Frequency		Percentage		Frequencies	Percentages
	M	W	M	W	Total	Total
	(*n* = 40)	(*n* = 114)			(*N* = 154)	
> 70Years Ago	20	51	13.0	33.1	71	46.0
41-70 Years Ago	25	37	16.4	24.0	62	40.3
11-40 Years Ago	15	42	9.8	27.2	57	37.0
< 10 Years Ago	12	34	7.8	22.1	46	29.9

experiences to have occurred greater than 70 years ago. However, traumatic experiences were less likely reported to occur less than 10 years ago (46; 29.9%). Relative to reported trauma by gender, centenarian men reported a greater frequency of trauma to have occurred greater than 41 years ago (25; 16.4%), whereas prevalence of trauma was lowest less than 10 years ago (12; 7.8%). Among women, trauma experiences were reported as occurring most frequently greater than 70 years ago (51; 33.1%). Similar to centenarian men, women also reported traumatic experiences to have occurred less often less than 10 years ago (34; 22.1%). Eighteen participants reported no trauma experiences. A chi-square analysis was used to further examine whether significant gender differences existed across reported trauma occurrences. No significant gender differences were evident.

Prevalence relative to type of trauma event was also considered (Figure 1). Natural/technical disasters emerged as the most commonly reported trauma event experienced across the participant sample (67; 43.5%). On the other hand, sexual assault was the least reported trauma event reported by sample participants (three; 1.9%). Relative to gender, 18 (45%) centenarian men reported natural/technical disaster as being the most prevalent trauma event. Furthermore, male participants did not endorse the occurrence of physical abuse or sexual assault before age 18. Additionally, centenarian women reported natural/technical disasters as the most frequent trauma event (49; 43%). However, three (2.6%) reported experiencing the event of sexual assault, and no female participant endorsed having experienced war. A chi-square test was used to identify gender differences across type of trauma (Figure 1). Three significant gender differences emerged. First, the percentage of men reporting combat exposure significantly differed from women, X^2 (1 N = 154) = 30.48, $p < .001$. Second, prevalence of centenarian men reporting fear of injury or death was significantly different from reported prevalence by women, X^2 (1 N = 154) = 6.02, $p < .05$. Third, the percentage of men having witnessed a trauma was significantly different from reported occurrence among women, X^2 (1 N = 154) = 5.04, $p < .05$. Thus, it



Note: Chi-Square tests used to test gender differences among trauma type.
*Statistically significant difference between age categories ($p < .05$)

Table 3

Hierarchical Regression Analysis of Variables Predicting Life Satisfaction (N = 154)

Variables	Model 1 Demographics			Model 2 Covariates			Model 3 Trauma Occurrence		
	B	*SE*	*β*	*B*	*SE*	*β*	*B*	*SE*	*β*
Age	.12	.31	.03	.41	.29	.12	.61	.28	.17*
Gender	-2.13	1.22	-.15	-2.26	1.12	-.16*	- 2.33	1.10	-.17*
Race	-.37	.28	-.11	-.22	.27	-.07	-.18	.26	-.05
Marital Status	.06	.51	.01	-.2	.46	-.05	-.20	.44	-.03
Education	-.04	.24	-.02	-.19	.22	-.07	-.18	.21	-.07
Perceived Health				1.88	.63	.23**	-1.58	.62	.20*
Economic Security				.77	.38	.17*	.91	.37	.20*
Social Support				.26	.07	.31***	.29	.07	.34***
> 70 Years Ago							-1.89	.57	-.25**
41-70 Years Ago							.71	.58	.09
11-40 Years Ago							-.14	.69	-.02
< 10 Years Ago							-2.03	.79	-.20*
F Δ	.97			11.60***			4.44**		
R^2	.03			.23			.33		
Adjusted R^2	-.00			.19			.26		

Note: * $p < .05$. ** $p < .01$. *** $p < .001$

appears that centenarian men in this sample significantly differ from their female counterparts relative to reported occurrence of trauma exposure involving combat, fear of injury/death, and being a witness to a trauma event.

Hierarchal regression analysis was used to determine the association between demographic characteristics, covarying influences, and lifetime trauma to life satisfaction (Table 4). The average perceived life satisfaction score of $M = 27.80$ indicates a high score on the SWLS. Relative to Model 1, socio-demographic characteristics were first included and no significant associations appeared. Relative to Model 2, a significant change occurred ($\beta = 11.60$; $p < .001$) when covarying variables were included while controlling for socio-demographic characteristics. Gender emerged as having a direct negative association with life satisfaction ($\beta = -.16$; $p < .05$). After controlling for socio-demographic variables, perceived health ($\beta = .23$, $p < .01$), economic security ($\beta = .17$, $p < .05$) and social support ($\beta = .31$, $p < .001$) were significantly and positively associated with life satisfaction.

Relative to the Model 3, a significant change occurred ($\beta = 4.44$; $p < .01$) when trauma occurrence of years past were included while controlling for socio-demographic characteristics and covarying variables. Age maintained a direct positive association with life satisfaction ($\beta = .17$, $p < .05$), whereas gender had a direct negative association ($\beta = -.17$; $p < .05$). This suggests that life satisfaction increases after 100 years of age, yet centenarian women appear to be less satisfied with life than their male counterparts. After controlling for socio-demographic variables and covarying influences, perceived health ($\beta = .20$, $p < .05$), economic security ($\beta = .20$, $p < .05$) and social support ($\beta = .34$, $p < .001$) were significantly and positively associated with life satisfaction. In other words, a positive health perception, greater economic security, and greater degree of social support were associated with increased life satisfaction. However, cumulative lifetime trauma encountered before age 30 ($\beta = -.25$, $p < .01$) as well as after age 89 ($\beta = -.20$, $p < .05$) were negatively and significantly associated with life satisfaction after controlling for

covariates and socio-demographic characteristics. Thus, lifetime trauma maintained a distal as well as contemporaneous association with life satisfaction. Overall, 26% of the variation in life satisfaction scores reported by centenarians in this sample was explained by socio-demographic characteristics, covarying influences, and lifetime trauma.

CHAPTER V

CONCLUSION

The purpose of this study was to examine the association between lifetime trauma and life satisfaction at 100 years of age and beyond. Of particular interest was identifying the association between distal and proximal occurrence of trauma and current life satisfaction. Three key findings emerged from this study. First, the emerging adult years represent a trauma dense period in the lives of centenarians. Second, exposure to natural/major disasters appears to be the single most prevalent trauma experience reported by persons 100 years and older. Third, trauma exposure has a distal as well as contemporaneous association to life satisfaction in old-old age.

Based on results from this study, it appears centenarians are exposed to a high number of trauma events (M = 2.07, S.D. = 1.39) and trauma primarily occurred greater than 70 years ago. Compared to a sample of older male military veterans, following an initial test of the BTS, Schnurr et al. (1995) reported an average of 1.73 traumatic events among older male military veterans. For most individuals, the emerging adult years are an eventual period of life (Rindfus,

1991). Rindfus referred to this period as "demographically dense" (p.946). Multiple transitions often occur during the emerging adult years such as: college graduation, workforce/career entry, marriage, and motherhood/fatherhood. Relative to Life Course Theoretical perspective (Elder, 1998) transitions that contribute to behaviors are linked to well-being. As more transitions occur, there are more risks that are involved. As persons age, life becomes more stable and commonly entails less behavioral risks and more consistent patterns of behavior indicative of resilience (Rindfus). By the time persons reach their 30's and subsequent decades, life becomes more pleasant and satisfying (Mehlsen, Platz, & Fromholt, 2003).

Field (1997) reported that younger adulthood and midlife are regarded as most satisfying whereas old age is regarded as the least satisfying period of life. Yet, some investigators suggest that happiness represents a "shifting baseline" in which happiness may actually ebb and flow below normative levels of emotional contentment (Cohen-Mansfield, 2011). In deriving the Theory of Gerotranscendence, Tornstam (1989) posited that individuals surviving to the extreme limits of old age come to accept what life once was, what it is, and what it will become. In turn, contemplation of one's life is believed to contribute to feelings of contentment, yet may disguise how old-old adults positively judge life satisfaction. Persons may report feeling happier with advancing age, but the longer they live beyond the normative limits of life expectancy, the more they may call into question attributes or qualities that make life pleasing (Baird & Lucas, 2010; Diener et al., 1999; Gerstof et al., 2010; Mroczek & Spiro, 2005). Perhaps, exposure to traumatic events (e.g. natural/technical disasters, falls, social loss) across differential periods represents a salient determinant of whether long-lived persons frame meaningful or negative appraisals about the quality of life. Nonetheless, further investigation is needed to resolve whether specific types of past or present trauma experiences maintain the greatest impact on one's sense of a meaningful life at 100 years of age and beyond.

A second finding from this study involved type of trauma exposure. In particular, natural/technological disaster emerged as the most common trauma event reported by centenarians. It is plausible to argue that this finding represents an artifact of geographic location. Participants in this study originated from the state of Oklahoma, a region of the country where naturally occurring phenomenon such as tornadoes tend to be more commonplace (Borden & Cutter, 2008). Since 1950, an average of 53 tornadoes has been observed annually within the state (Arndt, 2003). This cohort also experienced the Great Depression, Dust Bowl, and historical warfare. Exposure to natural and technological disasters has been reported to decrease quality-of-life among old-old adults (Massey, 1997). This tends to be most salient during the immediate post-disaster experiences. In particular, old-old persons have been reported to be reluctant in evacuating their homes due to a lack of safe transportation, limited financial resources, and acute physical distress in the aftermath of a disaster (Massey, 1997). Evidence from this study suggests that trauma not only has an immediate or proximal effect on life satisfaction, but trauma exposure may have a long-term impact. Further, longitudinal investigation into the associated link between trauma exposure and life satisfaction in old-old age is warranted.

It is important to note that old-old adults engage in resilient behavior in response to natural disaster experiences. Cherry (2009) hypothesized that old-old adults typically engage in two primary coping behaviors. First, many engage in assimilation which occurs when one alters the situation so it meets personal goals (e.g., overcoming a health issue, getting a job). Second, they use accommodation to adapt the sense of self and the individual adapts life meaning rather than actually altering their environment (Brandstadter, Wentura, & Greve, 1993). Both processes help build resilience in a way that the traumatic experience reduces direct and indirect threats to meaningful sources of well-being. Cherry (2009) noted that old-old adults maintain higher mean mental component scores in the aftermath of disaster than middle-aged and young adults. This suggests that old-old adults may be able to better manage psychological well-being in the

immediate aftermath of a disaster, as well as evolve a sense of reasoned growth or meaning in life.

From a life course perspective, the age or period in which individuals are exposed to a trauma, including natural or man-made disaster, may have immediate as well as long-term consequences on individual well-being (Elder, 1974). Dannefer (2003) has referred to this as cumulative advantage/disadvantage. The meaning and significance of a traumatic event that occurred earlier in life may become anchored in proximal and current ongoing trajectories of subjective well-being (Dannefer, 2003). Thoughts and feelings regarding the meaning of a certain experience may fade over the immediate aftermath of a trauma occurrence, yet the consequential impact of the experience may linger throughout the life course. In particular, emotional memories connected to a trauma experience may resurface at a later time in life (Danefer). This is believed to contribute to poor mental health and low life quality in old and very old age. This is what investigators have commonly referred to as the "lingering effect" of trauma on life satisfaction (Shmotkin, Berkovich, & Cohen, 2006). In other words, the impact trauma that is manifested earlier in life may not be fully recognized until persons reach advanced old age.

A third finding from the current study provides empirical support that past and recent trauma exposure diminishes life satisfaction in extreme old age. Results from this study lend support to the idea of a "lingering effect." In particular, traumatic events that occurred over 70 years ago appear to decrease current life satisfaction among centenarians. Shmotkin et al. (2011) noted that the emotional impact of trauma from earlier life periods typically lingers over time and eventually crosses-over into present perceptions of well-being. Similarly, other investigators have also reported that traumatic experiences occurring more than half a century ago still impact subjective well-being into advanced old age (Krause, 2004). Through the experience of more current trauma, past traumatic experiences are believed to be this demanding impact and greater use of resources in adaptation in later life (Martin & Martin, 2002). Resources must be used to help suppress

negative memories that can affect current daily living. In other words, distal events can also influence proximal life events.

Limitations

Although results from this study provide insight into the associated trauma on the life satisfaction of centenarians, several limitations should be noted. First, this study involved a cross-sectional investigation using a convenience sample. Cross-sectional findings are limited to being associational and therefore cannot be interpreted as involving causation. Therefore, results may not generalize to other centenarian populations who may reside across differential contexts (e.g., private-community dwelling vs. long-term facility) over time. Suh, Diener and Fujita's (1996) longitudinal study exploring the effects of life events on subjective well-being reported that only recent events influence subjective well-being of older adults. In contrast, findings from the current study suggest that trauma has both a distal as well as a proximal association. Thus, use of random or population-based sampling within a longitudinal investigation might have improved interpretation and generalizability of results.

A second limitation of this study involved reliance on retrospective recall of traumatic experiences; this may have introduced a degree of selectivity bias relative to the ability of centenarian participants to endorse past or current particular trauma events. Participants did not report endorsing items like physical abuse, as found from the low number of reports, but participants perhaps selectively endorsed items that have more positive undertones. Some investigators refer to this process as the "autobiographical bump" (Rubin & Berntsen, 2003). In other words, older adults are more likely to reframe negative life experiences more positively. It is plausible to assume that participants in this study may have experienced some type of abuse, yet such occurrences may have been underreported. Under reporting of events could also be due

to a cohort or generational effect. The trauma occurrences were also lumped into large age periods.

Third, this study involved use of standardized self-report instruments to assess life satisfaction. The alphas of the economic security scale, Social Provisions Scale, and the SWLS were considerably low, but with this age group of people, these are normal alpha ranges which means the scales are still good indicators to use with this population. Life satisfaction is also a complex and dynamic phenomena. The use of more qualitative assessments may have improved understanding of life satisfaction relative to traumatic events. In particular, the association of trauma on life satisfaction may be conceptualized differently among persons surviving to 100 years, who may be very resilient, than individuals who may represent earlier stages of life. This particular sample of centenarians also appeared to report high degree of life satisfaction (M = 27.75, S.D. = 6.13). According to Diener (2006) scores on the SWLS (Diener, 1985) in the range of 25-29 are indicative of high life satisfaction and best describe persons who enjoy life and feel things are going their way (Diener, 2006). Nonetheless, integration of a qualitative assessment may have provided a more effective method relative to exposing the context by which persons achieve a satisfying life at 100 years and beyond.

Future Directions

Despite study limitations, evidence from this study has implications relative to guiding how geriatric practitioners, clinical counselors, and social workers improve quality-of-life for long-lived trauma survivors. In particular, evidence from this study can be used to improve how aging service practitioners integrate reminiscence or life-review therapy or counseling within clinical or educational settings. This evidence can also be used to teach caregivers about the importance of social support on the well-being of older adults. Investigators should conduct future research that

on-sites the longitudinal impact of distal natural disaster experiences/traumas. This could determine what might be the probability of living to 100 and surviving a natural disaster.

Further investigation should consider the connection of proximal traumatic events relative to PTSD, depression, distress, memory deficits or other psychiatric concerns at 100 and beyond. In particular, investigators should identify key trauma incidents that centenarians have gone through that are linked to the onset of or progression of mental health disorders. Mental health outcomes may erode life satisfaction above and beyond additional physical, functional, and social loss. Results from this study promote interest and have implications for clinical and applied geriatric practitioners (e.g. counselors, case managers, social workers) in developing counseling services, life review programs, and social services used to help old-old adults achieve a sense of satisfaction despite past or recent emotionally adverse experiences.

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VITA

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Scope and Method of Study: Data for this study included N=154 centenarians (M_{age} = 101.01, S.D. = 1.72) residing in Oklahoma. Majority of participants were female, Caucasian, widowed, and having obtained a college education. The primary purpose of this study was to explore how reported lifetime traumatic experiences of extremely long lived persons influence well-being. A key objective was to identify the association between distal and proximal occurrence of cumulative lifetime trauma as well as the effects of perceived health, economic security, and social support on current life satisfaction.

Findings and Conclusions: Participants reported experiencing an average of 2.07 (S.D. = 1.39) traumatic events during their lifetime. They also reported events to have occurred the most often greater than 70 years ago. Natural disasters were reported to have occurred most often. After controlling for age, gender, race, education, marital status, perceived health, economic security, and social support, cumulative traumatic events encountered before age 30 (β = -.25, p < .01) as well as after age 89 (β = -.20, p < .05) were negatively associated with life satisfaction. In particular, past and recent traumatic events seem to decrease life satisfaction among centenarians. Perceived health (β = .20, p < .05), economic security (β = .20, p < .05), and social support (β = .34, p < .001) all maintained direct positive associations with life satisfaction. This suggests that greater perceived health, economic security, and social support occurring in old-old age increases life satisfaction. Results indicate that lifetime trauma has a distal as well as contemporaneous association with life satisfaction at 100 years of age and beyond. Evidence from this study has implications relative to guiding how geriatric health professionals and practitioners address quality-of-life among long-lived trauma victims.

ADVISER'S APPROVAL: Alex Bishop