

AGE AND RESPONSES TO THE EVENTS OF SEPTEMBER 11, 2001

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Following the terrorist attacks on the United States on September 11, 2001, many turned to the field of psychology for greater understanding of the impact of such events and guidance in supporting our citizens. This study sought to gain greater understanding of the differential impact of the September 11th attack on individuals by investigating the influence of age, psychological hardiness, and repression versus sensitization as forms of coping behavior on psychological health. Both an initial cross-sectional sample (172 young adults & 231 older adults) and a short-term longitudinal follow-up (39 young adults & 58 older adults) were included in the study. Older age, psychological hardiness and the use of a repressing coping style were found to each individually relate to greater resilience/less dysfunction at both time one and two. For young adults, high hardy repressors fared best, followed by high hardy sensitizers. Low hardy young adults demonstrated similar levels of dysfunction regardless of coping style (repressions/sensitization). For older adults, coping style impacted both high and low hardy individuals equally, with high hardy repressors demonstrating greater functioning. This study attempted to gain greater insight into explanations for these and previous findings of greater resilience among older adults. In explaining the greater resilience of older adults, it seems that coping style is highly important, while hardiness and the impact of history-graded events does not explain the resilience of older adults.

TABLE OF CONTENTS

	Page
LIST OF TABLES	iv
INTRODUCTION	1
REVIEW OF THE LITERATURE	3
The Influence of Age on the Impact of Stressful Events	3
Hardiness as a Mediating Factor in the Impact of Stress Events	6
Repression versus Sensitization Coping Dispositions and the Impact of Stress Events.....	8
STATEMENT OF THE PROBLEM	11
HYPOTHESES	15
Part A: Initial Study	15
Part B: Longitudinal Study	16
METHOD	17
Participants.....	17
Measures	18
Procedure	23
RESULTS	24
Hypothesis 1.....	24
Hypothesis 2.....	25
Hypothesis 3.....	28
Hypothesis 4.....	28
Longitudinal.....	45
DISCUSSION	47
Hypothesis 1.....	47
Hypothesis 2.....	48
Hypothesis 3.....	49
Hypothesis 4.....	50
Longitudinal Study.....	57
Summary of the Findings.....	59

Limitations	59
Implications.....	62
REFERENCES	82

LIST OF TABLES

	Page
1. Type of Exposure Reported by Young and Older Adults.....	65
2. Historical Events – Impact Scale	65
3. Means and Standard Deviations of Historical Events Impact by Decade for Older and Younger Adults.....	66
4. Means and Standard Deviations of the Impact of Historical Events by Decade on Coping with 9/11 by Older and Younger Adults.....	67
5. Means and Standard Deviations of Measures by Age	68
6. Correlations.....	69
7. Means and Standard Deviations for Young Adults by Hardiness by Repression-Sensitization.....	70
8. 1930s Means and Standard Deviations for Young Adults.....	71
9. 1940s Means and Standard Deviations for Young Adults.....	72
10. 1960s Means and Standard Deviations for Young Adults.....	73
11. 1970s Means and Standard Deviations for Young Adults.....	74
12. 1980s Means and Standard Deviations for Young Adults.....	75
13. 1990s Means and Standard Deviations for Young Adults.....	76
14. Impact of Pearl Harbor for Young Adults: Means and Standard Deviations	77
15. Impact of Pearl Harbor on coping with 9/11 for Young Adults: Means and Standard Deviations	78
16. Pearson’s Product Moment Correlations at Follow-Up for Whole Sample	79
17. Pearson’s Product Moment Correlations at follow-up for Young Adults	80
18. Pearson’s Product Moment Correlations at Follow-Up for Older Adults	81

INTRODUCTION

Research on the impact of disasters has demonstrated a wide variety of emotional and stress reactions in survivors (Norris, Byrne, Diaz, & Kaniasty, 2001). The impact is most likely to be particularly severe in instances involving malicious human intent, extreme damage to property, serious and ongoing financial problems for the community, a high prevalence for trauma in the form of injuries, threat to life, and loss of life, or when the event takes on a greater symbolic meaning of human maliciousness (Norris et al. 2001). Similarly Canino et al. (1990) found that disasters with a sudden, unexpected onset for which there was little warning, had a potential for recurrence, and was characterized by terror, horror, or a threat to lives and property, resulted in more individuals being affected and an increased rate of psychological impairment (Canino, Bravo, Rubio-Stipec, & Woodbury, 1990).

Given these findings, we would expect that the terrorist attacks on the United States on September 11, 2001 would result in severe emotional and stress reactions among survivors. We would not expect, however, that all individuals would react with the same emotional response or intensity of response. Beginning with the writing of Henry Murray in the late 1940s, researchers have worked to recognize the importance of individual differences in the study of personality and development (Zucker, 1990). Others, such as Bronfenbrenner (1979) have encouraged the recognition of social context and historical experiences when studying the individual, resulting in the current focus on the individual in context (Elder & Caspi, 1990).

We can assume that many researchers are rushing to gain understanding of the impact of the September 11th attacks, but this understanding will be limited if we do not recognize the importance of individual differences. Further, by understanding the differential impact of

traumatic events, such as the September 11th attacks, we can better allocate support and resources to survivors of this and future traumatic events.

Within this study I hope to gain a greater understanding of the differential impact of the September 11th attack on individuals by investigating the influence of age, psychological hardiness, and repression versus sensitization as forms of coping behavior on psychological health.

REVIEW OF THE LITERATURE

The Influence of Age on the Impact of Stressful Events

Early theorists often suggested that older adults would experience the greatest distress following disasters due to their greater physical frailty and lower social and economic resources. They also theorized that older adults would evaluate their situation more negatively (Thompson, Norris, & Hanacek, 1993). These theories have not been supported in research, which has instead found older adults to be the most resilient age group, followed only by middle-aged childless men (Norris et al. 2001). Whether the disaster was related to serious flood, earthquake, hurricane, or war the older adults always fared better than younger individuals in the study (Berwin, Andrews, & Valentine; 2000; King, King, Foy, Keane, & Fairbank, 1999; Knight, Gatz, Heller, & Bengtson, 2000; Norris & Murrell, 1988; Thompson, Norris, & Hanacek, 1993). Two different theories have been postulated in attempts to explain these findings, the maturation hypothesis and the inoculation hypothesis.

The maturation hypothesis states that as we age we become less emotionally reactive to stressful events including disasters (Gatz, Kasl-Godley, & Karel, 1996). With age comes increased psychological maturation, including more mature coping styles, which protect the older adult against stressors. Based on this theory, we would expect older adults to become less distressed than younger individuals when exposed to similar disaster or trauma experiences (Knight et al. 2000). The research of Knight et al. (2000) supported the maturation hypothesis. In their study older adults demonstrated less tendency to ruminate following an earthquake than did younger adults.

The inoculation hypothesis argues that exposure to stress increases people's resistance to subsequent stress and may ultimately protect them from harm. Thus, prior traumatic experiences

provide an inoculation against strong emotional reaction to repeated traumatic experiences. With each traumatic experience, the individual becomes stronger and more resilient (Knight et al. 2000; Thompson et al. 1993). Eysenck (1993) first proposed the inoculation hypothesis in his research on stress and health. In his studies with animals, he found that those exposed to repeated stress, became less responsive with each subsequent stressor. A rat that had received multiple mild shocks was much more tolerant of a subsequent stronger shock, than a rat who had not received any shocks prior to the strong shock. Eysenck (1993) also found that following traumas did not have to exactly mirror the initial trauma in order for the inoculation effect to provide protection. This “cross-tolerance” was demonstrated with animal experiments in which the animal was repeatedly exposed to a stressor and then later exposed to a different stressor (shock versus cold swim). Whether the previous stressors did or did not match the subsequent stressor was irrelevant, both groups showed an inoculation effect (Eysenck, 1993).

The inoculation hypothesis directly relates to age, in that older individuals generally bring a rich history of experience, which likely includes traumatic events. This history of trauma may account for the resilience observed in older adults (Norris & Murrell, 1988). Bell (1978) commented that older adults have experienced more traumas in their lives and therefore have learned an attitude of acceptance relative to loss and suffering. He suggested that this crisis experience and the resulting ability to accept loss and suffering accounts for the older adult’s resiliency (Bell, 1978).

Several studies have provided evidence supporting the inoculation hypothesis. Norris and Murrell (1988) researched the effects of serious flooding on residents in Kentucky. They found that individuals with previous flood experience did not exhibit distress and anxiety, whereas distress and anxiety were present in the individuals without flood experience. This

finding held true regardless of age, with older adults without flood experience demonstrating distress similar to their younger counterparts. They additionally found evidence of cross-tolerance. Individuals who had experienced non-weather related traumas also fared better than individuals without trauma. The more experienced older adults took their losses in stride, evidencing no increase in distress or anxiety symptoms.

Knight et al. (2000) used a longitudinal design to research the impact of an earthquake measuring strength 7 on the Richter scale, on residents of Los Angeles. In the process of another research study, pre-earthquake measures had already been taken of residents in the community, allowing for pre- and post-earthquake comparisons. They found that greater prior earthquake experience was related to lower levels of depression following the quake, even after adjusting for pre-quake levels of depressed mood (Knight et al. 2000). Wang et al. (2000) also discovered an inoculation effect in their study of earthquake related post traumatic stress disorder in China. They found a lower vulnerability for diagnosis of PTSD among villagers with a higher level of previous exposure to earthquakes (Wange, Gao, Shinfuku, Zhang, Zhao, & Shen, 2000).

Similar to the studies examining the impact of disaster on emotional health, research on combat experience has suggested an age and inoculation effect. In their research with World War II veterans, Elder and Clipp (1989) noted that veterans expressed the belief that combat experience had made them stronger and more able “to cope with adversity.” Elder and Clipp found that the men who had served in heavy combat were more assertive and resilient in mid-life, as compared to veterans with light or no combat. Further, the men who entered the military at a relatively young age were more likely to demonstrate combat related trauma, than those entering at a more mature age (Elder & Clipp, 1989). King et al. (1999) substantiated these

findings, with their research demonstrating that younger age at entry in the Vietnam war was directly associated with PTSD.

Some researchers have suggested that with age there is a decrease in emotionality and reactivity, and that this is the main explanation for findings of lower stress following trauma among older adults. They argue that prior to the trauma the older adult has lower levels of depression and anxiety, resulting in lowered symptoms following trauma as well (Babcock, Laguna, Laguna, & Urusky, 2000; Beurs, Beekman, Geerlings, Geeg, Van Dyck, & Van Tilburg, 2001; Elhai, Frueh, Gold, Gold, & Hamner, 2000; Thompson, Norris, & Hanacek, 1993). Babcock et al. (2000) found that despite having increased health problems and decreased relational satisfaction, older adults expressed considerably less symptoms of worry than younger adults. Elhai et al. (2000) similarly found that with age symptoms of depression, emotionality, anger, and impulsivity decrease.

Hardiness as a Mediating Factor in the Impact of Stress Events

Along with demographic factors related to the survivors of trauma, and factors related to the trauma itself, many researchers have investigated personality characteristics related to successful coping (Bell, 2001; Brewin, Andrews, & Valentine, 2000; Klohnen, 1996; Maddi, 1999; Rhodewald & Zone, 1989). Within this effort, Kobasa (1979) coined the term “psychological hardiness” to describe a constellation of personality characteristics that distinguish resilient individuals from those who are more vulnerable to stress reactions following traumatic events. The hardy individual is able to place stressful events within a broader perspective and find a deeper understanding of what needs to be done to cope with the event (Maddi, 1999). Further, a hardy attitude contains the “3 Cs” of commitment, control, and challenge. Individuals strong in commitment approach life with the belief that they are capable

of making any task interesting and worthwhile through a personal sense of resourcefulness. These individuals seek involvement rather than avoidance and are unlikely to engage in denial or feel disengaged. They have a sense of purpose and self-understanding and appear to perform tasks in a cheerful and effortless manner. Individuals strong in control believe that they can influence the direction and outcome of their environment and efforts, rather than view themselves as victims of circumstance. Lastly, persons high in a sense of challenge believe that their lives are most fulfilled when they are growing and developing through learning from experience, whether positive or negative. They do not expect life to be characterized by uninterrupted comfort and security, but instead strive to learn from challenge (Khoshaba & Maddi, 1999; Kobasa, 1979; Kobasa, Maddi, & Zola, 1983; Maddi, 1999; Maddi & Hightower, 1999).

Research has consistently found reliable differences between hardy and nonhardy individuals. Further, this research has substantiated Kobasa's theory of hardiness by demonstrating that hardy individuals can endure considerable life change without manifesting the high stress reactions exhibited by nonhardy individuals (Rhodewalt & Zone, 1989). Research on hardiness suggests that hardy individuals approach stressful events and problems in a very different way than nonhardy individuals. As compared to nonhardy individuals, hardy individuals appear to interpret situations in less stressful ways, generally appraising life change in relatively benign ways. Perhaps because of this tendency to interpret events as less stressful, hardy individuals appear to adjust more quickly following negative events (Maddi, 1999; Rhodewalt & Zone, 1989). Along with appraising events in a more positive manner, hardy individuals also appear to problem solve in a very different manner than nonhardy individuals. Hardy individuals approached a problem by analyzing it, formulating possible solutions to it, and

then carrying those solutions out. Nonhardy individuals, on the other hand, approached problems in a regressive manner, wishing that the problem would just go away and detaching themselves from it (Khoshaba & Maddi, 1999).

Research does not suggest that hardy individuals are completely protected from experiencing stress, but instead indicates that they can better tolerate stress events and recover more quickly when subjected to large amounts of stress. While stressful events increase strain, hardiness decreases its impact. This is especially true as stressful events mount (Bartone, 1999; Maddi, 1999).

Some researchers have criticized the construct of hardiness as merely another measure of negative affectivity or neuroticism. Maddi & Hightower (1999) found that while hardiness was negatively correlated with negative affectivity, the construct of hardiness retained its predictive power even when negative affectivity was controlled. They concluded that the hardiness measure is not merely a negative measure of neuroticism.

Despite extensive research supporting the construct of hardiness, it has not been free of criticism. Critics of this construct have questioned a) whether hardiness is a unitary or multidimensional construct, b) the measurement and statistical treatment of data in hardiness research, and c) the relationship of hardiness to health (Crowley, Hayslip, & Hobdy, 2003; Hull, Van Treuren, & Virnelli, 1987; Schmied & Lawler, 1986; Wiebe, 1991).

Repression Versus Sensitization Coping Dispositions

and the Impact of Stress Events

In 1961 Byrne created the Repression-Sensitization Scale in an effort to greater understand dispositional styles in coping with stressful events (Egloff & Hock, 1997). Byrne (1965) suggested a dimension of personality, which characterizes an individual's usual response

to anxiety-evoking stimuli. According to Byrne, repressing individuals avoid anxiety-arousing stimuli in order to minimize the experience of emotional arousal. Repressors work to withdraw attention from and limit the processing of threatening aspects of situations. In doing this, they try to prevent, reduce, or limit increases of aversive emotional arousal (Byrne, Golightly, & Sheffield, 1965; Hock, Krohne, & Kaiser, 1996). In contrast, sensitizing individuals approach and attempt to control threatening stimuli, expressing concern with uncertainty in threat situations. The sensitizer's inability to tolerate uncertainty promotes an intense and continuous monitoring of the environment, searching for the presence of danger. These individuals analyze elements of a situation that may be related to threat, attempting to decrease the likelihood of unanticipated occurrences of aversive events (Byrne et al. 1965; Egloff & Hock, 1997; Hock et al. 1996). When compared to repressors, sensitizers can be characterized as more intellectualizing, more likely to report being anxious and emotionally upset, more hostile, less likely to be rigidly over controlled, more dogmatic and prejudiced, and more introverted (Byrne et al. 1965). It has been suggested that repressors tend to be high in cognitive avoidance, or a tendency to turn attention away from and inhibit further processing of cues associated with threat, and low in vigilance, or the tendency exhaustively focus on and process threatening information. In contrast to repressors, sensitizers would take the opposite approach, low in cognitive avoidance and high in vigilance, in the face of threatening material (Egloff & Hock, 1997; Hock et al., 1996).

Initially, Byrne hypothesized that when psychological adjustment was graphed on a repression-sensitization scale a curvilinear relationship would exist, with individuals scoring high on either sensitization or repression showing the least psychological adjustment, and moderate individuals showing better psychological adjustment. This was not demonstrated by

his research. Instead, he found that repression-sensitization relates to adjustment in a linear fashion with sensitizers appearing more maladjusted than repressors (Byrne et al., 1965).

Hock et al. (1996) researched the processing styles of repressors versus sensitizers. They found that when exposed to ambiguous stimuli, sensitizers often imposed threatening interpretations and more easily recognized threatening aspects of ambiguous stimuli that had been previously presented. Sensitizing individuals demonstrated a tendency to attend to and elaborate on threatening aspects of ambiguous stimuli, while neglecting and more easily forgetting non-threatening stimuli. Repressors demonstrated the opposite approach, avoiding threatening aspects of ambiguous stimuli. Repressors appeared to avoid processing of threat-related aspects of stimuli very early in its presentation, demonstrating no encoding of the information into memory (Hock et al., 1996). Egloff & Krohne (1996) similarly found that repressors retrieved fewer negative emotional memories and took longer to retrieve them.

It seems logical that a repressing versus a sensitizing coping disposition may influence the degree of impact of traumatic life events. We can expect that sensitizers will become more absorbed in vigilantly processing and encoding into memory the threatening aspects of the event. The research results of Bromet et al. (1990) support this hypothesis. They found that a perception of continuing threat influenced adjustment following disaster. Individuals who were able to deny lingering danger experienced less distress, whereas individuals unable to deny the situation's danger fared more poorly (Bromet et al., 1990).

STATEMENT OF THE PROBLEM

The terrorist attacks on the United States on September 11, 2001 impacted individuals around the world. While responses varied, it seems that everyone was affected in some way. Many are turning to the field of psychology for understanding of the impact of such events and guidance in supporting our citizens. Researchers have begun reviewing past disastrous events and the responses of victims (Norris et al., 2001) and encouraging new research to explore the mental health consequences of the September 11 attack (NIH, 2002). Within this exploration it is crucial that we consider individual differences in the impact of traumatic events. Only with this consideration can we appropriately allocate resources and support those most in need. Further, by understanding what factors are related to positive coping responses, we can more adequately help those who do not fair as well. With this goal in mind, three specific factors were chosen to explore; age, psychological hardiness, and coping disposition (repression versus sensitization). Based on past research, each variable was expected to be singularly related to trauma response.

Research suggests that older individuals will be more resilient in the face of trauma and thus will exhibit less stress (Berwin, Andrews, & Valentine; 2000; King, King, Foy, Keane, & Fairbank, 1999; Knight, Gatz, Heller, & Bengtson, 2000; Norris & Murrell, 1988; Thompson, Norris, & Hanacek, 1993). Based on the inoculation hypothesis (Eyseneck, 1993; Knight et al., 2000; Thompson et al., 1993), we would expect older adults to have developed a stronger resistance to trauma related stress because of their greater exposure to past traumatic events. Influential events have often been conceptualized as falling into three categories: normative age-graded events, events that affect most all individuals at similar times of life; normative history-graded events, events that affect most people of the same generation or cohort; and non-

normative events, events that occur only to certain individuals often at unpredictable times and in atypical circumstances (Baltes & Danish, 1980). As a cohort, older adults have been exposed to history-graded influences. These influences likely change their reactions to other events, such as September 11th. Specifically, many writers have likened the attacks on September 11th to Pearl Harbor (Bernstein, 2002). Pearl Harbor, as a history-graded influential event, could potentially help inoculate the older adult against later similar events, such as the attacks on September 11th, thus making the older adult more resilient.

Psychological hardiness has also been found to be related to resiliency and a positive coping response after traumatic events (Kobasa, 1979; Maddi, 1999). Lastly, researchers have demonstrated a link between a repressive, as compared to a sensitizing, coping disposition and resiliency following negative experiences (Byrne, 1965).

In addition to being individually associated with resiliency, these factors are also likely to interact in their influence on trauma responses. These factors have not been researched together, thus one can only hypothesize about their possible interaction.

Both high psychological hardiness and a repressing coping disposition have been related to a more positive response following trauma. However, components of these two traits do not seem compatible. For example, the commitment component of hardiness includes a tendency to seek involvement rather than avoidance in the face of challenge (Khoshaba & Maddi, 1999; Kobasa, Maddi, & Zola, 1983). We would expect the opposite reaction from a repressor, who demonstrates a tendency to avoid anxiety-arousing stimuli (Byrne et al, 1996). It seems that repressing individuals would be more similar to nonhardy individuals, who tend to detach themselves from challenge. Since the characteristics of hardy individuals run counter to those of repressors, it might seem that they have more in common with sensitizers. This is not the case.

Hardy individuals are characterized by a tendency to interpret situations in less stressful ways, generally viewing stressors in benign terms (Maddi, 1999; Rhodewalt & Zone, 1989), while sensitizers tend to impose threatening interpretations on events (Hock et al, 1996). Further, sensitizers demonstrate an inability to tolerate uncertainty (Byrne et al, 1965), which would be inconsistent with our understanding of psychological hardiness. On initial examination of these two characteristics, it seems impossible to account for their incompatibility. How can two apparently opposite traits both predict resilient stress responses? Based on the definition of each construct, it seems that an individual can be both psychologically hardy and flexibly use either a repressing or sensitizing coping style. A nonhardy individual, however, might use only one coping style exclusively. I expect that among nonhardy individuals, those who use a repressing coping style will respond better than those who use a sensitizing coping style. Hardy individuals, on the other hand, will use either repressing or sensitizing coping styles and will approach conflict in a more mature and flexible manner. Thus, hardy individuals will be more resilient than nonhardy individuals, regardless of coping style.

Khoshaba and Maddi (1999) have suggested that psychological hardiness is a learned personality characteristic and that it can be taught. In teaching psychological hardiness, Maddi (1987) worked to help individuals place stressful events in a wider perspective, in which it is viewed as less terrible. Individuals are encouraged to take a decisive, rather than evasive action toward the stressful event. If these efforts fail, then the individual is encouraged to shift his or her approach and accept the events as unchangeable, decreasing feelings of bitterness and self-pity. Khoshaba and Maddi (1999) further suggest that stressful events have a developmental value as long as they lead to compensatory meaning and striving. This view appears compatible with the inoculation hypothesis. Individuals, who have experienced stressful events and

survived, realize that they can cope and handle negative situations. The individual gains a trust in his or her own control and ability to cope with future stress. The older adult is more likely to have faced stressful events and thus, based on this theory, would be more likely to have gained a trust in their ability to cope. If hardiness is learned and influenced by either development or historical experience, then we would expect older adults to be more likely to demonstrate psychological hardiness. If, on the other hand, psychological hardiness is temperamental and not subject to experience, then we would expect no difference in ratings of psychological hardiness among old versus young individuals.

HYPOTHESES

Part A: Initial Study

Hypothesis 1

It was hypothesized that older age, psychological hardiness, and repressing coping style would each be correlated with greater resilience/ less dysfunctional response to the September 11 attack. Measures of dysfunction included modules 2 & 3 of the OBBSSR September 11 Questionnaire, the Hopkins Symptom Checklist, the Ways of Coping Checklist, and The Resilience Scale. A Pearson product moment correlation was used for statistical analysis.

Hypothesis 2

It was hypothesized that individuals who are low in psychological hardiness and use a repressing coping style would have greater resiliency/ less dysfunction than individuals who are low in psychological hardiness and use a sensitizing coping style. However, individuals who are high in psychological hardiness were expected to be more resilient than both these groups. The interaction of hardiness and coping style (repression/sensitization) was statistically analyzed by using a two-way multivariate analysis of variance (MANOVA).

Hypothesis 3

It was hypothesized that older adults would be higher in psychological hardiness than younger adults. Statistical analysis was completed by using a one-way analysis of variance (ANOVA).

Hypothesis 4

It was hypothesized that individuals reporting greater impact by historical events would demonstrate less dysfunction/greater resilience than individuals not impacted by historical

events. This was expected to be especially true for those individuals impacted by the event of Pearl Harbor. Statistical analysis was completed by using a three-way MANOVA.

Part B: Longitudinal Study

Hypothesis 1

It was hypothesized that PTSD symptoms would dissipate over time. A repeated measures ANOVA was used for statistical analysis.

For exploratory purposes, the relationship between 3 OBSSR September 11th modules at time one and factors at time two were analyzed using a Pearson's product moment correlation.

METHOD

Participants

Initial Study

Participants for this study consisted of two distinct sample groups, young adults and older adults. The young adult sample consists of 172 undergraduate students (38 male, 134 female), between the ages of 18 and 25, enrolled in psychology classes at the University of North Texas. Students volunteering for the study received extra-credit points for their participation.

Among the young adult sample, the average age was 20.11 years with an average of 13.64 years of education. The majority of the sample was Caucasian ($n = 120$), while the remainder were either African American ($n = 22$), Hispanic ($n = 17$), Asian ($n = 6$), or other ($n = 6$). Most of the young adults identified themselves as single ($n = 160$), while 7 were married, 1 was divorced, and 3 were in a relationship with a life partner.

The majority of young adults stated that their health does not interfere with their daily activities, (95.9%). Additionally, most young adults reported minimal direct exposure or loss to the events of September 11th, though 16 reported a close friend or family member being directly exposed to the attack (see Table 1).

Among the older adult sample ($n = 231$), the average age was 72.23 years, with ages ranging from 60 to 92, and an average of 14.23 years of education. The majority of the sample was Caucasian ($n = 193$), while the remainder were either African American ($n = 21$), Hispanic ($n = 9$), Asian ($n = 3$), or other ($n = 3$). Most of the older adults reported being married ($n = 133$), while 22 were divorced, 11 were single, and 65 were widowed. The older adults (88 male, 143 female), age 60 and older, were solicited from Denton county senior centers and the

community at large. Age and completion of the study were the only inclusive criteria considered.

The majority of older adults also stated that their health does not interfere with their daily activities (72.3%). Also similar to young adults, the majority of older adults reported minimal direct exposure or loss to the events of September 11th, though 18 older adults reported a close friend or family member being directly exposed to the attack (see Table 1).

Longitudinal Sample

At the time of the initial survey, participants were asked for permission to be re-contacted in the future and given space to provide an address. Participants who agreed to future contact were mailed the follow-up survey along with an addressed and stamped envelope. Of the initial sample, 96 people completed and returned the follow-up survey. The sample consisted of 39 young adults and 58 older adults, ranging in age from 18 to 86 with 20 males and 76 females.

Measures

OBSSR 9/11 Questionnaire

The 9/11 Questionnaire was used to assess the degree of exposure experienced by participants to the terrorist attacks on the United States on September 11, 2001. The instrument was created by Fran Norris, Ph.D. at the Office of Behavioral and Social Science Research at the National Institutes of Health, in order to provide a standardized, validated measure of exposure for research on the impact of the terrorist attacks. The instrument is split into three modules: (1) exposure to the attacks – which assesses the degree of exposure directly and indirectly to the September 11th attack. High scores on this measure suggest greater exposure to the events of September 11th. Questions address personal exposure, family and friend's exposure, having to leave work, job loss, financial loss, increased demands, and hate crimes; (2) Loss of psychosocial

resources – which assesses the individual's sense of emotional or social loss, with questions addressing feelings of safety, pessimism, ability to rely on others and confidence in self. High scores on this measure suggest the individual experienced a greater personal sense of loss of psychosocial resources; and (3) mental health outcome – which is a questionnaire addressing post-traumatic stress reactions, with high scores indicating greater post-traumatic symptoms.

Influence of Historical Events

A scale was created to examine the impact of past historical events on the individual in general and their ability to cope with the terrorist attack on September 11th. Individuals are asked to consider the impact of each historical event on a 5-point Likert scale. Historical events to be placed on the scale were gathered by asking numerous individuals to write out as many major historical events from the last 80 years that they could think of. Additionally, a search on the Internet and of Time magazine and retrospective books was completed to gain further information on highly discussed historical events. Those events occurring with a high frequency were chosen to make up the list, selecting events based on the perceived salience for young and older adults, rather than creating an exhaustive list of all historical events. For the sake of statistical analysis, the events were broken down by decade (see table 2, 3 & 4). Alpha coefficients for each impact score by decade ranged from .64 (1930s) to .89 (1940s).

Social Readjustment Rating Scale

Holmes and Rahe (1967) formulated the Social Readjustment Rating Scale (SRRS) as a measure of experience of stressful life-events. The scale consists of 43 life-events, commonly reported as stressful, identified from clinical psychological experiences. High scores suggest that the individual has experienced a greater number of recent stressful life events. This measure has consistently shown a low, positive correlation with measures of illness (Kobasa & Puccetti,

1983). The SRRS is a commonly used research measure and is the most widely cited stress measurement instrument in psychology research (Hobson & Delunas, 2001).

Personal Views Survey

Kobasa developed the Personal Views Survey (PVS) as a measurement of psychological hardiness. The PVS is a revised version of an original hardiness measure containing six scales taken from various published measures. Through factor analysis, 50 items were found to significantly represent the construct of hardiness, and thus make up the PVS. This version of the PVS has 14 items assessing the control component, 13 assessing commitment, and 16 assessing challenge. The composite score for overall hardiness has a reliability coefficient (alpha) of .88. Respondents indicate their level of agreement on a Likert scale from “not at all true” to “completely true.” Higher scores on the PVS indicate higher levels of hardiness (Crowley, Hayslip, & Hobby, 2003).

Hopkins Symptom Checklist

The Hopkins Symptom Checklist (HSCL) is a 58-item survey designed to measure psychological functioning and physical illness. Items on the HSCL reflect psychological symptoms frequently seen in individuals seeking outpatient counseling and therapy. Separate scores are obtained for five scales: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Anxiety, and Depression, as well as a total symptom score. Internal consistency reliability estimates (coefficient alphas) for the scales ranged from .75 to .84 (Derogatis et al., 1974). Respondents are asked to rate each item on a 4-point Likert scale the degree to which each symptom as bothered him or her in the past 30 days.

Ways of Coping Checklist

The Ways of Coping Checklist is a 68-item measure of behavioral and cognitive strategies an individual might use in a specific stressful episode (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). This instrument contains items reflecting both assertive and defensive coping, such as escape-avoidance, isolation, intellectualization, suppression, information seeking, planful problem solving, palliation, inhibition of action, direct action, and magical thinking. Problem-focused items describe cognitive problem solving efforts and behavioral strategies for altering or managing the source of the problem, while emotion-focused items describe cognitive and behavior efforts at reducing or managing emotional distress. The problem-focused category contains 27-items and the emotion-focused category contains 41 items. Inter-rater reliability has been found to be high (91%). Using Cronback's alpha, the mean alpha coefficient for two administrations of the problem-focused scale was .80 and .81 for the emotion-focused scale (Folkman, et al. 1986). The instrument was modified for the purpose of this study by changing the true/false format to a 4-point Likert scale ranging from does not apply and/or not used to used a great deal. This study used the total achieved scores, with higher scores suggesting that the individual relied on a greater number of coping methods in the face of the attacks on September 11th.

The Controlled Repression Sensitization Scale

Handal (1973) designed the Controlled Repression Sensitization Scale (CR-S) by revising and shortening Byrne's Revised Repression-Sensitization Scale (RR-S). The CR-S is made up of 30 true/false items, with 15 keyed true, and 15 keyed false. High scores on this measure indicate a sensitizing coping style, while low scores indicate a repressing coping style. No difference has

been found between men and women on the CR-S, and the CR-S and the RR-S have a Pearson product-moment correlation of .82 ($p < .01$).

Social Support Questionnaire

Social support was measured by an 11-item version of the Social Support Questionnaire, which asks respondents to list all individuals in their life who provide social and psychological support and describe their satisfaction with this support on a 5-point Likert scale. Questions assessed the individual's support system in terms of availability, provision of positive feelings, degree of unconditional acceptance, and emotional support. Higher scores on this measure suggest that the individual perceives a greater degree of social support than those obtaining lower scores. Researchers have obtained alpha coefficients of .97 to .90 (Sarason, Sarason, Shearin, & Peirce, 1987).

The Resilience Scale

The Resilience Scale is a 25-item self-report survey developed by Wagnild & Young (1993) to measure themes of resilience taken from the author's literature reviews. All RS items are worded positively and responses are on a 7-point Likert scale. Concurrent validity has been supported by significant correlations between RS scores and measures of morale, life satisfaction and depression, and a Cronbach's alpha of .91. Higher scores represent higher resilience (Neill & Dias, 2001).

NEO-PI

The NEO-PI is a self-report personality questionnaire developed to measure the five factor model of personality: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The items are answered on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The scales are balanced to control for the effects of

acquiescent responding, and are not overly sensitive to social desirability effects. Internal consistency reliabilities for the five domains scales range from .76 to .93 in volunteer samples (McCrae, 1991).

Revised UCLA Loneliness Scale

The Revised UCLA Loneliness Scale is a 20-item self report questionnaire that is said to eliminate positive response bias that presented problems with the earlier version of the scale. Statistical analysis shows that the measure is less related to mood states or personality variables, but instead is related to feeling abandoned, depressed, empty, isolated, self-enclosed, and not feeling satisfied or sociable. The authors obtained a coefficient alpha of .94 (Russell, Peplau, & Cutrona, 1980).

Procedure

Young adult volunteers were recruited from undergraduate psychology classes at the University of North Texas. The students were asked to fill out the self-report questionnaire and return it for an extra-credit card. Older adult volunteers were recruited from local senior centers and the community and asked to fill out the self-report questionnaire during their free time. Each questionnaire packet included a cover sheet explaining the survey, informed consent forms, a demographic sheet, the OBBSSR 9/11 Questionnaire, Historical Events Scale, Social Readjustment Scale, Personal Views Survey, Hopkins Symptom Checklist, the Ways of Coping Checklist, Controlled Repression-Sensitization Scale, Social Support Scale, and the Resilience Scale. The initial data set was collected in the spring 2002, while the follow-up data was collected 6 to 8 months following completion of the first data set.

RESULTS

Hypothesis 1

The first hypothesis in this study predicted that older age, high psychological hardiness, and a repressing coping style would each be correlated with greater resilience/less dysfunction in response to the September 11th attack. A Pearson product moment correlation was used to analyze the relationship of these variables. In addition to the independent variables of age, hardiness, and coping style; exposure to September 11th (OBSSR module 1), health, impact of historical events by decade, and the Holmes & Rahe Social Readjustment scale were included for exploratory purposes (see Table 5).

Older age was found to be significantly correlated with the perception of less loss of psychosocial resources ($r = -.13$, $p = .007$), less psychological symptomology ($r = -.22$, $p < .001$), and less need for the use of coping skills ($r = -.23$, $p < .001$), as measured by the OBSSR module 2, the Hopkins Symptom Checklist, and the Ways of Coping Checklist respectively. Module 3: Post-traumatic symptoms and the Resilience Scale were not found to be significantly correlated with age. Thus the hypothesis was generally supported, with older adults demonstrating less dysfunction than younger adults.

Hardiness was found to be significantly correlated with all 5 measures of dysfunction. High hardy individuals reported a lower appraisal of loss of psychosocial resources on module 2 ($r = -.16$, $p = .001$), fewer post-traumatic symptoms on module 3 ($r = -.25$, $p < .001$), less psychological symptomatology on the Hopkins Symptom Checklist ($r = -.24$, $p < .001$), less need to use coping methods on the Ways of Coping Checklist ($r = -.14$, $p = .005$), and expressed greater resilience on the Resilience Scale ($r = .43$, $p < .001$). These results suggest that the

hypothesis was firmly supported with individuals high in psychological hardiness demonstrating less dysfunction and greater resilience.

Lastly, hypothesis 1 stated that individuals with a sensitizing coping style would express greater dysfunction, while those with a repressing coping style would report less dysfunction and greater resilience. As expected coping style was correlated with dysfunction and resilience, with sensitizers demonstrating greater dysfunction demonstrated by higher scores on module 2: appraisal of loss of psychosocial resources ($r = .42, p < .001$), module 3: post-traumatic symptoms ($r = .48, p < .003$), the Hopkins Symptom Checklist ($r = .70, p < .001$), and the Ways of Coping Checklist ($r = .41, p < .001$) and less resilience; the Resilience Scale ($r = -.31, p < .001$).

Hypothesis 2

The second hypothesis predicted that individuals who are low in psychological hardiness and use a repressing coping style would have less dysfunction/greater resilience than individuals who are low in psychological hardiness, but that those individuals who are high in psychological hardiness would be the most resilient, regardless of coping style. Levels of hardiness and repression/sensitization were based on a high/low median split. In terms of repression/sensitization, high scores indicate a sensitizing coping style, while low scores indicate a repressing coping style. In light of this study's intent, age was also utilized as an independent variable in this analysis. Hardiness and coping style were additional independent variables, while scores on module 2: appraisal of loss of psychosocial resources, module 3: post-traumatic symptoms, the Hopkins Symptom Checklist, the Ways of Coping Checklist, and the Resilience Scale were the dependent variables. A three-way between subjects multivariate analysis of variance (MANOVA) was performed on the data to analyze the impact of hardiness and coping

style on level of dysfunction/resilience. This analysis yielded main effects for psychological hardiness $F(6, 392) = 6.62, p < .001, \eta^2 = .095$, age $F(6, 392) = 9, p < .001, \eta^2 = .125$, and coping style $F(6, 392) = 22.23, p < .001, \eta^2 = .260$ at the multivariate level.

Univariate analysis

At the univariate level; hardiness was found to be impacted by perceived loss of resources (module 2) $F(1, 392) = 6.625, p < .01, \eta^2 = .017$ with high hardy individuals reporting less perceived loss or resources, social support $F(1, 392) = 4.87, p < .03, \eta^2 = .013$ with high hardy individuals reporting greater social support, and resilience $F(1, 392) = 33.53, p < .001, \eta^2 = .080$ with high hardy individuals demonstrating greater resilience.

Age was found to impact the need to use coping methods (the Ways of Coping Checklist) $F(1, 392) = 9.76, p < .003, \eta^2 = .025$ with young adults reporting greater need to use coping methods, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 11.91, p < .001, \eta^2 = .030$ with young adults reporting more psychological symptoms, perceived loss of resources (module 2) $F(1, 392) = 4.51, p < .04, \eta^2 = .012$ with young adults reporting a greater perception of loss of resources, and social support $F(1, 392) = 26.51, p < .001, \eta^2 = .065$ with young adults reporting greater social support.

Coping style was found to impact the need to use coping methods (The Ways of Coping Checklist) $F(1, 392) = 25.73, p < .001, \eta^2 = .063$ with sensitizers reporting a greater need to use coping methods, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 101.9, p < .001, \eta^2 = .210$ with sensitizers reporting more psychological symptoms, post-traumatic symptoms (module 3) $F(1, 392) = 47.59, p < .001, \eta^2 = .110$ with sensitizers reporting more post-traumatic symptoms, perceived loss of resources (module 2) $F(1, 392) = 20.57, p < .001, \eta^2 = .051$ with sensitizers reporting a greater perception of

loss of resources, social support $F(1, 392) = 20.55, p < .001, \eta^2 = .051$ with repressors reporting greater social support, and resilience $F(1, 392) = 12.75, p < .001, \eta^2 = .032$ with repressors demonstrating greater resilience.

Interaction Effects

While no interaction effects were found to be significant at the multivariate level, post hoc univariate analysis found the interaction of hardiness and age to be significant with regard to the perceived loss of resources (module 2) $F(1, 392) = 3.89, p < .05, \eta^2 = .010$ with low hardy, young adults demonstrating the greatest dysfunction/low resilience (mean = 25.88), followed by low hardy, older adults (mean = 22.66), high hardy, young adults (mean = 22.31), and high hardy, older adults demonstrating the lowest dysfunction/high resilience (mean = 22.19).

The post hoc univariate analysis similarly found a significant interaction effect for hardiness, age, and coping style on perceived loss of resources (module 2) $F(1, 392) = 3.90, p < .05, \eta^2 = .010$. For young adults being high in hardiness and having a sensitizing coping style resulted in greater disruption in functioning (mean = 25) when compared to high hardy young adults with a repressing coping style (mean = 19.70). However, for young adults who were low in hardiness, coping style showed little differentiation. For older adults, coping style impacted functioning in both high and low hardy adults, with high hardy and low hardy repressors demonstrating less dysfunction (mean = 20.5 and mean = 20.20 respectively) than high hardy and low hardy sensitizers (mean = 23.9 and mean = 25.13 respectively). In general hypothesis two was not supported (See Table 7).

Hypothesis 3

The third hypothesis stated that older adults would be higher in psychological hardiness than younger adults. A one-way ANOVA yielded no significant results. Thus this hypothesis was rejected.

Hypothesis 4

The fourth hypothesis argued that individuals reporting greater impact by historical events would demonstrate less dysfunction/greater resilience than individuals not impacted by historical events. This was expected to be especially true for those individuals impacted by the event of Pearl Harbor. Age was included as an independent variable because of the cohort-specific nature of historical life events. The dependent variable of dysfunction/resilience was measured using the OBSSR modules 2 & 3, the Ways of Coping Checklist, the Controlled Repressions Sensitization Scale, and the Hopkins Symptom Checklist.

A three-way between subjects MANOVA was performed on the data to analyze the influence of perceived impact of historical events by decade, age, and exposure to September 11th events on the level of dysfunction/resilience. Exposure to September 11th was defined based on scores on the OBSSR module 1 and was dichotomized using a median split. Perceived impact of historical events was measured using the Historical Events Scale, which asked participants to rate the impact of each event from 1 to 5. A median split was used to dichotomize these values, where in most cases an average score of 1 or up to 2 across life events by decade was labeled as very minimal impact and a score of 2 or greater was labeled as impacted. For the decade of the 1970s, 55.8 % of the sample rated the historical events as not significant. Most of the remaining participants rated the 1970s events as minimally impactful with only a select few reporting moderate or greater impact.

For each decade, a MANOVA was performed with the independent variables including the perceived impact of historical events in that particular decade, age, and exposure to September 11th (OBSSR module 1). The 1950s decade was not included due to missing data and lack of differentiation since the decade included only one significant event.

1930s

For the 1930s, the multivariate analysis yielded main effects for age $F(7, 392) = 8.24, p < .001$, eta squared = .133, the impact of the 1930s events $F(7, 392) = 3.27, p < .003$, eta squared = .057, exposure to September 11th $F(7, 392) = 2.04, p < .05$, eta squared = .037 and the interaction of age and being impacted by the 1930s $F(7, 392) = 2.45, p < .02$, eta squared = .043.

Univariate Findings - Age

At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 29.91, p < .001$, eta squared = .072 with younger adults using more coping efforts than older adults, coping style (repression versus sensitization) $F(1, 392) = 36.61, p < .001$, eta squared = .087 with younger adults demonstrating a more sensitizing style and older adults demonstrating a more repressing style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 36.16, p < .001$, eta squared = .086 with younger adults demonstrating more psychological symptoms than older adults, post-traumatic symptoms (module 3) $F(1, 392) = 4.8, p < .03$, eta squared = .012 with younger adults reporting more PTSD symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 12.8, p < .001$, eta squared = .032 with younger adults perceiving a greater loss of resources than older adults.

Univariate Findings – 1930s

Having perceived the historical events of the 1930s to be highly impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 11.72, p < .001, \eta^2 = .030$ with individuals reporting less impact expressing the need to use more coping methods than individuals reporting more impact, coping style (repression versus sensitization) $F(1, 392) = 5.51, p < .02, \eta^2 = .014$ with individuals reporting less impact demonstrating a repressing coping style and those reporting more impact demonstrating a sensitizing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 11.36, p < .001, \eta^2 = .029$ with individuals reporting less impact reporting less psychological symptoms than those reporting more impact, hardiness $F(1, 392) = 4.8, p < .03, \eta^2 = .012$ with individuals reporting less impact demonstrating greater psychological hardiness than those individuals reporting more impact, post-traumatic symptoms (module 3) $F(1, 392) = 13.88, p < .001, \eta^2 = .035$ with individuals reporting less impact reporting fewer PTSD symptoms than those individuals reporting more impact, and perceived loss of resources (module 2) $F(1, 392) = 6.45, p < .02, \eta^2 = .017$ with individuals reporting less impact reporting less loss of resources than individuals reporting more impact.

Univariate Findings – September 11th Exposure

Having been exposed to the events of September 11th impacted perceived loss of resources (module 2) $F(1, 392) = 10.9, p < .001, \eta^2 = .028$ with individuals reporting more exposure to September 11th perceiving a greater loss of resources.

Univariate Findings – Interaction of Age and 1930s

The interaction of age and perceived impact of historical events during the 1930s impacted coping style (repressions versus sensitization) $F(1, 392) = 4.97, p < .03, \eta^2 =$

.013 with older adults reporting a greater impact by the 1930s demonstrating a greater use of a sensitizing coping style and young adults demonstrating no preference in coping style (see Table 8).

1940s

For the 1940s, the analysis yielded main effects at the multivariate level for age $F(7, 392) = 10.03, p < .001, \eta^2 = .157$, the impact of the 1940s events $F(7, 392) = 3.78, p < .001, \eta^2 = .066$, and exposure to September 11th $F(7, 392) = 2.23, p < .04, \eta^2 = .04$. There were no interaction effects at the multivariate level.

Univariate Findings – Age

The univariate findings for age were highly similar to those for the 1930s, with the exception of hardiness being uniquely significant for this decade. At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 30.72, p < .001, \eta^2 = .074$ with younger adults expressing a greater need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 43.9, p < .001, \eta^2 = .103$ with younger adults demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 52.07, p < .001, \eta^2 = .12$ with younger adults reporting more psychological symptoms than older adults, hardiness $F(1, 392) = 4.15, p < .05, \eta^2 = .011$ with older adults demonstrating greater psychological hardiness than younger adults, post-traumatic symptoms (module 3) $F(1, 392) = 6.22, p < .02, \eta^2 = .016$ with younger adults reporting more PTSD symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 13.95, p < .001, \eta^2 = .035$ with younger adults perceiving a greater loss of resources than older adults.

Univariate Findings – 1940s

Having perceived the historical events of the 1940s to be impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 10.27, p < .001, \eta^2 = .026$ with individuals reporting less impact expressing the need to use fewer coping methods than individuals reporting more impact, coping style (repression versus sensitization) $F(1, 392) = 7.56, p < .007, \eta^2 = .019$ with individuals reporting less impact demonstrating a repressing style and individuals reporting more impact demonstrating some impact, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 17.52, p < .001, \eta^2 = .044$ with individuals reporting less impact expressing fewer psychological symptoms than individuals reporting more impact, hardiness $F(1, 392) = 6.95, p < .01, \eta^2 = .018$ with individuals reporting less impact demonstrating greater psychological hardiness than individuals reporting more impact, post-traumatic symptoms (module 3) $F(1, 392) = 11.75, p < .001, \eta^2 = .03$ with individuals reporting less impact expressing more PTSD symptoms than individuals experiencing more impact, and perceived loss of resources (module 2) $F(1, 392) = 6.55, p < .02, \eta^2 = .017$ with individuals reporting less impact perceiving less loss of resources than individuals reporting more impact.

Univariate Findings – September 11th Exposure

Similar to the 1930s, having been exposed to the events of September 11th impacted perceived loss of resources (module 2) $F(1, 392) = 8.78, p < .004, \eta^2 = .022$ with individuals experiencing greater exposure to September 11th perceiving a greater loss of resources than individuals reporting less exposure to September 11th.

Univariate Findings – Interaction of Age, Exposure to September 11th, & Impact of 1940s

Post hoc analysis found an interaction effect for age, exposure to September 11th, and being impacted by events in the 1940s impacted psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 4, p < .05, \eta^2 = .01$ was found to be significant at the univariate level. Having perceived the events of the 1940s as highly impactful was more influential for young adults, with those reporting being impacted by the 1940s expressing greater psychological symptomology than those not reporting impact. The group reporting the greatest distress was young adults reporting low exposure to September 11th and perceived impact by the 1940s. For older adults, minimal difference was demonstrated between those reporting being influenced by the 1940s and those denying being impacted (See Table 9).

1960s

For the 1960s, the analysis yielded main effects at the multivariate level for age $F(7, 392) = 8.623, p < .001, \eta^2 = .145$, and the impact of the 1960s events $F(7, 392) = 3.09, p < .005, \eta^2 = .057$. Exposure to September 11th only approached significance $F(7, 392) = 1.88, p = .072$. There were no interactions effects at the multivariate level for the 1960s.

Univariate Findings - Age

The findings for age in the 1960s duplicate those found in the 1930s. At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 32.42, p < .001, \eta^2 = .082$ with young adults reporting a greater need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 35.08, p < .001, \eta^2 = .088$ with young adults demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 37.55, p < .001, \eta^2 = .094$ with young adults reporting more psychological symptoms than older adults, post-traumatic symptoms (module 3)

$F(1, 392) = 4.29, p < .04, \eta^2 = .012$ with young adults reporting more PTSD symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 13.61, p < .001, \eta^2 = .036$ with young adults perceiving a greater loss of resources than older adults.

Univariate Findings – 1960s

Having perceived the historical events of the 1960s to be highly impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 14.25, p < .001, \eta^2 = .038$ with individuals reporting less impact expressing the need to use fewer coping methods than individuals reporting more impact, coping style (repression versus sensitization) $F(1, 392) = 3.67, p = .060, \eta^2 = .01$ with individuals reporting less impact demonstrating a repressing coping style and individuals reporting more impact demonstrating a sensitizing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 9.202, p < .003, \eta^2 = .025$ with individuals reporting less impact expressing fewer psychological symptoms than individuals reporting more impact, post-traumatic symptoms (module 3) $F(1, 392) = 8.99, p < .004, \eta^2 = .024$ with individuals reporting less impact expressing fewer PTSD symptoms than individuals reporting more impact, and perceived loss of resources (module 2) $F(1, 392) = 9.56, p < .003, \eta^2 = .026$ with individuals reporting less impact perceiving less loss of resources than individuals reporting more impact.

Univariate Findings – September 11th Exposure

Having been exposed to the events of September 11th impacted resilience $F(1, 392) = 4.99, p < .03, \eta^2 = .014$ and perceived loss of resources (module 2) $F(1, 392) = 4.86, p < .03, \eta^2 = .013$ with individuals reporting less exposure to September 11th perceiving less loss of resources than individuals reporting greater exposure to September 11th. The impact on resilience was unique to this decade, with the findings regarding loss of resources mimicking

those of the previous decades. There were no interaction effects at the univariate level for the 1960s (see Table 10).

1970s

There were no significant findings for the 1970s. This may relate to the restricted range of scores expressed for the perceived impact of historical events in the 1970s, with most participants reporting no impact.

1980s

For the 1980s, the analysis yielded main effects at the multivariate level for age $F(7, 392) = 10.09, p < .001, \eta^2 = .158$, and the impact of the 1980s events $F(7, 392) = 3.75, p < .001, \eta^2 = .065$. Exposure to September 11th only approached significance $F(7, 392) = 1.85, p = .076, \eta^2 = .033$. There were no interaction effects found at the multivariate level for the 1980s.

Univariate Findings - Age

The findings for age for the 1980s again duplicate the findings of previous decades. At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 35.51, p < .001, \eta^2 = .085$ with young adults reporting a greater need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 44.45, p < .001, \eta^2 = .104$ with younger adults demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 42.74, p < .001, \eta^2 = .101$ with younger adults reporting more psychological symptoms than older adults, post-traumatic symptoms (module 3) $F(1, 392) = 4.25, p < .05, \eta^2 = .011$ with young adults reporting more PTSD symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) =$

12.31, $p < .001$, eta squared = .031 with young adults perceiving a greater loss of resources than older adults.

Univariate Findings – 1980s

Having perceived the historical events of the 1980s to be highly impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 20.45$, $p < .001$, eta squared = .051 with individuals reporting less impact expressing less need to use coping methods than individuals reporting more impact, coping style (repression versus sensitization) $F(1, 392) = 6.78$, $p < .02$, eta squared = .017 with individuals reporting less impact demonstrating a more repressing coping style and individuals reporting more impact demonstrating a more sensitizing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 11.31$, $p < .001$, eta squared = .029 with individuals reporting less impact expressing fewer psychological symptoms than individuals reporting more impact, post-traumatic symptoms (module 3) $F(1, 392) = 13.88$, $p < .001$, eta squared = .035 with individuals reporting less impact expressing fewer PTSD symptoms than individuals reporting more impact, and perceived loss of resources (module 2) $F(1, 392) = 8.74$, $p < .004$, eta squared = .022 with individuals reporting less impact perceiving less loss of resources than individuals reporting more impact.

Univariate Findings – September 11th Exposure

Having been exposed to the events of September 11th impacted resilience $F(1, 392) = 3.75$, $p = .054$, eta squared = .010 with individuals experiencing less exposure to September 11th demonstrating greater resilience than individuals experiencing greater exposure to September 11th, post-traumatic symptoms (module 3) $F(1, 392) = 4.0$, $p < .05$, eta squared = .010 with individuals experiencing greater exposure to September 11th reporting more PTSD symptoms than individuals reporting less exposure to September 11th, and perceived loss of resources

(module 2) $F(1, 392) = 8.71, p < .004, \eta^2 = .022$ with individuals reporting greater exposure to September 11th perceiving more loss of resources than individuals reporting less exposure to September 11th.

Univariate Findings – Interaction of Age & September 11th Exposure

Post hoc analysis at the univariate level, found an interaction effect for age and exposure to the September 11th events impacted psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 4.39, p < .04, \eta^2 = .011$ and approached significance for perceived loss of resources (module 2) $F(1, 392) = 3.41, p = .066, \eta^2 = .009$. In both cases, young adults who reported greater exposure to September 11th also reported greater distress and sense of loss than young adults who reported minimal exposure to September 11th. There was little difference, however, between those older adults reporting greater exposure and those reporting minimal exposure. The interaction of age, exposure to September 11th, and being impacted by events in the 1980s approached significance for resilience $F(1, 392) = 3.4, p = .066, \eta^2 = .066$. For both young and older adults, reporting perceived impact by the 1980s was related to greater resilience. Young adults having less exposure to September 11th demonstrated greater resilience than young adults with higher exposure to September 11th, while minimal difference was noted for older adults (See Table 12).

1990s

For the 1990s, the analysis yielded main effects at the multivariate level for age $F(7, 392) = 7.44, p < .001, \eta^2 = .121$ and the impact of the 1990s events $F(7, 392) = 5.91, p < .001, \eta^2 = .099$. Exposure to September 11th only approached significance $F(7, 392) = 1.89, p = .070, \eta^2 = .034$. No interaction effects were found at the multivariate level.

Univariate Findings - Age

At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 15.36, p < .001, \eta^2 = .039$ with young adults reporting a greater need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 31.29, p < .001, \eta^2 = .076$ with young adult demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 26.77, p < .001, \eta^2 = .065$ with young adults expressing more psychological symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 4.76, p < .04, \eta^2 = .012$ with young adults perceiving a greater loss of resources than older adults. The findings for age for the 1980s were similar to those of previous decades with the exception that post-traumatic symptoms were not significant for this decade.

Univariate Findings – 1990s

Having perceived the historical events of the 1990s to be highly impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 18.27, p < .001, \eta^2 = .046$ with individuals reporting less impact expressing less need to use coping methods than individuals reporting more impact, coping style (repression versus sensitization) $F(1, 392) = 10.39, p < .001, \eta^2 = .026$ with individuals reporting less impact demonstrating a repressing coping style and individuals reporting more impact demonstrating a sensitizing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 13.76, p < .001, \eta^2 = .035$ with individuals reporting less impact expressing fewer psychological symptoms than individuals reporting more impact, post-traumatic symptoms (module 3) $F(1,$

392) = 26.54, $p < .001$, eta squared = .065 with individuals reporting less impact expressing fewer PTSD symptoms than individuals reporting more impact, and perceived loss of resources (module 2) $F(1, 392) = 25.34$, $p < .001$, eta squared = .062 with individuals reporting less impact perceiving less loss of resources than individuals reporting more impact.

Univariate Findings – September 11th Exposure

Similar to previous decades, having been exposed to the events of September 11th impacted perceived loss of resources (module 2) $F(1, 392) = 10.64$, $p < .001$, eta squared = .027 with individuals reporting greater exposure to September 11th perceiving a greater loss of resources than individuals reporting low exposure to September 11th. There were no interaction effects at the univariate level (see Table 13).

Pearl Harbor

It was predicted that individuals having been impacted by the attack on Pearl Harbor would demonstrate less dysfunction/greater resilience than individuals not impacted by this event. A three-way between subjects MANOVA was performed on the data to analyze the influence of perceived impact of Pearl Harbor, age, and exposure to September 11th on the level of dysfunction/resilience. The analysis yielded main effects at the multivariate level for age $F(7, 392) = 8.73$, $p < .001$, eta squared = .139, the impact of the attack on Pearl Harbor $F(7, 392) = 2.98$, $p < .006$, eta squared = .052, and exposure to September 11th $F(7, 392) = 2.24$, $p < .04$, eta squared = .04. There were no interaction effects at the multivariate level.

Univariate Findings - Age

The findings for age were similar to those found for each decade previously discussed. At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 26.37$, $p < .001$, eta squared = .064 with young adults expressing a greater

need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 39, p < .001, \eta^2 = .092$ with young adults demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 46.5, p < .001, \eta^2 = .108$ with young adults reporting more psychological symptoms than older adults, hardiness $F(1, 392) = 3.78, p = .053, \eta^2 = .01$ with young adults demonstrating less psychological hardiness than older adults, post-traumatic stress symptoms (module 3) $F(1, 392) = 6.4, p < .02, \eta^2 = .016$ with young adults reporting more PTSD symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 13.53, p < .001, \eta^2 = .034$ with young adults perceiving a greater loss of resources than older adults.

Univariate Findings – Pearl Harbor

Having perceived the attack on Pearl Harbor to be highly impactful influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 4.72, p < .001, \eta^2 = .012$ with individuals reporting greater impact by Pearl Harbor expressing a greater need to use coping methods than individuals reporting low impact by Pearl Harbor; coping style (repression versus sensitization) $F(1, 392) = 5.92, p < .02, \eta^2 = .015$ with individuals reporting low impact by Pearl Harbor demonstrating a sensitizing coping style and individuals reporting a higher impact demonstrating a repressing coping style; psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 15.77, p < .001, \eta^2 = .04$ with individuals reporting greater impact by Pearl Harbor expressing more psychological symptoms than individuals reporting little impact by Pearl Harbor; hardiness $F(1, 392) = 5.89, p < .02, \eta^2 = .015$ with individuals reporting greater impact by Pearl Harbor demonstrating greater psychological hardiness than individuals reporting little impact; post-traumatic symptoms (module 3) $F(1, 392)$

= 8.043, $p < .006$, eta squared = .021 with individuals reporting greater impact by Pearl Harbor expressing more PTSD symptoms than individuals reporting little impact by Pearl Harbor, and perceived loss of resources (module 2) $F(1, 392) = 5.82$, $p < .02$, eta squared = .015 with individuals reporting greater impact by Pearl Harbor perceiving a greater loss of resources than individuals reporting little impact.

Univariate Findings – September 11th Exposure

Similar to the results by decade, having been exposed to the events of September 11th impacted perceived loss of resources (module 2) $F(1, 392) = 8.12$, $p < .006$ with individuals reporting greater impact by September 11th perceiving a greater loss of resources than individuals reporting less impact by September 11th.

Univariate Findings – Interactions

At the univariate level post hoc analysis yielded an interaction effect for age and being impacted by the attack on Pearl Harbor approached significance for post-traumatic symptoms (module 3) $F(1, 392) = 2.8$, $p = .095$, eta squared = .007. The interaction of age and exposure to September 11th also approached significance for post-traumatic symptoms (module 3) $F(1, 392) = 2.73$, $p = .099$ and perceived loss of resources (module 2) $F(1, 392) = 2.88$, $p = .091$, eta squared = .007. The results were similar for both interactions, with young adults reporting being impacted by the attack on Pearl Harbor or having high exposure to September 11th expressing more PTSD symptoms than those reporting little impact by Pearl Harbor or exposure to September 11th. There was minimal difference for older adults in either case. The interaction of being impacted by the attack on Pearl Harbor and exposure to September 11th approached significance for hardiness $F(1, 392) = 3.65$, $p = .057$, eta squared = .009 with individuals reporting no impact/less exposure of Pearl Harbor and September 11th demonstrating the highest

degree of hardiness, followed by those reporting high impact/more exposure for both Pearl Harbor and September 11th. Individuals reporting being highly impacted by Pearl Harbor, but not being exposed to September 11th demonstrated the lowest levels of hardiness (see Table 14).

Pearl Harbor and Coping with September 11th

Participants were also asked to rate the effect being impacted by the attack on Pearl Harbor influenced their ability to cope with September 11th. This question was analyzed within a three-way between subjects MANOVA that included age and exposure to September 11th. The analysis yielded main effects at the multivariate level for age $F(7, 392) = 8.21, p < .001, \eta^2 = .132$, the effect of the impact of the attack on Pearl Harbor on coping $F(7, 392) = 3.53, p < .001, \eta^2 = .061$, and exposure to September 11th $F(7, 392) = 2.08, p < .05, \eta^2 = .037$. No interaction effects were found at the multivariate level.

Univariate Findings - Age

The findings for age again appear to duplicate previous findings for age by decade and Pearl Harbor. At the univariate level age was found to impact the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 32.53, p < .001, \eta^2 = .078$ with young adults expressing a greater need to use coping methods than older adults, coping style (repression versus sensitization) $F(1, 392) = 28.6, p < .001, \eta^2 = .07$ with young adults demonstrating a sensitizing coping style and older adults demonstrating a repressing coping style, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 36.65, p < .001, \eta^2 = .087$ with young adults reporting more psychological symptoms than older adults, and perceived loss of resources (module 2) $F(1, 392) = 8.85, p < .003, \eta^2 = .023$ with young adults reporting more perceived loss of resources than older adults.

Univariate Findings – Pearl Harbor on Coping

Having perceived the attack on Pearl Harbor to be impactful on the individual's ability to cope influenced the need to use coping methods (Ways of Coping Checklist) $F(1, 392) = 16.04$, $p < .001$, eta squared = .04 with individuals stating that Pearl Harbor negatively impacted their ability to cope expressing less need to use coping methods than individuals who reported that Pearl Harbor helped their ability to cope, psychological symptomology (the Hopkins Symptom Checklist) $F(1, 392) = 8.13$, $p < .006$, eta squared = .021 with individuals reporting that Pearl Harbor negatively impacted their ability to cope expressing fewer psychological symptoms than individuals who reported that Pearl Harbor helped their ability to cope, post-traumatic symptoms (module 3) $F(1, 392) = 6.41$, $p < .02$, eta squared = .016 with individuals reporting that Pearl Harbor negatively impacted their ability to cope expressing fewer PTSD symptoms than individuals who reported that Pearl Harbor helped their ability to cope, and approached significance for perceived loss of resources (module 2) $F(1, 392) = 3.52$, $p = .062$, eta squared = .009 with individuals reporting that Pearl Harbor negatively impacted their ability to cope perceiving less loss of resources than individuals reporting that Pearl Harbor helped their ability to cope.

Univariate Findings – September 11th Exposure

Having been exposed to the events of September 11th impacted coping style (repression versus sensitization) $F(1, 392) = 4.03$, $p < .05$, eta squared = .01 with individuals reporting greater exposure to September 11th demonstrating a sensitizing coping style and individuals reporting less exposure to September 11th demonstrating a repressing coping style, and perceived loss of resources (module 2) $F(1, 392) = 10.06$, $p < .003$, eta squared = .026 with individuals reporting greater exposure to September 11th perceiving a greater loss of resources than

individuals reporting less exposure to September 11th. While the impact on perceived loss of resources is similar to previous findings, the impact on coping style was unique to the variable of Pearl Harbor's impact on coping with September 11th.

Univariate Findings – Interaction of Age & September 11th Exposure

At the univariate level, post hoc analysis yielded an interaction for age and exposure to the September 11th events impacting coping style (repression versus sensitization) $F(1, 392) = 4.53, p < .04, \eta^2 = .012$, post-traumatic symptoms (module 3) $F(1, 392) = 4.62, p < .04, \eta^2 = .012$, and perceived loss of resources (module 2) $F(1, 392) = 6.51, p < .02, \eta^2 = .017$. Young adults reporting high exposure to September 11th demonstrated a higher use of a sensitizing coping style, higher levels of PTSD symptoms, and a greater perception of loss of resources, while older adults demonstrated little difference based on exposure to September 11th.

Univariate Findings – Interaction of September 11th Exposure & Pearl Harbor on Coping

Also at the univariate level, the interaction of exposure to September 11th, and viewing Pearl Harbor as influencing coping impacted coping style (repression versus sensitization) $F(1, 392) = 4.25, p < .05, \eta^2 = .011$, post-traumatic symptoms (module 3) $F(1, 392) = 6.59, p < .02, \eta^2 = .017$, and perceived loss of resources (module 2) $F(1, 392) = 5.88, p < .02, \eta^2 = .015$. Individuals who reported a high exposure to September 11th and viewing the attack on Pearl Harbor as helpful in their coping were more likely to use a sensitizing coping style, reported greater PTSD symptoms, and greater perceived loss of resources (See Table 15).

Longitudinal Study

Hypothesis 1

It was hypothesized that post-traumatic symptoms (module 3) would dissipate over time. A repeated measures analysis of variance was used to test this hypothesis, and as expected, PTSD symptoms decreased over time $F(1, 97) = 15.97, p < .001, \eta^2 = .144$. The decrease in PTSD symptoms over time did not vary by age, nor did young adults and older adults vary significantly in their reporting of PTSD symptoms at time 2 ($r = -.16$). Individual differences in PTSD symptoms over time were more stable for older adults ($r = .82, p < .001$) than for younger adults ($r = .41, p < .01$).

Exploratory Analysis

For exploratory purposes age differences in follow-up variables were examined as well as an exploration of what factors at time two correlated significantly with the three September 11th measures at time one. A between subjects analysis of variance was used to examine age as an independent variable, with Loneliness (UCLA Loneliness Scale) and the short form of the NEO-PI inventory factors as the dependent variables.

At the multivariate level, analysis yielded a main effect for age $F(9, 97) = 3.62, p < .001$. At the univariate level, age was found to impact Neuroticism $F(1, 97) = 23.26, p < .001$ with young adults demonstrating greater Neuroticism (mean = 31.67) than older adults (mean = 24.60), openness $F(1, 97) = 3.91, p = .051$ with young adults reporting greater openness (mean = 40.82) than older adults (mean = 38.03), conscientiousness $F(1, 97) = 5.78, p < .02$ with young adults expressing less conscientiousness (mean = 43.13) than older adults (mean = 38.03), and agreeability $F(1, 97) = 4.36, p < .05$ with young adults expressing less agreeability (mean = 42.28) than older adults (mean = 44.90).

A Pearson product moment correlation was used to analyze the relationship of the independent variables of exposure to September 11th (module 1), perceived loss of resources (module 2), and post-traumatic symptoms (module 3) at time one and the dependent variables of Loneliness (UCLA Loneliness Scale), the NEO-PI scales of neuroticism, extraversion, openness, agreeability, and conscientiousness, and post-trauma symptoms (module 3) at time 2. Correlations were run for each age group separately.

For young adults more post-traumatic symptoms at time one was correlated with less loneliness at time two ($r = -.32, p < .05$) and greater post-traumatic symptoms at time two ($r = .41, p < .01$). The exploratory analysis also found higher post-traumatic symptoms at time two among young adults who demonstrated a sensitizing coping style ($r = .57, p < .001$) and more psychological symptomology on the Hopkins Symptom Checklist ($r = .50, p < .001$)

For older adults more post-traumatic symptoms at time one was correlated with greater neuroticism ($r = .42, p < .001$), less agreeability ($r = -.27, p < .05$), and more post-traumatic symptoms at time 2 ($r = .82, p < .001$). More post-traumatic symptoms at time two were correlated with greater exposure to September 11th at time one ($r = .41, p < .001$) and greater perceived loss of psychological resources at time one ($r = .35, p < .008$). The exploratory analysis also found higher post-traumatic symptoms at time two among older adults who demonstrated a sensitizing coping style ($r = .53, p < .001$), who are low in hardiness ($r = -.25, p = .064$), and who report greater psychological symptomology on the Hopkins Symptom Checklist ($r = .66, p < .000$) at time one (see Tables 16-18).

DISCUSSION

Hypothesis 1

The first hypothesis suggested that older age, high psychological hardiness, and a repressing coping style would each be correlated with greater resilience and/or less dysfunction in response to the trauma of the attack on the United States on September 11, 2001. As was expected, older adults fared better psychologically following the September 11th attack as evidenced by less of a sense of loss of personal and psychological resources, such as feeling safe, sense of trust in their support group and the government, sense of optimism, etc; lower reports of psychological symptoms (e.g. crying, feeling lonely, anxiety, etc); and reported less need to use various coping methods in order to manage stress. Age did not differentiate individual scores of resilience or post-traumatic symptoms. The results suggest that in many ways older adults experience less distress or dysfunction in the wake of traumatic historical events. Similar findings were reported in two recent studies assessing distress among older adults following traumatic events; one examined September 11th, in which no changes were found in personal stress or mental health (Wolinski, Wyrwich, Kroenke, Babu, & Tierney, 2003) and the second examined the Columbia shuttle disaster, which found no significant change in negative affect or physical symptoms (Neupert, Spiro, Almeida, & Mroczek, 2003). Possible explanations for this difference will be discussed later in this paper.

Also as predicted, psychological hardiness was found to relate to the degree of distress and resilience, with psychologically hardy individuals expressing a lower sense of loss of psychological resources, fewer post-traumatic symptoms, fewer general psychological symptoms, less need to use coping methods, and greater resilience than individuals low in psychological hardiness. This finding supports previous research by Kobasa (1979) which found

that the core characteristics of the construct of hardiness, commitment, control, and challenge, distinguished resilient individuals from those more vulnerable to stress in the face of traumatic events. Hardy individuals have been found to approach stressful events in a more optimistic manner, believing in their ability to cope, and approaching the situation in a problem-solving manner (Maddi, 1999).

Coping style was additionally analyzed in an attempt to gain understanding of the factors related to greater resilience. Byrne (1965) suggested two different coping styles, sensitizers and repressors, where sensitizers approach stress with anxiety and an intense need to control their environment, while repressors tend to cognitively avoid stressful events and minimize the experience of emotional arousal. Past research on this construct has found that repressors avoid encoding of stressful events, denying the potential for lingering danger, which allows them to experience less distress. Sensitizers, on the other hand, vigilantly absorb all aspects of the traumatic event and vigilantly monitor for continued danger, leading to increased distress (Bromet et al. 1990). Similar to previous research, sensitizers were found to experience greater distress, reporting a greater sense of loss of psychological resources, more post-traumatic symptoms, more general psychological symptoms, a greater perceived need to use coping methods, and less resilience.

Hypothesis 2

The second hypothesis considered the interaction of psychological hardiness, age, and coping style. It was predicted that individuals high in hardiness could flexibly choose which coping style to use, repressing or sensitizing, in the face of trauma and would be able to successfully cope with the stressor. Low hardy individuals, however, were expected to fair better if they relied on a repressing coping style than a sensitizing coping style. Age was

included in the analysis for the sake of gaining greater understanding and in light of the goals of this study. Comparable to hypothesis one, both psychological hardiness and coping style impacted degree of distress. Significant interaction effects were not found at the multivariate level; however, post hoc univariate analysis did yield significant results. Contrary to predictions, for young adults, high hardy individuals who used a sensitizing coping style expressed greater dysfunction than high hardy individuals who used a repressing coping style, while low hardy individuals demonstrated no difference in dysfunction based on coping style. It seems, that for young adults, being low in hardiness led to a high enough degree of dysfunction that coping style became insignificant. For older adults, coping style impacted both high and low hardy individuals equally, with repressors fairing better than sensitizers. Thus, in contrast to my prediction, coping style does appear to be important in differentiating degree of distress among high hardy individuals, with high hardy repressors demonstrating greater functioning. Among older adults, repressors faired best, whether low or high in hardiness. For low hardy young adults, it seems that coping style does not differentiate degree of dysfunction.

Hypothesis 3

The third hypothesis predicted that older adults would be higher in hardiness than young adults. This hypothesis was based on research suggesting that hardiness can be taught and that stressful events can lead to increased hardiness if the individual can cope with the event and supply meaning in their life (Khoshaba & Maddi, 1999; Maddi, 1987). Thus, it was expected that older adults, having a greater history of experiences from which to grow, would develop greater psychological hardiness. This hypothesis was not supported by this study, which found no significant difference in psychological hardiness among young and older adults, suggesting

that hardiness is likely a stable trait, rather than a characteristic that increases with age and experience.

Hypothesis 4

Past research has suggested that older age is correlated with less distress and greater resilience in the face of traumatic events (Berwin, Andrews, & Valentine; 2000; King, King, Foy, Keane, & Fairbank, 1999; Knight, Gatz, Heller, & Bengtson, 2000; Norris & Murrell, 1988; Thompson, Norris, & Hanacek, 1993). The inoculation hypotheses, first posited by Eyseneck (1993) suggested that exposure to stressful events increases people's resistance to subsequent stress, thus protecting them from experiencing strong emotional reactions and pain. In his research with animals, Eyseneck (1993) noted that animals having been exposed to stressful circumstances (e.g. electric shock or cold water), expressed less distress when later re-exposed to stress situations, even if different from the previous experience. He posited that these results could be generalized to humans, and several studies did provide support for the inoculation effect (Bell, 1978; Elder & Clipp, 1989; Knight et al., 2000; Norris & Murrell, 1988; Wang et al., 2000). Further, this theory would suggest that the reason older adults fair better in the face of traumatic events is due to their vast past experience with various traumatic events which have given the older adult a sense of competence in coping with trauma and less sense of shock by new events.

For this study, it was predicted that experience with previous normative history-graded events would inoculate individuals against the traumatic effects of the terrorist attack on September 11th. Specifically, I hypothesized that individuals reporting greater impact by historical events on the Historical Events Impact Scale would demonstrate less dysfunction/greater resilience than individuals not impacted by these events. Due to the

similarities between September 11th and Pearl Harbor, I predicted that this event would especially provide an inoculating effect.

The Historical Events Impact Scale did not relate to distress in the manner expected, thus our hypothesis was not supported. Instead of individuals who reported greater impact demonstrating less distress, the opposite was found with greater reported impact of historical events related to greater distress.

For the 1930s, 1940s, and 1980s the individuals who stated that they were more than minimally impacted by the historical events of that decade, also reported a greater need to rely on coping methods, more psychological symptomatology, more post-traumatic symptoms, and a greater perceived loss of psychological resources. Similar results were obtained for the 1960s with more individuals reporting higher impact by historical events in the 1960s expressing a greater need to rely on coping methods, more psychological symptomatology, and a greater perceived loss of psychological resources and individuals reporting being impacted by the 1990s reported a greater need to rely on coping methods, more post-traumatic symptoms, and more perceived loss of psychological resources. Similar to the findings for each decade, individuals who reported experiencing greater impact by Pearl Harbor also expressed a greater need to rely on coping methods, more psychological symptomatology, more post-traumatic symptoms, and greater perceived loss of resources in the face of September 11th. These results suggest that individuals who express a greater sense of being impacted by past historical events experience greater distress in the face of later traumatic events. While in hindsight, this finding makes intuitive sense; it does not support the notion of the inoculation effect.

How Do These Findings Impact the Validity of Eyseneck's Inoculation Theory?

At first glance, these findings suggest that the theory of the inoculation effect is inaccurate. However, this conclusion cannot necessarily be drawn based on this study's results. The Historical Impact Scale asked participants to rate the degree of impact of each historical event; it did not measure exposure to the events. By merely being alive, one can assume that most older adults experienced some exposure to the historical events either directly or through the media, yet many reported minimal to no impact. Further, many young adults reported being impacted by historical events that occurred prior to their birth, thus any exposure would be retrospective and indirect in nature, given that they could not have directly been exposed to the events. While the goal was to test the applicability of the inoculation effect, it is possible I may have measured something else.

Additionally, the inoculation effect may be flawed when attempting to generalize to humans. Unlike animals, humans cognitively evaluate their environment and potentially react differently based on these evaluations. Because people differ in their attitudes, beliefs, and thought processes, they can experience the same event and come away from it with very different responses (Bandura, 2001). Exposure to historical events may be less important in predicting impact of later traumatic events, than the individual's personal reaction to and internal framing of the previous events.

Thus, while Eyseneck's inoculation theory was not supported by the present study, it cannot be summarily dismissed. These findings do suggest, however, that the impact of past traumatic events on coping with later trauma is more complex than has been previously suggested.

How Can These Findings Be Explained?

In order to gain better understanding of the results, a post-hoc between-subjects one-way MANOVA was performed on the data to analyze the impact of age on the major dependent variables of the study. The univariate analysis found a main effect for age and coping style $F(1, 326) = 11.732, p < .001$, with older adults demonstrating a repressing coping style and young adults demonstrating a sensitizing coping style. Thus it may be that coping style plays an important role in the influence of traumatic events and related distress. Sensitizing individuals are said to approach and attempt to control threatening stimuli, experiencing anxiety when faced with uncertainty in threat situations. The sensitizer then responds with hypervigilant attempts to continuously monitor their environment and identify potential danger (Byrne et al. 1965). Given this description of a sensitizer, we can expect that a sensitizing individual would subjectively rate a greater impact of past traumatic events, encoding them into memory with an attempt to maintain control. Repressors, on the other hand, would likely limit their attention and encoding of traumatic events and state that the event had little impact on them. This in fact was substantiated by the results, which found that those who rated historical events as having greater impact on them were also more likely to be sensitizers, and those who rated the historical events as having minimal impact were found to be repressors. Additionally, since older adults were more likely to be repressors, and repressors experience less distress following traumatic events, it makes sense that older adults would report less distress.

The results of this study do not explain why older adults were more likely to use a repressing style than young adults, but there are two possible explanations. It could be that with age, individuals gravitate towards a more repressing coping style, due to its greater effectiveness in decreasing distress. This explanation would be more consistent with the maturation

hypothesis, which suggests that with age we become less emotionally reactive and rely on more mature coping styles, resulting in greater resilience (Knight et al., 2000). A second, and potentially more plausible explanation, may be that there is a cohort difference in coping style. It may be that older generations received messages encouraging less focus on or internal processing of negative experiences, with sentiments like, “don’t dwell on the negative” and “what doesn’t kill me makes me stronger.” On the other hand young adults grew-up in a time encouraging self-improvement, discussion of feelings, and processing of experiences. This cohort difference is further supported by research demonstrating decreased use of mental health services by older adults and greater emphasis on self-sufficiency (Currin, Hayslip, Schneider, & Kooken, 1998; Utermark & Hayslip, 2000; Yang & Jackson, 1998).

The effectiveness of a repressing coping style can be explained and understood when considered within the context of primary versus secondary control. Primary control refers to the individual’s tendency to exert effort on the external world to achieve change. With secondary control the individual targets the self and their own thoughts in order to achieve change. Hence, with primary control the focus is on changing the environment, while with secondary control the focus is on changing one’s own attitude about the environment (Schulz & Heckhausen, 1996). When compared to coping style, primary control might resemble a sensitizing coping style, where the individual’s focus is on gaining control over their environment. When such control is not possible, the sensitizer becomes anxious and hypervigilantly scans the environment as the only measure of control available to them. Conversely, a repressing coping style may be similar to secondary control, where the individual approaches traumatic events with the attitude that if they cannot change the environment, then it is better to limit focus on the situation, expressing the motto, “why dwell on pain?” Instead of ruminating on their inability to change the

environment, repressors change their attitude towards the environment. Schulz & Heckhausen (1996) suggest that with age, the individual begins to rely more heavily on the use of secondary control due to decreasing capacity of the individual and external constraints. It seems that this move towards increased reliance on secondary control may effectively enhance the older adult's ability to cope and decrease distress when faced with uncontrollable traumatic events, such as September 11th.

Along with coping style impacting an individual's perception of the degree of impact of traumatic past events, the adaptive processes of assimilation and accommodation may impact the individual's perception of impact. Assimilation refers to the process of fitting new experiences into one's current cognitive organization or schema. Individuals change their mental image of the external world to fit the already existing internal structure of the individual. Accommodation refers the process of altering one's schemas in order to adjust to the new information that does not fit within an existing internal structure (Piaget, 1960). It may be that with an accumulation of life experiences, the older adult maintains a greater diversity in schemas, allowing them to more easily assimilate new experiences into an already existing similar schema. The young adult, however, may have fewer past life experiences within which to categorize the new experience, requiring the individual to accommodate to the new information. The process of accommodation is generally more complicated, and due to the greater mental energy required (Whitbourne, 1996), may increase the perception of being impacted by the new experience. Thus, having an existing schema similar to September 11th, may result in less need to focus on the events (repressing style) and better coping. The similarity of Pearl Harbor to September 11th noted by Bernstein (2002) may provide older adults with a schema for such attacks. Thus, older adults can assimilate the terrorist attack into their existing schema and require less focus on the events.

While several research studies, including the present study, have demonstrated greater resilience among older adults to traumatic events, there is no clear understanding of the reason for this resilience. Research on natural disasters has found that previous exposure to similar disasters resulted in considerably less distress (Knight et al., 2000; Norris & Murrell, 1988). The authors of these studies argued that their findings support the inoculation effect. The present study does not clearly support this conclusion, suggesting instead that the cognitive processes of the individual are of greater importance than exposure itself. The individual who exerts less cognitive energy in assimilating the new event into one's existing schema appears to experience less distress, and this approach appears to be more common among older adults.

The Impact of Pearl Harbor On Coping

It should be noted that the findings regarding the impact of Pearl Harbor on coping with September 11th are counterintuitive. The findings suggest that individuals who described Pearl Harbor as helping in their coping with September 11th also reported greater distress following September 11th. This particular scale was found to have several problems, which may have contributed to this finding. First, several people did not complete the scale, assuming it to be an accidental repetition of the first Historical Events Impact Scale. Second, it seemed that participants did not read the directions, in that they wrote numbers not included in the Likert scale. On the first Historical Events Impact Scale a 1 indicated "zero impact" while a 5 indicated "extreme impact" whereas on the second scale a 1 indicated "greatly hindered my ability to cope" and 5 indicated "greatly helped my ability to cope." It may be that people wrote 4 or 5 on the second scale with the purpose of stating that the event greatly impacted them, rather than that it helped them cope. In other words, it seems that participants may not have differentiated the two scales.

Longitudinal Study

Hypothesis 1

Hypothesis one of the longitudinal part of this study predicted that post-traumatic symptoms would dissipate over time. This hypothesis was supported, finding that the decrease in symptoms did not differ by age, with both older and young adults reporting a decrease in symptoms. The reporting of PTSD symptoms at time two did not differ among older and younger adults, with both older and young adults reporting few PTSD symptoms at time 2. Additionally, individual differences in PTSD symptoms were found to be more stable over time for older adults than for young adults. It makes logical sense that with time individuals would experience a decrease in their symptoms of distress and that after two years, few symptoms would remain. It appears that older adults are more homogeneous as a group in terms of change in symptoms over time. This may relate to the lower reporting of distress by older adults at time one when compared to young adults. Because young adults expressed greater distress at time one, there was more room for variation in change.

Exploratory Analysis

For exploratory purposes at follow up, age differences on the NEO-PI were examined along with an exploration of what factors at time two correlated significantly with the three September 11th measures at time one. For the NEO-PI, older adults were found to be higher in conscientiousness and agreeableness, while young adults were found to be higher in neuroticism and openness. Given the findings of greater distress among young adults, it makes sense that young adults would also express greater neuroticism and older adults would express greater agreeableness. Further, the findings of greater openness among young adults coincide with their greater demonstration of a sensitizing coping style. Unlike repressors, sensitizers are described

as being highly aware of environmental experiences and approach experiences with an effort to control them. Sensitizers could be expected to take in more information from their environment and possibly be more open to experiences, while repressors would be expected to avoid cognitively integrating or processing new experiences.

Both young and older adults reporting higher post-traumatic symptoms at time two, also reported greater PTSD, psychological symptomatology, and a sensitizing coping style at time one. These findings are not surprising, in that we would expect distress at time one to correlate with distress at time two. Also, it is logical that just as sensitizers express greater distress at time one, they would also express distress at time two.

Young adults who reported greater post-traumatic symptoms at time one also reported less loneliness at time two. At initial examination, this finding appears to run counter to intuitive logic, however it could be that those individuals experiencing greater distress at time one responded by seeking out greater social support, resulting in less intense feelings of loneliness.

For older adults, reported post-traumatic symptoms at time one, correlated with greater neuroticism and less agreeableness at time two. Again, these findings make intuitive sense, in that we would expect neurotic, non-agreeable individuals to experience greater distress following a traumatic event. Lastly, older adults who experienced greater exposure to the attack on September 11th and/or had a greater perceived loss of psychological symptoms at time one, expressed more post-traumatic symptoms at time two. This finding is also logical, and mirrors the findings at time one, where exposure to September 11th and perceived loss were each correlated with distress.

Summary of the Findings

As suggested by previous research, this study found that age, coping style (repression vs. sensitization), and psychological hardiness are each related to resiliency. While psychological hardiness did not differentiate young and older adults, older adults were more likely to be repressors, which appears to help explain their greater resilience when compared to young adults. Counter to expectation, perceived high impact of historical events did not increase resilience, resulting instead in decreased resilience. This finding also seems to relate to coping style, in that sensitizers appear to perceive greater impact of past events and experience greater distress following traumatic events.

Limitations

Ideally, this study would have assessed individuals immediately following the events of September 11, 2001. Unfortunately, data collection for this study did not begin until 6-8 months after the September 11th attack. It is likely that any distress experienced in response to September 11th had dissipated greatly by the time of this study. The later date may have also decreased variability in experiences of distress, as individuals moved towards their natural base rate of negative emotional experience. Very different findings may or may not have been obtained directly following the terrorist attack.

A large component of this study considered the impact of past historical events. In an attempt to measure this, participants were asked to rate the impact of several historical events between the 1930s and 2000. This measurement is retrospective in nature, asking participants to look back in their past and consider the impact of each event. How individuals perceive the event now may vary greatly from how they felt at the time of the event. Current perceptions would be greatly influenced by media coverage and other later discussions of the event.

Additionally, many individuals who were not alive at the time of an event rated it as highly impactful. This impact is obviously indirect and likely related to the young adult's exposure to media coverage and discussions of the events. In hindsight, it may have also been helpful to measure the individual's direct exposure to and/or direct impact of each event. Unfortunately, however this would have lengthened and complicated the survey. Additionally, it would not solve the issue of the retrospective nature of the measurement. While there is no way to avoid the retrospective component, research further exploring individual's cognitive approaches in coping with past events as well as their current framing of the event might provide greater insight, especially if exposure is also considered.

Similar to most survey based research studies, this study relied on voluntary participation and self-report. Young adults were solicited from undergraduate psychology courses and offered extra-credit to participate. This method reflects three possible limitations. First, undergraduate psychology students likely differ from young adults in general and thus generalization is difficult. These individuals are probably more interested in higher education, higher in SES, and more interested in psychological processes. Second, not all undergraduates approached chose to participate in the study. Those who did choose to participate may have differed from those who did not participate. These individuals may have been more interested in the topic of the research study, may have been more prone to volunteer in general, or may enjoy completing survey studies. Third, since extra-credit was offered, participants may have differed from non-participants in their need for or motivation to obtain extra-credit. Older adults were solicited from the community and were not offered any incentive to participate. Those who chose to participate often expressed interest in the study or stated a desire to help in educational pursuits. Those who declined to participate may have been uncomfortable or distressed by the topic.

Others who did not participate expressed a dislike for completing surveys or commented on the length of the survey. In general, it is possible that this selection bias influenced the results of this study.

The selection bias was also apparent in the longitudinal component of the study. Of the 400 participants in the original study, approximately 200 expressed interest in participating in the follow-up study. Of those, only approximately 100 returned complete surveys. It can be assumed that those who volunteered to be contacted at a later date and those who then followed-through with completing and returning the survey, differed from those who did not volunteer or follow-up. The longitudinal participants may be more conscientious, value research to a greater extent, or be more altruistic in nature.

The initial survey was fairly long (14 pages double sided) and appeared to impact some participants. As mentioned above, several older adults declined to participate once they saw the length of the survey. Additionally, many surveys were incomplete, with participants not completing the last few pages of the survey. Because of this, some questionnaires were not included in the analysis and some surveys had to be discarded. Further, many surveys were never returned, which may have been a result of the length of the survey, though this could also relate to individual's forgetting about the survey or not being motivated to complete and turn in the survey. Now that there is evidence of which surveys provided greater meaning, the study could be replicated with a shorter survey and perhaps decrease this limitation.

This study did not explore the influence of other life events on the individual or on their response to September 11th. The Social Readjustment Rating Scale was included to assess current additional life stressors in the individual's life, but past non-normative life events were not assessed. Individuals with extreme or recurrent past traumas may have been differentially

impacted by September 11th. The inoculation effect theory would suggest that these traumas would increase resilience to September 11th, just as traumas more similar to September 11th would provide an inoculating effect. However, long-standing or recurrent non-normative traumas may differ from singular events such as the history-graded events considered in this study. Many research studies have found that long standing abuse creates a sense of learned helplessness, rather than providing resilience (Berton & Stabb, 1996; McCord, 1983; Paris, 1997; Pomeroy, 1995; Rutter & Maughan, 1997). In the face of continuing abuse, the individual is not given the opportunity to gain a sense of competence in coping, because the individual must continually suffer the trauma. Futures studies on the concept of the inoculation effect or the influence of previous trauma on coping with later trauma should consider this concept, comparing singular event traumas and recurrent/ongoing traumas.

Lastly, this study was implemented in an area geographically distant from the events of September 11th. Individuals in Texas experienced limited direct exposure to the attack on September 11th and their responses would be expected to differ from individuals in New York City. Despite this, it is obvious that people around the world were impacted, and many of the participants in this study did experience distress. Further, comparing the impact of September 11th on individuals in Texas to the impact of historical events such as Pearl Harbor on individuals not living in Hawaii is possibly more accurate. New data has been collected in New York and Ohio, and it will be interesting to further explore this issue.

Implications

Following the events of September 11, 2001 there was extensive discussion through our media and written work on the impact of the attacks on our citizens. Many experts in the field were called on for advice and books, articles, and other forms of self-help popped up in an

attempt to provide advice on coping. Much of this advice occurred without researching individual responses to September 11th, or individual differences in coping with trauma in general. The overreaching goal of this study was to gain greater understanding of the factors related to positive coping in the face of September 11th, in order to more adequately help those individuals who do not fair as well. Many of the findings of this study can aid in guiding our interventions and allocation of resources. A major finding of this study was the difference in distress and resilience among older and young adults in response to September 11th. Older adults experienced considerably less distress than young adults, suggesting that rather than viewing older adults as vulnerable or emotionally fragile, we should recognize their strength and resilience. Older adults could possibly serve as an excellent resource in providing information on positive coping and in supporting younger generations.

The findings of this study disputed the simplistic view of Eyseneck's theory regarding the inoculation effect, finding that merely being influenced by previous similar traumas is not enough to provide resistance towards later traumas. Instead, it seems that how an individual cognitively frames and considers these traumas is of greater importance. It was found that a repressing coping style, in which the individual withdraws attention from and limits processing of threatening situations, resulted in greater functioning following the trauma of September 11th. This finding runs counter to many assumptions that individuals should introspect and process their feelings following a trauma. Further, our culture's tendency to inundate the population with media replaying and analysis of traumatic events is likely hindering positive coping and increasing distress, especially among sensitive individuals. In working with individuals experiencing great distress following a traumatic event such as September 11th, it may be helpful to encourage the individual to avoid repeated exposure and limit focus on the event. It may be

that the individuals seen in therapeutic settings are more likely to be sensitizers, and unlike repressors may need to emotionally process the event. Despite this, outside of therapy, it may be beneficial to encourage the individual to avoid media coverage, excessive discussions of the event, and engage in distracting activities, in order to minimize exposure and decrease negative rumination. Additionally, it would be helpful to encourage the individual to focus on efforts of secondary control, rather than primary control, helping the sensitizer to decrease hypervigilance and futile attempts to control the environment. When the individual cannot change the environment, it may be best to focus on internal coping methods. In a recent article, Bonanno (2004) similarly noted that a “debriefing” approach following traumatic events may not be helpful to all individuals and may actually undermine natural resilience processes for some individuals.

Table 1
Type of Exposure Reported by Young and Older Adults

Type of Exposure	Young		Old	
	Yes	No	Yes	No
Directly Exposed	2	167	2	224
Friend/Family Exposed	16	151	18	210
Exposed to Dead/Dying	2	169	6	223
Forced to leave work	32	139	5	226
Stranded from home/family	3	168	11	217
Laid off	1	168	7	224
Household provider laid off	12	155	5	219
Loss of significant money	16	154	70	155
Daily demands at home increased	13	156	10	215
Victim of hate crime due to 9/11	7	162	5	220

Table 2
Historical Events – Impact Scale
 Break down by decade:

- 1930s: Great Depression, Hindenburg Disaster, Lindberg Kidnapping
- 1940s: Pearl Harbor, Holocaust, WWII, Atomic Bomb Drop on Japan, Japanese Internment camps – WWII
- 1950s: Korean War
- 1960s: Vietnam War, J.F.K. Assassination, UT Tower Shootings, Marilyn Monroe’s Death, Martin Luther King Assassination, Robert Kennedy Assassination, Cuban Missile Crisis
- 1970s: Jonestown deaths, Kent State Shootings
- 1980s: Challenger Disaster, San Francisco Earthquake, Stock Market Crash of ’87, John Lennon Assassination, Reagan Attempted Assassination, Pan Am Flight Crash, Tylenol Poisonings
- 1990s: Kurt Cobaine’s Suicide, Princess Diana’s Death, Pipe bomb at the Atlanta Olympics, Gulf War, Oklahoma City Bombing, Columbine Shooting, Heaven’s Gate Suicides, Unibomber bombings

Table 3

Means and Standard Deviations of Historical Events Impact by Decade for Older and Younger adults

Decade	Young (n=169)		Old (n=202)		F	Significance
	M	SD	M	SD		
1930s	1.53	0.76	2.11	0.95	38.98	.000
1940s	1.66	0.95	2.65	1.08	86.38	.000
1960s	1.48	0.62	2.29	0.77	123.12	.000
1970s	1.26	0.65	1.75	0.88	33.70	.000
1980s	1.48	0.54	1.93	0.71	36.92	.000
1990s	2.05	0.68	1.91	0.74	4.12	.043

- Means are taken from ratings based on a Likert scale of 1-5, with 1 = zero impact of events within that decade and 5 = extreme impact.
- The 1950s are not represented due to low occurrence of significant events on the scale

Table 4

Means and Standard Deviations of the Impact of Historical Events by Decade on Coping with September 11th by Older and Younger Adults

Decade	Young (n=169)		Old (n=202)		F	Significance
	M	SD	M	SD		
1930s	2.80	0.70	2.96	0.73	6.08	.014
1940s	2.86	0.72	3.08	0.76	10.81	.001
1950s	2.80	0.68	3.11	0.91	*	*
1960s	2.80	0.65	3.00	0.64	11.27	.001
1970s	2.80	0.70	2.90	0.66	2.81	.095
1980s	2.79	0.66	2.90	0.59	4.11	.043
1990s	2.87	0.68	2.94	0.59	1.94	.165

* The 1950s are not represented due to low occurrence of significant events on the scale

- Means are taken from ratings based on a likert scale of 1-5, with 1 = greatly hindered my ability to cope with September 11th and 5 = greatly helped my ability to cope with September 11th

Table 5
Means and Standard Deviations of Measures by Age

Measure	Young		Old	
	M	SD	M	SD
OBBSSR Modules				
A (Exposure)	1.23	2.14	1.27	2.17
B (Loss of Resources)	24.02	6.44	22.13	7.83
C (Distress)	26.44	8.03	25.70	9.43
Holmes & Rahe	10.14	4.86	6.19	5.42
Hardiness	109.35	12.18	110.06	14.45
Challenge	32.58	4.24	33.45	5.10
Commitment	30.41	4.24	31.38	4.49
Control	31.25	4.22	31.68	4.87
Hopkins	95.34	27.04	81.23	23.61
Repression-Sensitization	13.65	4.97	10.56	5.15
Resilience	36.24	8.01	36.92	9.22
Coping	33.45	16.44	25.48	16.29
Social Support	27.73	12.31	21.05	15.38
Satisfaction w/ Social Support	23.90	6.80	19.51	9.96

Table 6
Correlations

<u>Independent Variables</u>	<u>Dependent Variables</u>				
	Mod2	Mod3	Hopkins	Coping	Resiliency
Age	-.132**	-.033	-.222**		.000
9/11 Exposure	-.231**	.209**	.073		-.049
Health	-.110*	-.150**	-.286**		.188**
1930s	.145**	.207**	.105*		-.047
1940s	.080	.148**	.057		-.006
1960s	.133**	.163**	.025		-.008
1970s	.072	.075	-.011		.004
1980s	.203**	.216**	.043		-.015
1990s	.310**	.281**	.218**		-.035
Holmes & Rahe	.268**	.343**	.444**		-.083
Hardiness	-.162**	-.250**	-.243**		.430**
Challenge	-.059	-.111**	-.099*		.291**
Commitment	-.238**	-.326**	-.329**		.350**
Control	-.169**	-.212**	-.250**		.433**
Repression-Sens	.415**	.477**	.703**		-.312**

* p<.05

** p<.01

- N = 417

Table 7

Means and Standard Deviations for Young Adults by Hardiness by Repression-Sensitization

	<u>High Hardiness</u>				<u>Low Hardiness</u>			
	<u>High R-S</u>		<u>Low R-S</u>		<u>High R-S</u>		<u>Low R-S</u>	
	M	SD	M	SD	M	SD	M	SD
Module2	25.00	6.00	19.70	4.25	26.20	6.20	25.56	7.40
Module3	27.49	8.04	21.91	3.18	29.00	9.24	25.00	5.00
Hopkins	103.16	28.57	76.23	14.00	106.17	25.30	79.06	10.43
Coping	36.36	17.43	28.09	14.92	35.30	15.70	29.31	12.24
Resiliency	38.20	8.71	40.70	5.17	32.28	7.53	36.31	6.72

Means and Standard Deviations for Older Adults by Hardiness by Repression-Sensitization

	<u>High Hardiness</u>				<u>Low Hardiness</u>			
	<u>High R-S</u>		<u>Low R-S</u>		<u>High R-S</u>		<u>Low R-S</u>	
	M	SD	M	SD	M	SD	M	SD
Module2	23.90	9.54	20.50	7.14	25.13	8.52	20.20	5.90
Module3	30.77	11.70	21.72	4.44	30.34	12.25	23.35	5.80
Hopkins	89.58	24.44	69.62	12.40	98.39	28.55	73.12	14.65
Coping	31.19	18.90	19.94	12.51	33.13	17.81	22.59	14.29
Resiliency	38.96	9.34	40.49	7.98	31.85	9.22	36.80	7.96

Table 8
1930s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1930s		Lo impact* by 1930s		Hi Impact* by 1930s		Lo Impact* by 1930s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	40.92	14.55	33.33	16.84	37.55	13.92	29.18	15.37
Resilience	34.84	9.33	35.23	8.98	37.00	5.91	37.22	7.31
Repression-Sens	14.68	5.97	14.50	4.86	12.91	4.60	12.96	4.64
Hopkins	104.2	30.95	97.50	22.53	95.36	21.31	90.66	28.06
Hardiness	107.68	12.45	109.06	12.72	105.9	13.63	112.4	9.4
PTSD	31.68	11.38	26.60	7.38	28.73	10.17	24.03	4.79
Loss of Resources	28.60	6.76	25.19	6.35	23.64	5.19	22.14	5.81

1930s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1930s		Lo impact* by 1930s		Hi Impact* by 1930s		Lo Impact* by 1930s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	28.82	17.53	24.5	14.57	26.48	17.16	22.67	15.86
Resilience	38.02	8.98	35.30	9.21	36.28	10.01	38.91	7.85
Repression-Sens	11.84	4.74	9.50	4.82	11.59	5.81	8.96	4.02
Hopkins	86.02	26.72	74.72	15.95	87.84	28.70	74.09	15.92
Hardiness	111.4	13.87	111.4	14.08	108.5	14.6	113.07	12.80
PTSD	27.54	11.02	24.26	6.19	26.00	11.71	24.89	7.03
Loss of Resources	22.88	8.92	22.46	7.32	22.83	8.06	20.20	7.04

*Perceived Impact – Median split for whole sample

Table 9
1940s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1940s		Lo impact* by 1940s		Hi Impact* by 1940s		Lo Impact* by 1940s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	41.45	14.53	33.53	16.72	37.19	11.95	29.84	15.75
Resilience	33.77	9.05	35.64	9.06	36.00	7.86	37.39	6.86
Repression-Sens	15.5	5.61	14.18	5.04	14.38	4.21	12.68	4.65
Hopkins	105.5	29.89	97.36	23.51	112.38	22.55	87.79	25.72
Hardiness	105.3	12.92	109.95	12.29	105.13	10.81	112.12	10.41
PTSD	32.45	10.77	26.56	7.86	28.19	9.61	24.46	5.74
Loss of Resources	28.77	6.73	25.31	6.39	24.13	5.20	22.15	5.75

1940s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1940s		Lo Impact* by 1940s		Hi Impact* by 1940s		Lo Impact* by 1940s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	27.91	16.82	24.26	14.79	26.67	16.72	21.49	16.24
Resilience	36.52	9.80	36.76	8.05	37.93	9.13	36.27	9.47
Repression-Sens	11.45	4.95	9.18	4.53	10.89	5.68	9.76	4.42
Hopkins	84.12	24.99	73.26	15.03	83.67	26.89	79.24	21.23
Hardiness	110.39	13.65	113.18	14.37	109.86	14.95	111.32	12.13
PTSD	26.91	10.39	23.97	5.28	26.01	11.44	24.62	6.47
Loss of Resources	23.12	8.90	21.87	6.50	22.38	8.39	20.51	6.18

*Perceived Impact – Median split for whole sample

Table 10
1960s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1960s		Lo impact* by 1960s		Hi Impact* by 1960s		Lo Impact* by 1960s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	42.50	15.53	33.31	16.47	40.50	14.66	29.77	15.27
Resilience	32.80	9.63	36.25	8.73	38.00	5.88	37.12	7.30
Repression-Sens	15.50	5.57	14.05	5.09	13.43	5.23	12.94	4.61
Hopkins	105.8	28.54	96.09	23.40	104.3	24.31	90.08	27.12
Hardiness	106.5	13.18	109.76	12.39	109.29	12.16	111.5	10.62
PTSD	29.25	9.55	27.15	7.95	29.93	12.06	24.33	4.98
Loss of Resources	28.35	6.46	25.40	6.65	24.50	6.00	22.30	5.68

1960s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1960s		Lo impact* by 1960s		Hi Impact* by 1960s		Lo Impact* by 1960s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	30.26	16.28	20.23	15.93	25.16	15.81	25.00	19.19
Resilience	37.44	9.03	34.42	9.66	37.36	9.80	38.03	8.05
Repression-Sens	11.15	4.96	9.29	4.91	10.81	5.14	9.88	5.79
Hopkins	84.84	23.08	71.71	19.84	82.32	26.05	82.06	24.12
Hardiness	111.1	12.64	113.06	16.01	109.27	14.91	113.21	11.74
PTSD	27.87	10.09	22.45	5.92	25.58	10.00	25.91	10.55
Loss of Resources	24.52	8.48	19.68	6.53	22.14	7.53	21.27	8.43

*Perceived Impact – Median split for whole sample

Table 11
1970s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1970s		Lo impact* by 1970s		Hi Impact* by 1970s		Lo Impact* by 1970s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	36.65	12.94	35.49	17.58	34.28	15.48	30.29	15.38
Resilience	32.55	8.99	36.00	8.96	37.61	6.06	37.07	7.22
Repression-Sens	15.50	5.87	14.23	4.97	12.94	5.03	12.95	4.54
Hopkins	104.2	29.4	98.1	24.2	94.1	26.4	91.2	26.9
Hardiness	106.9	13.6	109.2	12.2	107.7	15.6	111.7	9.3
PTSD	31.10	10.98	27.25	8.24	26.11	7.34	24.82	6.44
Loss of Resources	27.85	6.65	25.75	6.60	23.11	5.72	22.33	5.70

1970s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1970s		Lo impact* by 1970s		Hi Impact* by 1970s		Lo Impact* by 1970s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	28.29	15.58	23.59	16.17	25.97	15.68	23.15	18.25
Resilience	37.78	7.79	34.86	10.62	37.12	9.14	37.78	9.50
Repression-Sens	10.42	5.23	10.80	4.50	10.63	5.03	10.29	5.75
Hopkins	80.85	22.35	78.70	22.71	81.37	20.43	83.49	31.60
Hardiness	113.7	11.2	108.0	16.37	109.7	14.05	111.5	14.06
PTSD	26.27	9.20	25.18	8.77	24.60	7.25	27.10	13.39
Loss of Resources	23.58	8.45	21.57	7.58	21.69	7.04	21.83	8.85

*Perceived Impact – Median split for whole sample

Table 12
1980s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1980s		Lo impact* by 1980s		Hi Impact* by 1980s		Lo Impact* by 1980s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	41.64	14.27	32.98	16.78	39.21	13.97	28.44	14.99
Resilience	33.40	8.70	25.92	9.17	37.79	6.16	36.97	7.27
Repression-Sens	15.88	5.54	13.92	4.97	13.79	5.59	12.69	4.27
Hopkins	108.9	28.03	95.25	23.28	97.83	27.36	89.77	26.39
Hardiness	105.6	12.72	110.1	12.35	107.42	13.60	112.1	9.50
PTSD	31.52	11.09	26.67	7.63	27.08	7.92	24.42	6.03
Loss of Resources	27.28	6.21	25.83	6.84	23.54	6.14	22.13	5.54

1980s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1980s		Lo impact* by 1980s		Hi Impact* by 1980s		Lo Impact* by 1980s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	30.08	16.07	21.63	15.25	26.37	16.10	22.98	17.38
Resilience	37.65	8.34	35.40	10.12	36.77	9.86	38.15	8.38
Repression-Sens	10.92	4.97	10.09	4.82	11.27	5.41	9.49	5.00
Hopkins	83.83	22.52	73.88	20.10	84.11	26/97	79.60	22.42
Hardiness	112.08	12.19	110.60	16.25	109.5	14.57	111.5	13.33
PTSD	26.92	9.39	24.47	8.27	27.32	11.81	23.19	6.41
Loss of Resources	24.13	8.73	20.67	6.79	22.97	8.53	20.13	6.26

*Perceived Impact – Median split for whole sample

Table 13
1990s Means and Standard Deviations for Young Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1990s		Lo impact* by 1990s		Hi Impact* by 1990s		Lo Impact* by 1990s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	38.09	13.19	32.20	20.23	33.48	12.00	28.93	17.59
Resilience	33.60	8.24	37.47	9.85	37.61	6.29	36.80	7.58
Repression-Sens	15.45	5.34	13.17	4.76	13.11	5.03	12.82	4.26
Hopkins	104.2	25.36	92.53	24.59	97.20	26.46	87.07	26.27
Hardiness	108.3	12.75	109.1	12.49	111.5	10.15	110.62	11.27
PTSD	31.11	9.57	23.77	6.20	26.35	7.76	23.96	5.24
Loss of Resources	28.06	6.19	23.53	6.45	23.93	5.34	21.24	5.72

1990s Means and Standard Deviations for Older Adults

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact* by 1990s		Lo impact* by 1990s		Hi Impact* by 1990s		Lo Impact* by 1990s	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	34.50	17.29	22.02	13.58	27.79	17.19	22.64	16.03
Resilience	38.29	7.65	35.64	9.85	35.71	10.80	38.67	7.63
Repression-Sens	11.82	4.16	9.94	5.19	11.73	5.51	9.54	4.94
Hopkins	86.18	23.00	76.68	21.50	85.92	27.56	79.21	22.78
Hardiness	113.03	11.66	110.48	15.06	108.54	14.57	111.8	13.51
PTSD	29.32	10.44	23.83	7.34	27.23	10.66	24.21	9.37
Loss of Resources	25.97	9.13	20.76	6.80	22.92	8.40	20.82	7.10

*Perceived Impact – Median split for whole sample

Table 14

Impact of Pearl Harbor for Young Adults: Means and Standard Deviations

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact*		Lo impact*		Hi Impact*		Lo Impact*	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	43.07	16.53	34.17	16.10	35.56	12.27	30.14	15.83
Resilience	34.07	10.34	35.33	8.80	35.94	7.40	37.40	6.95
Repression-Sens	15.29	6.34	14.40	4.97	14.19	4.59	12.72	4.60
Hopkins	105.7	32.72	98.33	23.80	108.94	22.89	88.44	26.23
Hardiness	108.0	13.91	108.75	12.37	103.8	9.72	112.35	10.43
PTSD	33.00	11.00	27.19	8.38	28.31	9.78	24.44	5.67
Loss of Resources	28.57	7.54	25.79	6.37	24.25	5.58	22.13	5.68

Impact of Pearl Harbor for Older Adults: Means and Standard Deviations

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact*		Lo impact*		Hi Impact*		Lo Impact*	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	28.09	16.88	23.95	14.59	24.47	15.26	25.69	19.13
Resilience	37.14	9.52	35.68	8.55	36.27	9.62	39.33	8.25
Repression-Sens	11.36	5.15	9.34	4.19	11.07	5.45	9.49	4.90
Hopkins	84.52	25.62	72.58	12.39	85.06	28.10	76.98	17.70
Hardiness	111.1	12.50	112.0	16.23	108.49	14.11	113.72	13.37
PTSD	26.47	9.58	24.74	7.76	25.81	11.30	25.05	7.29
Loss of Resources	23.21	8.86	21.71	6.56	22.49	8.31	20.41	6.46

*Perceived Impact – Median split for whole sample

Table 15

Impact of Pearl Harbor on coping with September 11th for Young Adults: Means and Standard Deviations

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact*		Lo Impact*		Hi Impact*		Lo Impact*	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	42.57	15.58	32.91	16.06	37.36	16.03	29.98	15.14
Resilience	32.61	8.83	36.17	9.00	37.00	5.70	37.20	7.22
Repression-Sens	16.04	5.70	13.93	4.90	11.86	4.54	13.13	4.62
Hopkins	109.4	27.14	95.52	23.91	98.86	31.61	90.53	25.86
Hardiness	107.1	12.82	109.3	12.52	111.9	10.40	110.86	10.83
PTSD	32.09	11.36	26.61	7.51	25.64	9.83	24.95	5.98
Loss of Resources	28.57	6.24	25.33	6.62	21.50	4.80	22.62	5.83

Impact of Pearl Harbor on coping with September 11th for Older Adults: Means and Standard Deviations

Measures	High Exposure to 9/11				Low Exposure to 9/11			
	Hi Impact*		Lo impact*		Hi Impact*		Lo Impact*	
	M	SD	M	SD	M	SD	M	SD
Ways of Coping	30.63	15.85	20.34	14.66	25.75	16.21	22.46	18.02
Resilience	36.65	9.96	36.54	7.89	36.89	9.28	38.75	9.13
Repression-Sens	11.17	5.03	9.78	4.63	10.46	5.14	10.64	5.81
Hopkins	84.81	23.56	73.00	18.64	82.15	24.96	82.21	25.98
Hardiness	111.63	14.11	111.1	13.76	109.28	14.36	113.46	12.69
PTSD	27.87	10.23	22.71	5.28	25.35	9.56	26.11	11.42
Loss of Resources	24.29	8.64	20.17	6.51	21.79	7.44	21.61	8.67

*Perceived General Impact – Median split for whole sample

Table 16
Pearson's Product Moment Correlations at Follow-up for Whole Sample
Dependent Variables –Time 2

	Neuroticism	Extraversion	Openness	Agreeability
<u>Independent</u>				
<u>Variables</u>				
<u>Time 1</u>				
Age	-.44**	.02	-.19	.24*
9/11 Exposure	.04	.08	.07	-.07
Loss of Resources	.19	.08	.06	-.07
PTSD Symptoms	.33**	.11	-.04	-.25*

Dependent Variables – Time 2

	Conscientiousness	Loneliness	PTSD symptoms
<u>Independent</u>			
<u>Variables</u>			
<u>Time 1</u>			
Age	.21*	-.05	-.16
9/11 Exposure	-.10	-.05	.25*
Loss of Resources	.00	.05	.34**
PTSD Symptoms	-.18	-.02	.67**

Table 17
Pearson's Product Moment Correlations at Follow-up for Young Adults
Dependent Variables – Time 2

<u>Independent Variables</u>	Neuroticism	Extraversion	Openness	Agreeability
<u>Time 1</u>				
9/11 Exposure	.09	-.15	-.14	.03
Loss of Resources	.25	-.11	-.28	.189
PTSD Symptoms	.14	.29	-.15	-.15

Dependent Variables – Time 2

<u>Independent Variables</u>	Conscientiousness	Loneliness	PTSD symptoms
<u>Time 1</u>			
9/11 Exposure	-.10	-.17	.01
Loss of Resources	-.05	.08	.29
PTSD Symptoms	-.06	-.32*	.41**

Table 18
Pearson's Product Moment Correlations at Follow-up for Older Adults
Dependent Variables – Time 2

<u>Independent Variables</u> <u>Time 1</u>	Neuroticism	Extraversion	Openness	Agreeability
9/11 Exposure	.06	.19	.20	-.13
Loss of Resources	.11	.16	.19	-.14
PTSD Symptoms	.42**	.02	-.02	-.27*

Dependent Variables – Time 2

<u>Independent Variables</u> <u>Time 1</u>	Conscientiousness	Loneliness	PTSD symptoms
9/11 Exposure	-.13	.00	.41**
Loss of Resources	.05	.03	.35**
PTSD Symptoms	-.21	.07	.82**

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