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A Descriptive Epidemiology of Lifetime Trauma and the Physical Health Status of Older Adults

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Three issues are evaluated in this study. The 1st involves examining the relationship between exposure to trauma over the life course and physical health status in old age. The 2nd has to do with seeing whether the relationship between trauma and health varies across 3 cohorts of older adults: the young-old (ages 65–74), the old-old (ages 75–84), and the oldest old (age 85 and over). The 3rd issue involves seeing whether the age at which a trauma was encountered is related to health in late life. Data from a nationwide survey of older people (N = 1,518) reveal that trauma is associated with worse health. Moreover, the young-old appear to be at greatest risk. Finally, data suggest that trauma arising between the ages of 18 and 30 years, as well as ages 31 to 64 years, has the strongest relationship with current health.

During the past several decades, researchers have shown considerable interest in the study of traumatic events (e.g., Turner & Lloyd, 1995; Wheaton, Roszell, & Hall, 1997). Wheaton (1994) defined *trauma* as events that are ". . .spectacular, horrifying, and just deeply disturbing experiences" (p. 90). Traumas are distinguished from other types of stressors (e.g., stressful life events) by their imputed seriousness. Included among traumatic events are sexual and physical abuse, witnessing a violent crime, the premature loss of a parent, and participation in combat. Many researchers argue that the effects of trauma are so severe that they reverberate across the life course, creating a host of lifelong psychological problems (Bowlby, 1980; Brown & Harris, 1978; Janoff-Bulman, 1992).

Unfortunately, the wide majority of studies on traumatic events have focused on either children or younger adults. When researchers have examined older people, their work typically suffers from at least one of four shortcomings. First, a number of studies focus on a single traumatic event, such as the Holocaust (Shmotkin & Barilan, 2002) or involvement in combat (McCranie & Hyer, 2000). Although this research makes valuable contributions to the literature, this strategy overlooks the possibility that people may experience more than one traumatic event during their lifetime (Breslau, Chilcoat, Kessler, & Davis, 1999). By ignoring cumulative exposure to trauma over the life course, these investigators run the risk of underestimating the impact of the traumatic events they examine (Turner & Lloyd, 1995). Second, a number of studies that assess trauma among older adults rely on samples that have not been drawn at random, making it difficult to generalize the findings to the wider population of older people (Norris, 1992; Schnurr, Spiro, Aldwin, & Stukel, 1998). Third, the majority of studies on trauma focus on mental health problems, especially posttraumatic stress disorder. This overlooks the possibility that trauma may also have an adverse effect on the physical health status of older people as well. Focusing on physical health is justified because a vast literature on less potent stressful life events suggests they play a significant role in the etiology of a wide range of physical health problems (McEwen & Lasley, 2002). Of more importance, however, several studies indicate that trauma may be associated with physical health problems (e.g., Boscarino, 1997). Unfortunately, little of this research has been with older people (e.g., Schnurr et al., 1998). Finally, virtually every study on trauma in late life pools all older respondents into a single group (e.g., all study participants aged 65 and older). This is often done because the samples in these studies do not contain sufficient numbers of old-old (aged 75–84 years) and oldest old (aged 85 years and over). By pooling older people into a single group, investigators are assuming that trauma affects all elderly people in the same way. However, a number of researchers maintain it is important to take cohort differences into account when studying samples of older adults. For example, Elder (1999) provided convincing evidence that there are significant cohort differences in the psychosocial effects of the Great Depression and military service in World War II.

The purpose of this study is to provide a descriptive epidemiology of trauma in late life that addresses each of the limitations identified above. More specifically, this study, which is based on a large nationwide probability sample of older people, contains data on 22 traumatic events and a range of physical health outcome measures. Moreover, this data set contains approximately 500 study participants in each of three different cohorts, making it

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possible to see whether there are variations in the reaction to trauma within our aging population.

Core Issues in the Epidemiology of Trauma in Late Life

Before turning to the substantive questions that are evaluated in this study, it is important to briefly discuss how traumatic events may influence physical health. There are likely to be a number of ways in which this may happen. First, researchers have argued for some time that exposure to trauma compromises a person's ability to develop and maintain close personal relationships in adult life (e.g., Bowlby, 1980). This is important because research consistently shows that strong social support systems are associated with better physical and mental health (Krause, 2001). Second, some investigators maintain that exposure to traumatic events permanently lowers a person's sense of control or mastery (e.g., Brown & Harris, 1978). This is important because a well-developed literature reveals that a diminished sense of personal control is associated with more physical health problems across the life course (Mirowsky & Ross, 2002). Third, a number of studies reveal that traumatic events, such as family violence, are associated with health risk behaviors later in adult life, including the use of alcohol and drugs (Davis, Combs-Lane, & Smith, 2004). Finally, research by McEwen and Lasley (2002) indicates there may be direct physiological pathways linking trauma and health. More specifically, the findings from their extensive research program reveal that exposure to stressors tends to compromise immune functioning.

The analyses presented in this study are designed to examine six questions involving trauma and health. These questions begin with relatively simple issues and move to progressively more complex specifications. Given the lack of adequate data on trauma in late life, the first set of analyses provides a simple overview of how often older people have experienced each of 22 traumatic events at any point in the life course.

A second set of analyses are performed to see whether there are cohort variations in the amount of trauma encountered over the life course. Three age cohorts are included in this work: the young-old (65–74 years of age), the old-old (75–84 years of age), and the oldest old (85 years and older). There are at least two reasons why rates of exposure may vary across these cohorts. First, one might expect that the oldest old have encountered the most trauma simply because they have lived longer. Second, unlike those born after them, the oldest old have been exposed to some of the most memorable events of the past century. For example, the young-old were born between 1930 and 1939. Consequently, they were young children when World War II began. In contrast, the oldest old were born no later than 1919. This means that many of these individuals were eligible for service in this war and many did, in fact, participate in combat.

The goal of the third set of analyses is to see whether a cumulative measure of exposure to trauma across the entire life course is associated with three different indicators of physical health status in the pooled study sample (i.e., global self-rated health, a checklist of acute and chronic conditions, and functional disability). Most studies of the stress process in late life are concerned solely with less potent stressful life events that have arisen within the past year or so. In essence, this strategy assumes that health problems are determined solely by recent events. Consistent with studies of younger adults (Wheaton & Clarke, 2003), the intent of the third set of analyses is to expand the field of inquiry to include exposure to trauma over the entire life course. This approach is very much in keeping with the call to infuse social psychological research in aging with a wider life course perspective (George, 1996).

The fourth set of analyses takes a more fine-grained approach to the study of lifetime trauma and health. Researchers have argued for some time that the impact of a traumatic event may depend on the age or developmental stage in which it is encountered (O'Connor, 2003). For example, some investigators maintain that the loss of a parent through death or divorce has a greater effect on mental health if it occurs prior to age 16 years (see Krause, 1993, for a detailed discussion of this research). Many argue that exposure to a number of other traumatic events is also especially harmful if it occurs during early developmental periods (e.g., Wheaton et al., 1997). However, virtually all this research focuses on mental health problems. Because many psychiatric disorders arise relatively early in life (e.g., typically before young adulthood), the causes of these mental health problems must reside early in life as well (Kessler et al., 1994). In contrast, many physical health problems emerge at later ages, especially in late life (Aldwin, 2004). This raises the possibility that the etiology of physical health problems may be traced to events encountered later in the life course. This issue is probed in the analyses provided below by assessing whether trauma arising during six developmental periods is associated with physical health problems in late life.

The analyses involving age or developmental period are exciting because they provide an opportunity to see, for example, whether health at age 70 or 80 years is associated with traumatic events that arose 50 or 60 years earlier. Linking current health problems with events in the distant past provides the opportunity to vividly illustrate how lives form a long unbroken strand of interrelated experiences, thereby adding fresh examples of the true value of assuming a life course perspective.

The fifth set of analyses is designed to see whether the impact of cumulative trauma over the entire life course on health varies by age cohort. As Elder (1999) maintained,

> Each generation is distinguished by the historical logic and shared experience of growing up in a different time period. . .individuals are thought to acquire a distinct outlook and philosophy from the historical world, defined by their birthdate, an outlook that reflects lives lived interdependently in a particular historical context. (p. 15)

Unfortunately, it is difficult to find a good comprehensive overview of the historical experiences that were shared by the members of the three cohorts examined in this study. One of the few sources may be found in marketing research (Karner, 2001; Meredith & Schewe, 2002). These investigators used extensive data from focus groups and other sources to develop profiles of the people in each of three generations examined in this study.

Members of the oldest old cohort were born prior to 1919. Many entered young adulthood just as the Great Depression emerged. As a result, Meredith and Schewe (2002) referred to these elders as the Depression cohort. Given the profound influence of the Great Depression, it is not surprising to find that members of this cohort value safety and security highly, that they are very value conscious, and that they are risk averse (Meredith & Schewe, 2002). However, aversion to risk is not always good because it may inhibit the pursuit of new solutions to problems and the adoption of unfamiliar, but effective, coping responses. As a result, members of this cohort may have more difficulty grappling with traumatic events.

The old-old were born between 1919 and 1928. The big historical event facing members of this cohort was World War II. Consequently, Meredith and Schewe (2002) referred to people in this age group as the World War II cohort. The members of this cohort staked their lives on obedience, trusting authority, and honoring and fighting for the nation. It is therefore not surprising to find that research by Meredith and Schewe reveals that members of this cohort place a high value on patriotism, self-reliance, and respect for authority. Moreover, as Karner (2001) noted, self-sacrifice and discipline are valued traits in this cohort as well. The author went on to point out that members of this cohort value cooperation, mutual support, teamwork, and a sense of community. Levels of religious commitment also tend to be high in this cohort (Meredith & Schewe, 2002). The strong themes of self-reliance coupled with an emphasis on religion suggest that members of the World War II cohort may be somewhat better able to deal with traumatic events than members of the Depression cohort.

Finally, members of the young-old cohort were born between 1929 and 1938. Meredith and Schewe (2002) referred to them as the postwar cohort. They are also known as the Eisenhower cohort (Karner, 2001). This group was shaped by the good economic times and widespread political consensus following World War II. Companies valued loyalty in their employees, and workers could rest secure in knowing they could spend their entire career with the same corporation (Karner, 2001). The work of Meredith and Schewe reveals that members of the postwar cohort are not as concerned with security and they are nowhere near as value conscious as the members of the Depression cohort. Karner (2001) argued that members of the postwar cohort had an unquestioning belief in social institutions and individual conformity. It is especially important to note that members of this cohort place a high value on stability and living the American dream. However, there may be risks associated with clinging too tightly to the lofty expectations fostered by the American dream. More specifically, the stark contrast between these expectations and dramatic disruption and disorganization created by traumatic events may create special coping obstacles for postwar cohort members.

The last set of analyses to be performed in this study is the most complex. Here, an effort is made to see whether the relationship between trauma and health is influenced by the age at which a traumatic event occurred and the age cohort of older study participants. In essence, these analyses seek to identify the point of greatest vulnerability by looking at the intersection of age cohort and age of exposure to trauma.

Method

Sample

The data used in the analyses presented below come from an ongoing longitudinal study by Krause (1994). When the baseline data were collected, the study population was defined as all household residents who were noninstitutionalized, English-speaking, 65 years of age or older, and retired (i.e., not working for pay). Geographically, the study population was restricted to eligible persons residing in the coterminous United States (i.e., residents of Alaska and Hawaii were excluded).

The sampling frame consisted of all eligible persons contained in the Health Care Financing Administration (HCFA) Medicare Beneficiary Eligibility List (HCFA is now called the Centers for Medicare and Medicaid Services or CMS). Three waves of interviews were conducted between 1992 and 1999. All waves of data were collected by Harris Interactive. A total of 1,103 interviews were successfully completed at the baseline interview in 1992–1993. The response rate for the baseline survey was 69.1%. Then, 605 of these study participants were successfully reinterviewed in 1996–1997. A third wave of data was collected in 1998–1999. A total of 530 older people who participated in earlier waves of data collection were successfully reinterviewed at Wave 3.

A fourth wave of interviews was conducted in 2002–2003. However, the sampling strategy was complex. Two groups of respondents were interviewed at this point. The first consisted of older people who participated in Waves 1–3. A total of 269 of these individuals were reinterviewed successfully at Wave 4. This group was supplemented with a sample of older people who had not been involved in the project previously. The CMS files were once again used as a sampling frame for identifying elders in the supplementary sample. However, in this case, the sample was selected so that when it was combined with those who had participated previously in the study, there would be an approximately equal number of people in each of the following age cohorts: 65–74 years (n = 491), 75–84 years (n = 515), and 85 years and older (n = 509). Altogether, the Wave 4 sample consisted of 1,518 older people. No effort was made to assess the cognitive ability of study participants during the recruitment phase of this study. The overall response rate for both groups comprising the Wave 4 survey was 54%. The response rate for each cohort is as follows: age 65–74, 55%; age 75–84, 58%; and age 85 and older, 49%. As these data reveal, the overall response rate for this study is somewhat lower than what is found in the typical survey of older people because a larger amount of nonresponse was encountered among people aged 85 and older (see Rodgers & Herzog, 1992, for a discussion of this issue).

Because measures of lifetime trauma were not obtained until the Wave 4 survey, all analyses in this study are based on this round of interviews only. As discussed above, several sets of analyses are performed in this study. After using listwise deletion of cases containing item nonresponse, the sample sizes in the pooled analyses ranged from 1,388 to 1,505 older people. On the basis of the sample of 1,508 respondents, preliminary analyses revealed that the average age was 74.8 years (SD = 7.4 years), approximately 41% were men, 56% were married at the time the interview took place, and 89% were White. These descriptive analyses further indicate that the average number of years of completed schooling was 12.0 years (SD = 3.3 years). On the basis of the Census Bureau's current population survey (CPS) estimates, these descriptive data were weighted by age, sex, education, and race. The net effect of this weighting scheme is that the age composition of the pooled sample is in correct proportion to the age composition of the CPS data. Weighted estimates are also provided in all the analyses that follow.

Measures

Traumatic life events. The older people in this study were presented with a list of 22 traumatic life events. The respondents were asked whether they encountered each of the events in the checklist. This checklist was assembled from several sources, including the work of Wheaton et al. (1997), Turner and Lloyd (1995), and the traumatic events listed in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (American Psychiatric Association, 1994, p. 424). The participants in this study were asked whether they had ever experienced any of these events in their lifetime. If they indicated they had been exposed to a traumatic event, then they were asked to report their age when they first encountered the stressor. The events contained in this checklist are provided later in this study when the first set of data analyses is reviewed. No effort was made to differentially weight the traumatic events according to the degree of fear, helplessness, or horror they created (see American Psychiatric Association, 1994, p. 427). Consistent with the work of Norris (1992), preliminary analysis revealed that exposure to trauma was not uncommon and that the older respondents in this study experienced an average of 2.7 traumatic events (SD = 2.1 events) over the course of their lives.

As discussed in the previous section, the trauma event checklist was evaluated in two ways. First, a simple unweighted sum of all traumatic events arising across the entire life course was created. Then, a second set of measures was devised to see whether greater insight can be obtained by focusing on trauma arising during six age or developmental periods: 5

years of age or younger, 6–11 years of age, 12–17 years of age, 18–30 years of age, 31–64 years of age, and 65 years of age and older. The age-specific measures of trauma were created by computing the total number of traumatic events arising in each age group.

There are two reasons for creating an age group consisting of exposure to trauma at age 5 or younger. First, it is consistent with the basic developmental views of Freud, who argued that successful adult development is largely a function of resolving key issues that emerge through age 5 (see Goldhaber, 2000, for a review of Freud's developmental perspective). In addition, the period before age 5 constitutes the preschool years, in which the life space is compressed into a fairly narrow sphere of social activity. Ages 6 through 11 represent the early school years prior to puberty in which the scope of social life expands dramatically. Ages 12–17 encompass the emergence of puberty and typically represent the final years of residence in the parents' home. Ages 18–30 constitute the young adult years that are characterized by taking on many major responsibilities, including a career and a family. There are two reasons why the age cut point of 30 was selected. First, as William James (1892/1961) observed some time ago, this is the age at which a good deal of development ceases. In particular, he argued that ". . .in most of us, by the age of thirty, the character has set like plaster, and will never soften again" (James, 1892/1961, p. 11). Similar views were expressed more recently by McCrae and Costa (2003), who maintained that "personality traits do not appear to change much after age 30" (p. 206). If these researchers are correct, then the effects of trauma should be easier to observe before the adult character is firmly established. Extensive research by Rubin, Rahhal, and Poon (1998) provides another way to justify focusing on ages 18–30 in the analyses that follow. Their work focuses on events ranging from personal preferences in the arts to vivid memories and world events. Their data suggest that events like these tend to be remembered better and tend to be viewed as more important if they arise roughly between the ages of 18 and 30. A category containing ages 31 through 64 was created because it represents midlife. This is a time when social engagement is at its height and contributions to self and society are often at a zenith. Trauma arising at this point in the life course may cut down people in their prime, thereby interfering with their ability to reach their full potential. Finally, a category for age 65 and older was designated because it signals entry into late life and contains a number of key developmental transitions. According to Levinson (1986), late life is a key transitional period in which people critically examine life to see whether they are satisfied with it and the relationships they have developed and whether anything is missing. Trauma arising at this point in the life course is likely to cast a negative pall on these life reflections and present undeniable evidence that things are not turning out they way they should.

Physical health status. Three measures of physical health status are used in this study: a checklist of specific acute and chronic health problems, measures of functional disability, and global self-rated measures of health. Before describing these indicators, it may be helpful to discuss why health is assessed with more than one measure. As Liang (1986) pointed out in his classic study, physical health is a complex domain that encompasses a number of different dimensions. Measures of acute and chronic health problems reflect a more medically oriented conception because they simply assess the presence or absence of particular health problems. In contrast, measures of functional disability capture the behavior manifestations of specific health problems by assessing whether people are able to perform tasks necessary for daily living. Finally, self-rated health is the individual's perception and overall subjective evaluation of their general state of health. As Liang showed, self-rated health is influenced, in part, by specific acute and chronic health problems as well as by difficulties with physical functioning. As this brief overview reveals, the use of multiple measures provides a more comprehensive view of health in late life. In addition, using multiple measures of health provides one way of assessing the extent or robustness of the effects of trauma on health.

Global self-rated health is assessed with three items that are widely used in the literature. One item asks respondents to rate their overall health as excellent, good, fair, or poor. The second asks study participants to compare their health to that of other people their own age. The third indicator assesses whether older people are satisfied with their current state of health. All three indicators are coded so that a high score reflects better self-rated health. The internal consistency reliability estimate for this scale is .822.

Study participants were also asked whether they had experienced any of 12 specific health conditions during the year prior to the Wave 4 survey. Included in this checklist were diseases like arthritis, hypertension, and asthma. A simple count of the number of acute and chronic health problems is used in the analyses presented below. No attempt was made to gauge the severity of these different health problems. The study participants indicated they experienced an average of 2.5 acute or chronic conditions ($SD = 1.7$ conditions) in the year before the interview.

Finally, functional disability was assessed with 15 items taken from the work of Liang (1990). Indicators of instrumental activities of daily living (IADL) as well as activities of daily living (ADL) are included in this index. For example, these items assess whether older adults have trouble doing things like using the telephone or climbing two or three flights of stairs and whether they have trouble lifting or carrying something as heavy as 25 pounds. Although these measures assess whether older people have any difficulty performing each task, they do not reflect the amount of difficulty they encounter. A high score on this measure denotes greater difficulty with more ADL and IADL functions. The respondents in this study reported they had difficulty performing an average of 3.1 activities ($SD = 3.5$ activities).

The correlations among the three health measures are as follows: self-rated health and chronic conditions, $r = -.483$, $p < .001$; self-rated health and functional disability, $r = -.591$, $p < .001$; and chronic conditions and functional disability, $r = .456$, $p < .001$.

Demographic control measures. The multivariate analyses involving lifetime trauma were performed after the effects of the following demographic variables were controlled statistically: age, sex, marital status, education, and race. Age is scored continuously in years, and education reflects the total number of years of completed schooling. In contrast, sex (1 = men, 0 = women), marital status (1 = presently married, 0 = otherwise), and race (1 = White, 0 = all other races) were coded in a binary format.[1]

Results

Exposure to Trauma Over the Life Course

Table 1 contains the 22 traumatic events that were examined in this study as well as the proportion of older people who encoun-

[1] Two different samples are used in this study. Consequently, it is important to know whether there are any systematic differences between the two samples. A logistic regression analysis was performed to test for these differences. This analysis was conducted in the following manner. First, a binary outcome was created whereby a score of 1 was assigned to all participants who participated in the Wave 1–3 interviews (i.e., the "old sample"), and a score of 0 was assigned to those who participated in the study for the first time (i.e., the "new sample"). Then, this binary outcome was regressed on the three health variables, a count of the total number of traumatic events, age, sex, education, marital status, and race. If any of the independent variables were related significantly to the binary outcome, then there would be some evidence that the data may be influenced by selection bias. However, this comparison had to be done with care. The first wave of interviews conducted with the old sample took place in 1992. This means that the youngest person in the old sample was 75 years old when the Wave 4 interviews were conducted. Therefore, the most accurate assessment would involve comparing the old sample to only those new sample members who were 75 years of age or older. Subsequent analyses revealed that a statistically significant difference emerged with only one variable. More specifically, the findings revealed that the members of the old sample are somewhat younger than those in the new sample ($b = -.073$, $p < .001$). On the basis of this evidence, it does not appear that there is a problem with sample selection bias in this study.

Table 1
Exposure to Trauma Over the Life Course

Traumatic event	% of total sample exposed	Young-old (65–74 years) exposed	Old-old (75–84 years) exposed	Oldest old (85+ years) exposed
Has a spouse died?	37.4	23.2	46.4	69.1
Has a child ever died?	19.9	16.0	23.1	26.8
Have you ever had a child who died at or near birth?	6.8	6.7	7.0	7.3
Have you ever given up a child shortly after birth?	0.4	0.4	0.4	0.0
Not counting television or the movies, have you ever seen something very violent happen to someone or seen someone get killed?	17.6	18.0	20.9	9.4
Have you ever been in a major fire, flood, earthquake, or other natural disaster?	16.2	15.7	17.2	17.9
Have you ever had a life-threatening illness?	29.5	28.9	31.7	25.9
Have you ever had a serious accident or injury that was life threatening?	9.2	10.8	7.8	8.0
Has your spouse ever had a near-fatal accident or near-fatal, life-threatening illness?	33.1	28.5	36.9	40.3
Has one of your children ever had a near-fatal accident or near-fatal, life-threatening illness?	15.9	15.5	15.7	18.3
Have you ever fired a weapon in combat or been fired upon in combat?	9.9	6.1	17.1	6.5
Have you ever been sexually abused or sexually assaulted?	2.1	2.7	1.7	0.8
Have you ever been physically abused by your current spouse or a previous spouse or partner?	3.8	5.2	2.1	2.1
Has your spouse, partner, or child ever been addicted to drugs or alcohol?	10.6	12.8	8.4	6.5
Have you ever been divorced?	20.0	24.8	15.1	11.9
Before you were 18 years old, did you have to do a year of school over again?	8.7	10.6	6.7	4.1
Before you were 18 years old, did your father or mother not have a job for a long period of time when they wanted to be working?	9.0	5.4	14.3	8.6
Before you were 18 years old, were you sent away from home because you did something wrong?	0.5	0.8	0.0	0.0
Before you were 18 years old, did either of your parents drink or use drugs so often that it caused problems in the family?	8.4	10.5	7.2	3.6
Before you were 18 years old, were you ever physically abused by either of your parents?	1.7	2.1	1.9	0.5
Did one of your parents die before you were 18 years old?	15.0	12.7	17.2	16.4
Did your parents get divorced before you were 18 years old?	6.8	8.5	5.6	3.1

tered each type of adversity. Data on exposure to trauma within each cohort are also provided in Table 1. These data provide useful background information for the analysis of cohort differences in exposure to trauma.[2]

As the data in Table 1 reveal, the older adults in this study experienced a wide range of traumatic events over the course of their lives. The two most frequent events in the pooled study sample involve the death of a spouse (37.4%) as well as a near-fatal illness or injury of a spouse (33.1%). The respondent's own near-fatal illness (29.5%) was also fairly prevalent. Other traumatic events were rare (e.g., sexual abuse [2.1%]). It was surprising to find that some events, such as the death of a child, were more common than one might think (19.9%). Similarly, witnessing a very violent act against another individual was also surprisingly high (17.6%). However, it should be emphasized that similar levels of exposure to violent acts are found in the National Comorbidity Survey (Kessler, Sonnega, Bromet, & Hughes, 1995).

The second research question involved probing for cohort differences in exposure to traumatic life events. These analyses were conducted within an ordinary least squares (OLS) multiple regression framework. More specifically, a simple count of lifetime trauma that arose at any point in the life course was regressed on dummy variables reflecting cohort membership as well as the demographic control variables identified earlier. The data (not shown here) suggest there are no statistically significant cohort differences in exposure to trauma across the life course. More specifically, the findings reveal that compared with the young-old, the old-old do not encounter significantly more traumatic events ($\beta = .065$, *ns*). Similarly, the results further indicate that compared with the young-old, the oldest old also do not experience significantly more trauma over the course of their lives ($\beta = -.003$, *ns*). This issue was probed further by using a measure of age instead of the dummy variables representing cohort membership. The findings (not shown here) were the same: Age is not related significantly to the number of lifetime traumatic events ($\beta = -.033$, *ns*). Taken together, these data indicate that additional years of life do not necessarily translate into greater overall exposure to trauma. Perhaps the selective withdrawal from social activity that often accompanies advanced old age may be partly responsible for these results (Johnson & Barer, 2003).

Cumulative Trauma Across the Life Course and Health in Late Life

Two issues must be addressed at this juncture that involve the best way to handle the scoring of traumatic events when health

[2] Preliminary analysis provided the following means and standard deviations for the total number of traumas encountered in each age group: age 5 and younger, $M = 0.12$, $SD = 0.39$; ages 6–11, $M = 0.23$, $SD = 0.53$; ages 12–17, $M = 0.24$, $SD = 0.57$; ages 18–30, $M = 0.47$, $SD = 0.84$; ages 31–64, $M = 0.95$, $SD = 1.18$; and age 65 and older, $M = 0.64$, $SD = 0.90$. As these data reveal, the number of events arising prior to age 6 is quite small. It is difficult to determine the impact of this small cell size on the study findings.

serves as the outcome. First, some investigators might argue that death of a spouse is not necessarily a traumatic event, especially when it occurs in late life. For example, Neugarten (1996) would maintain that the death of a spouse in later years is an "on-time" event that is anticipated and, therefore, less stressful than the death of a spouse at an earlier point in the life course (e.g., at age 30). To the extent that this is true, including death of a spouse in later years might lead to an underestimation of the effects of trauma on health. Unfortunately, data were not gathered in this study on the age of the spouse at the time he or she died. However, the analyses involving health were repeated after deleting all instances in which the respondent was over age 40 when his or her spouse died. This should eliminate most instances in which a spouse was in late life (i.e., over age 65) when he or she died. The study findings from these additional analyses did not change. This suggests that the death of a spouse is a very taxing event and that the time of death is not as important as it may seem initially. This observation is supported by the work of Wortman and Bolger (1988), who reported that younger respondents are initially more deeply affected by the death of a spouse but that they recover more quickly than older study participants. Therefore, in the analyses that follow, we retain all deaths of a spouse regardless of when they occurred in the life course.

The second coding issue involves traumatic events that deal with a near-fatal illness or injury to the respondent. These events could obviously be the cause of current health problems. As a result, retaining these events may create problems with measurement confounding when current health status is the dependent variable. Therefore, to avoid this problem, traumatic events involving life-threatening illness or injury to the respondent were excluded from the analyses presented from this point onward.

The analyses involving cumulative trauma across the life course and current physical health status were also performed with OLS procedures. This involved regressing each of the three health outcomes on a simple count of traumatic events experienced throughout the life course. The demographic measures were included in the model as well. The findings (not shown here) reveal that lifetime trauma tends to exert a noxious effect on each of the three health status measures. More specifically, the data suggest that greater lifetime trauma is associated with less favorable self-rated health ($\beta = -.102$, $p < .001$), more acute and chronic health problems in old age ($\beta = .222$, $p < .001$), and difficulty with more ADL and IADL functions ($\beta = .192$, $p < .001$).[3] Taken as a whole, these findings indicate that there may be some credence to the notion that the sheer bulk or amount of exposure to trauma may be a critical factor in shaping the health of older people. This view is consistent with the work of McEwen and Lasley (2002), who argued that repeated exposure to stressful life events slowly produces wear and tear on internal organs (i.e., the allostatic load) that culminates in the development of specific acute and chronic health conditions. Moreover, as Turner and Lloyd (1995) convincingly demonstrated in their study of mental health outcomes, a cumulative measure of lifetime trauma appears to exert the greatest impact. However, before concluding that cumulative exposure to trauma is the key risk factor, a more focused set of analyses is needed that examines the impact of trauma arising at different points in the life course.[4]

Trauma at Different Points in the Life Course and Health in Old Age

Table 2 contains the results of a series of regression analyses that were designed to see whether trauma arising in the six developmental periods discussed earlier is associated with health in late life. A consistent and intriguing finding emerges across all three sets of analyses: It appears as though trauma in two specific age groups (18–30 and 31–64) consistently exerts the greatest effects on each of the health outcome measures. More specifically, the data involving global self-rated health indicate that trauma encountered at ages 18–30 ($\beta = -.082$, $p < .01$) and ages 31–64 ($\beta = -.069$, $p < .05$) appears to have the greatest effects. In contrast, the only other point where trauma appears to be a factor is between ages 6 and 11 ($\beta = -.054$, $p < .05$). Although the magnitude of the effect in the 6–11 age range is fairly modest, it is nevertheless remarkable because it suggests that traumatic experiences arising more than half a century ago still have a visible impact on the lives of older people.

The results involving acute and chronic health problems suggest that vulnerability to traumatic events may emerge in a wider range

[3] Two of the health measures used in this study are simple counts of chronic and acute health problems and simple counts of physical functioning tasks. An anonymous reviewer argued that Poisson regression analysis should be used under these circumstances. Although this is an important point to raise, we examined this issue by following the advice of von Eye (1998). He argued that a simple square root transformation of the dependent variable avoids the problems noted by this reviewer. A square root transformation was taken of the chronic illness and functional disability measures. Then these transformed outcomes were regressed on the total number of traumatic events encountered over the life course as well as the control variables. The square root transformation had no appreciable effect on the study findings. Prior to transformation, the relationship between total life trauma and the count of chronic conditions was $\beta = .222$, $p < .001$. After transformation, the findings were identical ($\beta = .222$, $p < .001$). Virtually the same results emerged with respect to functional disability. Before transformation, the effect of total trauma was $\beta = .192$, $p < .001$. After transformation, the effect was $\beta = .200$, $p < .001$. A normal plot of Y was examined after these analyses. This examination failed to reveal any systematic departures of Y from normality. Therefore, it does not appear that the count variables used in this study had a major impact on the findings.

[4] Some researchers might argue that the self-reported measures of health used in this study are influenced by psychological distress. To ensure that the findings reflect physical and not mental health problems, we ran the analyses a second time after a four-item measure of depressive symptoms was included in the model. These indicators were taken from the CES–D Scale (Radloff, 1977) and reflect the cognitive (but not somatic) aspects of depression. The cognitive aspects of depression include such things as feeling sad, feeling blue, and feeling depressed. Two findings emerge from these analyses. First, the data suggest that greater exposure to trauma is associated with more depressive symptoms ($\beta = .139$, $p < .001$). Second, and more important, the findings reveal that the relationship between cumulative trauma over the life course and health is only attenuated slightly by including the measure of depressed cognitions in the model. More specifically, these additional analyses provided the following coefficients for the relationship between lifetime trauma and the health outcomes: (a) global self-rated health, $\beta = -.073$, $p < .01$; (b) acute and chronic health problems, $\beta = .193$, $p < .001$; and (c) functional disability, $\beta = .164$, $p < .001$. We elected not to retain depressive symptoms as a control measure because research reveals that the direction of causality between depression and physical health status is very unclear (see Cohen & Rodriguez, 1995, for a detailed discussion of the problems involved in resolving this issue).

Table 2
Trauma Arising at Specific Points in the Life Course and Physical Health Status

Variable	Physical health status		
	Global self-rated health[a]	No. of acute & chronic conditions[b]	Functional disability[c]
Age	.006	.074**	.230***
	(0.002)	(0.007)	(0.111)
Sex	−.020	.036	−.145***
	(−0.093)	(0.126)	(−1.039)
Marital status	.078*	−.039	−.069*
	(0.357)	(−0.136)	(−0.490)
Education	.193***	−.116***	−.147***
	(0.133)	(−0.060)	(−0.159)
Race	.006	−.006	−.008
	(0.048)	(−0.033)	(−0.096)
5 years old or younger	.013	.023	−.018
	(0.081)	(0.105)	(−0.168)
6–11 years old	−.054*	.080**	.087***
	(−0.240)	(0.270)	(0.611)
12–17 years old	−.016	.072**	.028
	(−0.068)	(0.226)	(0.179)
18–30 years old	−.082**	.135***	.106***
	(−0.234)	(0.291)	(0.471)
31–64 years old	−.069*	.128***	.156***
	(−0.152)	(0.211)	(0.526)
65 years old and older	.032	.009	−.006
	(0.092)	(0.019)	(−0.029)

Note. Numbers not in parentheses are standardized regression coefficients; numbers within parentheses are unstandardized regression coefficients. Findings for age at exposure to trauma were obtained after the effects of age, sex, marital status, education, and race were controlled statistically.
[a] $n = 1{,}460$. [b] $n = 1{,}505$. [c] $n = 1{,}388$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

of age groups. In particular, the data indicate that trauma in all but the youngest (age 5 or less) and the oldest age groups (65 or older) is associated with more physical health problems. However, once again, the strongest relationships involve trauma encountered during ages 18–30 ($\beta = .135$, $p < .001$) and ages 31–64 ($\beta = .128$, $p < .001$). Trauma experienced at younger ages still factors into current health, but the effects do not appear to be as strong (i.e., for trauma at ages 6–11, the effect is $\beta = .080$, $p < .001$; for ages 12–17, the effect is $\beta = .072$, $p < .01$).

The findings involving functional disability largely mirror those of the other health outcomes. More specifically, the data suggest that trauma encountered between the ages of 18 and 30 ($\beta = .106$, $p < .001$) as well as traumatic events arising between ages 31 and 64 ($\beta = .156$, $p < .001$) appear to have the most adverse effect on physical functioning. Once again, traumatic events arising between ages 6 and 11 also have a modest but visible impact ($\beta = .087$, $p < .001$).

Viewed broadly, the data provided in this section suggest that people appear to be more vulnerable to the noxious effects of trauma at some points in the life course rather than in others. In particular, trauma at ages 18–30 and 31–64 consistently emerges as the most consequential for health. However, there is another way to probe the issue of vulnerability. As the analyses in the next section reveal, some cohorts of older people may be more vulnerable to the effects of trauma than others.

Exploring for Variation by Cohort

Table 3 contains the results of the analyses that examine cohort variations in the relationship between cumulative trauma across the life course and health in later years. Separate regression equations were estimated to look at the effects of trauma within each cohort. As in the previous set of analyses, the data provided in Table 3 were obtained after the effects of the demographic variables were controlled statistically. The findings indicate that cumulative trauma over the life course has adverse effects on the health of older people in each cohort, but one cohort appears to be more vulnerable than the others.

The data in Table 3 reveal that trauma arising over the entire life course is associated with less favorable self-rated health, but significant effects emerge only in the young-old cohort. These results indicate that cumulative lifetime trauma is associated with worse self-rated health among older people who are presently 65–74 years of age ($\beta = -.186$, $b = -.233$, $p < .001$), but similar findings are not evident in the old-old ($\beta = .014$, $b = .017$, *ns*) or the oldest old ($\beta = -.041$, $b = -.056$, *ns*).

The same conclusion is reached when current acute and chronic health problems serve as the dependent variable. More specifically, the effect of lifetime trauma among the young-old is fairly substantial ($\beta = .304$, $b = .277$, $p < .001$). In contrast, the relationship between cumulative lifetime trauma and specific health conditions is evident for the old-old ($\beta = .102$, $b = .095$, $p < .05$) and the oldest old ($\beta = .181$, $b = .197$, $p < .001$), but the magnitude of these relationships is not as large. It is best to focus on unstandardized regression coefficients (i.e., b) when discussing findings across cohorts because standardized estimates confound differences in item variances across groups with the differential impact of trauma across groups.

The pattern of findings that has emerged so far is not as evident when functional disability is used as the outcome measure. As the unstandardized coefficients in Table 3 suggest, the effects of

Table 3
Cumulative Trauma Across the Life Course, Age Cohort, and Physical Health Status

Variable	Physical health status		
	Global self-rated health	No. of acute & chronic conditions	Functional disability
Within young-old (65–74 years)			
β	−.186***	.304***	.265***
b	(−0.233)	(0.277)	(0.464)
n	474	488	456
Within old-old (75–84 years)			
β	.014	.102*	.125**
b	(0.017)	(0.095)	(0.233)
n	499	514	470
Within oldest old (85+ years)			
β	−.041	.181***	.212***
b	(−0.056)	(0.197)	(0.541)
n	480	503	449

Note. These findings were obtained after the effects of age, sex, education, marital status, and race were controlled statistically.
* $p < .05$. ** $p < .01$. *** $p < .001$.

lifetime trauma in the young-old ($\beta = .265$, $b = .464$, $p < .001$) are higher than those in the old-old cohort ($\beta = .125$, $b = .233$, $p < .001$) but not quite as high as those in the oldest old ($\beta = .212$, $b = .541$, $p < .001$).

Variation by Cohort and Age at Exposure to Trauma

The data provided up to this point suggest that the young-old may be more vulnerable to the effects of trauma and that traumatic events arising during certain points in the life course (18–30 and 31–64) may have a greater impact on health than events that are encountered at other ages. The next set of analyses is the most complex because it looks at the juncture of these two potential sources of vulnerability. More specifically, the data provided in Table 4 assess the joint effects of cohort and age at exposure to trauma in an effort to further pinpoint the circumstances under which the most potent effects of traumatic events arise.

The data in the top portion of Table 4 indicate that the relationship between traumatic events arising between the ages of 18 and 30 ($\beta = -.139$, $b = -.439$, $p < .001$) and 31 to 64 ($\beta = -.102$, $b = -.218$, $p < .05$) has the greatest effect on the self-rated health of the young-old. In contrast, these findings further reveal that trauma encountered at all other points in the life course is not significantly related to self-rated health in this cohort.

The results in the first portion of the table further reveal that traumatic events encountered between the ages of 18 and 30 ($\beta = .189$, $b = .434$, $p < .001$) as well as age 31 to 64 ($\beta = .146$, $b = .224$, $p < .001$) have the strongest relationship with the measure of acute and chronic health problems in the young-old cohort. Traumatic events at other points in the life course are also associated with acute and chronic health problems, but the magnitude of the relationships is not as large (6–11 years, $\beta = .110$, $b = .349$, $p < .05$; 12–17 years, $\beta = .122$, $b = .366$, $p < .01$).

The last set of analyses performed within the young-old cohort suggests that traumatic events are associated with functional disability. Once again, the strongest relationships emerge only within the 18–30 ($\beta = .143$, $b = .621$, $p < .001$) and 31–64 age ranges ($\beta = .201$, $b = .588$, $p < .001$). The only other point in the life course where significant findings emerge involved events arising between the ages of 6 and 11. However, as the data show, the magnitude of this relationship is fairly modest ($\beta = .093$, $b = .577$, $p < .05$).

The middle portion of Table 4 contains the findings involving the old-old cohort (i.e., those who are currently 75–84 years old). These results stand in sharp contrast to those involving the young-old. Specifically, the data indicate that exposure to traumatic events at any of the select age groups is not significantly associated with current self-rated health for members of the old-old cohort. The findings further reveal that only traumatic events encountered between the ages of 31 and 64 are related to the number of acute and chronic health problems currently experienced by members of this cohort ($\beta = .109$, $b = .198$, $p < .01$). The same is true with respect to functional disability. More specifically, the data suggest that only traumatic events encountered between the ages of 31 and 64 exert a statistically significant effect on current physical functioning in the old-old ($\beta = .125$, $b = .447$, $p < .01$). Perhaps the best way to succinctly capture the effects of trauma within the old-old cohort is to note that significant findings emerge in only 2 of the 18 tests that were performed in this group.

Table 4
Trauma Arising at Specific Points in the Life Course, Age Cohort, and Physical Health Status

Variable	Physical health status		
	Global self-rated health	No. of acute & chronic conditions	Functional disability
Within young-old (65–74 years)			
5 years old or younger	−.010 (−0.081)	.045 (0.194)	−.002 (−0.018)
6–11 years old	−.065 (−0.287)	.110* (0.349)	.093 (0.577)
12–17 years old	−.042 (−0.169)	.122** (0.366)	.053 (0.308)
18–30 years old	−.139** (−0.439)	.189*** (0.434)	.143*** (0.621)
31–64 years old	−.102* (−0.218)	.146*** (0.224)	.201*** (0.588)
65 years old and older	.029 (0.126)	−.035 (−0.113)	−.036 (−0.214)
n	474	488	456
Within old-old (75–84 years)			
5 years old or younger	.085 (0.525)	−.039 (−0.187)	−.034 (−0.321)
6–11 years old	−.036 (−0.152)	.027 (0.090)	.078 (0.511)
12–17 years old	.008 (0.033)	.040 (0.128)	.004 (0.025)
18–30 years old	.010 (0.026)	.054 (0.106)	.071 (0.279)
31–64 years old	−.047 (−0.109)	.109* (0.198)	.125** (0.447)
65 years old and older	.066 (0.164)	−.008 (−0.016)	−.010 (−0.040)
n	499	514	470
Within oldest old (85+ years)			
5 years old or younger	−.017 (−0.125)	.052 (0.301)	−.039 (−0.549)
6–11 years old	−.038 (−0.227)	.098* (0.478)	.132** (1.450)
12–17 years old	−.006 (−0.031)	−.057 (−0.233)	.089 (0.848)
18–30 years old	−.091 (−0.265)	.124** (0.284)	.172*** (0.937)
31–64 years old	.033 (0.076)	.127** (0.234)	.113* (0.483)
65 years old and older	.018 (0.040)	.074 (0.134)	.029 (0.122)
n	480	503	449

Note. Numbers not in parentheses are standardized regression coefficients; numbers within parentheses are unstandardized regression coefficients. Findings were obtained after the effects of age, sex, education, marital status, and race were controlled statistically.
* $p < .05$. ** $p < .01$. *** $p < .001$.

The findings involving the effects of trauma at different points in the life course within the oldest old cohort (i.e., those who are 85 years and older) fall somewhere between the two younger cohorts. Specifically, the data suggest that trauma in any of the six age groups fails to exert a statistically significant effect on the global self-rated health in the oldest old cohort. However, trauma at ages 6–11 ($\beta = .098$, $b = .479$, $p < .05$), ages 18–30 ($\beta = .123$, $b = .284$, $p < .01$), and ages 31–64 ($\beta = .127$, $b = .234$, $p < .01$)

are associated with more acute and chronic health problems. Even so, as the unstandardized coefficients reveal, the magnitude of the relationship between trauma at ages 18–30 is smaller than the effect observed in the young-old cohort. In contrast, the coefficient associated with trauma at ages 31–64 is slightly larger than the corresponding estimate in the young-old cohort. Finally, the results in Table 4 reveal that traumatic life events experienced between the ages of 18 and 30 ($\beta = .172$, $b = .937$, $p < .001$), as well as ages 31 to 64 ($\beta = .113$, $b = .483$, $p < .01$), appear to have an adverse effect on the functional disability of the oldest old. It was somewhat surprising to see that trauma encountered between the ages of 6 and 11 ($\beta = .132$, $b = 1.450$, $p < .01$) and between the ages of 12 and 17 ($\beta = .089$, $b = .848$, $p < .05$) is also associated with physical functioning in this cohort and that the effects of exposure at these ages are stronger than for any other cohort in this study.

Subsequent Bonferroni adjustments suggest it may be best to consider only those findings in Table 4 that are significant at the .001 level within each cohort.[5] This helps to simplify and clarify the results. More specifically, use of this Bonferroni adjustment suggests that only trauma arising at ages 18 to 30 and ages 31 to 64 is consequential for the health of the young-old. Moreover, only traumatic events encountered between ages 18 and 30 are related to the health of the oldest old. In contrast, trauma arising at any specific point in the life course does not appear to affect the health of the old-old.

Supplementary Analyses

If traumatic events arising in midlife are the most consequential for health, then it might be useful to conduct a set of preliminary analyses to see whether any particular events place older people at risk. This was accomplished by creating a dummy variable for each traumatic event. The three health outcomes were then regressed on these indicators as well as the demographic control measures. These supplementary analyses focus on trauma arising between the ages of 18 and 30 because the analyses presented above suggest this age range is more consistently related to health outcomes than the others. The supplementary analyses (not shown here) indicate that death of a spouse when the respondent was between the ages of 18 and 30 tends to erode self-rated health ($\beta = -.055$, $p < .05$). The data further reveal that death of child ($\beta = .072$, $p < .01$) and having a spouse who was addicted to alcohol or drugs ($\beta = .077$, $p < .01$) is associated with more chronic and acute health conditions. Finally, the supplementary analyses suggest that the death of a spouse ($\beta = .058$, $p < .05$), the death of a child ($\beta = .056$, $p < .05$), being physically abused by a spouse or partner ($\beta = .060$, $p < .05$), and being divorced ($\beta = .075$, $p < .01$) were all associated with greater functional disability. Viewed broadly, these data suggest that trauma arising within the family (i.e., the premature death of a spouse or child, as well as marital-related traumatic events) when the respondent was between the ages of 18 and 30 tends to have lifelong effects on health. However, great care should be taken when reviewing these findings because the rate of some traumatic events arising between the ages of 18 and 30 was quite low (see Schmitt & Colligan, 1984, for a discussion of this base-rate problem).

Discussion

Three key findings emerged from this study. First, the data reveal that traumatic events that arose across the entire life course exert an adverse effect on each of the three health outcome measures in this study. These results are significant because they underscore the importance of investigating the relationship between trauma and physical health and provide justification for conducting further work in this area.

Second, the data indicate that traumatic events encountered between the ages of 18 and 30, as well as the ages of 31 and 64, appear to exert the greatest effects on health in late life. Because this is one of the first studies to focus on physical health outcomes of trauma, there is little in the literature to substantiate these observations. However, it is interesting to note that other investigators have found similar trends when mental health outcomes were studied. More specifically, Berntsen and Rubin (2002) found that the number of outpatient psychotherapeutic sessions in response to traumatic events in Denmark peak around age 40. When coupled with the findings presented above, it appears that adversity encountered in adult life plays a more important role in shaping adult health than adversity encountered in childhood. This conclusion is consistent with the observations of Vaillant (2002), who argued that "although we all 'know' that childhood affects the well-being of adults, recent scientific reviews reveal that such explanations are rather less important than we thought" (p. 94).

This issue aside, the findings involving the age at exposure to trauma suggest that people may be more vulnerable to traumatic events during young and middle adulthood. We need to learn more about why this may be so. The supplementary analyses presented above indicate that traumatic events arising within the family may be most consequential, but it is not entirely clear how these events may create physical health problems in late life. The exploration of this issue should be a high priority in future research.

The third major finding to emerge from this study involves cohort differences in the effects of lifetime trauma. The data indicate that the young-old appear to be at greatest risk. These results raise a host of questions. There are several possible explanations for this pattern of findings. One is relatively straightforward. If traumatic events really do create physical health problems, then those who are most vulnerable to trauma should be more likely to become ill and die as they move through late life. As a result, members of the old-old and oldest old cohorts may simply be hardy survivors. However, there may be more to it than this because the data indicate that trauma still has an adverse effect on the health of the old-old and oldest old: The major difference across cohorts is largely one of magnitude.

An alternative explanation involves the cohort differences that were discussed earlier. On the basis of the work of Meredith and Schewe (2002), we argued that historical events encountered by the young-old and the oldest old may place them at greatest risk. In particular, lingering insecurity from the Great Depression may make members of the oldest old cohort more vulnerable to subsequent trauma, whereas the high expectations created by the economic boom following World War II may make severe adversity

[5] An anonymous reviewer pointed out that a relatively large number of tests of statistical significance were performed for the analyses presented in this section. He or she recommended that Bonferroni procedures be used to avoid capitalizing on chance variations in the data.

more difficult for members of the young-old cohort to tolerate. However, care must be taken in drawing these conclusions because sufficient contextual data on the historical experiences of different cohorts is hard to come by. Moreover, there is some evidence that there is significant variation within cohorts in the way that people react to major historical events (Alwin, McCammon, & Hofer, in press).

A third possibility is that the data reflect age and not cohort effects. It is impossible to disentangle the two with data that have been gathered at a single point in time, but speculating about potential age differences may provide a useful point of departure for future research. Some intriguing insights may be found by turning to work with the oldest old by Johnson and Barer (2003). They observed that "There is some evidence among the oldest-old of a greater acceptance of dependency and a surrender of control over select areas of their lives, changes that do not usually undermine their sense of well-being" (Johnson & Barer, 2003, p. 224). These investigators went on to argue that these changes are accompanied by an increasingly introspective nature (i.e., interiority), a characteristic that was discussed some time ago by Neugarten (1977). Perhaps these age-related changes in control and introspection help older people come to terms with the traumatic events in their lives.

Regardless of whether age or cohort explanations are more valid, the stage is now set for more focused work on the effects of trauma in late life. More specifically, researchers may benefit by probing more deeply into the lives of the young-old to find out why they may be more vulnerable to the effects of trauma, especially those events that are encountered in young adulthood and midlife.

The findings from this study have potentially important implications for clinical practice. If trauma is associated with physical health problems as the findings from this study show, then it may be important to routinely gather information on exposure to trauma during intake examinations. Some health care providers ask questions about stressful life events when taking medical histories, but asking about trauma as well may provide additional insight into the factors responsible for a patient's current state of health. In addition to this, some studies show that greater exposure to stressful life events leads to greater use of outpatient medical care and that many health care providers are unaware that this is the case (Krause, 1990). Moreover, many health care providers are not trained in helping people deal specifically with the effects of traumatic life events. This leads to ineffective treatment and the unwise use of scarce resources. If older people who have been exposed to trauma are also disproportionately high users of medical care, then identifying and properly treating these individuals may provide another way of helping to curb escalating medical care costs.

Investigators who are interested in pursuing research on trauma and health would be well advised to pay careful attention to the limitations in the present study. Seven are discussed below.

The data in this study were gathered at one point in time. As a result, it is not possible to demonstrate conclusively that traumatic events cause physical health problems in late life. In fact, one might instead argue that older people are more likely to explain or make sense of their current health problems by believing (and reporting) they were caused by exposure to trauma in the past. Clearly, this alternative explanation cannot be ruled out with the data at hand. However, the pattern of findings that emerged in this study appears to argue against it. If the counterargument is valid, then we would expect to see a consistently high relationship between trauma and health across all three cohorts. This was not the case. Greater effects emerged among the young-old. Moreover, if the alternative hypothesis is valid, then it is hard to imagine why trauma arising during the ages of 18 and 30, as well as 31 and 64, has the greatest effects on health.

The second limitation in this study arises from the fact that data on traumatic events are based solely on self-report. There is tremendous controversy in the literature over the reliability and validity of retrospective reports of lifetime trauma. Some maintain that these self-reports are seriously flawed (e.g., Maughan & Rutter, 1997), but others disagree. For example, as Bernstein and his colleagues maintained, these fears are greatly exaggerated and "retrospectively obtained histories of childhood experiences are generally stable over time, show good agreement with reports of other informants (e.g., siblings), and are often verified when archival data are available" (Bernstein et al., 1994, p. 1136; see also Goodman et al., 2003; Paivio, 2001). There is clearly no way to resolve this issue with the data available in the present study. The only way to conclusively resolve this problem is to carry out prospective studies from childhood through late adulthood. However, as Kessler, Gillis-Light, Magee, Kendler, and Eaves (1997) pointed out, such an undertaking would be massively expensive.

The third limitation is closely related to the second. The respondents in our study were asked to report two specific pieces of information: whether they were exposed to traumatic events and the age when they first experienced each trauma. This raises the possibility that the older adults in this study could accurately report they encountered a trauma but fail to provide accurate information about how old they were when they first experienced the event. We know of no research that examines the extent of this problem or whether it becomes more evident with age. This limitation should be kept in mind as the findings from this study are reviewed.

The fourth limitation in this study also has to do with the way the data on trauma were obtained. Respondents were asked only about the first time they experienced a particular event. However, as the work of Breslau et al. (1999) reveals, people may experience the same event more than once (e.g., a person may be sexually abused or physically assaulted more than one time). To the extent that this is true, the effects of trauma on health in this study may be underestimated, and this distortion may become progressively larger with advancing age.

The fifth limitation involves cohort differences in response rates. As the data provided earlier reveal, the response rate was lowest among those in the oldest old cohort. As a result, respondents in this group may be less representative of their cohort than the young-old or old-old.

The sixth limitation has to do with the measure of chronic and acute health problems that was used in this study. Some investigators maintain that the conditions in these checklists should be weighted by severity (e.g., Wyler, Masuda, & Holmes, 1968). However, sufficient data were not available to use such weighting schemes in the present study. Researchers should consider using these procedures in the future.

The final limitation has to do with the nature of the models that were tested. The analyses provided above are very straightforward because they focus primarily on the direct effects of traumatic events on health. However, stress researchers have known for quite some time that people typically rely on a range of resources to

cope effectively with the adversity they encounter. For example, some older adults turn to family and friends for support (Krause, 2001), whereas others rely on religion (Pargament, 1997). None of these stress-buffering resources are examined in the present study, and, as a result, the relationship between trauma and health is likely to be more complex than the present findings indicate.

Regardless of these shortcomings, we hope the results from this study promote renewed interest in examining the relationship between traumatic events and physical health status in late life. Moreover, by isolating key points of greater vulnerability in the life course (e.g., ages 18–30) and by identifying cohorts that may be at elevated risk (i.e., the young-old), we hope the findings provide guidance and direction for those wishing to conduct further research in the field. These issues aside, perhaps the greatest contribution of the work presented here arises from the fact that it shows that much is lost when all older adults are treated as a single group for data analytic purposes.

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Call for Nominations

The Publications and Communications (P&C) Board has opened nominations for the editorships of ***Clinician's Research Digest, Emotion, JEP: Learning, Memory, and Cognition, Professional Psychology: Research and Practice,*** and ***Psychology, Public Policy, and Law*** for the years 2007–2012. Elizabeth M. Altmaier, PhD; Richard J. Davidson, PhD, and Klaus R. Scherer, PhD; Thomas O. Nelson, PhD; Mary Beth Kenkel, PhD; and Jane Goodman-Delahunty, PhD, respectively, are the incumbent editors.

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