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# Witnessing Violence Across the Life Course, Depressive Symptoms, and Alcohol Use Among Older Persons

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The purpose of this study is to see whether witnessing a very violent act at any point in the life course is associated with depressive symptoms and alcohol use in late life. The data come from a nationwide probability sample of older adults ( $N = 1,498$ ). The findings reveal that witnessing violence is associated with more symptoms of depression for older women but not older men. In contrast, seeing a violent act is associated with greater alcohol consumption for older men but not older women. The results further indicate that age at first exposure to a violent act is not consistently associated with current depression or alcohol intake, suggesting that people who see something violent happen at any time in life may be at risk. The implications of these findings for designing interventions to help those who witness violent acts are discussed.

**Keywords:** *violence; depression; alcohol*

Violence is a nationwide public health problem. In 2004, approximately 1.4 million violent crimes were reported to the Federal Bureau of Investigation's Uniform Crime Reporting Program (Federal Bureau of Investigation, 2005). According to a 2005 report from the World Health Organization, violence is defined as "the intentional use of physical force or power, threatened or actual, that either results in or has the high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation" (quoted in Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002, p. 5). Violence is a major concern because research consistently shows that being a victim of a violent act increases the risk of numerous mental health problems, including depression (Nadine et al., 2005), posttraumatic stress disorder (PTSD; Lipsky, Field, Caetano, & Larkin, 2005), and drug and alcohol abuse (Swanson, Holzer, Ganju, & Jono, 1990).

Although the effect of violence on the mental health of victims is clearly established, there is growing evidence that people who witness violent acts, but are not victims themselves, may also be at risk. For example, a study by Davies, DiLillo, and Martinez (2004) reveals that Latina children who have witnessed violence tend to have lower self-esteem, more symptoms of depression, and a greater risk of developing PTSD than Latina children who have not seen a violent act. These findings make sense because

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witnessing violence is widely recognized as a traumatic life event. Traumas are defined as events that are “spectacular, horrifying, and just deeply disturbing experiences” (Wheaton, 1994, p. 89). In fact, the American Psychiatric Association (1994) explicitly includes witnessing a violent act among the traumatic experiences that put a person at risk for developing PTSD.

Given the potentially deleterious effect of witnessing violence on health, it is imperative that public health practitioners devise interventions to help people who have been exposed to this type of stress (Berkowitz, 2003). Some interventions have already been developed for this purpose. For example, the Child Witness to Violence Project (Augustyn, Parker, Groves, & Zukerman, 1995) uses play-therapy techniques to help children who have seen violent acts.

Although helping children who have been exposed to violence is a vitally important goal, it is important to see whether people in other age groups are also at risk. Unfortunately, fundamental gaps in the literature limit the ability of public health practitioners to address this issue. The present study was designed to address three of these shortcomings. First, the wide majority of studies focus exclusively on children and younger adults. As a result, we do not know whether the potentially important influence of witnessing violence is evident in late life as well. This is important because older adults represent the fastest growing age group in the United States (Federal Interagency Forum on Aging Related Statistics, 2004). By focusing solely on younger people, researchers tend to reinforce a long-standing assumption about human development. In particular, this research creates the impression that the early formative years are the most important developmental period and that exposure to traumatic events during this time is likely to have the greatest lifelong consequences. This assumption is sometimes referred to as the principle of primacy (Kermis, 1986). However, if older adults are not included in study samples, then it is difficult to know whether the principle of primacy is valid because the proper identification of critical periods of vulnerability requires that researchers study participants who have traversed nearly all of the life course. Consequently, the first goal of this study is to see whether witnessing a very violent act is associated with psychological distress and alcohol use among people who are at least 65 years of age. We were unable to locate any studies that examine this issue. There is a fairly well-developed literature on the fear of crime in late life, but researchers have known for some time that older people may be fearful of crime even though they have not personally witnessed a criminal act (Ferraro & LaGrange, 1988). By identifying individuals who have been exposed to violence and pinpointing the age at first exposure, we hope to more fully evaluate the lifelong influence of this traumatic experience.

Second, a number of investigators have tried to see whether there are gender differences in the effects of witnessing violence, but the findings from this research are inconsistent. For example, Farrell and Bruce (1997) were unable to find significant gender differences, but several other studies indicate that young girls may be at greater risk (e.g., Jaycox et al., 2002). Our study aims to further contribute to the literature by assessing whether witnessing violence has a greater effect on older women or older men.

The third limitation is closely related to the second. A number of investigators argue that when women are exposed to stressful events they are more likely to become depressed, whereas men who have experienced stressful life events are more likely to turn to substance abuse (Aneshensel, Rutter, & Lachenbruch, 1991). This suggests that the effects of witnessing violence may be underestimated in samples comprising men and women if only one outcome, such as depression, is used. To obtain better estimates

of the impact of witnessing violence, researchers must use outcomes that capture the way both men and women express symptoms of distress. It is for this reason that depressive symptoms and alcohol use serve as the key outcome variables in the analyses presented below.

The discussion that follows is divided into three main sections. First, the theoretical underpinnings of the study are developed in greater detail. Following this, the study sample and measures are described. Finally, the results are presented and discussed.

## **WITNESSING OF VIOLENCE, DEPRESSIVE SYMPTOMS, AND ALCOHOL USE**

We develop the theoretical foundation of this study by first identifying the reasons why witnessing a violent act may be associated with more symptoms of depression and greater alcohol intake. The potentially important influence of gender is examined after this. Then a brief overview of the life course is provided in an effort to show why witnessing violent acts may be consequential at any age.

### **Linking Exposure to Violence With Depressive Symptoms and Alcohol Use**

Janoff-Bulman (1992) devised one of the more well-developed theoretical explanations of the psychological impact of traumatic life events. Her perspective begins with the simple observation that because the social world is incredibly complex, people must devise working models of it to predict what others will do and to guide their own plans and behavior. These working models contain fundamental assumptions about the world that anchor an individual's place in the wider social order and make it possible to understand and make sense of things that happen. Included among the assumptions identified by Janoff-Bulman are the beliefs that the world is benevolent, that the world is a meaningful and just place, and that the self is worthy. According to her conceptual framework, traumatic events shatter these closely held assumptions, thereby casting an individual into a deeply distressing and disorienting state. Without valid markers to guide social life, the victim is thrust into a world that is inexplicable, unpredictable, and threatening.

The first two assumptions identified by Janoff-Bulman (1992) seem especially relevant for the study of people who have witnessed a violent act. When a person sees an individual deliberately harm someone else, it is easy to understand why it would be difficult to view the world as a benevolent place. Perhaps more important, seeing an act of aggression is likely to boldly underscore a person's own vulnerability to similar misfortune, thereby fostering pervasive fear of unfamiliar people and strange places. Furthermore, when a person witnesses a violent act, it may be difficult to conclude that the world is a meaningful, just, and orderly place. Instead, the resulting sense of chaos, irrationality, and unpredictability may undermine a person's sense of optimism and threaten his or her feelings of personal control. This is important because considerable research links both optimism (Peterson & Seligman, 2004) and feelings of personal control (Ross & Sastry, 1999) with physical and mental health problems. In addition, the ensuing loss of meaning that may accompany exposure to trauma may be especially noteworthy because a small, but rapidly growing, literature suggests that loss of meaning in life is associated with greater physical (Krause, 2004) and mental health problems (Reker, 1997) among older adults.

## Gender Differences in the Effects of Witnessing Violence

It may initially appear that women are more vulnerable than men to the effects of witnessing violence. After all, widely documented gender differences in physical stature and muscle mass may initially appear to suggest that seeing a violent act should be more likely to make women feel that they would be unable to defend themselves if they were in a similar situation. Well-documented patterns of sex role socialization practices provide another reason why women may be at greater risk. As Beit-Hallahmi and Argyle (1997) pointed out in their review of the literature, boys are socialized to be competitive, aggressive, and independent, whereas girls are taught to be obedient, sociable, helpful, and nurturing of others. These socialization patterns speak directly to the kind of assumptive worlds that males and females are likely to create (Janoff-Bulman, 1992). Taken at face value, violence may be less of a shock for those who have assumptive worlds based on competition and aggression than people whose assumptive worlds are built on notions of sociability and helpfulness. These factors may help explain why some, but not all, investigators report that young girls are at greater risk than young boys.

Even though it may seem that sex role socialization practices should make women more vulnerable to witnessing violence than men, the issue becomes more complicated when additional facets of the sex role socialization process are taken into account. As discussed above, research by Aneshensel et al. (1991) suggests that women who experience stressful life events are more likely to become depressed, whereas men who are exposed to stress are more likely to become involved in substance abuse. If both outcomes are not investigated in the same study, then it becomes more difficult to know whether women are really more vulnerable than men to the effects of witnessing a very violent act. Although a number of factors may explain why men and women react to stressors in different ways, sex role socialization practices may have something to do with it. More specifically, Rosenfeld (1999) argued that the emphasis on caring for others may be especially problematic in this respect for females. She maintains that "identifying strongly with others' interests also predisposes individuals to feelings of helplessness and hopelessness that characterize depressive reactions" (Rosenfeld, 1999, p. 216). To the extent that this is true, it becomes fairly easy to see why exposure to violence may prey on and accentuate underlying feelings of helplessness in women, thereby promoting the onset of depressive symptoms. In contrast, Rosenfeld showed how sex role socialization practices may lead to entirely different manifestations of distress among males, stating,

A strong sense of separateness from others and their interests and feelings allows one to act against them more easily. Coupled with a sense of entitlement and control, this distance enables individuals to blame others for difficulties. Such projective types of defenses characterize externalizing behaviors. (p. 216)

Given the relatively lax social sanctions involving alcohol use among men, it is not surprising to see why the deleterious effects of exposure to violence may become manifest in this type of externalized behavior.

## Age at Exposure to Violence, Depressive Symptoms, and Alcohol Use

Consistent with the developmental themes discussed above, this study takes a sweeping, life course view of the effects of exposure to violence. In particular, we ask

about witnessing violence at any point in life and then conduct a set of analyses to see whether the relationship between witnessing violence and the study outcomes is greater at some ages than at others. As discussed earlier, some investigators maintain that individuals who witness violence when they are children may be especially at risk, but as we argue below, a similar case can be made for a number of other ages as well. This is accomplished by briefly reviewing key developmental challenges that arise in the following theoretically meaningful age groups: 5 years of age or younger, 6 to 11 years of age, 12 to 17 years, 18 to 30 years, 31 to 64 years, and age 65 years and older. The essence of our argument is that people face key developmental challenges at all ages, and exposure to violence may impede a person's ability to meet these challenges successfully. And when developmental challenges are not resolved successfully, people may report experiencing more symptoms of depression and consume more alcohol in late life. It should be emphasized at the outset that there do not appear to be any studies in the literature that examine the effects of witnessing violence at each stage in the life course that we discuss. However, to justify examining the relationship between age at exposure to violence and the study outcomes, it is important to at least speculate on how witnessing a violent act may create problems at any point in the life course.

Those who were exposed to violence at age 5 years or younger may be at risk because, as Freud maintained, successful adult development is largely contingent on the resolution of key issues that emerge during this time, including the development of trust, self-regulation, and sex role identification (see Goldhaber, 2000, for a review of Freud's developmental perspective). Seeing a violent act may interfere with the resolution of these developmental tasks, thereby creating lifelong problems.

Ages 6 through 11 represent the early school years prior to puberty, during which the scope of social life expands dramatically. Witnessing a violent act during these ages may, therefore, hinder a child's ability to assume an array of new roles and a host of new responsibilities.

Ages 12 to 17 years encompass the emergence of puberty. Adolescents also wrestle with forming key identities at this time. The pervasive physical and psychological changes that occur at this point in the life course may be complicated greatly by witnessing a violent act.

Ages 18 through 30 constitute the young adult years. During this period, people take on a number of major responsibilities, such as launching a career and starting a family. Age 30 is important because, as William James argued some time ago, psychosocial development may cease at this point. More specifically, he maintained 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). If James (1892/1961) is correct, then witnessing violence should have a greater effect if it occurs before the adult character is firmly established by age 30.

Ages 31 to 64 years roughly constitute midlife. This is a time when social engagement is typically at its height and contributions to self and society are often at a zenith. Witnessing violence at this point in the life course may effectively cut people down in their prime, thereby interfering with their ability to reach their full potential.

Finally, witnessing violence at age 65 years or beyond may be especially disturbing because it may interfere with vitally important developmental tasks that involve meaning making. Erikson's (1959) classic treatise on human development helps to show why this may be so. According to this perspective, the life span is divided into eight stages. Each stage poses a unique developmental challenge. The final stage, which arises in late life, is characterized by the crisis of integrity versus despair. This is a time of deep introspection when a person attempts to accept the kind of person he or she has become over the years. This is accomplished by reconciling what one set out to do in life and what

has actually been accomplished. If this crisis is resolved successfully, elderly people are thought to derive a deep sense of meaning in life. But if it is not resolved successfully, then they are likely to slip into despair. Trauma arising at this critical juncture may cast a negative pall on these life reflections and present undeniable evidence that things have not turned out as they should have.

## METHOD

### Sample

The data for this study come from a nationwide longitudinal survey that was conducted by Krause (1994). When the baseline interviews were conducted, the study population was defined as all household residents who were noninstitutionalized, English speaking, at least 65 years of age, and retired (i.e., not working for pay). The study population was restricted to eligible persons residing within the coterminous United States (i.e., residents of Alaska and Hawaii were excluded).

The sampling frame consisted of all eligible individuals contained in the Center for Medicare and Medicaid (CMS) beneficiary list. This database contains the name, gender, race, and address of every person in the United States who has a Social Security number, whether they are currently receiving benefits or not. As a result, some individuals, such as undocumented aliens, are not included in the CMS database.

Three waves of interviews were conducted between 1992 and 1999. A total of 1,103 older respondents were interviewed successfully in 1992 and 1993. The response rate was 69.1%. Then, 605 of these study participants were reinterviewed in 1997 and 1998. A third round of interviews was carried out in 1998 and 1999 ( $N = 520$ ).

A fourth wave of interviews was conducted in 2002 and 2003. However, the sampling strategy was complex. Two groups of study participants were interviewed at this point. The first consisted of older people who participated in Waves 1 through 3 ( $N = 269$ ). This group was supplemented with a sample of older adults who had not been interviewed previously. The CMS files were once again used as a sampling frame for identifying elders in the supplemental sample. Altogether, the Wave 4 sample consisted of 1,518 older adults (see Krause, 2004, for a detailed discussion of the sample in this wave of interviews). The overall response rate for the Wave 4 sample was 54%.

The data in the analyses presented below come from the Wave 4 survey because this was the first time that questions on witnessing violence were administered. A series of analyses are performed in this study that involve several different outcomes. As a result, the sample size fluctuates from 249 to 1,498 cases. Table 1 contains descriptive data for the sample taken as a whole as well as descriptive data for the original sample (i.e., older adults who participated in Waves 1 to 4) and the supplemental sample (i.e., older people who participated for the first time in the Wave 4 survey). These descriptive data, as well as the substantive analyses that follow, are based on data that have been weighted. These weights were designed so that the data in the current study match the age, sex, education, and race in the most recent census.

### Measures

*Witnessing Violence.* The participants in this study were asked whether the following event had ever happened at any time in their lives: "Not counting television or the

Table 1. Descriptive Data for Full Study Sample and Subsamples

Variable	Full Sample <sup>a</sup>		Original Sample <sup>b</sup>		Supplementary Sample <sup>c</sup>	
	% or Mean	Standard Deviation	% or Mean	Standard Deviation	% or Mean	Standard Deviation
Age	74.752	7.401	80.139	3.775	73.773	7.477
Gender <sup>d</sup>	0.411%	0.492%	0.337%	0.474%	0.425%	0.494%
Education	12.001	3.292	12.298	3.479	11.947	3.255
Marital status <sup>d</sup>	0.564%	0.496%	0.436%	0.497%	0.587%	0.492%
Witnessed violence <sup>d</sup>	0.177%	0.381%	0.186%	0.389%	0.175%	0.380%
Depressed affect	5.473	2.453	5.273	2.078	5.510	2.515
Somatic symptoms	6.184	2.780	6.041	2.545	6.210	2.821
Alcohol use	9.585	32.383	8.361	22.016	9.807	33.929
Age at first exposure to violence	28.826	15.711	29.316	18.820	28.731	15.083

a. Sample size ranges from 249 to 1,498.

b. Older people who participated in Waves 1 to 4. Sample size ranged from 40 to 230.

c. Older people who participated for the first time in Wave 4. Sample size ranged from 209 to 1,267.

d. The following variables are percentages: gender, marital status, and witnessed violence. All the rest are means.

movies, have you ever seen something very violent happen to someone or seen someone get killed?" This item, which was taken from the work of Wheaton, Roszell, and Hall (1997), was modified in the following manner. With the advance of technology, people are increasingly exposed to violence through the media. For example, the nightly news frequently broadcasts graphic stories of violent acts that have happened to real people. However, we suspect that seeing a violent act in the media does not have the same effect as witnessing violence in person. As a result, a clause was added to the question stem to help ensure that study participants are thinking only of violence they witnessed firsthand. A simple binary measure was created from responses to this question whereby a score of 1 denotes those who had witnessed violence and a score of 0 was given to those who had not seen violence at any time in their lives. As shown in Table 1, 17.7% ( $n = 262$ ) of the older people in this study had witnessed a violent act at some point in their lifetime.

*Age at First Exposure to Violence.* If a respondent indicated that he or she had witnessed a violent act, he or she was asked to report the age at which this first happened. The exact age at exposure is used in the analyses presented below. No effort was made to validate the data on age at exposure to violence by using procedures such as a life event history calendar.

*Depressive Symptoms.* Symptoms of depression were evaluated with 8 items from the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). A confirmatory factor analysis (not shown here) was conducted with the data in the current study. The findings reveal that these indicators assess two dimensions of depression. Two separate depression outcomes were created based on these findings. These outcomes were computed by simply summing raw scores on the items that were identified in each

factor. The first outcome reflects a depressed affect and is assessed with the following indicators: "I could not shake off the blues, even with the help of my family and friends," "I felt depressed," "I had crying spells," and "I felt sad." The internal consistency reliability estimate for this brief composite is .870. The second depression outcome captures physiological manifestations of depression: "I did not feel like eating, my appetite was poor," "I felt everything I did was an effort," "My sleep was restless," and "I could not get going." The reliability estimate for the composite that assesses somatic symptoms of depression is .785. A high score on the depressed-affect and somatic symptom measures represents greater depressive symptomatology.

It may not be evident why it was necessary to create separate scales assessing depressed-affect and somatic symptoms. The reason has to do with the way depressive symptoms are expressed in late life. As Wells and Strickland (1982) demonstrated, responses to somatic symptom items (e.g., appetite problems) may not necessarily measure symptoms of psychological distress. Instead, these investigators show that somatic symptom items may also capture legitimate physical health problems or reflect the fact that people are taking medication. This is an especially important concern with older people because they are more likely to have physical health problems and they are more likely to be taking medications than younger individuals (U.S. Department of Health and Human Services, 2004). Therefore, to get a preliminary sense of whether witnessing violence is associated with depressive symptoms per se, we felt that it would be helpful to see whether it is related to depressed-affect scores separately because these scores are less likely to be contaminated by physical health problems and medication use.

*Alcohol Use.* Three questions were used to determine the amount of alcohol that was consumed by a study participant in the month prior to the survey. The first asked respondents whether they ever consume alcoholic beverages. If they do, they were asked two follow-up questions: "During the past month, on how many days did you drink beer, wine or liquor?" and "On the days that you drink, how many cans of beer, glasses of wine, or drinks of liquor do you usually have?" A measure of the total number of alcoholic drinks consumed in the previous month was created based on responses to these questions. As reported in Table 1, the older people in this study report that they consumed an average of 9.6 drinks in the past month ( $SD = 32.4$ ). These simple descriptive data may create the mistaken impression that the relatively low level of alcohol consumption in this study is not a public health concern. However, researchers have known for decades that older adults do not tolerate alcohol as well as younger people, and as a result, the effects of smaller amounts of alcohol may, nevertheless, be consequential in late life (Graham, 1986). This is because of a number of factors, including physiological changes associated with aging, chronic illness, and the interaction of alcohol with medications (Mukamal et al., 2004).

*Gender.* Gender was assessed with a binary variable that contrasts older men (scored 1) with older women (scored 0).

*Demographic Control Variables.* The relationships between witnessing violence, gender, depressive symptoms, and alcohol use were evaluated after the effects of age, education, and marital status were controlled statistically. Age was coded continuously in years, and education represents the total number of years of schooling that were completed successfully. In contrast, marital status is evaluated with a binary variable that contrasts older study participants who were married at the Wave 4 survey (scored 1) with all others (scored 0).

## RESULTS

The findings from this study are presented below in five sections. The relationships among witnessing violence, gender, depressed-affect scores, and somatic symptoms are examined first. Following this, findings from the analyses that assess witnessing violence, gender, and alcohol use are presented. Then, analyses that were designed to evaluate the influence of age at exposure are presented. Next, a set of supplementary analyses are provided that have not been discussed up to this point. The goal of the supplementary analyses is to provide additional contextual data that help round out our understanding of the relationship between gender and witnessing violence. Ordinary least squares (OLS) multiple-regression procedures are used for all but the supplemental analyses. Finally, as the discussion of the sampling procedures reveals, some respondents in this study were survivors from earlier waves of interviews (i.e., Waves 1 to 3), whereas others were interviewed for the first time at Wave 4. It is, therefore, important to see whether the older people in the initial sample differ significantly from older adults who participated for the first time at Wave 4. The last section is devoted to exploring this issue. All analyses in this study were conducted with the SPSS statistical software program (Version 14).

### Witnessing Violence, Gender, and Depressive Symptoms

According to the theoretical rationale that was devised for this study, there may be differences in the way that older men and women respond to seeing a violent act. Stated in more technical terms, this specification calls for a test of a statistical interaction effect between witnessing violence and gender on depressed-affect scores and somatic symptoms. This hypothesis was evaluated with hierarchical OLS regression procedures. Our use of the term "hierarchical" should not be confused with hierarchical linear models that are used to analyze multilevel data. Instead, we follow conventional use of the term "hierarchical" in the social and behavioral sciences. In the first step of our hierarchical analyses, depressed-affect and somatic-symptom scores were regressed on witnessing violence, gender, and the demographic control variables (Model 1). A multiplicative term was created by multiplying gender by the indicator assessing exposure to violence. This cross-product term was added to the equation in the second step to test for the proposed statistical interaction effect (Model 2). It should be emphasized that these analyses focus on exposure to violence at any point in the life course on current levels of depressed-affect and somatic symptoms.

If the regression coefficient associated with the multiplicative term is statistically significant, then it is important to determine how gender differences in response to witnessing violence are manifest. This is accomplished by performing some calculations using formulas provided by Aiken and West (1991). Cast within the context of this study, these calculations yield two unstandardized regression coefficients. The first represents the relationship between witnessing violence and depressive symptoms for older women, whereas the second depicts the association between witnessing violence and symptoms of depression for older men. An additional formula provided by Aiken and West provides *t* tests that indicate whether the slopes for older women and older men differ significantly from zero. Confidence intervals (CIs) may be computed at this point as well. Following this, standardized regression coefficients may also be derived.

The data from the hierarchical OLS analyses are provided in Table 2. The findings in the first column of Table 2 (see Model 1) reveal that witnessing violence earlier in

Table 2. Witnessing Violence and Depressive Symptoms ( $N = 1,485$ )

Independent Variables	Depressed Affect		Somatic Symptoms	
	Model 1	Model 2	Model 1	Model 2
Age	-.064** (-0.021)	-.058* (-0.019)	.011 (0.004)	.020 (0.007)
Gender	-.143*** (-0.713)	-.149*** (-0.743)	-.135*** (-0.761)	-.144*** (-0.811)
Education	-.120*** (-0.089)	-.121*** (-0.090)	-.150*** (-0.126)	-.151*** (-0.128)
Marital status	-.165*** (-0.816)	-.160*** (-0.793)	-.085** (-0.475)	-.078** (-0.438)
Witness violence	.063* (0.402)	.092** (0.632)	.079** (0.578)	.131*** (0.954)
Gender $\times$ Witness Violence	—	—	—	—
Multiple $R^2$	.075	.077	.058	.063

NOTE: Standardized regression coefficients are shown in the first row, and metric (unstandardized) regression coefficients in the second row within parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

life is associated with higher depressed-affect scores in late life ( $\beta = .063$ ;  $b = 0.402$ ;  $p < .05$ ). Although they are not shown in the tables, CIs are reported throughout the text for all substantive results. The lower 95% CI for the relationship between witnessing violence and depressed-affect scores is 0.066, and the upper confidence interval is 0.738. Witnessing violence also appears to be associated with somatic symptoms of depression ( $\beta = .079$ ;  $b = 0.578$ ;  $p < 0.01$ ; CI = 0.193, 0.962). However, in both instances, the size of the relationship is fairly modest. The data in columns 2 and 4 show why this may be so. More specifically, the findings indicate that there is a significant interaction effect between witnessing violence and gender on both depressed-affect scores ( $b = -0.766$ ;  $p < .05$ ; CI =  $-1.511, -0.021$ ) and somatic symptoms of depression ( $b = -1.246$ ;  $p < .01$ ; CI =  $-2.101, -0.391$ ; unstandardized regression estimates are discussed when presenting findings involving multiplicative terms because standardized estimates are not meaningful in this context).

The additional calculations recommended by Aiken and West (1991; not shown in Table 2) reveal that witnessing a violent act earlier in life is associated with greater depressed-affect scores for older women ( $\beta = .148$ ;  $b = 0.948$ ;  $p < .01$ ; CI = 0.321, 1.575), but not older men ( $\beta = .028$ ;  $b = 0.182$ ;  $ns$ ; lower CI =  $-0.210, 0.574$ ). The same is true with respect to somatic symptoms of depression. When older women witness a violent act earlier in life, they are likely to report more somatic symptoms of depression in late life ( $\beta = .202$ ;  $b = 1.469$ ;  $p < .001$ ; CI = 0.748, 2.190), whereas witnessing violence does not appear to affect older men in this way ( $\beta = .031$ ;  $b = 0.223$ ;  $ns$ ; CI =  $-0.232, 0.677$ ).

Taken as a whole, these findings initially appear to suggest that witnessing a violent act may be more consequential for older women than for older men. However, as the data in the next section will reveal, this conclusion is premature.

Table 3. Witnessing Violence and Alcohol Consumption ( $N = 1,498$ )

Independent Variables	Model 1	Model 2
Age	-.045 (-0.199)	-0.054* (-0.237)
Gender	.130*** (8.542)	.139*** (9.116)
Education	.097*** (0.954)	.099*** (0.971)
Marital status	-.001 (-0.035)	-0.007 (-0.488)
Witness violence	.074** (6.304)	.021 (1.798)
Gender $\times$ Witness Violence	—	—
Multiple $R^2$	.047	(14.946)** .052

NOTE: Standardized regression coefficients are shown in the first row, and metric (unstandardized) regression coefficients in the second row within parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

### Witnessing Violence, Gender, and Alcohol Use

The results for the tests of the relationship between seeing a violent act and alcohol use are provided in Table 3. Two important findings emerge from these data. First, the results indicate that witnessing a violent act earlier in life is associated with greater consumption of alcohol in the sample taken as a whole ( $\beta = .074$ ;  $b = 6.304$ ;  $p < .01$ ;  $CI = 1.808, 10.799$ ). But more important, the results further reveal that there is a statistically significant interaction effect between witnessing violence and gender on alcohol use ( $b = 14.946$ ;  $p < .01$ ;  $CI = 4.987, 24.904$ ). The calculations recommended by Aiken and West (1991; not shown in Table 3) indicate that witnessing violence earlier in life is not significantly associated with current alcohol consumption among older women ( $\beta = -.051$ ;  $b = -4.348$ ;  $ns$ ;  $CI = -12.737, 4.041$ ). But in contrast, older men who have witnessed a violent act at any point in their lifetime are likely to consume more alcohol in old age ( $\beta = .125$ ;  $b = 10.598$ ;  $p < .001$ ;  $CI = 5.282, 15.914$ ). Unstandardized regression coefficients are typically not meaningful in social and behavioral science research because the indicators used to estimate them are not measured at the ratio level. However, alcohol consumption is a ratio measure. As a result, the metric regression estimates provide meaningful information. The difference between the unstandardized regression estimates for older men and older women reveals that older men who witness a violent act at any point in the life course tend to consume 14.946 more drinks per month than older women who have witnessed a violent act ( $10.598 - -4.348 = 14.946$ ). When coupled with the findings provided in the previous section, these results show why it is important to include measures that reflect the way both older men and older women express symptoms of distress.

### Age at Exposure to Violence, Depressive Symptoms, and Alcohol Consumption

The final substantive goal of this study is to see whether the age at first exposure to a violent act is a critical factor. This was accomplished by regressing depressed-affect

Table 4. Age at Exposure to Violence, Depressive Symptoms, and Alcohol Consumption Among Those Who Witnessed Violence ( $N = 249$ )

Independent Variables	Depressed Affect		Somatic Symptoms		Alcohol Use	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	-.029 (-0.010)	-.025 (-0.008)	.085 (0.035)	.088 (0.036)	-.009 (-0.089)	-.010 (-0.099)
Gender	-.267*** (-1.473)	-.273*** (-1.511)	-.309*** (-2.065)	-.314*** (-2.097)	.139* (22.159)	.141* (22.451)
Education	-.202*** (-0.148)	-.199*** (-0.145)	-.281*** (-0.248)	-.279*** (-0.247)	.128* (2.696)	.127* (2.679)
Marital status	-.135* (-0.668)	-.133* (-0.659)	-.002 (-0.010)	-.001 (-0.002)	-.010 (-1.397)	-.010 (-1.469)
Age at exposure	-.147** (-0.021)	-.138* (-0.020)	-.094 (-0.016)	-.088 (-0.015)	.007 (0.027)	.004 (0.017)
Gender $\times$ Witness Violence	—	— (0.013)	—	— (0.010)	—	— (-0.097)
Multiple $R^2$	.167	.169	.176	.176	.034	.034

NOTE: Standardized regression coefficients are shown in the first row, and metric (unstandardized) regression coefficients in the second row within parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

scores, somatic symptoms, and alcohol use on the age when a violent act was first witnessed. The demographic control variables were included in these analyses as well. Because significant gender differences emerged in the findings presented up to this point, tests were also performed for interaction effects between gender and age at exposure to violence on the study outcomes. This final set of analyses (see Table 4) contains only those who witnessed a violent act, and as a result, the sample size ( $N = 249$ ) is relatively small.

The data in the first column of Table 4 indicate that the younger a person was when he or she first saw a violent act, then the more likely he or she is to have elevated depressed-affect scores in late life ( $\beta = -.147$ ;  $b = -0.021$ ;  $p < .01$ ;  $CI = -0.038, -0.004$ ). But in contrast, age at first exposure to violence is not significantly associated with either somatic symptoms of depression ( $\beta = -.094$ ;  $b = -0.016$ ;  $ns$ ;  $CI = -0.037, 0.004$ ) or alcohol intake ( $\beta = .007$ ;  $b = 0.027$ ;  $ns$ ;  $CI = -0.497, 0.552$ ) in late life. In addition, statistically significant interaction effects between gender and age at first exposure to violence fail to emerge when either depressed-affect scores ( $b = 0.013$ ;  $ns$ ;  $CI = -0.024, 0.049$ ), somatic symptoms ( $b = 0.010$ ;  $ns$ ;  $CI = -0.033, 0.054$ ), or alcohol consumption (see column 6;  $b = -0.097$ ;  $ns$ ;  $CI = -1.229, 1.035$ ) serve as the outcome measure.

The analyses presented so far deal solely with the linear effect of age at first exposure to violence. But if exposure to a violent act is more consequential at a particular point in the life course (e.g., ages 12 to 17) than at other times, then a different kind of analysis is called for. More specifically, there may be a nonlinear relationship between age at exposure to violence and distress. OLS regression models were estimated to evaluate this possibility (not shown in Table 4). A quadratic term was computed by squaring the age when a person first saw a violent act. This quadratic term was then entered as a second step in the model described above. No statistically significant nonlinear effects were observed with any of the study outcomes.

Taken together, nine sets of analyses were performed to evaluate the relationship between age at first seeing a violent act and the study outcomes. Statistically significant findings emerged only once, when depressed-affect scores served as the dependent variable. Viewed broadly, these results do not provide overwhelming evidence that exposure to violence at a specific time in the life course is especially consequential for old people. However, it is important to reflect carefully on what these data show. The data do not test, for example, whether witnessing violence is associated with depression in childhood. Instead, they assess whether the age when a violent act is first seen carries on into late life and is associated with depressive symptoms and alcohol use when people are much older.

### Supplementary Analysis

To embed the findings that have emerged up to this point in a wider context, it would be helpful to see whether older men or older women are more likely to witness a violent act in the first place. This issue was addressed in the following manner. First, a binary outcome variable was created by assigning a score of 1 to all study participants who witnessed a violent act at any time in life and a score of 0 to those who had not seen anything violent happen to someone else. Then, using logistic regression, this binary outcome was regressed on age, gender, education, and marital status.

The findings from the logistic regression analysis (not shown here) reveal that older men are far more likely than older women to have seen a violent act at some point in their life ( $b = 1.905$ ;  $p < .001$ ; odds ratio [OR] = 6.722; CI = 4.823, 9.369). The fit of this model to the data is given by the following  $-2$  log likelihood value: 1210.496. When coupled with the results in the previous sections, these data suggest that even though older men are much more likely than older women to witness a violent act, seeing something violent happen to another person is nevertheless associated with either depressive symptoms or alcohol for both older men and older women.

### Exploring the Effects of the Sampling Design

Three sets of analyses were performed to see whether the composition of the study sample influenced the results reported above. The first involved the effects of sample attrition among older people who participated in the Wave 1 to 3 interviews. It is possible that members of this sample who participated in Wave 4 differ significantly from older adults who were in the Wave 1 survey but dropped out by the time the Wave 4 interviews were conducted. This was accomplished by creating a binary variable whereby a score of 1 denotes Wave 1 to 3 elders who participated in Wave 4 and a score of 0 denotes older people who participated in Wave 1 but dropped out in either Waves 2, 3, or 4. Using logistic regression, this binary outcome was regressed on the following Wave 1 study measures: age, sex, education, marital status, depressed-affect scores, somatic symptoms, and alcohol use. The results (not shown here) reveal that participants who remained in the study were more likely to be younger ( $b = -0.114$ ;  $p < .001$ ; OR = 0.892; CI = 0.866, 0.918), women ( $b = -0.647$ ;  $p < .001$ ; OR = 0.523; CI = 0.373, 0.735), and more highly educated ( $b = 0.070$ ;  $p < .01$ ; OR = 1.073; CI = 1.023, 1.125). In addition, the attrition analyses further indicate that study participants with lower somatic-symptom scores were slightly more likely to participate in the Wave 4 survey ( $b = -0.082$ ;  $p < .05$ ; OR = 0.921; CI = 0.849, 1.000). However, significant differences failed to emerge with respect to marital status, depressed-affect scores, or alcohol use. The fit of this model to the data is given by the following  $-2$  log likelihood value: 1045.393.

The second set of analyses was designed to see whether the relationship between witnessing violence and the study outcomes depends on whether an older adult was a member of the old sample (i.e., people who participated in Waves 1 to 4) or the new supplemental sample (i.e., individuals who participated for the first time in Wave 4). This was accomplished by creating a multiplicative term that was formed by multiplying whether an older person witnessed a violent act by whether he or she was a member of the old or new study samples. Then each study outcome was regressed on this interaction term as well as age, sex, education, marital status, witnessing violence, and a binary variable reflecting whether participants came from the old or new samples. The data failed to provide any evidence that the sampling procedures biased the estimates provided earlier. More specifically, the unstandardized regression coefficient associated with the multiplicative term for each study outcome is as follows: Depressed-affect scores ( $b = -0.275$ ;  $p = .530$ ;  $CI = -1.134, 0.584$ ); somatic symptoms ( $b = 0.048$ ;  $p = .924$ ;  $CI = -0.935, 1.031$ ); alcohol use ( $b = -0.054$ ;  $p = .993$ ;  $CI = -11.567, 11.460$ ).

Interactions involving gender and witnessing violence figure prominently in the main findings reported above. Therefore, a series of three-way interaction effects between sample membership, gender, and witnessing violence on the study outcomes were evaluated to see whether membership in the old or new samples influenced these study findings as well. Tests for these three-way interactions (not shown here) failed to provide any evidence that sample membership had adverse effects on the main findings from the current study.

## DISCUSSION

In her thought-provoking book, Weingarten (2003) refers to witnessing violence as “common shock.” She deliberately chose the word “common” to emphasize the fact that this experience is widespread. The data in the current study suggest that this is so. Nearly 1 out of 5 older adults report that at some point in their lifetime, they saw something very violent occur to another individual. But instead of merely documenting the extent of exposure to violence, our intent has been to show that this pressing national problem is also a public health concern. Our findings reveal that older people who see a violent act are more likely to experience symptoms of depression, and they are likely to consume more alcohol than older adults who have not witnessed a violent act. These findings are noteworthy because this appears to be the first time that the relationship between witnessing a violent act, depressive symptoms, and alcohol consumption has been evaluated with data provided by a nationwide sample of older people.

Our analyses further indicate that the relationship between witnessing violence and health-related outcomes is more complicated than it may seem initially. Other investigators have argued that females are more vulnerable to the effects of seeing violence than males, but this is not what our data show. Instead, our findings suggest that when older people witness a violent act, women are likely to report experiencing more symptoms of depression than are men, whereas men are likely to indicate they consume more alcohol than women do. So witnessing violence is not more uniformly associated with the study outcomes for older men and older women; instead, they may simply react to violence in different ways. These results are important because they underscore that it is important to consider the way in which psychological distress is manifest among older men and women. If depressive symptoms had been used as the only study outcome, we would have erroneously concluded that witnessing violence is more of a concern for older women than older men.

The fact that the average age of exposure was 28.8 years provides compelling evidence for why it is important to take a life course perspective. The youngest person in our study was 65 years at the time of the interview. This means that on average, exposure to violence occurred nearly 40 years prior to the survey, yet witnessing violent acts, nevertheless, appears to be related to the study outcomes decades later in old age. Viewed in a more general way, this suggests that social life is a seamless whole, and things that happen in the more distant past may reverberate across the life course, leaving traces that are evident nearly half a century later. The bulk of research on stressful events focuses on problems that have arisen in the past year or so, but as our results indicate, it may be important to broaden the scope of inquiry to include things that have happened in the more distant past. It is for this reason that we hope the findings from this study speak to researchers as well as public health practitioners.

Although our work serves to underscore the utility of assuming a life course perspective, our study provides only a very limited test of this exciting framework. Clearly, many other events can occur during an older person's lifetime (e.g., the unexpected death of a child) that are also likely to be associated with his or her health and well-being. In addition, research indicates that the social and psychological resources needed to deal with these events are likely to ebb and flow over the life course as well. For example, research consistently shows that people with a strong sense of personal control tend to cope more effectively with stressful events than do individuals who believe that they are unable to influence the things that happen to them (see Krause, 2003, for a review of this research). Yet a compelling body of evidence indicates that feelings of personal control tend to decline at an accelerating rate with advancing age (e.g., Mirowsky, 1995). Taken as a whole, this literature points to the need for studies that examine the complex interplay between multiple events and change in core coping resources during the life course.

### **Implications for Practice**

The findings from this study have potentially important implications for the development of interventions to help older people who have been exposed to violence. Although our results should be replicated by other investigators, the findings suggest that treatment programs aimed at curbing alcohol use might best be targeted for older men who have seen a violent act, whereas interventions that focus on alleviating depressive symptoms might be more appropriate for older women who have seen a violent act.

Because violence may be witnessed at any age, we also wanted to see whether exposure to this type of trauma was more consequential at some points in the life course than others. This kind of information is useful because it helps bring an intervention target group into sharper focus. So, for example, if witnessing violence during childhood is more likely to lead to distress in adult life, then scarce resources would best be spent on people who are exposed to violence at a young age. However, the findings from our study did not provide overwhelming support for the notion that there are especially critical points in the life course. Instead, age differences in the effects of exposure to violence failed to emerge with two of the three outcomes we evaluated. This suggests that public health practitioners may need to consider helping all who have seen violence, regardless of the age of first exposure.

### **Limitations**

The current study has explored areas that have not been examined frequently by other investigators. As with any incursion into a new area of inquiry, there are ways

to improve on what we have done. Five shortcomings in this study are discussed briefly below.

The data on exposure to violence comes from the respondent's own self-reports. There is tremendous controversy about the validity of retrospective reports of lifetime trauma. Some investigators maintain that these self-reports are seriously flawed (e.g., Maughan & Rutter, 1997), but others disagree. For example, Berstein and his colleagues (1994) noted that fears regarding self-reports are greatly exaggerated and that "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" (p. 1136). It is obviously not possible to address this issue with our data. The only way to conclusively resolve this problem is to carry out prospective studies that literally span the entire life course. However, such an undertaking would be massively expensive.

The second limitation is closely related to the first. The respondents in this study were asked to report two specific pieces of information: They were asked whether they had witnessed a violent act, and they were asked to report the age when this first happened. This raises the possibility that an older person might accurately report that he or she had witnessed a violent act but fail to provide correct information about how old he or she was when it first happened. There do not appear to be any studies in the literature that assess the extent of this problem, but it should be kept in mind as the findings from this study are reviewed.

The third shortcoming also involves the way information on witnessing violence was obtained. Respondents were only asked about the first time they saw something very violent happen to someone else. However, as research by Breslau, Chilcoat, Kessler, and Davis (1999) reveals, people may experience the same traumatic event more than once. In fact, their findings suggest that multiple exposure to the same trauma increases the risk of mental health problems significantly beyond one-time exposure to a traumatic event. It is likely that some people in our study may have seen more than one episode of violence in their lifetime. To the extent that this is true, the effects of trauma that are reported above are likely to be underestimated.

The fourth limitation in this study arises from the fact that the data were gathered at a single point in time. We, therefore, assumed that exposure to violence subsequently creates greater difficulty with depression and alcohol use. However, this may not necessarily be true, especially with respect to alcohol use. Research reveals that the median age for the first use of alcohol is 14 years (Warren et al., 1997). Because the average age at exposure to violence is 28.8 years, it may therefore appear that drinking increases exposure to violence. There are, however, two issues that must be taken into account when evaluating this competing explanation. First, not all studies in the field support the notion that drinking increases the odds of seeing a violent act. For example, Sullivan, Kung, and Farrell (2004) conducted a longitudinal study of witnessing violence and substance abuse among 1,282 adolescents. They conclude, "Witnessing violence predicted subsequent initiation of cigarette, beer and wine, liquor, and advanced alcohol use" (Sullivan et al., 2004, p. 488). Second, our study participants were asked about the *first* time that they witnessed a violent act. Because the typical older adult first saw a violent act at an average age of 28.8 years, it is not clear why nearly 15 years passed between the median onset of drinking and first exposure to violence. This seems like an unusually long causal lag and suggests that other causal mechanisms may be at work. Even so, we cannot rule out the possibility that older people who already had problems with alcohol or depression are subsequently more likely to witness violent acts. Only carefully executed longitudinal studies can properly address this important issue.

Fifth, other potential confounding factors were not taken into consideration in our study. For example, people who witnessed a violent act may have also been a victim of a violent act themselves at some earlier point in time. If this is true, then the relationships reported in the current study between witnessing violence, depressive symptoms, and alcohol use may be biased.

Although there are limitations in the work we have done, we hope that these shortcomings do not diminish the larger message from this study. C. W. Mills (1959), a classic social theorist, argued that one of the chief aims of research should be to link public issues and private troubles. Violence is widespread in American society, and as a result, it is one of the leading public issues of our time. By linking this public issue with the private psychological troubles of older people, we hope that the findings from our study show yet another way in which public health research can rise to the challenge that Mills proposed nearly half a century ago.

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