

Exposure to Physical Violence During Childhood, Aging, and Health

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Objectives: The purpose of this study is to estimate the relationship between exposure to physical violence administered by one's parents and adult health. In the process, the authors also examine factors that mediate and moderate this association. **Methods:** Hypothesized relationships were tested using ordinary least squares regression analyses with data collected from a nationwide sample of adults aged 25 to 74 in 1995. **Results:** The data suggest that exposure to childhood physical violence is associated with diminished mental and physical health in adulthood. These associations do not vary by respondent's age. Furthermore, the long-term effects of childhood physical violence are largely mediated by psychosocial resources. **Discussion:** These results support the idea that the effects of childhood trauma may persist into later life. Therefore, in studying the antecedents of current health problems among adults, it may be necessary to consider the influence of events that have occurred throughout the entire life course.

Within the study of psychosocial stress, the examination of traumatic events and their consequences is undergoing a period of remarkable growth (Wheaton, 1999). Despite this increased effort, however, the long-term health effects of traumatic events remain unclear. The

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purpose of this study is to examine the extent to which one type of trauma encountered during childhood—exposure to physical violence at the hands of one's parents—affects health and well-being at different stages throughout the adult life span, including late life. In addition, important psychosocial processes are tested as potential intervening mechanisms for these effects.

The following discussion is divided into three main sections. First, trauma is defined and discussed, and the theoretical rationale for its proposed long-term effects is outlined. Following this, the sample and measures are introduced. Finally, the empirical findings are presented and discussed.

Childhood Trauma and Health in Later Life

Generally speaking, traumatic events can be distinguished from other types of stressors by their heightened magnitude and relative abnormality. Accordingly, the American Psychiatric Association (1987) defined traumatic events as incidents that are “outside the range of usual human experience” and are of such serious magnitude that they can be expected to be “markedly distressing to almost anyone.” Norris (1990) further refined this conceptual definition by referring to traumatic events as those that involve “violent encounters with nature, technology, or humankind.”

Within this general definition, particular forms of trauma can be further distinguished. For instance, Wheaton (1996) suggested that traumatic life experiences can range from sudden events (e.g., parental loss and natural disasters) to events that are more chronic in nature (e.g., repeated physical and sexual abuse and war combat). Traumatic events can also be characterized by their scope of influence. For instance, certain traumatic events, such as war or natural disasters, affect entire groups of people simultaneously and thus can be considered macro-level traumas. Other forms of trauma, such as exposure to physical violence or parental loss, primarily affect individuals in isolation and thus can be thought of as micro-level traumas.

Because it would be difficult to examine sudden and chronic as well as macro-level and micro-level trauma in a single study, this study

focuses on only one type of potentially chronic and micro-level trauma—exposure to acts of physical violence administered by one's parents. This particular form of micro-level trauma is assessed because of its relative lack of coverage in the aging literature and its expected importance as a predictor of adult health. As Kessler and Magee (1994) recognized, most research in the area of childhood trauma has focused on the effects of parental loss. Others (Everett & Gallop, 2001) have found that there is far more research on childhood sexual abuse than childhood physical violence. Unfortunately, this relative lack of attention to the effects of childhood violence belies its potential importance with regard to adult health. Indeed, some investigators suggest that the effects of exposure to physical violence on adult well-being may be stronger than the effects of other more frequently studied traumas such as parental loss (Bryer, Nelson, Miller, & Krol, 1987). Moreover, in a recently studied community sample of close to 10,000 individuals, more than 26% reported having been victims of childhood physical violence, whereas only approximately 8% reported having experienced childhood sexual abuse (MacMillan et al., 1997). As a result of this widespread occurrence of childhood physical violence, its potential societal-level effect on adult health could be substantial.

To provide a more detailed review of the potential long-term virulence associated with exposure to childhood physical violence from one's parents, three themes are developed. First, literature suggesting that exposure to trauma during childhood may be especially harmful is reviewed. Next, the possibility that the negative effects of childhood trauma carry over into early old age is examined. Finally, the extent to which childhood trauma may affect physical as well as mental health is discussed. Throughout this discussion, potential intervening mechanisms involving interpersonal relationships and personal control beliefs are proposed.

TRAUMA DURING CHILDHOOD

To date, much of the research in the area of traumatic stress has focused specifically on events that arise during childhood. Although trauma can arise at any point in the life cycle (Janoff-Bulman, 1992),

many investigators believe that exposure to trauma during childhood may be especially harmful. The importance of events that occur in childhood is suggested both by the work of Brown and Harris (1978) on early parental loss and Bowlby's (1980) research on attachment theory.

According to Brown and Harris (1978), early childhood is an exceptionally salient developmental period. In particular, they argued that during early life, a child's parents are often the primary source for learning effective ways of exercising personal control. This is important because a strong sense of control helps people to anticipate potentially stressful experiences or conditions, take preventive steps to avoid them, and confront and deal with the adversity that does occur (Ross, Mirowsky, & Goldstein, 1990). Consequently, the lessons learned during this early period of interaction between parents and children may have lasting effects on one's ability to handle adversity.

Bowlby (1980) also considered childhood a particularly important and vulnerable developmental stage. According to him, childhood is an important period for determining the nature of one's social relationships later in life. Specifically, he maintained that a child's relationship with his or her parents serves as a prototype for the development of social ties in adult years. Parent-child relationships that are intimate and caring tend to foster a sense of trust and security that facilitates the development of interpersonal closeness throughout the life course (for a recent review of this perspective, also see Reis & Patrick, 1996). Therefore, children may be particularly vulnerable to traumatic events, especially those of an interpersonal nature such as exposure to physical violence from one's parents because they could have lasting effects on one's ability to form and maintain meaningful and supportive social relationships throughout life.

EFFECTS OF CHILDHOOD TRAUMA IN LATE LIFE

In studying the consequences of childhood trauma in general and childhood physical violence specifically, much of the current research has focused on immediate or short-term effects of exposure to violence on childhood behavior and psychosocial adjustment (e.g., Conaway & Hansen, 1989; Lamphear, 1985). Recently, however, investigators have become increasingly interested in the potential

long-term consequences of childhood exposure to traumatic events. For example, a recent study among upper-level high school students (mean age = 18.3) suggests that those exposed to childhood trauma prior to age 16, including family violence, were more likely to become depressed when exposed to recent stress than students who were not exposed to childhood trauma (Hammen, Henry, & Daley, 2000). Similar results have been found among young and middle-aged adults. Specifically, Breslau and others (Breslau, Chilcoat, Kessler, & Davis, 1999) found increased vulnerability to post-traumatic stress disorder among adults age 18 to 45 who had experienced trauma in childhood. The effects of childhood trauma on a variety of psychiatric disorders among persons age 15 to 54 have also been reported (Kessler, Davis, & Kendler, 1997). And finally, among adults age 25 and older (mean age = 56.1), Felitti and colleagues (1998) found that exposure to childhood trauma was associated with health risk behaviors and diseases in a graded, or dose-response, fashion, such that the actual extent to which one was exposed to childhood trauma was related to adult health status.

Despite this growing appreciation for the long-term consequences of childhood trauma, most of these studies have not included older adults or have failed to test for age differences in the effects of early trauma (e.g., Felitti et al., 1998). Consequently, it is currently not clear whether the effects of childhood physical violence extend into late life as well. For instance, it might appear that psychosocial wounds resulting from childhood physical violence may eventually heal for most people with the passage of time. However, further consideration suggests that the effects of early trauma may be more complex than this. On the one hand, developmental tasks in late life (e.g., the life review) may serve to cushion the long-term effects of early physical violence. In contrast, the psychosocial impairments resulting from childhood physical violence may create new challenges throughout the life course, therefore exerting a life-long deleterious effect on health and well-being. Finally, cohort factors may be at work as well. Each of these possibilities is elaborated on in the following.

Life review and healing with time. As some people grow older, they may learn to reconcile or overcome the negative effects of their early trauma by reaching an understanding of the experiences they have had

and perhaps even forgiving the perpetrator of their traumatic experience. According to Erikson (1959), during older adulthood, and especially in the final stage of life, some elders consciously strive to evaluate, integrate, and make sense of the experiences they have encountered over the course of their lives. Butler and Lewis (1982) described this process as a life review in which people attempt to revive and resolve old conflicts and reconcile problematic interpersonal relationships. To the extent that this process of life review helps older adults make peace with problems from the distant past, the effects of childhood trauma might be expected to wane in later life. It is uncertain, however, whether all older adults engage in a life review (Merriam, 1993) or how effective such an activity is in eradicating long-developing psychosocial processes and their related health problems.

Impaired resources. As described earlier, Brown and Harris (1978) and Bowlby (1980) suggested that trauma during childhood threatens to disrupt key processes involved in developing a sense of control and supportive social relationships. As individuals advance through life, these damaged resources may serve to create new life conditions that are not conducive to further psychosocial development, thus perpetuating these deficiencies. Essentially, initial impairments in coping resources may promote new adaptive failures that in turn may further erode a person's ability to deal effectively with the challenges they face.

Some insight into this process is provided by the work of Harris, Brown, and Bifulco (1990). They presented a model showing that a lack of caring environment in childhood increases the probability of encountering adverse environmental experiences in adult life. Krause (1993) extended these findings into later life by showing that childhood trauma (parental loss) is associated with lower educational attainment and consequently, financial problems and diminished feelings of personal control among persons age 65 and older.

A review of studies by Malinosky-Rummell and Hansen (1993) suggests that exposure to childhood physical violence may also have long-lasting negative effects on one's intimate social relationships. Also, research by McLeod (1991) showed that the traumatic loss of a parent during childhood may begin a chain of events that results in life

conditions that disturb the formation and maintenance of intimate relationships and thereby promote the development of poor mental health. Still more evidence for the lasting effects on social relationships resulting from childhood trauma comes from Kessler and Magee (1994), who showed that the propensity for engaging in negative interaction with family and friends during adulthood may be a lasting consequence of having experienced physical violence as a child.

It is important to consider how these deficiencies in psychosocial resources might be particularly harmful as one faces the challenges of aging. Specifically, as people grow older, they may become more vulnerable to the negative effects of deficiencies in psychosocial resources resulting from their childhood trauma. This idea follows from the general life course model of aging presented by Baltes and Smith (1999). These scholars essentially described a process of aging whereby a decline in biological potential during later life is accompanied by an increase in the need to utilize personal and environmental resources, such as personal control and social support, to maintain high levels of functioning.

This suggests, for instance, that although a sense of personal control predicts well-being throughout the life course, it may be especially important as one navigates the aging process. It is for this reason that a sense of control is included among the primary contributors to successful aging (Rowe & Kahn, 1998). Similarly, although social activity in general seems to decline in later life, many believe that close and intimate relationships become increasingly important sources of well-being during this time (Carstensen, 1991). It follows then that deficiencies in personal control and the ability to form and maintain close relationships may become especially apparent and devastating as one grows older and is forced to become more reliant on them. If this is true, then the effects of childhood trauma may be particularly evident in later life.

Cohort differences regarding corporal punishment. Finally, age-related variations in the health effects related to physical violence in childhood may be due to a cohort effect arising from differences in the ways in which our society has viewed the use of physical force as a form of discipline by parents. The current cohort of older adults was raised during a time when attitudes toward corporal punishment were

more widely accepted. This shift in attitudes is perhaps most evident in pediatric research. Over the course of the past century, the pediatric literature has progressed from viewing corporal punishment as normative and morally sanctioned to viewing it as abusive and condemning it (Evans & Fargason, 1998). Because the physical violence that older cohorts may have been subject to was relatively normative at the time, the long-term psychosocial and health effects may be less severe for these individuals as compared to younger cohorts.

On the other hand, when members of the current cohort of older adults were youths, fewer social safety nets were in place to stop physical violence in the family should it arise or help victims cope with its effects. It was not until the 1960s that significant legislation was enacted that protected children and focused on their rights (Forehand & McKinney, 1993). To the extent that these cohort differences are authentic, the health-eroding processes initiated by childhood physical violence may be more pronounced among older cohorts.

*PHYSICAL AND MENTAL HEALTH
CONSEQUENCES OF CHILDHOOD TRAUMA*

Most studies focusing on childhood trauma have been limited to examining the mental health outcomes of traumatic events, such as posttraumatic stress disorder and depression (Breslau et al., 1999; Kessler & Magee, 1994). A great deal more might be learned by also studying the effect of childhood trauma on physical health status. Childhood physical violence is likely to affect physical health in adulthood because personal control and social support, the key intervening mechanisms discussed earlier, are also strongly related to physical health (Bandura, 1995; House, Landis, & Umberson, 1988; Seeman, 2000). Although the physical effect of early trauma is likely to be apparent immediately, it is also possible that the ongoing distress created by the loss of control and support may continue to erode health over time (McEwen, 1998). Unfortunately, most of the studies that have attempted to link physical health with early trauma have used samples recruited from clinics and health maintenance organizations (HMOs) or focus solely on the effects of sexual abuse (Golding, 1994; Walker et al., 1999; but see Schnurr, Spiro, Aldwin, & Stukel, 1998). Consequently, it is important to estimate the association between early

trauma and later physical health status with a more representative sample.

Taken as a whole, the theoretical rationale developed for this study leads to the following research questions:

Research Question 1: Is exposure to physical violence during childhood associated with diminished mental and physical health status in adulthood?

Research Question 2: Do the effects of childhood physical violence on adult health vary across current age groups?

Research Question 3: Are the potentially damaging health effects of childhood physical violence accounted for by diminished feelings of personal control and poor interpersonal relationships?

Method

SAMPLE

The data for this study come from the National Survey of Midlife Development in the United States (MIDUS), 1995-1996 (Brim et al., 1996). Participants are a nationally representative random-digit-dial sample of noninstitutionalized, English-speaking adults, aged 25 to 74, and residing in the coterminous United States. Older adults and men were oversampled. The data were collected via an initial telephone interview and a follow-up mailed questionnaire, both of which were completed in 1995. A total of 3,127 participants provided data. Of these, 2,788 had complete data on childhood physical violence and therefore serve as the base sample. It should be noted, however, that the analyses that follow use listwise deletion of missing values to deal with item nonresponse. Consequently, the sample size ranges from 2,509 to 2,752. The estimated response rate for MIDUS is 60.8% (Brim et al., 1996).

Approximately 55.8% of the sample is female, and 79.8% is White. The average age of participants was 44.62 ($SD = 13.41$). Almost one half (48.7%) of participants reported having pursued a formal education beyond high school, and 13.1% reported not having graduated from high school or attained a GED (graduate equivalency diploma).

These descriptive statistics as well as the findings presented in the following are based on weighted data.

MEASURES

Childhood physical violence. Exposure to childhood physical violence from one's parents was measured with two items from the mailed questionnaire. The first item focused on violence from one's mother: "During your childhood, how often did your mother, or the woman who raised you (do any of the following)?" A list of violent acts included "kicked, bit, or hit you with a fist; hit or tried to hit you with something; beat you up; choked you; and burned or scalded you." This same item was then repeated with reference to the respondent's biological or surrogate father. Each of these items was scored on a 4-point Likert scale that included *never* (1), *rarely* (2), *sometimes* (3), and *often* (4). The responses to the mother-focused and father-focused items were summed to create a single score of parental violence frequency, with higher scores indicating more frequent exposure to violence.

Approximately 10.8% of respondents were excluded from the study because they failed to respond to at least one of the items or reported not having both a mother figure and a father figure in their lives while growing up. Although this loss of respondents reduces the study's generalizability, it may be the best approach given the alternatives. In particular, by including respondents with just one parent as well as those with two, the number of parents is confounded with the frequency of exposure to violence. This is important because research indicates that the loss of a parent in and of itself may have adverse effects on well-being (e.g., Krause, 1998). Alternatively, one might control for differences in number of parents by dividing total violence scores by the number of parents present. However, averaging the scores of two-parent families may mask a violent situation. For example, if one parent was frequently violent (scored 4), and the other parent was never violent (scored 1), the average score would be 2.5. This average score would suggest that a respondent was slightly more than rarely exposed to violence. However, as this example suggests, this conclusion is inaccurate, especially given that there is little conclusive

evidence that support from one parent successfully offsets the effects of violence from another parent. Consequently, scores from respondents with data from just one parent and scores obtained by averaging the scores of two parents are not comparable. Based on this rationale, the analyses presented here focus only on those cases where information on violence from both parents was provided. Of those respondents meeting these inclusion criteria, 24.0% reported having experienced at least some physical violence from a parent or parents during childhood.

Psychological well-being. Current depressive symptomatology was used as an indicator of psychological health. Respondents reported how often during the past 30 days they felt each of six different depressive symptoms, including “so sad that nothing could cheer you up,” “nervous,” “restless or fidgety,” “hopeless,” “that everything was an effort,” and “worthless.” Responses to each of these items were scored on a 5-point Likert scale ranging from *none of the time* (1) to *all of the time* (5). A total score was computed by summing responses to each of the items. Thus, higher scores indicate more depressive symptoms. The internal consistency reliability estimate for this scale is .87.

Physical health status. A count of 31 chronic health problems was used as a measure of physical health status. Respondents reported whether they had experienced or been treated for any of 29 chronic conditions (e.g., asthma, arthritis, thyroid disease, urinary problems, hypertension, and diabetes) in the past 12 months and whether they had ever had heart trouble or cancer. Approximately 77.3% of respondents reported having had at least 1 of the 31 conditions, and the average number of conditions across all respondents was 2.68 ($SD = 2.86$).

Personal control beliefs. In the theoretical rationale described earlier, personal control was identified as a possible mediator of the relationship between childhood physical violence and adult health. A sense of personal control was measured using five items from Pearlin and Schooler’s (1978) Mastery Scale plus three additional items. Respondents were asked to indicate their agreement with the following statements: “I have little control over things that happen to me,”

“There is really no way I can solve the problems I have,” “I sometimes feel I am being pushed around in my life,” “There is little I can do to change the important things in my life,” “I often feel helpless in dealing with the problems of life,” “Other people determine most of what I can and cannot do,” “What happens in my life is beyond my control,” and “There are many things that interfere with what I want to do.” Responses to each item were scored on a 7-point scale ranging from *agree strongly* (1) to *disagree strongly* (7). An index was constructed by adding together the scores for all eight items. Higher scores reflect a greater sense of personal control. The internal consistency reliability estimate for this scale is .85.

Emotional support. It is also important to determine the extent to which problems with social relationships result from exposure to childhood physical violence. In the current study, emotional support from family members and friends at the time of the survey serves as a key indicator of the quality of one’s social relationships. Four items were used to measure emotional support received from one’s family and were then repeated to assess emotional support received from one’s friends. Respondents were asked: “How much do members of your family (not including your spouse or partner)/friends really care about you?”; “How much do they understand the way you feel about things?”; “How much can you rely on them for help if you have a serious problem?”; and “How much can you open up to them if you need to talk about your worries?” Each item was scored on a 4-point scale ranging from *not at all* (1) to *a lot* (4), and scales were constructed for both family support and friend support by summing scores for each item. Therefore, higher scores indicate more emotional support received. The internal consistency reliability estimates for the family and friend support scales are .83 and .89, respectively.

Negative interaction. In addition to the amount of support received from family and friends, another gauge of the quality of one’s social relationships is the amount of negative interaction one encounters (Rook, 1984). Again, this type of social relationship was measured separately with reference to one’s family and friends. Four items were used to create each of two scales measuring negative interaction with

family and negative interaction with friends. These items read “How often do members of your family (not including your spouse or partner)/friends make too many demands on you?”; “How often do they criticize you?”; “How often do they let you down when you are counting on them?”; and “How often do they get on your nerves?” Each item was scored on a 4-point scale ranging from *never* (1) to *often* (4), and the two scales were formed by summing the four applicable items. Thus, higher scores indicate more negative interaction. The internal consistency reliability estimates for the family negative interaction and friend negative interaction scales are both .79.

Age. Age is scored continuously in years.

Demographic control measures. The relationships between childhood physical violence, physical and mental health, personal control, social relationships, and age are estimated after the effects of sex and education are controlled statistically. Sex is represented as a binary measure (1 = male, 0 = female). The education measure reflects the highest grade or year of schooling completed and is coded with a 12-point ordinal scale in the following manner: 1 = no school or some grade school, 2 = eighth grade or junior high school, 3 = some high school, 4 = GED, 5 = graduated high school, 6 = 1 to 2 years of college (no degree), 7 = 3+ years of college (no degree), 8 = graduated from 2-year college, 9 = graduated from 4-year college, 10 = some graduate school, 11 = master’s degree, and 12 = doctoral or other professional degree.

DATA ANALYSIS STRATEGY

The analyses for this study proceed in five stages. The purpose of the first stage is to examine the nature of differences between those respondents who were included in the main analyses and those who were excluded (11%) due to insufficient violence data. This analysis is carried out in two ways. First, a binary variable representing inclusion or exclusion from the main analyses based on the criteria of having complete data for both parents is created (1 = included, 0 = excluded). Then, using logistic regression, this variable is regressed on basic

demographic factors and the study's major health outcomes. In addition, levels of exposure to violence are compared between respondents included in the main analyses and the subgroup of excluded respondents who only reported violence data for one parent. This analysis is done by computing a per-parent violence score for respondents with data on both parents and comparing this with the violence scores of respondents with single parents using a *t* test.

In the next stage of analysis, the major demographic predictors of exposure to childhood physical violence are identified. This is done by using ordinary least squares (OLS) multiple regression to regress the measure of childhood physical violence on basic demographic variables, including sex, age, race, and education.

The third stage of analysis corresponds to Research Question 1 and involves estimating the association between childhood physical violence and both physical and mental health. The following OLS regression equation is used to test for these effects:

$$CH = a + b_1CPV + b_2Age + b_3Sex + b_4Education + b_5Race.$$

In this equation, *CH* represents the dependent variable and refers to current health (i.e., psychological and physical health). *CPV* stands for childhood physical violence. Separate models using psychological and physical health as dependent variables are tested. In addition, *a* is the intercept, and the *b_i* are regression coefficients.

To determine which specific types of physical conditions are particularly affected by exposure to physical violence early in life, some additional analyses are performed at this stage. In particular, using four separate logistic regression models similar to Equation 1, the effects of childhood physical violence on a select few of the most serious individual chronic conditions—heart conditions, cancer, high blood pressure, and diabetes mellitus—are tested. Here, the dependent variable is a binary variable representing the presence (1) or absence (0) of the particular chronic condition.

In the next stage of analyses, an interaction term (*CPV* × *Age*) is entered into Equation 1. The purpose of including this term is to estimate the degree to which the effects of childhood physical violence on current health vary at different ages. Following the recommendations of Aiken and West (1991), when the interaction models are estimated, the independent variables are centered on their means.

Finally, in the fifth stage of analyses, the variables representing personal control and social relationships are entered into the equation. The purpose of this stage of analyses is to determine the degree to which these constructs account for or explain the main effect of childhood physical violence on current health status. If social and personal resources are important mediators of the relationship between early violence and current health, the effects of childhood physical violence (b_1) should decline when these variables are added to the model.

Results

Corresponding to the five stages of analyses described earlier, the findings from this study are presented in five sections. First, differences between respondents who were included and excluded from the main analyses are examined. Next, predictors of exposure to childhood physical violence are identified. Following this, the associations between childhood physical violence and both adult psychological and physical health are estimated. Next, the extent to which these associations vary at different ages of adulthood is examined. Finally, the degree to which psychosocial resources account for the association between childhood physical violence and adult health is tested.

INCLUDED VERSUS EXCLUDED RESPONDENTS

Findings from the logistic regression analysis evaluating differences between respondents included and excluded from the main analyses reveal that respondents that were included in the analysis were more likely to be male ($b = .377, p < .01$), White ($b = 1.009, p < .001$), more educated ($b = .066, p < .05$), and younger ($b = -.024, p < .001$) than respondents who were excluded. Included and excluded respondents did not differ significantly in terms of depressive symptoms or chronic conditions. In addition, the mean level of per-parent exposure to physical violence among respondents who were included in the analyses did not differ significantly from the mean level of physical violence for respondents who reported data on just one parent (tables containing the results of these analyses are available on request from the first-listed author).

*PREDICTORS OF EXPOSURE TO CHILDHOOD
PHYSICAL VIOLENCE*

Findings from the regression analysis conducted to identify predictors of childhood physical violence show that exposure to childhood physical violence is modestly associated with gender, education, and race (tables containing the results of these analyses are available on request from the first-listed author). Specifically, exposure to physical violence from parents during childhood is associated with being male ($\beta = .087, p < .001$), non-White ($\beta = -.039, p < .05$), and having completed less education ($\beta = -.052, p < .01$).

CHILDHOOD PHYSICAL VIOLENCE AND ADULT HEALTH

The associations between exposure to childhood physical violence from one's parents and adult health are shown in Tables 1 and 2. Specifically, as shown in column A of Table 1, more frequent physical violence from one's parents during childhood is associated with elevated levels of depressive symptoms during adulthood ($\beta = .138, p < .001$). Likewise, as shown in column A of Table 2, more frequent exposure to childhood physical violence is associated with the presence of more chronic conditions in adulthood ($\beta = .126, p < .001$). In further analyses, the results from separate logistic regression models (not shown here) suggest that in addition to being associated with adulthood chronic conditions in general, exposure to physical violence early in life is also associated with the presence of heart trouble specifically among adults ($b = .125, p < .05$). This makes sense given the notable association between psychological stress and heart disease (von Kaenel, Mills, Fainman, & Dimsdale, 2001). However, exposure to childhood physical violence with parents does not seem to be significantly associated with having had cancer, high blood pressure, or diabetes among adults (tables containing the results of these supplementary analyses are available on request from the first-listed author).

CHILDHOOD PHYSICAL VIOLENCE, ADULT HEALTH, AND AGE

The potential modifying effects of age on the association between childhood violence and adult health were tested with the multi-

Table 1
Regression of Depressive Symptoms on Childhood Physical Violence, Age, and Psychosocial Resources

Predictor	Column A	Column B	Column C
Sex (male)	-.121 ^a *** (-.958) ^b	-.122*** (-.965)	-.065*** (-.503)
Race (White)	-.004 (-.004)	.000 (.005)	.022 (.230)
Education	-.102*** (-.165)	-.102*** (-.166)	-.032 (-.051)
Age	-.121*** (-.004)	-.123*** (-.036)	-.128*** (-.038)
Childhood physical violence (CPV)	.138*** (.495)	.137*** (.491)	.039* (.139)
CPV × Age		— (-.001) ^c	—
Personal control			-.423*** (-.164)
Family emotional support			-.083*** (-.130)
Friend emotional support			-.006 (-.010)
Family negative interaction			.105 *** (.162)
Friend negative interaction			.036 (.067)
<i>N</i>	2,709	2,709	2,509
<i>R</i> ²	.056	.057	.291

a. Standardized regression coefficient.

b. Unstandardized regression coefficient.

c. Unstandardized coefficients are reported when focusing on the multiplicative terms because standardized estimates are meaningless in this context.

p* < .05. **p* < .001.

plicative term formed by multiplying exposure to violence by age (CPV × Age). The findings from this model specification appear in column B of Tables 1 and 2. In both models, the multiplicative term is nonsignificant, indicating that the associations between childhood physical violence and both adult psychological and physical health do not vary across the adult life span. Typically, nonsignificant findings are of little interest in psychosocial research. However, this is not the case in the present study. More specifically, the nonsignificant results suggest that the effects of childhood physical violence may not dissipate with time and instead may be evident for decades.

PSYCHOSOCIAL MEDIATORS

As discussed earlier, in the final stage of analyses, the degree to which a set of adult psychosocial factors account for the association between childhood physical violence and adult health is estimated. Specifically, variables representing each respondent's current sense of

Table 2
*Regression of Chronic Conditions on Childhood Physical Violence, Age,
 and Psychosocial Resources*

Predictors	Column A	Column B	Column C
Sex (male)	-.139 ^a *** (-.801) ^b	-.138*** (-.799)	-.109*** (-.629)
Race (White)	.027 (.204)	.027 (.204)	.046* (.361)
Education	-.106*** (-.125)	-.106*** (-.125)	-.066** (-.079)
Age	.175*** (.037)	.175*** (.038)	.161*** (.035)
Childhood physical violence (CPV)	.126*** (.326)	.126*** (.326)	.072*** (.186)
CPV × Age		— (.009) ^c	—
Personal control			-.226*** (-.065)
Family emotional support			.016 (.019)
Friend emotional support			-.032 (-.033)
Family negative interaction			.084*** (.095)
Friend negative interaction			.009 (.012)
N	2,740	2,752	2,525
R ²	.083	.083	.144

a. Standardized regression coefficient.

b. Unstandardized regression coefficient.

c. Unstandardized coefficients are reported when focusing on the multiplicative terms because standardized estimates are meaningless in this context.

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

control, levels of emotional support from both family and friends, and amount of negative interaction with both family and friends are tested as mediators. A correlation matrix including these potential mediators as well as the other major study variables appears in Table 3.

As a first step in testing for mediation relationships, the associations between the psychosocial factors and childhood physical violence must be estimated. This approach is based on the recommendations of Baron and Kenny (1986), who showed that a potential mediator must be related to both the main independent variable (childhood physical violence) as well as the dependent variable. Consistent with this strategy, the control and social support measures were regressed on the demographic characteristics, childhood physical violence, and the multiplicative term Childhood Physical Violence × Age. The regression coefficients for these models appear in Table 4. As shown in the row labeled *Childhood Physical Violence*, each of the coefficients representing the association between childhood physical

Table 3
Correlation Matrix of Major Study Variables^a

	1	2	3	4	5	6	7	8	9
Childhood physical violence	1.00								
Age	-0.022 ^b	1.00							
Personal control	-0.143	-0.105	1.00						
Family emotional support	-0.217	0.113	0.236	1.00					
Friend emotional support	-0.143	0.028 ^b	0.249	0.377	1.00				
Family negative interaction	0.211	-0.165	-0.223	-0.411	-0.156	1.00			
Friend negative interaction	0.116	-0.116	-0.170	-0.156	-0.145	0.428	1.00		
Depressive symptoms	0.136	-0.113	-0.460	-0.261	-0.161	0.261	0.156	1.00	
Chronic conditions	0.115	0.203	-0.292	-0.060 ^c	-0.065	0.127	0.066	0.385	1.00

a. $p < .001$, unless otherwise noted.

b. Nonsignificant at $p = .05$.

c. $p < .01$.

violence and the psychosocial factors is statistically significant and in the expected direction. For example, exposure to childhood physical violence is associated with a lower sense of personal control in adulthood ($\beta = -.144, p < .001$), less emotional support from family members ($\beta = -.209, p < .001$) and friends ($\beta = -.124, p < .001$), and more negative interaction with both family members ($\beta = .216, p < .001$) and friends ($\beta = .110, p < .001$). Furthermore, these analyses show that with one slight exception (friend support), none of the statistical interactions between childhood physical violence and age are significant. This suggests that there are few consistent or systematic variations by age in the effects of childhood trauma on these resources. These findings support the theoretical rationale that exposure to childhood physical violence is associated with a deficient psychosocial profile throughout adulthood.

Next, the psychosocial factors are added to the base models that estimate associations between childhood physical violence and adult health. The relevant findings appear in column C of Tables 1 and 2. The findings in Table 1 show that a sense of personal control is

Table 4
Regression of Psychosocial Resources on Childhood Physical Violence and Age

<i>Predictors</i>	<i>Personal Control</i>		<i>Family Emotional Support</i>		<i>Friend Emotional Support</i>		<i>Family Negative Interaction</i>		<i>Friend Negative Interaction</i>	
Sex (male)	0.093*** ^a	(1.909) ^b	-0.045*	(-0.227)	-0.151***	(-0.830)	-0.137***	(-0.693)	0.035	(0.148)
Race (White)	0.032	(0.867)	0.032	(0.208)	0.065**	(0.468)	-0.045*	(-0.304)	-0.083***	(-0.463)
Education	0.174***	(0.732)	0.031	(0.032)	0.094***	(0.106)	-0.009	(-0.009)	0.036	(0.030)
Age	-0.091***	(-0.070)	0.105***	(0.020)	0.050**	(0.010)	-0.156***	(-0.029)	-0.124***	(-0.020)
Childhood physical violence (CPV)	-0.144***	(-1.313)	-0.209***	(-0.469)	-0.124***	(-0.306)	0.216***	(0.494)	0.110***	(0.209)
CPV × Age	—	(-0.004) ^c	—	(0.002)	—	(-0.001)*	—	(-0.001)	—	(0.005)
<i>N</i>	2,644		2,705		2,722		2,692		2,716	
<i>R</i> ²	.075		.062		.057		.092		.043	

a. Standardized regression coefficient.

b. Unstandardized regression coefficient.

c. Unstandardized coefficients are reported when focusing on the multiplicative terms because standardized estimates are meaningless in this context.

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

strongly associated with depressive symptoms. In particular, respondents who reported having a higher sense of control have fewer depressive symptoms ($\beta = -.423, p < .001$). Levels of emotional support from one's family ($\beta = -.083, p < .001$) and negative interaction with family ($\beta = .105, p < .001$) are also significantly associated with depressive symptoms. However, neither friend-based emotional support nor negative interaction with friends are significantly associated with depressive symptoms.

The combined mediating effects of these psychosocial variables can be assessed by observing how the effect of childhood physical violence on adult depressive symptoms changes when the psychosocial variables are added to the model. Comparing columns A and C of Table 1 shows that the effect of childhood physical violence declines by 72% when the psychosocial variables are added (from .138 to .039). Essentially, this means that together, the psychosocial variables explain almost three quarters of the association between childhood physical violence and adult psychological health.

This same procedure was also performed using the model for predicting chronic conditions, and the findings appear in column C of Table 2. Again, respondents' sense of personal control ($\beta = -.226, p < .001$) and amount of family-based negative interaction ($\beta = .084, p < .001$) are significantly associated with current chronic conditions in the expected direction. The other psychosocial variables are not independently associated with chronic conditions. Even so, sense of control and negative interaction with family members account for almost half (43%) of the association between childhood physical violence and adult physical health (from .126 to .072). Taken together, it appears that personal control and social relationships with one's family are the most important mediators of the associations between childhood physical violence and both adult mental and physical health.

Discussion

There are several reasons why the findings from this study are noteworthy. First, at the most basic level, this study shows that people exposed to early life trauma, such as physical violence from one's

parents, are more likely to have both psychological and physical health problems throughout adulthood. In particular, the effects of early trauma continue unabated into later life. Viewed broadly, the fact that the effects of childhood physical violence do not appear to diminish with age underscores the importance of assuming a life course perspective when studying the stress process.

Second, most studies to date have only concentrated on the mental health consequences of childhood trauma, with far fewer focusing on the extent to which physical health is also affected (for exceptions, see Felitti et al., 1998; Krause, 1998). The findings from the current study suggest that exposure to childhood physical violence is associated with both psychological and physical health. Clearly, however, childhood physical violence appears to be more tightly linked to mental than physical health problems. This may be related to differences in how mental and physical health problems develop and are manifest over time. As Kessler et al. (1997) showed, early violence in the home promotes early onset psychological disorder, and this in turn sets in motion a vicious cycle of recurring disorder over the life course. In contrast, the link between a stressor and physical health is likely to be less pronounced because physical health typically changes more slowly. For example, Ross and Wu (1996) argued that low socioeconomic status (which could be viewed as economic stress) affects physical health, but it literally takes decades for these effects to become manifest. Despite these differences, however, the basic findings from the current study provide important new evidence in support of the need to consider this type of childhood trauma in studying the life long development of both mental and physical health problems.

Finally, the results from this study are important because they provide some preliminary insight into factors that link early trauma with adult health and well-being. The current study finds that the effects of childhood physical violence on adult health are largely due to the persisting effects that this early trauma has on important psychosocial resources. A sense of personal control and social relationships with one's family seem to be particularly important mediators of the effects of childhood physical violence on adult health. More specifically, this study provides preliminary evidence that exposure to physical violence during childhood may lead to deficiencies in personal control

beliefs and substandard social relationships, especially with one's own family, that appear to last throughout the adult life span. Deficiencies in these psychosocial resources then lead to poor health outcomes throughout adulthood.

The findings from this study, if corroborated by others, have potentially far-reaching implications for improving the physical and mental health of older adults. Instead of only considering the effect that contemporaneous life events may have on the physical and mental health of the elderly, health care providers may need to cast a much broader net that literally encompasses the entire life course.

In evaluating the findings from this study, at least five limitations should be considered. First, data about experiences with physical violence during childhood were collected from adults at one point in time. Therefore, given the age range in our sample (25 to 74), some study participants are being asked to recall events that may have arisen up to a half century ago. This study design raises the possibility of two types of error in measuring childhood physical violence. First, simply due to the passage of time between childhood and adulthood, some adults may have trouble remembering events from their childhood. Indeed, some researchers have expressed concern about the accuracy of self-reported exposure to early life-traumatic events (Maughan & Rutter, 1997). However, there is mounting evidence that bias in recalling traumatic events may not be as great as some fear (e.g., Bernstein et al., 1994; Dill, Chu, Grob, & Eisen, 1991). In fact, after carefully reviewing the literature, Brewin, Andrews, and Gotlib (1993) concluded that claims about the unreliability of these retrospective reports are "exaggerated" (p. 82). This conclusion is based on studies focusing on the test-retest reliability of trauma reports, verification with official records, and corroboration of self-reports by immediate family members (e.g., siblings).

The second type of potential error resulting from this study design involves confounding between the study's health outcomes and reports of childhood physical violence (i.e., an instrument effect). In particular, one could argue that respondents' current health status may differentially influence how they respond to questions about their past exposure to violence. For example, depressed adults, in trying to account for their current emotional states, may tend to have

exaggerated memories of their childhood exposure to violence. Unfortunately, without three or more waves of data, it is not possible to disentangle the direction of effects between childhood physical violence and adult health.

Another limitation of this study involves the sample. As was mentioned previously, this study included only those respondents who reported having known both a mother figure and a father figure while growing up. It should be noted that this did not mean that respondents were required to have lived with both their mother and their father. Instead, all respondents were merely required to have had some type of relationship with their mother or any women who helped with child rearing and their father or any man who helped with child rearing. This requirement along with the requirement that respondents provide answers to both of the violence questions resulted in the exclusion of almost 11% of the original sample. Included respondents were more likely to be male, White, younger, and more educated than respondents excluded from the study. Therefore, the generalizability of this study is restricted only to groups of adults who fit this demographic profile and who were cared for during childhood by both a man and a woman.

Third, the study's findings regarding age effects are also limited due to the cross-sectional nature of the data. In particular, as noted earlier, all data for this study were collected at one point in time from adult respondents of various ages. Therefore, for example, conclusions about age modifying the effects of childhood physical violence on adult psychosocial resources and health have been made by evaluating across rather than within individuals. It is impossible with this type of study to distinguish between true age effects and those that are due to cohort or period differences across the sample. For this reason, caution should be used in applying findings from this data to the experiences of individuals as they progress through adulthood.

The fourth study limitation involves the measure we use for childhood physical violence. Because the index we created to represent physical violence from parents contains only two items, its reliability may be weak. Unfortunately, we have been unable to find any evidence of the reliability of this particular measure in the literature. For this reason, the consequences of using a measure with potentially low reliability should be considered.

And finally, the scope of the current study did not allow for the examination of other closely related and important research questions. For example, in addition to the major psychosocial factors included in the current study, investigators interested in pursuing this area in future work would be wise to explore other potential mediating processes of the association between childhood physical violence and adult health. For instance, people exposed to physical violence from their parents during childhood may be prone to developing poor marital relations and poor relations with their children when they reach adulthood, and this in turn could affect mental and physical health. In addition, the extent to which the long-term health effects of exposure to childhood physical violence vary across demographic subgroups, such as sex and race, should be explored.

Despite these limitations, this work has important implications for the study of aging and health. Specifically, the findings presented here suggest that the current well-being of adults, including the young-old, is likely to be influenced by a lifetime of prior exposures to adverse situations. Exposure to physical violence at the hands of one's parents during childhood seems to be one type of early exposure that is particularly harmful to health in later life. It is therefore important to continue work in determining the precise mechanisms behind these long-term effects and in doing so, find ways to help people avoid the negative consequences of early adversity. This is consistent with a life course approach to gerontological research, a need for which is becoming increasingly recognized (George, 1996).

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