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Childhood Abuse and Current Health Problems among Older Adults: The Mediating Role of Self-Efficacy

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Abstract

Objectives—Child abuse has negative consequences on health functioning and the self-concept. Prior studies have garnered support for these relationships in younger adults; yet few studies have looked at the effects of abuse on health in older adults and the psychosocial variables, specifically self-efficacy, that may influence the abuse-health relationship.

Methods—Data obtained from the *Physical Health and Disability Study* were used to explore the impact of child abuse on current medical problems among older adults who were screened on physical disability status ($N=1396$, Mean age = 67, $SD = 10.2$). The study was conducted in South Florida and employed a multiethnic sample that is representative of the general population in this area.

Results—Child abuse was associated with the number of current medical problems and disability. Child abuse was also related to lower self-efficacy, and self-efficacy explained the relationship between abuse and the number of health problems.

Conclusions—There are far reaching effects of child abuse on older adults' health and self-concept. Health care providers and gerontologists need to be aware that child abuse is a life-long risk factor for increased disability and specific health problems, especially among the elderly. Future research should examine treatments designed to increase self-efficacy, especially among those who experienced child abuse, and observe any positive effects on health functioning.

Keywords

Older adults; Child abuse; Health; and Self-efficacy

Child abuse has been shown to have negative consequences for one's overall health (Sachs-Ericsson, Blazer, Plant, & Arnow, 2005) and self-concept (Cheever & Hardin, 1999). However, the majority of studies examining the effects of child abuse have focused on adolescents and young adults. Only a handful of studies have suggested that the effects of

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abuse extend well into older adulthood. Moreover, the specific mechanisms by which abuse confers risk to health functioning have not been extensively investigated in older adults (Talbot, Chapman, Conwell, McCollum, Franus, Cotescu, & Duberstein, 2009). As noted in a meta-analytic review of the effects of childhood abuse on medical outcomes in younger populations, Wegman and Stetler (2009) conclude that childhood abuse is associated with risk for poor physical health in adulthood. However, they state that evidence about the specific mechanisms by which these effects occur is still emerging. The present study sought to elucidate the impact of child abuse on physical health in a population of adults (N=1396) aged 50 and over, an understudied population in relationship to the long term effects of childhood abuse. We also sought to examine the influence of self-efficacy on the abuse-health relationship. That is, we believe it is important that studies try to determine the psychological mechanism (e.g., mediators) by which abuse may exert its influence on health..

Child Abuse and Health Outcomes

A growing body of literature has established an association between childhood abuse and an array of negative health outcomes (Sachs-Ericsson, Blazer, Plant, & Arnow, 2005). In a meta-analytic review of 31 studies looking at the long-term effects of child abuse on physical health, Irish and colleagues (2009) found that individuals with a history of abuse reported more complaints on six health outcomes including general health, gastrointestinal health, gynecological health, pain, cardiopulmonary symptoms, and obesity. However, it is important to note that most of the studies looking at the abuse-health relationship focused on adolescents and young adults. Very few studies have examined these relationships among older adults.

There have also been some longitudinal studies supporting the association between abuse and negative health outcomes. But again, the studies were comprised mainly of children followed into young adulthood (Flaherty, Thompson, Litrownik, Theodore, English, Black, Wike, Whimper, Runyan, & Dubowitz, 2006; Romans, Belaise, Martin, Morris, & Raffi, 2002). For example, Hussey and colleagues (2006) found in a longitudinal sample that abuse as a child was related to a number of negative health outcomes and negative health behaviors including obesity, alcohol use, and marijuana and cigarette use in adolescence.

In another longitudinal study (Flaherty et al., 2006), children aged 4 and at high risk for abuse (N=1,041) were assessed for the child's exposure in their family to adverse events including physical abuse, sexual abuse, and psychological maltreatment, and 4 categories of household dysfunction. Child physical health at age 6 years was assessed. One adverse exposure almost doubled the risk of overall poor health, and 4 adverse exposures or more almost tripled the risk of illness requiring medical attention. Another longitudinal study (van Tilburg et al., 2010) of 845 children observed from the age of 4 through 12 years was conducted to investigate the association of childhood maltreatment to early development of gastrointestinal (GI) symptoms. Sexual abuse preceded or coincided with abdominal pain in 91% of cases. Psychological distress was found to partially mediate the relationship between abuse and GI problems.

Child Abuse and Older Adults

Those studies conducted on older adults have shown that the effects of childhood abuse are long lasting. For example, in a study of psychiatric patients aged 50 and over, childhood sexual abuse victims were at a greater risk for medical illness burden, poorer physical functioning, and greater bodily pain (Talbot et al., 2009). In a study of more than 21,000 older adults (aged ≥ 60) currently under the care of general practitioners, it was found that those who experienced both physical and sexual abuse were at a higher risk for poor

physical and mental health (Draper, Pfaff, Pirkis, Snowdon, Lautenschlager, Wilson, & Almeida, 2008). Sachs-Ericsson and colleagues (2010) found sexual abuse to predict internalizing disorders in older adults (Sachs-Ericsson, Gayman, Kendall-Tackett, Lloyd, Medley, Collins, Corsentino, & Sawyer, 2010). Draper and colleagues (2008) concluded that the effects of childhood abuse appear to last a lifetime. However, they suggest that research is required to improve understanding of the pathways that lead to such deleterious outcomes.

Child Abuse and Self-efficacy

Self-efficacy is a central component of Bandura's social learning theory. Self efficacy, is described as a person's beliefs about their capacity to exert control over their own functioning and over events that affect their lives (Bandura, 1994; Bandura, 1997). Self-efficacy, also referred to as self-mastery by Pearlin and Schooler (1978), is related to a number of aspects of self-concept including self-control, self-liking, self-perceived abilities and self-esteem (Tafarodi & Swann, 1995). Studies have shown that high levels of self-efficacy are associated with positive health outcomes (Clark & Dodge, 1999). Perceived self-efficacy has been shown to play a significant role in diverse forms of health behavior. Converging findings from several areas of research have shown health behaviors are partly mediated by perceived self-efficacy (O'Leary 1985).

Previous research has shown that exposure to certain life stressors, such as childhood abuse, can negatively impact social-psychological resources like self-efficacy (Cheever & Hardin, 1999) which, in turn, can increase vulnerability to risks that threaten health status (Clark & Dodge, 1999). Importantly, the range of individual differences in negative outcomes associated with stress implies that other factors such as self-efficacy may play a role in the relationship between child abuse and negative outcomes (Collishaw, Pickles, Messer, Rutter, Shearer, & Maughan, 2007; Rutter, 2007).

There is evidence of an association between indices of self-efficacy and childhood abuse such that abuse has been shown to negatively influence one's cognitions about the self (Sachs-Ericsson et al., 2006). Self-efficacy is grounded in the attachment relationship with the primary caregiver. According to attachment theory, the quality of this attachment provides the "safe-base" from which the child gains mastery experience. It has been hypothesized as the primary source of efficacy beliefs (Weinberg, Sroufe, Egeland, & Carlson, 1999). Children with secure attachments learn that they fulfill their needs through their own efforts. In contrast, when children are abused or neglected, and their attachments are insecure, they grow up believing that their efforts are ineffective or they lack personal control, and they must rely on others who may or may not meet their needs (Weinberg et al., 1999).

Family dysfunction can block young adults' opportunities for exploration and the development of mastery (Ryan, Solberg & Brown, 1996). The family may not model functional coping in general, and they may be excessively negative and discouraging. This can impact self-efficacy (Ryan, Solberg & Brown, 1996). In contrast, family support was related to stronger self-efficacy beliefs among young Latinos, and self-efficacy was related to stronger persistence of intentions and had an indirect association with better health (Torres & Solberg, 2001).

However, to our knowledge, no study has explored the association between childhood abuse and self-efficacy in older adults; though personal control has been show to be associated with the relationship between abuse and health (Irving & Ferraro 2006). In the current cross-section study, we believe that it would be useful to understand if self-efficacy would impart explain the relationship between abuse and health. Thus hopefully, in the future in

conducting more costly and time consuming longitudinal research it would be instrumental to have identified psychological processes that may explain how abuse affects health

Relationship between self-efficacy and health

Beliefs about the self can influence one's health and health related behaviors. Studies looking at specific health problems and related behaviors have yielded support for the role of self-efficacy as a protective factor (Clark & Dodge, 1999). Self-efficacy can make a difference in adaptation to illness and disability (Marks, 2001; Shifren, Park, Bennett, & Morrell, 1999). Specifically, older patients who performed poorly on cognitive tasks also reported low self-efficacy, more pain, and poorer mental health than patients who performed well on cognitive tasks. Self-efficacy is also related to recovery from orthopedic surgery (Orbell, Johnston, Rowley, Davey, & Espley, 2001; Waldrop, Lightsey, Ethington, Woemmel, & Coke, 2001) and increased pain tolerance (Baker & Kirsch, 1991).

In one study of middle aged adults (Irving & Ferraro 2006), the relationship between emotional abuse and self-rated health was mediated by personal control. Indeed, in another study, high levels of personal control were associated with better physical and psychological functioning among adults who were physically abused as children (Pitzer & Fingerman, In press). Thus, personal-control, one aspect of self-mastery, has been shown to be one mechanism by which abuse influences health in middle aged adults.

Self-efficacy and Older Adults

Self-efficacy has been found to be a predictor of positive health outcomes among older individuals (Grembowski, Patrick, Diehr, Durham, Beresford, Kay, & Hecht, 1993). For example, in a sample of depressed older adults with chronic obstructive pulmonary disease, Mannarino and Cohen (1996) found that self-efficacy was associated with better overall functioning. Self-efficacy was an essential component in explaining the success of the community-based walking program among older adults (Lee, Avis, & Arthur, 2007). Additionally, researchers have shown that self-efficacy predicts well-being in older individuals (Smits, Deeg, & Bosscher, 1995).

The current study

The current study is based on a cross-sectional data of adults age 50 and over ($M = 67$, $SD = 10.2$) from a representative sample in south Florida over sampled for individuals with disabilities. We examined the relationship between participants' childhood abuse history (physical, emotional, and sexual), self-efficacy and the number of specific health problems. We used self-report measures of specific health problems. These are more objective indices of specific health problems than the more typically used subjective measures such as self-rated health. However, we purposely choose specific health problems because we wanted to have a more objective, theoretically verifiable assessment of current health status. Thus, these measures may afford a more rigorous test of our hypotheses. However, we also examine the relationship between abuse history and a more global assessment of health functioning, self reported disability. Based on the literature reviewed above, our multivariate analyses were modeled to evaluate the extent to which self-efficacy mediates the relationship between childhood abuse and current health problems.

Family dysfunction

Abuse often occurs within a context of other family characteristics which may influence health and thus should be controlled for when examining the association of abuse to health outcomes (Felitti, 1998; Kenny & McEachern, 2000). For example, in one study of adult HMO members, other adverse childhood experiences in addition to abuse were found to

compound the difficulties associated with abuse (Dube, Anda, Felitti, Edwards, & Williamson, 2002). Therefore, in the current study, we control for parental employment problems and parental substance misuse.

The present study seeks to expand upon the existing literature in several ways. First, it has the advantage of being based on a representative sample of older adults oversampled for disability. Interviews took place in the individual's home and were based on the version of the Composite International Diagnostic Interview (CIDI) (Kessler, Mroczek, Ustun, 1998) identical to that employed in the National Comorbidity Study Replication (Kessler & Merikangas, 2004). Further, although several cross-sectional and clinical based studies have found an association between abuse and health, few have done so specifically looking at older individuals. Moreover, this study seeks to better understand the psychological mechanisms by which childhood abuse may be related to current health problems; specifically we examine the role of self-efficacy in the abuse-health relationship.

We hypothesized that (1) childhood abuse would be associated with the number of current health problems as well as self-reported disability; (2) those who have been abused as a child would have lower levels of self-efficacy; and (3) that self-efficacy would explain the association between childhood abuse and health problems.

Methods

Sample

The sub-sample of older adults included in the current study were obtained from the data derived from the first of two waves of *The Physical Health and Disability Study*, a two-wave panel study of Miami-Dade County residents that included an over-sampling of individuals with a physical disability (Gayman, Turner, & Cui, 2008; Turner, Lloyd, & Taylor, 2006).

The plan for the study specified a representative sample of community residing individuals. The objective was to obtain a representative sample of adults over-sampled for disabilities that is unbiased with respect to treatment or service involvement. By applying detailed national age- and ethnicity-specific as well as age- and gender-specific disability rates to the Dade County we estimated the number and distribution of persons with activity limitations in each category. This information was then translated into the estimate of the number of households that would need to be screened in order to meet our sampling requirements. Households were screened with respect to the age, sex, ethnicity, disability status and the language preference of all adults 18 and older.

The ages of those sampled ranged from 18–93 ($M=59$). The original sample was drawn such that there were equal numbers of men and women and equal numbers of individuals screened as having a physical disability and those not. The four ethnic groups comprising more than 90% of all Miami-Dade county residents (non-Hispanic Whites, Cubans, non-Cuban Hispanics, and African Americans) were each represented equally in the sampling and only departed slightly from those for the county as a whole. The over sampling of physically disabled participants was conducted for reasons unrelated to the current study. However, this sampling strategy would likely increase rates of current health problems (the dependent measure of the study) and thus would allow us to have a larger sample of older adults with health problems. However, it should be noted that the rates of current medical problems identified in the sample are likely over-estimates of the rates occurring in the general population of older adults.

The first-wave panel study included a total of 1,986 interviews and was completed in 2000–2001 (82% response rate). Of these, 1,086 were screened as having no physical disability,

while 900 were screened as having a physical disability. Those individuals who were screened as not having a physical disability were matched on race/ethnicity, gender, and age with those individuals screened as having a disability.

Participants

Importantly, in the current study we identified a subsample of these adults who were 50 years of age or older. This included 1460 participants at Wave 1. The average age of the sample was 67.1 ($SD = 10.2$). However, there were 64 subjects who were excluded for missing data. Thus, for the analyses in the current study we had a total sample of ($N=1396$). There were 57.7% females. Race and ethnicity was as follows: non-Hispanic white (23.6%), Cuban (26.8%), other Hispanic (13.1%) and African American (36.5%). The high percentage of Cubans is consistent with the population of South Florida where this study was conducted.

Interviews

The majority of interviews took place in the homes of the participants by well-trained bilingual interviewers. Participants were first contacted through letters about the survey and were paid \$25 for their participation. Informed consent was obtained. Computer-assisted personal interviews in either English or Spanish were administered depending on the preference of the participant. Data were obtained using major sections from the Composite International Diagnostic Interview (CIDI). The version of the CIDI utilized is largely identical to that employed in the National Comorbidity Study Replication (Kessler & Merikangas, 2004).

Measures

Demographic Variables—In the analyses presented below, age, gender, educational attainment, and race/ethnicity were based on respondents' self-report.

Physically Disabled—The screening question for disability followed from the definition of disability as outlined by the World Health Association (1976): “Do you have any physical health condition or physical handicap that has resulted in a change in your daily routine or that limits the kind of or amount of activity you can carry out? (For instance work, housework, school, recreation, shopping, or participation in social or community activities).” (Yes/No)?

Specific Health Problems—At baseline, participants were assessed for current health problems. Specifically, they were read a list of health problems and asked to indicate with “Yes” or “No” whether the specific health problem had occurred within the last 12 month period. It is important to note that these are “current” and not lifetime problems and this is reflected in the lower prevalence of the disorders. Limiting consideration to past year health problems provides a more conservative estimate of the relationship between early abuse and health outcomes in older adults and, therefore, a more stringent test of the hypotheses presented here.

There were 15 health problems used in the analyses (after combining some of the health problems). These included the following: Pneumonia (other lung problems), Arthritis, Diabetes, High Blood Pressure, Heart Disease, Stomach Problems (including ulcer), Gallbladder, Kidney Problems, Bad or Migraine Headaches, Liver, Thyroid, Anemia, Gynecological/prostate, Stroke and pancreatic disease.

Health Problem Count—To determine the severity of health problems a summary scale was developed that included the overall number of current (12-month) health problems.

Childhood Abuse Items—At baseline individuals were assessed for a number of victimization events occurring before the age of 15 including rape, molestation, physical abuse and emotional abuse. It is important to note that abuse items were embedded in the PTSD module of the CIDI, which has been shown to have good validity and reliability (Kessler, 2000).

Sexual Abuse—The list of life victimization events included the following sexual abuse items: (1) Rape: “Did you ever have sexual intercourse when you didn't want to because someone forced you or threatened to harm you if you didn't?” and (2) Molestation: “Were you ever touched or made to touch someone else in a sexual way because they forced you in some way, or threatened to harm you if you didn't?” If the participants responded that either incident occurred, they were then asked at what age they were when this abuse first occurred. Those who reported that the abuse occurred before the age of 15 were coded 1 (Yes, childhood sexual abuse), and the remaining participants were coded 2 (No childhood sexual abuse).

Physical Abuse—Participants were asked, “Were you regularly physically abused by one of your parents, step-parents, grandparents, or guardians?” Individuals who reported that such abuse occurred before the age of 15 were coded 1 (Yes, childhood physical abuse), and the remaining participants were coded 2 (No childhood physical abuse).

Emotional Abuse—Participants were asked, “Were you regularly emotionally abused by one of your caretakers?” Those individuals who reported that the abuse occurred before the age of 15 were coded 1 (Yes, childhood emotional abuse), and the remaining participants were coded 2 (No childhood emotional abuse).

Abuse Scale—As the number of different adverse childhood events have been shown in some studies to increase the risk of health problems (Flaherty et al., 2006), a variable was created to determine the number of specific types of abuse experiences and was used as the predictor variable. This variable ranged from 0 ‘No Childhood abuse’ to 3 ‘experienced all three types of abuse’ (e.g., sexual, physical and emotional).

Self-Efficacy—A set of questions was employed to assess self-efficacy. These questions were derived from the Pearlin Mastery Scale (Pearlin & Schooler, 1978). Mastery is conceptualized as the extent to which one regards one's life-chances as being under one's own control in contrast to being fatalistically ruled. This scale is perhaps the most widely used measure of self-efficacy in health research (NIH, 2004). Respondents were presented with seven items that included statements such as “You have little control over the things that happen to you” and “What happens to you in the future mostly depends on you.” Response categories ranged from “strongly agree” to “strongly disagree” on a 5-point scale. All responses were coded such that higher values equated to greater self-efficacy. The Cronbach alpha is .76.

Covariates in Analyses

Family History of Substance Symptoms—Individuals were asked about their parents' use of substances. Specifically, they were asked “Did either of your parents drink or use drugs so often or so regularly that it caused problems for the family?” (Yes/No).

Parental unemployment—Participants were asked, “Did your father or mother ever have a long period of time when they were not working even though they wanted to?” (Yes/No).

Results

Data strategy

First, we report on demographics of abused and non-abused participants. Prevalence of abuse experiences related to disability is presented, including a logistic regression analysis examining the relationship of abuse to disability status.

Next, hierarchical linear regression analyses were performed with the 12-month health problem count as the dependent measure and the childhood abuse scale inserted into the model as a predictor, following the inclusion of the covariates. The predictor variables were entered in a planned manner as follows. The covariates included demographic variables (gender, age, education) and family dysfunction variables (parental unemployment and drug use of the parents). Then the childhood abuse scale was entered. Next, self-efficacy was entered into the model to examine whether self-efficacy predicted health outcomes. We then performed analyses to determine whether self-efficacy mediated the association between abuse and health problems.

Abuse statistics

Among our sample ($N=1396$), 6.4% reported a history of any childhood abuse (physical, sexual or emotional). Specifically, 2.6% reported being physically abused as a child, 2.4% reported sexual abuse, and 4.0% reported emotional abuse. The type of sexual abuse reported most often by the older participants was molestation, (1.3% raped and 1.6% molested, $\chi^2(1, N=1396) = 15.6, p < .001$). More women than men reported a history of emotional abuse, 5.0%, vs. 2.7%, $\chi^2(1, N=1396), p < .001$, and any sexual abuse, 3.6%, vs. .8%, $\chi^2(1, N=1396)=10.9, p < .001$. There were no gender differences for physical abuse. Those who had been abused were on average younger than those who had not been abused, 64.6 vs. 67, $F(1,1395) = 1.9, p < .001$, which could represent a cohort effect, or it may be that abused individuals do not live as long as those who were not abused. While there was data missing on race or ethnicity for some participants, among those participants for whom we had data, there were no group differences across race and ethnicity in abuse status. There was, however, an overall group difference in the number of health problems, $F(3,1281)=2.67, p = .009$. Post hoc analysis showed that Cubans ($M=.45, SD=.98$) and other Hispanics ($M=.5, SD=.93$) had higher rates of overall health problems than African Americans ($M=.30, SD=.68$) (all $p < .001$). Non-Hispanic Whites did not statistically differ from the other groups ($M=.34, SD=.81$).

There was a significant correlation between number of abuse symptoms and number of health problems, $r(1396)=.062, p=.02$. Self-mastery was also related to the number of health problems, $r(1396)=.082, p=.002$. Of note, participants who identified themselves as disabled were more than twice as likely to have been abused compared to those without a current physical disability (8.9% vs. 4.3%) $\chi^2(1, N=1396) = 12.01, p < .001$. Indeed, as predicted, in a logistic regression analysis controlling for age, gender, education and family dysfunction variables, we found abuse to be related to significantly related disability, $\beta = -.566$, Wald=9.38, $p < .01$, Exp(B) = .568. R^2 for the model is .03

As described in Table 1, the specific health problems which were statistically greater for abused participants were diabetes (5.6% vs. 1.8%), $\chi^2(1, N=1396) = 5.85, p = .03$ and bladder problems (4.5% vs. 1.2%), $\chi^2(1, N=1396) = 6.31, p = .03$, with migraine or bad headache problems approaching significance (5.6% vs. 2.2%), $\chi^2(1, N=1396) = 4.1, p = .06$. It is important to note that the abused participants were substantially younger than the non-abused participants which may have artifactually lowered rates of medical problems among the abused participants making direct comparisons less reliable.

Effect of Abuse and Self-efficacy on Health Status

To examine the influence of childhood abuse and self-efficacy on current health status, a hierarchical linear regression analysis was performed. Results are summarized in Table 2. There were 1396 participants from whom we had data on all of the variables included in the analysis. Demographics, including gender, age, and level of education which were entered into the first step. We should note that education is used to represent an index of social economic status. Income was not included in the analysis because there was considerable missing data on this variable (though results of the analysis were the same when income was included). We found that fewer years of education was predictive of current health problems. In the next step, we entered family dysfunction items including parental employment problems and parental drug use. Parental unemployment was related to current health problems.

In the third step, we entered our first predictor variable, the scale of the three abuse experiences (e.g., physical, sexual, and emotional). Consistent with our prediction, childhood abuse status was related to the number of current health problems. In the fourth step of the model, we entered our second predictor variable self-efficacy. This variable was also associated with current health problems. With this inclusion of self-efficacy in the model the scale of abuse experiences no longer predicted health problems. The R^2 value for our final model was .03.

Mediation effects

We wished to determine if self-efficacy explained the relationship between childhood abuse and health problems later in life. Thus, mediation analyses were conducted. Several conditions must be met in order to establish mediation (Baron & Kenny, 1986; Sobel, 1982). Specifically, a variable is considered to be a mediator to the extent in which it carries the influence of the independent variable (child abuse) to the dependent variable (current health). More specifically, mediation is said to occur when: 1) the independent variable (child abuse) significantly affects the mediator (self-efficacy). Indeed, we found abuse to predict the mediator, $F(1,1391) = 10.32, p < .01$ even after controlling for the demographics. Thus, childhood abuse was found to be associated with lower levels of self-efficacy. Further, 2) the independent variable (abuse) must significantly affect the dependent variable (health) in the absence of the mediator (self-efficacy). This requirement was illustrated in the above described regression analyses. 3) Next, we would need to show the mediator (self-efficacy) has a significant effect on health problems, an effect which was also demonstrated in the above regression analysis. Finally, (4) we needed to determine whether the effect of abuse on health is significantly reduced upon the addition of the mediator (self-efficacy) to the model. To determine whether the reduction was significant we performed a Sobel test which was significant ($z = 3.2, p < 0.01$). Thus, self-efficacy was shown to be a mediator of the abuse-health relationship. Though significant, it should be noted that the reduction in the effect size of abuse on health problems with the addition of self-efficacy was relatively small.

Discussion

The current cross-sectional study was based on a sample of adults aged 50 years and older ($M = 67.1, SD = 10.3$) obtained from a representative sample in south Florida ($N = 1396$) over-sampled for disability. We sought to examine the relationship between childhood abuse (physical, sexual, and emotional) and the number of current medical problems. Secondly, we sought to understand the mechanism by which childhood abuse may confer risk. Specifically, we examined the role of self-efficacy in the abuse-health relationship.

First, as predicted, we found that the number of childhood experiences of abuse, occurring decades earlier, was associated with the number of current health problems. Moreover, consistent with our hypothesis, we found that abuse was related to disability. These relationships were found even after controlling for a number of covariates associated with abuse and health outcomes. The findings are unique given that few studies have examined the relationship between childhood abuse and negative health status in older individuals.

One explanation for this association between abuse and health is the link between abuse and certain risky health behaviors that most likely first occur in young adulthood but have life long implications. Indeed, studies have shown that the coping mechanisms used by abuse survivors who are distressed can lead to an array of negative health behaviors (Springer, 2009). For example, in one study (Lewis, Kotch, Wiley, Litrownik, English, Thompson, Zolotor, Block, & Dubowitz, In Press) researchers examined the association between childhood maltreatment and adolescent smoking and the extent to which internalizing behavioral problems mediate the abuse-smoking relationship. Researchers found a significantly higher proportion of maltreated youth (19%) reported having smoked in the last 30 days compared with non-maltreated youth (7%). Internalizing behaviors partially mediated the link between childhood maltreatment by the age of 12 years and adolescent smoking at 16.

Another explanation for the relationship between abuse and health is that individuals who have early victimizations may be at greater risk for health problems because early victimizations influence the individual's neurobiology in such a manner that makes him or her more sensitive to stressful experiences and decreases immune response. Stress has been shown to affect neurological functioning which has implications to the immune system (Sapolsky, Romero, & Munck, 2000). There appears to be an interaction between early victimization and chronic stress that produces pathophysiological effects, such as hypocortisolism, which increases the probability of developing a number of medical conditions (Heim, Ehler, Hanker, & Hellhammer, 1998).

Nonetheless, in the current there were only three specific disorders related to child abuse. This may be a consequence of our identifying disorders only experienced in the last 12 months, which led to the relatively low base rates of the disorders. Secondly, abused individuals were significantly younger than non-abused individuals, and health problems may increase with age. The specific current medical disorders related to abuse included diabetes and bladder problems, and migraine or bad headaches (a painful condition) approached significance ($p=.06$). Bladder disorders have been found by others to have a higher prevalence in abuse victims (Link, Pulliam, Hanno, Hall, Eggers, Kusek, & McKinlay, 2008; Marinkovic, Moldwin, Gillen, & Stanton, 2009). Similarly, researchers have found that child abuse is also significantly related to insulin-dependent diabetes mellitus (Horan, Gwynn, & Renzi, 1986). In one study, the risk of obesity increased by 20% to 50% for several childhood adversities. However, the adversity with the strongest association with adiposity is physical abuse, which was associated with high glycosylated hemoglobin levels (Thomas, Hyponen, & Power, 2008).

Individuals may use food as a coping mechanism for dealing with the stress related to childhood abuse. There is a well-replicated association between child abuse and eating disorders (Gentile, Raghavan, Rajah, & Gates, 2007; Rayworth, Wise, & Harlow, 2004; Sanci, Coffey, Olsson, Reid, Carlin, & Patton, 2008; Wade, Bulik, Prescott, & Kendler, 2004); Fairburn, Doll, Welch, Hay, Davies, & O'Connor, 1998; Grilo & Masheb, 2001). For example, in one study (Grilo & Masheb, 2001) among outpatients with binge eating disorder researchers found 36% reported physical abuse and 30% reported sexual abuse. In a case-control design of women with binge eating disorder (Fairburn et al., 1998), those with binge

eating disorder were more likely to report childhood sexual abuse and repeated, severe physical abuse compared to healthy controls. Overeating may then lead to obesity. Obesity is a major risk factor for diabetes (Mokdad, Ford, Bowman, Dietz, Vinicor, Bales, & Marks, 2003).

Migraine or bad headaches are a pain related disorder. Researchers from a wide range of medical specialties have noted that a relatively high percentage of patients with painful medical conditions have history of childhood physical or sexual abuse (Kendall-Tackett, 2001) including headaches (Golding, 1999). Researchers have suggested that trauma-related alterations in neurosensory processing may amplify pain (Arnow, Hart, Hayward, Dea, & Barr Taylor, 2000; Drossman, 1994), and childhood abuse may lower thresholds for labeling painful stimuli as noxious (Scarinci, McDonald-Haile, Bradley, & Richter, 1994).

We also sought to examine the psychological mechanisms by which abuse confers risk for greater health problems. Specifically, we examined the role of self-efficacy in the abuse-health relationship. Self-efficacy is conceptualized as a person's beliefs about their capacity to exert control over their functioning and over events that affect their lives (Bandura, 1997). Perceived self-efficacy has been shown to play a significant role in diverse forms of health behavior (O'Leary 1985).

In the current study we found a main effect of self-efficacy on health problems. Specifically, lower levels of self-efficacy predicted the number of current health problems. Studies have shown that one's beliefs about the self can influence overall health and health behaviors. For example, high self-efficacy has been found to predict improvements in health status for individuals with multiple sclerosis, heart disease and chronic obstructive pulmonary disease (Clark & Dodge, 1999; Kaplan, Ries, Prewitt, & Eakin, 1994; Riazi, Thompson, & Hobart, 2004).

Moreover, as hypothesized, we found childhood abuse to predict lower levels of self-efficacy. Even among older adults childhood experiences of abuse still appears to affect one's sense of self. This finding had previously been demonstrated in younger populations but not among older adults. For example, studies have shown self-efficacy is lower in maltreated children when compared to their non-maltreated counterparts (Toth & Cicchetti, 1996). In addition, in a case control study of abused children, Swanston and colleagues (1997) discovered that abused children had a more negative self view than controls in the same cohort at a five year follow-up. Thus, consistent with studies on younger samples, sadly, our results suggest that childhood experiences of abuse negatively effect levels of self-efficacy decades later.

To better understand the mechanisms by which early abuse may affect health among older adults, we investigated the role of self-efficacy in the abuse-health relationship. We hypothesized that self-efficacy would explain the relationship between abuse and the specific health problems. That is, we examined the mediating role of self-efficacy on the abuse-health relationship. We found that self-efficacy did mediate the relationship between abuse and the number of health problems. That is, once self-efficacy was included in the linear regression model, the relationship between abuse and health was no longer significant. Nonetheless, it is worth noting that the reduction in the size of the effect of the abuse on health due to the addition of the self-efficacy variable was fairly small, but was nonetheless significant.

How can it be that self-efficacy affects the abuse-health relationship? Among older adults, high self-concept is considered to be one indicator of successful aging (Baltes & Baltes, 1990), in part because of its link to life satisfaction and psychological well-being (Markus & Herzog, 1992). Self-efficacy has historically been recognized as a predictor of health

behavior change and maintenance (Strecher, McEvoy DeVellis, Becker, & Rosenstock, 1986). Bandura (1974) proposed that self-efficacy beliefs affect the extent to which individuals exercise control over the vitality and quality of their health. Converging findings from several areas of research have shown health behaviors are partly mediated by perceived self-efficacy (O'Leary 1985). Indeed, high self-efficacy is associated with more positive health behaviors (Clark & Dodge, 1999; Kaplan, Ries, Prewitt, & Eakin, 1994; Riaz, Thompson, & Hobart, 2004). Additionally, high self-efficacy may be a protective factor against life stress because individuals possessing this trait are better equipped to avoid or reduce stressful experiences. High self-efficacy may play a role in buffering the negative effects of stress on health.

Among older adults we found childhood experiences of abuse were related to the number of current health problems. Childhood abuse also predicted disability. Health problems which were greater for abused participants included diabetes and bladder problems with headaches approaching significance. Childhood abuse was related to lower levels of self-efficacy, and self-efficacy explained the relationship between childhood abuse and the number of health problems. Importantly, this study suggests that among older adults there are far reaching effects of being abused as a child on both the individual's health and self-concept.

Limitations

As in all studies the current study has methodological limitations to consider when interpreting the results. First, we relied on self-reports of the participants' abuse history. Further, researchers have found that questions regarding abuse history that incorporate a high degree of behavioral specificity produce higher rates of reporting than those that do not. The National College Women Sexual Victimization Study (NCWSV) compared items with lower versus higher specificity regarding specific acts of sexual abuse and found greater specificity was associated with 11 times higher report of completed rape (Fisher, Cullen, & Turner, 2000). In the current study, there was some elaboration regarding the meaning of the terms of the abuse items. Nonetheless, the items were less specific than those used in the NCWSV and did not include much elaboration. Thus, our findings may reflect a bias toward underreporting of abuse.

The older age of the sample may also have affected the results with regards to the reliability of the retrospective reports of abuse history. The individuals in the current sample had a mean age of 67 and were reporting on abuse that occurred before the age of 15. This relatively long period of time between the occurrence of abuse and the assessment of abuse may have affected the reliability of the reports. Moreover, those most affected by abuse may be more likely to have reported abuse. For example, participants' retrospective reports of childhood abuse may have been influenced by their current health status. Indeed, some studies have found that individuals who have painful medical conditions may have a bias to recall abuse (Briere, 1992; Edwards, Anda, Nordenberg, Felitti, Williamson, & Wright, 2001). In contrast, however, in a study looking at recall bias, Edwards and colleagues (2001) found no evidence for this effect.

We also used self-report measures of the specific health problems which has both strengths and weaknesses. However, we purposely choose specific health problems because we wanted to have a more objective, theoretically verifiable assessment of current health status. Perceived health has been shown to provide good reliability (Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001), good predictive validity (Idler & Kasl, 1991) and good agreement with physician diagnosis (Kobasa, Maddi, & Courington, 1981). We also used a more global measure of health functioning, 'disability'. Specifically participants were asked if they had "any physical health condition or physical handicap that has resulted in a change in their daily routine or that limits the kind of or amount of activity they can carry out? (For instance

work, housework, school, recreation, shopping, or participation in social or community activities).” This health outcome variable combines both subjective and objective assessments of functioning and was found to be predicted by abuse.

The population was oversampled for people with physical disabilities. Disability is associated with health problems. This would mean that the frequencies of health problems (described in Table 1) are likely to be over-estimates of general population prevalence rates. Disability is also associated with child abuse. Thus, prevalence rates of abuse may also be overestimated. Thus, the over-sampling of disabled individuals likely increased rates of abused participants and participants with health problems. This sampling strategy may have afforded us greater power to examine whether or not there was an association between child abuse and health problems among older adults. In addition, the R^2 value for our final regression model was relatively low .03; suggesting that it may be useful to examine longitudinally specific health problem known to be associated with abuse, such as diabetes rather than employing global health as an outcome variable.

Finally, and importantly, due to the cross-sectional nature of the data clear conclusions regarding temporal ordering can not be made. This must be strongly considered in interpreting the results. While our findings are consistent with the possibility that early childhood abuse causes health problems in older adults, we are unable to determine if health problems came before or after low mastery was developed; which further limits our ability to identify the direction of these relationships. Thus we can not truly determine if mediation occurred. However, it is important that cross-sectional studies identify potential mediators of the abuse - health relationship in preparing for subsequent more costly longitudinal studies in which we try to understand true mediators of the abuse-health relationship.

In sum, sadly, the results of this study suggest that childhood abuse has negative effects on one's sense of self and on health problems many decades after the abuse has occurred. The results of this study highlight the importance of the effects of child abuse into older adulthood. We also explored mechanisms (i.e., self-efficacy) related to the abuse health association. Specifically, the study's results suggest that low self-efficacy might be one factor by which abuse in childhood can have a negative impact on one's health years after the abuse occurred. We found that when self-efficacy was entered into the final OLS regression model the coefficient for childhood abuse was reduced to non-significance. Future research is needed to help determine other mechanisms that underlie the abuse-health association among older adults

Implications

In conclusion, results of this as well as other studies have implicated childhood maltreatment as a factor in the development of negative self-schemas that may in turn influence the development of health problems. Furthermore, childhood abuse experiences may lead to the development of low self-mastery that is a risk factor for poor health functioning. Targeting self-critical ideation in adult patients, especially those who experienced childhood abuse, may help reduce health problems in this population. It would be of great importance to investigate if interventions that increase self-efficacy among older adults would have a positive effect on health functioning.

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Table 1Specific health problems experienced in the last 12 months by any abuse history^a

Medical disorder (N=1396)	Not Abused %	Abused %	χ^2	p-value
Pneumonia (other lung problems)	3.5%	3.4%	.005	$p=1.0$
Arthritis	6.3%	6.7%	.031	$p=.821$
Diabetes	1.8%	5.6%	5.85	$p=.033$
High Blood Pressure	4%	3.4%	.081	$p=1.0$
Heart Disease	2.1%	3.4%	.579	$p=.316$
Stomach Problems(ulcer)	3.2%	4.5%	.427	$p=.531$
Gallbladder	.7%	.0%	.617	$p=1.0$
Kidney Problems	1.2%	1.1%	.007	$p=1.0$
Bad or Migraine Headaches	2.2%	5.6%	4.05	$p=.06$
Liver	0%	0%	--	--
Thyroid	.7%	2.2%	2.59	$p=.152$
Anemia	2.2%	1.1%	.475	$p=.419$
Gynecological/prostate	1.9%	3.4%	.90	$p=.263$
Stroke	.9%	1.1%	.38	$p=.577$
Pancreatic	.1%	.0%	.16	$p=.694$
Number of specific medical problems	.41	.65	$F=11.4$	$p<.001$
Physically Disabled	35%	65%	17.0	$p<.001$

^a Note: In the regression analyses pneumonia, other lung problems, and tuberculosis were combined into one category (lung problems). Similarly, in the regression analysis stomach problems included ulcer problems. Physically disabled was not counted as a health problem.

Table 2

Regression Analysis Examining the Effect of Abuse on Number of Health Problems.

Variable	Unstandardized β	Standardized β	Standard Error	F value	P-value
Step 1					
Gender	-.003	.012	-.006	.057	$p=.811$
Age	4.216	.002	.001	.001	$p=.985$
Years of Education	-.021	.005	-.109	16.138	$p<.001$
Step 2					
Gender	-.002	.011	-.006	.047	$p=.829$
Age	.001	.002	.005	.028	$p=.867$
Years of Education	-.021	.005	-.108	16.128	$p<.001$
Parental Unemployment	-.209	.086	-.065	5.886	$p=.015$
Parental Drug Use	-.044	.093	-.013	.223	$p=.637$
Step 3					
Gender	-.004	.293	-.010	.153	$p=.696$
Age	.001	.012	.010	.135	$p=.714$
Years of Education	-.021	.002	-.109	16.304	$p<.001$
Parental Unemployment	-.193	.005	-.060	5.009	$p=.015$
Parental Drug Use	.008	.091	.002	.006	$p=.936$
Abuse	.157	.071	.062	4.918	$p=.027$
Step 4					
Gender	-.007	.293	-.017	.431	$p=.512$
Age	.001	.012	.012	.190	$p=.663$
Years of Education	-.015	.002	-.082	8.594	$p<.001$
Parental Unemployment	-.177	.005	-.055	4.200	$p=.041$
Parental Drug Use	.008	.091	.002	.007	$p=.933$
Abuse	.136	.098	.054	3.740	$p=.053$
Self-Efficacy	-.014	.074	-.102	13.645	$p<.001$

Note: N=1396

 R^2 for the model is .03