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Physical and sexual assault, and negative perceptions of health: Does age of onset matter?

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ABSTRACT

Purpose: The negative health consequences of physical and sexual assault are fairly well established, yet factors related to the context of assaults are less recognized. This study examines the role of the age of onset of physical and sexual assault on overall perceptions of health and autonomy over health.
Methods: Using a follow-up of the original Midlife Development in the United States (MIDUS) study, we use the MIDUS-3 dataset to test hypotheses that earlier age of assault onset is associated with greater negative perceptions of overall health and health autonomy than later onset.
Results: We find that physical and sexual assault are associated with greater negative perceptions of health but that age of onset only matters for sexual assault. Assault and age of onset do not matter for health autonomy which is influenced primarily by personality characteristics.
Conclusion: Physical and sexual assault are related to overall perceptions of health and should be considered by medical professionals and social services when working with survivors of violence. Personality characteristics are influential in health outcomes and should be considered when devising violence prevention and intervention strategies.

1. Introduction

Physical and sexual assault are two common forms of interpersonal violence that effect a wide range of individuals (Turanovic & Pratt, 2019). Indeed, recent National Crime Victimization Survey (NCVS) statistics indicates that while the rate of violent crime has declined from 20.1 to 16.4 between 2019 and 2020, the overall rate of violent victimization remains concerning (Morgan and Thompson, 2021). This is notable as victims of crime, especially survivors of physical and sexual assault, face a range of health consequences, including depression, anxiety, cardiovascular issues, obesity, and diabetes (Turanovic & Pratt, 2019). One area of research that has gained more attention in recent years is the connection between violent victimization and an individual's overall health and wellbeing.

A large body of scholarship has established an association between physical and sexual assault and negative health outcomes (Afifi et al., 2016; Amstadter et al., 2011; Campbell, Dworkin, & Cabral, 2009; Grose, Roof, Semenza, Leroux, & Yount, 2019; Leidig, 1992; Rentoul & Appleboom, 1997; Resnick, Acierno, & Kilpatrick, 1997; Semenza, Testa, & Turanovic, 2021; Testa, Semenza, & Jackson, 2022). While existing literature on this topic ranges from smaller empirical articles to large-scale reviews and meta-analyses (Humphreys et al., 2020; Norman et al., 2012), findings are consistent that there is a positive association between physical and sexual assault and negative health outcomes among children, adolescents, and adults. Thus, given the extent of exposure to violence and the subsequent negative health outcomes, it is essential to examine this association in depth.

One understudied area integral to how we theorize about the causes and consequences of victimization—as well as respond through social services and advocacy—is how the age of onset of physical and sexual assault may impact health outcomes later in the life-course. Specifically, we do not yet know how victimization that occurs earlier or later in the life-course impacts an individual's perception of their current health status and the autonomy over their own health. This study seeks to close this important gap in the literature and add to the accumulating knowledge base of victimological theory, research, and practice.

1.1. Prevalence of physical and sexual assault

The decrease in violent victimization between 2019 and 2020 is

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largely driven by a decrease in reported simple assaults (NCVS, 2021). Yet, despite the drop in overall violent victimization rates between 2019 and 2020, there are still concerning trends in the rate of violent victimization. For instance, while the rate of physical assault was 13.7 per 1000 individuals in 2020 – a decrease from the 2019 rate of 17.4 – the overall number of victims remains high (NCVS, 2021). Overarching victimization trends have held constant, with men being more likely to be physically assaulted than women, and those between the ages of 18–34 having a significantly higher rate of violent victimization (Bachman & Saltzman, 1995; Kilpatrick, Resnick, Saunders, & Best, 1998; Morgan & Thompson, 2021; Norris, 1992).

Further, while there were downward trends across nearly all forms of victimization and groups in 2020, the NCVS shows that racial and ethnic minority group members, and those of lower socioeconomic status, are more likely to be physically assaulted than any other demographic group (Acierno, Resnick, & Kilpatrick, 1997; Morgan & Thompson, 2021; Reiss Jr & Roth, 1994). Put simply, victimization is more prevalent among young people, particularly men, who are members of marginalized groups. Overall, the prevalence of sexual assault has not meaningfully changed in recent years (Morgan & Thompson, 2021). Basile, Chen, Black, and Saltzman (2007) report findings consistent with this, suggesting that the rate of sexual assault has remained stable for decades. Indeed, more than half of forced sex encounters for both men and women occurred before the age of 18, and this has held constant since the 90s (Norris, 1992).

1.2. Health outcomes of physical and sexual assault

The relationship between violent victimization and negative health outcomes is well-documented (Afifi et al., 2016; Amstadter et al., 2011; Campbell et al., 2009; Grose et al., 2019; Leidig, 1992; Rentoul et al., 1997; Resnick et al., 1997; Semenza et al., 2021; Testa et al., 2021). Two prominent health outcomes for victims of physical assault are increased stress and physical injury, which function as moderators for long-term physical issues (Resnick et al., 1997). For instance, physical injury can manifest itself as future heart attacks or strokes, while chronic stress can suppress the immune system and increase the likelihood of contracting contagious diseases (Afifi et al., 2016). Considering the prevalence of violent victimization, especially among minority group members—who are already disadvantaged with respect to access to healthcare—these findings deserve immediate attention.

Given the persistence of stress and health complications in general, potential long-term health consequences must be considered by researchers and health providers. For one, research conducted on the effects of childhood physical and sexual assault on adult health finds that "abuse in childhood was associated with arthritis, back problems, high blood pressure, migraine headaches, chronic bronchitis/emphysema/COPD, cancer, stroke, bowel disease, and chronic fatigue syndrome in adulthood, even when sociodemographic characteristics, smoking, and obesity were taken into account" (Afifi et al., 2016, p. 10). Secondly, these outcomes themselves are associated with later problems, including the ability to complete work responsibilities. These health outcomes are equally as severe when discussing sexual assault (Posick, Jackson, & Grubb, 2021).

Males and females both experience negative health issues following exposure to sexual violence. Research has shown that the effects of victimization on women can range from PTSD, depression, fear, generalized anxiety, fertility problems, self-blame, disordered eating, suicidal ideation, and an increased likelihood of substance use/abuse (Campbell et al., 2009; Leidig, 1992; Resnick, Guille, McCauley, & Kilpatrick, 2011). This is compounded by the more immediate health risks such as acute physical injury and complications from STD's (Resnick et al., 1997; Resnick et al., 2011). Furthermore, research pertaining to health outcomes of male sexual assault found no appreciable differences in the symptomatology of men and women concerning rape and serious sexual assault (Mezey & King, 1989; Peterson, Voller, Polusny, & Murdoch, 2011; Rentoul & Appleboom, 1997; Walker, Archer, & Davies, 2005).

Aside from overall perceptions of health, an important concept in wellbeing that remains understudied, especially in criminology and criminal justice, is health autonomy. The control that a person believes that they have is related to overall wellbeing. Almost 40 years ago, Seeman and Seeman (1983) found that low personal autonomy was related to a host of negative health issues including less self-initiated care, pessimism regarding preventive healthcare, poorer self-rated overall health, and more episodes of illness. Threat to health autonomy is heightened in minoritized individuals who might subsequently experience more health risks when compared to other groups (McLeod & Sherwin, 2000). The role of exposure to violence on levels of perceived health autonomy has yet to be fully explored and is a focus of this study.

1.3. Age of onset of physical and sexual assault on health

Research has established that physical and sexual assault are robustly linked to a wide array of negative health outcomes, both physical and mental (Gilbert et al., 2015). More specifically, assaults that occur during childhood and adolescence are significantly associated with depression (Heim, Shugart, Craighead, & Nemeroff, 2010; Mandelli, Petrelli, & Serretti, 2015; Putnam, 2003), sexually transmitted diseases, risky sexual behaviors (Norman et al., 2012), diabetes (Campbell, Farmer, Nguyen-Rodriguez, Walker, & Egede, 2018; Widom, Czaja, Bentley, & Johnson, 2012), gastrointestinal distress, illness (Park et al., 2016), and a range of other health issues over the life-course. For example, Anda et al. (2006) found that child maltreatment is significantly related to increases in obesity, depression, anxiety, substance use and abuse, stress, and trauma spectrum disorders into adulthood.

This warrants discussion because physical assault is one of the most prominent adverse childhood experiences (ACE) faced by children around the world. In fact, this form of victimization is so prevalent during childhood that some scholars have referred to childhood physical assault as a "major contributor to the burden of disease" globally (Norman et al., 2012, p. e1001349). Similar to physical assault, sexual assault that occurs during childhood—often referred to as childhood sexual abuse, or CSA—has been associated with negative physical, mental, and behavioral health outcomes over the life-course (Collin-Vézina, Daigneault, & Hébert, 2013). For example, in their study of 900 New Zealand citizens, Fergusson, McLeod, and Horwood (2013) found that CSA that occurred before age 16 was significantly associated with anxiety, depression, suicidal ideation, alcohol dependence, and illicit drug dependance in adulthood.

Scholars have also found indirect links between childhood physical and sexual assault and negative physical health outcomes. Research indicates that ACEs—including childhood assaults—are linked to increased tobacco, marijuana, and alcohol consumption (Boccio, Meldrum, & Jackson, 2022), which can lead to acute and chronic instances of poor health. The preponderance of evidence is clear that stressful life events in general exacerbate many acute and chronic diseases, such as infectious diseases and cardiovascular diseases (Cohen, Murphy, & Prather, 2019). This is important, as recent research indicates that the age of onset of physical and sexual assault among children is about is about 9 years (Children's Advocacy Centers of Tennessee, 2022) and 6.7 years (Al-Asadi, 2021), respectively.

Despite the abundance of evidence for physical and sexual assault leading to negative health outcomes, very few studies have been conducted to measure the health autonomy or the perception of health in assault victims (Afifi et al., 2016; Anda et al., 2006; Norman et al., 2012). In fact, the literature on either topic seems to focus heavily on personality influences and elderly/clinically ill populations (Cloninger & Zohar, 2011; Henderson, Holzleitner, Talamas, & Perrett, 2016; Schneider et al., 2004). However, given the numerous adverse effects of being assaulted, physically or sexually, it seems pertinent to discover whether these victimizations - especially those that occur during childhood – shape an individual's perception of health or their sense of health

autonomy.

Taken together, literature on childhood maltreatment and later victimization—namely physical and sexual assault—indicates that early onset of assault may be more predictive of worse health outcomes in adulthood than assaults that occur at later points in the life-course. Scholarship points to multiple explanations for this association, but much of the empirical evidence is rooted in the stress and trauma associated with victimization (Hager & Runtz, 2012). What is more, youth who experience victimization may be less equipped to cope with the resulting stress and trauma, which can lead to further negative health outcomes (Aldwin & Yancura, 2004). The extent to which the age of onset of victimization affects future health outcomes, specifically health autonomy and perception of current health, remains an open empirical question. Accordingly, the current study seeks to expand this body of knowledge.

2. Current study

Considering the body of scholarship on the association between physical and sexual assaults that occur early in the life-course and negative health outcomes, the current study seeks to answer eight interrelated hypotheses. Specifically, we offer two sets of hypotheses related to the association between exposure to assault and later health outcomes, and two hypotheses for physical and sexual assault for both perceptions of current health and health autonomy.

Current Health: Physical Assault

H_1 = Experiencing physical assault will reduce positive self-perceptions of current health

H_2 = The earlier the age of onset for physical assault, the greater reduction in positive self-perceptions of current health

Current Health: Sexual Assault.

H_3 = Experiencing sexual assault will reduce positive self-perceptions of current health

H_4 = The earlier the age of onset for sexual assault, the greater reduction in positive self-perceptions of current health

Health Autonomy: Physical Assault.

H_5 = Experiencing physical assault will reduce self-perceptions of health autonomy

H_6 = The earlier the age of onset for physical assault, the greater reduction in positive self-perceptions of health autonomy

Health Autonomy: Sexual Assault.

H_7 = Experiencing sexual assault will reduce self-perceptions of health autonomy

H_8 = The earlier the age of onset for sexual assault, the greater reduction in positive self-perceptions of health autonomy

3. Method and participants

To assess our hypotheses, we use the third Midlife in the United States (MIDUS-3) dataset. The MIDUS study was originally conducted in 1995–1996 and included a sample of 7000 adults aged 25 to 74 in the United States. The study aimed to understand the role of various factors (including behavioral, social, and psychological), in age-related differences in individuals' health and wellbeing. In the years since the original study, two additional follow-ups have been conducted. For the purposes of the current study, we use the most recent study, which is the MIDUS-3 dataset.

The MIDUS-3 was conducted in 2013 on "longitudinal participants" to better understand the experiences and health of individuals in their midlife (National Archive of Computerized Data on Aging, 2019). Researchers achieved an impressive 77% response rate of the living participants of the original MIDUS study to be included in the third wave (n = 3294). The baseline assessments given in the original study were repeated, including phone interviews and the self-administered questionnaire. Additionally, investigators included additional questions covering a range of topics from economic recession experiences to cognitive functioning information (National Archive of Computerized Data on Aging, 2019). Unique to the MIDUS-3 study is the collection of information from a daily diary, biomarkers, and neuroscience projects, which began in 2017 (National Archive of Computerized Data on Aging, 2019). Given our focus on exposure to physical and sexual assault, and their association with future negative health-related outcomes, the MIDUS-3 study is particularly well-suited for the current study.

4. Measures

4.1. Dependent variables

Two dependent variables represent health outcomes of interest in our study. The first is self-perception of current health. Participants were asked to "Rate Current Health" from 0 = Worst to 10 = Best. This variable approximated a normal distribution with a slight right skew (M = 7.30; SD = 1.60). The second outcome variable is a measure of self-perception of health autonomy. Participants were asked to "Rate Control Over Health" from 0 = None to 10 = Very Much. Similar to self-reported health, this variable approximated a normal distribution with a right skew (M = 7.60; SD = 1.80).

4.2. Focal independent variables

We have four focal independent variables. We measure exposure to both physical and sexual assault as well as the age of onset of physical and sexual assault. To measure experiencing physical assault, participants were asked if they were "Ever Physically Assaulted" which was coded as 0 = No (93%); 1 = Yes (8%). Experiencing sexual assault was measured by asking participants if they were "Ever Sexually Assaulted" 0 = No (90%); 1 = Yes (10%). While limited, these questions measure the prevalence of assault and enable the investigation of whether exposure to victimization is related to poor health outcomes as well as if age of onset (first experience) matters in the relationship.

To measure the age of onset of physical assault, a variable was created to indicate the "Respondent's age physically assaulted." This is a continuous measure ranging from 3 to 83 with a mean of 25 years (SD = 15 years). To measure the age of onset of sexual assault, a variable was created to indicate the "Respondent's age sexually assaulted." This is a continuous measure ranging from 3 to 60 with a mean of 16 years (SD = 9.10 years). It is impossible to know if respondents are entirely accurate in recalling their first instance of assault but estimates would still be useful in understanding how earlier or later onset matters in health related outcomes.

4.3. Study covariates

A series of study covariates are included in all analyses to control for confounding factors in the study of exposure to violence and personal health. Age is included as the respondents age at the time of the phone interview (M = 64 years; SD = 11 years). Biological sex is measured by asking the respondent their self-reported sex given as Male (45%) or Female (55%). Race/ethnicity is indicated by a variable asking the respondent their self-reported racial origins. The sample is overwhelmingly White, so we collapsed the variable into White (89%) and non-White (11%) for analytic purposes. Education is a continuous variable measuring the respondents' highest level of education obtained from 1 = no school or some grade school (1–6) to 12 = Ph.D., Ed.D., MD, DDS, LLB, LLD, JD, or other professional degree (M = 7.50; SD = 2.50). To control for household size, the number of household members is calculated using the number of living children + number of household members ranging from 0 to 29 (M = 3.30; SD = 1.90). To assess depression level, a continuous variable measuring depressive affect and anhedonia (inability to feel pleasure) was included ranging from 0 = lowest depression to 7 = highest depression (M = 0.60; SD = 1.70).

To account for individual characteristics, the "Big Five" personality

characteristics are included in all models, consistent with prior research (Posick et al., 2021). The construction of the Big Five trait variables ranged from 1 to 4 and is described in detail in appendix. The traits consist of (a) agreeableness (M = 3.40; SD = 0.50), (b) extroversion (M = 3.10; SD = 0.58), (c) neuroticism (M = 2.10; SD = 0.63), (d) conscientiousness (M = 3.40; SD = 0.46), and (e) openness (M = 2.90; SD = 0.54). See Table 1 for complete descriptive statistics.

4.4. Plan of analysis

We analyze the MIDUS-3 data using a series of multivariate ordinary least squares regression models. Both of the dependent variables—current health and health autonomy—are normally distributed. In the tables we report unstandardized beta coefficients and standard errors for all study variables. Adjusted R^2 statistics are presented as an estimate of the variance in health outcomes explained by each model. Models were checked for violations of regression assumptions including collinearity, and we did not uncover any problems with employing our models. Listwise deletion was chosen to deal with missing data given the large overall sample size. Sensitivity analyses revealed that while data were not missing completely at random, there was no systematic bias in the results and the analyses were not substantively different after alternative imputation methods were used. All statistical analyses were carried out in R version 4.1.2.

5. Results

In Table 2, we present the results from linear models regressing self-perceptions of current health on exposure to physical and sexual assault and the study covariates. Models 1 and 3 indicate that physical assault (b = −0.34; $p = .011$) and sexual assault (b = −0.25; $p = .008$) reduce the score of current health. Age of onset of sexual assault is statistically significant in relation to current health, as illustrated in Model 4, but was not related to self-reported current health for physical assault in Model 2. Contrary to our hypotheses, the effect of age of onset of sexual assault is negative, indicating an increasing effect the older one was at the time of the first incident.

Table 1
Study descriptive statistics.

	N	Mean	Standard deviation	Minimum	Maximum
Dependent Variables					
Current Health	2912	7.30	1.60	0	10
Health Autonomy	2911	7.60	1.80	0	10
Focal Independent Variable					
Physical Assault	2923	0.08	0.27	0	1
Sexual Assault	2923	0.10	0.30	0	1
Age of Onset - Physical Assault	196	25.00	15.00	3	83
Age of Onset - Sexual Assault	251	16.00	9.10	3	60
Covariates					
Age	3294	64.00	11.00	39	93
Sex	3294	0.55	0.50	0	1
Race/Ethnicity	3267	0.11	0.31	0	1
Education Level	3283	7.50	2.50	1	12
# Household Members	3294	3.30	1.90	0	29
Depression Level	3294	0.60	1.70	0	7
Agreeableness	2909	3.40	0.50	1.40	4.00
Extraversion	2908	3.10	0.58	1.20	4.00
Neuroticism	2907	2.10	0.63	1.00	4.00
Conscientiousness	2909	3.40	0.46	1.20	4.00
Openness	2905	2.90	0.54	1.00	4.00

Notes: N = Sample Size for the Variable.

Across models, there is some consistency in the effects of our control variables. Age is negatively associated with self-reports of health in line with research on aging. One's depression level is consistently related to negative reports of health and is often the most impactful factor we include on overall health. Apart from openness (and a few other rare exceptions), the Big Five variables were related to overall health with agreeableness and neuroticism decreasing health reports and extraversion and conscientiousness increasing such reports.

In Table 3, we present the results from linear models regressing self-perceptions of health autonomy on exposure to physical and sexual assault and the study covariates. Contrary to expectations, exposure to assault—whether physical or sexual—did not influence ratings of health autonomy. Age of assault onset was also unrelated to this outcome in each model. Again, the bulk of the effects were found for one's level of depression and their personality characteristics. Age reduced levels of health autonomy, while there is some evidence that females were more likely than males to report greater autonomy over their health. Extraversion and conscientiousness increased health autonomy while neuroticism was more likely to be related to reduced perceptions of health autonomy.

6. Discussion

There is ample evidence that victimization—particularly physical and sexual assault—have long-term impacts on overall health (Semenza et el., 2021; Testa et al., 2021). What is unclear, however, is the extent to which the age of onset of victimization impacts later health outcomes. Accordingly, our study investigated the relationship between physical and sexual assault and subsequent perceptions of health. Additionally, we examined the relationship between age of onset of physical and sexual assaults and perceptions of health. There are five key findings worth highlighting.

First, both physical and sexual assault impact current health status. Specifically, our findings indicate that there is a negative relationship between physical and sexual assault and both current health autonomy and current health perception. This finding aligns well with hypotheses 1 and 3, and is consistent with current literature (e.g., Testa et al., 2021). Conversely, our findings show that experiencing physical and sexual assault did not influence health autonomy. This is in direct contradiction to our 5th and 7th hypotheses, which state that experiencing physical assault will reduce self-perceptions of health autonomy and experiencing sexual assault will reduce self-perceptions of health autonomy, respectively.

Second, the age of onset of physical assault is not statistically significant in our models for either current health or health autonomy, which does not support hypotheses 2 and 6. Further, age of sexual assault did not influence health outcomes for health autonomy which does not support hypothesis 8. This indicates that, although existing research has found that earlier age of onset of victimization may predict negative health outcomes (Heim et al., 2010; Mandelli et al., 2015; Putnam, 2003), age of onset is not a statistically significant predictor of changes in current health or health autonomy in these data. This finding, which is opposite of our hypothesis, may be the result of the age of the sample at the time of survey administration (mean age = 64 years).

Indeed, as individuals age, other impactful life events occur. For some, there may be compounding instances of victimization that may also impact their lives, although this is quite rare (Menard, 2000). For others, a possible explanation is that they may be so far removed from the specific instance of victimization reported that they are unable to accurately recall how hit has impacted their health. Given our results, it appears that factors related to personality, such as being more extroverted, may motivate people to actively take control of their own health and wellness. Depressive incidents may increase stress, reducing both overall health and motivation for seeking assistance when needed.

Third, our findings reveal a statistically significant and substantively meaningful negative relationship between age of onset of sexual assault

Table 2
The relationship between assault type (IVs) and current self-reported health (DV).

	Physical assault						Sexual assault					
	Model 1			Model 2			Model 3			Model 4		
	b(se)	Beta	*p*-value	b(se)	Beta	p-value	b(se)	Beta	p-value	b(se)	Beta	p-value
Intercept	5.22(0.37)		<0.001	4.91(1.40)		<0.001	5.19(0.37)		<0.001	5.68(1.35)		<0.001
Focal Independent Variables												
Physical Assault	−0.34 (0.10)	0.712	0.011	–	–	–	–	–	–	–	–	–
Sexual Assault	–	–	–	–	–	–	−0.25 (0.09)	0.779	0.008	–	–	–
Age of Onset - Physical Assault	–	–	–	0.01(0.01)	1.010	0.181	–	–	–	–	–	–
Age of Onset - Sexual Assault	–	–	–	–	–	–	–	–	–	−0.03 (0.01)	0.970	0.016
Covariates												
Age	−0.01 (0.00)	0.990	0.005	0.00(0.01)	1.000	0.892	−0.01 (0.00)	0.990	0.005	0.00(0.01)	1.000	0.991
Female	0.09(0.06)	1.094	0.138	0.01(0.27)	1.010	0.981	0.11(0.06)	1.116	0.059	0.50(0.28)	1.649	0.077
Non-White	−0.13 (0.09)	0.878	0.158	0.28(0.33)	1.323	0.408	−0.13 (0.09)	0.878	0.157	0.15(0.29)	1.162	0.597
Education Level	0.07(0.01)	1.073	<0.001	0.04(0.05)	1.041	0.401	0.07(0.01)	1.073	<0.001	0.11(0.04)	1.116	0.012
# Household Members	0.00(0.01)	1.000	0.775	−0.09 (0.06)	0.914	0.105	−0.00 (0.01)	1.000	0.871	0.01(0.05)	1.010	0.866
Depression Level	−0.13 (0.02)	0.878	<0.001	−0.17 (0.05)	0.844	0.001	−0.13 (0.02)	0.878	<0.001	−0.21 (0.04)	0.811	<0.001
Agreeableness	−0.26 (0.07)	0.771	<0.001	−0.11 (0.27)	0.896	0.676	−0.26 (0.07)	0.771	<0.001	−0.06 (0.25)	0.942	0.823
Extraversion	0.54(0.06)	1.716	<0.001	0.61(0.25)	1.840	0.017	0.54(0.06)	1.716	<0.001	−0.04 (0.23)	0.961	0.854
Neuroticism	−0.30 (0.05)	0.741	<0.001	−0.57 (0.20)	0.566	0.005	−0.31 (0.05)	0.733	<0.001	−0.27 (0.17)	0.763	0.116
Conscientiousness	0.63(0.06)	1.878	<0.001	0.63(0.27)	1.878	0.017	0.63(0.06)	1.878	<0.001	0.21(0.24)	1.234	0.383
Openness	−0.06 (0.06)	0.942	0.376	−0.20 (0.27)	0.819	0.450	−0.06 (0.06)	0.942	0.315	0.31(0.24)	1.363	0.198
Adjusted R-Square	0.16			0.26			0.16			0.22		
Model Sample Size	2865			192			2865			247		

and current health. This indicates an increasing effect the older one was at the time of the first incident, which is contrary to study hypothesis 4. There are a few reasons why this may occur, such as being affected by depression, anxiety, and other known consequences of trauma exposure (Afifi et al., 2016). Indeed, existing research shows that individuals who are victimized but who have lower levels of depression are more resilient to future negative life outcomes, such as engaging in violence (Wright, Turanovic, O'Neal, Morse, & Booth, 2019). There is reason to believe, then, that this may also be true with respect to self-perceptions of current health highlighting the importance of continued research on resilience in victimological scholarship. Further, as mentioned above, the mean age of our sample is 64, meaning that the respondents who were victimized in later adulthood may be able to more accurately recall how the incident negatively impacted their life. Thus, the result could be partially driven by recency bias. One avenue of future research should be parsing out the effects by sample age to determine if there is a recency effect.

The fourth finding from our study that warrants discussion is the relationship between depression and negative health outcomes. Our results reaffirm the negative impacts that depression can have on health. In all models, higher levels of depression are associated with lower perceptions of current health as well as health autonomy. These findings indicate that depression, which is a well-known consequence of victimization (Kochel, Ladd, & Rudolph, 2012; Turanovic & Pratt, 2019), also impacts a person's ability to take control over their health—even well after the victimization occurs.

Lastly, our findings also indicate that personality characteristics, such as being extroverted or introverted, may attenuate the relationship between the age of onset of physical assault and perceptions of one's health. As such, an additional aspect of our study that is worth discussing is the role of personality characteristics in health outcomes of individuals who have been physically or sexually assaulted. Conscientiousness and extroversion are quite consistently associated with positive perceptions of health, while neuroticism is associated with negative perceptions of health.

Indeed, the findings outlined here shed light on the relationship between age, physical and sexual assault, and individual perceptions of health. Although we were able to answer some questions regarding the effect of earlier assaults on individuals' health, it remains an open empirical question how certain aspects of individuals' characteristics, such as their personality, impact health. While more research is needed to clarify the exact role of personality characteristics in various health outcomes, it may be that there are both direct and indirect effects of these characteristics on health. For example, those high in neuroticism are likely to experience elevated levels of stress and strain impacting health. They may also experience hypochondria more so than others. On the other hand, consciousness might be indirectly related to health through thoughtful decision-making such as staying out of risky situations. Extroverted individuals might have better perceptions of health because they are more likely to seek out medical advice or help when needed including after a victimization incident. This is certainly an important avenue for future research with respect to the consequences of victimization on future health outcomes.

There are aspects of this study that leave room for additional research. While we were able to temporally link prior exposure to victimization with current health perception and current health autonomy, we were unable to fully untangle how, over time, victimization and health are reciprocally associated with one another. It is very likely that poor health makes one more vulnerable to victimization. Exposure to victimization can lower perceptions of health along with other related

Table 3
The relationship between assault type (IVs) and current self-reported health autonomy (DV).

	Physical assault						Sexual assault					
	Model 1			Model 2			Model 3			Model 4		
	b(se)	Beta	p-value	b(se)	Beta	p-value	b(se)	Beta	p-value	b(se)	Beta	p-value
Intercept	6.62(0.44)		<0.001	10.05(1.65)		<0.001	6.63(0.44)		<0.001	8.24(1.61)		<0.001
Focal Independent Variables												
Physical Assault	−0.01 (0.12)	0.990	0.12	–	–	–	–	–	–	–	–	–
Sexual Assault	–	–	–	–	–	–	−0.10 (0.11)	0.905	0.367	–	–	–
Age of Onset - Physical Assault	–	–	–	−0.00 (0.01)	1.000	0.731	–	–	–	–	–	–
Age of Onset - Sexual Assault	–	–	–	–	–	–	–	–	–	−0.00 (0.01)	1.000	0.842
Covariates												
Age	−0.02 (0.00)	0.980	<0.001	−0.03 (0.01)	0.970	0.015	−0.02 (0.00)	0.980	<0.001	−0.03 (0.01)	0.970	0.018
Female	0.18(0.07)	1.197	0.013	0.62(0.32)	1.859	0.052	0.19(0.08)	1.209	0.009	0.54(0.34)	1.716	0.114
Non-White	−0.00 (0.11)	1.000	0.985	0.10(0.39)	1.105	0.793	0.00(0.11)	1.000	0.999	0.45(0.35)	1.568	0.191
Education Level	0.02(0.01)	1.020	0.153	0.14(0.06)	1.150	0.025	0.02(0.01)	1.020	0.153	0.07(0.05)	1.073	0.191
# Household Members	−0.03 (0.02)	0.970	0.083	−0.12 (0.07)	0.887	0.068	−0.03 (0.02)	0.970	0.089	0.02(0.05)	1.020	0.745
Depression Level	−0.10 (0.02)	0.905	<0.001	−0.08 (0.06)	0.923	0.183	−0.10 (0.02)	0.905	<0.001	−0.18 (0.05)	0.835	<0.001
Agreeableness	−0.08 (0.08)	0.923	0.325	−0.30 (0.31)	0.741	0.338	−0.08 (0.08)	0.923	0.340	0.05(0.30)	1.051	0.866
Extraversion	0.50(0.07)	1.649	<0.001	0.25(0.30)	1.284	0.405	0.50(0.07)	1.649	<0.001	0.38(0.27)	1.462	0.165
Neuroticism	−0.40 (0.06)	0.670	<0.001	−0.75 (0.23)	0.472	0.002	−0.40 (0.06)	0.670	<0.001	−0.67 (0.21)	0.512	0.001
Conscientiousness	0.43(0.08)	1.537	<0.001	−0.12 (0.31)	0.887	0.699	0.43(0.08)	1.537	<0.001	0.01(0.29)	1.010	0.970
Openness	0.07(0.08)	1.073	0.357	0.32(0.31)	1.377	0.316	0.07(0.08)	1.073	0.340	0.10(0.28)	1.105	0.712
Adjusted R-Square	0.11			0.14			0.11			0.19		
Model Sample Size	2866			191			2866			249		

factors such as depression and anxiety. An additional limitation to this study is our measures of health outcomes. We were able to measure self-perceptions of current health and autonomy, but unable to establish the relationship between age of onset of physical and sexual assault and *actual* health.

In addition to our key findings and these limitations, there are a few implications of this study. With respect to policy, practitioners working with individuals scoring high in depression—including those who have experienced exposure to violence—ought to be aware of the health issues and health seeking behaviors of their patience. Certainly, there are important steps that can be taken in mitigating the effects of victimization at an early age on long-term health outcomes, specifically physical and sexual assault. One such step is providing individuals, especially youth, with an early initial response that may reduce the stress, anxiety, and depression associated with exposure to assault (Broaddus-Shea, Scott, Reijnders, & Amin, 2021). There are also theoretical implications that emerge from our study. Theories of victimization have long been in existence, but theories that attempt to explain the relationship between victimization and health sequelae are under-developed. By including measures of health outcomes, theories in victimology will continue to grow and develop to fully capture the consequences of victimization over an individual's life.

This study examined multiple hypotheses regarding the impact that the age of onset of physical and sexual abuse have on self-perceptions of current health and health autonomy. Results indicate that age of onset of physical assault is not related to current health or health autonomy. However, we did find that the age of onset of sexual assault has a negative relationship to self-perceptions of current health.

Overall, taken with prior research, it is likely that exposure to violence in the form of physical and sexual assault leads to poor life outcomes including personal health. Theories of victimization risk and resilience that do not include factors related to health may be incomplete. Individuals working with survivors of violence should take health into consideration when providing medical, mental, and other recovery services. Therefore, a holistic theoretical and practical framework for uncovering the causes and consequences of victimization must consider personal health.

Appendix A: Construction of "big five" personality traits.

Trait	Adjectives	Trait	Adjectives
Agreeableness (alpha = 0.80)	Helpful Warm Caring Softhearted Sympathetic	Conscientiousness (alpha = 0.68)	Organized Responsible Hardworking Careless (R) Thorough
Extroversion (alpha = 0.76)	Outgoing Friendly Lively Active Talkative	Openness (alpha = 0.77)	Creative Imaginative Intelligent Curious Broad-minded
Neuroticism (alpha = 0.74)	Moody Worrying Nervous Calm (R)		Sophisticated Adventurous

Respondents were asked how much each of several self-descriptive adjectives described them on the following scale: 1 = a lot; 2 = some; 3 = a little; 4 = not at all.

Notes: Scaling: Personality traits scales are constructed by calculating the mean across each set of items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standings in each dimension. Missing Values: The scales are computed for cases that have valid values for at least half

of the items on the particular scale. Scale scores are not calculated for cases with fewer than half of the items on the scales.

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