

Adult happiness and prior traumatic victimization in and out of the household

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Abstract A large share of the American population suffers from traumatic experiences early in life. Many adults are also victims of trauma. Using data drawn from the *National Comorbidity Survey–Replication*, we examine the link between self-reported happiness, a broad gauge of subjective well-being, and four types of traumatic victimization that may occur at various points in the life cycle. In particular, we consider the association between home violence, sexual assault, community violence, and stalking and subsequent victims’ adult happiness. For females and males, we find that each of these traumas significantly reduces self-reported happiness later in the life course, and for both women and men, the estimated impact of home violence is greatest. Furthermore, we find that the adverse effects of trauma on happiness are comparable to the impact of critical socioeconomic developments on happiness. Moreover, we find that experiencing more than one type of these four traumas has a greater negative impact on subsequent happiness than experiencing only one type. Our findings are robust to the inclusion of a wide range of controls, and the influence of trauma on subsequent happiness is

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independent of personal and family characteristics. Since happiness and mental health are closely related, our work suggests that traumatic victimization undermines overall health and well-being in the U.S.

Keywords Happiness · Well-being · Child abuse · Trauma

JEL Classification I31 · J13 · J18

1 Introduction

In recent years, social scientists have been evaluating hypotheses aimed at explaining the determinants of happiness using data drawn from surveys providing self-reports of happiness and subjective well-being.¹ Researchers over the past two decades also have reported that a substantial share of Americans have been subjected to maltreatment as children. For instance, an astonishing 22 percent of Americans report having suffered from childhood sexual abuse; 21 percent indicate they were the victims of physical abuse as a youth, and 14 percent had witnessed maternal violence in the home as children (Edwards et al. 2003; Kilpatrick and Saunders 1997). Moreover, there is large body of research (Benjet et al. 2010; Kessler et al. 1997; Kendler et al. 2000; Shalem et al. 2012; and Diette et al. 2014) linking maltreatment as a youth with poor mental health later in life. However, scholars have yet to explore carefully the connection between traumatic victimization earlier in life and level of happiness as an adult.²

Exposure to traumatic events can have both direct and indirect effects—by altering factors such as mental health and personal behavioral—on subsequent subjective well-being. There is a substantial body of research demonstrating an association between violence victimization during childhood and both emotional distress and problematic behavior as a youth (Hughes 1988; Garbarino and Abramowitz 1992; Sternberg et al. 1993; Berman et al. 1996; Berton and Stabb 1996; Cooley-Quille et al. 2001; Gabarino et al. 1992).³ However, due to endogeneity, it is difficult to establish if these outcomes of violence victimization are the pathways leading to lower happiness later in life without appropriate instruments.⁴ Thus, this paper contributes to the literature by documenting if an association exists between trauma and subsequent happiness.

¹ For an overview of findings regarding the determinants of happiness see Graham (2008).

² The lone paper on this topic (Royse et al. 1991) simply compares mean levels of life satisfaction between those who reported being abused or neglected as a child and those who avoided such an experience for a sample of 604 persons living in Kentucky.

³ See Margolin and Gordis (2000) for a review of this literature.

⁴ Stevenson and Wolfers (2009) discuss this problem in their work identifying the trend of declining female happiness. Although they would like to know if an intermediate development like the increase in female employment is responsible, by causing stressful trade-offs for many women between work and childrearing time, they note that working is a choice and cannot be simply included as a determinant of happiness in econometric models.

We unite the separate literatures on adult happiness and maltreatment as a youth to determine whether traumatic victimization early in life that occurs inside and outside of the household negatively affects a person's life to the extent that it is linked to lower levels of happiness as an adult. Using data from the *National Comorbidity Survey Replication (NCS-R)*, a large nationally representative survey, we estimate the connection between experiencing four alternative forms of traumatic victimization—violence in the home as a youth, sexual assault, violence in the community, and stalking—on current happiness as an adult. Our findings reveal that being the victim of these traumatic experiences is associated with lower levels of happiness as an adult, after accounting for a wide range of factors expected to affect subjective well-being, and the magnitude of these effects is similar to that of major sources of disappointment as an adult including unemployment and low social standing. In addition, the probability of being happy as adult declines for females and males as the total number of different types of traumas a person is the victim of rises.

Some economists view subjective well-being, or happiness, as a proxy for “utility” (Thaler 1992; Frey and Stutzer 2002), while others consider self-perception of happiness as an indicator of revealed preference for various forms of consumption or experiences (Kahneman and Krueger 2006). Empirical work providing a deeper understanding of the determinants of individual happiness is helpful to policymakers in designing and implementing initiatives that advance societal well-being (Frey and Stutzer 2002). For instance, although happiness measures are highly correlated with conventional, material-oriented measures of well-being such as consumption, income, and wealth (Gruber and Mullainathan 2005; Kahneman and Krueger 2006; Stevenson and Wolfers 2009), research reveals that happiness self-assessments are strongly associated with non-financial factors including relationships (Myers and Diener 1996; Frey and Stutzer 2002).⁵ Moreover, studies reveal relatively small and short-lived effects of changes in most life circumstances on reported life satisfaction, a phenomenon referred to as the “hedonic treadmill” (Kahneman and Krueger 2006). However, the existing research has found a consistently large and sustained significance of personal socioeconomic developments including self-perceived social standing and unemployment on self-reported life satisfaction. Thus, numerous economists (Kahneman and Krueger 2006; Graham 2008) and psychologists (Diener and Seligman 2008; and Ostir et al. 2000) suggest that policy-makers not only emphasize increasing consumption opportunities, but also take these social insights into account when designing new programs.

2 Data and measurement of happiness and trauma

We analyze restricted data from the *National Comorbidity Survey-Replication (NCS-R)*. The *NCS-R* was designed to collect information on potential determinants of mental disorders and other measures of well-being—including happiness—in the

⁵ Researchers have also found that a respondent's self-reported happiness is strongly associated with perceptions of the respondent's happiness held by spouses, family members, and friends (Myers and Diener 1996, and Frey and Stutzer 2002).

US through face-to-face interviews with respondents conducted in their homes. The NCS-R was carried out on a nationally representative group of racially and ethnically diverse respondents between February 2001 and April 2003.⁶ Our analysis sample includes 3216 women and 2336 men.

A desirable feature of the data is that the survey collects retrospective respondent information on exposure to traumatic events in a life event framework. As a result, information on the age of first subjection to various forms of traumatic victimization is available. This allows us to parse out individuals who suffered from traumatic events at various points during the life cycle from those who were not exposed to such experiences. In addition, respondents provided a self-report of happiness as part of the survey. The NCS-R also contains rich demographic, individual, and family information so that a wide array of factors expected to influence happiness, aside from traumatic victimization, can be accounted for in our analysis.

The NCS-R survey contains a question to gauge happiness. Respondents were asked, *In the past 30 days, how often did you feel happy?* They had five valid response options: all, most, some, little, or none of the time.⁷ We construct a measure that we refer to as *happy*, which takes on a value of 1 for persons who report being happy either all of the time, most of the time, or some of the time, and a 0 otherwise. We refer to people as being *unhappy* if they are only happy little of the time or none of the time (*happy* = 0). One advantage associated with phrasing the happiness question in reference to the past 30 days is that it allows for a clearly defined time frame across respondents. In addition, the time frame balances two common concerns of being broader than momentary happiness (i.e., one day), but not so long as to cloud recollection (i.e., a year). The question in this survey is modeled after the convention used in the Diagnostic and Statistical Manual of Mental Disorder (DSM) IV in an effort to capture a longer time horizon while not sacrificing accurate recall.

A question that arises is the viability of using a single item self-rating scale for happiness relative to well-known multi-item scales.⁸ Abdel-Khalek (2006) offers evidence of high correlations between a single item general measure of happiness and life satisfaction with both the *Oxford Happiness Inventory* and the *Satisfaction*

⁶ The NCS-R sampled 9282 individuals. These respondents spent approximately one hour completing the first component of the survey. The second part of the survey was only administered to 5692 individuals in order to reduce the direct costs of the survey as well as the time to the respondents. The subsample includes all individuals with a lifetime disorder plus a probability subsample of other respondents. Weights are used to maintain the structure of the full sample of respondents. Of these 5692 individuals a total of 5,552 individuals (3216 women and 2336 men) are included in our analysis. 140 individuals were dropped for one of the following issues: non-response to the happiness question, non-response to any of the trauma questions, questions related to the age of when any of the traumas first occurred, and observations from one state where all individuals report the same level of happiness and therefore drop out of the estimation procedure that includes state fixed effects.

⁷ The distribution of responses across the five possible answers to the question *In the past 30 days, how often did you feel happy?* for males is: all (12 percent), most (50 percent), some (26 percent), little (9 percent), and none (2 percent). For females the distribution is: all (8 percent), most (45 percent), some (31 percent), little (12 percent), and none (4 percent).

⁸ A single item measure of Happiness is used by Stevenson and Wolfers (2009) in their study of trends in female and male perspectives on happiness.

with *Life Scales*, both of which are commonly used and well-regarded multi-item scales to gauge happiness.⁹

NCS-R respondents were asked questions to identify if they were subject to various forms of trauma or maltreatment over the course of their life. If they were victims, they reported the age of first onset of the particular form of trauma. Four indicator or dummy variables were created to identify those who were the victims of: violence in the home as a child, sexual assault, community violence, and stalking.

Respondents were catalogued as having been subject to violence in the home if they answered yes to either of these questions: *as a child, were you ever badly beaten up by your parents or the people who raised you*, or *as a child, did you ever witness serious physical fights at home, like when your father beat up your mother?* For these individuals the indicator variable *Home Violence as a Child* equals 1.

The survey also asked respondents *did Someone either have sexual intercourse with you or penetrating your body with a finger or object when you did not want them to, either by threatening you or using force*, and *if other than rape, did someone touch you inappropriately when you did not want them to?* Individuals who respond affirmatively to either of these questions are classified as having been the victim of sexual trauma, and the variable *Sexual Assault* equals 1.

Persons were identified as having been subject to violence in their community if they reported that they had either been *beaten by anyone other than parents*, or if they had been *mugged, held up, or threatened with a weapon*. The variable *Community Violence* equals 1 for these individuals. A respondent is categorized as a victim of stalking and the variable *Stalked* equals 1 if they answered affirmatively to the question *has Someone followed you or kept track of your activities in a way that made you feel you were in serious danger?*

We next present a range of descriptive statistics for different subsamples of the data used in our analysis. This exercise aims to shed light on: the prevalence and timing of traumatic victimization, the extent to which persons are exposed to multiple forms of trauma, the connection between trauma victimization and happiness, and the association between happiness status and trauma victimization.

Table 1 reports the prevalence of first onset for four forms of traumatic victimization for females and males. We present prevalence of first onset of these traumas by stage in the life cycle: during childhood (ages 1–17) and later years (ages 18 to the year of the survey). Inspection of Table 1 reveals that 18 percent of females indicated that during childhood, they lived in a family where there was violence.¹⁰ An even larger share of women in the sample—26 percent—report being victims of sexual assault over the course of their life to the point of the survey, while women experience stalking and violence in the community less commonly during their lifetimes, with each represented in the sample at 13 percent. The composition of the trauma experienced by men is different than for women. For instance, while

⁹ Abdel-Khalek's (2006) finding is consistent with Cummins (1995, p 196) who asserted, "if researchers are interested only in an overall life satisfaction score, there seems little benefit in asking respondents multiple questions; it seems that a single question can yield reliable and valid data".

¹⁰ The *NCS-R* only collects information on home violence during childhood, since it is likely that respondents live outside of their parents' home in adulthood.

Table 1 Prevalence of traumas by age of first onset Source: *National Comorbidity Survey-Replication*

	Home violence	Sexual assault	Community violence	Stalking
Females		25.9 %	13.3 %	13.4 %
Age 1–17	18.3 %	20.3	4.3	3.6
Age 18-year of survey		5.6	8.9	9.8
Males		6.2	31.7	5.1
Age 1–17	15.2	5.0	15.3	1.0
Age 18-year of survey		1.2	16.2	4.1

All statistics use the variable *NCSRWTLG* to weight observations

the share of men who report experiencing home violence during childhood is comparable to that of women at 15 percent, only between 5 and 6 percent of men in our sample report being either sexually assaulted or stalked during their lifetimes. However, 32 percent of men in the sample experience violence in their community during the course of their lives, more than twice the rate at which women experience this form of trauma.

Further examination of Table 1 reveals that the majority of females who report experiencing sexual assault first experience this trauma during childhood (20 percent of the sample), while the majority of women who were stalked and experienced community violence faced this form of victimization after the age of 18 (10 percent and 9 percent of the sample respectively). Similar to females, males first experience the majority of sexual assault as a youth, though at a much smaller magnitude than women (5 percent of the sample). Men are also more likely to be stalked in adulthood (4 percent of the sample) than as a youth. However, men first experience community violence about as frequently in their youth as in their adulthood (between 15 and 16 percent of the sample). In summary, Table 1 offers evidence that among victims of sexual assault, the first onset occurs primarily in childhood, while the first onset of stalking and community violence typically is experienced as an adult. The lone exception is that first onset of community violence is approximately evenly split between childhood and adulthood for males.

Table 2 reports mean values for *happy* (the dependent variable) and the four types of trauma by gender for the entire sample and then for subsamples who experienced a particular form of maltreatment. Both females and males who are victims of traumatic events are substantially less likely to be *happy* than the full sample average. Among trauma victims, the share of women who report being *happy* ranges from 80 to 81 percent depending on the specific trauma compared to the full sample average of 89 percent. Similarly, fewer males who are victims of traumas are *happy*, ranging from 85 to 88 percent, than the sample average of 92 percent. Thus, while males appear happier than females on average, we observe a similar pattern regardless of gender; victims of trauma report being less *happy* than the average in the sample.

Table 2 also reveals that there is a substantial likelihood that both females and males who are victims of traumatic events will have also fallen victim to one or

Table 2 Mean values of happy and traumas for full sample and by type of trauma Source: *National Comorbidity Survey-Replication*

	Full sample	Home violence	Sexual assault	Community violence	Stalking
<i>Panel A: Females</i>					
Happy (%)	89.1	80.5	81.3	81.2	80.7
Home violence as a child (%)	18.3	100.0	34.5	37.2	34.0
Sexual assault	25.9	48.8	100.0	55.3	56.8
Community violence	13.3	27.0	28.4	100.0	31.5
Stalked	13.4	24.9	29.4	31.8	100.0
Observations	3216	695	1071	537	556
<i>Panel B: Males</i>					
Happy (%)	92.2	85.6	84.7	88.1	84.7
Home violence as a child (%)	15.2	100.0	39.3	25.1	37.8
Sexual assault	6.2	15.9	100.0	12.3	15.9
Community violence	31.7	52.3	63.4	100.0	64.8
Stalked	5.1	12.6	13.1	10.4	100.0
Observations	2336	451	192	878	150

All statistics use the variable *NCSRWTLG* to weight observations

more other types of maltreatment. Among females who experienced home violence, almost half were sexually assaulted, and approximately one quarter either experienced community violence or stalking. In addition, over one-third of women who were victims of any of the other three traumas also experienced home violence. A high degree of trauma comorbidity exists for women subject to the other forms of traumatic victimization as well. For example, among women who were sexually assaulted, the prevalence rates of the other traumas are approximately 30 percent. At least half of the women who were victims of any of the other three traumas were also sexually assaulted. Over half of the males who experienced home violence as a child report that they experienced community violence, while about a quarter of men who experience violence in their community also report that they grew up in violent homes. Similarly, for men who were either sexually assaulted or stalked, over a third experienced home violence as a child, and almost two-thirds reported suffering from violent acts in their community. In summary, both men and women experience high levels of comorbidity across the four different types of traumas.

The *NCS-R* also provides extensive information on demographic factors that the literature reveals as important controls or other determinants of happiness (Graham 2008). These include a respondent's educational attainment, age, racial and ethnic heritage, gender, marital status, current family structure and wealth accumulation. In addition, information regarding the respondent's family characteristics during childhood is available, which allows us to control for whether they were raised by both of their parents, their parents' education level, and whether their family received public assistance when they were a youth. Respondents also reported on personal features of their life expected to be associated with happiness including

perceived social standing, participation in organized religion, and connections to friends. Online Appendix Table 1 provides summary statistics for all of the control variables used in our formal analyses of happiness for the full sample by gender.¹¹ The characteristics of men who suffered from a form of traumatic victimization are similar to the features of the sample of males as a whole, with the exception of a few features for the men who experienced home violence as children. As children, these men, relative to the average male in our analysis subsample, were less likely to have been raised by both biological parents, had parents who were less educated, and were raised in families that were more likely to have received welfare. As adults they were less likely to continue their education beyond high school and to interact frequently with friends. The only other notable difference was that men who were subject to community violence had far lower levels of wealth.

Table 3 reports mean values for the four different forms of trauma for the subsample of women and men separated into those who reported being *happy* (all, most, or some of the time) and for those who are *unhappy* (happy little or none of the time). For both women and men, those who are *unhappy* have substantially higher levels of traumatic victimization compared to those who are *happy*. For example, among women who report being *happy*, 17 percent experienced home violence as a child, while 33 percent of *unhappy* women were exposed to home violence. Similarly, 14 percent of *happy* men experienced home violence as a child, compared to 28 percent of *unhappy* men. These unconditioned means suggest that traumatic victimization is related to self-reported happiness levels later in life.

In Table 4, we divide females and males into three groups based on the number of different types of traumas they report experiencing during their lifetime and display the percent classified as *happy* within each group. The first group is individuals who report never being a victim of any of the four types of trauma: home violence, sexual assault, community violence, and stalking. The second group contains individuals who have experienced only one type of trauma and the final group includes those who report experiencing more than one type of trauma. Females and males have a similar gradient with respect to the number of traumas experienced and the percent classified as *happy*. In our sample, 93 percent of women and 95 percent of men who have never been victims of trauma report being *happy*. The share of the analysis sample that is *happy* falls monotonically as the number of types of trauma increases. For females the share *happy* falls from 88 percent to 79 percent as the number of traumas increase from one to more than one type of trauma. Similarly, for males, the share of *happy* falls from 91 percent to 84 percent.

¹¹ Summary statistics for the victims of each form of trauma are available upon request. Some characteristics of individuals or the families they were raised in are closely associated with forms of traumatic victimization for females and males respectively. The characteristics of the females who have suffered from any of the forms of maltreatment are similar to the full sample of females. The lone exception is the slightly elevated share of Hispanic women reporting violence in the home, 15.8 percent, relative to their share in the sample, 10.6 percent. The only other substantive differences occur for women who report having been exposed to violence in their homes while growing up. As children, these women are more likely to have been raised in poor families, less likely to have been raised by both biological parents, and more likely to have less well-educated mothers and fathers. Moreover, as adults, those women who were raised in a violent home were less likely to have continued schooling beyond high school, tend to talk with friends less often, and to have lower levels of wealth.

Table 3 Mean values of trauma by gender and *Happy* status Source: *National Comorbidity Survey-Replication*

Traumas	Females		Males	
	<i>Happy</i>	<i>Unhappy</i>	<i>Happy</i>	<i>Unhappy</i>
Home violence as a child (%)	16.5	32.8	14.1	28.2
Sexual assault	23.6	44.3	5.7	12.1
Community violence	12.1	22.9	30.3	48.3
Stalked	12.1	23.8	4.7	9.9
Observations	2716	500	2079	257

All statistics use the variable *NCSRWTLG* to weight observations

Table 4 Mean value of happy by number of types of trauma exposure Source: *National Comorbidity Survey-Replication*

Number of different types of traumas	Females			Males		
	<i>No trauma</i>	<i>One trauma</i>	<i>>One trauma</i>	<i>No trauma</i>	<i>One trauma</i>	<i>>One trauma</i>
Happy	93.0	88.1	78.7	94.7	91.1	83.4
Observations	1551	871	794	1181	751	404

All statistics use the variable *NCSRWTLG* to weight observations. The four types of trauma are: sexual assault, stalking, community violence, and home violence

Thus, those with more than one trauma are roughly three times more likely to report being *unhappy* than those who never experience any of the four traumas measured.

Based on the unconditioned means reported in Table 3 and Table 4, it appears that there is a strong negative association between being *happy* and being the victim of at least one of the four types of traumatic experiences included in this study and that the negative relationship is stronger among victims of multiple types of traumas. In the next section we describe the methodology we adopt to conduct formal tests of these hypotheses. Our results are presented in the subsequent sections.

3 Methodology

We estimate variations of a standard happiness equation as represented in Eq. 1, augmented to account for indicators for exposure to each of the four different types of traumas for females and males. We assume the specifications take on a probit distribution, using maximum likelihood estimation.

$$Happy_{is} = \alpha_0 + \alpha_1(Trauma_{is}) + \alpha_2(X_{is}) + \varphi_s + \varepsilon_{is} \tag{1}$$

Happy takes on a value of one if individual *i* who resides in state *s* and who reports being happy either all, most, or some of the time, and a 0 otherwise. *Trauma*

is a vector of indicator variables for exposure to the four types of trauma: home violence as a child, sexual assault, community violence, and stalked.

Men and women may process various characteristics into happiness differently and/or have a different measurement scale of happiness. Consequently, rather than adding a control for gender to our empirical model, we conduct the analysis separately for females and males to allow the impact of traumatic victimization (and all other controls) to vary based on gender. The reference group is the group of females and males respectively who have not experienced any of the traumas we specified.

A number of factors can influence a person's level of happiness other than exposure to a traumatic event. Failure to account for such potential determinants of happiness may cause estimates of the link between traumatic victimization and happiness to suffer from omitted variable bias. To address this concern, the models we estimate include X , a vector of controls to account for an array of demographic, individual, and family features potentially linked to happiness. However, it is important to recognize that adding controls for factors that are people's choices may introduce endogeneity bias. Thus, in our first specification, Model 1, we include no controls. In Model 2 we limit controls to those that we believe are clearly exogenous. These variables include age and age squared along with dummy variables for: race and ethnicity, being born outside of the U.S., being raised by both biological parents, if their parents divorced when the respondent was in their teens, number of siblings, mother having at least a high school education, and father having at least a high school education. In addition, we include childhood family variables to identify whether the family received welfare or emphasized religion.¹²

In Model 3, X is expanded to include potentially endogenous controls that indicate if the respondent completed more than a high school education, if they are currently married, and whether they have ever been divorced. In addition, Model 3 also includes state fixed effects, φ_s , (i.e., an indicator variable for the state where the Respondent currently resides). This specification compares trauma victims' happiness to the happiness of the non-trauma control group within the same state. This accounts for the possibility that people who reside in some states may be happier than others because of differences in state characteristics such as economic opportunity or the weather. Although the factors introduced in Model 3 are often treated as exogenous, they are potentially endogenous because they reflect personal choices, and their inclusion may introduce some bias to our estimates. Thus, we incorporate them into the analysis at this later stage to examine the robustness of our findings.

Finally, in Model 4 we also incorporate indicator variables to account for a range of factors that describe the respondent's current situation. These current factors may be a direct source of happiness or have the capacity to buffer or mediate the impact of a past trauma on present happiness. These additional dummy variables account for: the presence of children in the household, if the respondent practices religion at

¹² We also include a missing variable indicator for every variable used in a model specification, rather than drop observations when a respondent did not provide information on a variable. The only exception to this is that we dropped observations where information on education was missing.

least monthly, if they speak to friends regularly, their family's financial net worth, whether either of their parents died when they were a teen, if any of the respondent's children have died, their sense of where they stand in the community, and whether they experienced unemployment in the most recent week prior to the survey. These control variables may reflect choices that may be jointly determined with happiness, leading to endogeneity bias. For instance, people who talk to friends frequently may not only be happier, but happier people may also stay in more consistent contact with friends.

The control for the respondent's sense of where they stand in the community addresses the frame of reference a person uses in answering questions about their level of happiness. Many scholars and social commentators assert that people make social comparisons when they assess their happiness and that people tend to have a preference for higher social standing.¹³ NCS-R survey respondents were asked to identify on a ladder with 10 rungs their *standing now relative to people in their community*. From this we constructed a binary indicator variable to capture a respondent's sense of their social standing. The variable *community standing low* takes on a value of 1 for persons who reported being on one of the 5 lowest rungs of their community standing ladder, and a 0 otherwise.¹⁴ To explore the influence of the number of different types of trauma a person experienced on happiness we modify Eq. (1) and estimate Eq. (2), using the same specifications for Models 1–4.

$$\begin{aligned} \text{Happy}_{is} = & \beta_0 + \beta_1(\text{One Trauma}_{is}) + \beta_2(\text{More Than One Trauma}_{is}) \\ & + \beta_3(X_{is}) + \varphi_s + \varepsilon_{is} \end{aligned} \quad (2)$$

One Trauma is an indicator variable that takes on a value of one if a respondent reports experiencing only one type of trauma, and a 0 otherwise. Similarly, *More Than One Trauma* is an indicator variable that identifies individuals who experienced more than one type of trauma. As in Eq. (1), the reference group is those who were not the victims of any type of trauma.

4 Results

In this section we present our findings on the link between initial exposure to traumatic victimization and subsequent happiness as an adult. These estimates reveal whether the probability of being happy all, most, or some of the time as an adult relative to being happy less often is significantly related to traumatic victimization earlier in life and other factors. Our discussion will focus on Model 2, which includes controls that are clearly exogenous. The marginal effects reported are estimates of the variable contributions evaluated at the sample means for all of

¹³ In a seminal paper, Easterlin (1974) presents evidence that as average income in society rises, average happiness increases, but that each additional gain in income for the typical person in society leads to a smaller gain in average happiness. One explanation for this is that people care not only about the capacity to consume but also about their position in society. For a review of the literature on relative standing and happiness see Frank and Heffetz (2011).

¹⁴ 30 percent of respondents assessed their community standing to be on the bottom 5 rungs.

the other regressors. We also estimate specifications that account for the timing of when in the person's life cycle they were first subject to the various traumas. This allows us to determine if traumas that happen at different stages of life have a more or less adverse association with adult happiness than maltreatment that occurs at an older age.

4.1 Traumatic victimization and the probability of happiness—core findings

Table 5 presents the marginal effects from our probit estimates of Eq. (1), the impact of trauma exposure on the probability of being happy all, most, or some of the time as an adult in the last 30 days relative to being happy less often, holding all of the other determinants of happiness at their mean level for the sample. We present separate estimates for women and men. Full results for Models 2–4 are presented in Online Appendix Table 2.

Examination of Column 2 of Table 5 reveals that females who experienced home violence are 5.4 percentage points less likely to be *happy* relative to persons who experienced no forms of traumatic victimization during their life (the reference group)—and this difference is statistically significant. This is a very large effect. Recall that 10.9 percent of females in the sample report being *unhappy* (see Table 2, Panel A). Thus, women who experienced home violence as children, relative to the average female in the sample, are 49.5 percent (i.e., 5.4/10.9) more likely to be *unhappy*. We also find that females who were sexually assaulted are 5.2 percentage points less likely to be *happy* than women in the reference group, producing a similarly sized gap that is also statistically significant. In addition, women who were stalked are 3.5 percentage points less likely to be *happy*, and, relative to the average female in the sample, are 32.1 percent (3.5/10.9) more likely to be *unhappy*. The estimated marginal effect of community violence of 2.4 percent is not statistically significant with a p value of 0.100.

Results for the males display similar levels of significance in Column 6 of Table 5. Similar to women, men who experienced household violence as children experience the largest impact relative to other traumas, 4.5 percentage points less likely to be *happy*, at a statistically significant level. As 7.8 percent of males report being *unhappy*, relative to other males in the sample, men who experienced home violence as a child are 57.7 percent (i.e., 4.5/7.8) more likely to be *unhappy*. Men who were sexually assaulted and men who experienced community violence are respectively 3.4 percentage points and 3.8 percentage points less likely to be *happy* than men who never experienced these types of trauma. The differences for these traumas are also statistically significant. Compared to the average men in the sample, these men are 43.6 and 48.7 percent (i.e., 3.4/7.8 and 3.8/7.8) more likely to be *unhappy*. Men who were stalked are also 3.2 percentage points less likely to be *happy*, although our estimate is not precise.

Our significant findings for the women and for the men are robust to the inclusion of controls for state of residence, education level, being married or cohabitating currently, and having ever been divorced in Model 3 as well as accounting for social standing and a range of factors that might buffer the impact of traumatic

Table 5 Marginal effects of traumatic victimization on the probability of being happy by gender Source: *National Comorbidity Survey-Replication*

	Females				Males			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Home violence as a child	-0.058*** [0.000]	-0.054*** [0.000]	-0.048*** [0.001]	-0.045*** [0.001]	-0.045*** [0.000]	-0.045*** [0.001]	-0.046*** [0.000]	-0.040*** [0.002]
Sexual assault	-0.061*** [0.000]	-0.052*** [0.000]	-0.047*** [0.000]	-0.043*** [0.000]	-0.033* [0.083]	-0.034* [0.064]	-0.032* [0.080]	-0.029* [0.089]
Community violence	-0.032** [0.029]	-0.024 [0.100]	-0.020 [0.172]	-0.020 [0.181]	-0.041*** [0.000]	-0.038*** [0.001]	-0.036*** [0.002]	-0.030*** [0.008]
Stalked	-0.038** [0.012]	-0.035** [0.020]	-0.033** [0.026]	-0.029** [0.041]	-0.031 [0.152]	-0.032 [0.126]	-0.034* [0.084]	-0.040** [0.041]
Age & childhood demographics		Y	Y	Y		Y	Y	Y
Education & marital status			Y	Y			Y	Y
State fixed effects			Y	Y			Y	Y
Adult demographics				Y				Y
Perceived community standing				Y				Y
Observations	3216	3216	3216	3216	2336	2336	2336	2336

The regressions weight observations using the variable *NCSRWTLG* provided by the NCS-R. The estimations use the probit command in Stata version 13 and marginal effects are calculated with the margins, dydx command. The *p* values are in brackets and are calculated from the Z-statistic. * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. The dependent variable, *happy*, takes a value of one when then respondent reports being happy all, most, or some of the time in the last 30 days and zero if they answer little or none of the time. Age and childhood demographics include: age, age-squared, indicator variables for Black, Hispanic, Asian, Other Race with White as the reference group, number of siblings, and indicator variables for whether their mom had at least a high school education, father had at least a high school education, family received Welfare as a youth, religious as a child, and whether their biological parents were still together when the respondent was 16. Adults controls include indicator variables for whether the respondent has more than a high school education, if they are currently married or cohabiting, and whether they have ever been divorced, state fixed effects for current residence, indicator variables for whether their mother or father died while they were a teen, if one of their children has died, the number of kids currently in the household, whether they are unemployed, their net worth, and if they talk to friend most every day or few times a week. The four types of trauma are: sexual assault, stalked, community violence, and home violence

victimization in Model 4. It is worth noting that for males in both Models 3 and 4, having been stalked becomes statistically significant. In summary, for males, we find that each of the four forms of trauma is adversely associated with subsequent happiness while for women this is true for all traumas except community violence.¹⁵

In order to understand the importance of trauma to subsequent happiness, it is helpful to identify the magnitude of these effects relative to the influence of other important socioeconomic developments on happiness. We focus on unemployment in the last week—a marker for economic well-being—and self-perceived community standing, a marker for social stature. Inspection of Model 4 (Columns 3 and 6 for females and males respectively) in Online Appendix Table 2 shows that these developments are negatively and significantly associated with current happiness. Females who were unemployed in the last week are 5.2 percentage points less likely to be *happy*, those who believe they hold a low-level of community standing are 4.4 percentage points less likely to be *happy*. For the women in our sample, the estimated impacts of experiencing home violence as a child and sexual assault are virtually identical in magnitude to the perception of having low community standing. Males who experienced unemployment are 3.9 percentage points less likely to be *happy*, compared to males who believe themselves to be of low community standing, who are 4.8 percentage points less likely to be *happy*. For these males, the estimated effects of unemployment are somewhat larger than the estimated impact of experiencing home violence as a child. Thus, having experienced trauma and currently experiencing disappointing life outcomes, such as unemployment and low social standing, have similar adverse effects on happiness.

4.2 Traumatic victimization, life cycle position, and the probability of happiness

The timing of initial exposure to trauma or the stage in the life cycle when a form of victimization is first experienced may influence the link between that development and happiness later in life. For instance, community violence may be more damaging when a person is older, while the shame, anger, and distrust that is often associated with sexual assault can be expected to be more damaging to mental

¹⁵ Our measures of the variables home violence as a child, sexual assault, and community violence each combine two different subcategories of traumatic experiences. A table that presents the prevalence of trauma for each subcategory is available upon request. Inspection of this table reveals that females and males are twice as likely to report witnessing violence in the home than being beaten by their parents. In addition, both men and women are more likely to report being sexually assaulted (non-rape) than raped and being mugged than being beaten in the community. We estimated a version of Eq. (1) with Trauma measured as a vector of indicators for exposure to each of the aforementioned six subcategories and stalking. Online Appendix Table 3 presents the results for Models 2 and 4. These coefficient estimates are generally smaller in magnitude to the pooled results presented in Table 5. Moreover, the significance levels decline when we use the subcategory measures, which can be attributed to small cell size. It is noteworthy that our findings reveal the effects of the subcategories are nearly identical within each type of trauma. These findings affirm our approach of combining the subcategories when measuring the four different trauma types.

health and future happiness if it occurs at a younger age.¹⁶ To explore these hypotheses, we re-estimated Models 2 and 4 after augmenting the specification to identify when in the life cycle—as a youth (before the age of 18) or as an adult (age 18 to year of survey)—a person was initially subject to each of the possible forms of trauma. It is important to note that respondents were only asked whether or not they experienced home violence as children. Therefore, only the variables *sexual assault*, *community violence*, and *stalking* are split into age 1 to 17 and age 18 to the year of survey. Table 6 presents our findings on the link between happiness as an adult and the timing of exposure to the four types of trauma for both females and males.

Examining Column 1, it is striking to note that for females, being sexually assaulted as an adult has the largest impact of any trauma and carries a larger impact on being *happy* than being sexually assaulted as a child. Women who first experienced this trauma as adults are 6.5 percentage points less likely to be *happy*, compared to 4.9 percentage points for women who were sexually assaulted as children. Women who experienced community violence are negatively impacted by this type of trauma at any age, though not at a statistically significant level. Among females who were stalked, those who experienced this trauma as children are 5.4 percentage points less likely to be *happy*, compared to the women who were stalked as an adult, who are 2.7 percentage points less likely to be *happy*.

Examining Column 3 of Table 6, we can see that the stage in life that trauma was first experienced is informative for males as well. Males who were first sexually assaulted before the age of 18 are 4.9 percentage points less likely to be *happy*, a result that is statistically significant. However, we find no statistically significant relationship between having been sexually assaulted as an adult and subsequent happiness for males. Men who experienced community violence both as children and as adults are less likely to be *happy*, by 4.2 and 3.2 percentage points respectively. These findings are both statistically significant. It is also interesting to note that men who were stalked as children are 7.8 percentage points less likely to be *happy*, and that there is a negative but insignificant impact on happiness for men who are stalked as adults.

Our analysis so far has explored the association between experiencing different types of trauma and happiness, not accounting for whether or not respondents have experienced more than one type of trauma. An interesting question is whether individuals exposed to more than one type of trauma are less happy than persons who experience a single type of trauma.

4.3 Number of alternative types of traumatic victimization and the probability of happiness

Table 7 presents the marginal effects from our probit estimates of Eq. (2) using measures of one trauma and two or more different types of trauma relative to no trauma. We again estimate the probability of being *happy* all or most of the time as an adult in the last 30 days relative to being *happy* less often, and report the marginal effects holding all of the other covariates at their mean level for the

¹⁶ For a discussion of these issues see Kendall-Tackett et al. (1993); Cahill et al. (1999); and Celano (1992).

Table 6 Marginal effects of trauma types by age victimized on the probability of being happy by gender
Source: *National Comorbidity Survey-Replication*

	Females		Males	
	(1)	(2)	(3)	(4)
Home violence as a child	-0.055***	-0.045***	-0.043***	-0.038***
(Age 1-17)	[0.000]	[0.001]	[0.002]	[0.003]
Sexual assault	-0.049***	-0.039***	-0.049**	-0.042**
(Age 1-17)	[0.000]	[0.003]	[0.012]	[0.022]
Community violence	-0.038	-0.045*	-0.042***	-0.035***
(Age 1-17)	[0.113]	[0.052]	[0.003]	[0.008]
Stalked	-0.054**	-0.050*	-0.078*	-0.079*
(Age 1-17)	[0.049]	[0.056]	[0.098]	[0.071]
Sexual assault	-0.065***	-0.054***	0.066++	0.057++
(Age 18 to year of survey)	[0.001]	[0.004]	[0.188]	[0.221]
Community violence	-0.014	-0.004	-0.032***++	-0.022++
(Age 18 to year of survey)	[0.416]	[0.839]	[0.036]	[0.132]
Stalked	-0.027*	-0.019	-0.015	-0.025
(Age 18 to year of survey)	[0.092]	[0.211]	[0.504]	[0.230]
Age & childhood demographics	Y	Y	Y	Y
Adult controls		Y		Y
Observations	3216	3216	2336	2336

The regressions weight observations using the variable *NCSRWTLG* provided by the NCS-R. The estimations use the probit command in Stata version 13 and marginal effects are calculated with the margins, dydx command. The *p* values are in brackets and are calculated from the Z-statistic. * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$. The dependent variable, *happy*, takes a value of one when then respondent reports being happy all, most, or some of the time in the last 30 days and zero if they answer little or none of the time. Age and childhood demographics include: age, age-squared, indicator variables for Black, Hispanic, Asian, Other Race with White as the reference group, number of siblings, and indicator variables for whether their mom had at least a high school education, father had at least a high school education, family received Welfare as a youth, religious as a child, and whether their biological parents were still together when the respondent was 16. Adults controls include indicator variables for whether the respondent has more than a high school education, if they are currently married or cohabiting, and whether they have ever been divorced, state fixed effects for current residence, indicator variables for whether their mother or father died while they were a teen, if one of their children has died, the number of kids currently in the household, whether they are unemployed, their net worth, and if they talk to friend most every day or few times a week. Chi-squared tests of differences between early ages and later ages within type of trauma are reported as + $p < 0.1$, ++ $p < 0.05$, and +++ $p < 0.01$

sample. As above, we present separate estimates for women and men. Our discussion focuses on Model 2 (columns 1 and 3), the specification that includes only controls for factors that are clearly exogenous.

Examination of Column 1 of Table 7 reveals that among females the probability of being *happy* falls as the number of different types of trauma experienced increases. Women who suffered from one form of trauma were 4.4 percentage points less likely to be *happy* than women who report never experiencing any of the four types trauma analyzed, while women who experience multiple traumas are 10.0

Table 7 Marginal effects of number of different types of trauma experienced on the probability of being happy by gender Source: *National Comorbidity Survey-Replication*

	Females		Males	
	(1)	(2)	(3)	(4)
One trauma	-0.044*** [0.001]	-0.037*** [0.006]	-0.035*** [0.007]	-0.025** [0.048]
More than one trauma	-0.100*** [0.000]	-0.085*** [0.000]	-0.089*** [0.000]	-0.076*** [0.000]
Chi-squared: One trauma = More than one trauma	[0.000]	[0.001]	[0.000]	[0.000]
Age & childhood demographics	Y	Y	Y	Y
Adult controls		Y		Y
Observations	3216	3216	2336	2336

The regressions weight observations using the variable *NCSRWTLG* provided by the NCS-R. The estimations use the probit command in Stata version 13 and marginal effects are calculated with the margins, dydx command. The *p* values are in brackets and are calculated from the Z-statistic. * *p* < 0.1, ** *p* < 0.05, and *** *p* < 0.01. The dependent variable, *happy*, takes a value of one when then respondent reports being happy all, most, or some of the time in the last 30 days and zero if they answer little or none of the time. Age and childhood demographics include: age, age-squared, indicator variables for Black, Hispanic, Asian, Other Race with White as the reference group, number of siblings, and indicator variables for whether their mom had at least a high school education, father had at least a high school education, family received Welfare as a youth, religious as a child, and whether their biological parents were still together when the respondent was 16. Education and marital status includes indicator variables for whether the respondent has more than a high school education, if they are currently married or cohabiting, and whether they have ever been divorced. The state fixed effects refer to the state of current residence. Adult demographics include indicator variables for whether their mother or father died while they were a teen, if one of their children has died, the number of kids currently in the household, whether they are unemployed, their net worth, and if they talk to friend most every day or few times a week

percentage points less likely to be *happy* than the control group of women who have experienced no traumas. Compared to the average women in the sample, women who experienced one trauma and women who experienced more than one trauma are 40.4 and 91.7 percent (i.e., 4.4/10.9 and 10/10.9) more likely to be *unhappy*. Moreover, a Chi-squared test in Table 7 reveals that women who are subject to more than one form of trauma are significantly less happy than women who experience only one type of trauma.

We find a similar pattern for males in Column 3 of Table 7. Men who report experiencing one type of trauma are 3.5 percentage points less likely to be *happy* than those who have not been the victim of a trauma. These males, relative to the average male in the sample, are 44.9 percent (i.e., 3.5/7.8) more likely to be *unhappy*. The likelihood of being *happy* for men who have been the victims of more than one type of trauma is 8.9 percentage points less than for those who have never suffered from trauma. It is striking that, relative to the average male in the sample, these men are more than twice as likely (114.1 percent i.e., 8.9/7.8) to be *unhappy*. Similar to the results for females, men who experience more than one form of trauma are significantly less likely to be happy than men who are subject to only one

type of trauma. Our findings, for both females and for males, retain their significance as additional controls are added in Model 4 (columns 2 and 4).

In Table 4 of the Online Appendix, we report the estimated marginal effects from when extend the analysis to examine finer age intervals. We identify the age of first trauma during youth (ages 1–11), adolescence (ages 12–17), early emerging adulthood (ages 18–22), late emerging adulthood (ages 23–29), and adulthood (beyond age 29). For females, traumas as a youth are significantly more likely to be associated with being *unhappy* as an adult relative to adolescence or early emerging adulthood, and these differences are statistically significant. The estimated marginal effect of 7.0 percentage points is larger than any of the estimates of the types of trauma within the broader age categories reported in Table 6. In addition, the most recent traumas, those since the age of 29, are associated with being 8.6 percentage points less likely to be *happy*. The pattern is less clear for males as none of the estimated marginal effects are statistically different from each other.

4.4 Traumatic victimization and happiness: possible mediating factors

It is possible that the association between adult happiness and prior exposure to one form of trauma or more than one form of trauma is influenced by various personal and family characteristics. We choose to examine eight characteristics that may conceivably result in a person being either more resilient or more vulnerable to the influence of trauma on happiness.

First, for the two characteristics that are plausibly exogenous, we examine whether the link between experiencing trauma and subsequent happiness depends upon if the respondent was (not) raised by both biological parents and if the respondent's mother has (does not have) 12 or more years of education. To evaluate if these factors mediate the link between trauma and happiness we use Eq. (2) to sequentially interact these two variables with both having experienced a single type of trauma and multiple types of trauma. We use Model 4, which contains our full set of controls, since this allows us to investigate the role of both childhood and current factors on the association between trauma exposure and happiness. These findings are reported in Table 5 of the Online Appendix. Inspection of the table reveals that for females and males, the association between one form of trauma and happiness, as well as multiple forms of trauma and happiness, is independent of these two childhood family characteristics.

Second, we explore six potentially endogenous channels: respondent's education, being married or cohabiting, unemployed in the past week, religious as an adult, speak with friends frequently, and self-assessed low standing in the community. We use Eq. (2) and treat each channel as the independent variable within the Model 2 specification, only including the age and childhood demographic controls. The estimated marginal effects of trauma are reported in Table 6 of the Online Appendix. For both females and males, traumas are associated with an increase in the likelihood of being unemployed. Multiple traumas are linked to a lower assessment of community standing for both genders, and for males the relationship is statistically significant for one trauma as well. For males, experiencing one trauma lowers the probability of being religious as an adult. Finally, for females,

experiencing trauma is associated with a lower probability of being married or cohabitating. These results are suggestive of potential channels for happiness to influence adult happiness.

5 Concluding remarks

In this paper we examine the connection between being the victim of traumatic events—home violence as a child, sexual assault, community violence, and stalking—and happiness. Given the high levels of these forms of trauma documented by us and others, this is an important question to address. We find that each type of trauma significantly reduces the probability of being happy later in life as an adult.¹⁷ In addition, we find that people who experience one type of trauma are less likely to be happy as an adult, compared to those who have experienced no trauma. Furthermore, those who have been subject to multiple forms of trauma are less likely to be happy than both those who have no experienced trauma and those who have only experienced one type of trauma.

One potential limitation of our findings is that the impact of trauma on happiness may depend on additional details of the nature of the trauma that we are unable to account for due to lack of data. For example, we would ideally be able to control for the relationship of the perpetrator of the trauma to the victim, a measure of the severity of the trauma (such as its duration), and a measure of the frequency and timing of subsequent traumas (instead of only controlling for the age when victimization from each of the different types traumas first occurred).

Scholars have documented the adverse impact of traumatic victimization during childhood and other phases of the life cycle on subsequent mental health and well-being. This paper provides additional evidence on the non-pecuniary costs suffered by those who have been the victims of various forms of traumatic maltreatment by offering evidence of a negative association between trauma victimization and subsequent happiness.

It is the role of any well-functioning government to provide for the general welfare of the populace and enable the pursuit of happiness. Policies have been put in place to clarify what constitutes sexual assault and other forms of violence. In addition, penalties have been established for the perpetrators of these crimes. Nevertheless, many in the U.S. continue to be victimized traumatically by the actions of others and these abuses are adversely linked to their well-being in adulthood. Mental health and happiness are related constructs, so our work suggests that traumatic victimization is undermining the health and sense of accomplishment or well-being in the U.S. Thus, policymakers should strive to even further emphasize how extensive the problem of traumatic victimization is in our society and how damaging these traumas are to the victims.

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¹⁷ The negative association between stalking and happiness for males occurs when we estimate a model with our full set of controls. We do not find an association between community violence and happiness for females.

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