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The Exoneree Health and Life Experiences (ExHaLE) Study:
Trauma Exposure and Mental Health among Wrongly Convicted Individuals

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Materials and anonymized data for this study are available at <https://osf.io/3kyvu/>

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Abstract

The exoneree population is growing rapidly, and legislatures are increasingly contemplating whether and how to better support exonerees' reentry, yet our understanding of exonerees' mental health and other post-release needs remains somewhat limited. The current study measured trauma exposure and mental health, including various protective and risk factors, in the largest-ever sample of exonerees. Fifty-nine exonerees completed online measures of trauma exposure, PTSD symptoms, depressive symptoms, perceived social support, negative posttraumatic cognitions (including self-blame), and personal history (e.g., time served, time since release, race, cause of conviction, compensation received). Overall, 80% of exonerees reported experiencing at least one significant traumatic event while incarcerated, and approximately half reported clinically significant symptoms of PTSD (48-52%) and/or depression (51%). Exonerees who reported stronger social support, weaker negative cognitions about the self and world, and/or full-time employment exhibited better mental health—but mental health was unrelated to time served, time since release, financial compensation, or false confession. Our findings underscore the importance of legislative actions that guarantee exonerees access to holistic and long-term transitional support (e.g., mental health counseling, vocational and financial literacy training). For clinicians, our findings also highlight specific psychotherapeutic approaches that may be effective with exonerated clients.

Keywords: exonerees, trauma, reentry, wrongful conviction, mental health

The Exoneree Health and Life Experiences (ExHaLE) Study:

Trauma Exposure and Mental Health among Wrongly Convicted Individuals

Since 1989, over 3,000 individuals in the U.S. have been wrongly convicted of crimes and later exonerated (i.e., declared factually innocent and/or absolved of all legal consequences) after spending an average of nine years in prison (National Registry of Exonerations, 2022). As efforts to remedy and prevent wrongful convictions have steadily increased over time (Norris, 2019; Scheck, 2016), so too has the rate of exonerations—including over 1,200 exonerations since 2014 alone—and it is likely that many more miscarriages of justice have yet to be discovered or will occur in the future (Zalman & Norris, 2021). It thus seems inevitable that the exoneree population will continue to grow at a steady, if not accelerating, rate.

What Challenges Do Exonerees Face?

While much research has examined the *causes* of wrongful conviction, we know less about the *effects* of wrongful conviction—i.e., the traumas and challenges that exonerees endure both in prison and after their release. Several studies have found that the public stigmatizes exonerees—despite their innocence—similarly to other former prisoners (e.g., Blandisi et al., 2015; Clow & Leach, 2015a; Thompson et al., 2012; for an exception, see Tudor-Owen et al., 2019; for a review, see Faison & Smalarz, 2019). Similarly, field experiments have found that exonerees face employment (Clow, 2017; Kukucka et al., 2020) and housing (Kukucka et al., 2021; Zannella et al., 2020) discrimination akin to other former prisoners, which present considerable barriers to reentry. These findings may reflect doubt over exonerees’ innocence (perhaps to protect *belief in a just world*; Hafer & Bègue, 2005; Scherr et al., 2018a) and/or belief that exonerees have been corrupted by their prison experience (i.e., *stigma-by-association*; Clow et al., 2012; Goffman, 1963).

Even fewer studies have considered the experiences of exonerees themselves. Taken together, existing studies of exonerees suggest that they frequently witnessed and/or experienced traumatic events while incarcerated (e.g., physical and/or sexual assault) and continued to face many adversities even after their release from prison—including but not limited to physical and/or mental illness, strained social

relationships, unemployment, poverty, homelessness, and sleep disorders (for reviews, see Brooks & Greenberg, 2021; Kirshenbaum et al., 2021; Vollen & Eggers, 2005).

Though informative, most existing studies of exonerees were purely descriptive and/or based on small samples ($Ns \leq 27$)—with three exceptions: First, Grounds (2004) described his own assessments of 18 male exonerees, finding that most met ICD-10 diagnostic criteria for PTSD (67%), depressive disorders (56%), and/or personality change (78%) that adversely impacted their relationships. Second, in the largest existing study of exonerees, Wildeman et al. (2011) surveyed 55 male exonerees and inferred that many exonerees suffered from clinical depression (44%) and/or PTSD (27%). Third, Alexander-Bloch et al. (2020) likewise surveyed 13 male exonerees and found that five (42%) and six (46%) of these exonerees exceeded clinically significant cutoff scores for PTSD and depression, respectively. These three studies thus provide convergent evidence that exonerees often exhibit symptoms of mental illness.

Are Some Exonerees Worse Off Than Others?

While all exonerees face hardship, previous work suggests that some exonerees may be worse off than others. First, both Alexander-Bloch et al. (2020) and Wildeman et al. (2011) found that exonerees who left prison more recently tended to report poorer mental health—and surprisingly, neither study found that incarceration length predicted mental health among exonerees, although such a relationship has been found among former inmates more broadly (Porter & Demarco, 2019). Second, Wildeman et al. (2011) found that full-time employment predicted better mental health among exonerees, which echoes broader findings that reliable employment benefits mental health (e.g., Dooley et al., 2000). Third, exonerees who falsely confessed tend to be more stigmatized than other exonerees; in various studies, laypeople rated false confessors as less warm, intelligent, and mentally healthy (Clow & Leach, 2015b; Scherr et al., 2018b; 2020), more responsible for their own wrongful conviction (Kukucka & Evelo, 2019; Savage et al., 2018; Scherr et al., 2020), and less deserving of financial compensation (Kukucka & Evelo, 2019) and psychological counseling (Scherr et al., 2018b) than other exonerees. Lastly, evidence of racial differences among exonerees has been mixed: Whereas Howard (2019) found that people rated Black false confessors as more aggressive, more likely to

commit a future crime, and less deserving of support than White false confessors, Scherr et al. (2018a) found that people rated a Black exoneree who was convicted of embezzlement as *less* likely to be guilty and *more* deserving of support than a White exoneree convicted of the same crime, and Karaffa et al. (2017) found that people rated Black and White exonerees as equally deserving of financial compensation.

What Support Do Exonerees Receive?

While exonerees presumably experience similar traumas and challenges as other former prisoners, exonerees paradoxically tend to receive less post-release support than do parolees, including transitional services such as job training and housing assistance, precisely *because* they are innocent (e.g., Baumgartner et al., 2014; Chunias & Aufgang, 2008; Cook et al., 2014). Thirteen U.S. states do not currently guarantee any post-release support to wrongly convicted individuals—and where it is provided, the amount and nature of support varies dramatically between states (e.g., \$5,000 per year of wrongful imprisonment with a \$25,000 maximum and no transitional services in Wisconsin, versus \$86,000 per year with no maximum plus other services such as housing, college tuition, and healthcare in Maryland) and petitioning for compensation is often a daunting, slow, and/or expensive process (e.g., Gutman & Sun, 2019; Koehler, 2019; Simms, 2016). Further, some states systematically bar certain exonerees (e.g., those who falsely confessed or pled guilty to the crime of which they were convicted; Scholand, 2013) from receiving any compensation.

Given the aforementioned data suggesting high rates of mental illness among exonerees, the Innocence Project and others (e.g., Armbrust, 2004; Goldberg et al., 2019; Trivelli, 2016) have urged legislatures to guarantee exonerees access to mental health counseling, and 13 U.S. states—representing over 1,100 exonerees (National Registry of Exonerations, 2021)—have already done just that. The growing exoneree population combined with their increasing access to mental health services creates a clear and urgent need to identify effective therapeutic interventions for this population. To that end, Heilbrun et al. (2020) reviewed common mental health effects of wrongful incarceration (e.g., depression, hypervigilance, social withdrawal) and used the broader trauma literature to propose treatment approaches for exonerees—

while also noting that there is currently no research to inform treatment of exonerated clients specifically.

The current study was designed to begin addressing this conspicuous gap in the literature.

The Current Study

As noted above, one may question the generalizability of prior studies of exonerees given their small samples and/or purely descriptive approaches. In contrast, Wildeman et al. (2015) recruited 55 exonerees at the annual Innocence Network conference to complete measures of anxiety, depression, and PTSD symptoms. The current study will extend their work in several important ways. First, whereas their sample was limited to exonerees who could attend the Innocence Network conference (e.g., healthy, able to travel), we will collect data online in the hopes of reaching a more representative sample of exonerees. Second, whereas they did not perform any inferential analyses, we will test whether and how variables such as time served, time since release, and cause of conviction relate to exonerees' mental health. Third, our study will be the first to systematically measure exonerees' exposure to traumatic events during incarceration—events that they should not have experienced in the first place—as well as two variables that are known to predict mental health among trauma victims in general and are therefore likely relevant to exonerees as well—namely, social support (a protective factor) and self-blame (a risk factor).

Social Support as a Protective Factor

Meta-analyses have found that social support protects against depressive symptoms (e.g., Gariépy et al., 2016) and PTSD symptoms (Brewin et al., 2000; Ozer et al., 2003; Zalta et al., 2021). According to the *stress-buffering model* (Cohen & McKay, 1984; Cohen & Willis, 1985), both psychological and material/instrumental resources provided by others can protect individuals against the negative effects of stressful experiences—for example, by encouraging positive reappraisals of stressful events, increasing access to or use of adaptive coping responses, and/or increasing one's sense of belonging and reducing perceived isolation. Consistent with this possibility, Haimson (2021) interviewed 11 exonerees and argued that “social resources” (e.g., relationships with family, friends, and significant others; participation in exoneree support groups; speaking engagements) were especially beneficial to their post-release wellbeing. Moreover, the

stress-buffering model implies that an individual's level of *perceived* support (i.e., their evaluation of whether their social support matches their expectations and/or needs) may be more influential than their objective level of support (Cohen & Willis, 1985)—and indeed, perceived social support has shown larger effect sizes with PTSD symptoms compared to objective measures of support (Finch et al., 1999; Zalta et al., 2021). Thus, the present study will focus on exonerees' perceived level of social support.

Negative Cognitions as a Risk Factor

Cognitive theories of PTSD and depression suggest that negative attributions of the self, including self-blame, predict psychological distress (e.g., Elwood et al., 2009). Accordingly, the DSM-5 criteria (American Psychiatric Association, 2013) for PTSD and major depressive episodes each reference self-blame—i.e., MDD Criterion A7 (“feelings of worthlessness or excessive or inappropriate guilt;” p. 161) and PTSD Criterion D (“persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others;” p. 272). In the depression literature, individuals with a *negative cognitive style*—i.e., a tendency to negatively attribute blame for the causes and consequences of events and make negative inferences about one's self-worth—tend to experience more depressive episodes and stronger depressive symptoms (Alloy et al., 2006; Iacoviello et al., 2006; Yeo et al., 2020). In the trauma literature, self-blame is thought to represent an attempt to preserve one's belief in a just world (Bulman & Wortman, 1977) and/or increase one's perceived sense of control over future trauma recurrences (Walster, 1966), yet greater self-blame has predicted stronger PTSD symptoms in prospective studies and meta-analyses (e.g., Feiring & Cleland, 2007; Gómez de La Cuesta et al., 2019; Kline et al., 2021) and reductions in self-blame have predicted attenuated PTSD symptoms in treatment outcome studies (Holliday et al., 2018). Thus, self-blame may confer risk for PTSD and depressive symptoms, and altering self-blame may be an important mechanism of effective trauma-focused treatment.

Summary and Aims

In sum, the exoneree population is growing rapidly, many exonerees report symptoms of PTSD and depression, and legislatures are increasing exonerees' access to mental health treatment—yet we still know

relatively little about how to best support exonerees' reentry, and even less about how to best treat their mental health. Thus, we designed the current study with two primary aims: (1) Replicate and extend earlier findings by measuring trauma exposure and mental health—specifically, PTSD and depressive symptoms—in the largest and most representative sample of exonerees ever obtained, and (2) measure self-blame and social support as potential risk and protective factors, respectively, in an effort to inform therapeutic interventions with exonerees. As a secondary aim, we also sought to explore whether and how personal history variables—such as incarceration length, time since release, employment, false confession, and race—relate to exonerees' current mental health. Informed by the aforementioned literature, we developed the following five hypotheses (Hs) and three exploratory research questions (Es):

E1: What percentage of exonerees in our sample will report clinically significant symptoms of PTSD and/or depression, as evidenced by established self-report measures?

H1: Consistent with meta-analytic data (e.g., Gariépy et al., 2016; Zalta et al., 2021), exonerees who perceive greater social support will tend to report less severe PTSD and depressive symptoms (i.e., lower total scores on self-report measures of PTSD and MDD symptomatology).

H2: Consistent with meta-analytic data (Gómez de La Cuesta et al., 2019; Yeo et al., 2020), exonerees who report stronger self-blame will tend to report more severe PTSD and depressive symptoms.

E2: Because previous findings have been mixed, we will explore whether the length of exonerees' wrongful incarceration is related to severity of their PTSD and/or depressive symptoms.

H3: As in Wildeman et al. (2011) and Alexander-Bloch et al. (2020), exonerees who were released from prison more recently will tend to report more severe PTSD and depressive symptoms.

H4: As in Wildeman et al. (2011), exonerees who are currently employed full-time will report less severe PTSD and depressive symptoms on average than those who are not employed full-time.

H5: Informed by Kukucka and Evelo (2019) and others, exonerees who were wrongly convicted due to a false confession will report stronger self-blame than other exonerees.

E3: Because previous findings have been mixed, we will explore whether Black and White exonerees differ in terms of the severity of their PTSD and/or depressive symptoms.

Method

Participants

Using a combination of direct e-mail solicitation and snowball sampling over nine months, we ultimately obtained responses from $N = 59$ exonerees. To be exact, we advertised the study to exonerees in two ways: (1) The first author contacted exonerees with whom they are personally acquainted, with an invitation to complete the study themselves and/or share it with fellow exonerees; (2) The first author sent the study information to trusted colleagues (e.g., academics, attorneys, innocence organization employees) to share with exonerees who they know personally. We were thus very careful in how we shared the study information so as to be confident that all participants were in fact exonerees. Because this population is exceptionally difficult to reach, we did not predetermine a sample size; rather, our goal was to obtain the largest possible sample within the timeframe of our funding, and no data were excluded.

Our sample was predominantly male (78.0%) with a mean age of 51.68 ($SD = 10.15$; Range = 26 – 74). In terms of race/ethnicity, our sample was 45.8% White, 32.2% Black, 15.3% Hispanic, and 6.8% other; though not identical, a chi-square goodness of fit test indicated that this distribution did not significantly differ from that of the known exoneree population (36% White, 50% Black, 12% Hispanic, 4% other; National Registry of Exonerations, 2022), $\chi^2(3) = 7.08$, $p = .070$. At the time of data collection, just over half of the exonerees in our sample (50.8%) were unemployed, while the others were employed either part-time (22.0%) or full-time (25.4%); one exoneree did not report their employment status.

On average, these exonerees were wrongly incarcerated for 16.11 years ($SD = 9.15$; $Med = 17$) and released in 2009 ($M = 2009.29$, $SD = 8.25$; Range = 1986 – 2020), such that the average exoneree had been out of prison for approximately 11.5 years at the time of data collection. The most commonly self-reported factor in their wrongful convictions was official/government misconduct (72.9%), followed by inadequate

legal defense (52.5%), false or misleading forensic evidence (45.8%), mistaken witness identification (30.5%), false confession (20.3%), jailhouse informant testimony (20.3%), and false guilty pleas (5.1%).

At the time of data collection, 42.4% of exonerees ($n = 25$) had received financial compensation for their wrongful conviction, while 55.9% ($n = 33$) had not (one exoneree did not answer). Of those who had received compensation, 20 also reported the amount of compensation received; those amounts varied dramatically, both in terms of total amount ($M = \$4,000,500$, $SD = \$4,908,833.58$) and annuity per year of wrongful incarceration ($M = \$235,612.62$, $SD = \$270,738.09$; Range = \$1,086.96 – \$937,500).

Procedure

All procedures and materials were approved by the Towson University IRB (protocol #1109). First, exonerees received a Qualtrics link—from either the first author or a fellow exoneree—to a short pre-screen survey that provided information about the study and asked them to provide their name and e-mail address if they were interested in participating. We strove to present this information in as simple language as possible; it was ultimately written at an 11th grade level (Flesch reading ease = 46.8), which is a bit higher than ideal, due at least partly to the fact that the IRB requires certain multi-syllabic words (e.g., “compensation,” “confidentiality”) that impact the aforementioned readability metrics. Because we cannot know how many exonerees ultimately received our solicitation, the response rate is unknown.

Then, within 24 hours, the first author sent each interested exoneree a second Qualtrics link to the main survey. Upon clicking this link, each exoneree first read a consent form and gave consent by clicking a box to affirm that they had read and understood the information provided, including that they were free to exit the study at any time and/or decline to answer any questions that were asked. Then, they completed five measures: (1) the PTSD Checklist for DSM-5 (PCL-5) with an abbreviated Life Events Checklist (LEC-5; Weathers et al., 2013); (2) the Center for Epidemiologic Studies Depression Scale—Short Form (CES-D-SF; Levine, 2013); (3) the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988); (4) the Brief Posttraumatic Cognitions Inventory (PTCI; Wells et al., 2019); and (5) a demographic questionnaire. Each measure was shown on a separate page and always in the same order. Each page also

included an “end study now” button that exonerees could click to end the survey at any time, and every other page included a link to mental health resources that exonerees could click if they felt distressed.

After completing all five measures (or clicking the “end study now” button), exonerees read debriefing information and were redirected to a third Qualtrics survey where they again provided their name and e-mail address in order to be compensated for their time. In exchange for approximately 16 minutes of participation (which was the median response time), each exoneree received a \$30 Amazon gift card via e-mail within 24 hours of completing the survey.

Measures

PTSD Checklist for DSM-5 (PCL-5) with Life Events Checklist (LEC-5)

The PTSD Checklist for DSM-5 (PCL-5) with Life Events Checklist (LEC-5; Weathers et al., 2013) is a widely-used measure of trauma exposure and PTSD symptoms. First, respondents complete the LEC-5, in which they report their prior exposure to each of 17 potentially traumatic events (e.g., serious accident, physical assault, sexual assault). Then, respondents complete the PCL-5, which consists of 20 items that correspond to the DSM-5 criteria for PTSD. For each of these 20 items, respondents indicate how much they have been bothered by that problem in the past month (e.g., “repeated, disturbing, and unwanted memories of the stressful experience;” “loss of interest in activities that you used to enjoy”) on a scale from 0 (*not at all*) to 4 (*extremely*). Total PCL-5 scores can therefore range from 0 to 80. Weathers et al. (2013) proposed that a total PCL-5 score of 33 or higher indicates probable PTSD, though some validation studies have found optimal cut-off scores as low as 23 (e.g., Ibrahim et al., 2018). Alternatively, Iverson et al. (2019) mapped the 20 PCL-5 items onto the DSM-5 PTSD criteria—i.e., Intrusion (items 1-5), Avoidance (items 6-7), Cognition/Mood (items 8-14), and Arousal (items 15-20)—and classified individuals as having a profile of symptoms consistent with PTSD if they endorsed (i.e., answered ‘2’ or higher to) at least one Intrusion item, one Avoidance item, two Cognition/Mood items, and two Arousal items.

For this study, we abbreviated the LEC-5 by deleting impertinent events (e.g., captivity, which all exonerees experienced) and combining similar events (e.g., “transportation accident” and “serious accident”

became “transportation or other serious accident”), leaving eight items (see Table 1). For each of these eight events, exonerees indicated whether they had (a) personally experienced it in prison, (b) witnessed it in prison, (c) personally experienced it outside of prison, and/or (d) witnessed it outside of prison—except for “sudden violent or accidental death,” which exonerees may have witnessed but not experienced.

Then, exonerees completed the unabridged 20-item PCL-5. One exoneree did not answer any of the PCL-5 items. Another exoneree answered only 19 of the 20 PCL-5 items, so we imputed the mean of their 19 answered items as their response to the lone unanswered item. All other exonerees answered all 20 items, and the PCL-5 showed very strong internal consistency ($\alpha = .94$).

Center for Epidemiologic Studies Depression Scale—Short Form (CES-D-SF)

The Center for Epidemiologic Studies Depression Scale—Short Form (CES-D-SF; Levine, 2013) is a seven-item version of the original 20-item Center for Epidemiologic Studies Depression Scale (Radloff, 1977) that measures the severity of respondents’ depressive symptoms. For each item, respondents indicate how often they have felt or behaved that way during the past week (e.g., “I felt sad;” “My sleep was restless”), using a scale from 0 (*rarely or none of the time [less than one day/week]*) to 3 (*most or all of the time [5-7 days/week]*). Total CES-D-SF scores can therefore range from 0 to 21, and Levine (2013) proposed that a total score of 8 or higher indicates probable major depressive disorder.

In our study, two exonerees (3.4%) answered only six of the seven CES-D-SF items, so we imputed the mean of their six answered items as their response to the seventh item. All other exonerees answered all seven items, and the CES-D-SF showed strong internal consistency ($\alpha = .83$).

Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) is a 12-item measure of respondents’ perceived social support from friends, family, and significant others—with four-item subscales for each of these sources of support. For each item, respondents indicate the degree to which they agree with that statement (e.g., “My family really tries to help me;” “I can talk about my problems

with friends”) on a scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Total MSPSS scores can therefore range from 12 to 84, with higher scores indicating stronger perceived social support.

In our study, one exoneree answered only six of the 12 MSPSS items, so we did not compute a total MSPSS score for that exoneree. Another exoneree answered only 11 of the 12 MSPSS items, so we imputed the mean of their 11 answered items as their response to the twelfth item. All other exonerees answered all 12 items, and the MSPSS showed very strong internal consistency ($\alpha = .95$).

Brief Posttraumatic Cognitions Inventory (PTCI-9)

The Brief Posttraumatic Cognitions Inventory (PTCI-9; Wells et al., 2019) is a nine-item version of the original 33-item PTCI (Foa et al., 1999) that measures respondents’ maladaptive posttraumatic cognitions about the self and world. The nine items are organized into three subscales of three items each—i.e., self-blame (e.g., “The event happened because of the way I acted”), negative cognitions about the self (e.g., “I have no future”), and negative cognitions about the world (e.g., “People can’t be trusted”). For each item, respondents indicate the degree to which they agree with that statement, on a scale from 1 (*totally disagree*) to 7 (*totally agree*). Total PTCI-9 scores can therefore range from 9 to 63, and subscale scores can range from 3 to 21, with higher scores indicating stronger negative cognitions.

In our study, one exoneree answered only eight of the nine PTCI-9 items, so we imputed the mean of their eight answered items as their response to the ninth item. All other exonerees answered all nine items, and the PTCI-9 showed acceptable internal consistency ($\alpha = .68$).

Demographic Questionnaire

Lastly, exonerees self-reported their age, gender, race, current employment status, length of wrongful incarceration, year of release from prison, factor(s) in their wrongful conviction, whether they had received any financial compensation for their wrongful conviction, and if so, how much.

Data Availability Statement

All study materials and data are available on the Open Science Framework (<https://osf.io/3kyvu/>).

Note that we have redacted all information that may be personally identifiable (e.g., age, gender, time served, compensation amount) so that it cannot be used to identify individual exoneree participants.

Results

Table 1 shows the percentage of exonerees who reported experiencing and/or witnessing each of the eight traumatic events on our abbreviated LEC-5 while in prison. Table 2 shows correlations between, and descriptive statistics for, each of the primary measures and variables of interest.

Trauma Exposure

As shown in Table 1, most exonerees witnessed (74.6%) and/or experienced (79.7%) at least one of the traumatic events on our abbreviated LEC-5 while in prison, with the modal traumatic event being physical assault (62.7% witnessed; 54.2% experienced). The average exoneree reported having experienced 2.12 of seven possible traumatic events ($SD = 1.59$; $Med = 2$; Range = 0 – 6) and having witnessed 2.97 of eight possible traumatic events ($SD = 2.37$; $Med = 3$; Range = 0 – 8) while in prison.

E1: PTSD and Depressive Symptoms

Overall, exonerees' mean PCL-5 score was 33.28 ($SD = 17.96$; $Med = 33.5$; Range = 0 – 73). Using Weathers et al.'s (2013) cutoff score of 33, 30 of 58 exonerees (51.7%) who completed the PCL-5 reported clinically significant PTSD symptoms. Alternatively, using Iverson et al.'s (2019) approach to capture the diagnostic profile of criteria required for a PTSD diagnosis, a majority of exonerees met PTSD Criteria B (76.3%), C (72.9%), D (59.3%), and E (74.6%)—and 28 of 58 exonerees (47.5%) met all four criteria, suggesting a symptom profile consistent with PTSD. Notably, 25 exonerees (43.1%) were both above the cutoff score of 33 and reported a symptom profile consistent with PTSD.

Exonerees' mean CES-D-SF score was 7.61 ($SD = 4.84$; $Med = 8$; Range = 0 – 21). Using Levine's (2013) cutoff score of 8, 30 of 59 exonerees (50.8%) reported clinically significant depressive symptoms.

Depending on how the PCL-5 was scored, 36.2% (Weathers et al., 2013) or 31.0% (Iverson et al., 2019) of exonerees reported significant PTSD symptoms *and* depressive symptoms, while 32.8% (Weathers et al., 2013) or 31.0% (Iverson et al., 2019) did not report significant symptoms of either illness.

H1: Perceived Social Support

Supporting H1, exonerees with higher MSPSS scores reported less severe PTSD symptoms, $r = -.39$, $p = .003$, and depressive symptoms, $r = -.29$, $p = .030$ (see Table 2). Furthermore, their scores on each of the MSPSS subscales—i.e., family, $r = -.38$, $p = .004$, friends, $r = -.34$, $p = .010$, and significant other, $r = -.30$, $p = .021$ —were significantly correlated with PTSD symptoms. In contrast, only exonerees’ scores on the family subscale, $r = -.28$, $p = .035$ —but not the friends, $r = -.24$, $p = .074$, or significant other, $r = -.24$, $p = .072$, subscales—were significantly correlated with depressive symptoms.

H2: Self-Blame and Posttraumatic Cognitions

Contrary to H2, scores on the self-blame subscale of the PTCI-9 were not correlated with either PTSD symptoms, $r = .04$, $p = .749$, or depressive symptoms, $r = -.01$, $p = .945$.

However, exploratory analyses revealed that exonerees with higher total PTCI-9 scores (i.e., stronger overall negative posttraumatic cognitions) reported stronger PTSD symptoms, $r = .53$, $p < .001$, and depressive symptoms, $r = .40$, $p = .002$ (see Table 2). Moreover, scores on the ‘negative cognitions about the self’ subscale were correlated with PTSD symptoms, $r = .60$, $p < .001$, and depressive symptoms, $r = .56$, $p < .001$, and scores on the ‘negative cognitions about the world’ subscale were likewise correlated with PTSD symptoms, $r = .45$, $p < .001$, and depressive symptoms, $r = .29$, $p = .024$.

E2: Length of Incarceration

In addressing E2, we found that the length of exonerees’ incarceration was unrelated to the severity of their PTSD symptoms, $r = -.08$, $p = .546$, or depressive symptoms, $r = .06$, $p = .635$.

Furthermore, incarceration length was unrelated to the number of traumatic events that exonerees had witnessed, $r = .25$, $p = .061$, or experienced, $r = .21$, $p = .118$, in prison. Notably, the number of traumatic events *experienced* in prison was positively correlated with both PTSD symptoms $r = .26$, $p =$

.050, and depressive symptoms, $r = .30$, $p = .020$ —but the number of traumatic events *witnessed* in prison was unrelated to both PTSD symptoms, $r = .09$, $p = .487$, and depressive symptoms, $r = -.07$, $p = .617$.

H3: Time Since Release

Contrary to H3, the year in which exonerees were released from prison was unrelated to the severity of their PTSD symptoms, $r = -.07$, $p = .601$, or depressive symptoms, $r = -.07$, $p = .622$ (see Table 2), such that exonerees who were released longer ago did not reliably report better mental health. Moreover, release year was positively correlated with perceived social support, $r = .35$, $p = .007$, such that exonerees who left prison more recently tended to perceive stronger social support, but release year was unrelated to PTCI-9 score, $r = -.22$, $p = .101$, such that recency of release was unrelated to negative cognitions.

H4: Employment Status

Supporting H4, exonerees who were employed full-time ($n = 15$) reported less severe PTSD symptoms ($M = 24.07$, $SD = 17.37$) than those who were not employed full-time ($n = 42$; $M = 36.39$, $SD = 17.41$), $t(55) = -2.35$, $p = .022$, $d = 0.71$ [95% CI: 0.10, 1.31]. Similarly, exonerees who were employed full-time ($n = 15$) reported less severe depressive symptoms ($M = 5.07$, $SD = 3.88$) than those who were not ($n = 43$; $M = 8.47$, $SD = 4.92$), $t(56) = -2.42$, $p = .019$, $d = 0.73$ [95% CI: 0.12, 1.33].

H5: False Confessions

Contrary to H5, exonerees whose conviction involved a false confession ($n = 12$; $M = 9.00$, $SD = 5.56$) did not report stronger self-blame than other exonerees ($M = 8.34$, $SD = 3.80$), $t(57) = 0.49$, $p = .629$, $d = 0.16$ [95% CI: -0.48, 0.79]. Moreover, these subgroups of exonerees did not differ in terms of their PTSD symptoms or depressive symptoms, nor in their total MSPSS or PTCI-9 scores, all $ts < 1$, $ps > .34$.

E3: Exoneree Race

In addressing E3, Black ($n = 19$) and White ($n = 27$) exonerees did not differ in terms of their PTSD symptoms or depressive symptoms, nor in their total MSPSS or PTCI-9 scores, all $ts < 1$, $ps > .38$.

Financial Compensation

Lastly, an additional set of exploratory analyses revealed that exonerees who had received at least some financial compensation and those who had not did not differ in terms of their PTSD symptoms or depressive symptoms, nor in their total MSPSS or PTCI-9 scores, all $ts < 1.56$, $ps > .12$. Moreover, for the 20 exonerees who reported the amount of compensation received, compensation amount—whether total or annuity—was likewise unrelated to these variables, all $|r|s < .33$, $ps > .17$.

Discussion

We set out to measure trauma exposure, mental health, and protective and risk factors in the largest sample of exonerees to date. We found that most exonerees (80%) experienced traumatic events while incarcerated, and about half of exonerees met a clinical cutoff score or reported a symptom pattern consistent with PTSD (48-52%) and/or major depressive disorder (51%). These estimates are similar to those found in prior, smaller studies of exonerees (i.e., Alexander-Bloch, 2020; Grounds, 2004; Wildeman et al., 2011) and are much higher than the past-year prevalence rates for these disorders in the general population (i.e., 3.6% and 6.7%, respectively; Kessler et al., 2005). For context, Lehavot et al. (2018) found that 65.5% of military veterans had experienced a traumatic event in their lifetime, and a meta-analysis estimated a PTSD prevalence rate of 23% among veterans of the Iraq and Afghanistan wars (Fulton et al., 2015). Moreover, a meta-analysis by Baranyi et al. (2018) estimated lifetime PTSD prevalence rates of 18% and 40% among formerly incarcerated men and women more generally. Thus, our data suggest that exonerees experience trauma and symptoms of mental illness at alarming rates—not only relative to the general public but perhaps also relative to other high-risk populations—which holds significant implications for their reentry and wellbeing. In fact, as explained below, our data may actually *underestimate* exonerees' plight due to the inherent impossibility of recruiting a truly representative sample of exonerees.

With respect to time served, Porter and DeMarco (2019) found a dose-response relationship between incarceration and mental health among former inmates, such that longer prison stays predicted poorer post-release mental health. In contrast, we found no relationship between incarceration length and mental health among exonerees. While this could reflect a Type II error, the observed correlations were very weak ($|r|s$

$\leq .08$; see Table 2) and ours is now the third study to find no such relationship among exonerees (Alexander-Bloch et al., 2020; Wildeman et al., 2011). Thus, a more plausible explanation may be that wrongful imprisonment can be devastating regardless of its duration. Consistent with this possibility, we also found that time served was unrelated to the number of traumatic events experienced or witnessed in prison, and others have argued that even a brief period of wrongful imprisonment can have strong and enduring psychological effects (e.g., Simon, 1993). Moreover, in Jackson et al. (2021), over 90% of exonerees felt that their prison experience was fundamentally different from that of guilty inmates due to the added burden of knowing that they were innocent, which prompts a range of negative emotions that Scott (2010) described as a “soul death” (see also Campbell & Denov, 2004). In short, it does not appear safe to assume that the psychological impact of *wrongful* incarceration is equivalent to that of incarceration *per se*.

With respect to time since release, both Wildeman et al. (2011) and Alexander-Bloch et al. (2020) found that exonerees who had been out of prison for longer reported weaker PTSD symptoms and depressive symptoms—but we found no such relationships ($|r|s = .07$; see Table 2). Instead, exonerees in our study reported similar PTSD symptoms, depressive symptoms, and negative post-traumatic cognitions regardless of when they left prison. In addition, exonerees who were released longer ago perceived less social support than those released more recently; this finding echoes the *social support deterioration deterrence model* (e.g., Norris et al., 2005), which explains that there is typically a strong mobilization of social support after a catastrophic event, but this support later deteriorates due to factors such as compassion fatigue and stress contagion (Kaniasty & Norris, 2004; Prati & Pietrantonio, 2010). Taken together, these findings suggest that time does not heal all wounds, such that exonerees need—and deserve—holistic and ongoing support.

In what follows, we consider how our findings can inform contemporary efforts to better support exonerees’ post-release transition and long-term wellbeing—both on the individual level (i.e., mental health treatment) and on the societal level (i.e., compensation statutes). In so doing, we also discuss several limitations of the current study and identify important directions for future research.

Practice Implications

Informed by the broader trauma literature, we predicted that social support would be a protective factor for exoneree mental health. Supporting this hypothesis, exonerees who perceived greater social support tended to report less severe PTSD symptoms and depressive symptoms. Maximizing post-release social support may therefore bolster a critical resiliency factor for exonerees. Haimson (2021) likewise emphasized social support as the most important factor in exonerees' reentry, noting that it provided not only emotional support but also job opportunities and financial stability. Indeed, prior to any therapeutic approach, significant case management and connection to resources is likely needed to ensure adequate housing, legal assistance for civil litigation, and vocational assistance, among others (see Heilbrun et al., 2020).

Peer support groups provide one avenue for exonerees to share lived experiences with others who can uniquely empathize (DeShay, 2016; Wildeman et al., 2011). In DeShay (2016), exonerees explained that regular meetings with fellow exonerees benefitted their coping process by providing camaraderie as well as advice on how to navigate post-release obstacles—but while sharing their experiences may be healing for some, it may prove retraumatizing for others (Konvisser & Werry, 2017). Further, of the three sources of social support measured in the current study, family support was the only source to correlate with both PTSD symptoms and depressive symptoms, suggesting the importance of involving exonerees' families in treatment as well. This could take many forms, such as educating families on the causes and effects of wrongful convictions, promoting similar support groups for family members, and/or providing psychoeducation regarding how to best support their loved ones' mental health.

Unexpectedly, self-blame was unrelated to symptoms of PTSD or depression—and in fact, self-blame was rather low in our sample overall. This may reflect exonerees' unique understanding that wrongful conviction can happen to anyone—and indeed, that is a common sentiment among exonerees (Konvisser, 2015), especially in advocating for criminal justice reform (Konvisser & Werry, 2017). However, exonerees who expressed stronger negative cognitions about the self (e.g., “I have no future”) and/or world (e.g., “People can't be trusted”) tended to report stronger symptoms of PTSD and depression and weaker social support. While such beliefs may be understandable given their experiences, these generalized beliefs may

interfere with meaningful relationships and engagement during reentry and may lead exonerees to have difficulty asking for, receiving, or perceiving social support as helpful (e.g., Robinaugh et al., 2011). Therefore, therapy approaches might focus on seeking to modify or defuse from negative thoughts.

No clinical trials have yet tested the efficacy or effectiveness of specific therapeutic approaches among exonerees (see Heilbrun et al., 2020, for a review and recommendations). Some candidate therapies might include trauma-focused cognitive behavioral therapies [CBTs] such as Cognitive Processing Therapy (CPT; Resick & Schnicke, 1992; Resick et al., 2016)—a 12-session psychotherapy that has been shown to reduce both PTSD and depressive symptoms (Liverant et al., 2012; Resick et al., 2002; 2003) through a focus on negative beliefs (i.e., “stuck points”) about the self, others, and future. Cognitive flexibility might also be enhanced through mindfulness or acceptance-based strategies, such as acceptance and commitment therapy (ACT; Hayes et al., 1999); with its focus on values and committed action, ACT could help exonerees explore the self and goals for the future while increasing meaningful participation in their lives.

Thus, future research should test the efficacy of these approaches, including whether they must be adapted to exonerees’ needs and whether clinicians have the knowledge, tools, and attitudes to effectively treat exonerees. Where exonerees are guaranteed access to mental health treatment via statute, there is no guarantee that effective or evidence-based methods will be used—and if clinicians exhibit the same prejudices as the general public, those biases could disrupt critical therapeutic alliances and affect treatment quality. In states where treatment access is not guaranteed, exonerees who are indigent or unemployed may lack the funds or insurance to access psychotherapy at all, which stands to prolong their suffering.

Policy Implications

When ordinary prisoners are released on parole, they are frequently offered reentry services (e.g., vocational training, housing assistance, substance abuse treatment) to help them transition back into the community—but exonerees, who often face these same challenges, are typically ineligible for these same services precisely because of their innocence (Baumgartner et al., 2014; Cook et al., 2014). The public appears to favor supporting exonerees’ reentry: In one study, most respondents felt that wrongly convicted

individuals should receive job training (86%), mental health counseling (79%), and subsidized housing (71%), among other services (Clow & Leach, 2015a); in another study, the average participant awarded an exoneree who was misidentified by an eyewitness—the most common cause of wrongful conviction—over \$100,000 in compensatory damages per year of wrongful incarceration (Kukucka & Evelo, 2019; see also Karaffa et al., 2017). Yet compensation statutes lag behind public opinion, as many U.S. states guarantee no support to exonerees, and among those that do, the services offered are highly variable and financial compensation is sometimes paltry and/or difficult to obtain (Goldberg et al., 2019; Gutman & Sun, 2019).

Our data reflect this extreme variability: Fewer than half (42%) of exonerees had received *any* financial compensation for their wrongful conviction, and among those who had, amounts ranged from approximately \$1,000 to \$1 million per year of wrongful imprisonment. Yet financial compensation—whether receipt, total, or annuity—was also unrelated to exonerees’ mental health, which echoes arguments that money is not enough to “make exonerees whole again” (e.g., Armbrust, 2004; Lonergan, 2007; Trivelli, 2015). Compounding this problem, Page (2013) explained that exonerees—including those who receive large payments—may struggle to manage their finances insofar as they have limited experience in doing so, yet few states offer financial training to exonerees. Our data therefore provide additional evidence that money is not a panacea; at bare minimum, exonerees should receive the same degree of support commonly offered to parolees—and perhaps more, to address their unique challenges and needs.

As in Wildeman et al. (2011), full-time employment emerged as a key predictor of exonerees’ mental health. While our study cannot establish causality, other data indicate that this relationship is bidirectional (e.g., Olesen et al., 2013; Ross & Mirowsky, 1995), such that stable employment can improve mental health (see also Dooley et al., 2000). Moreover, Perreault et al. (2017) found that social support—another key variable in our study—mediated the relationship between employment and depression. Unfortunately, however, many exonerees struggle to find employment due to limited job skills, résumé gaps, discrimination, and/or difficulty having their record expunged (Chunias & Aufgang, 2008; Kukucka et al., 2020), such that

providing job training via statute and/or banning employers from asking about applicants' criminal history (i.e., "Ban the Box" policies; Maurer, 2019) may benefit exonerees in more ways than one.

Lastly, some statutes selectively bar exonerees who falsely confessed or pleaded guilty from receiving compensation on the grounds that they "contributed to their own wrongful conviction" (Scholand, 2013). While the public may blame false confessors for their own plight (e.g., Savage et al., 2018), we found no relationship between false confession and self-blame—though we did not ask exonerees if they *personally* gave a false confession or were implicated in someone else's false confession, which is likewise compelling to fact finders (Wetmore et al., 2020). Alternatively, false confessors may acutely understand—as research has amply demonstrated (see Kassin et al., 2010)—that common interrogation practices can lead even unimpaired adults to falsely confess, and hence they do not blame themselves. In any case, our data suggest that this subgroup of exonerees is no less disadvantaged than their peers and is therefore no less deserving of support. As the public grows more educated about the phenomenon of false confessions (Mindthoff et al., 2018), legislatures would ideally follow suit and remove these caveats from statute.

Limitations and Future Directions

Though informative in their own right, all but one prior study of exonerees featured sample sizes less than half that of the current study, which was partly motivated by concern over their generalizability. That said, it is arguably impossible to recruit a truly representative sample of exonerees—and our study is no exception. In order to participate in research, exonerees must be both living and healthy, which for many is sadly not the case. Exonerees are also difficult to contact, as many understandably prefer to keep a low profile (e.g., Konvisser & Werry, 2017). We reached many exonerees via snowball sampling, but as a result, exonerees who are more socially well-connected (which may correlate with mental health) may be over-represented in our sample. Lastly, because we collected data online, our sample was limited to exonerees with access to and the ability to use a computer. In fact, we received a voicemail from one exoneree who wanted to participate but lacked the means to do so, and though we tried to accommodate them via phone, we were ultimately unsuccessful. In sum, participating in research requires a degree of health, wealth,

availability, and/or knowledge that some exonerees simply do not have. Thus, while our data paint a bleak picture of exonerees' mental health, the reality may be even direr than it appears.

Our study is also limited by its reliance on self-report measures of mental health symptoms and conventional approaches to interpreting said measures; because we did not conduct formal assessments of our participants, we cannot definitively state that they meet diagnostic criteria for PTSD and/or MDD. Any given total score on the PCL-5 or CES-D-SF may reflect a large number of mild symptoms or a small number of intense symptoms. Iverson et al.'s (2013) approach to scoring the PCL-5 remedies this problem to a degree by mapping the scale items onto the DSM-5 diagnostic criteria for PTSD, but it does not consider exclusionary criteria and thus likewise falls short of a formal diagnosis. Relatedly, insofar as there is overlap in symptomatology between PTSD and MDD, we cannot know whether any given experience reported by an exoneree is a symptom of PTSD, MDD, both, or neither. It is noteworthy that the prevalence of significant PTSD and MDD symptoms in the current study (based on cutoff scores) was similar to the prevalence of these illnesses in Grounds' (2004) formal assessments of 18 exonerees, yet researchers should remain mindful not to conflate self-reported symptoms with a formal diagnosis.

While we found that the *length* of an exoneree's incarceration was unrelated to their mental health, we did not consider the *timing* of their incarceration. There is some evidence that being incarcerated earlier in one's life has stronger negative effects (e.g., mental illness, homelessness, recidivism) compared to being incarcerated for the same amount of time later in life (e.g., Baćak et al., 2019; Cox et al., 2020). The effect of timing may also vary between groups; for example, exoneree Amanda Knox (2021) explained that wrongly convicted women are often "sentenced to infertility" insofar as they miss out on most or all of their childbearing years while in prison. History effects may also play a role; for example, being wrongly incarcerated during a time of rapid technological advancement may be more detrimental insofar as exonerees will have more skills to learn upon their release—skills that are increasingly needed to secure employment and maintain social relationships. Future work could explore whether and how exonerees' post-release needs differ as a function of when—personally and/or historically—they were incarcerated.

Lastly, the correlational nature of our study prevents us from making causal inferences about the observed relationships, and many of the variables we measured are likely interrelated. For example, employment provides not only income but also opportunities for socialization and insurance which begets access to mental health care. Conversely, poverty and mental illness may limit job opportunities and/or socialization, while larger social networks may invite job prospects. Longitudinal studies of exonerees may prove helpful in teasing apart these effects—e.g., pre-post comparisons of exonerees who participate in support groups, psychotherapy, or full-time employment. Relatedly, we must be careful in speaking of the mental health “effects” of wrongful incarceration given that mental illness is also a risk factor for legal system involvement (e.g., Steadman et al., 2009), including wrongful conviction due to false confession (e.g., Gudjonsson, 2003). That said, the observed rates of trauma exposure, combined with ample qualitative evidence, leave little doubt that wrongful incarceration can be detrimental in myriad ways.

Conclusion

The exoneration of wrongly convicted individuals is a noble pursuit—but it is not the end of the story, as exonerees continue to experience hardships that stem from their wrongful imprisonment long after their release. In this, the largest-ever study of exonerees, we found staggering rates of clinically significant mental health symptoms that were unrelated to length or recency of incarceration or receipt of financial compensation, suggesting that exonerees need—and deserve—holistic and long-term support. We hope that our findings will stimulate further research on how to better support exonerees’ reentry, inspire clinicians to develop and practice effective mental health interventions for this population, and encourage lawmakers to provide exonerees with the resources needed to begin righting these unthinkable wrongs.

Table 1

Percentage (and Number) of Exonerees Exposed to Traumatic Events in Prison

	Experienced	Witnessed
Natural disaster (e.g., fire, flood, hurricane, tornado, earthquake)	30.5% (18)	11.9% (7)
Transportation or other serious accident	11.9% (7)	5.1% (3)
Physical assault (e.g., being attacked, hit, slapped, kicked, beaten up)	54.2% (32)	62.7% (37)
Assault with a weapon (e.g., being shot, stabbed, threatened with a knife or gun)	37.3% (22)	55.9% (33)
Sexual assault (e.g., rape, attempted rape, made to perform any type of sexual act through force or threat of harm)	13.6% (8)	42.4% (25)
Other unwanted or uncomfortable sexual experience	27.1% (16)	30.5% (18)
Life-threatening illness or injury	37.3% (22)	42.4% (25)
Sudden violent or accidental death	--	45.8% (27)
At least one of the above	79.7% (47)	74.6% (44)

Table 2

Correlations and Descriptive Statistics for Primary Measures and Variables of Interest

	1	2	3	4	5	6	7	8
1. Length of incarceration (years)	--							
2. Year released from prison	.57**	--						
3. Traumatic events experienced in prison (out of 7; LEC-5)	.21	.11	--					
4. Traumatic events witnessed in prison (out of 8; LEC-5)	.25	.10	.50**	--				
5. PTSD (total PCL-5 score; 0-80)	-.08	-.07	.26 [†]	.09	(.94)			
6. Depression (total CES-D-SF score; 0-21)	.06	-.07	.30*	-.07	.79**	(.83)		
7. Social support (total MSPSS score; 12-84)	.28*	.35**	.14	.02	-.39**	-.29*	(.95)	
8. Posttraumatic cognitions (total PTCI-9 score; 9-63)	-.19	-.22	.03	-.04	.53**	.40**	-.42**	(.68)
<i>M</i>	16.11	2009.29	2.12	2.97	33.28	7.61	54.79	27.96
<i>SD</i>	9.15	8.25	1.59	2.37	17.96	4.84	20.25	8.34

Note. ** $p < .01$; * $p < .05$; [†] $p = .050$. Cronbach's α values shown in parentheses along the diagonal.

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