



Applying the Stress Process Theory to Assess Correlates of Suicide Ideation-to-Action Among Persons on Parole in the United States

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Abstract

There is limited knowledge regarding precipitating factors associated with suicidality among persons on parole. Pairing the suicide ideation-to-action framework and stress process theory, the present study aimed to characterize sources of major stress (drug use, physical health, and mental health) and their associations to suicide ideation, planning, and attempt among a national sample of persons on parole. This study included a subsample of persons on parole ($N=1725$) using pooled national data from the National Survey on Drug Use and Health (2015–2019). A series of logistic regression results indicate that various drug use, physical health, and mental health factors significantly influenced all three suicidality measures. Due to this population's unique experiences and numerous barriers following release from prison, it is essential to personalize interventions geared toward this population to meet their specific needs and address suicidality based on where they fall on this continuum.

Keywords Persons on parole · Suicidality · Ideation-to-action framework · Stress process theory

Introduction

Death by suicide continues to be a significant contributor to increased premature mortality rates for imprisoned populations in the United States. Suicide was the leading cause of death in jails from 2006 to 2016 (Carson & Cowhig, 2020). For example, between 2006 and 2016, death by suicide accounted for 31% of all deaths in jails, while suicide represented an average of 6.8% of deaths from 2001 to 2016 in state prisons (Carson & Cowhig, 2020). Many factors contribute to the heightened risk of suicide while imprisoned. Still, the stress of the incarceration experience itself has a considerable impact on all inmates' mental health and well-being (Valera & Boyas, 2019; Wallace & Wang, 2020), which may ultimately result in an elevated risk of premature mortality (Binswanger et al., 2007, 2013). Incarcerated individuals struggle with overcrowding, lack of freedom, estrangement from family and friends, limited

social networks, and lack rehabilitation services, all of which negatively impact mental health (Huey & McNulty, 2005).

Although the literature that underscores the elevated risk of suicide for persons while imprisoned is well-established, less research has focused on exploring the risk and correlates of suicidality after being released from prison, such as for persons on parole (Lim et al., 2012; Pratt et al., 2006; Yu et al., 2014). Persons on parole represent a subpopulation that are on conditional release and are supervised in the community. In 2018, 901,100 people were on parole in the U.S., a rate of 344 per 100,000 people (Kaeble & Alper, 2020). There is a lack of thorough understanding regarding the precipitating factors that correlate with suicidality among persons on parole, which is concerning for several reasons. First, the United States (U.S.) imprisons more people per capita than any other country (Pfaff, 2017). The U.S. incarcerates 698 per 100,000 people (Prison Policy Initiative, 2020). Eventually, many of these individuals will leave prison and will be released across various communities. Second, the number of people being released from prisons each year has been exacerbated by the desire to slow the spread of the Coronavirus Disease 2019 (COVID-19) within correctional facilities, whereas many as 651 incarcerated people and 50 correctional staff died because of the virus (Prison Policy Initiative, 2020; The Marshall

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Project, 2020). Moreover, more than 100,000 people were released from correctional facilities into various communities across the U.S. between March and June of 2020 (The Marshall Project, 2020). Last, several studies suggest that persons released into the community after incarceration were at higher risk for suicide (Barry et al., 2018; Haglund et al., 2014; Lize et al., 2015; Spittal et al., 2014; Yu et al., 2014). A systematic review revealed that suicide rates of people leaving prison were 6.75 times higher than that of the general population (Jones & Maynard, 2013). Thus, it is germane to identify stressors that contribute to the genesis of suicidality among persons on parole returning to a community setting, particularly at a time when many formerly incarcerated individuals will be paroled because of the ongoing pandemic. Pairing the suicide ideation-to-action framework and stress process theory (SPT), this study aims to explore how multiple psychological and behavioral factors differ in influencing the ideation-to-action continuum among a national sample of persons on parole.

Theoretical Framework

The present study used the ideation-to-action framework to examine suicidality as three distinct spheres (ideation, planning, and action) that build on each other but may be influenced by different factors (Klonsky et al., 2016). This framework emphasizes that the progression from suicide ideation to attempt is a distinct process and includes specific explanations (Klonsky et al., 2018). This is an important distinction given that more people who consider suicide, or ideate, do not attempt suicide (Klonsky & May, 2014), which is why it has been maintained that the ideation-to-action framework should be used to guide suicide research, theory, and practice since it equips researchers the ability to identify which factors contribute to ideation, planning, or attempt of suicide jointly, or independently (May & Klonsky, 2016). In application, the ideation-to-action framework would make risk assessment for suicide more specific to each of these spheres. Prevention professionals would then create programming tailored specifically to those who ideate versus those who attempt suicide. Additionally, the ideation-to-action framework deviates from traditional approaches to suicide by distinguishing suicide and its related factors as unitary constructs. In contrast, the ideation-to-action framework differentiates risk factors for ideation and attempts independently, given their influence (Klonsky et al., 2016). For example, depression is more likely to influence suicide ideation significantly, but not suicide attempt (Klonsky & May, 2014; O'Brien et al., O'Brien et al., 2014). Thus, we maintain the ideation-to-action framework more adequately captures the diverse experiences of suicide among persons on parole and is valuable from an analytic standpoint. This present study distinguishes itself from some existing suicide

studies focusing on people on parole that pool suicidal ideation, planning, and attempts into one measure or only explore one aspect of the suicide spectrum (Klonsky et al., 2016). Analyzing suicide ideation, planning, and attempt independently is more advantageous in delineating what factors impact each sphere and identifying their impact. This is an important distinction since some empirical studies have shown that suicide is a continuum process that is not sequential because individuals engage in a range of thoughts and behaviors (Boyas et al., 2019; Villarreal-Otálora et al., 2020). Data from the Centers for Disease Control (CDC) (2020) indicates that in the United States, 4.3% of adults seriously thought about suicide, 1.8% of adults made a plan to commit suicide, and 0.8% of adults confirmed attempting suicide (Substance Abuse and Mental Services Health Administration, 2021). Such statistics illustrate the importance of understanding the process and transition from ideas to actions is critical in understanding each sphere of the suicidality spectrum.

The SPT was also used as the guiding theory to contextualize factors contributing to the genesis of suicidality among persons on parole. SPT suggests that a significant life event such as imprisonment may bring about new strains or exacerbate pre-existing ones (Pearlin et al., 1981). These new or intensified strains may result in stress. SPT underscores three dynamics that contribute to stress: (a) stressors or sources of stress, (b) mediators, and (c) health/mental health outcomes. It is well established that experiencing imprisonment itself is a risk factor for poor outcomes (Brinkley-Rubinstein, 2013; Wildeman & Wang, 2017). The immense levels of stress can stem from the lived experience while in prison, such as lack of adequate treatment, delayed care, the uncaring demeanor of the staff, and treatment lacking until conditions worsen (Walsh-Felz et al., 2019). Simultaneously, persons imprisoned often lack a sense of control over their lives, social support, or have not developed effective coping strategies (Thoits, 2010; Valera & Boyas, 2019). Nonetheless, such stressors will require behavioral readjustment while in prison and once they return to the community, particularly if these stressors overburden these individuals' abilities to cope successfully. As a result, the stressors experienced while incarcerated can leave psychological and physical wounds, even after a person leaves prison (Moran, 2014; Wallace & Wang, 2020). Thus, the cumulative stress of imprisonment may leave them physically and emotionally vulnerable, precipitating physical health and mental health problems (Thoits, 2010; Walsh-Felz et al., 2019). Persons on parole are also likely to experience barriers and stigma once released into the community due to the stigma associated with their criminal history (Sheppard & Ricciardelli, 2020). This stigma adversely affects this population by creating barriers to obtaining employment (Harding et al., 2019; Sheppard & Ricciardelli, 2020); securing adequate

housing (Evans et al., 2019; Furst & Evans, 2017; Herbert et al., 2015), unstable housing that results in homelessness (Petersilia, 2003) and loss of social standing (Gunnison & Helfgot, 2017; Moore et al., 2013).

Literature Review

There has been a gap in the scholarly literature regarding the demographic outlay of suicide ideation, planning, and attempt among individuals on parole since that time. Given that adults in prisons and jails only comprise one third of the correctional population in the U.S., it is critical that research becomes more inclusive of the 4.5 million (in 2016) adults on community supervision (Winkelman et al., 2020). Limited literature demonstrates that individuals on parole are twice as likely to report suicidal ideation than those not on parole, and approximately 3.3 times more likely to die from suicide compared to the general population (Binswanger et al., 2007; Yu et al., 2014). This is further supported by Bryson and colleagues (2021), who found that rates of suicide for previously incarcerated individuals were still higher compared to their matched controls from the general population, with 3.2% of persons on parole, 2.7% of probationers, and 3.3% of arrestees reporting suicide attempts within the past year.

Research has established that certain demographic characteristics are common correlates of suicidality. The broad scope of suicidality presently suggests adults ranging from 35 to 64 years of age account for nearly half of all deaths in the nation (CDC, 2022), while recent research on the prison population suggests that age and the probability of reporting suicidal thoughts and behavior is curvilinear (Stoliker et al., 2020). When adjusting for age, between 2019 and 2020, suicide rates decreased 4.5% among non-Hispanic Whites, and increased 4% and 6.2% among non-Hispanic Blacks and American Indians (CDC, 2022). Among incarcerated populations, White individuals were more likely than Black or Hispanic individuals to report suicidal thoughts and attempts throughout the lifespan (Stoliker & Galli, 2021). In addition, suicide ideation is more prevalent among formerly incarcerated females than males (Yu & Sung, 2015), although overall suicide attempts remain significantly higher among males (Freeman et al., 2017). Additional research has demonstrated that incarcerated individuals are also more likely to report multiple suicide attempts, compared with a single attempt, particularly among women (Stoliker, 2021). Further, research has indicated that while marital status itself was not directly linked with suicidality, there was an association between the number of separations with a partner (both married and unmarried) and rates of suicidality (Gunter et al., 2013). Given these findings, the disadvantaged and vulnerable social status of persons on parole

should be considered when accounting for risk factors that may contribute to suicidality.

Physical/Mental Health and Suicide Ideation, Planning, and Attempt

Persons on parole are growing at an unprecedented rate, resulting in a higher need for physical health, mental health, and substance use treatment (Bryson et al., 2019; Houser et al., 2019; Pinedo, 2020; Sheppard & Ricciardelli, 2020). There is also a growing recognition that being imprisoned expands or intensifies healthcare disparities (Massoglia, 2008; Wang et al., 2014). This occurs due to prisons experiencing understaffing, poor quality care, and limited access to medical services (Pew Charitable Trusts, 2017; Prison Policy Initiative, 2017). Additionally, research suggests that exposure to suicidal behavior by peers increases suicide ideation among incarcerated individuals (Favril et al., 2020b).

One study concluded as many as 40% of incarcerated individuals reported persistent health conditions such as hypertension, asthma, arthritis, diabetes, and obesity (Maruschak et al., 2015). Other studies suggest that the prevalence of cancer, Human Immunodeficiency Virus (HIV), Hepatitis C, and tuberculosis is higher among imprisoned populations than in the general public (Cloud, 2014; Vigilanti et al., 2018). Worsening health and health outcomes are also prevalent among this population due to limited access to health care post release (Kulkarni et al., 2010; Marlow et al., 2010; Wallace & Wang, 2020). These conditions often go untreated and exacerbate during prisoner reintegration. For example, research has indicated that low physical health self-efficacy was associated with prior suicide attempts and future suicide ideation (Isaac et al., 2018). Research also indicates higher risks of suicide ideation and suicide attempt as a result of disability and ongoing chronic pain conditions (Fishbain et al., 2014; Khazem et al., 2019). This speaks to a larger need for literature centered on self-rated health conditions in relation to the suicide ideation-to-action continuum among persons on parole.

In terms of mental health, acute stress has been associated with higher rates of suicidality, but was not the sole variable impacting the likelihood of suicide attempts (López-Díaz et al., 2018). In addition to the gap in physical health services, studies show that individuals on parole often lack mental health services aimed at addressing suicide-related behaviors, non-suicidal self-injury, and a multitude of behavioral health concerns (Bryson et al., 2019; Houser et al., 2019; Shaffer et al., 2018; Timmer & Nowotny, 2021; Van Deirse et al., 2019). For example, some estimates suggest that as many as 29% of persons on parole experience risk factors associated with suicide, such as depression, psychological distress, and episodes of major depression (Bryson et al., 2019; Visher & Courtney, 2007; Yu et al., 2014). For

example, Yu et al., (2014) found that serious psychological distress, episodes of major depression, and inpatient mental health treatment were all significantly associated with suicidal ideation among persons on parole.

Substance Use and Suicide Ideation, Planning, and Attempt

In addition to widespread health and mental health needs, people on parole need services to address substance use. Research has suggested that rates of substance use and substance use disorders were higher among adults on probation or parole compared to the general population (Lynch et al., 2020; Vaughn et al., 2012; Yu et al., 2014). People on probation and parole were found to be two to five times more likely to report using marijuana, cocaine, hallucinogens, oxycontin, and tranquilizers in the past year (Vaughn et al., 2012). Building on this, suicide mortality was found to be over 11 times higher in individuals with polysubstance use disorders (Lynch et al., 2020). This partially explains why persons on parole were more likely than the general population to have had treatment for substance abuse or dependence (Vaughn et al., 2012). In conjunction with these findings, (Esang & Ahmed, 2018) found that individuals with substance use dependence are 10–14 times more likely to experience completed suicides, and approximately 22% of deaths by suicide have involved alcohol intoxication. Additional substances have also contributed to suicide, including opiates, marijuana, cocaine, and amphetamines.

Of the literature reviewed for this study, much of the current research unpacks the risks of suicide ideation in prisons, barriers to services, and overall conditions of those incarcerated in relationship to a suicidality binary along the lines of suicide ideation and suicide attempts (Favril et al., 2020a; Forster et al., 2019), without considering the impact of these risk factors on planning suicide. Earlier studies are also limited in that they have only examined one aspect of the suicide continuum, failing to account for the spectrum of suicidal thoughts and behaviors (Cook, 2013; Yu et al., 2014). In summary, current literature speaks to the ongoing intersectional conditions of mental health issues, chronic physical health conditions, and the use of substances as contributing factors to shifting through the suicide ideation-to-action continuum, but scant research is available to examine connections related to these intersectional identities and suicidality in persons on parole (Esang et al., 2018; López-Díaz et al., 2018).

Persons on parole are an understudied population who continue to face significant challenges upon community reentry. The connections between stressors and suicidality have not been well established among this population. Most of the literature on populations under community supervision and suicide have focused on individuals on

probation (Pluck & Brooker, 2014; Sirdifield et al., 2020). Further, much of the existing literature stems from studies that explored suicidality among former prisoners from one single state (Lize et al., 2015), or have analyzed community supervision populations outside of the U.S. (Joukamaa, 1998; Verger et al., 2003). Thus, more studies are needed that explore how mental health, physical health, and substance use are associated with the suicide spectrum among a vulnerable and growing subpopulation. Knowledge gained from this study has the potential to inform the development of intervention and prevention efforts of suicidality among persons on parole.

Methods

Data Source and Sample

The present secondary data analysis used pooled data (2015–2019) from the National Survey on Drug Use and Health (NSDUH), which annually surveys noninstitutionalized individuals 12 years and older in the U.S. civilian population across all 50 states and the District of Columbia. For this study, data were pooled from multiple years, as individuals on parole represented only a small portion of the NSDUH surveys collected annually. We did not find significant differences by dataset year on the dependent variables of interest therefore pooling the data was appropriate. The Substance Abuse and Mental Health Services Administration (SAMHSA) conducts the NSDUH annually (Center for Behavioral Health Statistics & Quality, 2020) to obtain state and national estimates on substance use. A stratified multi-stage sampling technique was used to yield the nationally representative sample. Data were collected by conducting an approximately one hour, audio-assisted computer interview method. This technique was used to ensure confidentiality, given the sensitivity of the information regarding drug and alcohol use behaviors. Since 2002, respondents have received US \$30 as incentive for their participation. The present analysis included survey participants between 2015 and 2019 who self-identified as being on parole ($N = 1725$).

Measures

Dependent Variables

Ideation-to-Action Variables The focus of this study was on parceling out suicidal behavior (i.e., ideation, planning, and attempt) among persons on parole. Thus, suicidal thoughts and behaviors were collapsed into three dependent variables: suicidal ideation; suicide planning; and suicide attempt. Responses to, “Did you seriously think about killing yourself?” was used to measure suicidal ideation. To measure

whether participants had created a suicide plan responded to the question, “Did you make any plans to kill yourself?” was used. Lastly, to measure suicide attempt the item, “Did you try to kill yourself?” was used. All three suicidality questions had a recall point of the last 12 months and were coded as no=0 and yes=1.

Independent Variables

Mental and Physical Health Variables Number of reported chronic health conditions is based on the total number of physical health conditions in an individual, ranging from 0 to 5. Five represents more chronic health conditions. Overall health is a Likert scale, ordinal variable that measures an individual’s perceived health, ranging from 1 (poor) to 5 (excellent). The following variables related to mental health treatment were coded as 0=no and 1=yes: overnight stay in hospital for mental health treatment during the past 12 months, outpatient mental health treatment during the past 12 months, prescribed medications for mental health during the past 12 months, and needed MH treatment but did not get it during the past 12 months. Total acute depression score was the sum and reported frequency of acute depressive symptoms (i.e., how often felt nervous, hopeless, restless/fidgety, sad/nothing could cheer you up, feeling that everything was an effort, and feeling down/worthless/no good) over the previous 30 days. This score ranged from 0 to 12. Finally, total activities of daily living (ADL) shortcomings score was based on the reported number of difficulties experienced with activities of daily living, such as hearing, seeing, walking, concentrating, bathing, and doing errands alone. This score ranged from 0 to 6. Higher numbers represent more difficulties.

Substance Use Variables The following substance use variables are included in the current analyses: ever consumed alcohol, ever used marijuana, ever used cocaine, ever used crack, ever used methamphetamine, ever used needle to inject drugs, and ever misused pain reliever prescribed by doctor. Each variable is dummy coded as 0=no and 1=yes. Each of these variables are indicative of any lifetime use of these substances or paraphernalia associated with these substances.

Demographic Variables The analysis controlled for the following sociodemographic variables: age, sex, marital status, and race/ethnicity. Age was collapsed into the following categories: 0=18–20 years old, 1=21–25 years old, 2=26–34 years old, and 3=35 and older (reference). Within the NSDUH dataset, different variables were available for age; however, none were in a consistent interval/ratio breakdown for respondents 18 and older. The above age breakdown was utilized for this population given that many

parolees fall within these particular age brackets (Hughes & Wilson, 2004). Sex was coded as a dichotomous variable (0= male; 1=female). Marital status and race/ethnicity were each coded as categorical variables. Marital status was coded as follows: 0=never married (reference), 1=married, 2=widowed, 3=divorced/separated. Race/ethnicity was recoded as follows: 1=non-Hispanic White (reference), 2=African American, 3=Latina/o/x, 4=other racial/ethnic groups. It should be noted that for each of the categorical variables—marital status, race/ethnicity, and age—the following are designated as reference categories, respectively: being single/never married, being white/non-Hispanic, and being 35 and older, as the majority of respondents were in these respective groups. Marital status and race/ethnicity were further coded into dummy variables given that they are categorical in nature, as logistic regression would allow for further analysis of suicidality outcomes for each group.

Analytic Strategy

All analyses were conducted using SPSS version 27. For the final multivariate analyses, statistical significance was measured at the 95% confidence interval level ($p = \leq 0.05$). Descriptive statistics were first used to present sample characteristics across the three suicidal thoughts and behaviors: suicidal ideation, planning, and attempt. Univariate statistics were used to assess the prevalence of suicide thoughts and behaviors. Secondly, a series of binary logistic regressions were conducted to explore each variable’s relationship to the three dependent variables (i.e., ideation, planning, and attempt) and the independent variables. The main analysis included computing three multivariate binary logistic regression models to identify predictors of suicide ideation to action variables. Independent variables that were found to be statistically associated with the three suicide ideation-to-action outcome variables were included in building the multivariate model. Odd ratios (OR) and 95% confidence intervals (CI) were reported for the bivariate and multivariate results. The present study was a secondary data analysis using a publicly available dataset. Researchers obtained exemption from the IRB at the authors’ home institution. No funding was secured to carry out this study, and the authors have no conflicts of interest to report. Additionally, all authors accept responsibility for all stages of this investigation and ensure its accuracy and integrity.

Results

Sample Descriptives

Table 1 shows the descriptive information for the sample. The majority of the sample included mostly male

Table 1 Descriptive statistics for model variables (n = 1725)

Variable	%	Median	SD
Ever used alcohol	90.3	–	–
Ever used marijuana	78.2	–	–
Ever used cocaine	44.1	–	–
Ever used crack	22.8	–	–
Ever used methamphetamine	31.1	–	–
Ever used needles for drug use	19.2	–	–
Ever misused pain relievers	33.1	–	–
Overnight hospital stay for MH treatment < 12 months	4.6	–	–
Received outpatient MH treatment < 12 months	15.3	–	–
Needed MH treatment but did not receive it < 12 months	12.0	–	–
Took Rx medication for MH condition < 12 months	19.9	–	–
Race/ethnicity			
White	47.1	–	–
Black	20.2	–	–
Latina/o/x	21.3	–	–
Other	11.4	–	–
Sex			
Male	73.3	–	–
Female	26.7	–	–
Marital status			
Married	20.4	–	–
Widowed	1.7	–	–
Divorced/separated	17.3	–	–
Never married	60.6	–	–
Age			
18–20	10.2	–	–
21–25	25.1	–	–
26–34	28.1	–	–
35+	36.6	–	–
Number of chronic conditions (0–5)	–	0.00	0.804
Acute depression score (0–12)	–	2.00	3.508
Total ADL shortcomings (0–6)	–	0.00	1.011
Overall health (1 = poor; 5 = excellent)	–	3.00	1.026

participants ($n = 1264$). In terms of race and ethnicity, almost half of the sample consisted of persons who self-identified as non-Hispanic Whites ($n = 813$), followed by Latinas/os/x ($n = 368$), and Blacks ($n = 348$). The majority reported never marrying ($n = 1046$) and a larger percentage reported earning a high school diploma or GED (38.8%; $n = 670$). In terms of employment, the majority reported working full-time (42.1%; $n = 726$), while 245 (14.2%) reported being unemployed/laid off and looking for employment. The largest number of participants reported annual income less than \$30,000 (53.2%), and 37% reported living in poverty. Most respondents (40%) reported living in large metro areas.

In terms of suicide ideation, 177 (10.3%) respondents endorsed having thoughts about killing themselves. Another 84 (4.9%) made plans to commit suicide, while 56 (3.2%) reported attempting to commit suicide in the past year.

Amongst this study's sample, 48 (2.8%) reported ideating, planning, and attempting suicide. Among persons on parole, all respondents who attempted suicide also planned it, whereas eight respondents attempted suicide but did not make a suicide plan.

Bivariate Results

Chi-square and t-test results (Table 2) indicated that most of the predictor variables were significantly associated across all three dependent variables. In terms of drug use, a significantly higher number of respondents who did ideated, planned, or attempted suicide also reported using crack, needles to inject drugs, and misusing pain relievers. Turning to mental health, a significantly higher number of respondents who ideated, planned, or attempted suicide also

Table 2 Bivariate measures for suicidality among persons on parole

Variable	Ideation		Planning		Attempt	
	% (n)	χ^2 (df)	% (n)	χ^2 (df)	% (n)	χ^2 (df)
Ever had drink of alcoholic beverage	9.7 (168)	4.766 (1)*	4.5 (78)	0.653(1)	2.8 (49)	0.526(1)
Ever used marijuana/hashish	8.9 (154)	8.989 (1)**	4.1 (71)	2.085(1)	2.5 (43)	0.067(1)
Ever used pain reliever not directed by doctor	4.8 (83)	17.396 (1)***	2.7 (47)	21.673(1)***	1.7 (30)	10.907(1)***
Ever used cocaine	5.8 (100)	12.383 (1)***	2.7 (47)	5.097(1)*	1.7 (29)	1.402(1)
Ever used crack	3.7 (63)	18.201 (1)***	1.9 (33)	13.643(1)***	1.2 (20)	5.443(1)*
Ever used methamphetamine	3.7 (64)	2.382 (1)	1.7 (29)	0.486(1)	1.2 (20)	0.582(1)
Ever used needle to inject drugs	3.1 (53)	14.522(1)***	1.7 (30)	15.380(1)***	1.0 (17)	4.597(1)*
Overnight stay in hospital for MH tx < 12 months	1.9 (32)	83.955(1)***	1.1 (19)	67.651(1)***	1.0 (18)	104.936(1)***
Received outpatient MH tx < 12 months	3.7 (63)	64.498(1)***	1.8 (30)	30.094(1)***	1.2 (21)	23.958(1)***
Needed MH tx but didn't receive it < 12 months	4.1 (71)	153.157(1)***	2.1 (36)	83.523(1)***	1.1 (19)	28.593(1)***
Took any rx meds for MH condition < 12 months	4.7 (80)	81.733(1)***	2.2 (37)	34.671(1)***	1.4 (24)	21.143(1)***
Race		13.983(3)**		8.974(3)*		3.853(3)
White	6.0 (104)		2.8 (49)		1.6 (27)	
Black/African American	1.3 (22)		0.5 (9)		0.4 (7)	
Latina/o/x	1.7 (29)		0.6 (13)		0.7 (12)	
Other	1.3 (22)		0.6 (13)		0.6 (10)	
Sex		12.474(1)***		7.095(1)**		3.432(1)
Male	6.3 (110)		3.0 (51)		2.0 (35)	
Female	3.9 (67)		1.9 (33)		1.2 (21)	
Marital status		7.841(3)*		9.399(3)*		7.997(3)*
Never married	6.3 (110)		2.7 (47)		2.0 (34)	
Married	1.4 (24)		0.6 (11)		0.3 (5)	
Widowed	0.2 (3)		0.1 (2)		0.1 (2)	
Divorced/separated	2.3 (40)		1.4 (24)		0.9 (15)	
Age		13.590(3)**		3.211(3)		8.726(3)*
18–20 years old	1.9 (32)		0.8 (13)		0.7 (12)	
21–25 years old	2.5 (43)		1.0 (18)		0.9 (15)	
26–34 years old	2.6 (45)		1.2 (21)		0.8 (13)	
35+ years old	3.3 (57)		1.9 (32)		0.9 (16)	

	Ideation		Planning		Attempt	
	M(SD)	t(95% CI)	M(SD)	t(95% CI)	M(SD)	t(95% CI)
# of reported chronic conditions	.42(.78) <i>.62(.95)</i>	- 2.702(- .345-[- .054])**	.43(.79) <i>.71(1.01)</i>	- 2.545(- .509-[- .063])*	.43(.80) <i>.68(1.01)</i>	- 1.789(- 5.17-.029)
Overall health	3.48(1.02) <i>3.16(1.06)</i>	3.743(.149-.479)***	3.46(1.02) <i>3.23(1.05)</i>	2.003(.005-.454)*	3.45(1.03) <i>3.34(1.00)</i>	3.871(.155-.473)***
Total acute depression score	2.49(3.13) <i>7.22(3.81)</i>	- 15.821(- 5.322-[- 4.142])***	2.75(3.35) <i>7.33(3.71)</i>	- 12.061(- 5.316-[- 3.829])***	2.82(3.39) <i>7.60(3.86)</i>	- 15.821(- 5.322-[- 4.122])***
Total ADL deficiency	.42(.93) <i>1.18(1.38)</i>	- 7.120(- .970-[- .549])***	.45(.96) <i>1.37(1.53)</i>	- 5.457(- 1.261-[- .588])***	.46(.97) <i>1.44(1.68)</i>	- 7.120(- .970-[- .549])***

Bold: Never ideated/planned attempted; Italics: Reported ideation/planning/attempt * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

reported higher depression scores, overnight hospital stays, taking prescription medication for a mental health condition, receiving outpatient mental health treatment in the past year, and needing mental health treatment but not receiving it. As for physical health, a significantly higher number of respondents who ideated, planned, or attempted suicide also reported higher numbers of chronic health conditions and ADL shortcomings. Race, sex, marital status, and age were all associated with ideation at the bivariate level, but these effects diminished once planning and attempt were taken into consideration.

Four predictors that were significantly associated with suicide ideation and planning but not attempt: cocaine use, number of reported chronic conditions, sex, and race/ethnicity. Alcohol and marijuana use were significantly associated with suicidal ideation, but not planning or attempt. Age was significantly associated with suicidal ideation and attempt, but not planning suicide.

Multivariate Logistic Regression Model Results

Suicidal Ideation Model

Table 3 shows the results of multivariate logistic regression models and the impact of each of the independent variables on ideating, planning, and attempting suicide among persons on parole. For each model, odds ratios and 95% confidence intervals (Cis) are presented. Model 1 demonstrates the impact of each independent variable on suicidal ideation. The overall model predicting suicidal ideation was statistically significant, $\chi^2(25, n = 1687) = 320.897, p = 0.001$. The independent variables included within this model explained 36% of the variance in reported suicidal ideation. Among persons on parole, suicidal ideation was significantly linked to methamphetamine use, overnight stay in hospital for mental health treatment during the last twelve months, needing mental health treatment but not receiving it in the past twelve months, total acute depression score, being divorced/separated and being 18–20 years old. Only history of methamphetamine use had a negative relationship with suicidal ideation, while overnight stay in hospital for mental health treatment during the past twelve months, needed mental health treatment but did not receive it in the past twelve months, being divorced/separated, and being 18–20 years old all had positive relationships with suicidal ideation. Respondents between 18 and 20 years old were 3.85 times (CI 1.943–7.624) more likely to report suicidal ideations when compared to their counterparts who were 35 years of age and older. Divorced/separated respondents were about twice as likely (CI 1.135–3.593) to report suicidal ideations compared to their single counterparts. Those who reported an overnight stay in the hospital for mental health

reasons over the past twelve months were about 2.73 times (CI 1.463–5.081) more likely to report suicidal ideation. Meanwhile, respondents who needed mental health treatment but did not receive it over the past 12 months were 2.62 times (CI 1.693–4.054) more likely to report such ideations. Those with higher scores on the total depression scale were about 1.3 times (CI 1.693–4.054) more likely to report suicidal ideation. Last, individuals with a history of methamphetamine use were about 0.45 times (CI 0.326–0.912) less likely to report suicidal ideation.

Suicide Planning Model

Model 2 demonstrates the impact of each independent variable on planning suicide. The overall model was found significant in predicting suicide planning, $\chi^2(25, n = 1687) = 172.687, p = 0.001$ and accounted for approximately 31% of the variance in explaining planning a suicide. Suicide planning was significantly associated with methamphetamine use, overnight stay in hospital for mental health treatment during the last twelve months, needing mental health treatment but not receiving it in the past twelve months, total acute depression score, being divorced/separated, ever using a needle to inject drugs, misuse of a pain reliever prescribed by doctor, and overall health. Having a history of methamphetamine use was again negatively associated with planning suicide, while using a needle to inject drugs, misusing a pain reliever prescribed by their doctor, overall health, overnight stay in the hospital for mental health treatment over the past twelve months, needing mental health treatment but not receiving it over the past twelve months but not receiving it, total acute depression score, and being divorced/separated all had positive relationships with planning a suicide attempt. The highest odds predicting suicide planning was among respondents who reported an overnight stay in the hospital for mental health reasons over the past twelve months (OR 3.33, CI 1.575–7.051). Respondents who needed mental health treatment but did not receive it over the past 12 months were two times to more likely to plan a suicide (OR 2.231, CI 1.693–4.054). Respondents who reported using a needle to inject drugs (OR 2.183, CI 1.206–3.986) and misusing a prescribed pain reliever (OR 2.183, CI 1.031–4.625) were each two times more likely to report planning suicide. Suicide planning was 1.3 times higher among individuals who reported better overall health (CI 1.011–1.748) and those with higher acute depression scores (CI 1.190–1.377). Divorced/separated respondents were almost three times more likely (OR 2.923; CI 1.395–6.125) to report planning suicide than their single counterparts. Suicide planning was about 32% (CI 1.190–1.377) less likely among those with a history of methamphetamine use.

Table 3 Multinomial logistic regression results for ideation, planning, and attempting suicide among persons on parole

Variables	Ideation		Planning		Attempting	
	OR	95% CI	OR	95% CI	OR	95% CI
Ever consumed alcohol	1.598	0.657–3.891	0.907	0.316–2.602	0.533	0.178–1.597
Ever used marijuana/hashish	1.262	0.682–2.336	1.136	0.507–2.545	0.697	0.276–1.759
Ever used cocaine	0.788	0.455–1.365	0.486	0.216–1.095	0.528	0.190–1.467
Ever used crack	1.578	0.888–2.803	2.176	0.954–4.965	2.414	0.842–6.925
Ever used meth	0.545*	0.326–0.912	0.323**	0.158–0.659	0.521	0.215–1.263
Ever used needle to inject drugs	1.470	0.836–2.586	2.183*	1.031–4.625	1.408	0.559–3.546
Ever misused pain reliever prescribed by doctor	1.218	0.788–1.882	2.193**	1.206–3.986	2.374*	1.107–5.091
# of reported chronic conditions	0.953	0.753–1.208	1.053	0.782–1.419	1.069	0.731–1.561
Overall health	1.042	0.853–1.274	1.330*	1.011–1.748	1.464*	1.055–2.033
Overnight stay in hospital for MH treatment past 12 months	2.726**	1.463–5.081	3.333**	1.575–7.051	7.127***	3.086–16.457
Outpatient MH treatment past 12 months	1.096	0.668–1.797	0.936	0.482–1.816	1.156	0.514–2.599
Took any prescription medications for MH past 12 months	1.390	0.871–2.217	1.030	0.548–1.937	0.709	0.322–1.562
Needed MH treatment but didn't get it past 12 months	2.620***	1.693–4.054	2.231**	1.247–3.992	1.182	0.555–2.516
Total acute depression score	1.300***	1.233–1.371	1.280***	1.190–1.377	1.313***	1.202–1.435
Total ADL deficiency score	1.129	0.960–1.329	1.217	0.997–1.485	1.239	0.979–1.568
Male	0.938	0.617–1.426	1.019	0.579–1.792	0.996	0.500–1.981
Marital status (Single/Never Married)						
Married	1.096	0.616–1.951	1.250	0.569–2.743	0.912	0.301–2.762
Widowed	1.187	0.290–4.863	2.290	0.433–12.112	4.131	0.759–22.466
Divorced/separated	2.020*	1.135–3.593	2.923**	1.395–6.125	4.192**	1.654–10.623
Race/ethnicity (White)						
Black	1.266	0.320–1.044	0.499	0.212–1.172	0.592	0.211–1.656
Hispanic	0.708	0.424–1.235	0.886	0.425–1.845	1.359	0.602–3.069
Other	0.887	0.433–1.535	1.062	0.468–2.409	1.165	0.425–3.196
Age (35 and older)						
18–20 years old	3.849***	1.943–7.624	2.410	0.952–6.098	5.477**	1.802–16.648
21–25 years old	1.618	0.895–2.926	1.188	0.536–2.634	2.453	0.907–6.640
26–34 years old	1.206	0.700–2.076	1.049	0.510–2.157	1.791	0.701–4.576
Constant	0.007***		0.002***		0.001***	
	Nagelkerke R ² = .360		Nagelkerke R ² = .307		Nagelkerke R ² = .316	

Reference categories: marital status is single/never married; race/ethnicity is white; age is 35 and older. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Suicide Attempt Model

Model 3 demonstrates the effects of each variable on the likelihood of predicting a suicide attempt. The overall model significantly predicted attempting suicide, $c^2(25, n = 1,687) = 135.295, p = 0.001$ and the independent variables included in this model account for almost 32% of the variance. In this model, misusing pain reliever prescribed

by a doctor, overall health, overnight stay in hospital for mental health treatment over the past twelve months, being divorced/separated, and being 18–20 years old were significant predictors of a suicide attempt; all were positive associations. The highest likelihood of attempting suicide was among individuals who reported having an overnight stay in the hospital for mental health treatment over the past twelve months. Having an overnight stay in the hospital for

mental health treatment was associated with a seven time (CI = 3.086–16.457) increase in having engaged in a suicide attempt. The next highest likelihood of a suicide attempt was associated with age. Respondents who were between the ages of 18–20 were about five (CI = 1.802–16.648) times more likely to have attempted suicide compared to respondents 21 years of age and older. Individuals who were divorced/separated were about four (CI = 1.654–10.623) times more likely to attempt suicide. Individuals who misused a pain reliever prescribed by a doctor were two times more likely to attempt suicide (CI = 1.107–5.091). Those with higher scores for overall health were 1.5 (CI = 1.055–2.033) times more likely to have attempted suicide. Those who needed mental health treatment but did not receive it over the past twelve months were 1.3 times more likely to have attempted suicide (CI = 1.202–1.435).

Discussion

Using a combined SPT and suicide ideation-to-action framework, the present study aimed to identify sources of stress (drug use, physical health, and mental health) that contribute to suicide ideation, planning, and attempt. Persons on parole in this study reported varying degrees of suicidal thoughts and behaviors. Consistent with existing research, suicidality among persons on parole was not linear since the progression from suicidal ideation to attempt were distinct processes (Valera & Boyas, 2019; Villarreal-Otálora et al., 2020). In the present study, the highest number of persons on parole reported having suicide ideations but only about a third of respondents also reported attempting suicide. Less than three percent of all respondents fully endorsed ideating, planning, and attempting suicide. These results suggest that persons on parole reported experiencing higher rates of suicide ideation, planning, and attempt compared to the general adult population in the United States (Substance Abuse and Mental Services Health Administration, 2021), but lower death by suicide rates found in state prisons (Carson & Cowhig, 2020). The results of the present study suggest that it is essential that data is collected on the various thoughts and behaviors that permeate among people who are imprisoned. Currently, death by suicide is collected by state prisons, but tells part of the story—it is not the complete narrative. National data should be collected on suicide ideation, planning, and attempt among people imprisoned in state prisons. These findings are also consistent with the attempter-ideator distinction (Have et al., 2009; Klonsky et al., 2018). This distinction suggests that factors that predict suicide ideation may differ from those that predict attempting suicide (Klonsky et al., 2016). The following sections underscore how different factors influenced each of the suicidality steps, but

also, when the same predictor was statistically significant, it showed a different impact.

Multivariate results indicate that one of the consistent factors associated with each step of suicidality was having an overnight stay in a hospital for mental health treatment. In each case, it represented a very high risk for suicidal ideation, planning, and attempt. Moreover, the current findings show that this factor showed the strongest association with attempting suicide. Given that hospital stays increased the odds of experiencing suicidal ideation, further research revealed a lack of current studies to understand better how overnight and long-term medical stays impact people in prison and those on parole. Much of the data available on the frequencies of suicidal behaviors and medical facilities, hospital stays, and long-term care facilities are focused on aging populations, adolescents, and veterans (Simons et al., 2019; Tseng et al., 2020). Psychiatric inpatient stays have been associated with increased suicidality among various populations not involved in the criminal justice system during the medical stay and shortly after being discharged. Still, additional research is needed to unpack the impacts of stress on imprisoned and paroled populations who spent time in a medical facility, particularly immediately post-discharge (Madsen et al., 2020). It is important to examine this issue more seriously given that a systematic review and meta-analysis revealed that suicide rates among discharged patients were more than 30 times that of the general population (Chung et al., 2017).

It is well established that suicidality is associated with mental health and substance use disorders (Furnes et al., 2020; Nock et al., 2008). As evidenced by the current findings, substance use and mood disorders were significantly associated with multiple suicidality outcomes. Consistent with existing studies (Brädvik, 2018; Zhong et al., 2021), experiencing depression symptoms was one of the more consistent factors that elevated the likelihood of reporting suicide ideation and attempt. This finding could indicate that persons on parole with depressive symptoms are less likely to know, or make use of, effective coping strategies post-imprisonment. For persons on parole, depression and subsequent suicide could stem from problems reintegrating into their community, problems reconnecting or rebuilding their social network, learning, or adapting to new social roles, unstable housing, and/or accessing material resources (Dobmeier et al., 2017; Western et al., 2015; Wyse, 2018). In addition, inability to access to physical and mental health care due to being uninsured places another barrier on persons on parole, and thereby increases the likelihood of experiencing mental health symptoms, and eventually, recidivism (Marlow et al., 2010).

Results also show that not receiving mental health treatment but needing it is associated with suicidal ideation and planning but not attempting suicide. Not receiving mental

health services but needing them was statistically associated with suicide attempt at the bivariate level, but this significant relationship diminished after adjusting for other factors in the multivariate analysis. In this study, 12% of the sample affirmed that they needed mental health services but did not receive them. The importance of access to mental health services stems not only from the association between mental health and overall well-being but may have particular significance for persons on parole because poor and untreated mental health may not only increase the probability of suicidality, but it is also associated with a decreased desistance from crime (Brine et al., 2021; Wallace & Wang, 2020) and desistance from drug use (Brine et al., 2021). All these factors may exacerbate each other in a way that undermines successful transition back into the community. We recognize that we identified some research that connects overnight stays with increased suicidality, which calls for researchers and practitioners to act on investigating and testing inpatient psychiatric treatment specific to persons on parole. There may be needs experienced by this population that are context-driven, which may not be relevant to other populations. This is a call to action for the development of models of intervention for access and treatment specific to persons on parole who experience mental health struggles, notably suicidality.

Limitations

We should acknowledge several limitations associated with this study. First, the cross-sectional design does not allow examination of the variable over time or causal inferences. A longitudinal design is needed to truly isolate the underlying causal linkages of health, mental health, substance use, and suicidality. Since multiple variables in the multivariate models are likely to vary over time, it would be valuable to examine these relationships longitudinally. Second, the data are self-reports of participants' experiences, resulting in the possibility of under- or over-reporting answers to sensitive questions. The objectivity and accuracy of the data could be enhanced by including diverse assessment methods, such as in-depth individual interviews or medical histories. Third, we measured all three suicidality outcomes with single items, which may not capture the breadth of these constructs. Future studies can benefit from using well-validated multi-item measures (i.e., Suicide Assessment Scale; Nimeus et al., 2000; Beck Depression Inventory-II; Beck et al., 1996). Related, we only examined three aspects of the suicidality spectrum. Future studies could examine an extended scope of suicidal behaviors such as active suicide intensity and frequency. Last, we did not control for social support variables because there were none available in the dataset. Existing studies underscore the importance of social support in achieving optimal physical and psychological

functioning among formerly incarcerated persons (Brine et al., 2021; Muñoz-Laboy et al., 2014; Valera & Boyas, 2019). Future studies should examine the role social support plays in mediating the relationship between health, mental health, drug and alcohol use, and suicidality.

Implications

Notwithstanding the present study's limitations, we can draw several critical implications to understand better how health, mental health, and substance use are associated with suicidality among persons on parole. Persons in prison and those on parole need additional protective factors to increase overall health, better mental wellness, and decrease substance use. Protective factors could include a range of social service provisions including, but not limited to, wraparound services and integrated care. Prevention programs could also play a prominent role in managing the number of persons in prisons who identify as persons with mental illness(es). Local prevention programs supported by regional initiatives have been proven to support more structural and macro-level interventions sustained by national programs and county-level stakeholders (Johnson et al., 2021). Wraparound services provided while a person is still in prison could prove to reduce substance use and dependency as well as improve mental and physical well-being and reduce hospitalizations (Pinals et al., 2019; Smelson et al., 2018; Vest et al., 2018, 2019). Practicing wraparound services (such as substance abuse therapies, job skills training, trauma counseling, and physical wellness programs) while increasing access to mental health courts has also been proven to reduce the number of mentally ill and dual diagnosed persons in prisons (Pinals et al., 2019). Unpacking the needs of persons on parole through community-based participatory research should be increased to perform more ethical data collection, which could shift examinations of persons on parole to center their holistic lived experiences, rather than collecting siloed perspectives of their lived experiences which is often the outcome with quantitative inquiry (McCracken, 2019).

It is clear that access to mental health resources is needed for persons on parole. In this study, several mental health stressors were significantly associated with suicidality. This population needs access to population-specific support groups, psychotherapists, psychologists, and psychiatrists to help them address their mental health needs. Access is particularly important given that people on parole welcome receiving services and have positive views of mental health providers (Brine et al., 2021). If this population is open to receiving services, then structural, cultural, political and material barriers must be eliminated. More research is needed that unearths what proximal and distal barriers to access to mental health resources exist for persons on parole. This will be important going forward as more and more

people are paroled because of the COVID-19 pandemic. Moreover, future research should explore what unique barriers to mental health care have emerged during the pandemic, particularly for those individuals who live their lives in overlapping vulnerabilities as people of color, the stigma of being formerly incarcerated, and vulnerability of having a mental illness.

While the current analysis considered those who self-identified as on parole during the previous twelve months, it is unclear exactly how long these individuals have been on parole. As a result, it is difficult to determine whether their stressors are carceral- or community-related. Prior research has emphasized the importance of rehabilitation services, including mental health programming, within the prison setting to prepare for future transition into society (Lipsey & Cullen, 2007; Yoon et al., 2017), which can have both direct and indirect impacts on mental health throughout the life course. However, unless individuals display overt mental health symptoms, it is unlikely that these services will continue following their incarceration (Lurigio, 2001). Due to the limited availability of mental health services tailored to persons on parole, research should continue to emphasize the importance of crisis intervention services within this population to best address their unique circumstances.

Findings suggest that age was a significant predictor of suicide ideation and attempt. The younger persons on parole showed to be at greater risk. Target risk assessment and intervention programs should be designed to take into account the needs of this at-risk group. Additional age-related research among persons on parole may also assist in developing targeted intervention services supporting this population.

Conclusion

The present study examined suicidality among persons on parole using a combination of the Ideation-to-Action Framework and SPT. The results indicated some consistencies in the variables contributing to ideation, planning, and attempting suicide, namely, a self-reported overnight stay in a hospital for mental health treatment, and higher acute depression scores. Meanwhile, certain variables differed in significance levels across the three spheres, including time since last use of methamphetamine, perceived need for mental health treatment but did not receive services, and self-rated health. Due to this population's unique experiences and numerous barriers following release from prison, it is essential to personalize interventions geared toward this population to meet their specific needs and address suicidality based on where they fall on this continuum, mainly because suicidal thoughts and behaviors are malleable. Providing trauma-informed training to criminal justice practitioners and social service

providers regarding the barriers that persons on parole face and any thoughts and behaviors indicative of suicidality across the three spheres is necessary to provide appropriate interventions.

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Declarations

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