# The Relationship Between Mental Pain, Suicide Risk, and Childhood Traumatic Experiences:

## Results From a Multicenter Study

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### ABSTRACT

***Objective:*** Mental pain and exposure to maltreatment are significant risk factors for suicidal behavior. This study aimed to investigate whether mental pain could be associated with a recent suicide attempt and whether it could mediate the relationship between childhood traumatic experiences and suicide risk in psychiatric patients.

***Methods:*** A multicenter observational study was organized as a joint project with representatives of numerous mixed Italian academic and clinical settings. Between December 2017 and March 2020, batteries of tests were administered to patients, assessing suicidal ideation and behavior, mental pain (usual and worst mental pain in the past 15 days), depression, and childhood maltreatment.

***Results:*** A total of 2,137 psychiatric patients (1,313 women and 824 men) were included in the final sample, and 315 reported having attempted suicide in the last 3 months. Suicide attempters (compared to nonattempters) had higher odds of reporting worse mental pain (odds ratios [ORs] between 1.02 and 1.17; $P < .001$) and suicidal intent with/without a specific plan (ORs between 11.57 and 11.77; $P < .001$). They also had higher odds of having a personality disorder (borderline personality disorder: ORs between 2.65 and 3.01; $P < .001$; other personality disorders: ORs between 1.96 and 2.28; $P < .01$) and major depression (ORs between 1.62 and 1.70; $P < .05$). Childhood trauma was associated with suicide risk directly (standardized effects between 0.06 and 0.07; $P < .01$) and indirectly through mental pain (usual mental pain: standardized indirect effect = 0.11, $P < .001$; worst mental pain in the past 15 days: standardized indirect effect = 0.12, $P < .001$).

***Conclusions:*** Mental pain constitutes a crucial framework for assessing the individual need for psychiatric help. Assessing mental pain allows identification of the main ingredient of suicide risk and puts the clinician in a strategic position to unlock some motives behind the wish to die. Further research is needed to learn if childhood adversities may interact with adult mental pain and thus foster suicide risk.


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**Clinical Points**

- Previous studies have shown that mental pain and childhood negative experiences and maltreatment are associated with suicide risk.
- In this study, individuals who had attempted suicide in the previous 3 months reported worse mental pain and suicidal ideation and had higher odds of having personality disorders and major depression. Mental pain partly mediated the relationship between childhood trauma and suicide risk.
- Mental pain represents a critical feature in identifying and assessing suicide risk and may shed light on the reasons behind the wish to die. The contribution of childhood adversities requires further investigation.

Seminal papers pointed to mental pain ("psychache") as an explanatory construct of the phenomenology of suicide.[1] According to Shneidman's model, suicide is an escape from intolerable suffering, which leads to "perturbation of the mind," referring to how upset (disturbed, agitated, discomposed) the individual is and the state in which suicide is likely to occur.[1] In a meta-analysis, Ducasse et al[2] reported that mental pain was higher in suicide attempters than nonattempters and in suicide ideators than nonideators.[3,4]

Intense mental pain could be a consequence of negative childhood experiences and maltreatment and could be a significant risk factor for several psychiatric disorders.[5–13] Childhood maltreatment is also considered a significant risk factor for impulsive/aggressive behaviors and suicidal behavior.[14–19]

Our study aimed to investigate whether mental pain could be a predictor of recent suicide attempts in psychiatric patients and whether it could be associated with childhood traumatic experiences. Specifically, the present study explored to what extent mental pain constitutes a contributor to suicide risk independently of psychiatric diagnoses when recent suicidal attempters versus nonsuicidal individuals are compared, as well as whether childhood traumatic experiences contribute to suicide risk, and whether mental pain mediates this relationship. We hypothesized that those who had recently attempted suicide would have higher levels of mental pain and that childhood adversities would characterize suicidal patients compared to nonsuicidal patients. We also hypothesized that those who had had more severe childhood traumatic experiences would have higher mental pain levels and, in turn, could be at higher risk of suicide.

## METHODS

### Study Design

A multicenter observational study was organized as a joint project with representatives of numerous mixed Italian academic and clinical settings (represented by the authors' affiliations). Investigators were trained to use the instruments involved in the study and had constant contact with the coordinating center. The project was first submitted to the Internal Review Board of Sant'Andrea Hospital (RIF. CE: 4646_2017) as part of the Sapienza University of Rome, which was the study coordinator. The protocol was then submitted to the internal review boards of the participating centers by local investigators.

The study was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. Patients participated voluntarily and provided written informed consent following review and approval of each participating center's research ethics review board.

### Inclusion and Exclusion Criteria

Investigators were asked to recruit patients with psychiatric disorders, either inpatients or outpatients, and provide a sample of both suicide attempters and controls. It was agreed that each center, based on preliminary calculations and in-depth discussion, would set the enrollment of patients at 150 consecutive participants: on average, 75 with a recent suicide attempt and 75 nonsuicidal patients. For a proper definition of suicide attempt, we referred to Silverman et al,[20,21] in which type II suicide attempts are described as self-destructive acts with some degree of intent to end one's life and some identifiable injuries. Suicide attempts were considered recent when they had occurred in the past 3 months, in accordance with the Columbia-Suicide Severity Rating Scale assessment, as this was the main instrument used for this purpose.

Patients were assessed for psychiatric diagnoses according to the *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition (*DSM-5*)[22] criteria, and these diagnoses were confirmed by the Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-I), via psychiatric interviews and the administration of psychometric instruments. The inclusion criterion was to be between 18 and 65 years of age (subjects over 65 were included only if physically fit, that is, they lacked medical comorbidities that reduced quality of life, caused impairments, etc). Exclusion criteria were being unwilling to participate or denial of informed consent and having neurologic diseases (eg, dementia, Parkinson's disease, epilepsy, etc), cognitive impairments, and language difficulties.

### Patients

Patients were recruited from December 2017 to March 2020. Sociodemographic characteristics of the sample are reported in Table 1. Patients were ensured that data would be reported only anonymously and in aggregate form.

A web-based system with codes and anonymous labels was devised for this study. Each center directly entered all data via a guided digital procedure to minimize data entry errors.

### Assessment

The following instruments were administered to patients: the Columbia-Suicide Severity Rating Scale (C-SSRS),[23] the Beck Depression Inventory-2 (BDI-2),[24] the Childhood

**Table 1. Differences Between Groups (N = 2,137)[a,b]**

| Variables | Whole group (N = 2,137) | Suicide attempters (N = 315) | Nonattempters (N = 1,822) | Test | Significance | Effect size |
|---|---|---|---|---|---|---|
| Sex, n (%) | | | | | .31[c] | Φ = 0.01 |
| Men | 824 (38.6) | 126 (40.0) | 698 (38.3) | | | |
| Women | 1,313 (61.4) | 189 (60.0) | 1,123 (61.7) | | | |
| Age, mean ± SD, y | 42.87 ± 14.98 | 43.49 ± 15.49 | 42.76 ± 14.89 | $t_{2,093} = 0.79$ | .43 | $d = 0.05$ |
| Marital status, n (%) | | | | $\chi^2_2 = 9.97$ | .007 | $v = 0.07$ |
| Married | 699 (32.7) | 103 (32.8) | 596 (33.1) | | | |
| Divorced or widowed | 342 (16.0) | 69 (22.0) | 273 (15.2) | | | |
| Single | 1,075 (50.3) | 142 (45.2) | 932 (51.7) | | | |
| Job, n (%) | | | | $\chi^2_2 = 4.41$ | .11 | $v = 0.05$ |
| Employed | 1,074 (50.3) | 150 (47.8) | 924 (51.8) | | | |
| Unemployed | 745 (34.9) | 111 (35.4) | 633 (35.5) | | | |
| Other | 279 (13.1) | 53 (16.9) | 226 (12.7) | | | |
| School attainment, n (%) | | | | $\chi^2_2 = 29.45$ | **< .001** | $v =$ **0.12** |
| ≤ 8 y | 680 (31.8) | 142 (45.5) | 538 (30.0) | | | |
| = 13 y | 1,054 (49.3) | 125 (40.1) | 928 (51.7) | | | |
| ≥ 16 y | 374 (17.5) | 45 (14.4) | 329 (18.3) | | | |
| Living accommodation, n (%) | | | | $\chi^2_2 = 13.82$ | **.001** | $v =$ **0.08** |
| Alone | 415 (19.4) | 83 (26.3) | 332 (18.4) | | | |
| Family or friends | 1,415 (66.2) | 183 (58.1) | 1,231 (68.3) | | | |
| Other | 289 (13.5) | 49 (15.6) | 240 (13.3) | | | |
| Inpatients, n (%) | 658 (30.8) | … | … | … | … | |
| Diagnosis, n (%) | | | | | | |
| Schizophrenia | 319 (14.9) | 40 (12.7) | 279 (15.3) | | .13[c] | Φ = −0.03 |
| Bipolar disorder | 453 (21.2) | 46 (14.6) | 406 (22.3) | | **.001[c]** | Φ = **−0.07** |
| MDD | 621 (29.1) | 121 (38.4) | 500 (27.5) | | **< .001[c]** | Φ = **0.09** |
| Anxiety disorders | 388 (18.2) | 32 (10.2) | 356 (19.5) | | **< .001[c]** | Φ = **−0.09** |
| Personality disorders, n (%) | | | | $\chi^2_2 = 81.15$ | **< .001** | $v =$ **0.20** |
| Borderline personality disorder | 176 (8.2) | 51 (16.2) | 125 (6.9) | | | |
| Others | 282 (13.2) | 77 (24.4) | 205 (11.3) | | | |
| Substance abuse, n (%) | 190 (8.9) | 24 (7.6) | 166 (9.1) | | .23[c] | Φ = −0.02 |
| Mental illness in family members, n (%) | 1,026 (48.0) | 159 (57.8) | 866 (48.5) | | .002[c] | Φ = −0.06 |
| Suicide ideation, last month, n (%) | | | | $\chi^2_5 = 574.82$ | **< .001** | $v =$ **0.52** |
| None | 1,394 (65.2) | 84 (26.7) | 1,308 (71.9) | | | |
| Wish to be dead | 221 (10.3) | 20 (6.3) | 201 (11.0) | | | |
| Suicidal thoughts | 91 (4.3) | 19 (6.0) | 74 (4.1) | | | |
| Suicidal thoughts with method (but without specific plan or intent to act) | 126 (5.9) | 20 (6.3) | 106 (5.8) | | | |
| Suicidal intent (without specific plan) | 118 (5.5%) | 43 (13.7) | 75 (4.1) | | | |
| Suicidal intent with specific plan | 187 (8.8) | 129 (41.0) | 57 (3.1) | | | |
| Suicide attempts last 3 mo, n (%) | 315 (14.7) | … | … | … | … | |
| Suicide attempts, lifetime, n (%) | 811 (38.0) | 315 (100.0) | 495 (27.2) | … | … | |
| OMMP mental pain, mean ± SD | 111.50 ± 40.53 | 126.87 ± 38.10 | 108.85 ± 40.36 | $t_{2,129} = 7.37$ | **< .001** | $d =$ **0.46** |
| PPPS worst mental pain, mean ± SD | 5.92 ± 3.40 | 7.15 ± 3.22 | 5.71 ± 3.39 | $t_{429.03} = 7.16$ | **< .001** | $d =$ **0.44** |
| PPPS physical pain, mean ± SD | 10.14 ± 8.57 | 12.21 ± 9.15 | 9.79 ± 8.42 | $t_{399.59} = 4.33$ | **< .001** | $d =$ **0.28** |
| CTQ physical neglect, mean ± SD | 8.19 ± 3.18 | 8.41 ± 3.37 | 8.15 ± 3.14 | $t_{2118} = 1.35$ | .18 | $d = 0.08$ |
| CTQ emotional neglect, mean ± SD | 13.06 ± 5.71 | 13.38 ± 5.66 | 13.01 ± 5.72 | $t_{2,118} = 1.07$ | .29 | $d = 0.07$ |
| CTQ sexual abuse, mean ± SD | 6.65 ± 3.87 | 7.73 ± 4.95 | 6.46 ± 3.62 | $t_{369.09} = 4.30$ | **< .001** | $d =$ **0.29** |
| CTQ physical abuse, mean ± SD | 6.70 ± 3.32 | 7.37 ± 3.88 | 6.58 ± 3.20 | $t_{385.84} = 3.41$ | **.001** | $d =$ **0.22** |
| CTQ emotional abuse, mean ± SD | 9.35 ± 4.77 | 10.59 ± 5.24 | 9.13 ± 4.66 | $t_{398.50} = 4.62$ | **< .001** | $d =$ **0.29** |
| BDI-2, mean ± SD | 20.19 ± 13.85 | 25.99 ± 14.40 | 19.19 ± 13.50 | $t_{2,130} = 8.16$ | **< .001** | $d =$ **0.49** |
| BDI-2 score ≥ 20, n (%) | 1,019 (47.7) | 196 (62.4) | 823 (45.3) | | **< .001[c]** | Φ = **0.12** |

[a]Boldface indicates test significant after correction for multitesting.
[b]Bonferroni correction for multitesting: $P = .05/24 = .002$.
[c]One-way Fisher exact test.
Abbreviations: BDI = Beck Depression Inventory-2, CTQ = Childhood Trauma Questionnaire, MDD = major depressive disorder, OMMP = Orbach & Mikulincer Mental Pain Questionnaire, PPPS = Physical and Psychological Pain Scale.

Trauma Questionnaire (CTQ),[25] the Orbach & Mikulincer Mental Pain Questionnaire (OMMP),[26] and the Physical and Psychological Pain Scale (PPPS).[27] An ad hoc schedule was used to collect patients' sociodemographic (gender, age, marital status, occupational status, school attainment, living accommodation) and clinical (psychiatric diagnosis, comorbidities, mental illness in family members) characteristics. An extensive presentation of the measures administered is reported in the Supplementary Methods.

***C-SSRS.*** A rating scale evaluating suicidal ideation in individuals aged 12 years and older.[23] The C-SSRS rates an individual's degree of suicidal ideation on a scale from "wish to be dead" to "active suicidal ideation with a specific plan and intent."

***BDI-2.*** A 21-item self-report instrument evaluating the presence/severity of depressive symptoms during the previous 14 days.[24]

***CTQ.*** A 28-item self-report questionnaire assessing physical, emotional, and sexual abuse and also emotional and physical neglect.[25] We considered a 5-factor model: emotional neglect (EN), emotional abuse (EA), sexual abuse (SA), physical abuse (PA), and physical neglect (PN).

***OMMP.*** A 44-item self-report measure of mental pain (usual mental pain).[26]

***PPPS.*** A self-administered questionnaire that evaluates the intensity of physical and mental pain[27]; in the present study, we considered scores on the item assessing the maximum pain experienced in relation to the last 15 days (PPPS worst).

### Data Analysis

A series of 1-way Fisher exact tests, $\chi^2$ tests, and independent sample *t* tests were used to assess differences between groups at the bivariate level. Bonferroni correction was used for controlling multitesting. Effect sizes were reported using Cohen *d* coefficient (*d* = 0.2, small effect size; *d* = 0.5, medium effect size; *d* = 0.8, large effect size)[28] and phi and Cramer *v* (*v* = 0.1, small effect size; phi/*v* = 0.3, medium effect size; phi/*v* = 0.5, large effect size).

Variables significant in the bivariate analyses were included as independent variables in 2 log-linear models (in the first one, OMMP mental pain scores were included as a predictor in the analysis; in the second one, PPPS worst mental pain scores were used),[27,29,30] with recent suicide attempter status (suicide attempters vs nonattempters) as a criterion. Due to possible multicollinearity, in the log-linear models we included a composite score derived from the sum score of significant CTQ dimensions at the bivariate analyses (CTQ total score = SA + PA + EA). ORs and 95% confidence intervals (95% CI) were calculated as measures of association. The likelihood ratio $\chi^2$ test was reported as the measure of fit of the model.

Pearson *r* coefficient was reported as a measure of association between variables: $r < 0.10$, negligible or null effect; $r = 0.10–0.30$, small effect; $r = 0.30–0.50$, medium effect; $r \geq 0.50$, large effect.[28] Single mediation analyses were carried out to assess whether mental pain mediated the association between childhood trauma and suicidal status. CTQ total score was included in the model as an independent variable, mental pain (OMMP scores in model 1, and PPPS worst mental pain in model 2) as a single mediator, suicidal status as a dependent variable, and depression severity was included in the model as a covariate. All tests were significant at $P < .05$.

## RESULTS

### Characteristics of the Sample

A total of 2,137 psychiatric patients (1,313 women and 824 men) were included in the sample: 658 (410 women and 248 men) had been admitted to inpatient units at that time, and 1,479 (902 women and 576 men) to outpatient units (differences between in- and outpatients are noted in Supplementary Table 1 and Supplementary Results). Of the total sample, 315 patients reported having attempted suicide in the past 3 months, as screened by the C-SSRS in the suicidal behavior section (see Table 1). All of the suicide attempters had attempted suicide at least once before (vs. 27.2% of current nonattempers; $P < .001$). Of the total sample, 29.1% of patients had MDD, 14.9% had schizophrenia or other psychotic disorders, 21.2% had bipolar disorder (either type I or II), and 18.2% had an anxiety disorder. In addition, more than 21% of patients had a personality disorder, and 8.2%, a borderline personality disorder. Lastly, 47.7% of patients had scores on the BDI-2 indicating moderate to severe depression.

### Factors Associated With Recent Suicide Attempts

Differences between groups after correction for multitesting are reported in Table 1. Suicide attempters (compared to nonattempters) more frequently had MDD (38.4% vs 27.5%; $P < .001$) and personality disorders (16.2% vs 6.9% and 24.4% vs 11.3%, respectively, for borderline personality disorder and other personality disorders; $\chi^2_2 = 81.15$, $P < .001$), and less frequently had bipolar disorder (14.6% vs 22.3%; $P = .001$) and anxiety disorders (10.2% vs 19.5%; $P < .001$). Groups did not differ in the number of diagnoses of schizophrenia or other psychotic disorders (12.7% vs 15.3%; $P = .13$) or the presence of substance abuse (7.6% vs 9.1%; $P = .23$).

Around 50% of the attempters reported suicidal intent in the last month (with or without a specific plan) on the C-SSRS compared to only 7.3% of the nonattempters ($\chi^2_5 = 574.82$, $P < .001$). Finally, suicide attempters (compared to nonattempters) reported worse mental pain (OMMP: $t_{2,129} = 7.37$, $P < .001$; PPPS worst: $t_{429.03} = 7.16$, $P < .001$) and physical pain ($t_{399.59} = 4.33$, $P < .001$) and had higher scores on the following CTQ dimensions: SA ($t_{369.09} = 4.30$, $P < .001$), PA ($t_{385.84} = 3.41$, $P = .001$) and EA ($t_{398.50} = 4.62$, $P < .001$). Suicide attempters (compared to nonattempters) also had higher BDI-2 scores ($t_{2,130} = 8.16$, $P < .001$), and 62.4% had BDI-2 scores indicating moderate to severe depression.

Variables significant in the bivariate analyses were included in 2 alternative log-linear models with recent suicide attempter status as a criterion (in the first one, OMMP usual mental pain was included as a predictor in the analysis; in the second one, PPPS worst pain was used) (Table 2). Both models fit the data well, and slight differences were evident in the significance of the predictors (OMMP: likelihood $\chi^2_{368} = 128.14$, $P = 1.00$; PPPS: likelihood $\chi^2_{368} = 140.72$, $P = 1.00$). Recent suicide attempters (compared to nonattempters) had higher odds of reporting worse mental pain (OMMP: OR = 1.02; $P < .001$; PPPS worst: OR = 1.17; $P < .001$) and suicidal intent with/without a specific plan (OR = 11.77/11.57; $P < .001$) but not physical pain (OR = 1.01; $P = .49/.57$). Suicide attempters (compared to nonattempters) also had higher odds of having a borderline personality disorder (OR = 3.01/2.65; $P < .001$), other personality disorders (OR = 2.28/1.96; $P < .001/.01$), and MDD (OR = 1.70/1.62; $P < .01/.05$). Other diagnoses were not significantly associated with suicide status. The association between suicide status and the CTQ total score was significant only when the PPPS, and not OMMP scores, was included in the model (OR = 1.00/1.02, $P = .70/< .05$). Depression severity was not significantly associated with

**Table 2. Log-Linear Models (Criterion: Recent Suicide Attempter Status)[a,b]**

| Variables | *Z* | Significance | Odds ratio | 95% CI, lower limit | 95% CI, upper limit |
|---|---|---|---|---|---|
| School attainment ≤ 8 y | 2.98 (2.77) | .01 | 1.61(1.56) | 1.18 (1.14) | 2.21 (2.14) |
| Living with family, friends, or other accommodations | −4.49 (−4.40) | < .001 | 0.41 (0.43) | 0.28 (0.29) | 0.61 (0.63) |
| Bipolar disorder | −0.44 (−0.78) | .66 (.44) | 0.90 (0.83) | 0.57 (0.52) | 1.43 (1.32) |
| MDD | 2.73 (2.53) | .01 (.05) | 1.70 (1.62) | 1.16 (1.11) | 2.49 (2.36) |
| Anxiety disorders | −0.04 (−0.34) | .97 (.74) | 0.99 (0.91) | 0.55 (0.51) | 1.78 (1.60) |
| Borderline personality disorder | 4.11 (3.79) | < .001 | 3.01 (2.65) | 1.78 (1.60) | 5.09 (4.38) |
| Other personality disorders | 3.82 (3.09) | < .001 (.01) | 2.28 (1.96) | 1.49 (1.28) | 3.47 (3.01) |
| Suicidal intent with/without specific plan | 13.57 (12.41) | < .001 | 11.77 (11.57) | 8.25 (7.28) | 16.81 (15.35) |
| OMMP usual mental pain (PPPS worst mental pain) | 4.77 (3.79) | < .001 | 1.02 (1.17) | 1.01 (1.08) | 1.02 (1.26) |
| PPPS physical pain | 0.69 (0.58) | .49 (.57) | 1.01 | 0.98 | 1.04 |
| CTQ total score | 0.39 (2.09) | .70 (.05) | 1.00 (1.02) | 0.98 (1.00) | 1.03 (1.04) |
| BDI ≥ 20 | −0.10 (0.39) | .92 (.69) | 0.97 (1.12) | 0.54 (0.64) | 1.74 (1.96) |

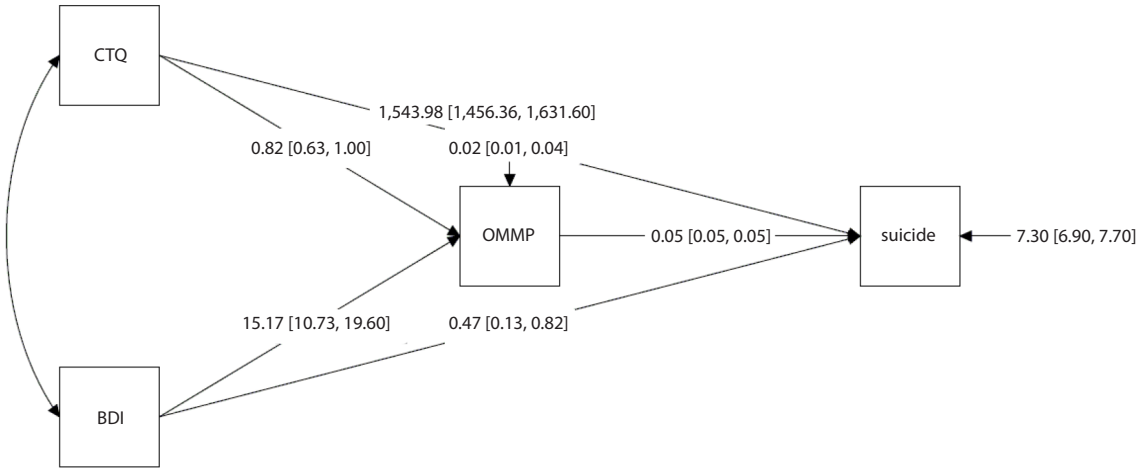
[a]Model statistics: likelihood $\chi^2_{368} = 128.14$, $P = 1.00$ (likelihood $\chi^2_{368} = 140.72$, $P = 1.00$).
[b]In parentheses are coefficients and statistics for an alternative model with the PPPS worst mental pain as predictor when different from the model with the OMMP usual mental pain as predictor.
Abbreviations: BDI = Beck Depression Inventory-2, CTQ total score = sum score of the Childhood Trauma Questionnaire dimension, MDD = major depressive disorder, OMMP = Orbach & Mikulincer Mental Pain Questionnaire, PPPS = Physical and Psychological Pain Scale.

**Table 3. Associations Between Variables**

| | PPPS worst[a] | PPPS physical pain | BDI | CTQ PN | CTQ EN | CTQ SA | CTQ PA | CTQ EA |
|---|---|---|---|---|---|---|---|---|
| OMMP mental pain | 0.60** | 0.34** | 0.80** | 0.05* | 0.12** | 0.11** | 0.12** | 0.26** |
| PPPS worst[a] | … | 0.41** | 0.61** | 0.03 | 0.09** | 0.09** | 0.13** | 0.23** |

[a]PPPS worst = worst pain in the last 15 days.
*Significant at $P < .05$. **Significant at $P < .01$.
Abbreviations: BDI = Beck Depression Inventory-2, CTQ = Childhood Trauma Questionnaire, EA = emotional abuse, OMMP = Orbach & Mikulincer Mental Pain Questionnaire, PA = physical abuse, PN = physical neglect, PPPS = Physical and Psychological Pain Scale, SA = sexual abuse.

**Figure 1. Mediation Model (CTQ Sum Score as Independent Variable, OMMP Usual Mental Pain as Mediator, Suicide Status as Dependent Variable, and BDI as Covariate)[a]**



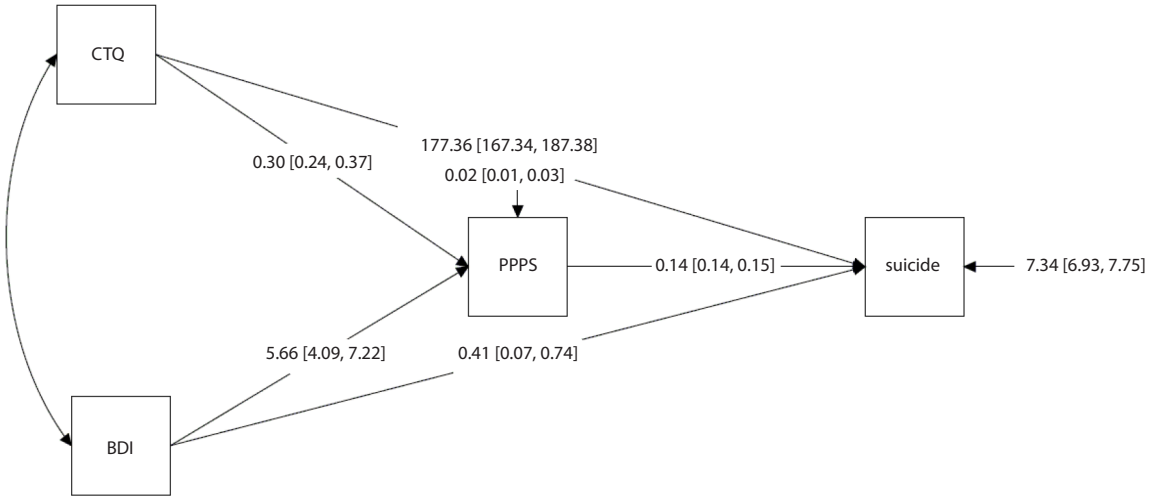

[a]Values reflect unstandardized effects with their 95% bootstrap confidence intervals.
Abbreviations: BDI = Beck Depression Inventory-2, CTQ = Childhood Trauma Questionnaire, OMMP = Orbach & Mikulincer Mental Pain Questionnaire.

suicide status (OR = 0.97/1.12, $P = .92/.69$). Finally, recent suicide attempters (compared to nonattempters) had higher odds of having lower school attainment (≤ 8 years of schooling: OR = 1.61/1.56; $P = .01$) and lower odds of living with family members, friends, or other accommodation, eg, rehabilitation centers (OR = 0.41/0.43; $P < .001$). Thus, recent suicide attempters reported more severe mental pain. This result supports Shneidman's hypothesis, which considers mental pain to be a major ingredient of suicide.[1]

### Associations Between Mental Pain, Depression Severity, and Childhood Trauma

The associations between mental pain and other variables are reported in Table 3. Mental pain was strongly associated

**Figure 2. Mediation Model (CTQ Sum Score as Independent Variable, PPPS Worst Mental Pain as Mediator, Suicide Status as Dependent Variable, and BDI as Covariate)[a]**




[a]Values reflect unstandardized effects with their 95% bootstrap confidence intervals.
Abbreviations: BDI = Beck Depression Inventory-2, CTQ = Childhood Trauma Questionnaire, PPPS = Physical and Psychological Pain Scale.

with depression ($r$ between 0.61 and 0.80; $P < .001$) and moderately related to physical pain ($r$ between 0.34 and 0.41; $P < .001$). Associations between mental pain and childhood trauma ranged from negligible ($r < 0.10$) to weak ($r < 0.30$). Mental pain was also significantly and weakly associated with the number of lifetime suicide attempts (OMMP: $r = 0.26$, $P < .001$; PPPS worst: $r = 0.21$, $P < .001$). Single mediation analysis indicated that mental pain partly mediated the relationship between childhood trauma and suicide status (OMMP: standardized total indirect [direct] effect = 0.11 [0.07], SE = 0.01 [0.02], $P < .001$ [$< .001$]; PPPS worst: standardized total indirect [direct] = 0.12 [0.06], SE = 0.01 [0.02], $P < .001$ [$< .001$]) (Figures 1 and 2). Thus, the presence and severity of childhood trauma were associated with higher usual and worst mental pain in the last 15 days. These were associated with increased suicide risk.

## DISCUSSION

In line with our hypothesis, we found that suicide attempters reported more intense mental pain (usual and worst mental pain in the last 15 days). These results align with previous reports from Olié et al[27] and Caceda et al[31] and support Shneidman's hypothesis that mental pain is the main ingredient of suicide and a common denominator in the array of factors faced by individuals in crisis.[1] The mind considering suicide is perturbed by a transient sense of constriction and a narrowing of the options available.[1] Suicide is therefore a way to stop one's consciousness experiencing intolerable pain.[1]

Recent suicide attempters (compared to nonattempters) also had a more severe childhood physical, sexual, and emotional abuse history but not emotional and physical neglect (for this dimension, we have to consider that reliability was insufficient). Moderated mediation models indicated that childhood trauma was directly and indirectly associated with the presence of a recent suicide attempt. Mental pain (usual and worst mental pain in the last 15 days) partly mediated the relationship between childhood trauma and suicide status. In a recent meta-analysis, Zatti et al[32] explored cohort studies that reported the presence of suicide attempts during follow-up. They included an assessment of childhood trauma and reported that sexual, physical, and emotional abuse was associated with the presence of suicide attempts, but this was not the case for emotional neglect. Unlike our results, the authors also reported a significant association between the presence of suicide attempts and physical neglect, despite physical neglect being indicated as contributing to suicide attempts more weakly than other childhood adversities. Provided that childhood trauma constitutes an emotional burden, moderated mediation models suggested that such an experience could influence suicide risk both indirectly via mental pain and directly. We can speculate that childhood experience could influence suicide behaviors via pathways other than mental pain in the latter case. In supporting this hypothesis, we must note that mental pain and suicide risk were associated significantly although only moderately. Such results are line with previous research that found that mental pain had a mediating role in the relationship between childhood trauma and suicidal ideation.[5,33,34]

Another well-known factor independently associated with a recent suicide attempt is the presence of more severe suicidal ideation. More than 70% of the suicide attempters reported suicidal ideation in the last month, and 41% of them reported suicidal intent with a specific plan. Although there were some contrasting results,[35–37] this is in line with research indicating that a person is at a heightened risk of suicide after discharge from a psychiatric hospital, especially in those who have had a previous recent suicide attempt,[38] suggesting that a specific population of psychiatric patients

with a heightened chronic risk of suicide could manifest chronic suicidal ideation in a mental state characterized by intolerable psychache.

Major depression was independently associated with suicide attempts in our sample even when controlling for depression severity and mental pain, indicating that patients with major depression were a population at high suicide risk, consistent with previous studies.[39–42] Recent suicide attempters had higher odds of having a borderline personality disorder or other personality disorders.

As a distinct clinical entity from depression, mental pain may embody an extraordinary experience of suffering, for which subjects may not have appropriate words to describe the experience.[43] Scholars have argued that the need to assess mental pain in depressive individuals resides in the fact that mental pain overlaps with some of the core depressive symptoms, such as overresponse to negative stimuli, feelings of guilt, painful rumination, or self-devaluation. Furthermore, such experiences could be linked to altered emotional regulation strategies.[44] A further fact is that mental pain is often associated with suicide risk. Such facts suggest that the experience of mental pain is complex in terms of both mental and pathophysiologic processes, the understanding of which may shed light on new perspectives on patients' unmet needs.

Our results also indicated that low educational attainment and living alone (vs living with family, friends, or other accommodation, eg, rehabilitation centers) could be predictors of the presence of recent suicide attempts. Educational attainment has been indicated as a strong predictive factor of increased suicide risk in large prospective studies[45] and in epidemiologic studies.[46] Also, living alone is generally considered a risk factor for suicide, especially in older adults,[47–50] probably because it can promote depression and a sense of loneliness, limiting access to the social network if social support is needed and especially when facing powerful stress factors.[51,52]

### Strengths and Limitations of the Study

To our knowledge, this is one of the most extensive investigations into the role of mental pain in explaining the variance in suicide attempts among psychiatric patients and in pointing to the need to investigate the association between mental pain and childhood traumatic experiences. The large number of centers participating in this research may point to heterogeneity of assessment and evaluation procedures through psychometric instruments. Also, patients had several psychiatric diagnoses, making it difficult to characterize single groups. Unfortunately, some centers did not manage to recruit the number of patients set at the beginning of the study (partial samples were not included), thus influencing the heterogeneity and representativeness of the final sample. Finally, the fact that C-SSRS assessed suicidal intent in the past month, whereas recent suicide attempts were considered to be in the past 3 months, could set the two measures at different times.

## CONCLUSIONS

Mental pain, which encompasses psychiatric diagnoses, constitutes a crucial framework for assessing an individual's need for psychiatric help. Unfortunately, standard diagnostic criteria barely address the level of mental distress and do not consider its main features. Undoubtedly, assessing and taking advantage of mental pain in the care of patients (also exploring differences across diagnoses) is a challenge that should be embraced in mental health because it could unlock some of the causes behind suicide risk. Bridging the gap between clinicians and patients in understanding human suffering is an essential step in suicide prevention. Therefore, clinicians should consider a phenomenological approach when dealing with suffering individuals and explore lifetime experiences, which often guide patients' global understanding.

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***Supplementary material:*** Available at PSYCHIATRIST.COM.

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*Editor's Note:* We encourage authors to submit papers for consideration as a part of our Focus on Suicide section. Please contact Philippe Courtet, MD, PhD, at pcourtet@psychiatrist.com.

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# Supplementary Material

**Article Title:** The Relationship Between Mental Pain, Suicide, and Childhood Traumatic Experiences: Results From a Multicenter Study

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## List of Supplementary Material for the article



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## METHODS

### Assessment

**C-SSRS.** A rating scale evaluating suicidal ideation in individuals aged 12 years and older.[1] The C-SSRS rates an individual's degree of suicidal ideation on a scale from 'wish to be dead' to 'active suicidal ideation with a specific plan and intent'. The C-SSRS begins with two items assessing the respondent's wish to be dead (e.g. 'I wish I were dead') and non-specific active suicidal thoughts (e.g. 'I've thought about killing myself'). If the participant responds positively to one of these items, then three additional items are used to assess: active suicidal ideation either with any method but no plan or intent to act; active suicidal ideation with some intent to act but no plan; and active suicidal ideation with a specific plan and intent. According to the protocol of this instrument, we used past month ratings for all analyses involving suicidal ideation and intent, whereas past three month ratings for those involving suicidal behaviour.

**BDI-II.** A 21-item self-report instrument evaluating the presence/severity of depressive symptoms during the previous 14 days.[2] Each item is scored from 0 to 3 to evaluate symptom severity, with total scores of 0–63. A score of $\geq 20$ is suggestive of moderate to severe depression. Internal consistency and concurrent validity have been documented in clinical/non-clinical samples.[3] Cronbach's alpha in the present sample was 0.94.

**CTQ.** A 28-item self-report questionnaire assessing physical, emotional and sexual abuse and also emotional and physical neglect.[4] Each item begins with the anchor 'when I was growing up' and respondents indicate the frequency of a particular incident on a five-point

Likert scale (1 = *never true*; 5 = *very often true*). Consistent with the original factor structure, we considered a five-factor model: emotional neglect (EN), emotional abuse (EA), sexual abuse (SA), physical abuse (PA) and physical neglect (PN). The CTQ has been shown to have solid psychometric properties.[5-7] Cronbach's alpha values in the present sample were 0.52 for PN, 0.89 for EN, 0.91 for SA, 0.81 for PA and 0.83 for EA.

**OMMP.** A 44-item self-report measure of mental pain.[8] Each item is self-scored on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher OMMP scores reflect higher levels of mental pain. Cronbach's alpha in the present sample was 0.98.

**PPPS.** A self-administered questionnaire that evaluates the intensity of physical and mental pain on a dimensional scale from 0 (*none*) to 10 (*maximum possible pain*):[9] the current intensity of pain, the usual pain during the last 15 days and the maximum pain always experienced in relation to the last 15 days (PPPS worst). Cronbach's alpha values in the present sample were 0.91 and 0.92, respectively, for physical and mental pain dimensions.

## RESULTS

### Differences between in- and out-patients

658 participants (410 women and 248 men) were currently admitted to inpatient units, and 1479 (902 women and 576 men) to outpatient units. Inpatients and outpatients differed for several sociodemographic and clinical variables (see Table S1), including age (40.77±14.78 vs. 43.82±14.98, respectively for inpatients and outpatients, $t_{2093}$=4.32, p<0.001), suicide ideation in the last month ($\chi_5^2$=277.71, p<0.001), lifetime suicide attempts (48.8% vs. 33.1%, respectively for inpatients and outpatients, p<0.001), and diagnoses of schizophrenia (20.8% vs. 12.3%, respectively for inpatients and outpatients, p<0.001), anxiety disorders (11.7% vs. 21.0%, respectively for inpatients and outpatients, p<0.001), and personality disorders (8.5% of BPD and 21.0% of other personality disorders vs. 8.1% of BPD and 9.7% of other

personality disorders, respectively for inpatients and outpatients, $\chi^2_2$=51.40, p<0.001).

Supplementary Table 1. Differences between inpatients and outpatients (N=2137)

| Variables | Inpatients N=658 | Outpatients N=1478 | test | Significance | Effect size |
|---|---|---|---|---|---|
| **Sex – n\|(%)** | | | | 0.30[a] | phi=-0.01 |
| Men | 248(37.7%) | 576(39.0%) | | | |
| Women | 410(62.3%) | 902(61.0%) | | | |
| **Age – M\|SD** | 40.77±14.78 | 43.82±14.98 | $t_{2093}$=4.32 | **<0.001** | **d=0.20** |
| **Marital status – n\|(%)** | | | $\chi^2_2$=27.40 | **<0.001** | v=011 |
| Married | 167(25.4%) | 532(36.5%) | | | |
| Divorced or widowed | 107(16.3%) | 235(16.1%) | | | |
| Single | 383(58.3%) | 691(47.4%) | | | |
| **Job – n\|(%)** | | | $\chi^2_2$=36.53 | **<0.001** | v=0.13 |
| Employed | 279(43.0%) | 795(54.9%) | | | |
| Unemployed | 291(44.8%) | 453(31.3%) | | | |
| Other | 79(12.2%) | 200(13.8%) | | | |
| **School attainment – n\|(%)** | | | $\chi^2_2$=11.33 | 0.003 | v=0.07 |
| ≤8 yrs | 244(37.3%) | 436(30.0%) | | | |
| =13 yrs | 309(47.2%) | 744(51.2%) | | | |
| >=16 yrs | 102(15.6%) | 272(18.7%) | | | |
| **Living accomodation – n\|(%)** | | | $\chi^2_2$=24.87 | **<0.001** | v=**0.11** |
| Alone | 162(24.6%) | 253(17.3%) | | | |
| Family or friends | 434(66.0%) | 980(67.1%) | | | |
| Other | 62(9.4%) | 227(15.5%) | | | |
| **Diagnosis – n\|(%)** | | | | | |
| **Schizophrenia** | 137(20.8%) | 182(12.3%) | | **<0.001[a]** | **phi=-0.11** |

| | | | | | |
|---|---|---|---|---|---|
| **BD** | 138(21.0%) | 314(21.2%) | | 0.47[a] | phi=-0.003 |
| **MDD** | 192(29.2%) | 429(29.0%) | | 0.49[a] | phi=0.002 |
| **Anxiety disorders** | 77(11.7%) | 311(21.0%) | | **<0.001[a]** | phi=**-0.11** |
| **Personality disorders – n\|(%)** | | | $\chi^2_2$=51.40 | **<0.001** | v=**0.16** |
| BPD | 56(8.5%) | 120(8.1%) | | | |
| Others | 138(21.0%) | 144(9.7%) | | | |
| **Substance abuse – n\|(%)** | 64(9.7%) | 126(8.5%) | | 0.21[a] | phi=0.02 |
| **Mental illness in the family members – n\|(%)** | 308(47.6%) | 717(50.7%) | | 0.10[a] | phi=0.03 |
| **Suicide ideation, last month – n\|(%)** | | | $\chi^2_5$=277.71 | **<0.001** | v=**0.36** |
| None | 295(44.8%) | 1097(74.2%) | | | |
| Wish to be dead | 68(10.3%) | 153(10.4%) | | | |
| Suicidal thoughts | 33(5.0%) | 60(4.1%) | | | |
| Suicidal thoughts with method (but without specific plan or intent to act) | 55(8.4%) | 71(4.8%) | | | |
| Suicidal intent | 69(10.5%) | 49(3.3%) | | | |

| | | | | | |
|---|---|---|---|---|---|
| (without specific plan) | | | | | |
| Suicidal intent with specific plan | 138(21.0%) | 48(3.2%) | | | |
| **Suicide attempts, lifetime – n\|(%)** | 321(48.8%) | 489(33.1%) | | **<0.001**[a] | **phi=-0.15** |
| **OMMP Psychological pain – M\|SD** | 119.96±38.58 | 107.74±40.83 | $t_{2129}$=6.49 | **<0.001** | d=**0.31** |
| **PPPS worst Psychological pain – M\|SD** | 7.33±2.96 | 5.31±3.40 | $t_{1395.63}$=13.75 | **<0.001** | d=**0.63** |
| **PPPS Physical pain – M\|SD** | 11.05±8.72 | 9.73±8.48 | $t_{2101}$=3.26 | **0.001** | d=**0.15** |
| **CTQ PN – M\|SD** | 8.20±3.22 | 8.19±3.16 | $t_{2118}$=0.10 | 0.92 | d=0.003 |
| **CTQ EN – M\|SD** | 12.92±5.62 | 13.12±5.75 | $t_{2118}$=0.77 | 0.44 | d=0.04 |
| **CTQ SA – M\|SD** | 7.00±4.21 | 6.50±3.70 | $t_{1101.40}$=2.63 | 0.009 | d=0.13 |
| **CTQ PA – M\|SD** | 7.30±3.99 | 6.44±2.94 | $t_{964.69}$=4.93 | **<0.001** | d=**0.25** |
| **CTQ EA – M\|SD** | 10.16±5.01 | 8.99±4.62 | $t_{31145.87}$=5.08 | **<0.001** | d=**0.24** |
| **BDI – M\|SD** | 24.01±13.87 | 18.49±13.50 | $t_{2130}$=8.64 | **<0.001** | d=**0.40** |
| **BDI≥20 - n\|(%)** | 381(58.1%) | 638(43.2%) | | **<0.001**[a] | phi=**0.14** |

[a]One-way Fisher exact test. Bonferroni correction for multitesting: p=0.05/24=0.002; In bold test significant after correction for multitesting.

BD=Bipolar disorder; MDD=Major depressive disorder; BPD=Borderline personality

disorder; OMMP=Mental Pain Questionnaire; PPPS=Physical and Psychological Pain Scale; CTQ=Childhood Trauma Questionnaire; PN=Physical neglect; EN=Emotional neglect; SA=Sexual abuse; PA=Physical abuse; EA=Emotional abuse; BDI=Beck Depression Inventory-2.

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