

The Relationship Between Persecutory Delusion Subtypes, Attributional Bias, Childhood Trauma, and Offense Profiles in Schizophrenia

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ABSTRACT

Introduction: Schizophrenia is associated with an increased risk of offending, likely mediated by multiple clinical and psychosocial factors. Childhood trauma, attributional biases, and persecutory delusions have been implicated in both psychosis and aggression; however, their relationships with verified offense categories remain unclear. This study investigated the associations between childhood trauma, attributional biases, persecutory delusion subtypes, and offense categories in individuals with schizophrenia.

Methods: Ninety-six individuals with schizophrenia under court-ordered forensic psychiatric monitoring and with at least one verified criminal offense were included. Participants were in remission and adherent to treatment. The Childhood Trauma Questionnaire – Short Form, Internal, Personal and Situational Attributions Questionnaire-Turkish Form, and Persecution and Deservedness Scale were administered. Delusional subtypes were classified as poor-me (PM), bad-me (BM), unclassified persecutory, or non-persecutory. Offenses were categorized as interpersonal aggression/violence crimes, property/economic crimes, or system-directed/institutional crimes.

Results: Offense categories were not associated with persecutory delusion subtypes. However, personalizing bias was significantly higher among individuals convicted of interpersonal aggression and violence than among those convicted of system-directed and institutional crimes ($p=0.042$). Childhood trauma differed across delusional subtypes, with higher emotional abuse scores in PM and BM groups and higher physical neglect and total trauma scores in the BM group. In multinomial logistic regression analyses, higher personalizing bias independently predicted lower odds of belonging to the property/economic crime group relative to the interpersonal aggression group ($OR=0.029$, $p=0.035$).

Conclusion: Delusion subtype was not associated with offense category in schizophrenia. In contrast, personalizing bias was associated with offending patterns, while childhood trauma was linked to specific persecutory delusion subtypes. These findings suggest that attributional processes may be more informative than delusional content alone for understanding offending behavior in schizophrenia.

Keywords: Attributional bias, childhood trauma, offending, persecutory delusion, schizophrenia

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INTRODUCTION

Schizophrenia has been a subject of interest in forensic psychiatry due to the complex relationship between psychotic symptoms, contextual factors, and aggressive or criminal behavior (1). Although most individuals with schizophrenia are not violent, epidemiological studies have shown that people with schizophrenia are at a modestly increased risk of engaging in violent or criminal acts compared to the general population (2). This relationship appears to be mediated by a multitude of factors, including comorbid substance use, impaired insight, persecutory delusions, and psychosocial stressors (3,4). Nevertheless, the mechanisms linking psychosis and criminal behavior remain insufficiently understood.

One domain that has gained attention in both psychosis and criminology research is early life adversity. Childhood trauma—including emotional,

Highlights

- Offense type was unrelated to persecutory delusion subtype.
- Personalizing bias distinguished violent from institutional offenders.
- Childhood trauma was linked to persecutory delusion subtypes.
- Bad-me paranoia was associated with greater childhood adversity.
- Attributional style may improve forensic risk assessment.

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physical, and sexual abuse, as well as emotional and physical neglect—has been strongly associated with the onset and severity of psychotic symptoms (5). Moreover, early trauma has been linked to impaired emotional regulation, maladaptive attributional styles, and increased risk of violence and offending in adulthood, particularly in vulnerable populations such as individuals with severe mental illness (6,7).

Attributional style represents another important psychological mechanism with relevance to both psychosis and behavioral outcomes. A tendency to attribute negative events to others—rather than to situational or internal causes—has been closely linked to persecutory delusions and heightened perceptions of interpersonal threat (8). The tendency to attribute negative events to other people rather than to situational or internal causes plays a central role in interpersonal threat perception and has been consistently associated with persecutory delusions in schizophrenia (9). However, its potential contribution to criminal behavior in this population remains largely unexplored.

In the context of persecutory delusions, recent cognitive models have differentiated between two subtypes based on self-evaluative beliefs: poor-me (PM) paranoia, in which the individual feels unjustly persecuted and maintains a positive self-concept, and bad-me (BM) paranoia, characterized by the belief that persecution is deserved, often accompanied by self-blame and guilt (10). These distinct subtypes are thought to reflect different cognitive-affective processes and may carry differential implications for risk assessment and offending behavior. Specifically, the combination of persecutory thinking and beliefs about deserving punishment could theoretically influence the nature and motivation of criminal acts in individuals with psychosis (11).

Although childhood trauma, attributional style, persecutory delusion subtypes, and offending behavior have each been studied in schizophrenia, research examining these factors together, particularly in relation to documented offending among forensic patients, remains limited. Moreover, most prior work has relied on either non-forensic samples or self-reported offending, leaving a substantial gap in understanding how these psychological mechanisms manifest in real-world forensic contexts. The present study aims to address this gap by examining childhood trauma, attributional bias, and persecutory delusion subtypes in relation to documented offense categories among forensic inpatients with schizophrenia. Rather than drawing causal conclusions, it offers a descriptive, data-driven analysis of how these variables appear together in this population. Using a multidimensional approach and validated measures, the study seeks to clarify psychological characteristics that may be relevant to offending behavior in schizophrenia.

METHODS

Participants

This cross-sectional study included 96 individuals with a DSM-5-TR diagnosis of schizophrenia who were receiving court-ordered forensic psychiatric follow-up at the High-Security Forensic Psychiatry Hospital at Ankara Bilkent City Hospital. These individuals were living in the community and attended the hospital on an outpatient basis as part of routine forensic monitoring after a prior criminal offense. All participants had at least one documented offense verified through official forensic records.

Inclusion criteria were: age 18 years or older, a confirmed schizophrenia diagnosis, remission according to standardized criteria, a Clinical Global Impression (CGI) score <3, regular adherence to prescribed antipsychotic treatment, and ongoing participation in scheduled

forensic follow-up evaluations. Exclusion criteria were comorbid intellectual disability, acute psychotic symptoms requiring immediate intervention, and severe neurological or medical conditions that could interfere with assessment. All participants provided written informed consent.

Procedure

Data collection took place between March 2025 and August 2025. All participants completed a battery of self-report and clinician-administered instruments for a detailed forensic evaluation. Written informed consent was obtained from all participants. For participants under legal guardianship written informed consent was obtained from their legal guardian and assent was obtained from the participant whenever possible. The study was approved by the Scientific and Ethical Review Board of Ankara Bilkent City Hospital (Number: TABED 2-25-892; Approval date: 19.02.2025).

Measures

Sociodemographic and Clinical Information Form: This form was developed by the researchers to obtain demographic (age, gender, education, marital status, income, etc.) and clinical information (duration of illness, treatment adherence, history of self-harm or suicide, substance use, number of hospitalizations, type of offense).

Childhood Trauma Questionnaire – Short Form (CTQ-SF): The CTQ is a 28-item self-report inventory assessing five types of childhood maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, as well as a denial/minimization scale. Each item is rated on a 5-point Likert scale. Higher scores indicate greater exposure to trauma (12). The Turkish adaptation was used in this study and the Cronbach's alpha coefficient of the scale was 0.93 (13).

Internal, Personal and Situational Attributions Questionnaire – Turkish Version (IPSAQ-TR): This tool assesses attributional style through hypothetical positive and negative scenarios, with responses coded as internal, personal, or situational (14). All six subscales of the IPSAQ-TR had KR-20 values ranging from 0.702 to 0.820. The mean KR-20 across subscales was 0.753, reflecting overall good reliability of the attributional subscales. Personalizing Bias (PB) and Externalizing Bias (EB) are the two cognitive biases that are calculated from the subscale scores. The Turkish version was validated by Çakmak et al. (2025) and demonstrated acceptable psychometric properties (15).

Persecution and Deservedness Scale (PaDS): The PaDS consists of two subscales: the Persecution subscale, which measures beliefs about being harmed, threatened, or treated unfairly by others, and the Deservedness subscale, which evaluates the extent to which individuals consider such negative treatment to be justified. The PaDS consists of two subscales measuring persecutory beliefs and the extent to which the individual believes those experiences are deserved. The scale includes 10 persecution items and 10 deservedness items, each rated on a 0–4 Likert scale. For the persecution subscale, the average score of the 10 items was multiplied by 2.5 to yield a total score ranging from 0 to 100, where higher scores indicate more intense perceptions of threat or harm from others. Each persecution item is followed by a deservedness item, which is only answered if the corresponding persecution item was rated greater than 1. A deservedness score was calculated by taking the average of all valid deservedness responses—provided at least three such responses were available—and multiplying it by 25, yielding a total score between 0 and 100 (16). Higher deservedness scores reflect a greater belief that the persecution is justified or deserved. The scale was used for the first time in Turkish in the current study. The Turkish version demonstrated high internal consistency for the *Persecution* subscale

(Cronbach's $\alpha=0.88$) and moderate reliability for the *Deservedness* subscale ($ICC=0.50$).

Delusional Subtype Classification (PM / BM): Participants were classified based on their scores on the PaDS subscales. Additionally, all patients with persecutory delusions met the definition described by Freeman and Garety (17), based on the evaluators' assessments. Participants with a persecution score greater than 1 and a deservedness score below 2 were categorized as having PM delusions, characterized by the belief that the perceived persecution is unjustified. Those with a persecution score greater than 1 and a deservedness score equal to or above 2 were classified as BM, indicating the belief that the persecution is deserved. Participants with high persecution but fewer than three valid deservedness responses were assigned to an *unclassified persecutory* group, as their orientation regarding deservedness could not be reliably determined. Finally, individuals who did not report any persecutory ideation were grouped under the *non-persecutory* category.

Crime Type Categorization: Recorded offenses were identified by reviewing each patient's forensic monitoring notes documented in the hospital's clinical records. The legal classification and naming of offenses were based on the corresponding articles and terminology of the Turkish Penal Code (18). After compiling these records, offenses were evaluated by forensic psychiatry specialists and categorized into broader groups for analysis. Given the substantial variety of individual offense types, classifying crimes strictly according to each specific Penal Code article would have resulted in numerous small subgroups with inadequate statistical power. Therefore, to maintain theoretical coherence and analytical feasibility, offenses were consolidated into three commonly used forensic categories: *Interpersonal Aggression and Violence Crimes*: offenses involving direct threat or harm toward another person (e.g., homicide, injury, assault, threats, unlawful deprivation of liberty, sexual offenses); *Property and Economic Crimes*: offenses involving material gain or damage to property (e.g., theft, robbery, fraud); and *System-Directed and Institutional Crimes*: offenses targeting public order, administrative functioning, or legal processes (e.g., drug-related offenses, forgery, resisting law enforcement, perjury, escape from custody). This categorization was informed by previous offense classification approaches in the literature and adapted to the conceptual framework of the study (19,20), which focuses on attributional biases and persecutory beliefs related to self, others, and non-human targets. Consolidating offenses into these three categories enabled clinically meaningful comparisons while ensuring adequate statistical power for analysis.

Statistical Analysis

All analyses were conducted using IBM Statistical Package for Social Sciences (SPSS) program for Windows version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics are presented as mean $\pm$ standard deviation (SD), median (minimum–maximum), or frequency (%), as appropriate.

Comparisons of childhood trauma (CTQ), attributional style (IPSAQ-TR), and persecutory ideation (PaDS) variables across crime categories were performed using one-way analysis of variance (ANOVA) for normally distributed variables and the Kruskal-Wallis test for non-normally distributed variables. Likewise, CTQ and IPSAQ-TR scores were compared across delusional subtypes using the Kruskal-Wallis test. When overall group differences were significant, Bonferroni-adjusted post hoc pairwise comparisons were performed.

The association between crime categories and delusion subtypes was examined using Pearson's chi-square test. Because of sparse expected cell counts in the 4 $\times$ 3 contingency table, the Freeman-Halton extension of

Fisher's exact test was also performed. Comparisons of CTQ and IPSAQ-TR scores according to the presence or absence of a lifetime suicide attempt were conducted using the Mann-Whitney U test.

To identify variables independently associated with crime type, a multinomial logistic regression analysis was performed with interpersonal aggression and violence crimes as the reference category. Crime category was entered as the dependent variable, whereas illness duration, years of education, CTQ total score, personalizing bias score, lifetime suicide attempt history, delusion subtype, and marital status were entered simultaneously as independent variables. Adjusted regression coefficients (B), odds ratios (ORs), 95% confidence intervals (CIs), and p values were calculated. Model fit was evaluated using the likelihood ratio chi-square test together with Nagelkerke's and McFadden's pseudo- R^2 statistics. All statistical tests were two-tailed, and statistical significance was set at $p < 0.05$.

RESULTS

The sociodemographic characteristics of the participants are presented in Table 1, and the clinical characteristics are shown in Table 2. The majority of the participants were male and single, unemployed at the time of inclusion, living with their nuclear families, had legal guardians, resided in metropolitan areas, and most of the male participants had completed their compulsory military service. In addition, 25% of the participants ($n=25$) reported having a family history of a psychiatric disorder requiring medication, and 24% ($n=23$) had comorbid medical conditions. All patients were receiving antipsychotic treatment; 13.5% ($n=13$) were using mood stabilizers, and 10.4% ($n=10$) were on antidepressant medication.

As shown in Table 3, negative personal attribution scores and PB scores differed significantly across crime groups. While pairwise comparisons for negative personal scores were not statistically significant, PB scores showed a significant difference between individuals who committed interpersonal aggression and violence crimes and those who committed system-directed and institutional crimes, with Bonferroni-adjusted ($p=0.042$).

No statistically significant relationship was found between types of delusions (non-persecutory, unclassified persecutory, PM, and BM) and crime categories ($\chi^2=5.009$; $p=0.511$) (Table 4). Similarly, grouping participants by the presence or absence of persecutory delusions ($p=0.583$), or comparing poor-me and bad-me subtypes ($p=0.405$), did not yield significant differences in crime type. Total persecution and deservedness scores were also similar across crime categories ($p=0.570$ and $p=0.779$, respectively). Participants with a history of suicide attempts scored significantly higher on all CTQ subscales ($p < 0.05$), as well as on PB and total persecution scores.

When grouped by delusional subtypes, a significant difference was found in emotional abuse scores ($H=12.769$, $p=0.005$) (Table 5). Post hoc Bonferroni-adjusted comparisons showed that individuals without persecutory delusions scored significantly lower than both the PM ($p=0.013$) and BM ($p=0.006$) groups. A significant difference was also found in physical neglect scores across delusional subtypes ($H=9.478$, $p=0.024$), with higher scores observed in the BM group compared to the unclassified persecutory group ($p=0.017$). Although sexual abuse scores differed significantly across groups ($H=8.087$, $p=0.044$), no pairwise comparison remained significant after Bonferroni correction. Significant differences were also observed in CTQ total scores ($H=10.646$, $p=0.014$). Post hoc analyses indicated that the BM group had significantly higher total CTQ scores than the non-persecutory group ($p=0.045$).

Table 1. Demographic variables of the participants

Age (years ± SD)	40.14±9.81
Gender, n (%)	
Female	13 (13.5%)
Male	83 (86.5%)
Education (years ± SD)	11.04±3.44
Marital status, n (%)	
Married	11 (11.5%)
Single	58 (60.4%)
Divorced	27 (28.1%)
Employment Status, n (%)	
Employed	26 (27.1%)
Unemployed	48 (50.0%)
Retired due to disability	17 (17.7%)
Retired	5 (5.2%)
Household type, n (%)	
Nuclear family	62 (64.6%)
Traditional family	12 (12.5%)
Living alone	15 (15.6%)
Nursing home	2 (2.1%)
Other	5 (5.2%)
Place of residence, n (%)	
City	71 (74.0%)
District	20 (20.8%)
Village	5 (5.2%)
Monthly income, n (%)	
Below minimum wage	35 (36.5%)
Above minimum wage	61 (63.5%)
Military service (males only), n (%)	
Completed	45 (46.9%)
Exempt	25 (26.0%)
Deferred	4 (4.2%)
Medical leave/Penal status, n (%)	9 (9.4%)

n: number of participants; SD: standard deviation.

Table 2. Clinical variables of the patients

Age at first diagnosis (years) (mean ± SD)	28.35±3.37
Duration of illness (years) (mean ± SD)	12.06±8.16
Number of hospitalizations (mean ± SD)	3.97±8.16
Number of forensic hospitalizations (mean ± SD)	1.94±1.34
Duration of current treatment (months) (years) (mean ± SD)	28.48±37.48
Legal guardian, n (%)	
Present	53 (55.2%)
Not present	43 (44.8%)
Smoking, n (%)	
Yes	71 (74.0%)
No	25 (26.0%)
Alcohol abuse, n (%)	
Yes	18 (18.8%)
No	78 (81.3%)
Substance use, n (%)	
Yes	23 (24%)
No	73 (76.0%)
Self-mutilation, n (%)	
Yes	21 (21.9%)
No	75 (78.1%)
Suicide attempt, n (%)	
Yes	25 (26.0%)
No	71 (74.0%)

n: number of participants; SD: standard deviation.

Table 3. Comparison of childhood trauma, attributional style, and persecutory beliefs across crime types

	Aggression and Interpersonal Violence (n=75)	Property and Economic Crimes (n=11)	System-Directed and Institutional Crimes (n=10)	
CTQ Scores				
Emotional abuse	10 (5-21)	8.5 (5-10)	7 (5-8)	H=3; p=0.223
Physical abuse	7 (5-19)	6.5 (5-20)	5 (5-14)	H=0.254; p=0.881
Emotional neglect	12 (5-22)	14 (7-22)	11 (7-17)	H=0.650; p=0.722
Physical neglect	10 (5-16)	7 (6-13)	7 (6-15)	H=0.425; p=0.809
Sexual abuse	6 (5-14)	5 (5-9)	6 (5-7)	H=1.581; p=0.454
Denial	8 (3-14)	9 (6-11)	9 (9-10)	H=0.373; p=0.830
Total	46 (35-90)	52 (38-61)	44 (37-64)	H=2.340; p=0.310
IPSAQ-TR Scores				
Positive Internal	10 (2-16)	7.5 (5-14)	13 (4-16)	H=1.421; p=0.491
Positive Personal	3 (0-10)	5 (0-9)	0 (0-11)	H=3.678; p=0.159
Positive Situational	3 (0-12)	2 (2-4)	1 (0-6)	H=0.538; p=0.764
Negative Internal	5 (2-15)	7.5 (2-9)	12 (0-14)	H=1.599; p=0.450
Negative Personal	6 (0-11)	6 (1-13)	3 (0-7)	H=6.025; p=0.049*
Negative Situational	3 (0-13)	3 (1-6)	4 (1-9)	H=3.424; p=0.181
Personalizing Bias	0.56±0.28	0.60±0.26	0.42±0.27	F=4.274; p=0.042*
Externalizing Bias	2.82±4.87	2.33±5.01	3.60±9.96	F=0.754; p=0.480
PaDS Scores				
Persecution Total Score	52.5 (25-92.5)	42.5 (20-75)	47.5 (25-70)	H=1.123; p=0.570
Deservedness Total Score	25 (2.5 - 84.38)	30 (12.5-100)	25 (10.7-35)	H=0.500; p=0.779

CTQ: Childhood Trauma Questionnaire; IPSAQ-TR: Internal, Personal and Situational Attributions Questionnaire; PaDS: Persecution and Deservedness Scale; results are presented as mean ± standard deviation or median (minimum-maximum), as appropriate. * Statistically significant at p <0.05.

Table 4. Distribution of crime types according to delusional subtypes

Delusional subtype	Interpersonal Aggression and Violence, n (%)	Property and Economic Crimes, n (%)	System-Directed and Institutional Crimes, n (%)
Non-Persecutory	10 (83.3)	0	2 (16.7)
Unclassified Persecutory	18 (75.0)	3 (12.5)	3 (12.5)
PM	26 (86.7)	3 (10.0)	1 (3.3)
BM	21 (70.0)	5 (16.7)	4 (13.3)

BM: bad me; PM: poor me.

Table 5. Childhood trauma questionnaire scores across delusional subtypes

CTQ Domains	Non-Persecutory (n=12)	Unclassified Persecutory (n=24)	PM (n=30)	BM (n=30)	
Emotional Abuse	5.0 (5–8)	7.0 (5–17)	7.5 (5–21)	8.5 (5–19)	H=12.769; p=0.005*
Physical Abuse	5.0 (5–10)	6.0 (5–17)	6.0 (5–23)	6.0 (5–20)	H=2.565; p=0.464
Physical Neglect	7.0 (5–10)	5.0 (4–17)	6.0 (5–16)	7.0 (5–16)	H=9.478; p=0.024*
Emotional Neglect	9.0 (6–17)	10.5 (5–20)	10.0 (5–22)	12.5 (5–22)	H=3.768; p=0.288
Sexual Abuse	5.0 (5–7)	5.0 (5–11)	5.0 (5–12)	6.0 (5–14)	H=8.087; p=0.044*
Minimization/Denial	11.0 (5–13)	10.0 (4–14)	9.0 (3–15)	9.0 (3–14)	H=2.845; p=0.416
CTQ Total	43.0 (37–55)	45.0 (35–68)	48.0 (38–90)	52.5 (38–83)	H=10.646; p=0.014*

BM: bad me; CTQ: Childhood Trauma Questionnaire; PM: poor me. * Statistically significant at p <0.05.

Table 6. Multinomial logistic regression analysis predicting crime type (reference category: interpersonal aggression and violence)

Predictor	Property and Economic Crimes vs. Interpersonal Aggression			System-Directed and Institutional Crimes vs. Interpersonal Aggression		
	B	OR (95% CI)	p	B	OR (95% CI)	p
Illness duration	0.007	1.007 (0.922–1.099)	0.880	-0.031	0.970 (0.869–1.082)	0.584
Education	-0.174	0.841 (0.623–1.134)	0.256	0.057	1.059 (0.815–1.375)	0.669
CTQ Total	-0.053	0.948 (0.871–1.032)	0.218	-0.009	0.991 (0.909–1.079)	0.833
Personalizing Bias	-3.544	0.029 (0.001–0.779)	0.035*	-2.461	0.085 (0.005–1.558)	0.097
Suicide attempt	2.960	19.289 (2.363–157.450)	0.006**	-18.641	Not interpretable	0.998
Delusion subtype: Unclassified Persecutory vs. BM	-0.246	0.782 (0.113–5.410)	0.803	-0.641	0.527 (0.077–3.627)	0.515
Delusion subtype: PM vs. BM	-1.392	0.249 (0.037–1.692)	0.155	-2.117	0.120 (0.008–1.828)	0.127
Marital status	-1.631	0.196 (0.034–1.133)	0.069	-1.888	0.151 (0.023–0.975)	0.047*

Model statistics: $\chi^2(20)=40.704$, p=0.004; Nagelkerke $R^2=0.466$; McFadden $R^2=0.313$.

Suicide attempt estimation is unstable because of sparse cell counts and complete/quasi-complete separation.

BM: bad me; CTQ: Childhood Trauma Questionnaire; PM: poor me. * Statistically significant at p <0.05; ** Statistically significant at p <0.01

Additionally, negative situational attribution scores differed significantly across delusional subtypes, with the unclassified group scoring significantly higher than both the PM (p=0.021) and BM (p=0.039) groups. No significant differences were observed among the delusional subtypes for the remaining IPSAQ-TR variables.

The results of the multinomial logistic regression analysis are presented in Table 6, with the interpersonal aggression and violence group specified as the reference category. The overall model was significant ($\chi^2=40.70$, p=0.004) and explained 46.6% of the variance in crime type (Nagelkerke $R^2=0.466$). Higher personalizing bias was associated with lower odds of belonging to the property/economic crime group relative to the interpersonal aggression group (OR=0.029, 95% CI=0.001–0.779, p=0.035). In contrast, a history of suicide attempts was associated with substantially increased odds of belonging to the property/economic crime group rather than the interpersonal aggression group (OR=19.289, 95% CI=2.363–157.450, p=0.006). Additionally, being single rather than divorced was associated with lower odds of belonging to the system-directed/institutional crime group relative to the interpersonal aggression group (OR=0.151, 95% CI=0.023–0.975, p=0.047).

DISCUSSION

The study sample showed a sociodemographic distribution similar to previous studies investigating offending behavior in individuals with schizophrenia, with a predominance of male, single, and unemployed participants (21). Also, the distribution of PM and BM subtypes in our sample was consistent with previous findings, with PM markedly more common than BM (12,22). Notably, 87.5% of our participants presented with persecutory delusions, a symptom constellation repeatedly associated with an increased risk of violence in schizophrenia (23).

The present study included only patients who had been regularly adhering to their prescribed medications for an extended period, consistently attending social stability evaluations in forensic psychiatry outpatient clinics, and presenting with a CGI score below 3, residual delusional symptoms were still reported by several participants. This finding aligns with previous literature suggesting that even in clinically stable individuals with schizophrenia, residual psychotic symptoms—particularly persecutory delusions—may persist despite adequate treatment and functional stability. This is consistent with evidence that

persecutory subtypes, particularly the distinction between PM and BM, may fluctuate even during periods of clinical stability, reflecting dynamic changes in self-esteem and stress sensitivity rather than acute psychotic disruption (24). The presence of such residual symptoms is clinically relevant, as they may continue to influence patients' social cognition, interpersonal interactions, and potentially their risk for offending behavior (25). Additionally, the lack of demographic differences between the PM and BM groups is consistent with the broader literature showing that PM/BM differences are not rooted in sociodemographic or contextual variables but reflect phenomenological differences in self-evaluation, attributional style, and deservedness beliefs (12,26,27). The predominance of PM cases also aligns with earlier research showing that PM paranoia is more common than BM across different samples and cultural contexts (28).

In our sample, no significant relationship was observed between persecutory delusion subtypes and offense categories. Similarly, total PaDS scores did not differ significantly between crime types. These findings suggest that while persecutory ideation may enhance perceived threat, delusional content alone is not predictive of criminal behavior. Additionally, prior findings indicating that PM/BM distinctions primarily map onto self-esteem and self-evaluation processes rather than behavioral or forensic outcomes. PM/BM subtypes are more strongly tied to affective and cognitive-affective mechanisms than to overt behavioral risk (12,26). However, our findings did show that attributional bias, particularly personalizing bias, was significantly higher in individuals who committed interpersonal aggression and violence, compared to those who committed system/institution-related crimes. Experimental PM/BM studies have repeatedly shown that personalizing and internalizing biases—not delusional content per se—are the cognitive mechanisms most strongly linked to hostility and interpersonal threat perception (29). Additionally, the observed differences in PB suggest that a general cognitive tendency to attribute negative outcomes to the actions of other individuals, as opposed to situational factors, may play a more critical role in predisposing individuals to aggressive behavior.

From a forensic perspective, these findings may help inform risk assessment by highlighting psychological factors that remain relevant even during remission. The higher PB observed in individuals who committed interpersonal aggression suggests that stable attributional tendencies—not only acute symptoms—may play a role in risk-related behaviors. Likewise, the association between childhood trauma and suicidality underscores the importance of considering developmental history in routine forensic evaluations. Taken together, these patterns may offer insight into risk beyond symptom severity alone. However, because offence history was obtained retrospectively while delusional content and cognitive variables were assessed during remission, these associations should be interpreted with caution. The cross-sectional design does not permit conclusions about temporal order or causality, and our findings therefore reflect patterns of co-occurrence rather than direct mechanistic links between delusional characteristics and offending behavior.

Emotional abuse scores were significantly higher among participants with PM or BM delusions compared to those without persecutory delusions. This supports the hypothesis that early maltreatment may contribute to the development of persecutory ideation (30), possibly through the internalization of victim schemas or beliefs about deserved punishment (31,32). The subgroup differences observed in specific CTQ subscales indicate that childhood adversities may be associated with distinct cognitive-affective patterns in individuals with persecutory ideation. Although the cross-sectional design precludes inferences about developmental mechanisms or the formation of symptom themes,

the present findings are consistent with the notion that early adverse experiences may contribute to enduring schemas related to delusion formation.

Additionally, physical neglect scores were significantly higher in those with BM paranoia compared to those with unclassified persecutory delusions, suggesting a differential impact of trauma types on delusional subtype formation. Physical neglect during childhood often entails inadequate caregiving, unmet basic needs, and emotional unavailability from attachment figures. This can lead to negative core beliefs about the self, such as feeling unworthy, defective, or deserving of mistreatment (33). In the context of BM paranoia, persecutory experiences are interpreted as deserved punishment, which may be reinforced by the internalized neglect-related schema. This is concordant with evidence that BM paranoia, in particular, shows stronger associations with childhood adversity—especially neglect, humiliation, and trauma-related self-blame schemas—than PM presentations (32,34).

Negative situational attributions were higher in the unclassified group than in the PM and BM groups, consistent with findings that specific attributional patterns may vary across delusional profiles (35). Although the reasons for this finding remain uncertain, one possible explanation is that individuals who do not meet criteria for either the PM or BM subtype may exhibit more heterogeneous attributional patterns. Rather than consistently attributing negative events to external persecutors (PM) or to personal deservingness (BM), these individuals may rely more on situational explanations. This interpretation is consistent with the view that persecutory delusions are heterogeneous and that PM/BM presentations may represent dynamic rather than fixed cognitive profiles (12,36). However, this explanation remains speculative and should be examined in future longitudinal studies.

The multinomial regression findings suggest that attributional style may be more informative than delusional content in understanding offence patterns among individuals with schizophrenia. While childhood trauma and persecutory delusion subtypes were examined as potential correlates of offending behavior, neither variable independently differentiated crime categories after adjustment. In contrast, PB remained a significant predictor, indicating that a tendency to attribute negative events to the actions of other people may be particularly relevant to interpersonal aggression (37,38). This finding is consistent with cognitive models of paranoia and aggression, which propose that aggressive responses are influenced not only by the presence of persecutory beliefs but also by the interpretation of interpersonal events. A personalizing attributional style may heighten perceived threat and increase the likelihood that ambiguous situations are experienced as intentional, hostile, or dangerous. Accordingly, PB may represent a more proximal cognitive mechanism underlying interpersonal aggression than the phenomenological content of persecutory delusions. The absence of significant effects for PM/BM subtype in the regression model further supports this interpretation, suggesting that the forensic relevance of persecutory ideation may depend less on whether persecution is perceived as deserved or undeserved and more on the attributional processes through which social threat is construed. Nevertheless, given the relatively small number of participants in some offence categories, replication in larger and more balanced forensic samples is needed to confirm the generalizability of these findings.

One of the main strengths of this study is its multidimensional approach, evaluating offending behavior in schizophrenia not solely through delusional content but also by integrating childhood trauma, attributional biases, and suicidal behavior. This comprehensive perspective provides a more nuanced understanding of forensic risk.

The use of well-validated instruments (CTQ-SF, IPSAQ-TR, PaDS) with established reliability enhances the methodological rigor and scientific credibility of the findings. Furthermore, the sample was recruited from a high-security forensic psychiatry hospital, allowing offense histories to be verified through official records, which adds robustness and originality to the data. By distinguishing persecutory delusions into PM and BM subtypes, the study also addresses a clinically relevant dimension that has been relatively underexplored in the literature. Finally, by considering not only clinical symptom profiles but also cognitive attributional patterns and traumatic life experiences, the study makes a unique and practical contribution to risk assessment in forensic psychiatry.

This study has several limitations that should be considered when interpreting the findings. First, its cross-sectional design precludes causal inferences between childhood trauma, attributional biases, delusional subtypes, and offending behavior. Second, both trauma history and attributional style were assessed using self-report measures, which are subject to recall bias, social desirability, and the tendency of forensic outpatients to present themselves in a more favorable light. Third, the PaDS was used without a formally validated Turkish version. Although its internal consistency was evaluated in the present sample, the lack of a comprehensive validation study may limit the interpretation of the findings.

The fact that patients were assessed in remission, while regularly adhering to medication and forensic follow-up, further limits the generalizability of findings to the state at the time of the offense, when acute symptoms and disinhibition may have played a more prominent role. In contrast, prospective or compulsory forensic inpatient assessments conducted closer to the offense might yield stronger associations between psychopathology and criminal behavior.

Another limitation concerns the relatively small number of participants in the property/economic and system-directed crime groups. Although marital status and history of suicide attempts emerged as significant predictors in the multinomial regression model, these findings should be interpreted with caution. The small subgroup sizes may have reduced the stability of parameter estimates, particularly for suicide attempts. Replication in larger and more balanced forensic samples is therefore necessary to determine the generalizability of these associations.

Finally, the study did not examine potential interaction effects between variables in multivariate models of crime type prediction. Future research would benefit from exploring such interactions, adopting more comprehensive delusion categorizations, and including additional traits such as impulsivity and aggression to clarify how individual vulnerabilities, cognitive biases, and trauma histories jointly shape offending behavior.

In summary, our findings suggest that delusional content alone does not adequately differentiate offence patterns among individuals with schizophrenia. While childhood trauma and persecutory delusion subtypes were associated with several characteristics, PB emerged as the most robust factor associated with offence type. This highlights the potential importance of attributional processes in understanding interpersonal aggression. These findings support the view that the forensic relevance of persecutory ideation may depend less on its phenomenological content and more on the cognitive mechanisms through which social threat is interpreted. Together, the results underscore the value of multidimensional assessment approaches that extend beyond symptom content to include attributional styles and relevant developmental factors in forensic psychiatric settings.

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