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Capgras Syndrome: A 21-Year Retrospective Evaluation in a Psychiatric Inpatient Setting

Capgras Sendromu: Psikiyatri Kliniğinde 21 Yıllık Retrospektif Bir Değerlendirme

Uğur Tekeoğlu[1] | İbrahim Zeyrek[2] | Muhammed Hakan Aksu[3] Behçet Coşar[3]

[1] Recep Tayyip Erdoğan Üniversitesi Tıp Fakültesi, Çocuk ve Ergen Ruh Sağlığı ve Hastalıkları Anabilim Dalı, Rize, Türkiye
[2] Memorial Diyarbakır Hastanesi, Çocuk ve Ergen Ruh Sağlığı ve Hastalıkları, Diyarbakır, Türkiye
[3] Gazi Üniversitesi Tıp Fakültesi, Psikiyatri Anabilim Dalı, Ankara, Türkiye

ORCID: UT: 0000-0002-8432-7566 **İZ:** 0000-0003-2650-0663 **MHA:** 0000-0003-2930-5337 **BC:** 0000-0002-6422-499X

Sorumlu Yazar | Correspondence Author
Uğur Tekeoğlu
ugur.tekeoglu@erdogan.edu.tr
Address for Correspondence: Recep Tayyip Erdoğan Üniversitesi Tıp Fakültesi, Çocuk ve Ergen Ruh Sağlığı ve Hastalıkları Anabilim Dalı, Rize, Türkiye

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Capgras Syndrome: A 21-Year Retrospective Evaluation in a Psychiatric Inpatient Setting

ABSTRACT

Objective: Capgras syndrome (CS) is a delusional misidentification syndrome characterized by the belief that a familiar person has been replaced by an identical-looking impostor. This study aimed to determine the prevalence of CS in a tertiary psychiatric inpatient unit and examine its associated sociodemographic, clinical, and phenomenological characteristics. Secondary exploratory analyses focused on target identity, delusional content, and aggressive behavior.

Materials and Methods: Medical records of all adult patients hospitalized between January 2004 and January 2025 were retrospectively reviewed. The diagnosis of CS was defined using predefined phenomenological criteria and confirmed through independent review by two psychiatrists. Clinical and sociodemographic variables, target identity, delusional themes, hallucinations, aggressive behavior, and neuroimaging findings were extracted. In addition to descriptive and comparative analyses of clinical and sociodemographic characteristics, exploratory analyses examined associations among target identity, delusional content, and aggressive behavior. Associations between variables were examined using nonparametric and exact tests, and effect sizes (Phi, Cramer's V) were calculated. Post-hoc power analyses were conducted for selected non-significant findings.

Results: Among 1,328 inpatients, 28 patients (2.1%) met the criteria for CS. Schizophrenia was the most common associated diagnosis (75.0%). Parents were the most frequently targeted individuals (39.3%), and persecutory delusions were the predominant delusional theme (85.7%). Aggressive behavior was documented in 39.2% of cases. No statistically significant associations were found between aggressive behavior and diagnosis, sex, family history, or target identity *(all $p > 0.050$)*. Although moderate effect sizes were observed in certain subgroup analyses (e.g., sex and parental targeting; schizophrenia subtype and aggression), post-hoc power analyses indicated limited statistical power

Conclusion: CS represents a heterogeneous clinical condition characterized by diagnostic, relational, and phenomenological factors. Although descriptive patterns involving target identity, delusional content, and aggression were observed, statistically robust associations were not demonstrated. These observational patterns may warrant further investigation in larger samples. These findings underscore the importance of incorporating phenomenological and interpersonal dimensions into clinical assessment and risk evaluation.

Keywords: Aggressive behavior, Capgras syndrome, Delusional misidentification, Schizophrenia, Phenomenology.

Capgras Sendromu: Psikiyatri Kliniğinde 21 Yıllık Retrospektif Bir Değerlendirme

ÖZ

Amaç: Capgras sendromu (CS), bireyin tanıdık bir kişinin aynı görünüme sahip bir başkasıyla değiştirildiğine inanmasıyla karakterize edilen sanrısal bir yanlış tanıma sendromudur. Bu çalışmada, üçüncü basamak bir psikiyatri yatan hasta kliniğinde CS'nin görülme sıklığını belirlemek ve sendromla ilişkili sosyodemografik, klinik ve fenomenolojik özellikleri; özellikle hedef alınan kişi, sanrısal içerik ve saldırgan davranış ilişkisi açısından ikincil ve keşifsel analizlerle incelemek amaçlanmıştır.

Gereç ve Yöntem: Ocak 2004 - Ocak 2025 tarihleri arasında hastanede yatarak tedavi edilen tüm erişkin hastaların dosyaları geriye dönük olarak incelenmiştir. CS tanısı önceden belirlenmiş fenomenolojik ölçütler doğrultusunda operasyonelleştirilmiş ve iki psikiyatrist tarafından bağımsız inceleme ile doğrulanmıştır. Klinik ve sosyodemografik değişkenler, hedef alınan kişiler, sanrısal temalar, varsanılar, saldırgan davranış ve nörogörüntüleme bulguları kaydedilmiştir. Klinik ve sosyodemografik özelliklere yönelik tanımlayıcı ve karşılaştırmalı analizlerin yanı sıra, hedef alınan kişi, sanrısal içerik ve saldırgan davranış arasındaki ilişkileri incelemek amacıyla keşifsel analizler yapılmıştır. Değişkenler arasındaki ilişkiler uygun parametrik olmayan ve kesin testlerle analiz edilmiş; etki büyüklükleri (Phi, Cramer's V) hesaplanmış ve seçilmiş anlamlı olmayan bulgular için post-hoc güç analizleri yapılmıştır.

Bulgular: Toplam 1328 hastanın 28'inde (%2.1) CS saptanmıştır. En sık eşlik eden tanı şizofrenidir (%75.0). En sık hedef alınan kişiler ebeveynler (%39.3) olup, en baskın sanrısal içerik perseküsyon sanrılarıdır (%85.7). Olguların %39.2'sinde saldırgan davranış öyküsü mevcuttur. Saldırgan davranış ile tanı, cinsiyet, ailede psikiyatrik hastalık öyküsü veya hedef kişi arasında istatistiksel olarak anlamlı ilişki saptanmamıştır *(tüm p>0.050)*. Bazı alt grup analizlerinde orta düzey etki büyüklükleri gözlenmiş olmakla birlikte, post-hoc güç analizleri istatistiksel gücün sınırlı olduğunu göstermiştir.

Sonuç: CS, tanısal, kişilerarası ve fenomenolojik özelliklerle karakterize heterojen bir klinik tablodur. Hedef alınan kişi, sanrısal içerik ve saldırgan davranış arasında betimleyici örüntüler gözlenmiş olsa da istatistiksel olarak güçlü ilişkiler gösterilememiştir. Bu gözlemsel örüntülerin daha geniş örneklemlerde araştırılması yararlı olabilir. Bulgular, klinik değerlendirme ve risk analizinde fenomenolojik ve kişilerarası boyutların dikkate alınmasının önemini vurgulamaktadır.

Anahtar Sözcükler: Capgras sendromu, Fenomenoloji, Saldırgan davranış, Sanrısal yanlış tanıma, Şizofreni.

Introduction

Capgras syndrome (CS), first described by Capgras and Reboul-Lachaux in 1923 (1), represents the most common form of delusional misidentification syndromes (DMS) (2). CS is currently conceptualized as part of the broader spectrum of DMS, which also include Fregoli syndrome, intermetamorphosis, and subjective doubles, each characterized by distinct disturbances in identity attribution and familiarity processing (3). It is characterized by the delusional belief that significant individuals in patients' lives, the patients themselves, or both have been replaced by identical-looking impostors or "basic doubles" (4). Contemporary reviews emphasize that this belief is not limited to visual resemblance but reflects a complex disturbance in familiarity attribution and identity recognition processes, integrating perceptual, emotional, and cognitive components (5,6). In an attempt to distinguish the real person from the impostor, patients may rely on minor physical or behavioral discrepancies shaped by misinterpretations of sensory input (7).

CS most commonly emerges in the context of primary psychiatric disorders, particularly schizophrenia and mood disorders (8-10). However, it has also been reported in a wide range of organic conditions, including Alzheimer's disease, dementia with Lewy bodies (DLB), multi-infarct dementia, head trauma, epilepsy, cerebrovascular disease, pituitary tumors, multiple sclerosis, viral encephalitis, frontal lobe pathologies, and AIDS (9-12). Recent meta-analytic and narrative reviews further support the association between CS and neurodegenerative disorders, particularly Alzheimer's disease, while highlighting substantial heterogeneity in prevalence estimates across diagnostic groups (13,14).

Both psychoanalytic explanations and organic mechanisms have historically been proposed as contributors to the etiology of CS (1,15-17). In recent years, increasing emphasis has been placed on organic and neurobiological factors (8,18). Large-scale clinical and neuroimaging-based reviews suggest that a significant proportion of CS cases are associated with identifiable brain pathology or network-level dysfunction (5,19). In this context, Signer's classic analysis of 315 CS cases, reporting organic etiology in at least 40% of patients (20), has gained renewed relevance when interpreted alongside modern neuroimaging findings.

The prevalence of CS varies across studies (9,20). In psychiatric inpatient settings, reported prevalence rates range from 0.3% to 4.1% (7-9,21,22). In contrast, studies focusing on neurodegenerative populations have reported prevalence rates between 2% and 30% among patients with Alzheimer's disease (23,24), with a pooled prevalence estimate supported by recent systematic reviews and meta-analyses (14). In DLB, CS prevalence has been reported as 16.6% (25), while in schizophrenia populations, rates of approximately 15% have been observed (26).

A growing body of research has focused on the neuroanatomical and network-level substrates underlying CS. Early models emphasized disruptions in face recognition pathways, particularly the ventral visual stream connecting the visual cortex to limbic structures via the amygdala (11). The integrated framework proposed by Bruce and Young (1986) and Ellis and Lewis (2001) suggested a disconnection between perceptual recognition and affective familiarity processes (11,27). More recently, lesion-network mapping and connectivity-based studies have extended these models, demonstrating that CS is associated with dysfunction in distributed brain networks involving frontal, limbic, and retrosplenial regions rather than focal lesions alone (28). These findings support a network-based understanding of CS that bridges classical cognitive models with contemporary neuropsychiatric neuroscience.

Despite its relative rarity, CS poses significant diagnostic and therapeutic challenges in clinical practice. Failure to recognize the syndrome may lead to misdiagnosis, treatment resistance, and, in some cases, underestimation of the risk of aggressive behavior. Although the literature contains numerous case reports and small case series, comprehensive epidemiological and phenomenological studies based on larger samples remain limited. This limitation is particularly pronounced in the Turkish context, where systematic investigations of CS prevalence, associated psychiatric diagnoses, and clinical characteristics are scarce.

To date, most studies on CS have examined the syndrome within diagnostic or etiological frameworks, focusing primarily on organic causes, neurobiological models, or comorbid psychiatric disorders. In contrast,

relatively few studies have systematically explored the relationship between the identity of the targeted individual, the nature of delusional content, and aggressive behavior. Recent clinical reports underscore the relevance of this triad for risk assessment and management, particularly in early psychosis and complex interpersonal contexts (29,30). In clinical settings, the presentation of CS appears to be closely shaped by interpersonal dynamics and the phenomenological content of delusions, independent of diagnostic labels. Therefore, evaluating CS through a phenomenological lens—especially along the target–delusion–behavior axis—may contribute meaningfully to clinical risk assessment and intervention strategies.

The primary aim of the present study was to determine the prevalence of CS in a tertiary psychiatric inpatient setting and to systematically describe its sociodemographic, clinical, and phenomenological characteristics. As a secondary, exploratory aim, we sought to investigate the relationships between the identity of the targeted individual, delusional content, and aggressive behavior, with the goal of generating hypotheses for future research rather than drawing definitive conclusions. By retrospectively evaluating cases hospitalized between 2004 and 2025, we sought to contribute to the limited epidemiological data in Türkiye and to enhance clinical awareness of diagnostic and risk-related challenges in CS.

Materials and Methods

This study was conducted through a retrospective review of the medical records of all adult patients hospitalized in the inpatient unit of the Department of Psychiatry at Gazi University Faculty of Medicine between January 2004 and January 2025. Ethical approval for the study was obtained from the Gazi University Clinical Research Ethics Committee on November 25, 2025 (Approval No: 2025/1936; Document Date and Number: 25.11.2025-E.1392815), and all procedures were conducted in accordance with the Declaration of Helsinki. No informed consent was required for this retrospective study.

Sample and Inclusion Criteria

During the study period, the medical records of 1,328 inpatients were reviewed. Patients diagnosed with CS constituted the study sample. Because CS is not classified as a distinct diagnostic entity in DSM or ICD systems and no structured diagnostic instrument was routinely used in clinical practice during the study period, case identification relied on systematic re-examination of archived clinical documentation. Psychiatric admission notes, structured mental status examinations, daily progress records, consultation reports, and discharge summaries were reviewed to verify the presence, persistence, and internal consistency of the misidentification belief.

CS was defined as a fixed and persistent delusional belief that a significant person in the individual's life had been replaced by an identical-looking "double" or impostor. Although CS is considered within the group of delusional misidentification syndromes (DMS), it does not constitute a separate DSM or ICD diagnosis. Therefore, within the scope of this study, the diagnosis was operationalized in accordance with the original phenomenological description (1) using the following criteria:

(a) the presence of a stable and well-formed delusional belief of replacement by an identical-looking double;

(b) preserved basic perceptual recognition of the person (i.e., visual identification without correct familiarity attribution);

(c) a conviction resistant to logical counterargument or contradictory evidence;

(d) explicit and repeated documentation of the misidentification belief in psychiatric evaluation records; and

(e) absence of acute delirium or transient confusional states at the time of diagnosis.

These criteria were applied retrospectively through detailed qualitative review of the clinical records. Only cases in which the delusional misidentification was clearly documented on more than one occasion or consistently described across independent clinical notes were included to minimize misclassification.

To enhance diagnostic reliability, all potentially eligible records were independently reviewed by two psychiatrists at different time points. Each reviewer applied the predefined operational criteria to determine case eligibility. In cases of disagreement, a consensus decision was reached through joint discussion. Preliminary independent ratings were not systematically archived in a format that allowed

retrospective calculation of formal inter-rater agreement statistics (e.g., Cohen's kappa). Nevertheless, the dual-review and consensus procedure was implemented to reduce diagnostic bias and increase methodological rigor.

Data Collection and Variables

For each patient, the following clinical and sociodemographic variables were recorded: age, sex, educational level, marital status, psychiatric diagnoses (DSM/ICD-based), duration of illness and age at onset, number of hospitalizations, EEG and MRI findings, family history of psychiatric illness, duration of CS, targeted individuals, accompanying delusional themes and hallucinations, and presence of aggressive behavior. Neuroimaging findings were based on routine clinical radiology reports available in the hospital archive. Imaging data were not re-evaluated by neuroradiologists for research purposes.

Aggressive behavior was defined as documented physical aggression toward other people or property, including physical assault, attempted assault, or behavior that required physical intervention during hospitalization, as recorded in clinical records. Verbal hostility without accompanying physical behavior was not classified as aggressive behavior. No structured aggression rating scale was used, and classification was based on retrospective review of medical records.

Statistical Methods

Statistical analyses were performed using SPSS software version 29.0.2. Continuous variables were presented as mean ± standard deviation and minimum–maximum values, while categorical variables were expressed as frequencies and percentages. Differences in the duration of CS among diagnostic groups were evaluated using the Kruskal–Wallis test. Associations between categorical variables were analyzed using Pearson's chi-square test when assumptions were met. In cases of sparse cell distribution (expected cell counts <5), Fisher's exact test or Fisher–Freeman–Halton exact test was applied as appropriate. Effect sizes were calculated using Phi coefficients for 2×2 contingency tables and Cramer's V for larger tables. Exploratory analyses were conducted to examine the relationships between target identity, delusional content, and aggressive behavior. Given that targeted individuals could overlap within individual cases (e.g., parents and spouse simultaneously), target identity variables were recoded as binary presence indicators (e.g., parents present vs absent; spouse present vs absent) for these exploratory phenomenological analyses. These variables were then examined in relation to aggressive behavior and specific delusional themes using Fisher's exact test. These exploratory analyses were hypothesis-generating in nature, and findings should be interpreted as descriptive patterns rather than confirmatory evidence. Post-hoc power analyses were conducted using G*Power (version 3.1) for clinically relevant non-significant associations demonstrating moderate effect sizes. Statistical significance was set at $p<0.050$ (two-tailed).

Results

Sample and Prevalence

Between 2004 and 2025, the medical records of 1,328 patients treated in the inpatient unit of the Department of Psychiatry at Gazi University Faculty of Medicine were retrospectively reviewed, and CS was identified in 28 cases. Accordingly, the prevalence of CS during the study period was calculated as 2.1%. Sixteen patients (57.1%) were female and twelve (42.9%) were male. The mean age was 32.6 ± 6.7 years (range: 20–46).

Sociodemographic and Clinical Characteristics

Examination of the distribution of psychiatric diagnoses showed that the majority of patients were diagnosed with schizophrenia (n=21, 75.0%). Among patients with schizophrenia, 47.6% (n=10) were classified as undifferentiated type, 28.5% (n=6) as paranoid type, and 23.8% (n=5) as disorganized type. Schizophrenia was followed by schizoaffective disorder (n=4, 14.3%) and bipolar disorder (n=3, 10.7%).

The mean duration of illness was 6.68 ± 4.9 years (range: 1–20), the mean age at illness onset was 26.0 ± 4.2 years (range: 17–32), and the mean number of hospitalizations was 2.61 ± 1.7 (range: 1–8). A family history of psychiatric illness was present in half of the patients (history of schizophrenia n = 12, 42.9%; history of bipolar disorder n = 2, 7.1%). EEG and MRI findings were normal in all cases (Table I).

Table I: Sociodemographic and Clinical Characteristics of Patients Diagnosed with Capgras Syndrome (n=28)

Variable	Value
Age, years	32.6 ± 6.7 (20–46)
Sex, n (%)	
Female	16 (57.1)
Male	12 (42.9)
Educational level, n (%)	
Primary school	8 (28.6)
High school	14 (50.0)
University	6 (21.4)
Marital status, n (%)	
Married	13 (46.4)
Single	9 (32.1)
Divorced	6 (21.4)
Psychiatric diagnosis, n (%)	
Schizophrenia	21 (75.0)
Undifferentiated type	10 (47.6)
Paranoid type	6 (28.5)
Disorganized type	5 (23.8)
Schizoaffective disorder	4 (14.3)
Bipolar disorder	3 (10.7)
Duration of illness, years	6.68 ± 4.9 (1–20)
Age at illness onset, years	26.0 ± 4.2 (17–32)
Number of hospitalizations	2.61 ± 1.7 (1–8)
Family history of psychiatric illness, n (%)	
Present	14 (50.0)
Absent	14 (50.0)
EEG / MRI findings, n (%)	
Normal	28 (100)

Data are presented as mean ± standard deviation (minimum–maximum) or number (%). EEG: electroencephalography; MRI: magnetic resonance imaging.

Clinical Presentation of Capgras Syndrome

The mean duration of CS was 4.04 ± 3.6 years (range: 1–13). Auditory hallucinations and delusions were identified as the core symptoms in all cases. In five cases (17.9%), visual hallucinations were reported in addition to auditory hallucinations.

Targeted Individuals

Evaluation of targeted individuals revealed that parents were the most frequently targeted group (n = 11, 39.3%). Only the spouse or partner was targeted in four cases (14.3%), only siblings were targeted in four cases (14.3%), and only children were targeted in one case (3.6%). In eight cases (28.6%), more than one target was reported (Table II).

Table II: Clinical and Phenomenological Characteristics of Capgras Syndrome (n = 28)

Variable	Value
Duration of Capgras syndrome, years	4.04 ± 3.6 (1–13)
Types of hallucinations	
Auditory hallucinations	28 (100)
Visual hallucinations	5 (17.9)
Targeted individuals	
Parents only	11 (39.3)
Spouse/partner only	4 (14.3)
Siblings only	4 (14.3)
Children only	1 (3.6)
Multiple targets	8 (28.6)
Delusional content	
Persecutory	24 (85.7)
Religious / mystical	19 (67.8)
Referential	14 (50.0)
Bizarre	11 (39.3)
Grandiose	6 (21.4)
Somatic	2 (7.1)
Aggressive behavior	
Present	11 (39.2)
Absent	17 (60.8)

Continuous variables are presented as mean ± standard deviation (minimum–maximum). More than one type of delusional content may be present in the same patient.

Delusional Content and Aggressive Behavior

Persecutory delusions were the most frequently observed delusional theme (n=24, 85.7%), followed by religious/mystical delusions (n=19, 67.8%), referential delusions (n=14, 50.0%), bizarre delusions (n=11, 39.3%), grandiose delusions (n=6, 21.4%), and somatic delusions (n=2, 7.1%). A history of aggressive behavior was identified in eleven cases (39.2%) (Table II).

Relationships Between Clinical Variables

No significant difference was found between diagnostic groups in terms of the duration of CS (Kruskal–Wallis test, H(2) = 0.462, *p=0.794*). No statistically significant association was identified between schizophrenia subtype and aggressive behavior (Fisher–Freeman–Halton exact test, *p=0.415*). However, a moderate effect size was observed (Cramer's V=0.322). Post-hoc power analysis revealed low statistical power (1−β = 0.252). Similarly, no significant association was found between aggressive behavior and family history of psychiatric illness (Fisher–Freeman–Halton exact test, *p=0.352*; Cramer's V=0.253) or sex (Fisher's exact test, *p=0.705*; Phi=0.106).

When targeted individuals were dichotomized as parents versus other targets, no statistically significant association with aggressive behavior was observed

(Fisher's exact test, *p=0.701*; Phi=0.102). In analyses examining sex differences in parental targeting, the association did not reach statistical significance (Fisher's exact test, *p=0.121*), although a moderate effect size was observed (Phi=0.338). Post-hoc power analysis indicated limited statistical power (1−β = 0.432). A summary of statistical analyses examining associations between diagnosis, sex, family history, target identity, delusional content, and aggressive behavior is presented in Table III.

Table III: Associations Between Clinical Variables and Aggressive Behavior or Target Identity

Analysis	Statistical test	Result	Effect Size	Power (1−β)
Diagnosis × duration of Capgras syndrome	Kruskal–Wallis	*H(2)=0.462, p=0.794*	η^2 = 0.02	-
Schizophrenia subtype × aggression	Fisher–Freeman–Halton exact test	*p=0.415*	Cramer's V=0.322	0.252
Family history × aggression	Fisher–Freeman–Halton exact test	*p=0.352*	Cramer's V=0.253	-
Sex × aggression	Fisher's exact test	*p=0.705*	Phi = 0.106	-
Sex × parental targeting (present vs absent)	Fisher's exact test	*p=0.121*	Phi = 0.338	0.432
Visual hallucinations × aggression	Fisher's exact test	*p=0.353*	Phi = 0.198	-

Effect sizes are reported as Phi coefficients for 2×2 tables, Cramer's V for larger contingency tables, and eta-squared (η^2) for the Kruskal–Wallis test. Post-hoc power analyses were conducted for clinically relevant non-significant associations demonstrating moderate effect sizes.

Exploratory Phenomenological Analyses of Target Identity, Delusional Themes, and Aggressive Behavior

Given that multiple targets could be present within individual cases, target categories were recoded as binary presence variables (e.g., parents present vs absent; spouse present vs absent). In exploratory analyses, no significant association was found between parental presence and aggressive behavior (Fisher's exact test, *p=0.440*; Phi=0.219) or between spouse presence and aggressive behavior (Fisher's exact test, *p=0.435*; Phi=0.198). Similarly, parental presence was not significantly associated with persecutory delusions (*p=0.596*; Phi=0.204), and spouse presence was not significantly associated with mystical delusions (*p=1.000*; Phi=0.073). The detailed results of these target-based phenomenological analyses are presented in Table IV.

Table IV: Exploratory Phenomenological Patterns Between Target Presence, Delusional Themes, and Aggressive Behavior

Analysis	Statistical Test	*p value*	Effect Size
Parents present × Aggression	Fisher's exact test	*0.440*	Phi = 0.219
Spouse present × Aggression	Fisher's exact test	*0.435*	Phi = 0.198
Parents present × Persecutory delusions	Fisher's exact test	*0.596*	Phi = 0.204
Spouse present × Mystical delusions	Fisher's exact test	*1.000*	Phi = 0.073

Target categories were coded as binary presence variables (0 = absent, 1 = present) to account for overlapping target identities within individual cases. Effect sizes are reported as Phi coefficients.

Discussion

In this study, the prevalence, clinical characteristics, and phenomenological patterns of CS among inpatients hospitalized in a tertiary psychiatric clinic over a 21-year period were retrospectively examined. The findings indicate that CS represents a heterogeneous clinical condition that is not restricted to organic pathologies but emerges predominantly in the context of primary psychotic disorders.

Prevalence and Diagnostic Distribution

In the present study, the prevalence of CS was found to be 2.1%, which is consistent with previously reported prevalence rates ranging from 0.3% to 4.1% in psychiatric inpatient samples (7-9,21,22). The predominance of schizophrenia diagnoses among affected patients aligns with earlier studies indicating that CS is most frequently observed in paranoid and undifferentiated subtypes of schizophrenia (26,31,32). The relatively smaller numbers of patients with schizoaffective and bipolar disorders further support the notion that CS occurs less frequently in mood disorders.

The finding that EEG and MRI results were normal in all cases suggests that CS in this sample occurred primarily in the context of functional psychiatric disorders. However, contemporary reviews and meta-analytic data indicate that approximately 25–40% of

CS cases may have an identifiable organic etiology (14,18). In light of recent neuroimaging and lesion-network studies, the absence of detectable structural pathology does not exclude the presence of functional brain network or connectivity abnormalities (28).

It should be noted that neuroimaging findings in the present study were based on routine clinical radiological reports rather than systematic research-oriented reassessment. Therefore, subtle structural abnormalities may have remained undetected. Moreover, the absence of functional neuroimaging techniques (e.g., fMRI or PET) limited the evaluation of connectivity-based alterations, which are increasingly emphasized in lesion-network and distributed brain models of CS.

While no organic etiology was identified in the present sample, the etiological landscape of CS is diverse. A wide range of organic conditions have been reported in association with CS, including neurodegenerative disorders, cerebrovascular events, epilepsy, and frontal lobe pathologies (9-12). Contemporary neurobiological models emphasize that CS is increasingly conceptualized as a disorder of distributed brain networks rather than as a consequence of focal lesions alone (28). Lesion-network mapping and connectivity-based analyses have demonstrated the involvement of frontal, limbic, and retrosplenial regions, supporting a network-level understanding of delusional misidentification syndromes (5,19,28). The absence of detectable structural pathology in the present study does not exclude the presence of functional network abnormalities.

Clinical and Phenomenological Characteristics of Capgras Syndrome

In the present study, auditory hallucinations and delusions were observed as core symptoms in all cases, whereas visual hallucinations were present in a smaller subset (17.9%). This finding is consistent with the view that CS is characterized more by impaired emotional and cognitive interpretation of perceived information than by primary perceptual deficits (33). Persecutory delusions were the most prominent delusional content (85.7%), followed by mystical/religious and referential delusions. This distribution highlights the flexible and context-dependent nature of CS phenomenology.

Although CS can present with a broad phenomenological spectrum—including voice-specific misidentification, cases in visually impaired individuals, and misidentification of animals or inanimate objects (34-38)—all cases in the present study involved exclusively familiar persons, reflecting a more interpersonally focused clinical presentation.

Parents were the most frequently targeted individuals in this study, accounting for nearly 40% of cases, followed by spouses or partners. This predominance of emotionally close targets suggests that CS is closely linked to interpersonal attachment and trust relationships, consistent with recent multidisciplinary reviews emphasizing the central role of relational context in shaping misidentification delusions (29). The high prevalence of persecutory delusions (85.7%) and the substantial rate of aggressive behavior (39.2%) further highlight the potential clinical significance of threat perception in CS. Although descriptive differences were observed between male and female patients regarding targeted individuals, statistical analyses did not demonstrate significant associations. Similarly, formal statistical analyses did not confirm significant associations between target identity, delusional content, and aggressive behavior. These observations warrant further investigation in larger samples.

The relationship between the identity of the targeted individual, delusional content, and aggressive behavior has been highlighted in prior retrospective case series, particularly in first-episode psychosis (30). These studies suggest that interpersonal context and specific delusional themes may contribute to violence risk.

In the present study, although descriptive inspection suggested potential thematic clustering according to targeted individuals, formal statistical analyses did not demonstrate significant associations among target presence, specific delusional themes, and aggressive behavior. Effect sizes across these analyses were small.

The high overall prevalence of persecutory delusions and the overlapping nature of target categories may have reduced variability, potentially limiting the detection of subgroup differences. Thus, while previous literature underscores the potential predictive value of phenomenological features, our findings suggest that such associations may be more

subtle and sample-dependent than previously assumed.

Earlier studies have reported relatively high rates of aggression in CS (7,31,39). In the present sample, aggressive behavior was observed in fewer than half of the patients, which may reflect differences in clinical setting, comorbidity profiles, or phenomenological characteristics.

Although no statistically significant association was identified between sex and aggressive behavior, contemporary clinical frameworks emphasize that risk assessment in CS should extend beyond diagnostic categories to incorporate phenomenological features and relational context (29,30). The moderate effect size observed in sex-based relational analyses, together with low statistical power, suggests that further investigation is warranted.

In addition, several non-significant findings in this study were accompanied by moderate effect sizes but low post-hoc statistical power, particularly in analyses examining the associations of sex with parental targeting and of schizophrenia subtype with aggressive behavior. These results indicate a substantial risk of Type II error and suggest that the absence of statistical significance should be interpreted cautiously. Larger multicenter studies are required to clarify these associations.

Although CS is classically defined by the delusional belief that a familiar person has been replaced by an identical-looking impostor, clinical presentations are highly variable. Previous studies have demonstrated that misidentification in CS is not restricted to visual face recognition and may involve voice-specific misidentification, visually impaired individuals, animals, or inanimate objects (34-37,40-42). In this respect, CS is best conceptualized as part of a broader spectrum of DMS, encompassing diverse forms of familiarity disturbance rather than a single modality-specific impairment (5,6,38,43).

In the present study, however, the entities believed to have been replaced were limited to familiar persons. Moreover, no systematic assessment of visual–auditory dissociation was available in the retrospective clinical records. These findings may reflect both the characteristics of the study sample and the limitations inherent to retrospective designs, and they highlight the need for future prospective studies incorporating detailed multimodal perceptual and neuropsychological assessments.

The findings of this study highlight the importance of systematically assessing the identity of the targeted individual and the nature of delusional content in the clinical evaluation of CS. Although statistical analyses did not demonstrate robust associations between specific target–content combinations and aggressive behavior, the relational and phenomenological dimensions of misidentification remain clinically relevant.

Risk assessment in CS should therefore extend beyond diagnostic categories to incorporate the interpersonal context, emotional salience of delusional beliefs, and the presence of persecutory themes. Given that aggression was observed in a substantial proportion of cases, careful evaluation of threat perception and relational dynamics may contribute to more comprehensive clinical management.

Integrating phenomenological features into routine assessment may enhance individualized treatment planning, particularly in inpatient settings where acute psychotic symptoms and interpersonal tensions frequently coexist.

This study has several strengths. First, because it was conducted in a tertiary psychiatric hospital and covered a 21-year period, it represents one of the most comprehensive single-center case series on CS. Second, detailed clinical, sociodemographic, and diagnostic data were systematically extracted from hospital records. Third, the inclusion of variables such as family history, educational level, target identity, delusional content, and aggressive behavior enabled a multidimensional evaluation of the clinical and phenomenological features of CS.

However, several limitations must be acknowledged. First, the retrospective design limits causal inference and renders the findings dependent on the quality and completeness of archived documentation. Over the 21-year study period, record-keeping practices evolved, including the transition from paper-based files to electronic medical records. Although core psychiatric assessment procedures remained institutionally standardized, variability in documentation detail across years may have influenced data completeness and phenomenological characterization.

Second, although CS cases were identified using predefined operational criteria and independent dual review, the diagnosis was based on clinical documentation rather than a structured diagnostic instrument specifically validated for CS. Preliminary independent ratings were not archived in a format permitting retrospective calculation of formal inter-rater agreement statistics (e.g., Cohen's kappa). While consensus procedures were implemented to minimize diagnostic bias, formal reliability coefficients could not be reported.

Third, although EEG and structural MRI findings were available for all cases, imaging data were derived from routine clinical radiological reports and were not systematically re-evaluated for research purposes. Subtle structural abnormalities may therefore have remained undetected. In addition, functional neuroimaging techniques (e.g., fMRI or PET) were not available within the scope of this retrospective review, limiting conclusions regarding connectivity-based or network-level dysfunction.

Fourth, the absence of a comparison group consisting of patients with schizophrenia or other psychotic disorders without CS limits the ability to determine which observed characteristics are specific to CS and which may reflect broader features of chronic psychosis. Because the study was designed as a prevalence and case-characterization analysis, systematic parallel data extraction from non-CS patients was not performed. Future controlled studies are required to clarify syndrome-specific features.

Fifth, diagnostic classifications changed during the study period, including the transition from DSM-IV to DSM-V. The schizophrenia subtype distinctions reported in this study reflect DSM-IV criteria that were in use at the time of hospitalization, as DSM-V eliminated formal subtype categories. Therefore, subtype-based analyses should be interpreted within their historical diagnostic framework rather than according to contemporary DSM-V nosology.

Finally, the relatively small number of CS cases reduced statistical power in subgroup analyses. Several non-significant findings were accompanied by moderate effect sizes but low post-hoc power, indicating a potential risk of Type II error. Larger multicenter prospective studies will be necessary to confirm these associations.

Conclusion

This study represents one of the largest single-center investigations in Türkiye to examine the clinical characteristics of CS in patients with psychiatric disorders. In this sample, CS was predominantly observed in the context of primary psychotic disorders and was characterized by substantial clinical and phenomenological heterogeneity. Although certain descriptive patterns were observed regarding target identity, delusional themes, and aggressive behavior, statistical analyses did not demonstrate robust associations between these variables. These findings underscore the complexity of CS and suggest that its clinical expression may reflect the interaction of relational, phenomenological, and neurobiological factors rather than discrete subtype-specific patterns. The absence of detectable structural abnormalities in routine imaging does not preclude network-level dysfunction, and future studies incorporating functional neuroimaging and connectivity-based approaches are needed to further elucidate the neural mechanisms underlying CS. Prospective, multicenter investigations with larger samples, standardized neuropsychological assessments, and appropriate comparison groups will be essential to clarify risk factors, phenomenological variability, and potential predictors of aggression in this population. Overall, continued research into CS and other DMS may contribute substantially to advancing our understanding of delusion formation, familiarity processing, and distributed brain network dysfunction.

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