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Attachment representations in individuals diagnosed with schizophrenia: A projective study through the bird's nest drawing

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ABSTRACT

Objectives: This study aims to explore the attachment representations of individuals diagnosed with schizophrenia through the Bird's Nest Drawing, a projective technique. It also seeks to compare the findings with those of individuals without a schizophrenia diagnosis to identify potential differences in attachment-related imagery and narrative themes.

Methods: A total of 100 participants took part in the study: 50 individuals diagnosed with schizophrenia and 50 without any psychiatric diagnosis. Each participant was asked to draw a bird's nest and write a brief narrative about their drawing. Quantitative data were analyzed using chi-square tests. Qualitative analysis was conducted through thematic evaluation of narratives from 15 randomly selected participants from each group.

Results: Quantitative analysis showed statistically significant group differences in several aspects of the drawings, including the presence of parent bird and chick/egg, use of appropriately colored figures, frequent use of green, and whether the nest touched a surface. Qualitative analysis revealed that narratives of individuals with schizophrenia included themes of loneliness, mistrust, unmet basic needs, and disconnection from the nest. Conversely, narratives of individuals without schizophrenia reflected familial closeness, caregiving, and emotional security.

Conclusions: The results suggest that individuals with schizophrenia project attachment-related difficulties - such as distrust, disconnection, and impaired bonding - more prominently in both their drawings and written narratives. The BND test appears to be a meaningful tool for exploring attachment dynamics at the projective level in clinical populations.

Keywords: Schizophrenia, attachment, projective drawing, bird's nest drawing

Attachment theory posits that the emotional bonds formed between an individual and their primary caregiver during early childhood leave lasting impacts on interpersonal relationships, emotion regulation capacity, and self-perception throughout life [1, 2]. According to this perspective, secure attachment developed in early childhood contributes to healthier social relationships, more effective coping with stress, and greater psychological resilience [3]. On the other hand, insecure or avoidant attachment

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patterns can lead to a decrease in the individual's basic sense of trust, difficulties in social interactions, and impaired psychological functioning [4]. Recent studies have shown that attachment styles are an important factor that affects not only social adjustment but also the development of psychopathological processes [5, 6].

Although Bowlby [2] originally developed attachment theory to explain childhood development, it has since evolved into a valuable framework for understanding adult psychopathology as well [7, 8]. Attachment representations are known to influence various psychological functions, particularly emotional regulation, self-image, and interpersonal relationships. Disruptions in these areas may contribute to the onset of psychiatric disorders. Among these, schizophrenia is considered a complex and heterogeneous mental condition, believed to result from abnormalities in brain development shaped by the interplay of genetic predispositions and psychosocial influences [9]. The disorder is commonly characterized by impaired social functioning; individuals may experience difficulty in engaging with others or maintaining social support [10]. Interestingly, researchers emphasize that attachment styles not only influence how psychological disorders begin, but also how they progress over time [11]. It is believed that these attachment dynamics affect both the severity of symptoms and the individual's level of daily functioning [8]. In this context, the possible links between attachment process disruptions and psychotic disorders such as schizophrenia are increasingly being investigated. Indeed, numerous studies have shown that individuals diagnosed with schizophrenia often exhibit insecure attachment styles [7, 12].

Evaluating attachment styles in individuals diagnosed with schizophrenia provides a more comprehensive understanding of psychopathological symptoms and contributes to the development of tailored intervention plans [7]. Assessment tools used in this context range from self-report measures that evaluate insight into past attachment experiences and relational patterns to semi-structured clinical interviews that address deeper psychodynamic structures [5]. However, in cases such as schizophrenia, where disturbances in thought processes and reality testing are observed, individuals may have limitations in verbal expression. Thus, projective assessment methods gain importance as complementary tools for understanding attachment representations [13].

One such projective assessment tool is the Bird's Nest Drawing (BND) test, which enables individuals to symbolically and creatively express emotional traces related to early caregiver-child relationships [14]. In this task, individuals are asked to first draw a bird's nest and then write a brief story about their drawing. The number of birds, contents of the nest, its location, environmental features, and overall organization offer projective cues regarding the individual's sense of emotional security and their relational representations of caregiving figures [14, 15]. Because the test includes both visual and narrative elements, it allows for the simultaneous assessment of verbal and visual expression while providing rich material for psychodynamic interpretations based on attachment theory. The nest - symbolizing safety, shelter, protection, and relational bonding—facilitates the symbolic reflection of unconscious dynamics related to the individual's attachment system [16, 17].

A review of the existing literature reveals that most studies examining attachment representations in individuals with schizophrenia rely primarily on self-report measures. This has led to an overly surface-level and verbal exploration of attachment processes. However, the cognitive impairments, attention difficulties, and limited insight commonly observed in schizophrenia may pose challenges and limitations in administering such instruments. In an effort to overcome these limitations and explore attachment representations in a more in-depth manner, the present study employed a projective technique - the BND test.

In this study, both quantitative and qualitative data derived from the BND test were analyzed, and the following hypotheses were tested:

H1: The frequency of visual elements in the BND test that indicate attachment representations (e.g., presence of chick/parent figures, contact with a surface, appropriate use of color) will differ significantly between individuals diagnosed with schizophrenia and those without a diagnosis.

H2: The thematic content emerging in participants' narratives about their BNDs will reflect their attachment representations, and there will be significant differences in these themes between individuals with and without a diagnosis of schizophrenia.

METHODS

Research Design

This study was built on a qualitative framework, embracing a multi-method approach that brought together different ways of gathering insight. In this process, both the visual expressions found in participants' drawings and the words they used to describe them were carefully examined. Drawing on diverse data collection techniques to explore a shared theoretical focus was seen as a meaningful way to strengthen the credibility and depth of the findings [18]. Moreover, the analysis did not rely on a single perspective; instead, it was enriched through the inclusion of multiple data sources, allowing the research to rest on a more grounded and trustworthy foundation [19]. Although the study incorporates both qualitative and quantitative analyses, the quantitative data were derived entirely from the categorical coding of qualitative material obtained through the BND test and accompanying narratives. Therefore, the methodological orientation of the research remains within a qualitative framework, with quantitative analyses serving to complement and further substantiate the qualitative findings.

Participants

The study sample consisted of a total of 100 participants, including 50 individuals diagnosed with schizophrenia and 50 individuals with no psychiatric diagnosis. The ages of the schizophrenia group ranged from 23 to 49 years, with 31 men and 19 women. The comparison group, composed of individuals without a diagnosis of schizophrenia, ranged in age from 21 to 46 years, with 29 women and 21 men. Participants in the schizophrenia group were recruited from volunteers receiving inpatient treatment at a private care center in Istanbul. In terms of clinical characteristics, all individuals in the schizophrenia group had a chronic diagnosis of schizophrenia and were undergoing antipsychotic treatment. Most were receiving atypical antipsychotics, while some were prescribed typical agents or combination therapy. The duration of illness varied: 12 participants had been diagnosed for 5 years or less, 15 for 6-10 years, 13 for 11-15 years, and 10 for more than 15 years. Regarding education, 18 participants had completed primary school, 20 had completed middle school, 9 had finished high school, and 3 were university graduates. In terms of marital status, 40 were single, 8 were married, and 2 were divorced. Individuals in the non-schizophrenia group were selected from adults with no history of psychiatric illness. To determine whether the sample size was statistically adequate, a power analysis was conducted using the G*Power 3.1 program. In social sciences, a statistical power of 80% ($1-\beta = 0.80$) is generally considered sufficient. Based on this criterion, with a medium effect size (Cohen's $w = 0.30$) and a significance level of $\alpha = 0.05$, the analysis indicated that a minimum of 87 participants would be required. Thus, the inclusion of 100 participants (50 with schizophrenia and 50 without psychiatric diagnoses) ensured sufficient statistical power for the study.

Data Collection Procedure

Before beginning the study, the director of the Private Karanfil Care Center in Istanbul - where the research would take place - was consulted, and written permission was kindly granted to carry out the study at the institution. Following this approval, all required documents were prepared and submitted to the Ethics Committee of Istanbul Kent University. Ethical clearance was formally granted with the decision numbered 2025/06, dated 01.07.2025. Participants who voluntarily agreed to be part of the study were individually interviewed. Each was informed in detail about the study's purpose, the procedures involved, and how data would be collected. Their verbal and written consent was respectfully obtained before proceeding. During the session, every participant was offered an A4-sized sheet of paper and a set of colored pencils. They were gently encouraged with the following instruction: "I'd like you to draw a bird's nest. Please feel free to use any colors you wish." After they completed their drawings, they were asked softly, "Is your drawing finished? Would you like to add anything else?" Once the drawing was finalized, participants were then invited to write a short story describing the nest they had drawn. All drawings were later reviewed by the lead researcher and two clinical psychologists. The researcher holds a doctorate in psychology and has conducted multiple studies in the areas of art therapy and projective drawing assessments. The other two professionals are trained clinical psychologists with established experience in art-based therapeutic evaluations.

Data Collection Tools

In order to explore attachment representations through projective means, two main tools were used in this study: a Demographic Information Form and the BND test.

Demographic Information Form

It was designed by the researcher to collect data on the basic sociodemographic characteristics of the participants. The form includes questions about the participants' identifying information, such as gender and age.

Bird's Nest Drawing (BND) Test

The BNDTest, first introduced by Kaiser in 1996 and later adapted for Turkish populations by Demirbağ (2016), is a projective technique aimed at exploring individuals' implicit attachment patterns through visual symbolism. In its administration, participants receive a blank A4 sheet and colored pencils, and are simply invited to "draw a bird's nest," with no additional guidance. This open-ended approach allows for the free emergence of symbolic themes related to attachment experiences.

For consistent evaluation, the Turkish adaptation applies the BND Assessment Scale, which consists of 12 dichotomous items scored as 1 ("present") or 0 ("absent"). These items capture both the compositional and symbolic qualities of the drawing, such as:

1. Presence of a parent bird in or near the nest
2. Presence of a baby bird or eggs in or near the nest
3. Use of green as the dominant color
4. Utilization of more than 20% of the total page area
5. Inclusion of a sun symbol
6. Inclusion of a cloud symbol
7. Presence of "M"-shaped birds in the sky
8. Presence of additional decorative or contextual elements (e.g., flowers, pets)
9. Use of realistic colors for depicted objects
10. Nest illustrated as trapped inside the tree trunk (reverse scored)
11. Nest placed on a visible supporting surface (e.g., branch, leaf, ground)
12. Presence of both a parent bird and a baby bird or egg.

Higher scores on the scale are interpreted as reflecting more secure attachment representations, whereas the reverse-scored item (nest trapped in the trunk) is associated with symbolic restriction or confinement. The rubric was developed through comparative analysis of drawings from individuals with differing attachment styles. Reliability analyses indicated inter-rater agreement ranging from .66 to 1.00 for individual items, with overall internal consistency coefficients of .70 (KR-20) and .73 (split-half). Criterion validity was supported by a statistically significant, moderate positive correlation with Kern's Secure Attachment Scale ($r = .34$, $P<0.01$).

Statistical Analysis

In the qualitative phase of the study, participants' BNDs and the narratives they produced to accompany them were examined through a thematic analysis process. The analysis began with familiarization with the data, during which the drawings and narratives were reviewed multiple times to capture initial impressions and recurring elements. Coding was then carried out, distinguishing between two main categories: predetermined themes derived from existing literature (e.g., security, nurture, isolation) and emergent themes that arose inductively from the participants' own expressions. The thematic framework was refined through an iterative process of reviewing and grouping related codes, followed by naming and defining the themes. The drawings and narratives were independently evaluated by the lead researcher and two domain experts, after which evaluations were compared to identify consensus and discrepancies. Inter-rater reliability was calculated using the formula previously described [20]: Reliability = Agreement / (Agreement + Disagreement), yielding a reliability score of 90%, which exceeds the commonly accepted threshold of 70% in social research. Additionally, Cohen's Kappa coefficient was computed to provide a chance-corrected measure of agreement, with $\kappa = 0.88$, indicating a high level of coding consistency. In the quantitative phase, descriptive statistics were used to compare drawing-based data between participants diagnosed with schizophrenia and those without any psychiatric diagnosis. Group differences in categorical variables were examined using the Chi-Square Test, as this method is particularly suitable for assessing the significance of associations in qualitative data across independent groups [21].

RESULTS

This section presents findings based on the evaluation of data obtained from the "BND test" for the purpose of examining the attachment status of 50 participants diagnosed with schizophrenia and 50 participants without any psychiatric diagnosis (Table 1).

The evaluation of BND criteria revealed statistically significant differences in several core drawing features between individuals diagnosed with schizophrenia and those without such a diagnosis. Significant group differences were found for the presence of a parent bird in or near the nest ($\chi^2(1)= 4.52$, P=0,033, w= 0.21), the inclusion of a chick or egg ($\chi^2(1)= 4.54$, P=0,033, w= 0,21), green being the dominant color ($\chi^2(1)= 4.40$, P=0.036, w= 0.21), the appropriateness of coloring relative to the nature of the depicted objects ($\chi^2(1)= 21.72$, P<0.001, w= 0.47), the nest making contact with a visible surface ($\chi^2(1)= 22.04$, P<0.001, w= 0,47), and the depiction of both a parent bird and a chick/egg together ($\chi^2(1)= 11.63$, P<0.001, w= 0,34). In contrast, no significant differences were

Table 1. Comparison of attachment representations between participants with and without a schizophrenia diagnosis

BND Evaluation Criteria		Diagnosed with Schizophrenia	Not Diagnosed with Schizophrenia	χ2	P Value	Cohen's w
1. Is there a parent bird in or near the nest?	Yes	28 (56%)	39 (78)	4.52	**0.033***	0.213
	No	22 (44%)	11 (22%)			
2. Is there a chick or egg in or near the nest?	Yes	37 (74%)	46 (92%)	4.54	**0.033***	0.213
	No	13 (26%)	4 (8%)			
3. Is green the dominant color?	Yes	12 (24%)	23 (46%)	4.4	**0.036***	0.210
	No	38 (76%)	27 (54%)			
4. Is more than 20% of the paper surface used?	Yes	48 (96%)	42 (84%)	2.78	0.096	0.167
	No	2 (4%)	8 (16%)			
5. Is there a sun figure?	Yes	4 (8%)	9 (18%)	1.42	0.234	0.119
	No	46 (92%)	41 (82%)			
6. Is there a cloud figure?	Yes	4 (8%)	6 (12%)	0.11	0.738	0.033
	No	46 (92%)	44 (88%)			
7. Are birds drawn in an "M" shape?	Yes	3 (6%)	5 (10%)	0.14	0.712	0.037
	No	47 (94%)	45 (90%)			
8. Are there additional figures like flowers or pets?	Yes	18 (36%)	27 (54%)	2.59	0.108	0ş161
	No	32 (64%)	23 (46%)			
9. Is the coloring appropriate to the nature of the figures?	Yes	17 (34%)	41 (82%)	21.72	**0.001***	0.466
	No	33 (66%)	9 (18%)			
10. Is the nest enclosed within the trunk of a tree (if present)?	Yes	0 (0)	2 (4%)	0,51	0.475	0.071
	No	50 (100%)	48 (96%)			
11. Is the nest in contact with the ground (branch, leaf, etc.)?	Yes	18 (36%)	42 (84%)	22.04	**0.001***	0.469
	No	32 (64%)	8 (16%)			
12. Are parent and chick/egg birds drawn together?	Yes	18 (36%)	36 (72%)	11.63	**0.001***	0.341
	No	32 (64%)	14 (28)			

Data are shown as n (%). BND=Bird's Nest Drawing
*P<0.05.

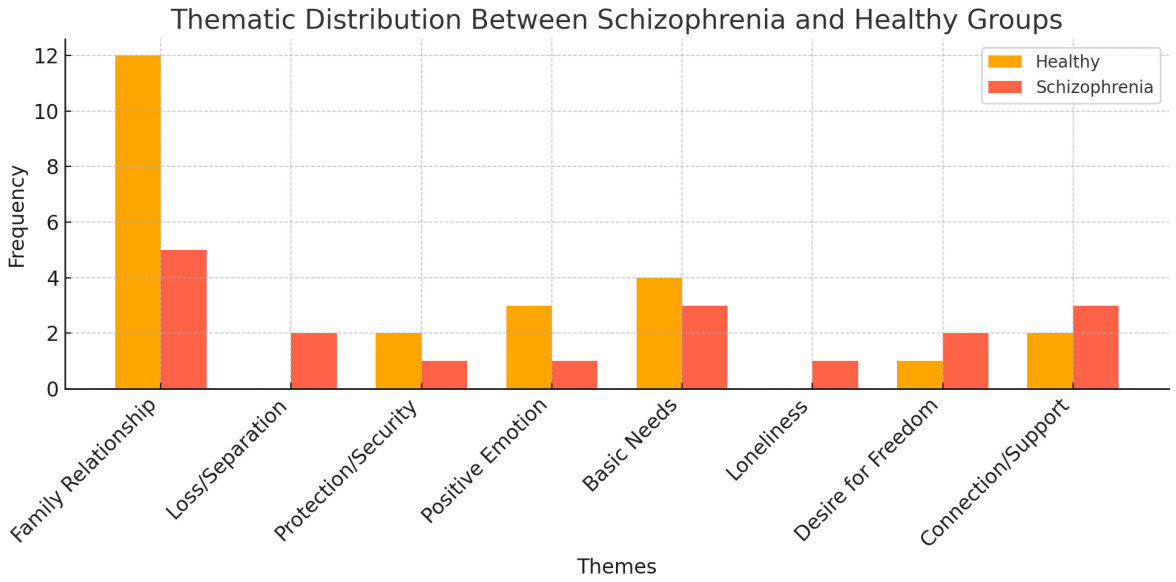

Fig. 1. Thematic distribution between the schizophrenia group and the control group.

observed between the groups in the use of more than 20% of the paper surface (P=0.096), inclusion of a sun figure (P=0.234), presence of clouds (P=0.738), "M"-shaped birds (P=0.712), additional figures such as flowers or pets (P=0.108), or nests enclosed within a tree trunk (P=0.475).

The quantitative findings indicate that significant differences exist between the two groups in terms of specific visual criteria related to the BND. However, in order to gain a deeper understanding of how these numerical differences reflect individuals' inner experiences, emotional patterns, and attachment representations, the written narratives accompanying the drawings were analyzed qualitatively. In this context, the narratives of 15 participants diagnosed with schizophrenia and 15 without a diagnosis were examined using discourse analysis. The aim was to explore how attachment representations are shaped through verbal and metaphorical expressions, and to identify themes that demonstrate similarities and differences between the two groups. The discourse themes, along with illustrative excerpts and content patterns from both groups, are presented below (Fig. 1).

The thematic analysis revealed that themes such as loneliness, desire for freedom, loss/separation, and basic needs were more frequently repeated in the stories of individuals diagnosed with schizophrenia. In contrast, themes such as family relationships, protection/security, and positive emotions were more prominent in the narratives of individuals who were not

Table 2. Group frequencies and descriptions by theme

Theme	Non-Schizophrenic group	Schizophrenic group
Family relationships	12	5
Loss/separation	0	2
Protection/security	2	1
Positive emotions	3	1
Basic needs	4	3
Loneliness	0	1
Desire for freedom	1	2
Connection/support	2	3

Fig. 2. **Sample bird's nest drawings by participants diagnosed with schizophrenia.**

diagnosed with schizophrenia.

When examining Table 2, themes such as access to basic needs, desire for freedom, loneliness, and loss are prominent in the stories of individuals diagnosed with schizophrenia. Metaphorical narratives such as "homelessness," "not being able to find food," "loneliness," and "spreading one's wings toward freedom," which are frequently encountered in these stories, indicate that the individual may have a weak secure attachment experience and emotional regulation difficulties. In addition, religious or mystical content has been observed in some narratives. In the written narratives of individuals who have not been diagnosed, the stories are generally shaped around family structure, caregiving, cohabitation, protection, and positive emotions. Motifs such as "the mother bird feeding her young," "family nest selection," and "spring and living in harmony with nature" provide clues about secure attachment representations and the capacity to form sustainable social relationships.

The final part of the findings section presents selected examples of bird's nest drawings created by both individuals with and without a schizophrenia diagnosis (Figs. 2 and 3).

DISCUSSION

This study examined the attachment representations of individuals diagnosed with schizophrenia and those without a diagnosis through the BND test and accompanying narratives. Quantitative findings revealed statistically significant differences between the two groups in several criteria, including the presence of parent and chick/egg bird figures, the use of green as a dominant color, appropriate coloring in line with the nature of the figures, and whether the nest was depicted in contact with a surface. Qualitative analysis showed that narratives by individuals with schizophrenia prominently featured themes such as loneliness, distrust, and loss. These findings indicate that individuals diagnosed with schizophrenia display more pronounced signs of insecure attachment representations.

In evaluating the drawings, the presence of parent birds, chick/egg figures, and similar components were notably less frequent among participants with schizophrenia compared to the non-clinical group, with these differences being statistically significant. These figures are often seen as indicators of familial unity and emotional closeness. Projective depictions of family-related elements can offer insights into individuals' internal representations of attachment and family dynamics. According to Akoğlu [22], in family-themed drawings, the presence, number, and spatial closeness of figures may reflect emotional bonds within the family.

Therefore, the significantly reduced inclusion of parent and chick/egg figures in drawings by partici-

Fig. 3. **Sample bird's nest drawings by participants without a schizophrenia diagnosis.**

pants with schizophrenia suggests possible deficits or weaknesses in their internalized family representations. Studies by Ebrinç *et al*. [23] and Karancı [24] emphasize that individuals diagnosed with schizophrenia frequently experience attachment-related traumas, emotional neglect, and inconsistent caregiving during childhood. Bowlby [2] argued that the absence of early secure attachment experiences can negatively impact the development of self-perception and trust in others. As a result, such individuals may perceive the external world as threatening and withdraw from relationships. The absence of parent and offspring bird figures in their drawings may thus be interpreted as a projective expression of these attachment-based difficulties. Furthermore, Tüzer *et al*. [25] highlight that families of individuals with schizophrenia often exhibit negative interaction patterns, including high expressed emotion, critical attitudes, and overprotectiveness, which may disrupt the individual's sense of safety and attachment system. Therefore, the lack of family figures in drawings should not be seen merely as an artistic limitation but rather as a clinically significant indication of restricted cognitive and emotional representations of familial experiences.

The findings also revealed significant differences in whether green was used as the dominant color and whether the coloring was appropriate to the nature of the figures. Green, symbolizing nature, vitality, and continuity of life, has been associated with secure attachment patterns in previous research [16, 17, 26]. In this study, participants with schizophrenia were found to use green less frequently and to demonstrate less consistency in coloring the figures appropriately compared to their non-diagnosed peers. This aligns with the findings of Shen *et al*. [27], who noted that individuals with schizophrenia tend to use fewer colors in projective drawings.

One of the most notable findings in this study was the frequent depiction of bird nests floating in space - disconnected from any visible ground - among individuals diagnosed with schizophrenia. When evaluated within the framework of Bowlby's [2] attachment theory, this situation shows that an individual's ability to position themselves on secure ground, emotionally and physically attached to a "support point," is based on early attachment experiences. Therefore, representations of a groundless home may reflect the individual's inability to construct a sense of inner security, to sufficiently internalize a sense of belonging, and to establish consistent bonds with their social environment. In this context, Liotti [6] states that early attachment traumas and unresolved experiences lead to fragmentation, inconsistency, and discontinuity in the individual's mental representations, deeply affecting their relationships with the outside world. Similarly, Uzun and Aslan [28] have shown in their pre-published studies that despite the desire of individuals diagnosed with schizophrenia to belong to society, experiences of exclusion and stigmatization seriously undermine this feeling. Barut *et al*. [29] also noted that themes of lack of belonging, loneliness, and social isolation are dominant in the lives of individuals on the schizophrenia spectrum. The fact that participants frequently describe themselves as "excluded," "lonely," and "not belonging anywhere" shows that the lack of belonging plays an important role in their mental structure. All these findings suggest that the presence of groundless nests in projective drawings is not merely an aesthetic choice but also a symbolic expression of the difficulties individuals experience in representing internal security, belonging, and relational integrity. In this context, the nests suspended in empty space appear not as mere artistic elements but as visual metaphors for emotional dislocation, relational fragmentation, and an enduring search for stability.

For some drawing criteria, no statistically significant differences were found between the groups. Specifically, the inclusion of elements such as the sun, clouds, "M"-shaped birds, flowers, or pets, the nest being enclosed in a tree trunk, and the proportion of paper used did not differentiate the groups significantly. These elements may reflect individual drawing style, personal expression, or aesthetic preference rather than attachment-related content. In projective assessments, the contextual and relational content of figures is more meaningful for psychodynamic interpretation, whereas elements that lack symbolic depth or direct relevance to the attachment system may have limited interpretability [30]. Therefore, the non-significant differences in these elements may be attributed to individual stylistic variation or non-attachment-based representations.

Qualitative findings further support the quantitative results, showing that individuals with schizophre-

nia expressed themes of unmet basic needs, desire for freedom, loneliness, and loss. Metaphorical expressions such as "lack of a nest," "inability to find food," "being alone," and "spreading wings toward freedom" suggest an unmet need for a secure attachment figure and underdeveloped emotional regulation mechanisms. According to attachment theory, a lack of trust-based early relationships with caregivers may lead to internal representations shaped by themes of distrust, abandonment, and isolation [31, 32]. In contrast, narratives from the non-clinical group included more positive themes such as "mother bird feeding her chicks," "building a nest as a family," and "living in harmony with spring and nature," reflecting secure attachment experiences, a sense of belonging, protection, and sustained social bonds. These contrasting themes suggest that individuals with schizophrenia exhibit signs of attachment disruptions and psychosocial deprivation, while the non-clinical group displays more coherent and positively internalized attachment systems.

Previous research employing various projective drawing techniques has also identified distinct visual and structural features associated with schizophrenia, supporting the present study's findings. For example, Kaneda *et al*. [33] compared tree-drawing test results between chronic schizophrenia patients and healthy controls, reporting significant differences in key structural indicators such as trunk width, base opening, branch-end size, and the ratio of tree area to paper area. These findings parallel the current study's observations that spatial organization and structural completeness in projective drawings may reflect underlying cognitive and emotional processing differences. Similarly, Teneycke *et al*. [34], using the bridge-drawing task, found that individuals with psychosis differed from control groups in formal art characteristics, including color choice, accuracy, and symbolic placement of elements such as the "future," suggesting that spatial-symbolic decisions in drawings may reveal altered perceptions and relational schemas. In a different cultural context, Iqbal *et al*. [35] analyzed emotional indicators in Draw-a-Person tests and observed that certain features - such as omission of key body parts, gross disproportions, and vacant eyes - occurred more frequently in the drawings of individuals with schizophrenia. Taken together, these studies align with the present findings by indicating that projective drawings, across diverse formats and cultural settings, capture meaningful markers of impaired integration, diminished symbolic coherence, and disrupted attachment representations in schizophrenia.

Limitations

While the findings contribute valuable insights to the literature, certain limitations should be acknowledged. First, the relatively small sample size and the recruitment of participants from a single institution limit the generalizability of the results. In particular, selecting participants exclusively from one private care center may have restricted the diversity of the sample in terms of socioeconomic background, cultural experiences, and clinical profiles. Second, the study relied solely on projective visual (BND) and narrative (storytelling) methods without incorporating standardized psychometric scales to measure attachment. As a result, the conclusions regarding attachment styles were based on indirect, interpretative analyses rather than objective, measurable data. Although projective techniques offer rich qualitative insights into the individual's inner world, they are limited in their ability to yield categorical classifications for complex constructs such as attachment. A more robust approach would have involved combining projective techniques with standardized attachment scales to enhance both the reliability and validity of the interpretations. Therefore, conclusions drawn regarding attachment representations should be interpreted cautiously and within the scope of these methodological limitations. Additionally, it should be noted that most participants with schizophrenia were on antipsychotic or other psychotropic medications, which may affect cognitive functioning, motor skills, and expressive behaviors (e.g., drawing performance, color use, narrative clarity). Thus, the performance exhibited in drawing and storytelling tasks may be influenced not only by psychopathology but also by medication effects. This presents another methodological limitation that complicates attributing projective findings solely to attachment representations.

Given the limitations noted in this study—such as single-site sampling, the absence of standardized attachment measures, and the potential influence of medication effects—future research should adopt mixed-method designs that integrate projective drawing and narrative techniques with validated attachment scales. Such an approach would not only strengthen

the validity and reliability of attachment assessment in schizophrenia but also bridge the gap between qualitative depth and quantitative precision. Longitudinal studies are particularly warranted to examine how attachment patterns influence clinical course, treatment adherence, relapse rates, and social reintegration over time. Future investigations should aim to control for neurobiological confounders, including the cognitive and expressive effects of psychotropic medication, by comparing medicated and non-medicated groups or statistically adjusting for medication status. Expanding recruitment to multiple sites with diverse cultural and socioeconomic backgrounds would improve the generalizability of findings and facilitate cross-cultural comparisons of attachment-related imagery. To ensure cross-cultural applicability, standardized measures should undergo cultural adaptation and validation prior to integration with projective techniques. From a methodological perspective, the symbolic and psychodynamic meanings of visual elements in projective drawings should be examined alongside thematic and contextual narrative analyses, potentially supported by computational tools such as visual content analysis software. Clinically, embedding attachment-sensitive principles into psychoeducation, individual therapy, and family interventions may foster more secure relational patterns and enhance psychosocial functioning. Finally, projective drawing techniques should be considered not only as diagnostic tools but also as therapeutic interventions that can promote emotional expression, strengthen self-awareness, and support the therapeutic alliance. Embedding these approaches into rehabilitation programs for individuals with schizophrenia may encourage insight, adaptive coping, and more holistic treatment outcomes.

CONCLUSION

In conclusion, the findings of this study suggest that the attachment representations of individuals with schizophrenia differ significantly from those without a diagnosis, both in visual drawings and narrative content. The presence or absence of specific figures in the BND, structural integrity of the drawings, and color choices were interpreted as projective reflections of the internal attachment system. The absence of parent and offspring bird figures, depiction of nests as floating and ungrounded, and limited use of appropriate coloring in the drawings of individuals with schizophrenia suggest weakened secure attachment experiences and vulnerabilities in emotional regulation and relational functioning. These findings were reinforced by qualitative data, which revealed themes of loneliness, rootlessness, unmet basic needs, and loss in the schizophrenia group. In contrast, drawings and narratives by the non-clinical group emphasized familial togetherness, caregiving, protection, and secure attachment patterns. Evaluated within the framework of attachment theory, all findings suggest that the qualitatively poor early caregiving experiences of individuals with schizophrenia significantly shape their internal representations, with implications for both psychopathology and social functioning.

Ethics Approval and Consent to Participate

This study was approved by the Istanbul Kent University Social and Human Sciences Ethics Committee (Decision No: 2025/06; date: 01.07.2025). All procedures were conducted in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments. Written informed consent was obtained from all individual participants included in the study.

Data Availability

All data generated or analyzed during this study are included in this published article. The data that support the findings of this study are available on request from the corresponding author, upon reasonable request.

Authors' Contribution

Study Conception: VD; Study Design: VD; Supervision: VD; Funding: VD; Materials: VD; Data Collection and/or Processing: VD; Statistical Analysis and/or Data Interpretation: VD; Literature Review: VD; Manuscript Preparation: VD; and Critical Review: VD.

Conflict of Interest

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Generative Artificial Intelligence Statement

The author(s) declare that no artificial intelligence-based tools or applications were used during the preparation process of this manuscript. The all content of the study was produced by the author(s) in accordance with scientific research methods and academic ethical principles.

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