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ORIGINAL ARTICLE

A mirror that does not create a self-portrait: narrative and behavioral disturbances in the Mirror Procedure among individuals with schizophrenia

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BACKGROUND
Alienation from one's mirror reflection is a hallmark of identity disintegration in schizophrenia. This study investigated whether observing one's reflection during the Mirror Procedure (MP) was more frequently associated with narrative disturbances, atypical behaviors, and nonverbal signs of tension in individuals with schizophrenia compared to healthy controls. Additionally, the relationship between narrative disruptions in MP and clinical characteristics of schizophrenia and disturbances in the bodily identity measured by questionnaire was examined in a clinical group.

PARTICIPANTS AND PROCEDURE
The sample included 82 individuals diagnosed with schizophrenia in a stable mental state and 82 matched controls. All participants completed the Bodily Identity Questionnaire and took part in the MP. Narratives elicited during the MP were evaluated for both content and formal disturbance. Atypical behaviors and nonverbal signs of tension were also coded.

RESULTS
Compared to controls, participants with schizophrenia displayed more narrative disturbances and atypical behaviors, but fewer nonverbal signs of tension. Only in the clinical group were narrative disruptions in the MP associated with altered bodily self-identity as measured by the questionnaire.

CONCLUSIONS
The findings suggest that visual activation of body representation in schizophrenia triggers both narrative and behavioral disorganization. While healthy individuals experienced elevated emotional tension, their narratives remained coherent, though often negative. In contrast, the disorganized speech and behaviors observed in schizophrenia stem from the disembodiment of the self rather than from dissatisfaction with appearance. The MP appears to validly assess bodily identity disturbances specifically in schizophrenia, as only this group showed a consistent association between narrative and questionnaire-based measures.

KEY WORDS
schizophrenia; body image; mirror; disembodiment

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BACKGROUND

The recognition of oneself in a mirror image is one of the first manifestations of self-awareness and a sense of identity (Thirioux et al., 2016). The crucial role of this experience in structuring mental life has been emphasized in developmental psychology (Rochat, 2024; Wallon, 1987), psychoanalysis (Lacan, 2006), and phenomenological perspective (Poletti & Raballo, 2023). According to the latter conceptualization, extended by a neurocognitive framework, observing one's reflection in a mirror involves a process of mapping – that is, aligning a two-dimensional visual projection with the subjective proprioceptive experience of the body. In schizophrenia, due to early neurodevelopmental constraints, this integration is disrupted (Poletti & Raballo, 2023). Within the Lacanian psychoanalytic framework, the emphasis is placed on the psychological process of identification with one's own body during the mirror stage, in which a stable and coherent self-image emerges (Lacan, 2006). For a child, who initially lacks control over their body (motility, emotions), the mirror stage serves a structuring function, as it leads to the formation of a psychological matrix (representation) around which further self-images crystallise. Through identification with this coherent image of the body, sensations, affects, and thoughts undergo gradual integration, which manifests in a sense of identity, encompassing the coherence of the body, its continuity in time and space, the sense of its boundaries (Sakson-Obada et al., 2018; Sakson-Obada, 2020). Failures in successfully passing through the mirror stage can be observed in individuals with schizophrenia, where disruptions in the perception and integration of experience lead to unstable, incoherent, and chaotic representations of the self and the body. At the core of these disturbances is a schizophrenia-specific disembodiment, in which bodily experience fails to be subjectivized at a fundamental ontological level (Poletti & Raballo, 2023; Sakson-Obada et al., 2018; Sakson-Obada, 2020; Stanghellini, 2009).

Paul Abély (1930) was the first psychiatrist to describe the specific "mirror signs" of schizophrenia, referring to a sense of alienation from one's own body image, accompanied by feelings of strangeness. Clinical literature provides various examples of mirror signs, which are regarded as significant indicators heralding the onset of full-blown psychosis (Abély, 1930; Weckowicz & Sommer, 1960). Some patients have broken mirrors in their homes, while others would stare at their reflection for hours, making grimaces (Hsia & Tsai, 1981; Rosenzweig & Shakow, 1937). Patients often described disturbing alterations in their mirror image, accompanied by feelings of eeriness or intense fear. In the most severe cases, the loss of coherence with the body image is manifested as a mirror double, experienced as detached from the subject's sense of self (Harrington et al., 1989). An insightful description of the gradation of these experiences, as they occur in the development of full-blown schizophrenia, is provided by Poletti and Raballo (2023). As they note, patients in the prodromal stages of psychosis experience a fascination with the strangeness of their own mirrored reflection, tinged with a sense of unfamiliarity and anxiety. The subsequent phase of illness development involves hallucinations of facial distortions, whereas in the chronic phase, a detachment of the individual from the image seen in the mirror occurs. This image may be experienced as a doppelgänger, whom the patient either fears or engages in conversation with.

Clinical observations have inspired research into behavioral and narrative disturbances in individuals with schizophrenia diagnosis in response to seeing their own reflection in a mirror. Rosenzweig and Shakow (1937) demonstrated that individuals with a severe course of schizophrenia failed to exhibit typical social behaviors, such as adjusting their appearance, while simultaneously engaging in inappropriate behaviors, including facial expressions (e.g., grimacing, squinting) and self-manipulative actions (e.g., rubbing their cheeks, picking their nose). In the study by Weckowicz and Sommer (1960), hospitalized individuals with schizophrenia, compared to a control group, produced shorter and more bizarre narratives about their reflections, less frequently referring to themselves. This suggests that their body representation is impoverished and poorly differentiated (Weckowicz & Sommer, 1960). Studies employing a procedure in which individuals stare at their mirror image in a darkened room – typically inducing illusions (e.g., a sense of facial distortion or changes in brightness) – revealed that individuals hospitalized for schizophrenia experienced more frequent, realistic, longer-lasting, and terrifying disturbances compared to the control group (Caputo et al., 2012).

The study's findings revealed difficulties in the subjective engagement with one's mirror reflection among individuals with schizophrenia, observed at behavioral, verbal, and phenomenological levels. The latter aspect encompasses experiences of varying intensity – from subtle feelings of strangeness to hallucinations. Their variability can be explained by the type of procedures used (e.g., illusion-promoting observation in a darkened room vs. short-term observation under normal conditions) and the varying severity of psychotic positive symptoms.

The aim of this study was to investigate whether individuals diagnosed with schizophrenia in a stable mental state exhibit more atypical behaviors, nonverbal signs of affective tension, and narrative disruptions during the activation of body image in the Mirror Procedure (MP), compared to a control group. Given that identification with one's reflection is considered a fundamental component of personal

identity (Sakson-Obada, 2020; Thirioux et al., 2016), we aimed to investigate whether individuals with schizophrenia report a higher number of disturbances in bodily self-identity, as measured by a questionnaire, and whether these disturbances are associated with narrative disruptions during the MP. In addition, we examined whether the severity of clinical symptoms of schizophrenia (positive, negative, and general psychopathology) is related to the narrative disturbances in the MP.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

A total of 164 individuals participated in the study. Of these, 82 were patients diagnosed with schizophrenia according to ICD-10 criteria, all of whom were considered by the attending psychiatrist to be in a stable mental state. This clinical group included 46 outpatients and 36 inpatients (30 patients interviewed 1 to 4 days prior to hospital discharge, 6 residents of psychiatric care and treatment ward), with a mean age of 38 years (SD = 9.0) and an equal gender distribution (50% male). Participants were recruited from various psychiatric facilities located in the Greater Poland region, Olsztyn, and Szczecin. The clinical group was considered homogeneous, as no significant differences were found between inpatients and outpatients in terms of the psychiatric symptoms (Positive and Negative Syndrome Scale – PANSS) and the number of disruptions in the Mirror Procedure. The control group was matched for gender (women = 50%), age (M_s = 38.0, SD = 9.0; M_c = 38.0, SD = 9.6), and years of education (M_s = 13.3, SD = 2.8; M_c = 13.4, SD = 2.8). In the clinical group, the predominant diagnosis was paranoid schizophrenia (n = 72, 87.8%) with an acute onset (n = 60, 73.2%). Symptom severity according to the PANSS was: positive symptoms 12.8 (SD = 5.4), negative symptoms 17.2 (SD = 7.6), and general psychopathology 33.32 (SD = 10.3); the average number of psychiatric hospitalizations in the last three years was 1.55 (SD = 1.6), and the mean illness duration was 12.82 years (SD = 8.54). All patients in the clinical group were taking antipsychotic medication.

The following exclusion criteria were applied: chronic somatic illness or physical disability, alcohol or substance dependence (for both the clinical and control groups), acute psychotic episode, and difficulties in maintaining interpersonal contact (for the clinical group), as well as a history of psychiatric hospitalization or current use of psychological or psychiatric services (for the control group). Participant inclusion in the clinical group and the assessment of schizophrenia-related clinical features (PANSS scale; Kay et al., 1989) were conducted by the attending psychiatrist. Individuals in the control group were recruited via advertisements posted on a well-known social media platform. All participants provided written informed consent to take part in the study. The research project was approved by the Local Ethics Committee.

MEASURES

The study involved individual meetings with participants, during which they completed the Body Identity Scale and participated in the Mirror Procedure.

The Body Identity Scale (22 items, see: Appendix 1 in Supplementary materials), developed by Sakson-Obada (2020), assesses dimensions including the sense of vitality, sense of bodily boundaries, sense of continuity of the body over time and space, coherence with motor functions and with the image of one's own body. Each statement was rated on a five-point scale ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). The higher the score, the greater the body identity disturbances. In the present study, the Cronbach's α coefficient for the Body Identity Scale was .93. The scale effectively differentiated individuals from the general population patients with schizophrenia diagnosis (Sakson-Obada, 2020, 2024).

The Mirror Procedure (MP) was used to assess behavioral, emotional, and narrative distortions induced by exposure to one's own reflection. Participants stood in front of a wall-mounted mirror reflecting their entire body (190 cm × 80 cm). Participants were free to move in front of the mirror. The researcher asked two questions: (1) "Can you describe what you see when looking in the mirror?" and (2) "When you look at your reflection, is there anything that attracts your attention?". During the procedure, two types of behaviors were coded: 1) atypical behaviors (heavy breathing, freezing, lifting clothes, swaying from side to side, taking off shoes, avoiding looking in the mirror, standing sideways to the mirror, hugging the body with hands, squatting, making grimaces) and 2) signs of tension (fidgeting with fingers, rubbing or scratching the body, tapping one's feet, wringing one's hands, repeatedly putting one's hands in and out of pockets). Participants' behaviors were noted by the researcher, while their verbal responses were audio-recorded and subsequently transcribed. The extraction of narrative features related to body identity and body representation was based on a three-stage analytical scheme: exploration, analysis, and synthesis (Soroko, 2014). In the first step, through repeated readings of the participants' narratives, the researcher who collected the data – and simultaneously served as the principal investigator – identified 11 narrative indicators corresponding to the theoretical categories under study. The relevance of these indicators, as well as their assignment to previously defined theoretical categories, was discussed

with a second expert. As a result of this consensus-seeking procedure, eleven narrative indicators were identified, as presented in Table 1: six pertaining to bodily coherence and its distortions, and five concerning body representation, including its constancy, impoverishment, and qualitative changes. In the subsequent step, both researchers independently evaluated the presence of each indicator based on the participants' transcripts. Any discrepancies regarding whether a given indicator was present in a participant's narrative were discussed until a consensus was achieved. The indicator was not coded in seven cases due to a lack of consensus. The presence or absence of each indicator was coded, and the total number of narrative disturbances was calculated.

DATA ANALYSIS

Statistical analyses were conducted using IBM SPSS Statistics (version 29.0.2.0). Although the study variables did not follow normal distributions, the Mann-Whitney *U* test was used to examine between-group differences, and Spearman's rho was applied to assess correlations between the variables. The chi-square (χ^2) test was used to evaluate nominal variables (the presence of narrative indicators and atypical behaviors in the MP).

RESULTS

One in four individuals with a diagnosis of schizophrenia (n = 21, 25.6%) presented bizarre behaviors, while such behaviors were essentially absent in the control group (n = 1, 1.2%, χ^2 = 20.99, p < .001, φ = .358). The frequency of non-verbal signs of tension was significantly higher in the control group (M_s = 1.39, SD = 2.39; M_c = 1.66, SD = 1.65; z = 2.73, p = .002, r = .21). Individuals diagnosed with schizophrenia reported significantly more disturbances in bodily identity, as measured by the questionnaire, compared to those in the control group (M_s = 2.07, SD = 0.68; M_c = 1.42, SD = 0.46; z = 6.94, p < .001, r = .54). An analysis of between-group differences based on overall narrative disturbances in the MP revealed significantly more abnormalities in the schizophrenia group compared to the control group (M_s = 1.50, SD = 1.33; M_c = .16, SD = 0.58; z = 8.13, p < .001), with a strong effect size (r = .63). Table 2 shows the results of the analyses on the frequency of each narrative indicator in the clinical and control groups.

A detailed analysis of disturbances in coherence with one's own body showed that all indicators in this category, except for *Disintegration of body coherence*, differentiated the study groups, although the effect size was moderate (*Discomfort* and *Uncertainty*) or weak (*Alienation*). The strongest effect size (φ = .351, χ^2 = 20.20, p < .001) was observed in the case of *Uncertainty* related to doubts about what is seen in the mirror reflection. This was present in one in five individuals with a diagnosis of schizophrenia, while such statements were absent in the control group. *Discomfort* induced by the MP was reported by one in five individuals in the clinical group and two individuals in the control group, with a moderate effect size (φ = .286, χ^2 = 13.39, p < .001). The weakest effect size (φ = .203) was observed in the case of *Alienation*, felt by 13.4% of participants with a diagnosis of schizophrenia and 2.4% of the control group, with a statistically significant difference between the groups (χ^2 = 6.77, p = .009). *Disintegration of body coherence* did not differentiate the groups (χ^2 = 1.03, p = .310, φ = .079), as statements regarding body part mismatches were reported by only three participants in the clinical group and one in the control group. In the case of *Identification with the image*, the effect size was weak (φ = .244), despite a significant difference between the groups (χ^2 = 9.76, p = .001). Individuals in the control group more often spontaneously identified with their mirror image (61%) compared to those with a schizophrenia diagnosis (36.6%). No significant differences were found in *Personal reference*, coded in the case of possessive pronouns used in reference to the body (M_{schi} = 0.54, SD = 0.98; M_{con} = 0.46, SD = 1.01; z = 0.29, p = .769).

Disturbances in the constancy of body representations were examined using three indicators. *Disturbed sentence structure* showed a moderate effect size (φ = .334), with more frequent abnormalities in the clinical group (25.6%) than in the control group (2.4%, χ^2 = 18.26, p < .001). *Interrupted sentence* was more frequent in the clinical group (23.2%) than in the control group (2.4%), with a moderate effect size (χ^2 = 15.78, p < .001, φ = .310). *Excluding characteristics* were only present in the group with a diagnosis of schizophrenia (8.5%), and the difference between the groups was statistically significant, with a weak effect size (χ^2 = 7.31, p = .007, φ = .211).

Poverty of body representation, manifested by merely listing body parts without providing broader descriptions or general characteristics, was significantly more frequent in the schizophrenia group, though with a weak effect size (12.2% in the schizophrenia group vs. 2.4% in the control group; χ^2 = 5.75, p = .016, φ = .187). *Qualitative disturbances* in body representation, identified through the presence of a single indicator, significantly differentiated the groups (χ^2 = 13.39, p < .001, φ = .286), occurring in 20.7% of the clinical group compared to 2.4% of the control group.

Only in individuals diagnosed with schizophrenia were narrative disruptions during the MP associated with disturbances in bodily identity as measured by the questionnaire (r_{sch} = .356, p = .001; r_{con} = .013, p = .905). Among the clinical characteristics exam-

Table 1

Theoretical categories and indicators used to evaluate statements in the Mirror Procedure

Indicator	Description
Coherence with the body	
• **Identification with the image:** spontaneous statement that the person recognizes their own reflection. • **Personal reference:** number of first-person singular possessive pronouns.	• Presence of statements: "I see myself," "This is me in the mirror," or "I see [own name]." • Presence of the terms "mine," "my," and "own" when referring to the body.
Distortion of coherence with the body	
• **Discomfort:** verbal expression of discomfort when viewing one's reflection in a mirror.	• Presence of terms refering to negative affect evoked by the MP, e.g., „Describing myself in this way in front of the mirror, I feel completely out of sync."
• **Uncertainty:** hesitation or lack of confidence in describing what is seen.	• Presence of terms such as "as if," "probably," "not quite" when describing the self in response to question 1.
• **Alienation:** feeling disconnected from one's mirror image.	• Presence of a statement expressing "separation" from the image, a feeling of alienation, or a lack of recognition of what is seen. Example: "I see a person completely unlike me."
• **Disintegration of body coherence** describes disintegration of the body either at the motor level or within the body image.	• Presence of a statement depicting the separateness of certain body parts from others, either through an explicitly expressed feeling of mismatch (e.g., "The head does not fit with the rest of the body"), or through sentence constructions suggesting the independent operation of one body function from another (e.g., "I have a large belly that must be carried by my weak legs").
Constancy of the body representation: distortions	
• **Exclusive features:** the person identifies two mutually exclusive body features.	• Presence of mutually exclusive characteristics relating to the body. Example: "I see an old woman (...) she looks quite young."
• **Disturbed sentence structure:** grammatically or syntactically incorrect sentences that remain uncorrected.	• Presence of an incorrectly constructed sentence that renders the utterance bizarre; the irregularities go beyond typical grammatical and syntactical errors. Example: "My legs should be washed apart from the lesions I have on my hands."
• **Interrupted statement:** the utterance suddenly stops and does not have an ending.	• The presence of a statement that breaks off and lacks a logical continuation in the rest of the narrative (cf. symptom of thought blocking).
Poverty of body representation	
• **Poverty:** a brief narrative listing body parts.	• The statement consists of listing individual body parts without providing more general characteristics of one's own appearance (e.g., "I see legs, arms, torso, chest, and head").
Qualitative changes in body representation	
• **Distorted representation of the body:** the presence of neologisms, references to non-existent figures, and perceptions not shared by the observer.	• (1) a neologism, an incorrect phraseological compound, or a bizarre term referring to the body (e.g., "I am such a square"); (2) a reference to non-real characters or animals in the characterization of one's body that goes beyond typical metaphors (e.g., "I have angel eyes"); (3) a term indicating a distorted perception of one's body (e.g., "I have a shorter leg, but doctors tell me I have both equal").

Table 2

Occurrence of distinct indicators in the Mirror Procedure in the control and clinical groups: results of between-group comparisons

Indicator	Clinical group		Control group		*p* value		Effect size
	n	%	*n*	%	χ^2/z^*	*p*	φ/r^*
Coherence with the body							
Discomfort	17	20.7	2	2.4	13.39	< .001	.286
Uncertainty	18	22.0	0	0	20.22	< .001	.351
Alienation	11	13.4	2	2.4	6.77	.009	.203
Disintegration of coherence	3	3.7	1	1.2	1.03	.310	.079
Identification with the image	30	36.6	50	61.0	9.76	.001	.244
Personal reference*	*M* = 0.54, *SD* = 0.98		*M* = 0.46, *SD* = 1.01		0.29	.769	.002
Constancy of the body representation							
Exclusive features	7	8.5	0	0	7.31	.007	.211
Disturbed sentence structure	21	25.6	2	2.4	18.26	< .001	.334
Interrupted statement	19	23.2	2	2.4	15.78	< .001	.310
Poverty of body representation							
Poverty	10	12.2	2	2.4	5.75	.016	.187
Qualitative changes in body representation							
Distorted representation	17	20.7	2	2.4	13.39	< .001	.286

Note. **z* and *r* (effect size) in Mann-Whitney test; *p* – one-tailed significance.

ined, the severity of positive symptoms, general psychopathology, and illness duration were associated with narrative disturbances in MP ($r_{posit.}$ = .283, p = .005; $r_{gen.}$ = .219, p = .048; $r_{durat.}$ = −.221, p = .049).

DISCUSSION

Mirror phenomena are prodromal disturbances of self-experience, observed many years before the onset of full-blown psychosis (Abely, 1930). These disturbances include subtle feelings of estrangement from one's own reflection, perceiving disturbing changes within it, and even hallucinatory transformations of the image in the mirror, as the disease progresses. In psychology, these phenomena are considered serious disturbances of body identity, resulting from a lack of embodiment and disruptions in the integration of experiences, leading to the absence of coherent, stable, and clearly delineated body representations (Sakson-Obada, 2020). Previous research on the relationship with the mirror reflection has focused on individuals hospitalized due to schizophrenia or those with a severe course of the disorder, analyzing individual narrative and behavioral disturbances (Caputo et al., 2012; Harrington et al., 1989; Rosenzweig & Shakow, 1937; Weckowicz & Sommer, 1960). The main aim of the present study was to examine whether aspects such as a detailed analysis of narrative features, behavioral disturbances (bizarre behaviors), and non-verbal signs of emotional tension differentiate individuals in schizophrenia in a stable mental state and the control group.

Statistical analyses showed that bizarre behavior and the total score of narrative distortion in response to seeing one's mirror image differentiated well between the clinical and control groups. In general, it can be stated that the narratives of individuals in the clinical group were inconsistent and inconclusive, drawing attention due to their unusualness and sudden breaks in speech, often accompanied by discomfort and a sense of estrangement from their own reflection in the mirror. Bizarre behaviors, which were generally absent in the control group, and co-occurred with narrative disturbances in individuals with a diagnosis of schizophrenia, show that in schizophrenia, the activation of the body image leads to significant disruptions in functioning, at both the verbal and behavioral levels.

Of the eleven narrative indicators, nine differentiated well between the control and clinical groups, and their rare presence in the control group sug-

gests that they are specific to schizophrenia. Statistical analyses revealed that three indicators related to the loss of body coherence – *Discomfort*, *Uncertainty*, and *Alienation* – effectively differentiated the study groups. Individuals with a diagnosis of schizophrenia more frequently reported anxiety, a sense of estrangement, and uncertainty regarding what they saw in their mirror reflection. Therefore, due to the lack of embodiment, an increased awareness of the body led to changes in its experience, specifically a loss of coherence with the image seen in the mirror. Nevertheless, *Disintegration of body coherence*, related to mismatches between body parts, was coded in only three individuals with a diagnosis of schizophrenia, which contributed to the lack of statistically significant differences between the groups. In light of these findings, it may be hypothesized that the indicator under discussion is more closely associated with the motor dimension grounded in the body schema than with its visual representation. Consequently, it cannot be excluded that the use of a procedure involving, for example, the description of movement sequences might enable a clearer identification of disturbances within this aspect of bodily identity. For the positive dimension of coherence with one's own body, only one indicator – *Identification with the image*, coded when a participant spontaneously stated that they saw themselves in the mirror reflection – differentiated the study groups. On the other hand, *Personal reference* (use of terms in reference to the body, such as 'my' and 'own') did not differentiate between the studied groups, although earlier studies found less frequent use of the above-mentioned possessive pronouns in people with a diagnosis of schizophrenia (Weckowicz & Sommer, 1960). The differences in the obtained results may be attributed to linguistic factors (such as the lack of a direct English equivalent for the Polish word '*swoje*') and methodological differences, including the use of a three-wing mirror and the content of the interview questions in the study by Weckowicz and Summer (1960). Thus, a spontaneous statement that a mirror image represents an individual is a more accurate indicator of coherence with one's own body than terms woven into the flow of speech suggesting that a body part 'belongs' to the subject.

The existential difficulty arising from the impossibility of a subjective inscription into the mirror image is evidenced by both the formal and the previously described content-related disruptions of discourse. Formal discourse disturbances – captured by the indicators *Disturbed sentence structure* and *Interrupted statements* – can be interpreted as reflecting difficulties in discourse monitoring in schizophrenia and may be understood as a manifestation of a lack of stability and coherence in body representation (Sakson-Obada, 2020). Moreover, according to the assumptions of Weckowicz and Sommer (1960), a shorthand description, consisting of listing body parts only (typically without affective involvement), indicates a poverty of mental representation of the body. The presence of these disturbances was significantly more frequently identified in individuals with a diagnosis of schizophrenia compared to the control group.

The heightened emotional tension observed in the control group, together with only sporadic narrative distortions, indicates that although the MP frequently provoked negative emotional arousal, as evidenced by negative statements concerning one's body, participants were nevertheless capable of maintaining a coherent bodily narrative. The presence of isolated narrative distortions in the control group suggests that key factors underlying disruptions in narrative coherence and content included: (a) defensive attitudes toward the assessment context, (b) the activation of negative affect linked to unfavorable evaluations of appearance, and (c) the use of unconventional metaphors or comparisons, reflecting a creative use of language rather than qualitative disturbances in body representation.

Consistent with expectations, participants with a diagnosis of schizophrenia reported greater disturbances in bodily identity, as assessed by the questionnaire. The correlation between narrative distortions observed during the MP and questionnaire-based measures of identity disturbance emerged only within the clinical group, indicating that the MP may not be sufficiently sensitive to detect such disturbances in normative populations. These distortions should be distinguished from negative attitudes towards one's own appearance, which is a common experience, especially among women (Sakson-Obada, 2020). Women with schizophrenia were more likely to describe their appearance in negative terms compared to healthy women, whereas no such differences were observed between the male groups (M_{m_s} = 1.20, SD = 1.21, M_{m_c} = 1.22, SD = 1.19, z = 0.13, p = .901; M_{w_s} = 3.15, SD = 2.72, M_{w_c} = 1.51, SD = 1.31, z = 3.07, p = .002). However, a qualitative analysis of the statements of the female patients revealed a radical rejection of the body, which should not be confused with a negative attitude towards appearance. The extreme depreciation of the body of women with schizophrenia found expression in comparing themselves to devalued animals, expressing a lack of will to live, or in extremely negative descriptions of every part of the body.

Schizophrenia-specific narrative disturbances, along with the emergence of strange bodily behaviors in the experimental situation, indicate that in schizophrenia the body becomes an "unfamiliar," alienated territory – one that resists integration and remains difficult to psychically elaborate. Lack of embodiment in schizophrenia was probably also reflected in lower emotional tension in patients' narratives. Their attenuated affective response in MP aligns with schizophrenia's negative symptoms, although it could also result from side effects of medication.

Disruptions in the narrative of individuals diagnosed with schizophrenia in MP were associated with both the severity of positive symptoms and general psychopathological manifestations. A more detailed analysis revealed that key symptoms involved in this process included hallucinations, delusions, and formal thought disorder (positive symptoms), as well as unusual thought content and preoccupation with one's own thoughts. For these symptoms, correlation coefficients ranged from $\tau = .193$, $p = .039$ (formal thought disorder) to $\tau = .309$, $p < .001$ (preoccupation with thoughts). The findings suggest that the intrusion of chaotic primary mental contents impedes the construction of a stable, coherent, and well-differentiated representation of one's body, which in turn hinders the formulation of a formally and thematically coherent narrative concerning one's mirror reflection. Unexpectedly, narrative disturbances in MP were negatively correlated with illness duration. This finding may be explained by lower symptom severity in individuals with a longer illness course, as indicated by the negative correlation between illness duration and symptoms measured with the PANSS ($r = -.239$, $p = .033$).

CONCLUSIONS

The conducted research leads to several important conclusions. Firstly, severe distortions in body representation and disturbances in bodily identity, as explored through narrative indicators in the MP, appear to be specific to schizophrenia. The narrative and behavioral disturbances observed in the experiment indicate a profound alienation from the self-image and should not be confused with a negative body image. Secondly, although more non-verbal signs of tension were observed in the control group and their narratives about appearance were far from positive, these narratives were characterized by coherence, conclusiveness, and a lack of significant distortions. Thirdly, the Mirror Procedure proves to be a valid tool for studying disturbances in body identity exclusively within the schizophrenia group. Narrative disturbances were found to be associated with body identity disruptions only in this group, as measured by questionnaires. Moreover, the validity of the MP for assessing deficits in self-embodiment in schizophrenia was further supported by associations between narrative disruptions and PANSS-measured symptoms indicative of chaotic and fragmented experiential content, particularly positive symptoms and general psychopathological features such as unusual thought content and preoccupation with one's own thoughts. Finally, none of the narrative indicators appeared frequently enough to be used independently for assessment purposes. Therefore, it is advisable to investigate disturbances in bodily coherence and its representation in schizophrenia using a combination of narrative indicators. Notably, 18 individuals diagnosed with schizophrenia (22%) showed no disruptions in speech or behavior during the MP, suggesting the potential presence of compensatory mechanisms that facilitate the integration of body representations and identity, thereby enhancing embodiment.

LIMITATIONS

The first limitation concerns the research procedure. Participants' statements were induced rather than spontaneous, and the presence of the experimenter added a social evaluative context, while body movements during speech may have altered the body image. Despite these factors, the observed group differences are consistent with theoretical assumptions of body disembodiment in schizophrenia versus maintained embodiment in the control group. However, the lack of a psychiatric control group limits conclusions about whether mirror-related disturbances are specific to schizophrenia or also occur in other conditions affecting body image or self-experience (e.g., borderline personality disorder, body dysmorphic disorder, depersonalization–derealization disorder).

A second limitation of the study is that participants' verbal or motor response onset and the duration of their interaction with the reflected image were not assessed; these aspects should be examined in future studies.

Another limitation consists in a single measurement, which may have been influenced by transient changes in participants' mental state. Additionally, information on total lifetime antipsychotic exposure and medication effects was not available. Both the efficacy and side effects of antipsychotic treatment may affect body-self disturbances and should be considered in future studies.

Supplementary materials are available on the journal's website.

Disclosures

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