Positive and negative valences of the Human body in schizophrenia: A pilot study of emotional narrative regarding the front and back

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ABSTRACT

People with schizophrenia have marked emotional and relational difficulties, such as those with eye contact where there is a markedly strong tendency to avoid looking frontally at others appears when occupying a shared space with strangers. A prominent feature of emotional dysregulation in schizophrenia is clinically evident in blunted affect, often observed as reduced emotional expressivity alongside the individual's report of normal or heightened emotional experience. This study uses a combination of qualitative and quantitative approaches in order to explore a crucial, largely unexamined, aspect of the embodied experience of emotions: the front-back axis of the body image in its association with positive or negative emotional words (e. g., Joy, Pleasure, Tenderness, Anger, Anxiety, Fear, and so on). We demonstrate that this spatial axis (front-back) of the body image constitutes two principal emotional narratives. One views the front of the body as conflictual and dangerous, and the other apprehends the back as more reassuring, pleasurable and calming. This kind of emotional narrative, conceptualized within Conceptual Metaphor Theory, explains the findings.

1. Introduction

Schizophrenia is a complex neuropsychiatric syndrome (Anticevic, Schleifer, & Youngsun, 2015) usually characterized by a constellation of symptoms, such as hallucinations (hearing voices, seeing visions, etc.) and difficulties in thinking (fixed, false beliefs, delusions). While these symptoms may episodically come and go, some of the more long-lasting symptoms involve difficulties in emotion. Emotions are responses to internal or external events (Kring & Caponigro, 2010), consisting of multiple components including outward expression (e. g., a smile), reported experience (e. g., reporting feelings of happiness), physiology (e. g., increased heart rate), appraisal (e. g., labeling one's experience and its probable cause), and brain activation (e. g., activation in certain areas of the prefrontal cortex). Emotions are characterized by various potential movements toward, or away from, an actual or implicit "other," and are therefore essentially "relational" (De Riveira, 1977;

Fuchs & Koch, 2014).

People with schizophrenia demonstrate emotional difficulties with eye contact, for example, when occupying a shared space with strangers there is evidence of a marked tendency to avoid looking frontally at others (Exner, Boucsein, Degner, Irle, & Weniger, 2004; Hooker & Park, 2005; Rosse, Kendrick, Wyatt, & Isaac, 1994). In particular, the so-called negative symptoms of flat affect, anhedonia and avolition all involve emotion. These particular symptoms are often resistant to medication and are associated with poor overall functioning, underscoring the importance of understanding emotion in schizophrenia (Kring & Caponigro, 2010). Further, a prominent emotional dysregulation in schizophrenia is clinically evident in blunted affect,[1] often observed as reduced emotional expressivity alongside the individual's report of normal or heightened emotional experience (Berenbaum & Oltmanns, 1992; Kirkpatrick & Fischer, 2006). Items for "decreased spontaneous movements" and/or "poor eye contact" are included in

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[1] Blunted affect can be considered to have three components: (1) decrease in facial expression; (2) decrease in expressive gestures and other body language; and (3) decrease in modulation of the volume, pitch, and speed of speaking.

some blunted affect subscales (Kirkpatrick & Fischer, 2006). Exner et al. (2004) focused on the role of amygdala size in schizophrenia and its relation to an impaired ability to integrate information about the emotional meaning of observed facial expressions. Tremeau's (2006) meta-analysis of fifty-five articles further illustrated the marked deficits in schizophrenia related to recognizing intrapersonal verbal expressions of emotion. Van't Wout and colleagues (2007) confirmed these findings in a study of forty-three people with schizophrenia who demonstrated an impaired ability in identifying and verbally expressing emotions in face-to-face encounters. In clinical interactions, speech produced by people with schizophrenia features words with a negative emotional valence in connection with the front of the body and his or her parts/organs (Pedinielli & Gimenez, 2002), including, for example, the sense that face-to-face encounters involve a physical threat (e. g., "they are looking at me in a strange way"; "my stomach is tight and in danger").

To date, little is known about the experience of the back of the body. One of the rare psychopathological studies of the front-back experience (Soulayrol, Sokolowsky, & Fournier, 1989; Soulayrol, Sokolowsky, Vion-Dury, Moulinas, & Cazes, 1987) placed four children with schizophrenia and a control group of four children of the same ages in situations in which they were approached from the front, the back and the side, both with and without physical contact. The children with schizophrenia preferred to have their backs touched and refused contact in the face-to-face situation. The control group reacted in the opposite manner, choosing face-to-face contact and refusing to be approached from behind, whether or not they were touched.

The posture of the human body is such that we see from the front (Škara, 2004), move forward rather than backward, and interact with people and our environment using mostly the front parts of our bodies. Our senses are predominantly directed forward (sight, hearing, taste, and smell). This orientation has implications for how human beings linguistically register their lived experience. In Conceptual Metaphor Theory (Clark, 1973; Evans, 2004; Gentner, 2001; Lakoff & Johnson, 1980; 1999; Ścigała & Indurkhya, 2016), there is a space-time metaphoric system in English and many other languages conflated with the emotional experience: the ego-moving metaphor.

In this metaphoric system, the ego is conceptualized as a non-stationary entity that moves through a landscape and walks past events that are "anchored" on a straight, horizontal path. The ego projects fronts into the future, and this is reflected in the metaphoric language of "progress, dignity, frank behavior, seeing, e. g. *to one's face* (frankly), *He was afraid to lose face* (dignity), *Let's face it* (to see), *the whole future is in front of him*" (Škara, 2004, p. 186). As Škara (2004) suggests, the front is associated with the conscious, clear and rational part of the mind, reflected in the expression "with an eye to the future." Danger and fear may cause us to turn away in order not to see it. Experiences of avoidance reinforce an association of the back side with negative feelings, and thus underlie metaphorical projections involving the back such as: "*to stab someone in the back* (to betray), *to have one's back to the wall* (to be in defensive position), *Get off my back!* (back meaning the seat of one's awareness of duty or failings), *behind one's back* (without one's knowledge, in secret)" (Škara, 2004, p. 186).

2. Aims of this study: hypothesis

This study focuses on the proposition that the front/back axis of our body is linked conceptually with our modes of feeling negative or positive emotions. The study further proposes that people with schizophrenia actively and automatically employ the ego-moving metaphor in a specific way. The authors' hypothesis is that when patients locate themselves in the frontal position, they conflate the ego-moving metaphor with negative emotional experience, and therefore associate words with negative emotional valence. This explains why they experience a perturbation (Nelson, Parnas, & Sass, 2014; Sass, 2014; Sass & Parnas, 2003) of their sense of ownership (that makes me feel that my body is enduring an experience), and their sense of agency (that makes

me understand that I am the one who initiated the action). Evidence also suggests that people with schizophrenia appear less likely to anticipate that future events will be pleasurable, are less likely to experience pleasure in anticipation of things to come, and thus may be less likely to seek out pleasurable experiences (Gard, Kring, Horan, & Green, 2007).

In the opposite situation, when the patients locate themselves in the back position, they conflate the ego-moving metaphor with positive emotional experience (Seong-Eun, 2003) thus they associate this spatial orientation with words with positive emotional valence. Grotstein (1981) has described how background objects, or affective objects that provide support from behind, provide a fundamental experience of containment by furnishing the underlying support necessary for occupying space. Here, the primal experience of being carried generates an initial sense of being held and surrounded (Winnicott, 1971). The authors posit that people with schizophrenia could be especially sensitive to this primal experience of the body.

Finally, we think that this spatial axis (front-back) can constitute two emotional narratives, one in which a person views the front of the body as conflictual and dangerous, and the other in which a person considers the back as more reassuring, pleasurable and calming.

3. Methods

3.1. Ethics

This study was approved by the French University Ethics Committee (identification code 2015-07-01-003). Each participant also signed a consent form indicating his or her voluntary participation in a study on "body image." The consent form specified the right to withdraw this consent at any time and guaranteed that data collected would be anonymous and confidential. As part of the informed consent process, approved by French University Ethics Committee, the authors proposed an intensive educational intervention (2 preliminary interviews of 35 min), inspired by Rogerian psychotherapeutic principles—empathy, congruence, non-directivity, and positive unconditional regard—that empower and motivate the patients to talk freely of their emotional/affective experience (Rogers, 1951, 1961, 1975). In addition, participants' capacity to give consent was verified by two psychiatrists employed by hospital in which the experiment was carried out.

3.2. Research design

In the attempt to explore front-back narrative experience with precision, we employed mixed methods,[2] using both a quantitative and a qualitative method. Our goal in using a mixed methods approach was to advance the systematic integration of quantitative and qualitative data within a single investigation (Wisdom & Creswell, 2013), and thus permitting a more complete utilization of data than that afforded by either quantitative or qualitative data collection and analysis alone. Mixed methods allows study participants to have a voice and ensures that study findings are grounded in participants' actual experiences (Creswell, Klassen, Plano, & Smith, 2011; Mertens, 2011; Morse & Cheek, 2014). Our study used qualitative data to explore quantitative findings. This explanatory sequential design typically involves two

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[2] The core characteristics of a well-designed mixed methods study in research include the following experiences (Creswell et al., 2011; Mertens, 2011; Morse & Cheek, 2014; Wisdom & Creswell, 2013): 1. Collecting and analyzing both quantitative (closed-ended) and qualitative (open-ended) data. 2. Using rigorous procedures in collecting and analyzing data appropriate to each method's tradition, such as ensuring the appropriate sample size for quantitative and qualitative analysis. 3. Integrating the data during data collection, analysis or discussion. 4. Using procedures that implement qualitative and quantitative components either concurrently or sequentially, with the same sample or with different samples.

phases (Wisdom & Creswell, 2013): (1) an initial quantitative instrument phase, followed by (2) a qualitative data collection phase, building directly on the results from the quantitative phase. In this way, the quantitative results are explained in more detail through the qualitative data.

3.3. Participants

The authors aimed to have a small-size sample of patients that were motivated to narrate their experience for the purpose of conducting a pilot study. Further, they could compose a future emotion-focused therapeutic group in the psychiatric structure. Two distinct groups of participants were designated: 1) a "people with schizophrenia group" (recruited in a French psychiatric facility), and 2) a "control group" (recruited in a French university). Our sample included a total of 30 participants (middle-class adults living in households with disposable incomes ranging from two-thirds to double the national median, and averaging 10 years of education): 15 patients (8 men, 7 women) diagnosed with schizophrenia with a mean age of 40.2 years ($SD = 8.2$) and 15 control individuals (8 men, 7 women), not suffering from any psychiatric or illness conditions, with a mean age of 41.4 ($SD = 10.1$). No participant had diagnoses of obesity or eating disorders.

Diagnoses were established in terms of DSM-V (APA, 2013) by two independent staff psychiatrists of a partial hospitalization program (day hospital), who had regular interaction with the patients. Patients were in stable phases (i. e., with no acute symptoms) and were involved in therapeutic bodywork activities (weight-training, dance, yoga and/or relaxation). They demonstrated good performance on verbal fluency. They were receiving either antipsychotic (72%) or neuroleptic (18%) treatment. The control group completed an anamnestic questionnaire to preclude individuals who had psychiatric problems or who had received treatment for a mental illness. Specifically, control group exclusion criteria were: study participants who have had an appointment with a psychiatrist or have undergone psychiatric hospitalization, and/or have received pharmaceutical treatment for mental illness.

3.4. Stimuli and task

The authors (AS, HB) developed a narrative tool, the Front-Back Emotional Narrative (FBEN), inspired by Fisher's (1970) Body Focus Questionnaire (BFQ). To enhance the projective quality of our experiment, a morphological figure showing a male body outline (indicating biological masculinity; see Fig. 1) was used with male subjects and a morphological figure showing a female body outline (indicating biological femininity; see Fig. 2) with female subjects. To use this tool, study participants placed a predefined list of words on either the front
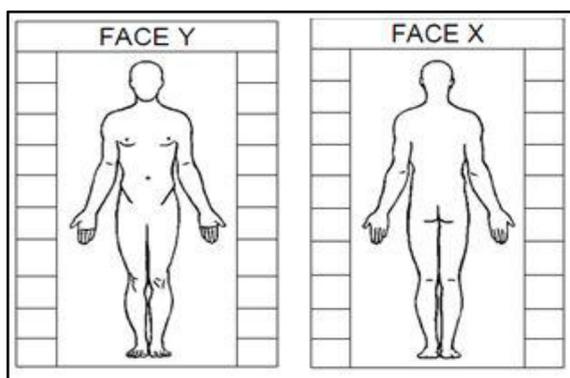

Fig. 1. Male figure, front and back views. To the left and the right of the figure are boxes connected to each area of the body (Forehead/Back of Head; Neck/Nape of Neck; Chest/Torso; Arms; Stomach/Waist/Back; Genital Organs/Buttocks/Hands/Pelvis; Thighs; Knees; Legs/Shins/Calves; Ankles/Feet/Heels/Toes), in which study participants placed the emotion words.
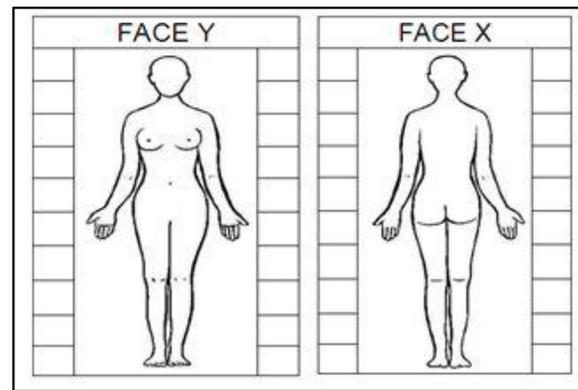

Fig. 2. Female figure, front and back views. To the left and the right of the figure are boxes connected to each area of the body (Forehead/Back of Head; Neck/Nape of Neck; Chest/Torso; Arms; Stomach/Waist/Back; Genital Organs/Buttocks/Hands/Pelvis; Thighs; Knees; Legs/Shins/Calves; Ankles/Feet/Heels/Toes), in which study participants placed the emotion words.

or the back of a human figure, which was divided into ten corporeal zones inspired by Fisher's (1970) Body Focus Questionnaire (BFQ): Forehead/Back of Head; Neck/Nape of Neck; Chest/Torso; Arms; Stomach/Waist/Back; Genital Organs/Buttocks/Hands/Pelvis; Thighs; Knees; Legs/Shins/Calves; Ankles/Feet/Heels/Toes. This tool is used to compare results obtained with the people with schizophrenia and control groups, while stimulating self-narratives about the back and front body images (see Figs. 1 and 2).

Each proposed word had an emotional valence, which allowed the subject to express projectively a two-dimensional representation of his or her body. The words used were complex units defined by semantic qualities, the emotional nature of which varied according to these same two-dimensional indicators (Monnier & Syssau, 2014; Syssau & Font, 2005). The French word list comprises 20 words from the corpora presented by Monnier and Syssau (2014) and by Syssau and Font (2005): 10 words with very distinctly positive valences (Dream, Freedom, Friendship, Gentle, Happiness, Joy, Miracle, Pleasant, Pleasure, Tenderness) and 10 others with very distinctly negative valences (Anger, Anxiety, Cruelty, Fear, Grief, Hatred, Lack, Sadness, Sorrow, Unhappiness).[3] We recall that it has been shown that people with schizophrenia retain the perception of the emotional valence of words (Jalenques, Enjolras, & Izaute, 2013).

4. Measures

4.1. Quantitative data

Each subject in the two groups, selected in random order, was presented with two A4-size worksheets (Sheet X and Sheet Y): Sheet Y contained a drawing of a figure of a person as seen from the front and Sheet X contained another drawing in which the figure was seen from behind (Figs. 1 and 2). Each subject was presented 20 slips of paper, each containing one word, in a random order but simultaneously on the table. The subject was then invited to place the slips of paper on the worksheets, with the following instructions: "Place each word on Sheet X or Sheet Y, matching it with a part of the drawing." The research assistant then filled in a report form.

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[3] The words are organized in terms of their statistical percentages of negativity, neutrality, positivity and their respective emotional intensities, on an 11-point scale ranging from -5 (extremely negative) to $+5$ (extremely positive). All positive valence words have a high percentage of positivity ($\geq 86\%$) and a high degree of intensity (≥ 4). All negative valence words have a high percentage of negativity ($\geq 84\%$) and a high degree of intensity (≥ -3).

4.2. Qualitative data

A semi-directed interview technique (Blanchet, 1991) was employed, with two types of follow-up: questioning and reiteration. The central interview question was as follows: "Now, for each word, could you tell me why you put it on this side or on that side?" After this central question, we probed the narrative more specifically in order to explore participants' experiences of emotions.

5. Statistical analysis

5.1. Quantitative analysis

Data were analysed using SPSS for Windows version 21, with a mixed ANOVA procedure used to test the variance of 4 variables (front positive words, back positive words, front negative words, back negative words) against the independent variable group (schizophrenia and control). To increase the statistical precision of the results, a threshold of $p \leq .01$ was used.

5.2. Qualitative analysis

We analysed the narratives of people with schizophrenia gathered in semi-directed interviews that explored how they came to associate certain words with different sides of the body. A discursive corpus of 6331 occurrences/tokens (974 words, 496 hapax,[4] 0.154 words/tokens) was selected from the transcripts of six audio recordings of interviews conducted with six of the fifteen patients in the schizophrenia group. The therapeutic style of the interviewing psychologist was rooted in Rogerian psychotherapeutic principles, especially empathy, congruence, non-directivity, and positive unconditional regard that aim to empower and motivate the client in the therapeutic process (Rogers, 1951, 1961, 1975). Only six participants of the fifteen showed a strong interest in telling their experience. One reason for this may be because patients with schizophrenia already possess a tendency to avoid face-to-face interaction with people due to negative emotional valence, an inference supporting our current experiment.

For the analysis, a computer-aided content analysis of the interview transcript was performed, on the basis of a specific keyword-in-context list (Weber, 1984) according to a directed content analysis (Hsieh, 2005). For this, the NVivo 10[5] software program (QSR International, 2012), which allows for qualitative and mixed methodologies, was used. The following list of keywords[6] was used to identify meaningful statements in the corpus:

"ankle(s)", "anus", "arm(s)", "back of head", "back", "behind", "body(ies)", "brain(s)", "brainy", "breast(s)", "buttock(s)", "calf/calves", "chest(s)", "dorsum", "ear(s)", "exterior", "eye/eyes", "face(s)", "facial", "finger(s)", "foot/feet", "forehead", front", "frontal", "genital organ(s)", ""heart(s)", hand(s)", "head", "heel(s)", "inside",

"interior", "knee(s)", "leg(s)", "lower/small of back", "mouth(s)", "nape of neck", "navel(s)", "neck(s)", "nose(s)", "outside", "pelvis", "sex", "sexual", "shoulder(s)", "side", "stomach(s)", "thigh(s)", "throat(s)", "toe(s)", "torso", "voice(s)", "wrists(s)".

The choice of keyword list was based on the body zones identified in the experimental tool (see Figs. 1–3) and associated with the positive and negative emotions words of the task (miracle, angry, etc.). This strategy determined the local meaning of the selected keyword, on the basis of a specific keyword-in-context list (Weber, 1984), following the principles of a directed content analysis (Hsieh, 2005).

Using this methodological strategy the authors could identify the meaningful fragments of the narratives that evoked the parts of the body with positive or negative emotions (4.49% of the corpus). We selected co-occurrences within the textual corpus according to this strategy: considering the basic context to be every sequence of words interrupted by full stop whose dimensions are less 400 characters, inspired by T-LAB software[7] co-occurrence analysis (Lancia, 2004; 2007). We collected sequences of words (≤ 400 characters, spaces included) in which there was one body zone associated with an emotional word (positive or negative).

6. Results

6.1. Quantitative findings

The study found a significant difference (Fig. 4) in how each of the two groups placed the words with a negative emotional valence: $F (1.27) = 27.034; p = .001$. The people with schizophrenia group associated an average of 7.07 negative words with the front of the body ($SD = 1.71$); for members of the control group, an average of 3.33 negative words were placed on the front ($SD = 2.19$). Regarding the back of the body, the people with schizophrenia group associated an average of 2.93 negative words with this side ($SD = 1.71$), while members of the control group placed an average of 6.67 negative words associated with the back ($SD = 2.19$).

For associations of positive valence words (Fig. 5), there was also a statistically significant difference between the two groups: $F (1.27) = 71.649; p = < .0001$. The people with schizophrenia group placed an average of 3.47 positive words on the front of the body ($SD = 2.20$); members of the control group placed an average of 8.87 positive words on the front ($SD = 1.12$). As concerns the back of the body, the people with schizophrenia group placed an average of 6.53 positive words ($SD = 2.20$) on this side; for members of the control group, an average of 1.13 positive words was associated with the back ($SD = 1.12$). There were no significant results for the sex and age variables.

6.2. Qualitative findings: meaningful narratives

In the following examples of excerpts from interview transcripts (complete excerpts in Appendix A), the authors identified the meaningful fragments of the narratives (e. g., F1., F2., and so on) through the association of the parts of the body with positive or negative emotions (see bold-font words).

The front of the body associated with negative emotions

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[4] A word that occurs only once within a context.

[5] NVivo 10 facilitates the collection, organization and analysis of material including interviews, thematic group discussions, surveys, audio recordings, social media and websites. The program's "text search" query function was used to identify synchronous words, which allowed statements with the greatest meaning to be taken from the first stage of the study and organized into themes that clarify the associative logic used by subjects.

[6] Original French keywords: "antérieur", "anus", "arrière", "avant ", "bouche/s", "cérébral", "cerveau/x", "cœur", "cheville/s", "corps", "côté", "crâne/s", "cuisse/s", "dedans", "dehors", "derrière", "devant", "doigt/s", "dos", "épaule/s", "extérieur", "facial", "fesse/s", "front", "genou/x", "gorge/s", "intérieur", "jambe/s", "la/les voix", "le/les bras", "le/les cou", "le/les nez ", "main/s", "mollet/s", "nombril/s", "nuque/s", "œil/yeux", "oreille/s", "organe/s génital/aux", "orteil/s", "pied/s", "poignet/s", "poitrine/s", "postérieur", "pubis", "rein/s", "sein/s", "sexe", "sexuel", *"talon/s"*. "tête/s", "torse/s", "ventre/s", "visage/s".

[7] T-LAB version 9.1.3 is a linguistic and statistical tool for text analysis, developed by Franco Lancia (2004; 2007). T-LAB software proposes the multitude of instruments offered for text analysis and the possibility to use them in an integrated way (e. g., word association, thematic analysis, co-occurrence analysis, comparative analysis), and the possibility of analyzing a very large text. T-LAB works on a corpus that can be composed of one or more texts and can be divided into different subsets, according to the variables employed for describing the texts.
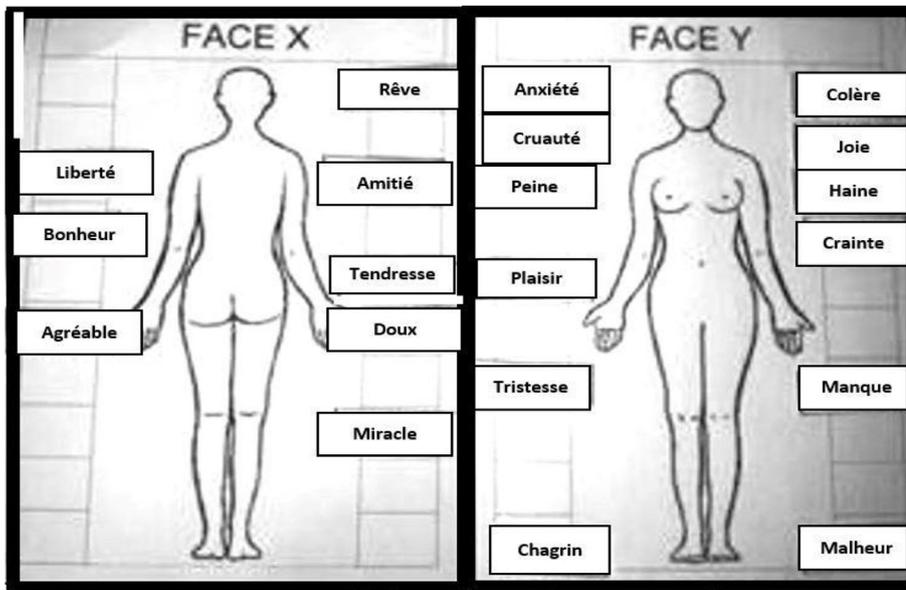
Fig. 3. Example of a worksheet from the patients with schizophrenia group (female subject), in which the subject has placed the emotional valence words next to zones of the body to which they are associated. Sheet X (back): on the left, *Liberté* [freedom], *Bonheur* [happiness], *Agréable* [pleasant]; on the right, *Rêve* [dream], *Amitié* [friendship], *Tendresse* [tenderness], *Doux* [gentle], *Miracle* [miracle]. Sheet Y (front): on the left, *Anxiété* [anxiety], *Cruauté* [cruelty], *Peine* [sorrow], *Plaisir* [pleasure], *Tristesse* [sadness], *Chagrin* [grief]; on the right, *Colère* [anger], *Joie* [joy], *Haine* [hatred], *Crainte* [fear], *Manque* [lack], *Malheur* [unhappiness].
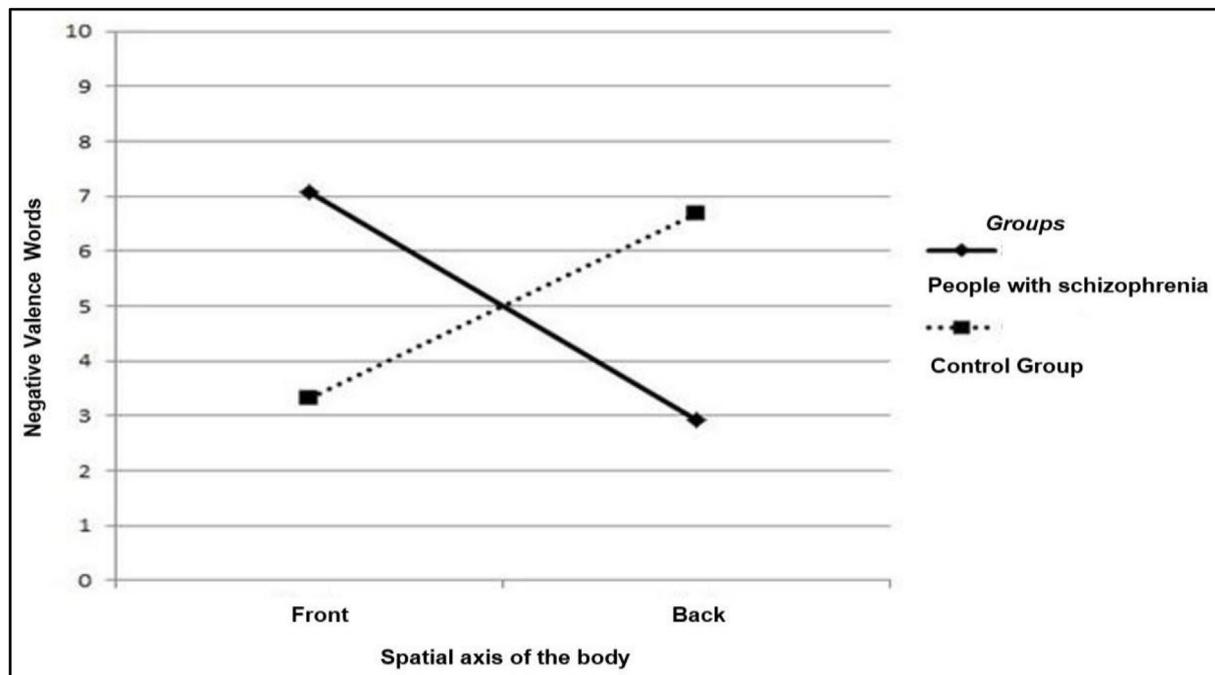

Fig. 4. Placement of negative valence words by the patients with schizophrenia and control groups.

Patient 1

   F1. **Hatred.** I put it on the **front.** It's when you're mean.

Patient 2

   F1. There, and also some **anger** because I don't know how to explain it, but I really think **anger** goes there, in **front.** It seems to me that on the **side**, in **front**, there is more to say than there is about the **side** in back, and then I have the impression that it's messier here in the **front** than it is in **back.**

Patient 3

   When someone is **sad**, you can see that on their **face.** When we're sad! Anxiety — that goes by the **throat. Anxiety.** Because we have a navel. It's being afraid of having something.

The back of the body associated with positive emotions

Patient 1

   F1. **Gentle** in the **back.** It makes me think of someone calm stroking my **back.**

Patient 2

   F1. **Gentle.** I put that for the **buttocks**, well, that's pleasure, too. Yes, that is the **back**, cares maybe, too.

   That's the **back**, massages and things like that… for example with children when you stroke their **backs** to calm them down.

Patient 3

   F1. **Pleasure.** At the **back. Pleasure** with your friends. Colleagues. I feel a sense of security.

7. Discussion

   In this study, the authors focused on the idea that the front/back axis of our body is linked conceptually with our mode of feeling
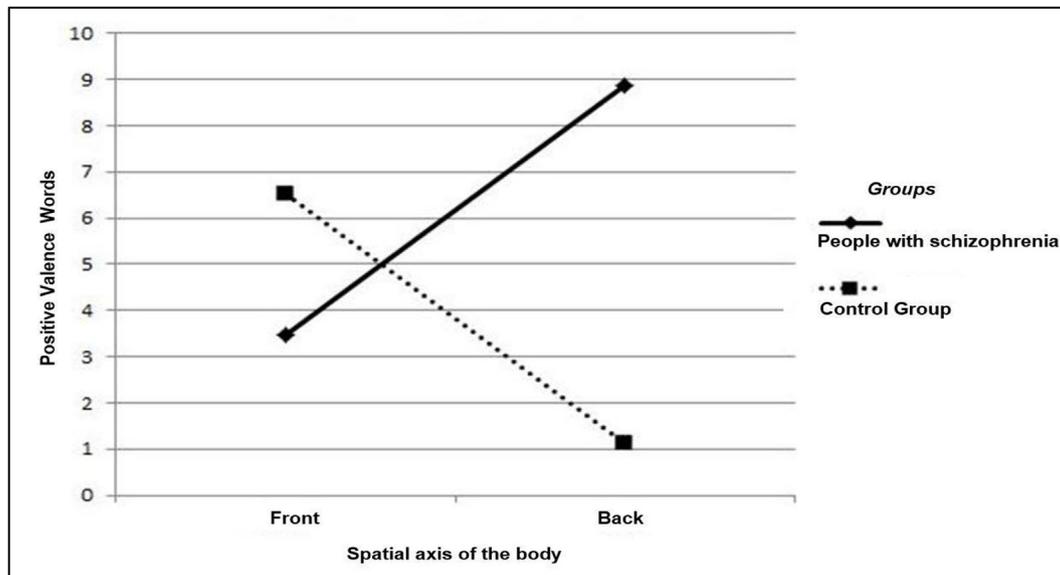
Fig. 5. Placement of positive valence words by the patients with schizophrenia and control groups.

negative or positive emotions. We argued that people with schizo-phrenia actively and automatically employ the ego-moving metaphor in a specific way. The findings reported in Figs. 4 and 5 are consistent in suggesting that the two groups employ a different emotional narrative palette when speaking about the back and front of the body. Compared to the control group, the people with schizophrenia group used many more negative words for the front and positive ones for the back.

In order to explain the quantitative data qualitatively, this study described a hypothetical perturbed organization of front-back con-ceptual system associated with verbalized emotions in schizophrenia. We described emotional narratives corresponding to the spatial axis (front-back), one that viewed the front of the body as conflictual and dangerous, and another that considered the back as more reassuring, pleasurable and calming. Our hypothesis is that when patients locate themselves in the frontal position, they conflate the ego-moving me-taphor with negative emotional experience.

Narrative fragments, as selected by the criteria outlined above, described an association between the front of the body, which is di-rected toward others (general people, parents) or one self, as involving distrustful, angry, and aggressive face-to-face encounters. Here are ex-amples:

"I really think anger goes there, in front"; "Hatred. I put it on the front. It's when you're mean"; "When someone is sad, you can see that on their face"; "Cruelty. I put them together, on the front. Grief, sorrow and sadness. They are words that are similar, down inside of me. They make me think of my grandmother because she raised me"; or "Anger, I put on the front because I have a lot of anger in me. There is hate around my breasts because I don't like it when people touch them."

People with schizophrenia, since they are less likely to anticipate that future events will be pleasurable and to experience pleasure in anticipating of things to come, may be therefore less likely to seek out pleasurable experiences (Gard, Kring, Horan, & Green, 2007). It is thus more explicable why they have emotional difficulties with eye contact when their body interacts frontally with others (Hooker & Park, 2005; Rosse et al., 1994; Tso, Mui, Taylor, & Deldin, 2012).

In the opposite situation, when the patients locate themselves in the back position, they conflate the ego-moving metaphor with positive emotional experience (Seong-Eun, 2003), and thus associate words with positive emotional valence. Their narrative is directed to others or to oneself in a pleasurable, benevolent, liberating, and calming encounter,

for example:

"Gentle in the back. It makes me think of someone calm stroking my back"; "Gentle. I put that for the buttocks, well, that's pleasure, too"; "Pleasure. At the back. Pleasure with your friends. Colleagues. I feel a sense of security"; "Miracle, I put it there, in my back. I believe in miracles. When it snows, I think that's a miracle. It's a miracle when it snows in Marseille"; or "Yes, because freedom comes from the back. It comes from the back, freedom. Yes! My freedom, it's been a long time since I left you in a wild land. My freedom like a wild land."

The narrative associated with the back seems to be consistent with the rare psychopathological studies of the front-back experience on the children with schizophrenia (Soulayrol et al., 1987; Soulayrol et al., 1989). In our study, people with schizophrenia seemed sensitive to the positive early experience of being carried, which furnishes a sense of being held and surrounded. It appears that, consistent with Grotstein (1981), affective objects that provide support from behind simulta-neously provide a fundamental experience of containment by bringing the underlying support that is necessary for occupying space. In our study, people with schizophrenia considered the back positively as more reassuring, freeing, pleasurable, and calming.

8. Conclusions and limitations

In the narratives of this study, the back of the body is associated with a more reassuring, pleasurable and comforting positive body ex-perience. This actualization of a pleasurable body experience may be a positive resource in the reconstruction of an embodied self (Gallagher, 2011; Gallese, 2014). On the basis of such findings, psychotherapists and clinical psychologists, could adapt and create narrative-based or body techniques as part of the treatment of people with schizophrenia. It is crucial to determine whether the same kind of emotional front-back narrative is present in other psychopathological categories, such as anorexia and autism where the sense of embodied self (Gallagher, 2011; Gallese, 2014) is also radically disrupted. Kerric (2008), for example, has identified the positive experience of the back in a child with autism. Future quantitative and qualitative investigations with a comparison between different psychopathological categories are necessary in order to confirm our exploratory investigation and to provide additional theoretical explanations.

Potential limitations of the current study are related to its small

sample size, leaving the extent to which it is representative of the population of patients or controls to further research. Another limitation is that the patient group was medicated, complicating the clarity and specificity with which emotional effects may be deemed due to the disease, medications or an interaction between the two. Furthermore, it is not clear that the controls are matched on all relevant demographics or potential influencing variables. There is also the possibility that people with other mental illnesses, or illnesses in general, may show the same pattern as the patients. Future research may involve making improvements to the qualitative data collection, such as using voice communication only for the interview by having the participants' eyes covered to avoid frontal interaction. Future research would also necessarily involve study the narrative of a control group.

Authors' note

Declaration of conflicting interests

Ethics

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.newideapsych.2019.01.002.

Appendix A

The front of the body associated with negative emotions

Patient 1
F1. **Hatred**. I put it on the **front**. It's when you're mean.
Patient 2
F1. There, and also some **anger** because I don't know how to explain it, but I really think **anger** goes there, in **front**. It seems to me that on the **side**, in **front**, there is more to say than there is about the **side** in **back**, and then I have the impression that it's messier here in the **front** than it is in **back**.
Patient 3
F1. When someone is **sad**, you can see that on their **face**. When we're sad! Anxiety — that goes by the **throat. Anxiety**. Because we have a navel. It's being afraid of having something.
Patient 4
F1. **Cruelty**. I put them together, on the **front. Grief**, **sorrow** and **sadness**. They are words that are similar, down inside of me. They make me think of my grandmother because she raised me.
Patient 5
F1. Anger, I put on the **front** because I have a lot of **anger** in me.

F2. There is **hate** around my **breasts** because I don't like it when people touch them.
F3. It's like **hate**, it's the same as like around my **chest** because my brother raped me.
Patient 6
F1. Yes, **unhappiness** in **front**, I don't know why. I can't deal with this. I'm worn out.
F2. And **anxiety**, I put that with the **heart** in the front because I pray every day that if there is a good God for me.
F3. **Cruelty** around my brother in my **stomach** because I think it comes from there, in the **stomach.**

Patient 1
F1. **Gentle** in the **back**. It makes me think of someone calm stroking my **back**.
Patient 2
F1. **Gentle**. I put that for the **buttocks**, well, that's pleasure, too. Yes, that is the **back**, cares maybe, too.
That's the **back**, massages and things like that… for example with children when you stroke their **backs** to calm them down.

The back of the body associated with positive emotions

Patient 3
F1. **Pleasure**. At the **back. Pleasure** with your friends. Colleagues. I feel a sense of security.
Patient 4
F1. **Gentle**, I put that with the lower **back.** There's gentleness around the lower back. Gentle is **gentleness.** You caress yourself, you get caressed by someone else. It's **gentle.** Having your **back** stroked.
F2. **Dream** is beside gentle on the back. To **dream**, in the sense of sleeping.
F3. **Miracle**, I put it there. I believe in miracles. When it snows, I think that's a **miracle.** It's a **miracle** when it snows in Marseille. When it snows. I feel it in my **back.** It's **gentle.** It comes from **behind**, miracles. **Miracles**, they surprise me. It's surprising.
F4. **Pleasure. Freedom.** At the **back. Freedom. Pleasure** with your friends. Colleagues. Talk. **Freedom**, it's being able to go out. Live. Have a drink know how to share everything with a colleague. It's not often like that.
F5. **Friendship**, I put it there, **behind.** Ok, friendship. **Friendship** is difficult these days. It still exists. But it's less frequent than before. Because friendship - you have to Me, I have the **pleasure** of making love. The **pleasure** of eating. There are many kinds of **pleasure.** Eating a good meal. A good dish. It's a **pleasure** with a girlfriend. Because I myself see **friendship** as very interesting.
F6. People, they're like that. When they do something for you, they expect you to do something in return. **Tenderness. Joy.** That's there, down by the **calves** in **back.** Yes. That's **tender** for you! I think that **tenderness** and **joy** go together. That reminds me of my godfather. The one who had me baptized. He was tender. He had a lot of tenderness. He passed away.
Patient 5
F1. **Freedom**, I put that on the side **behind** with the **back** because I saw that I've changed now because that used to scare me before. Because now I think that when I'm being talked to I don't reply right away. I think about it before speaking. Because really the boys, what they're after, it's just sex and after that's it.
F2. **Tenderness**, I like **tenderness** in dancing because there are hard things but also things that are very tender. I remember that it was a surprise. Yes, it's **tenderness** without seeming like it. I put it in **behind**, in my **back.**
Patient 6
F1. Yes **gentleness friendship**, in the **back.** The **friendship** I feel for my girlfriend Mary. My friend Mary, we've known each other

for twenty or twenty-five years. Yes, we've known each other since sixth grade. She lives in Aix. Yes she lives in Aix. I put them on the **back** because she is nice. She came to see me. She brought me two packs of cigarettes. I only wanted one but she brought two.

F2. Yes, because **freedom** comes from the **back.** It comes from the **back**, **freedom.** Yes! My **freedom**, it's been a long time since I left you in a wild land. My **freedom** like a wild land. My **freedom**, for a long time I kept you like a precious gem to take me all the way to go anywhere luck would lead. To pluck in my **dreams** a wind rose on a moon pathway … my **freedom**, my **freedom.**

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