

Artistic Portraits of Strange-Face Illusions Produced through Eye-to-Eye Gazing in Dyads or Mirror-Gazing

GIOVANNI B. CAPUTO AND GIANCARLO LEPORE

ABSTRACT

Strange-face illusions are apparitional perceptions of deformed faces, unknown people and monstrous beings produced by prolonged staring at one's own face in a mirror or when staring eye to eye at another person in a dyad, at low-level room illumination. In the authors' experiment, portrait artists drew illusions they perceived during a 10-minute eye-to-eye gazing session while paired in dyads with naive participants. Dissociation was measured through standard self-report questionnaires. Results showed that portraits became more abstract and less figurative as the artists experienced higher levels of nonpathological dissociation. Statistically, a significant correlation was found between art-abstraction ratings and dissociation scores by judges and portrait artists, respectively. Findings are discussed in relationship to portraits *à la manière de* Scipione and Francis Bacon.

Modern artists Scipione (1904–1933) and Francis Bacon (1909–1992) created human portraits characterized by deformed, stretched, flowing and melting facial features. In fact, modern visual artists acting as phenomenological neuroscientists have investigated mental processing and neurophysiological limitations of the visual system through their paintings [1]. In connection to face processing, experimental psychologists have found that, at low-level illumination, mirror-gazing at one's own reflected face [2] or eye-to-eye gazing within a dyad of individuals [3] produced perceptions of facial deformations and apparitions of unknown faces—the so-called strange-face illusion—that look like faces portrayed by Scipione and Bacon.

Further research has shown that dissociation [4] of the subject's consciousness is produced during strange-face illusions [5]. The nonpathological dissociation produced by mirror-gazing has a short-term effect that is completely dissipated within 15 minutes of the end of the session [6].

Dissociation of consciousness has different facets: dereal-

ization (detachment from the external world), depersonalization (detachment from self-body) and dissociative identity (compartmentalization of a second identity or personality). Some authors have conceptualized dissociative experiences as a progression on a continuum from normal integration of consciousness to derealization, depersonalization and finally dissociative identity [7]. From a cognitive viewpoint, these three dissociative levels can correspond to deficits of integration at the three levels of self-referential processing: bodily-self, minimum-self (in particular, body-ownership) and identity-self, respectively. In turn, these three different impairments of self-consciousness produce distinguishable effects in strange-face illusions.

In the present study, our hypothesis was that greater levels of strangeness of portraits created by artists could be associated with higher levels of the artists' dissociative states. From an operational viewpoint, this hypothesis can be stated as follows: that progressive levels of dissociation in the artist's consciousness should be shown by the progressive detachment from a realistic portrait toward a higher level of abstraction in their drawing. In order to test this hypothesis, we used the eye-to-eye gazing test (Fig. 1) for producing nonpathological dissociation in dyads. Seventeen portrait artists (mean age 23.3 years; st.dev. 4.2) were randomly paired with 17 naive participants (22.5 years; st.dev. 2.2), thus forming 17 artist-naive dyads. (Artist-artist dyads were excluded to avoid prior knowledge between members.) All individuals were white Europeans who took part voluntarily in the research. Portrait artists were invited by one of the authors (GL) on the basis of their skills to create face drawings. Naive participants consisted of students and members of the general public. The two groups were both age and gender balanced.

Participants of each dyad met for the first time at the laboratory, where they were introduced to the experimental setting and gave their informed consent. The experimenter explained that the aim of the research was “the perception of the face of another person.” Each pair of participants sat in two chairs positioned facing each other. They received the following written instructions: “Maintain a neutral facial

Giovanni B. Caputo (educator, artist), University of Urbino, DISTUM, via Saffi 15, Urbino, PU 61029, Italy. Email: giovanni.caputo@uniurb.it. ORCID: 0000-0002-8692-4786.

Giancarlo Lepore (educator, artist), Academy of Arts, via dei Maceri 2, Urbino, PU 61029, Italy.

See <https://direct.mit.edu/leon/issue/54/4> for supplemental files associated with this issue.

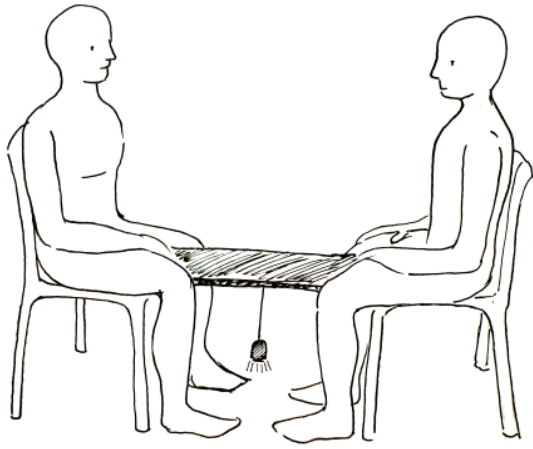


Fig. 1. The eye-to-eye gazing test was conducted in a dark room that was lit by a small light (20 W) placed between the two participants under a flat opaque panel. Illumination of the faces was 0.8 lux. Drawing by Alberto Conti. (© Giovanni Caputo)

expression. Your task is to look at the other participant. Keep gazing in the eyes of the other participant. The session will last ten minutes.”

Members of dyads took the experimental task seriously and had no difficulty in maintaining eye-to-eye gazing without laughing or crying. In fact, the onset of strange-face illu-

sions starts, on average, after one minute of gazing [8] and is usually accompanied by a sort of “lucid” consciousness [9].

When the 10-minute test finished, participants were asked to fill in a self-report questionnaire of dissociation adapted from the Clinician-Administered Disassociated States Scale (CADSS). Then we invited the artists to sketch drawings by memory, with pen or pencil, of the illusory faces they might have *perceived* in place of the actual face of the other member of the dyad.

The results of the questionnaire showed a large range of dissociation among the artists (CADSS total score mean \pm SEM = 26.9 ± 2.3 ; range = 12–45) and naive participants (23.8 ± 2.3 ; range = 10–44). This difference (of dissociation scores between the artists and naive participants) was statistically nonsignificant (ANOVA; $F(1,32) = 0.92$; $p = 0.34$; eta-squared = 0.028).

All 17 artists sketched portraits. None of the portraits corresponded to the other’s physical faces in the dyads. Eight portraits are displayed in Fig. 2, which show drawings from (a) to (h) at increasing levels of self-reported dissociation. They can easily be classified into the categories of strange-face illusions previously reported in the mirror-gazing test [10].

Portraits show figurative differences in relationship to the level of the artist’s dissociation of consciousness. For ex-



Fig. 2. Portraits of strange-face illusions sketched by eight artists and sorted at increasing levels of nonpathological dissociation. According to the artists’ descriptions, the portraits represent: (a) an unknown woman; (b) a woman of a different race; (c) an unknown woman wearing imaginary glasses; (d) a man with multiple eyes; (e) an unknown dead woman; (f) an alien presence; (g) multiple apparitions of cartoon-like faces; (h) an evil witch. (© Giovanni Caputo)



Fig. 3. Portraits of strange-face illusions sketched after a 10-minute session of mirror-gazing. Portraits were sorted in order of increasing levels of nonpathological dissociation. The mirror measured 0.4 m × 0.4 m and was mounted on a stand placed in the center of a dark room, at a distance of 0.4 m from the participant's eyes. The small light (20 W) was positioned on the floor at a distance of 0.3 m behind the chair; the spotlight pointed to the floor. Illumination of the face was 0.8 lux (see Mirror-Gazing Test in the online supplemental material). (© Giovanni Caputo)

ample, at low-level dissociation, which is characterized by derealization at the early level of visual processing, strange-face illusions are represented by temporary loss of face details (Fig. 2a) or changes of colors and facial features (Figs 2b and 2c). At intermediate-level dissociation, characterized by depersonalization, momentary loss of bodily-self cohesion (Fig. 2d), dead faces (Fig. 2e) or portraits of a “presence” (Fig. 2f) are shown. Finally, at high-level dissociative identity, apparitions of multiple cartoon-like faces (Fig. 2g) or dissociative personalities (Fig. 2h) are likely to manifest.

Our hypothesis is that portraits become less figurative, yet increasingly more abstract, as dissociation of consciousness increases. In order to test this hypothesis, we printed 17 sheets with same-size portraits of strange-face illusions. Subsequently, we separately asked four independent judges with formal expertise in figurative art to sort the portraits from very realistic to very abstract. Rankings were statistically correlated to artist dissociation scores (Spearman $\rho = 0.35$; $p = 0.005$), with an acceptable level of inter-judge ranking reliability (Cronbach alpha = 0.44).

We obtained similar results in another experimental session that used mirror-gazing (see the Mirror-Gazing-Test (MGT) setup in the online supplemental material) and sorted at increasing levels of dissociation. Portraits illustrate the three levels of increasing dissociation: derealization (deformations of facial features: Fig. 3a); toward incremental depersonalization (body-ownership changes: an “aura” or “presence” behind the subject: Fig. 3b; “detachment” of the face as if it were a mask: Fig. 3c); and finally, the abrupt interruption of self-identity and apparition of an “inconceivable” dissociative identity (in the artist's words, “a sorceress with phosphorescent yellow sclerae”: Fig. 3d).

It is noteworthy to observe that, at the highest levels of dissociative identity, portraits can look either realistic (as in Fig. 2h) or hallucinatory (as in Fig. 3d). Indeed, a couple of portraits from dyads showed *realistic dissociative identities* that look like hallucinations (so called pseudo-hallucinations), for example, a “shining adolescent” or an

“unknown individual with an exceedingly intense emotional mood” (see portraits in the online supplemental material).

The comparison between mirror-gazing and eye-to-eye gazing is instructive. Strange-face illusions during mirror-gazing are very unsettling, because the subject is forced to acquire consciousness of self-apparitions. From a different perspective, eye-to-eye gazing produces interpersonal possibilities of twofold-unconscious melting within the dyad (i.e. each dyad subject cross-projects their dissociative illusions onto the other's face) and thus opens up a potential for creativity.

None of the participants, either artists or naive individuals, experienced strange-face illusions before the experimental session. This finding reflects a sort of uneasiness in confronting such unsettling experiences. Mirror-gazing during the night is connected to some forms of magic and spirituality [11,12]. Anthropology, theology and art history attest that the usage of mirrors as a tool for awakening is rather common across cultures [13,14], religions [15,16] and arts [17,18].

Nevertheless, it is well known that great artists used mirrors extensively in their ateliers. For example, Leonardo da Vinci was fascinated by mirrors, as declared in his *Trattato della Pittura* [19] and by Vasari in *Le vite de' più eccellenti pittori, scultori, e architettori* [20]. It is said that Leonardo da Vinci had a black room containing a mirror, which he presumably used for meditation [21]. His painting *Saint John the Baptist*, in author Caputo's opinion, is a portrayal of his experiences with unsettling spiritual images of strange-face illusions, which surface from the lucid obscurity of a reflective mirror.

In addition, Francis Bacon possessed a large round mirror that emerged like a magical self-presence within his junk-filled atelier. Since a low level of illumination is required for triggering dissociative states of consciousness in healthy individuals, further biographical research is needed to discover whether artists such as Scipione and Bacon did indeed conceive their portraits in dim light settings—only afterward switching to normal light illumination for cor-

rect usage of oil colors. Other ways to produce dissociative states of consciousness are psychophysical trauma and psychoactive substance intake—and these tools should also be considered in the biography of artists of strange-face paintings. Francis Bacon's portraits—single-figure, two-figure and “in a mirror” paintings—investigate and represent the entire hierarchy of dissociative states (for review of dissociative states, tools for dissociation in the laboratory, roles of personality differences and possible neurophysiological

explanations see Caputo, Lynn and Houran [22]): (i) derealization (e.g. huge deformations and animal faces); (ii) depersonalization (e.g. detachment of the face as if it were a mask with holes, and a “presence” perceived/represented in the shadows and through doors); (iii) dissociative identity (e.g. doubles lying side by side on a bed or a grass field). In conclusion, the experience of strange-face illusions can unlock new horizons for both artistic achievements and individual self-knowledge.

Acknowledgments

The authors report no conflict of interest. The Ethical Committee of the University has approved this research.

References and Notes

- 1 P. Cavanagh, “The Artist as Neuroscientist,” *Nature* **434** (2005) pp. 301–307. doi:10.1038/434301a.
- 2 G.B. Caputo, “Strange-Face-in-the-Mirror Illusion,” *Perception* **39**, No. 7, 1007–1008 (2010). doi:10.1068/p6466.
- 3 G.B. Caputo, “Strange-Face Illusions during Interpersonal Gazing and Personality Differences of Spirituality,” *Explore Journal of Healing* **13**, No. 6, 379–385 (2017). doi:10.1016/j.explore.2017.04.019.
- 4 American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5th Ed. (Washington, DC: American Psychiatric Publishing, 2013).
- 5 G.B. Caputo, “Strange-Face Illusions during Eye-To-Eye Gazing in Dyads: Specific Effects on Derealization, Depersonalization and Dissociative Identity,” *Journal of Trauma & Dissociation* **20**, No. 4, 420–444 (2019). doi:10.1080/15299732.2019.1597807.
- 6 C.R. Brewin, B.Y.T. Ma and J. Colson, “Effects of Experimentally Induced Dissociation on Attention and Memory,” *Consciousness and Cognition* **22**, No. 1, 315–323 (2013). doi:10.1016/j.concog.2012.08.005.
- 7 J.D. Bremner et al., “Measurement of Dissociative States with the Clinician-Administered Dissociative States Scale (CADSS),” *Journal of Traumatic Stress* **11** (1998) pp. 125–136. doi:10.1023/A:1024465317902.
- 8 G.B. Caputo, “Apparitional Experiences of New Faces and Dissociation of Self-Identity during Mirror-Gazing,” *Perceptual Motor Skills* **110**, No. 3, 1125–1138 (2010). doi:10.2466/pms.110.C.1125-1138.
- 9 Caputo [5].
- 10 Caputo [2] and Caputo [5].
- 11 G.B. Caputo, “Archetypal Imaging and Mirror Gazing,” *Behavioral Sciences* **4**, No. 1, 1–13 (2014). doi:10.3390/bs4010001.
- 12 A. Delatte, *La Catoptromancie grecque et ses derives* (Liège, Belgium: Vaillant-Carmann, 1933).
- 13 G.C. Vollrath, “Cultural Techniques of Mirroring from Lecanomorphy to Lacan,” *Communication+1* **7**, No. 1, 5 (2018). doi:10.7275/879h-wr36.
- 14 K.B. Barker and C. Rice, *Folk Illusions* (Bloomington, IN: Indiana Univ. Press, 2019).
- 15 P. Dunn, *The Practical Art of Divine Magic* (Woodbury, MN: Llewellyn Publications, 2015).
- 16 J. Bronkhorst, “Can Religion Be Explained? The Role of Absorption in Various Religious Phenomena,” *Method & Theory in the Study of Religion* **29**, No. 1, 1–30 (2017). doi:10.1163/15700682-12341375.
- 17 J. Baltrusaitis, *Le miroir: revelations, science-fiction et fallacies* (Paris: A. Elmayan-Le Seuil, 1978).
- 18 M. Pendergrast, *Mirror Mirror: A History of the Human Love Affair with Reflection* (New York: Basic Books, 2003).
- 19 Leonardo da Vinci, *Trattato della Pittura* (1540) pp. 402, 404.
- 20 G. Vasari, *Le vite de' più eccellenti pittori, scultori, e architettori* (Firenze, Italy: Lorenzo Torrentino, 1550) pp. III, 574.
- 21 M. Di Vito, “The Misty Mirror of the Soul: The Cultural History and Iconology of Leonardo's *Saint John the Baptist*,” in V. Merlini and D. Storti, eds., *Saint John the Baptist* (Milan: Skira, 2009).
- 22 G.B. Caputo, S.J. Lynn and J. Houran, “Mirror- and eye-gazing: an integrative review of induced altered and anomalous experiences,” *Imagination, Cognition and Personality* (3 November 2020). doi:10.1177/0276236620969632.

Manuscript received 25 February 2019.

GIOVANNI B. CAPUTO is a scientist and an artist. As a professor at the University of Urbino, he studies cognitive psychology, psychopathology, perception, consciousness, aesthetics and spirituality. He is also a visual artist and filmmaker (alias *Giò Kaptra*).

GIANCARLO LEPORE is a sculptor and professor at the Academy of Arts of Urbino.