

LAST BUT NOT LEAST

Strange-face-in-the-mirror illusion

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I describe a visual illusion which occurs when an observer sees his/her image reflected in a mirror in a dimly lit room. This illusion can be easily experienced and replicated as the details of the setting (in particular the room illumination) are not critical. These observations were made in a quiet room dimly lit by a 25 W incandescent light. The lamp was placed on the floor behind the observer so that it was not visible either directly or in the mirror. A relatively large mirror (0.5 m × 0.5 m) was placed about 0.4 m in front of the observer. Luminance of the reflected face image within the mirror was about 0.2 cd m⁻² and this level allowed detailed perception of fine face traits but attenuated colour perception. The illusion occurred even at higher levels of illumination of observer's face (from 0.2 to 1.6 cd m⁻²). The task of the observer was to gaze at his/her reflected face within the mirror. Usually, after less than a minute, the observer began to perceive the strange-face illusion.

Phenomenological descriptions were made by fifty naive individuals (age range 21–29 years; mean 23 years; SD 2.1 years). At the end of a 10 min session of mirror gazing, the participant was asked to write what he or she saw in the mirror. The descriptions differed greatly across individuals and included: (a) huge deformations of one's own face (reported by 66% of the fifty participants); (b) a parent's face with traits changed (18%), of whom 8% were still alive and 10% were deceased; (c) an unknown person (28%); (d) an archetypal face, such as that of an old woman, a child, or a portrait of an ancestor (28%); (e) an animal face such as that of a cat, pig, or lion (18%); (f) fantastical and monstrous beings (48%).

The disappearance or attenuation of face traits could be linked to the Troxler fading that occurs in the periphery while staring at a central fixation. However, this explanation would predict that face traits should fade away and eventually *disappear* (Wade 2000), whereas the *apparitions* in the mirror consist of *new* faces having *new* traits. A possibly related 'multiple-faces' phenomenon (Simas 2000) has been reported for photos of faces placed in peripheral vision. In this case, the reported deformations of features include variations of the facial traits and expressions or appearance of new ones like teeth, or a beard, as well as completely new faces, 3-D distortions, rotations, upside-down faces, the subject's own face, sometimes younger or older. Clearly, there are similarities in effects for peripherally viewed photos and centrally viewed self-reflections in dim light. However, in central viewing, the perception of the face is more accurate, making the distortion more salient, and, because the distortions are of one's own face, the effects are amplified from merely intriguing to often unsettling. The two types of distortion (peripheral versus low-illumination central viewing) can be compared by viewing one's own face in ¾ profile in a mirror in peripheral vision.

From a perceptual viewpoint, the strange-face illusion may be explained by disruption of the process of binding of traits (eyes, nose, mouth, etc) into the global Gestalt of face (Thompson 1980). This long-term viewing of face stimuli of marginal strength may generate a haphazard assembly of face traits that generate deformed faces or scrambled

faces. Frequent apparitions of strange faces of known or unknown people support the idea that the illusion involves a high-level mechanism that is specific to global face processing. On the other hand, the frequent apparition of fantastical and monstrous beings, and of animal faces cannot, in our opinion, be explained by any actual theory of face processing. Neither constructive approaches nor top-down accounts seem to provide adequate explanations.

The participants reported that apparition of new faces in the mirror caused sensations of otherness when the new face appeared to be that of another, unknown person or strange 'other' looking at him/her from within or beyond the mirror. All fifty participants experienced some form of this dissociative identity effect, at least for some apparition of strange faces and often reported strong emotional responses in these instances. For example, some observers felt that the 'other' watched them with an enigmatic expression—a situation that they found astonishing. Some participants saw a malign expression on the 'other' face and became anxious. Other participants felt that the 'other' was smiling or cheerful, and experienced positive emotions in response. The apparition of deceased parents or of archetypal portraits produced feelings of silent query. Apparition of monstrous beings produced fear or disturbance. Dynamic deformations of new faces (like pulsations or shrinking, smiling or grinding) produced an overall sense of inquietude for things out of control.

Static face pictures and the distortions seen when they are peripherally viewed (Simas 2000) involve the binding of face traits. In contrast, self-perception in a mirror engages a far broader set of processes as the image duplicates one's own face perfectly in space and time, triggering an integration of perceptual, motor, and proprioceptive processes. It is a dynamic process involving self-motion and autonomous self-exploratory control of facial pose and expression (Rochat 2002). The construction of our self-identity includes, among other processes, the capacity to recognise oneself in the mirror, a competence acquired in childhood between 2–3 years of age (Zazzo 1981). Another aspect of the strange-face illusion is the potential breakdown of self-identity that may take place when gazing at a strange new face that has replaced one's own in the mirror for a relatively long time.

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