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**Perception in the mirror: the influence of self-beliefs**

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**Abstract**

Mirrors are more than reflective surfaces; they are portals to self-perception influenced by a tapestry of developmental, psychological, and cultural factors. In this paper, we explore the interplay between these factors by investigating the effect of beliefs on mirror images and clarifying how negative self-perception develops. We analyse the phenomenon of mirror self-recognition and the development of beliefs about oneself, attempting to clarify how emotionally charged beliefs could influence our experience with the mirror. Our proposal offers insights into body dysmorphia disorders, emphasizing the importance of the interaction between belief and self-perception in this and related disorders.

**Keywords:** self-representation; body image; perception; self-beliefs; emotional object seeing.

1. **Introduction**

In recent decades, body acceptance has gained public attention, spurred by social media, educational initiatives, and psychological research who advocate for its relevance to both emotional and social well-being.While emotional well-being pertains to an individual's internal psychological state, social well-being encompasses their ability to form and maintain healthy social relationships and to feel accepted in social contexts. This shift in focus highlights the importance of fostering a positive relationship with one's body, not only to support individual mental health but also to enhance social connectedness and resilience.

Clinical research has expanded our understanding of body dissatisfaction. It has been shown that body dissatisfaction is often associated with eating disorders and body dysmorphic disorders, which are characterised by an overwhelming fear of being unattractive and by a dysfunctional use of the mirror (Cash et al., 2004; Sepúveda et al., 2002; Vartanian, 2009). Studies also show a correlation between the self-attribution of negative traits and body dissatisfaction (Thomas et al. 2000). For example, individuals who have difficulties in accepting their bodies often also exhibit low self-esteem and a tendency to form negative self-concepts, i.e., self-assessed negative behaviours, abilities, and traits (Tiggermann, 2005; Vartanian et al. 2017; Vartanian & Dey, 2013).

There is however a philosophical shortcoming in the analysis of the relation between self-perception and self-concept. That body dissatisfaction is often associated with a negative self-concept does not say much about the causal interaction between these constructs. Therefore, it is unclear whether there is a direct influence from self-attribution of negative traits to self-perception, and how this interaction may occur at the psychological level. We will exemplify self-concepts by considering beliefs that one attributes to oneself, and we will analyse the following question: do self-beliefs influence the way we perceive ourselves? And if so, how can we explain this process?

The mirror as a tool for self-observation is central to our analysis since, the mirror can reflect not only our physical appearance but also the practice of self-assessment of our traits developed through social interactions. In line with other scholars (Tiemersma, 1990; Lacan, 2010; Eco, 1984; Koukouti & Malafouris, 2020; Lemma, 2020), our analysis considers the mirror as an "external eye" on ourselves, and as a medium informed by social development that may transform self-perception into an experience of self-criticism and even contempt.

The experience of looking in the mirror, which we here call mirror gazing, can be particularly distressing because individuals may not like what they see and may find it difficult to accept their bodies as they are. People may perceive their image in the mirror as particularly ugly, in a way that they would believe is not socially acceptable or that they believe it would make their social life difficult. In this sense, mirror gazing not only affects emotional well-being but also one’s ability to engage confidently in social contexts, thus impairing social well-being. As Koukouti and Malafaouris (2020) observed, "As many people know from experience, looking in the mirror can turn into an experience of belittlement and abuse" (p. 22).

Our focus is on how contemptuous, socially constructed beliefs about oneself interact with mirror experience from the perspective of a philosophical and psychological perspective. Despite extensive research on the socio-cultural significance of mirror recognition in human life (e.g., Pendergrast, 2003; Rochat, 2021), the cognitive relationship between self-beliefs and self-perception remains a largely untapped area of study.

We take into consideration self-beliefs as the cornerstone of socio-cultural self-development. Beliefs are mental states which stand as good candidates for possibly affecting human psychology. Emphasizing the importance of beliefs in human experience, we will focus on self-beliefs as a shortcut to the analyses of the cognitive relationship between self and mirror image. We will specifically examine what predisposes individuals to dislike their bodily appearance and how this experience is influenced by the acquisition of negatively charged beliefs about oneself.

Ultimately, we will present an argument detailing how the interaction between beliefs and self-perception operates at the cognitive level, drawing upon existing literature on emotion-object perception. We will contend that emotionally charged self-beliefs influence self-perception through arousal, perceptual biases, and attentional distortions of the mirror image, and finally analyse how these effects manifest in a variety of contexts and body disorders.

We begin with (§2) first define mirror self-recognition as a social and cultural practice that affects individual behaviour with the mirror. Then (§3), we will unpack self-beliefs and their interplay with bodily experiences and representations. We will then (§4) introduce the reciprocal interaction between self-beliefs and mirror gazing and analyse how beliefs can affect mirror gazing by introducing the concept of emotional object seeing. Finally (§5), we connect these insights to concrete cases, showing the profound influence of self-beliefs on self-perception. By bridging philosophical and clinical perspectives, we will provide a comprehensive understanding of the cognitive and affective relationship between self-beliefs and body perception.Our analysis considers both cognitive mechanisms and affective dimensions, examining how emotionally charged beliefs about one’s body contribute to anxiety, shame, and self-contempt, and how these responses further distort mirror perception. Integrating cognitive and emotional facets, we hope to illuminate the complex ways in which self-beliefs shape both body perception and emotional experience, offering a richer understanding of body image dissatisfaction and its impact on psychological well-being.

1. **Cultural influences on visual self-recognition**

In philosophical and psychological accounts, the ability to recognize oneself in the mirror has long been interpreted as a sign of self-awareness (Amsterdam, 1972; Boyle 2018; Gallup & Anderson, 2020; Savanah 2013). This interpretation has been initially proposed by studies examining self-recognition ability through the mirror test. In these studies, a mark is placed on the subject's forehead, and if the subject exhibits self-oriented behaviours, such as touching it or trying to remove it, then the subject is believed to be able to become the object of his or her own attention, aware of his or her own presence and even of his or her own subjective perspective on the world (Amsterdam, 1972; Anderson, 1984; Gallup, 1977).

Studies on mirror self-recognition have sparked intense debate, with some scholars arguing that success in the mirror test does not conclusively prove self-awareness. For example, an alternative leaner account proposes that subjects displaying self-directed behaviour toward the mark on the head are simply manifesting the ability to discriminate visual feedback about one’s own motor behaviour from other visual inputs (Heyes, 1994). Others suggested that human infants form a mental representation, which includes anticipatory elements or expectations, of what they look like and are not simply discriminating between different sources of stimuli (Nielsen et al., 2006). The suggestion of expectations, rather than just static mental representations, highlights that infants may anticipate certain aspects of their appearance and are surprised when this expectation is violated—thus engaging in behaviours aimed at resolving this incongruence [a similar interpretation has been put forward by Pennisi (2023)]. Another influential account suggests that mirror self-recognition requires bodily self-awareness, as opposed to introspective forms of self-awareness heralded in Gallup’s account (Suddendorf & Butler, 2013).We will not explore the question of what kind of mental state is necessary for mirror self-recognition. For our purpose, it is only important to establish that the mirror serves as a tool for self-observation in many cultures and that mirror self-recognition is often connected to conscious representations of self through sociocultural learning. Accordingly, we agree with scholars (see Heyes, 2018) who argue that variations in the phenomenon of mirror self-recognition are due to cultural factors, because mirror interactions are often mediated by others and mirror self-recognition is influenced by social and cultural dynamics.

A sociocultural perspective of mirror self-recognition can provide a theoretical framework to explain cultural variations in mirror-related behavioural responses. In line with the sociocultural account of mirror self-recognition, reactions to the mirror test in children can vary widely. While some children may recognize their reflection in the mirror as their own, they may not exhibit self-directed behaviours toward their mirror image due to other causes. Therefore, while ‘passing’ the mirror test might indicate self-recognition, test ‘failure’ should not be interpreted as an absence of this ability, as early self-reflective behaviour is influenced by several social and cultural factors (Keller, 2004). In addition, the experience with the mirror in humans is multifaceted, and it depends on multiple interacting factors (Rochat and Zahavi, 2011).

Cross-cultural research has unearthed correlations between children’s behaviour in front of the mirror and sociocultural variables such as parenting habits and cultural norms. In certain cases, the absence of self-oriented behaviour in front of the mirror could be attributed to a tendency to not express recognition outwardly in young children who were raised by less responsive parents during their early development (Borke et al., 2007; Keller et al., 2004). Cultural values like compliance may also influence how children react to the mark on their forehead in front of the mirror (Broesch et al., 2011). Thus, the behaviour of the individual in front of the mirror seems to be affected by what they expect or believe to be appropriate in a specific situation.

Children’s reactions, ranging from indifference to attempts to remove the mark on their forehead, appear to hinge on social context. Factors such as the expectations of parents or experimenters (Henrich, 2020), preparedness to deal with changes in their appearance (Broesch et al. 2011), or alignment with the appearance of others in their social context (Rochat et al., 2012), can influence the child’s mirror behaviour. Interestingly, children with a history of early developmental maltreatment or insecure attachment often display more neutral or negative emotions when faced with their own image (Schneider-Rosen & Cicchetti, 1991; Lewis et al., 1985). This suggests that the process of mirror self-recognition could be influenced by the emotional aspects of self-other relationships.

Developmental and cross-cultural studies offer insight into key aspects of mirror self-perception. Notably, the mirror does not seem to be universally recognized as a tool for self-recognition that augments states of self-awareness. How individuals in different social and cultural contexts approach the mirror as a tool for self-observation depends on those contexts. Sociocultural variations in mirror-related behaviour can be understood as dynamically formed through the interaction between individuals and their environment. In this perspective, self-recognition emerges through a practical engagement with the socio-cultural world. In different cultural contexts, the mirror offers opportunities for self-observation that are shaped by the social and material environment. Children learn to navigate these opportunities for interactions through repeated engagement with their caregivers and cultural artifacts, such as mirrors, and, also through the meanings attached to these objects within their community (Lobaccaro and Bacaro, 2021).

In Western cultures, parents typically expose infants and children to mirrors, including cameras and videos, conditioning them to interact with the mirror in a certain way, and identify with what they see, allowing them to develop a rich mirror image (Heyes, 2018). Conversely, in cultures such as that of the Buryats of eastern Mongolia, mirrors are treated as objects that amplify the brightness of the home and enrich the display of precious objects. Among the Buryats, it is also believed that mirrors can absorb the soul of the beholder, retaining and reflecting things that are best not seen; hence these objects are often covered or turned around during unfortunate events (Humphrey, 2007). It is therefore possible that children from these cultures become less or differently familiar with the mirror as a tool for self-inspection. In cultures where mirrors have different functions or hold specific cultural and spiritual meanings, children may develop different patterns of interaction with their reflection, enacting different forms of self-recognition shaped by those cultural values.

In conclusion, behaviour in front of the mirror is influenced by sociocultural development, which includes situational factors, such as the accessibility and presence of the mirror in social contexts and the way social groups use mirrors in their daily life. The way children are raised by their caretakers also seems to affect mirror-oriented behaviours, because children raised in contexts where compliance is valued may exhibit fewer initiatives and show less self-oriented actions during mirror self-reflection. Psychological factors seem to be also relevant. The desire to resemble others, meet their expectations, and the tendency to adjust to internalised emotions toward oneself may affect the individual's behaviour in front of the mirror. For instance, children in a context where most social peers also have the mark on their heads might be less inclined to touch the mark, presumably believing that they are expected to appear that way (Rochat, 2021).

Variations in individuals’ behaviours towards the mirror may also be dictated by variations in how one perceives and evaluates the image in the mirror. The mark on the head of individuals placed in front of the mirror might be perceptually irrelevant if one is not accustomed to paying attention to one's physical appearance. The red mark could also be a salient object of attention, regarded as something good because it reflects a sign of group membership, or as something bad but still to be accepted because authorities (such as parents and experimenters) dictated it to us. While studies on mirror self-recognition during development are important in establishing the sociocultural and affective nature of mirroring behaviour, they cannot guide us in understanding the interaction between self-concepts and mirror gazing. Beliefs, as attitudes toward certain states of affairs, are formed in sociocultural contexts and are therefore suitable for investigating whether and how such self-attributed traits influence mirror perception. We turn, therefore, to an investigation of beliefs about the self.

1. **Features of self-beliefs**

In this section, we will explore self-beliefs to offer insights into whether and how the interplay between the socio-cultural context and cognitive self-development can shape an individual's experience with the mirror image. Our approach to understanding the role of beliefs in self-perception recognizes that the self is an integrated network of dimensions across bodily, social, cultural, and normative domains, each exemplified by potentially distinct cognitive processes.

Over the past decades, research has illuminated the roles of bodily, affective, and sensorimotor aspects in shaping how individuals perceive and evaluate their bodies and preferences. For instance, studies by Seth (2013), Tajadura-Jiménez and Tsakiris (2014) and Preston and Ehrsson (2014) among others, show that interoception, proprioception, and actions modulate self-perception. However, as introduced at the onset of the manuscript, less attention has been given to how beliefs specifically interact with these lower-level aspects of self-perception—a gap this analysis aims to address.

Importantly, we do not propose that any particular dimension or cognitive factor retains primacy in the constitution of the self. Instead, we emphasize that research increasingly reveals continuity and interdependence between sensations and beliefs, emotions and thoughts, actions, perception, and rationality. This integrated view reflects the self as dynamically constituted by both pre-reflective and reflective aspects, rather than seeing these as separate or hierarchically ordered (Rochat and Zahavi, 2011). Having said this, a developmental view can highlight how conceptual competencies are often built on the ground of bodily, affective and sensorimotor capacities (Pezzullo et al. 2016)

Throughout our lives, we develop highly sophisticated social and linguistic competencies. We learn to situate ourselves in a complex world of self-related and other-related events, and acquire beliefs related to ourselves and others. Our self-representations, initially rooted in bodily perception and non-verbal cues, evolve as we acquire language and master verbal communication. What during earlier development was only a multisensorial representation of the body, later becomes integrated into a self-construct which can be expressed through words and concepts tightly related to emotions and feelings. We acquire the capacity to think and talk about ourselves, as we do about others, and thereby develop what has been called a self-concept.

Self-concept encompasses all the qualitative and quantitative traits that a person self-attributes, including physical characteristics, social roles, personality traits, interests, and abilities. It is a multidimensional construct composed of beliefs about the self, and informed by other types of attitudes such as desires and intentions, and mental states characterised by non-propositional content such as sub-doxastic beliefs (Brown, 1998; Markus & Wurf, 1997; Neisser, 1997). For the sake of simplicity, however, we will only discuss self-concept as composed of explicitly self-attributed attitudes, because in psychology scholars have often defined it as a cognitive evaluation of attributes about oneself (Hattie, 2014). Moreover, analysing even implicit, nonconscious self-attributions requires considerations that would take us down a completely different path.

The aspect of self-concept which we will consider here regards beliefs that individuals hold about themselves or self-beliefs. Beliefs are types of attitudes towards objects and states of the world, and self-beliefs have the individual as referent, integrated with other beliefs related to other non-self referents. For example, one may have reasons to think of themselves as “being 1,60 m tall”, on the grounds of believing that measuring tapes are reliable tools for measuring objects. Humans can have beliefs about themselves regarding both occurrences and dispositions (Cassam, 2014). Self-belief of the first type regards situations the subject is or was in, such as the belief “I am running on a treadmill for 5 km” or “I dropped out of university”. In contrast, self-beliefs about dispositions regard the characteristic manifestations, capacities, abilities, and proclivities which one attributes to oneself. Self-beliefs about dispositions may thus concern propositions such as “I am an optimist” or “I am an athlete”, held on the grounds of one’s history or of one’s attributable typical behaviour in certain situations.

In psychology, self-concept includes more often beliefs about self-dispositions, namely one's roles, attributes, worth, and value in different contexts and social situations, and it is measured through several psychometric tools (Byrne, 1996). Common tools for measuring self-concept include the Rosenberg Self-Esteem Scale (RSES), which assesses global self-worth, the Tennessee Self-Concept Scale (TSCS), which provides a more comprehensive evaluation of self-concept across multiple domains (e.g., physical, moral, personal, and family-related aspects), and the Self-Description Questionnaire (SDQ), which is often used to measure self-concept in children and adolescents, particularly focusing on academic, social, and physical dimensions.[[1]](#footnote-1)

Regarding self-beliefs concerning dispositions, the classical psychology definition acknowledges that individuals attribute these beliefs to themselves, regardless of whether others share these attributions. In essence, individuals hold authority over their beliefs and their content. Further , our consideration of self-concept extends beyond this traditional scope by including self-beliefs related to specific events, such as "I dropped out of university." This broader approach is relevant to our exploration of how self-beliefs influence self-perception, because we argue that autobiographical events can also significantly impact self-perception under certain conditions. We will revisit this point later in our discussion.

There is some agreement among psychologists that the self-concept originates in socio-cultural contexts between the first and the second year of life, and interestingly, this is a phase when children start to recognise themselves in the mirror (Rochat, 2004). Consider Neisser: “[self-concept] probably begins in a subset of the occasions of shared attention just mentioned, those in which the object of joint interest is the child herself (Tomasello, 1993). These are the occasions when a mother says “That’s a good girl!” or “Did you do that?”-when she speaks to the child about the child. The result is that the child, like her mother, now takes herself as an object of thought. She begins to think of herself as having traits, attributes, worth and value” (Neisser, 1997, p. 31).

What Nessier pictures is often understood as a capacity for self-reference which hinges on situations that include oneself and develops when children start to attribute characteristics and features to themselves. This is an activity that typically continues throughout the entire life of an individual. Through the sociocultural development of a self-concept, individuals may modify or produce new self-beliefs and therefore influence what individuals think, evaluate, and attribute to themselves. The self-concept can change or remain stable across life, and self-beliefs may be expressed publicly or remain unspoken in the subject’s mind.

We favour a conception of attitudes, such as beliefs, that is interwoven and dependent on bodily experiences and environmental cues ((Buccino & Colagé, 2022; Gallagher, 2023). Experiences with the body are a fundamental component of self-belief formation and maintenance across our lives (Mackenzie, 2009). For example, a man may initially perceive himself as being puny and scrawny, but over time, as he evolves into a cross-country runner, his belief might change to that of being lean, wiry, and fit. Changes in the perception of the body may contribute to the shaping of self-beliefs, and this process can also include perception of the body which is aided by mirror gazing. Observing certain aspects of our physical appearance can contribute to the way we conceptualize ourselves, and build our identity based on a variety of perceptual and social factors.

Beliefs about oneself, like other types of beliefs, are socially situated and moulded by cultural norms that assign specific meanings and values to different body types (Kiverstein, 2012). For example, societal preferences and idealizations concerning certain body types—such as being thin, fit, tall, or having specific skin tones or muscle structures—can have a profound influence on beliefs about ourselves and how they affect the perception of one’s body (Vartanian et al. 2023).

In our view of cognition, attitudes such as self-beliefs arise through the dynamic interaction between an agent and its environment (Di Paolo, 2009), emphasizing the idea that mental states are not abstract and disembodied internal representations but emerge from embodied, active engagement with the world. Despite not disagreeing with the idea that mental states are meaningfully charted as representational devices of some forms (Burnston and Tramacere, 2023), we think that depicting self-beliefs as patterns of sensorimotor coordination that reflect how an individual adapts and acts in specific social and cultural environments is helpful to emphasize their grounding in the socio-cultural history of the subjects, and their impact on their behaviour. For example, a self-belief like “I am competent” can be seen as an embodied readiness to act competently, sustained and reinforced by actions and reactions in a cultural context. Cultural practices provide specific opportunities for action and expression—that help shape and maintain certain self-beliefs. Through repeated participation in culturally meaningful practices (e.g., rituals, language use, norms), individuals come to embody and enact specific beliefs about themselves.

While the role of the body, and its interaction with the socio-cultural environment to shape the self-concept has already been emphasised by philosophical and psychological research (Rochat, 2004; Herbert & Pollatos, 2012; Gallagher, 2000) some philosophers have proposed that self-concepts may also have impacts on body experiences (Mackenzie, 2009; Brandon, 2016). Variations in beliefs about oneself can affect one's body perception because the relationship between beliefs and perception of the body appears bidirectional rather than unilateral (Brandon, 2016).

It is in the bidirectional interaction between self-beliefs and perception of the body that lies a key factor about how socio-cultural self-development may affect how humans perceive their mirror image. By analysing how self-beliefs and mirror gazing affect each other it may be possible to disentangle the interaction between negatively charged self-concepts and visual experience of one’s own body. In this interaction, there may lie a vicious circle between negative self-representation and a discomforting experience of our body.

1. **The impact of self-beliefs on mirror perception**

In mirror gazing, we not only recognize ourselves but also evaluate various features of our bodies. These evaluations often become integral components of our self-concept. As a routine part of daily life, we may scrutinise our appearance in the mirror, using socially derived categories to assess how we look. These categories become entrenched in how we think and what concepts we attribute to ourselves, thereby solidifying an identity that is heavily dependent on how we perceive and evaluate our bodily appearance. As a result, mirror gazing serves as a significant contributor to the construction of our self-concept, particularly in cultures where mirrors are a prominent tool for self-observation (Koukouti & Malafouris, 2020).

In other words, the experience of the body, together with the perception and evaluation of our body whether in the mirror or not, influence the crafting of our self-beliefs. This assumption is largely shared. Foundational analyses in this direction have been led by Merleau-Ponty’s phenomenology of perception, which emphasizes the body as a core site for self-experience, suggesting that our self emerges through lived, perceptual interactions with our own body. The psychoanalytic approach of Lacan (2010) converges on this point, and focuses on the proposal of a "mirror stage", in which the act of recognizing oneself in a mirror is foundational to the development of the self-concept. Finally, integrating cognitive and psychological insights into neurophenomenological approaches, Rochat (2003) and Rochat and Zahavi (2011) emphasize the developmental significance of mirror self-recognition in forming self-awareness and self-concept in children.

Experimental studies have also highlighted how perceptual evaluation in the mirror can shape our self-concept. For example, Cash (2001) investigated the effects of mirror exposure on body image among women with body dissatisfaction. They found that guided mirror exposure led to improvements in body image and self-concept by reducing negative self-evaluations. Vocks et al. (2008) conducted studies with individuals suffering from eating disorders and discovered that mirror exposure therapy not only affected body image but also contributed to changes in self-concept and self-esteem over time.

On the contrary, how self-concepts influence our perception, is a less explored mechanism. The influence of self-concept on mirror image seems harder to justify, which could be a reason why the impact of self-beliefs on the way we perceive our mirror image has been so far disregarded. Because of commonly held beliefs about perception and the characteristics of the mirror, it might be thought that visual perception is, at least in some basic aspects of visual coding, a process which reflects the objective nature of reality. Further, as an object of visual reflection, the mirror seems to offer an objective image of ourselves, the image of how we really are and of how others see us.

The mirror might be taken as a tool for an objective self-depiction that always tells us the truth about ourselves, and that we can use to see how others see us. The mirror, in other words, could be considered by most humans engaging in the activity of self-reflection as an external and objective eye on us through which we can grasp the reality of our own appearance in the world. As Eco (1984) observes, ‘[o]nce we have acknowledged that what we perceive is a mirror image, we always begin from the principle that the mirror 'tells the truth'’ (p. 207). Koukouti and Malafouris (2020) also observed that people tend to “‘[…]share an unexamined and largely automatic conviction: the mirror always speaks the truth” (p. 7). The authors, on the contrary, elaborate on evidence demonstrating that this conviction is ill-posed, because the mirror does not offer an objective image, but it is a repository of meanings that depend on the development, socio-cultural and psychological history of each subject.

In line with the work of Koukouti and Malafouris (2020), we contend that what we see in the mirror depends on a variety of different factors, and therefore the mirror is not always offering an objective image to us. The interaction between mirror gazing and self-concept is not one-directional, but it includes reciprocal influences. On the one hand, mirror gazing contributes to the formation of self-concept through development. The ability of perceiving and self-attributing certain characteristics of oneself, which can pertain to gender, body shape, skin color, etc. contributes to building our identity in a socio-cultural context, where each of these traits have normative, affective and moral connotation. On the other hand, self-beliefs can also influence mirror gazing. Our perception of the mirror image can be affected by a variety of features that we attribute to ourselves, and that are evoked by the perception of ourselves in the mirror. We will now explore how this process may take place.

Beliefs about ourselves do not only refer to occurrences, and subjectively perceived dispositions but are also entangled with emotions and feelings that arise from our developed attitudes toward them. Take the examples offered above. Self-beliefs about occurrences such as “I dropped out of university” might be charged with negative emotions because of family pressure to finish studies, or the social stigma of not being graduated in certain cultural contexts. In the same way, self-beliefs about dispositions, such as “I am a bad athlete” or “I am not able to run” might convey social fear, self-attributed contempt, disgust and even self-hate. Finally, self-beliefs are entangled with the experience of the body and are centred on our body as the perspective through which we have experienced those events. One´s own body or parts of it can be at the centre of negatively charged self-beliefs because of stressful experiences of social comparison which have led the subject to dislike one´s physical appearance. In the alternative, socially conveyed narratives about idealised body images may lead to building self-beliefs about one's own body as inadequate or particularly ugly.

Self-beliefs can be responsible for the specific emotional lens through which the mirror image is perceived. To understand this process, consider emotional object seeing, namely the process through which emotions affect the perception of the external world or external objects, distorting or biasing their size, quality, and features.

Studies have shown that under conditions of fear, subjects may perceive fearful objects as different than under different more neutral conditions. Individuals trapped in a room with a live tarantula perceive the spider as closer than it is (Cole et al. 2013). Individuals independently assessed for high fear of heights consistently overestimate a vertical extent from a two-story balcony to the ground, as they stand on the balcony ledge looking down (Teachman et al. 2008). Similar effects have been shown with subjects perceiving the slant of a hill they had to carry through a skateboard (Stefanucci et al. 2008).

Not only fear, but also disgust seems to affect the perception of objects. Some studies suggest that disgust may compress perceived distances between the observer and the object of disgust, while also affecting the perceived space surrounding the entire object by reflecting perceived contamination (Stefanucci et al., 2011). Gable and Harmon-Jones (2008) found that highly arousing positive emotions also focus or narrow attention which is often associated with perceptual distortion. These studies can illustrate the way the emotions conveyed by our beliefs about ourselves influence how we perceive and evaluate our physical bodies during mirror gazing. They suggest that our emotions are not isolated from our cognitive processes but play a crucial role in shaping our experiences of the external world. When we gaze into the mirror, emotions conveyed by our self-beliefs can affect our perception and how we view our reflection. If self-concept triggered by mirror gazing is predominantly negative, the emotions tied to relevant beliefs might bias the perception of one’s own bodily features and characteristics. When individuals gaze into the mirror, they might view their physical features more critically, distortedly perceiving the size of some body parts, focusing attention on aspects of the body that have been associated with negative connotations, or feeling particularly aroused by the image of oneself.

Although how the studies discussed the emotional view of objects may help to understand why some individuals perceive themselves negatively as a result of negatively connoted attitudes toward themselves, these studies do not clarify whether emotions can influence the cognitive evaluation of objects, or whether they affect early-stage perceptual processes. Some scholars argue that fear and disgust can have a direct effect on perception by distorting it; others argue that instances of emotional viewing of objects are better explained by nonperceptual phenomena, which lead the subject to make judgments in agreement with certain emotions (Firestone, 2013). Recently, Carvalho has advanced an intermediate view. He suggests that emotions such as fear and disgust might distort perception, but these distortions likely occur at the evaluative or attentional stage of perception rather than in its earliest stages. This appraisal stage allows for emotions and self-beliefs to shape how we interpret perceptual input, acting as a bridge between evaluative processes and perceptual distortions. Carvalho refers to a special mode of attention that is part of an orchestrated response that prepares the organism to deal effectively with an object in the environment (de Carvalho, 2021).

Specifying the exact cognitive process by which emotional attitudes conveyed by self-beliefs influence mirror observation is beyond the scope of this article. For our purpose, it is sufficient to show that the beliefs that individuals develop in a social context and attribute to themselves can indeed influence how the mirror image is represented and evaluated. Developing a negative self-concept may lead individuals to focus their attention on aspects of themselves that are considered particularly problematic, and even to distort the cognitive processes involved in evaluating a mirror image. On the other hand, assessing whether emotionally-charged beliefs can affect mirror perception at an early state of visual processing requires additional research.

1. **Self-beliefs and the origins of dysmorphic disorders**

We are arguing that self-beliefs can influence self-perception, not only through evaluative processes but also by shaping how we represent our mirror image. Self-beliefs allow us to represent certain aspects of our mirror image as distorted (different in quantity or quality) due to the valence of the beliefs we attribute to ourselves. This interpretation is aligned with studies on emotional object seeing, according to which emotions such as fear and disgust influence how we represent certain objects in our environment.

An individual, say Mr Smith, may have contrastive self-beliefs. For example, he may have positive self-beliefs when thinking of being a parent whose children’s love is overtly communicated, and believe to be a good parent, but negative ones when thinking about being a writer, and believing to be a bad writer as a result of having failed to sell any copies of a book. Which of the different self-beliefs possessed by this person will influence his experience with the mirror? Which emotionally driven attributions will influence this person’s image when looking in the mirror? We endorse the notion of the self as a dynamic and changing construct that shows variations over time and across different contexts (Wallace, 2019). Furthermore, we think that our analysis of self-concepts as a collection of beliefs about oneself is compatible with a multifaceted and dynamic view of the self, in which aspects of one's identity depend on a variety of attributions across different dimensions. However, we do not believe that this undermines the thesis that self-beliefs can influence mirror gazing, distorting our representation of the mirror image through the emotional valence of those beliefs.

In many subjects, mirror observation may be associated with changing experiences, sometimes positive and sometimes negative, depending on many factors, including the beliefs that mirror exposure may trigger at that particular moment. The relevance of context in influencing self-representation has been widely recognised in both philosophy and psychology, according to which self-concept is known to be profoundly influenced by the social and cultural environment (Byrne, 2000; Gallagher, 2000). Our contribution to these accounts is that self-concept can influence the mirror image, and the way this influence takes place depends on a variety of contextual factors.

Consider Mr Smith again. Looking at himself in the mirror at home, being close to his family and children, Mr Smith would more likely think of himself through the beliefs associated with being a good father, which produces a more pleasant representation of his image in the mirror. The feeling of self-appreciation conveyed by the attributed role in the family plays a role in influencing his experience of looking in the mirror accordingly. At work, on the other hand, where Mr Smith ascribes to himself the belief of being a failed writer, looking in the mirror may lead to a completely different result. The emotion associated with the work-related self-beliefs may act on the image in the mirror by distorting it and making him focus on perceived flaws and deformities.

The socio-cultural view of mirror self-recognition has been documented in the case of mirror self-recognition studies. As will be recalled, children tend to show no self-orientation behaviour towards the red sign if others in the laboratory also wore a red sign on their head (Rochat, 2012) because they were presumingly inclined to appear 'like the others'. Similarly, children with no or limited experience with the mirror as a self-inspecting tool may also fail to show self-directed behaviour (Humphrey, 2007). Furthermore, children raised in families where compliance with rules is a value refrain from touching the mark on their head (Broesch et al., 2011) because they are used to waiting for permission from authority before acting. According to our thesis, just as behaviour towards the mirror image can change with contextual and, by extension, cultural factors, the psychology of mirror exposure is also influenced by similar factors.

While some individuals may identify themselves through non-homogeneous sets of self-beliefs, some evaluated through positive and some negative emotional attitudes, depending on the individual's life experience and value system, others may have internalised a predominantly devaluing self-concept. Consequently, for the latter, the self-concept is predominantly negative. Consider the case of individuals with Body Dysmorphic Disorder (BDD), a psychopathological condition characterised by a constant sense of ugliness and fear of rejection, a struggle with obsessive attention to body appearance, feelings of shame, depression and social withdrawal (Veale, 2001; Phillips, 2009). BDD is characterised by an excessive focus on minor or imagined physical defects, leading to significant distress and impaired social functioning (Perugi et al. 1997).

In particular, BDD may occur in individuals exposed to negative social experiences such as bullying or maltreatment (Buhlmann et al. 2008, Veale, 2016). The common trait of those who suffer from this disorder seems to be that the negatively perceived mirror image is connected to a deeply problematic self-concept involving both feelings of inadequacy, often reflected in low self-esteem and a perceived lack of competence or ability (Buhlmann et al. 2008; 2015). It seems that the profound self-disliking observed in BDD-affected individuals reflects a negative internalised image of oneself that extends beyond physical features. Important for our argument is that these individuals often harbour a generally negative concept about themselves, including their past or present life, and prospects (Lemma, 2010). Crucially, it seems that their suffering stems from non-perceptual experiences and typically involves other aspects of their psychology.

BDD can offer insights into how the emotional and evaluative components of self-trait attribution can be responsible for the profound discomfort felt by some individuals during mirror exposure. We have claimed that research on emotional object seeing shows how emotions can influence or alter our perception. Here, it also can become a vital facet in understanding the subjective experiences of individuals suffering from BDD. Emotions emerging from negative beliefs about oneself are potent enough to affect and distort an individual's self-perception, which, in the context of BDD, manifests as severe dissatisfaction with one's physical appearance.

Evidence suggests that emotional arousal, particularly fear and anxiety, might cause a restriction of the perceptual field through a narrowing of attention (van Steenbergen, 2001; Shang et al., 2021). This phenomenon where the visual field seems to shrink around a threatening stimulus, is akin to the experiences of individuals with BDD. They may perceive their flaws with exaggerated clarity and focus due to a heightened emotional state.

But how does self-belief convey fear and disgust about oneself? We think that the answer lies in the fact that a negative emotionally charged self-concept may translate into a variety of different emotional attitudes toward oneself. For example, a negative self-concept may imply having a “fear” of being inadequate and therefore being afraid of perceiving the inadequateness of oneself in one’s own outer characteristics. Holding negatively charged self-beliefs may mean being afraid of having a low worth with respect to some situations and therefore that one’s own low worth is visible through the features of one’s own body. Also, negative self-beliefs may imply that one is disgusted by what one sees and how one’s own body is.

Negative self-beliefs may include both personality, skills, competence, and body characteristics of the individual but also, as previously discussed (§3) more specifically life occurrences. Beliefs about the self-attributed dispositions as well as beliefs about life occurrences shape people's beliefs about how one ought to be and what one lacks to be desirable to others. In an experiment (Henderson-King et al. 2001) for example, it has been shown that women who consider attractiveness to be an important value were more vulnerable to the effects on self-perception of overhearing an appearance-oriented conversation. Consequently, these women felt markedly worse about themselves after hearing a conversation about a woman who had gained weight, let herself go, and become less attractive. This suggests that self-perception is modulated by metacognitive mechanisms, involving the attribution of beliefs (and desires) to oneself as related to the interaction with others. The recursive process of self-perception, alongside others' perceptions and attributed desires and beliefs, can potentially sway our self-evaluation. In each belief, there are evaluations and norms, expectations and desires that contribute to making a self-attributed state of affairs the repository of emotions and feelings that affect our self-perception processes.

Beliefs about oneself can bias subjects’ perceptions and responses (even without much subject awareness). Associating information with a variety of unknown faces led experimental subjects to prefer faces which were coupled with positive information even when subjects were not anymore able to explicitly recall the learned information (Zhao et al. 2017). This suggests that acquired attitudes toward individuals may influence our evaluation of them. Biographical information with emotional value about individuals influences not only our eventual appreciation of them, but also the perception of their facial expressions. In a series of studies (Suess et al., 2015), the acquisition of a negative emotion toward certain individuals has been shown to bias the recognition of their facial expression toward the same emotion. We contend that the complex process of interaction (between other’s related attitudes conveyed by biographical information and perception of physical features) occurs also during self-perception.

Tramacere (2022) discusses the neural underpinning that might subserve the process of influence between attitudes and perception. By discussing a body of research on the interaction between biographical information and the perception of others’ faces, she advances an account of mirror gazing, which is based on social neuroscience research about faces. She proposes that, when we look at ourselves in the mirror, we activate brain mechanisms that we also employ while perceiving others, and because responses to others are affected by our feelings toward them, feelings toward ourselves very likely affect our responses to the mirror image. Based on what we know about the brain, affective attitudes modulate mirror interactions with oneself as they modulate social interactions with others.

**Conclusion**

Self-concept significantly influences our experiences of looking in the mirror, which in some cases can trigger deep discomfort with one's appearance. The mirror in human life, more than a tool for grooming, can act as a powerful conduit for self-evaluation, revealing underlying dimensions of body dissatisfaction and low self-esteem.

Building on theoretical and clinical insights, we explored how sociocultural factors shape the experience of the mirror perception as a dynamic interface between self-beliefs and subjective self-appraisal. By examining self-beliefs as fundamental aspects of the self-concept, we gain insight into how individuals structure thoughts and emotions, which, in turn, impact how they see themselves in the mirror. Our analysis thus brings attention to the cognitive and affective aspects of mirror self-perception.

Emotional states like fear, when tied to negative self-beliefs, can skew self-perception and amplify dissatisfaction. This cyclical pattern, where beliefs about the self evoke emotions that, in turn, reinforce these beliefs, suggests that the mirror image becomes a repository of personal meanings, resonating with one’s emotional evaluations. In cases of BDD, for instance, negative self-beliefs manifest visibly, leading to perceptual distortions similar to fear-driven misperceptions of feared objects. Here, our analysis underscores the power of self-beliefs to shape, and often distort, self-images.

Beyond identifying the impacts of negative beliefs, we propose that positive self-beliefs, such as self-appreciation, hold transformative potential. When individuals approach the mirror with a foundation of self-appreciation, the experience becomes one of empowerment rather than critique. This shift in perception does more than bolster self-esteem; it redefines how the self is visually apprehended, transforming self-liking from a protective factor to an active agent of change. Positive self-beliefs, then, support an authentic self-perception that resists distortion, fostering a deeper sense of social identity and self-expression.

The cultivation of self-appreciation could thus act as a powerful counterforce, enabling individuals to disengage from negative self-concept cycles. Here, the mirror image shifts from a potential site of judgment to a symbol of growth, with each gaze reflecting personal development and future potential. Visual self-appreciation— what we called “self-liking”—emerges as a crucial aspect of psychological well-being, reinforcing positive self-perception, well-being, and identity. Finally, embracing self-appreciation and cultivating positive self-beliefs may allow individuals to break free from the vicious circular effects of a negative self-concept. Rather than being imprisoned by past experiences, individuals empowered by self-appreciation may view their reflection not as a source of judgment but as an affirmation of personal growth and potential. Thus, the cultivation of visual self-appreciation, or “self-liking,” underscores the profound impact of visible self-perception on psychological well-being, social identity, and public expression. Future research might further explore the mechanisms by which positive self-concept influences cognitive processes and delineates a path to sustained self-empowerment.

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1. For further details on these psychometric tools, see Rosenberg (1965) for the RSES, Fitts & Warren (1996) for the TSCS, and Marsh (1990) for the SDQ. Each of these instruments has been widely validated and used across different populations to assess various aspects of self-concept. [↑](#footnote-ref-1)