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THE EVOLUTIONARY FOUNDATION OF PERCEIVING ONE'S OWN EMOTIONS

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ABSTRACT: Much research in the field of emotions has shown that people differ in the cues that they use to perceive their own emotions. People who are more responsive to personal cues (personal cuers) make use of cues arising from their own bodies and behavior; people who are less responsive to personal cues (situational cuers) make use of cues arising from the world around them. An evolutionary explanation of this well-documented phenomenon is that it occurs because of the operation of a cognitive module designed to enable the organism to predict its own impending behavior. This theory suggests that situational cuers would be people for whom external factors are the best source of information about their own future behavior, whereas personal cuers are people for whom cues about themselves are the best source of information about their own future behavior. Such a view is founded in the New Realist philosophy of the early twentieth century, a philosophy that affected psychology through the work of E. C. Tolman and J. J. Gibson.
Key words: emotion, self-perception, evolutionary psychology, new realism

The object of this paper is to offer an evolutionary psychological explanation of individual differences in emotion self-perception. Because the idea that our emotions are something that we ourselves must perceive is already philosophically controversial, this project requires that we revive New Realism. This philosophical movement of the early twentieth century is almost entirely unknown, yet it has had a profound influence on the development of American psychology. Thus, in the course of achieving its goals, this paper draws on three literatures, Evolutionary Psychology (EP), Self-Perception Theory, and New Realism.

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Evolutionary Psychology

The program of EP is ambitious—nothing less than to provide a new foundation for the social and behavioral sciences (Barkow, Cosmides, & Tooby, 1992). EP seeks to integrate and rationalize the field of psychology by providing it with a foundation in evolutionary biology. According to evolutionary psychologists, an organism's behavior patterns are specific responses to the specific ecological circumstances under which they evolved. Following Bowlby (1969), these circumstances are referred to as "the Environment of Evolutionary Adaptedness" (EEA). For human evolution the EEA is the Pleistocene, one of the most turbulent times in all of the Earth's climatic history. During the Pleistocene the world's climate was subjected to such rapid alternations of warmth and cold that when the Pleistocene climate is studied in detail no scale of magnification makes these changes seem gradual (Richerson & Boyd, 2000). The Pleistocene environment posed for humans very specific problems—of food gathering, of protection against predators, of mate selection, of mate guarding, and of social organization. Human nature was formed as a set of specific cognitive mechanisms to those specific circumstances. Although civilization has dramatically changed the circumstances under which most human beings live, the relatively short time since the termination of Pleistocene conditions—barely 500 generations—is too short a time for natural selection to have reshaped human nature to meet the demands of modern life. Thus, according to evolutionary psychologists, we are Pleistocene hunter-gatherers living in modern environments, and if our behavior is ever to be understood it must be in terms of the contradiction between the nature that selection has fashioned for us and the environments that we have fashioned for ourselves (Symons, 1992).

Emotion Self-Perception

Self-Perception Theory (Bem, 1972; Laird, 1974, 1984) is an elaboration of the emotion theory most commonly associated with William James (1890). James' theory asserts that the feelings of an emotion are not the *cause* of emotional behavior but the *result*. James proposed that we do not cry because we are sad, but that we are sad because we cry, and that we do not run because we are afraid, but we are afraid because we run. Many psychologists (e.g., Buck, 1985: Izard, 1977, 1990; Laird, 1974, 1984; Lanzetta & Orr, 1986; Leventhal, 1980; Schachter & Singer, 1962; Tomkins, 1982; Zajonc, 1985) have developed theories derived from James' thinking. The common thread in these theories is that emotional behavior is the cause of emotion feelings, rather than the reverse. The basic empirical implication of this theory is that if people are induced to act emotionally, they will report that they feel those emotions. Many studies confirm this prediction. For example, inducing people to adopt facial expressions of emotion leads them to feel those emotions (see Laird & Bresler, 1992 and Laird & Strout, in press for extensive reviews). Changing participants' posture by having them either slouch or stand up straight affects their feeling state (Duclos et. al., 1989), changing the

direction of the participants' gaze (either gaze averted or gazing directly into another's eyes) affects feelings of attraction (Kellerman, Lewis, & Laird, 1989), and combinations of postures and expressions will elicit stronger feelings than either alone (Flack, Laird, & Cavallaro, 1999).

This research has identified a major addition to James' theory and Bem's (1972) version of Self-Perception Theory: people differ dramatically in the role of bodily/behavioral cues in producing feelings. Laird and others have shown that some people focus on information about themselves (personal cuers), whereas others on information the situation, including normative information about how people usually respond (situational cuers). Personal cuers feel emotion in the Jamesian manner: when induced to smile they feel the emotion of happiness. Situational cuers, however, do not feel happiness as a result of smiling. Situational cuers seem to feel emotion in response to the cues in the situation. Situational cuers are happy because they received a present, or sad because a loved pet died, but *not* because they are smiling or crying. These individual differences in response to perceptual cues have been demonstrated in many experiments (see Laird & Bresler, 1992 for a review) and seem to be stable over time (Bresler & Laird, 1983; Laird & Crosby, 1974).

Although Self-Perception Theory identifies these two ways of emotion perception, it does not account for the origins of these differences. We explain these differences using a New Realist evolutionary argument, specifically utilizing the theoretical approaches of Chisholm's evolutionary account of attachment (1999) and the theoretical basis of the New Realist approach.

New Realist Psychology

Like any other comprehensive psychology, EP must ultimately stake out a position on the mind/body problem. Though EP often takes a materialist stance, EP itself is not behavioristic. Rather, EP's stance on the mind/body problem has been broadly "computational" or "functional," in the philosophical sense of those words. In the functionalist view, mind things (e.g., mental modules) have been understood as internal embodiments of the world and of the organism's relations to it.

Because of misgivings about functionalism (e.g., Thompson, 2000; Thompson & Derr, 2000) this article will proceed from a different approach to the mind/body problem, one based on the New Realism (Heft, 2001; Holt et. al., 1912). Recently, Tonneau (2004) provided another attempt to put the New Realist approach to work solving contemporary psychological problems; his approach is largely congruent with our own. Tonneau argues that the New Realist or neorealist approach provides as adequate an explanation of consciousness as brain-centered theories. In particular, he believes that neorealist views account for the relation between veridical and nonveridical perceptions better than brain-centered theories.

The New Realists were a small group of William James' graduate students who formed a short-lived philosophical movement at Harvard in the early 1900s. One of them, E. B. Holt (1914), defined an organism's "consciousness" as the "cross-section" of objects in the world to which the organism responds. The most

accessible explication by a New Realist of the cross-section idea occurs in E. B. Holt's *Concept of Consciousness* (1914). To Holt, a cross-section of an object is a set of features of an object that are designated by a system external to that object. For instance, a cut across a log is a cross-section because, while the cut may reveal something about the internal structure of the log, it is made without regard to the structure of the log. In explicating a psychological cross-section, Holt uses the following metaphor:

> [A] navigator, exploring his course at night with the help of a searchlight, illuminates a considerable expanse of wave and cloud, occasionally the bow and forward mast of his ship, and the hither side of other ships and of buoys, lighthouses, and other objects that lie above the horizon. Now the sum total of all *surfaces* thus illuminated in the course, say, of an entire night is a cross section of the region in question that has rather interesting characteristics. It is defined, of course, by the contours and surface composition of the region, including such changes as are taking place in. . .the surface of the waves. . .and by the searchlight and its movements, and by the progress of the ship. [This] manifold is neither ship nor searchlight, nor any part of them, but it is a portion. . .of the region though which the ship is passing. [It] is clearly extended in space, and extended in time as well, since it extends through some watches of the night. . . .This cross-section, furthermore, is in no sense inside the searchlight, nor are the objects that make up the cross-section in any wise dependent on the searchlight for their substance or their being. (p. 171)

This definition's ontology is radical. It places consciousness outside the conscious actor. For instance, it moves your consciousness from being a property of you to being a property of your surroundings. The definition turns on its head the functionalist notion that your consciousness is ontologically "within" you but epistemologically available to you only through examination of your behavior. In the New Realist account, the contents of your consciousness are epistemologically linked to you but are ontologically outside of you. Thus, to a New Realist, an emotional feeling is a fact about the world rather than a fact about the organism that "has" the feeling.

New Realists and Self-Perception Theorists

Most psychologists adopt a causal mentalist account of emotional behavior; that is, they assume that emotional experiences causally mediate the relation between emotion-relevant stimuli in the world and emotional responses by the organism. To the causal mentalist, these emotional experiences occur in some inner place known primarily to the emotion-owner, the mind, the brain, or both. That most psychologists are causal mentalists is not surprising; the causal mentalist account is deeply embedded in ordinary language, and psychologists, like everybody else, have to speak the language. Moreover, as we have seen above, a form of causal mentalism is endorsed by the most powerful voices of recent thought on the mind/body problem, the philosophical functionalists.

Self-Perception theorists and New Realist thinkers disagree with the causal mentalist accounts of emotion. Both agree that the explanation S → E → R (emotional stimuli [S] cause emotion experiences [E] which, in turn, cause emotional responses [R]) is a bad account of adaptive regulation. For one event to be the cause of another, the causal event must both precede and be distinct from its effect (i.e., the effect must occur after the cause, and the effect must not be a mere description of the cause). However, New Realist and Self-Perception theorists object to different parts of this hypothetical causal chain. The Self-Perception objection is to the causal mentalistic assumption that emotional experiences come before emotional responses. According to this theory, emotional feelings follow, rather than precede, emotional behavior (S → R → E). The New Realist objection is to the causal mentalistic assumption that emotional stimuli and emotional experiences are distinct. Whatever the order of events may be, emotional experiences have no existence independent of the stimuli that are supposed to cause them. New Realists offer an [S ≡ E] → R account of emotional causality.

How is the [S ≡ E] → R account of the New Realists to be reconciled with the S → R → E account of Self-Perception Theory? The reconciliation we offer is an $[E_1 \rightarrow R_1] \equiv E_2] \rightarrow R_2$ account. This account starts with a typical New Realist move: a response [R] is defined as a pattern of action, and an experience [E] as an aspect of the environment to which the actor is responding. An experience is thus ontologically an external cause of a response and epistemically known by it.

What could possibly be meant by "an emotion" in a system of thought in which emotional experiences are nothing but suitably designated features of the environment and emotional responses are nothing but physical behaviors? The answer is that each emotion term refers to a different mode of relation between responses and experiences. For instance, the emotion "fear" would be the mode of relation between life-threatening experiences and life-protecting responses; "anger" would be the mode of relation between attack-provoking experiences and attacking responses. This way of looking at emotions identifies them as Situation/Response relations. Just as experienced features of the environment can lead to responses, $[E_1 \rightarrow R_1]$, so these feature-responses patterns can themselves be patterns that constitute new experienced features that, in turn, can lead to new responses $[E_2 \rightarrow R_2]$, where $E_2 \equiv [E_1 \rightarrow R_1]$. In the New Realist thought, the experience of William James's charging bear is just (≡) the fact that one's flight behavior highlighted the bear. In this sense, being fearful is normally an experience of the environment, *not* an experience of an emotion. We think that in this rather constrained usage the idea that emotional experiences cause emotional reactions is uncontroversial even for emotion Self-Perception theorists. It merely asserts that fearful behaviors are those that highlight the threatening aspects of the environment and that it is these threatening features of the environment that cause flight.

Regarding the relation $[E_2 \rightarrow R_2]$ in New Realist thought, E_2 includes features of the organism's relations to its environment that are now highlighted by its own behavior, the feature in this case being the fact that $E_1 \rightarrow R_1$. However, in the paragraph above we defined the relation between emotional circumstances and

emotional responses as the emotion. Thus, it is hard for us to deny that when an organism's responses highlight a relation between its own emotional circumstances and its own emotional responses, we have, by definition, an experience *of* an emotion. To put the matter most simply, that the bear made me flee is what is experienced as my fear of the bear.

Self-Perception: The New Realist–Evolutionary Psychology of Experiences of Emotion

The New Realist ontology does away with the privilege of the first-person perspective. Since Jones's consciousness is just those features of the world illuminated by his behaviors, then Smith, or anybody else, is as privileged as Jones to experience Jones's consciousness. The same applies also to Jones's consciousness of himself. Since, in the New Realist ontology, Smith's consciousness of Jones is just the object named "Jones" being illuminated by Smith's behaviors, then Jones's consciousness of Jones occurs when Jones's behavior illuminates the object named Jones. Self-experience, in the New Realist view, occurs when actors are illuminated by their own actions.

This formulation completes the integration of Self-Perception theory with the New Realist framework. Self-Perception theorists (like James, in general) believe that one does not have to experience an emotion, as such, to experience the world emotionally. New Realists absolutely agree. For both theories, an experience of an emotion is a different and higher order category than an emotional experience of the world, and Self-Perception theorists have demonstrated repeatedly the effects of manipulating experiences of emotion on subsequent behavior and self-appraisal. However, an *evolutionary* New Realist account of emotion self-perception requires that both forms of emotional experience—emotional experiences of the environment and experiences of emotions—have reproductive advantages.

No one has doubted, since Darwin's (1872) *Expression of Emotion in Man and Animals*, that emotional experiences of the first type are functional. Returning to James's bear for a moment, few would argue that Jones's survival is promoted by his having the first sort of fear experience (i.e., by his seeing the bear as threatening). In addition, no one would doubt that it is functional for Smith (as, say, Jones's companion on a hike in grizzly bear country) to have the second sort of fear experience with respect to Jones's fear—that is, to see Jones as fearful. Smith needs to know what Jones is about to do. What remains to be understood is: what benefit would follow from Jones having the second sort of fear experience with respect to his own fear? That is, what is the function of Jones seeing Jones as fearful?

To causal mentalists the question will seem bizarre, because in the causal mentalist account Jones's knowledge of his own fear is the origin of his fearful responses, so how could it be that Jones could respond fearfully yet not have knowledge of his own fear? Nevertheless, on the New Realist account Jones is in the same epistemological position with respect to his own fear as is Smith. Jones needs to know what Jones is about to do, just as surely as does Smith. After all,

how could he avoid tripping over Smith in his flight from the bear without knowing both what Smith is going to do and what *he himself is going to do*? And just as Jones would predict Smith's behavior on the basis of knowing the relation between emotional circumstances and emotional responses in Smith's recent behavior, Jones would predict his own behavior on the basis of recent relations between his own emotional circumstances and his own behavior. In this account, emotion self-perception is a mechanism for predicting one's own future behavior. Just as humans have evolved cognitive mechanisms that function to predict the behavior of other creatures (Thompson & Derr, 2000), they have evolved cognitive mechanisms whose function is to predict their own behavior. While some researchers have asserted than in certain instances self-deception is beneficial to the organism (e.g., Nesse & Lloyd, 1992; Trivers, 1985), we believe that in regard to emotion it would be beneficial to be able to predict your own future behavior. For example, if we look at aggression inhibition, self-deception would not be beneficial. In circumstances in which a low-status male becomes angry with a high-status male, it would be safer for him to know he was about to respond in anger so that he could change his action before the high-status male attacks. If he uses self-deception he would not know his future actions and could react rashly, thus injuring himself or getting killed. These self-mechanisms generate emotional experience in the second sense mentioned above; that is, experience of our own emotions.

Assuming that self-consciousness is a system for making good predictions about one's own future behavior, from what sources are we to draw the information about what our own emotional actions are likely to be? Here, of course, is where the empirical contributions of Self-Perception theory are unequivocal: Laird and others (see Laird & Bresler, 1992 for a review) have shown that people differ in what sources of information they use to attribute emotions to themselves. Some people focus on information about themselves (personal cuers) whereas others focus on information about the people around them (situational cuers). How do we square this robustly documented fact with our New Realist theory of emotional self-consciousness offered above?

The solution we propose is that people differ in their cue types because they also differ in what is the best basis for making predictions about their own future emotional behavior. Think again about the relation $[E_1 \rightarrow R_1] \equiv E_2] \rightarrow R_2$. Recall that E_2 is the highlighted relation between E_1 and R_1. Like every relation it has two parts. In highlighting that relation, an emotionally reacting person can focus with greater care on one or the other of the two parts depending on how much the variation in each of the parts contributes to the value of the relation. For some people the best source of information is themselves and their own bodies because the environment is very unstable and thus offers no reliable information. For other people the best source of information is their social surroundings because the environment is very stable and offers reliable and predictable information.

Therefore, in this evolutionary psychological account, emotion self-perception styles are different systems for the social actor to predict his or her own future behavior. Where do these different systems come from?

James Chisholm has developed a theory, which if extended, would explain how Pleistocene living conditions might have selected for the differentiation of different emotion self-perception styles (Amin & Thompson, 2001; Chisholm, 1999). Chisholm holds that the attachment relation has two functions. The first is that assigned to it by John Bowlby, of regulating the proximity between the mother and her offspring during the critical early months of life (Bowlby, 1969). The second function is providing information to the infant about the kind of social and physical environment that it will be entering in adulthood. An environment in which the mother is unable or unwilling to buffer social and physical hazards leads to an insecure attachment style, which leads, according to Chisholm, to early and aggressive behavior followed by low parental investment. An environment in which the mother is able to protect the infant from social and physical hazards leads to a secure attachment style that leads, according to Chisholm, to delayed, cautious, and nurturing reproductive behavior. Notice that Chisholm's characterization of attachment styles as adaptive responses resists any attempt to pathologize one or other of the styles. Both securely attached and insecurely attached styles are "normal" and functional responses to radically different social and environmental conditions. A person is born with the ability to form any attachment style—the specific types one forms is toggled by the environment and learning experiences.

Thus, the personal cuer/situational cuer distinction may be another manifestation of Chisholm's attachment toggle. Infants are designed to survey their environments for indications of what sorts of cues they should use to determine their own future behavior in adulthood. Emotion self-perception styles should be persistent personality differences that endure into adulthood and ramify widely in adults' interactions in their social environments. Securely attached children and conservatively reproducing adults should be situational cuers since for them the environment is stable and provides reliable and predictable information concerning their future actions. Conversely, insecurely attached children and unconservatively reproducing adults should be personal cuers since their environment is unstable and unpredictable and does not provide reliable information about their future actions. This predicted association between attachment style and self-perception style is currently under investigation in our laboratory (Strout, Bush, & Laird, in preparation).

The goal of this paper was to demonstrate the evolutionary adaptedness of differences in emotion self-perception using an evolutionary theory shaped by the New Realism of the early twentieth century. We hope that the success of the integration of New Realism and EP in explaining these differences in emotions is a promising indication of its integrative and heuristic usefulness for the field of psychology.

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