PROSPECTS AND DILEMMAS IN EMOTION PSYCHOLOGY

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There is general agreement in the literature on emotions concerning their central role in many aspects of our everyday life. In order to give an overview over the theoretical issues in the field of emotion psychology, we will define first of all emotion, as well as their components and functions, before we turn to differentiate between emotions, feelings, affects and moods. Following, the dimensional and categorical approaches of emotion will be distinguished, and an outline of classic and contemporary emotion theories will evidence a renewed interest in the neural processes underlying emotions. While both social psychological perspectives and the interest in neurophysiology represent actual intriguing prospects of emotion psychology, the dilemmas in the field will also be outlined.

Key words: emotions, psychology, affect

EMOTIONAL BACKGROUND: A FIRST APPROACH

The interest of science in emotion psychology has been revived in the last years, taking a relevant position in contemporary research. This renewed interest was already manifest in the early 80s, with a proliferation of publications concerned predominantly with emotion (see Gross, 1999; Scherer, 1984), and continued in the 90s with thousands of articles published in these years, along with textbooks and specific journals such as Cognition and Emotion (Cacioppo & Gardner, 1999), or the APA journal Emotion. In spite of this, the field has been continually characterized by a disagreement on the definition and concept of emotion, or how many emotions can be distinguished, major points the following section will deal with.

DEFINITION, COMPONENTS AND FUNCTION OF EMOTIONS

Though many attempts have been made to define emotions, there is a lack of consensus on a generally accepted definition and concept of emotion (Izard, 1993b; Scherer, 1984). Moreover, a disagreement of definitions can be found in most writers over the last years (Ekman, Friesen, & Ellsworth, 1972), contributing to a “historical lack of
consensus on the definition of emotion” (Cole, Martin, & Dennis, 2004, p. 319). Differing views such as whether conscious experience is a necessary component of emotion, for example, contribute to this lack of agreement (Lane, 2000). For this reason, although several authors have proposed their own definition of emotion (e.g., Plutchik, 1984), trying to provide a complete definition would give rise to controversy (Izard, 1993a).

The term emotion may be limited to a single modality, yet most theorists agree on a multicomponential definition (Scherer, 2000). Plutchik’s definition (1984), for example, includes cognitive, subjective, autonomic and neural factors, as well as action impulses and behavior. Scherer refers to the general agreement concerning the components of the concept of emotion: a cognitive appraisal or evaluation of stimuli and situations, a physiological component, a component of motor expression, a motivational component and a subjective component (Scherer, 1984). In the same way, Öhman and Birbaumer (1993) also draw attention to the contextual-situational component, along with a subjective-verbal, a peripheral physiological, neurophysiological, and a behavioral component. More recently, Clore and Ortony (2000) distinguish between a cognitive component, a motivational-behavioral component, a somatic component and a subjective-experiential component. Accordingly, a handful of basic characteristics on which there is substantial agreement may be identified: the involvement of neural processes, expressive or motor components, and experiential components such as motivation or action readiness (Izard, 1993a).

As far as the function of emotion is concerned, different perspectives have been adopted. Whereas some researchers assume that emotions have no functions, others held that emotions once served functions that are no longer pertinent, while yet others take the stance that emotions serve to adapt to problems now, as they have in human evolution (Keltner & Gross, 1999). The latter has been taken for example by Ekman (1992, 1999), who considers that the main function of emotion consists of activating the organism to manage important interpersonal encounters. Damasio (2000) also points out that emotions serve the elicitation of specific behaviors to react to a situation, and to change the internal state to prepare the organism for that behavior. Not least, emotions serve to increase the chances of survival of organisms (e.g., Plutchik, 1989). Whereas fear, for example, has been ascribed the adaptive function of protection, anger is said to serve destruction, joy, reproduction, and disgust, rejection (Plutchik, 1989). Going more into detail, Scherer (1984) ascribes particular functions to each of the components. Thus, processing cognitive stimulus serves the evaluation of environment, whereas neurophysiological processes are useful for system regulation, motivation and behavior tendencies for the preparation of action, and subjective feelings serve reflection and monitoring.

In this context, the interpersonal and communicative functions of emotions can be differentiated from the intrapersonal ones. Levenson (1999) points out a number of these latter functions, consisting of 1) coping with environmental challenges by escaping from homeostasis, 2) returning to homeostatic levels by positive emotions, 3) shifting behavioral and cognitive hierarchies, 4) subjective experience (i.e., serving as a signal that sustains engaging in adaptive voluntary behaviors), 5) providing associate structures in memory, 6) group differentiation, 7) and individual differentiation. What seems important
here is to reflect on negative emotions separately from positive ones, or even from the self-conscious (e.g., shame, pride) emotions, which would necessitate supplementary models and theories (Levenson, 1999).

From a social psychological perspective, emotions prepare the individual to respond to problems or opportunities that arise in social interactions (Keltner & Haidt, 1999). In fact, this is the main role played by emotions in the interpersonal context: to structure relationships, coordinate social interactions, provide information about current emotions and intentions, etc. Furthermore, emotions arise in an intergroup arena and are shared by individuals who have developed a social identity tied to their membership to a group (Mackie, Devos, & Smith, 2000). According to Frijda, Kuipers, and Schure (1989, p. 213) emotions are related to an event that “appears to favour or harm the individual’s concerns: his or her major goals, motives, or sensitivities”. In many cases, however, these concerns relate to the groups to which the person belongs to. The identity, however, is not the only concern of social beings. Besides, the problems of survival or reproduction are also intimately linked to a wide group of emotions such as fear or disgust (Keltner & Haidt, 2001).

Differentiating Between Emotion and Related Concepts. As stated before, there seems to be considerable disagreement in emotion literature concerning the definition and concept of emotion. According to Ekman (1992), the confusion of what these [basic] emotions are is attributable, amongst others, to a lack of success in distinguishing emotions from other affective phenomena (see also Scherer, 2000). In fact, delineating and differentiating the term of emotion from other concepts such as feelings or moods is complicated, and increases the existing definitional complications.

As an example, the terms feeling and emotion are often used interchangeably (e.g., Gross, 1999) or clearly defined and delimited from each other (e.g., Damasio, 2000). For instance, Arnold (1960) has referred to emotion as indicating attitudes to an object, and feeling as referring to one of its aspects (e.g., “x is pleasant”). Damasio (2000) also proposes distinguishing feeling as “private, mental emotional experience of an emotion”, from emotion as “all the responses whose perception we call feeling...” (p. 15), which are comparatively public. The intricacy of using both terms as synonyms relies on the use of the term feeling as one component of emotion (Scherer, 2000). As can be derived from the preceding section, this makes more complex differentiating the subjective componential of emotion from other phenomena.

An additional concept often used in substitution of emotion is affect (Gross, 1998). Scherer (1984) has suggested the use of the term affective states to refer to “states of the organism that have both organic and psychological components, only some of which we will want to call emotions”, whereas emotions would consist of “clearly delineated, intensive patterns of affective processes” (p. 298). In the same way, Damasio (2000) states that affect should include feeling and emotion.

A further term to be distinguished from emotion is mood. Mood has been described as being another set of affective phenomena different from emotions, lasting much longer, differing in the involved appraisal, the physiological substrate and what elicits them (Ekman, 1992, 1999). More precisely, Scherer (2000) defines mood as a diffuse affect state of low intensity. For Damasio (2000), it should be called mood when an emotion
occurs frequently or continuously, while Clore and Colcombe (2003) make reference to moods as “affective states that are temporally extended and that have no salient object or focus” (p. 335). This latter aspect, along with the temporal aspect concerning a longer duration of moods in comparison to emotions, seems to represent a major point of overlap (e.g., Scherer, 2000).

This convergence of points of view could represent a first step towards sharpening the differences between the different concepts. In particular, affect may represent a superordinate term, covering emotion, mood, and feelings, while feelings would be at the same time subordinated to emotions, as they represent a specific component of emotions. Other components, such as neural processes, expressive or motor components, and experiential components stand for a sort of summary of emotion components (see Izard, 1993a).

**DIMENSIONAL AND CATEGORICAL APPROACHES TO EMOTIONS**

Further, emotions can be considered either in dimensional or discretional/categorical terms (Gross, 1999; Keltner & Gross, 1999). The dimensional approach focuses on changes in emotion experience, expression and physiology by using broad classes of emotions such as appetitive and aversive systems (Lang, 1995) or approach and withdrawal related emotions (Davidson, 1998; Davidson & Irwin, 1999). The approach system “facilitates appetitive behaviour and generates certain types of positive affect that are approach-related” (Davidson, 1998, p. 311), whereas the latter system “facilitates the withdrawal of an individual from sources of aversive stimulation and generates certain types of negative affect that are withdrawal-related” (p. 313).

The categorical approach emphasizes on the other hand the differences between concrete emotions, focusing on the functions of discrete emotions (e.g., Ekman, 1992; Izard, 1993b). Here, theorists differ on the question of how many basic emotions are to be distinguished, and which criteria to follow for this distinction. Plutchik (1984), for example, proposed the eight basic emotions of fear, anger, joy, sadness, acceptance, disgust, anticipation, and surprise based on patterns of adaptation. Ekman (1999) has revised and extended his classification and characteristics of basic emotions, distinguishing a large number of basic emotions such as awe, anger, or embarrassment (cf. Ekman, 1992). He specifies that the characteristics which serve to distinguish emotions from one another and from other affective phenomena such as moods or emotional traits are, amongst others, an emotion-specific physiology (distinct patterns of autonomic nervous system activity), automatic appraisal influenced by ontogenetic and phylogenetic past, quick onset and presence in other primates.

Despite these differences, however, both the dimensional and categorical approach could be considered as being complementary rather than opposing (Bradley, Greenwald, & Hamm, 1993; Izard, 1993b). Indeed, allocating concrete emotional states in the 2-dimensional affective space defined by valence and arousal is for instance possible (Bradley et al., 1993).
Among the most cited theories in emotion research are undoubtedly those by James (1884), Cannon (1927) and Bard (1928). Whereas the first considered that events were perceived by sense organs and passed to the cortex, where the perception finally produced bodily changes and gave rise to the emotion, both Cannon and Bard maintained that if emotions were the perception of bodily change, these should be dependent on intact sensory and motor cortices. In the last years, LeDoux and his colleagues made changes on Cannon’s theory to encompass the amygdala in the circuit (Heilman, 2000). In line with Cannon, they do not conclude that the cortex plays a crucial role in the interpretation of stimuli (Heilman, 2000). So far, both the James-Lange theory and Cannon’s proposition have received some empirical support. In fact, the James-Lange theory is still important, and, as Dalgleish (2004) states it, a perspective in which bodily feedback alters the experience of emotion would be approved by most affective neuroscientists.

However, both have also been shown to fail in some points. To replenish the insufficiency of James’s visceral formulation of emotion, cognitive factors were introduced as determinants of emotional states by Schachter and Singer in the early sixties, and further elaborated on by Schachter (1964). Interestingly, this theory has prevailed in the textbooks for the last 30 years (Scherer, 2000). In Schachter’s “two-factor theory”, also known as “cognition-arousal” theory or “Schachter theory of emotional states” (Reisenzein, 1983), emotions are seen as a function of the interaction of cognitive factors, on one hand, and physiological arousal on the other. He proposes that being in a state of physiological arousal without having an explication for this state, individuals will resort to available cognitions to describe their feelings. Moreover, Schachter suggests that given an appropriate explication for a state of physiological arousal, no evaluation and therefore no alternative cognitions are needed, and that only to the extent that an individual experiences a state of physiological arousal, will he react emotionally or describe his feelings as emotions.

Schachter’s model has been challenged, as a large number of replications of this classic study have failed to give empirical evidence for Schachter’s thesis (review of empirical research concerning three major hypotheses of the theory by Reisenzein, 1983). Anyway, the present theory has not only generated research, thus leading to a large number of studies, but has also directed attention to the—for a long time abandoned—cognitive component of emotional states (Reisenzein, 1983).

Another theory which has experienced great development since the mid 1980’s, is the multiple appraisal models of emotion (Scherer, 2000). A central principle of appraisal theory states that “emotions are elicited and differentiated on the basis of a person’s subjective evaluation or appraisal of the personal significance of a situation, object, or event on a number of dimensions or criteria” (Scherer, 1999, p. 637). Thus, appraisal designates the “assignment of value or emotional meaning” (Clore & Ortony, 2000, p. 25), pointing to a fundamental role of cognition in the generation of emotions (Robinson, 1998). Criticism regarding appraisal theory leveled at methodological aspects such as a supposed cognitive bias (Scherer, 2000), the use of self-report of emotion-antecedent
appraisal, or the tendency to neglect the social context in which emotion-antecedent appraisal and responses take place (Scherer, 1999). Nevertheless, the basic assumptions of the appraisal theories are rarely attacked, being of special interest for the explanation of cultural differences in emotion-evoking situations and emotional experience (Scherer, 1996). Furthermore, strong and consistent experimental support has been provided in the last years for different appraisal theories (Scherer, 2000).

Taking clinical experiments on fear and phobia as a starting point, Peter Lang elaborated in the past decades the influential “bioinformational theory of emotion” (e.g., Lang, 1979, 1993, 1994). This theory, and its further development, postulates that emotions are instantiated when concrete memory episodes are retrieved. These episodes constitute in memory-coded networks of mutually activating, associated information units. In this context, phobias represent uncommonly coherent and stable emotion prototypes. A fear prototype, for example, can be activated by instructional, media, or objective sensory input, with information matching that included in the network. These networks are connected through direct associative links to one of two motive systems: the appetitive and the defensive or aversive system (Lang, 1994), which evolved to mediate transactions in the environment that either support or threaten the survival of organisms (Bradley, Codispoti, Sabatinelli, & Lang, 2001). That is to say that emotions are conceived on a natural science-based perspective as biological phenomena which reflect an evolutionary legacy. Derived from this framework, Lang (1993) conceives emotions as action dispositions, “defined by a specific information structure in memory, which, when accessed, [are] processed as both a conceptual and motor program” (p. 75). The data structure of an emotion involves three principal categories of information, including the information about the external stimuli and the context in which they take place, information about the reaction in this context, and information defining the meaning of the stimulus and response data.

Not least, one of the best-studied models involving emotions is founded on the work of Joseph LeDoux (e.g., 1995b, 2000a, 2000b) and his associates at New York University. In LeDoux’s model, the amygdala is a key structure in emotional behavior, receiving information from the sensory stimulus and controlling fear reactions by way of its output projections to behavioral, autonomic, and endocrine response control systems in the brain stem. As a result, it plays a fundamental role in deciding whether a stimulus is dangerous or not. According to LeDoux, there are in all two pathways projecting information of a sensory stimulus to the lateral nucleus of the amygdala, where auditory and other sensory inputs mostly terminate. On one side, there is a direct thalamic pathway, which is the shorter and faster one, and provides a more crude representation of the external world, and on the other side, there is the longer and slower thalamo-cortical pathway. Both converge in the lateral nucleus of the amygdala, but while the first one serves to trigger the emotion by simple stimulus features, the second one has a larger capacity to offer a more detailed and accurate representation, permitting the recognition of the object by sight or sound and determining the nature and extent of the sensory stimulus. In summary, although the results on which the LeDoux model is based are limited to the emotion of fear and have been obtained with animals (see discussion by LeDoux, 1995b), it nevertheless provides a
deeper insight into fundamental aspects of emotion (LeDoux, 1995b), as well as limitations of relevant issues about the nature of emotion (LeDoux, 1995a) by portraying the neural networks underlying fear conditioning.

As can be derived from this overview over some of the emotion theories which were influential in the field, the last years have shown a renewed interest in the neural processes underlying emotions. A wider access to neuroimaging procedures has contributed to this interest, allowing for a deeper understanding of the cortical and subcortical bases of emotions.

**PROSPECTS AND OUTLINES IN EMOTION PSYCHOLOGY**

*Insights From Neuropsychology.* To gain insights into the neural foundation of emotions, looking at those studies which have so far explored the neural correlates of emotion activation represents an important step towards deepening our understanding of emotion processing. For example, neuroimaging studies of emotion activation by visual stimuli have described the brain regions activated by emotions in general, or related to specific emotions such as disgust or fear, for which two patterns emerged: on one side, some regions seem to play a general role in emotion processing, whereas, on the other side, specific brain areas seem to be associated to distinct emotions. Following Sprengelmeyer and colleagues (Sprengelmeyer, Rausch, Eysel, & Przuntek, 1998), however, both patterns may not be exclusive, as some regions such as the Brodmann area 47 in the left inferior frontal cortex may play a more general role and others might be specific of each emotion. As revealed by a recent meta-analysis of emotion activation studies in PET and fMRI, the medial prefrontal cortex plays a general role in emotional processing, without being specifically activated by a particular emotion or induction method (Phan, Wager, Taylor, & Liberonz, 2002).

However, the differential localization of the neural substrates of specific unpleasant emotions such as fear, disgust, or anger has also received empirical support (e.g., Blair, Morris, Frith, Perrett, & Dolan, 1999; Paradiso et al., 1997; Phillips et al., 1998; Sprengelmeyer et al., 1998), as the recognition of basic emotions has been found to produce emotion-specific activations in independent neural structures, that is, nonoverlapping brain areas. The perception of facial expressions of disgust has been shown, for instance, to activate regions such as the anterior insula (Phillips et al., 1997, 1998; Sprengelmeyer et al., 1998), medial frontal cortex, or striatum (Phillips et al., 1997, 1998). In contrast, heightened amygdala activation was assessed when recognizing fearful facial expressions (e.g., Breiter et al., 1996; Morris et al., 1996, 1998; Phillips et al., 1997, 1998; see meta-analysis by Phan et al., 2002), along with other regions such as the left frontal lobe (Sprengelmeyer et al., 1998). Despite these findings, less is known about the neural structures underlying processing expressions of anger and sadness (Blair et al., 1999; George et al., 1995), and even less concerning pleasant emotions. In all, the prefrontal cortex, which has been said to be a relevant part of a circuitry which implements positive and negative affect, seems to play a special role regarding emotions.
But also limbic regions are of special relevance here, as they mediate for example emotion and the behavioral expression of emotion (Martin, 1989).

**Contributions From a Social Perspective.** Regardless of the contributions within the Sociology of Emotions since the 70’s (e.g., Kemper, 1978; Hochschild, 1975), the social, symbolic and cultural dimensions of emotions have also been considered in emotion psychology. From the perspective of social constructionism, for example, emotions are not seen as natural responses to external stimuli, but thought of as part of a social and historical milieu and discursive practices which involves norms, beliefs and values (Harré, 1986). This system defines which emotions are appropiate and which not, depending on the context in which they emerge and are shown. Emotions also function as elements of social control (Parrott & Harré, 1996): they are exhibited according to a set of rules, norms and values that are part of a moral order which is partly responsible for the content and display of emotional states (e.g., Harré, 1986; Harré & Parrott, 1996).

A further approach has been proposed by Ginsburg and Harrington (1996), who consider emotions within so-called “lines of situated action”. Specifically, for Ginsburg and his colleagues, emotional episodes should be studied in their context, taking into account their hierarchical and linear organization, that is, considering both the line and the setting in which emotional episodes are inscribed. This would allow not only for considering the social functions of emotions, but also the social environment in which they occur.

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**DISCUSSION: CURRENT DILEMMAS IN EMOTION PSYCHOLOGY**

Taking a look, for example, at the contents of a journal such as *Emotion* reveals that contents related to neural processes were scarce in the beginning years of this century. A similar pattern can be found in *Cognition & Emotion*, while the same is also true for studies using event-related brain potentials. However, neuroimaging studies are becoming more and more important with the years in emotion psychology.

However, regardless of the broad observations outlined in the previous section, mixed findings are present in emotional neuroimaging studies. Research by Nakamura and colleagues (1999), as well as Kosslyn and colleagues (1996), for example, failed to find a heightened activation for the amygdala when assessing sad and angry facial emotions, or aversive pictures. Just as much, amygdala activation has not always been found when looking at fearful faces (e.g., Sprengelmeyer et al., 1998). It has been hypothesized that the selected stimuli, technique problems or the elicited emotion could underlie these amygdala-related effects (Kosslyn et al., 1996; Nakamura et al., 1999). In addition, habituation effects have also been pointed out as underlying these differences (Breiter et al., 1996; Sprengelmeyer et al., 1998). Moreover, because of this likely habituation effect, the temporal resolution of PET may be insufficient (LaBar & LeDoux, 2002).

More general, inconsistent findings may underlie the different procedures employed (i.e., PET, iMRI). The same is true for age (cf. Paradiso et al., 1997), gender (cf. George
et al., 1995) and individual differences (e.g., level of emotional awareness; Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990), which are often not controlled. But also other factors such as arousal, prior expectation, context and task demands may influence emotional responses and thus affect experiments (Liberzon et al., 2000). One additional difficulty is that the employed stimulus often activates both sensory, perceptual, lexical, or lower-level semantic processes, on one side, and higher-order, affect-related meanings, on the other side, hindering the attribution of different components of brain activation to distinct aspects of emotion production (Teasdale et al., 1999). Despite these limitations, however, resorting to neurophysiological studies analyzing the underlying neural systems of emotion activation allows for a deeper understanding of emotions.

In sum, this deeper understanding of the cortical and subcortical bases of emotions is enabled by the emergence of neurophysiological studies. But although the findings of neurophysiology are providing the field of new insights in the brain areas involved in the processing of emotional stimuli, emotion psychology still lacks of clear definitions and delimitations which could allow for a more systematic and faster integration of new findings. This includes, for example, differentiating between concepts- an important issue which concerns the utilization and distinction of several terms such as “affect” and “emotion”. As already mentioned, both concepts are often used interchangeably, while other times affect is considered as being superordinate to emotion, and several other times its use is not even specified.

Further future directions are also needed. Concerning the social perspective of emotions, Parkinson, Fischer and Manstead just mentioned in the preface to their book “Emotion in social relations: Cultural, group, and interpersonal processes” (2005) that there has often been payed no attention to the processes on a group level, with little work focusing on the cultural and interpersonal factors and their role in the construction of emotions. Therefore, in our opinion, an important issue for the coming years should be the combination of the prevalent intra-individual level of analysis with an interindividual level of analysis, as well as considering the extra-situational differences in social positions, norms, beliefs, evaluations and representations (Doise, 1980). In all, not only the processes underlying emotions should be considered, but also the context and circumstances in which the emotions arise and take place.

Coming years will show how the field develops, whether or not new models and accounts, as well as more experimental insights into the underlying processes are provided. Both neuroimaging findings and social psychological approaches are expected to play a relevant role; however, it remains open which and how these findings will be integrated and can contribute to the future emotion psychology.

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