*John Paul II Catholic University of Lublin. Faculty of Social Science
Pedagogical University of Cracow. Faculty of Social Science
** John Paul II Catholic University of Lublin. Faculty of Social Science
University of Zielona Góra. Faculty of Pedagogy, Psychology and Sociology


KRYSTIAN MACHETA*, OLEG GORBANIUK**

ORCID: 0000-0002-9130-2287, krystian.macheta@gmail.com
ORCID: 0000-0001-9830-8537, oleg.gorbaniuk@gmail.com

## The Lexical Approach to the Taxonomy of Emotions

Podejście leksykalne w taksonomii emocji

## ABSTRACT

The first attempts to create a taxonomy of emotions were made before the psychology has become an official field of science. Over the centuries, scientists have attempted to reach a taxonomy consensus of emotions, however, unsuccessfully. Despite the relative agreement in the division of emotions into basic and complex, no agreement on applied criteria was reached. It leads to a significant discrepancy in the published lists of basic emotions. Furthermore, subsequent attempts at the taxonomy of emotions, despite their increasing detail, have also not led to any solution that could be considered as consensus. The article discusses selected, current ways of classifying emotions and presents an alternative way to unify the taxonomy of emotions. It could be done by looking at the emotions as an individual difference. It is possible, among others, on the grounds of an evolutionary approach. The taxonomic potential of the lexical approach in the systematization of individual differences has never been used in the area of emotion classification despite the fact that psycholexical approach helped to achieve relative consensus, for example, in personality psychology. The article discusses the most important problems to solve in order to identify culturally universal emotions, based on natural languages.

**Keywords**: taxonomy of emotions; lexical approach; individual differences

For many years of research on emotions they have still not been clearly classified. However, other areas of psychology, such as personality psychology, also faced a similar problem in their history. This article aims to demonstrate the cur-

rent ways of classifying emotions and puts forward the theoretical possibility of an alternative, psycholexical approach to the taxonomy of emotions. It takes the basis of an approach which has helped achieve a relative consensus in personality psychology and shows why this is also possible in the area of emotions.

In science, taxonomy is directly associated with the development of scientific theories and must be empirically confirmed (Jasielska, 2013). It is important for the development of every field of science to achieve classification agreement. For example, in chemistry or biology, the consensus in the taxonomy of chemical elements and living organisms is already taken for granted and people got used to it (Eysenck, 1991; Grobler, 2006). There are also classifications in psychology in which relatively high compliance of the scientific community has been achieved. It is exemplified by the lexical structure of personality traits (e.g. De Raad, Barelds, Timmerman, De Roover, Mlačić, Church, 2014; Goldberg, 1990). However, there is still no such unanimity in the field of the taxonomy of emotions (Gasiul, 2007; Izard, 2010; Scherer, 2013). It is also natural in the world of science to make hierarchical classifications – the taxonomy which allows extracting subsets, like the taxonomy of live beings (Grobler, 2006).

An example of struggling with a lack of consensus in the classification of psychological variables and solutions to taxonomy issues are personality studies which in the 1980s did not have a consistent classification of traits. For example, most of the factors within the personality structure proposed by Raymond Catell (e.g. Cattell, 1943; Cattell, Cattell, 1995) turned out to be unreplicable (Eysenck, 1991; Goldberg, 1990). However, due to psycholexical research, a relative taxonomic consensus was achieved (e.g. Ashton, Lee, 2005; De Raad et al., 2014; Saucier, Hampson, Goldberg, 2000; Saucier, Srivastava, 2015).

## AN ATTEMPT TO ISOLATE A SET OF BASIC EMOTIONS

Scientists who try to classify the basic emotions usually also try to give the exact number of emotions (e.g. Ekman, 1992; Frijda, 1986; Plutchik, 1980). The most common assumption is that emotions considered "basic" are distinguishable by their origin (e.g. physiological, motivational) and the effects (e.g. aggressive behavior). What is more, the emotion considered as basic must be clearly distinguishable from other basic emotion and has to have an adaptive role (Ekman, Cordaro, 2011). Carol Izard defines the basic emotions as: "emotions that organize and motivate rapid virtually automatic yet malleable responses that are critical in meeting immediate challenges to survival or well-being" (Izard, 2009, p. 6). Furthermore, Izard (2011) divides emotions into positive first order and negative first order, highlighting their different roles depending on the development period. Common features of this division, regardless of age, are the ability to act quickly and automatically during the experience of first order negative emotions and pro-

social behavior during the experience of positive first order emotions. Till today, various measurement methods were chosen as the basis for identifying basic emotions. For example, some researchers have taken facial expression as a criterion for the identification of basic emotions, because emotion could be correctly identified by most people in the world on the basis of emotional facial expression, regardless of cultural affiliation (Ekman, Friesen, 1986; Ekman, Sorenson, Friesen, 1969). However, these classifications are divergent and have a different number of basic emotions – usually from 5 to 15 (Scherer, 2013).

Some researchers claim that oversimplicity in distinguishing one emotion from another and universality of basic emotions division may have consequences that lead to reduced distribution resulting from emotional diversity. This diversity is typical for human emotionality (Frijda, Parrott, 2011). Most researchers do not dispute the universal mechanisms behind the emotions considered as basic (i.e. biological background). However, they point atcomplex emotions to be more accurate for a description of the human nature emotionality. Although it may consist of a "mix" of basic emotions, complex emotions have the advantage of taking into account individual and intercultural differences. Its intricacy is also connected with theoccurrence at a later stage of evolution (Oatley, Johnson-Laird, 1987). Appearing in the literature, so-called, wheel-emotions models (e.g. Klaus, Scherer, Shuman, Fontaine, Soriano, 2013; Russell, 1980) also seem to support the assumption about the complexity of emotions, indicating the possibility of mutual interpenetration of emotions; emotions co-experience in many cases. It opens the possibility of feeling them in at least several "combinations". The exception is the emotions located on two ends of the same dimension (e.g. happiness and sadness) (Plutchik, 1980; Russell, 1980).

The division of emotions into basic and complex ones is not controversial for most researchers (Ben-Ze'ev, Oatley, 1996). Nevertheless, there is no general agreement on the criteria for making such a split.Still it is an open discussion about which emotions are basic (sometimes also called fundamental or primary) and why these emotions belong to the specific set of basic emotions (Camras, 1992; Fontaine, 2013; Izard, 1992; Ortony, Turner, 1990; Shaver, Morgan, Wu, 1996). Perhaps even this division should be questioned because assigning an emotion to the "basic" or "complex" category has no connection with its function. The main task of every emotion is to adapt the organism to the current situation (Ben-Ze'ev, Oatley, 1996).

## ATTEMPTS TO FIND THE CONSENSUS IN THE TAXONOMY OF EMOTIONS

Doubts about the nature of emotions and the ways of categorizing them appeared before psychology developed as an independent scientific field. For exam-

ple, philosophers in their remarks about emotions tried to integrate cognitive skills with the emotional aspects or lead them to be perceived as two separate systems (Knuuttila, 2004; Solomon, 2005). An evolutionary approach has a great impact on the development of emotion science (Al-Shawaf, Conroy-Beam, Asao, Buss, 2016) and is relatively consistent in its assumptions – emotions are for survival and should be considered in terms of their functions (Tracy, 2014). However, it is questionable up to now whether the adaptation functions to "here and now" are more important or maybe reproduction is the main, supported by emotions, human goal. And it is important from a categorization point of view because it leads to finding a common point with neuroscience research. According to neurobiological studies, there are separate brain systems responsible for the emotions associated with lust (Montag, Panksepp, 2017), which are typical not only for humans, but also for other mammals (Montag, Panksepp, 2016). At this point, there is disagreement either to classify emotion as a consequence of experienced neurobiological changes or only as a stage (equal element) of these changes (Izard, 2009). Trying to categorize emotions using a physiological changes occurring in the body, we come to the point where emotion is mainly a collection of physiological reactions of the body, to which we give the appropriate name (James, 1884). Nowadays, it is possible to distinguish even thirteen emotions based on the measurement of physiological activity (Verma, Tiwary, 2014). Though, this approach has been criticized because it is possible to activate physiological arousal without emotional experience or emotion could appear simultaneously, along with another – not related to the experienced emotion – physiological reaction (Cannon, 1927).

Taking emotions from the cognitive point of view, on the one hand, there is a possibility of appearing the influence of the interpretation of the situation on the experienced emotion (Siemer, Mauss, Gross, 2007), on the other hand, cognitive abilities are described as supporting the understanding of emotions and enabling conscious emotional experience. For example, by focusing on it (Izard, 2009). Due to cognitive involvement, emotions can be divided into those that require higher order cognition and for those that do not require it (lower order cognition). The latter cognitive processing is automatic, usually causing immediate reactions. In addition, often excluding conscious involvement. However, if an emotion is consciously processed by the cognitive system, then we are talking about the higher order cognition (Izard, 2011).

This is not the only classification based on the cognitive approach to emotions. It is possible to also include the categorization based on appraisal theories of emotion. According to them, emotions should be divided to the individual assessment of events or objects,which is directly connected with the person who makes it (Scherer, 2005). Therefore, emotion can be considered as an individual difference, because two different people may behave differently and feel different emotions in relation to the same event. The difference in assessment may

consist not only of dispositions but also of cultural variables (Brosch, Pourtois, Sander, 2010).

Looking at emotions from the dimensional theories of emotions point of view, the bi-dimensional model comes to the fore. The first dimension is valence (pleasant vs unpleasant) and second is arousal (Russell, 1980). Moreover, one-dimensional classifications as well appear in the literature, e.g. positive vs negative affect (Watson, Clark, Tellegen, 1988); other bi-dimensional classifications, e.g. activation-deactivation; pleasure-displeasure (Yik, Russell, Steiger, 2011) or three-dimensional, like: hedonic tone, tense arousal, energetic arousal (Matthews, Jones, Chamberlain, 1990) or pleasure-displeasure, excitement-inhibition, and tension-relaxation (Wundt, 1905, quoted in Coppine, Sander, 2016). This method of classification, in the case of research based on principal component analysis (PCA) or factor analysis (FA), does not have to be the main evidence of divergence in emotion categorization. It may be the result of operating at a different level of abstraction within the same hierarchical structure of emotions.

According to the constructivist theories, emotions are concepts created by human. It makes the possibility of categorizing the experienced states. People are learning this way of categorization during the life-span and it could be done by language. In other words: language is used as a tool for naming and categorizing stimuli, including emotions (Barrett, 2006a). According to this assumption, people learn to name what they feel and what they see in others. Only on the basis of such knowledge, they are able to describe their own experiences (Barrett, 2006b). This is in line with the assumption accepted in the research on emotion labeling which claims that the possibility of lexicalization is directly related to the existence of conceptual knowledge about the emotional experience (Ogarkova, 2013). This leads to the contact of a scientific and folk description of emotions. Asking respondents to describe their emotions seems to be a form of access to emotions which can be a source of scientific taxonomy, an alternative to physiological responses or emotional facial expressions analysis (Barrett, 2006b). It creates a new basis for scientific categorization. Analysis of the emotion lexicon provides knowledge about which emotions people are able to distinguish, recognize, name and, subsequently, use in describing their own experiences.

## LANGUAGE AS A SOURCE OF KNOWLEDGE ABOUT EMOTIONS

Categories can be divided into universalistic – based on objective, physical properties of objects, and into relativistic – in which language and the impact of culture are important elements of categorization. Although it is hard to judge which one would be more suitable for scientific taxonomy, there is evidence that language strongly influences the way information about self and the world is organized (Brosch et al., 2010).

While speaking about emotions in the context of their labels (words that are used to name them), we may not be talking about emotions' in themselves, because the process of naming emotions is independent of the experienced state. We are talking then about the attribution of the felt state to a specific emotional category made in the mind by language (Scherer, 2013). Nowadays, the area of research on the lexicalization of emotions is a dynamically developing area of research on emotions, showing greater mutual relations between emotions and language (Lindquist, MacCormack, Shablack, 2015). It has been shown that people could label emotions both literally and metaphorically in every language of the world studied so far, including ancient languages like Greek or Latin (Ogarkova, 2013). However, there are some difficulties in categorizing emotions resulting from their frequent co-occurrence (e.g. sadness and guilt during thedepression) or mutual interactions (Izard, 2011).

The idea of using language users' knowledge about emotions as a way of scientific categorization allows to capture all human-recognized emotions at the same time creates opportunities for an exhaustive classification. The latter advantage is particularly important in the context of discrepancies in previous attempts to classify emotions. An example could be a categorization based on an analysis of emotional facial expression (e.g. Ekman, Friesen, 1986; Ekman, Sorenson, Friesen, 1969). Above method of categorization is accused of being limited mainly to a few emotions regarded as basic as well of being based on very clear (intensive) display of these expressions (Barrett, 2006b).

## LEXICAL APPROACH IN SCIENTIFIC TAXONOMY

The purpose of psycholexical research is to systematize individual differences between people and, due to its evolutionary origin, emotion could be in this set (Izard, 2011). These studies are based on the lexical assumption which claims that all significant individual differences are coded in the language (Allport, Odbert, 1936), what was pointed out by Francais Galton (1884). In reference to this thesis, Lewis Goldberg (1981) formulated the lexical assumption: all the most important individual differences are encoded in natural languages. Dictionaries compiled by linguists independently of the lexical researcher are a potential source of the individual differences lexicon (De Raad, Barelds, 2008). Therefore, the starting point of lexical research could be considered as common, stable and objective (Angleitner, Ostendorf, John, 1990), giving researchers the option of an alternative, independent manner of exploring the subject of study (Roccas, Sagiv, Schwartz, Knafo, 2002). In addition, it increases the chances of replicability of the research results (Gorbaniuk, Ivanova, 2018). However, due to the time-consuming nature of this procedure, the number of lexical studies is relatively limited. Moreover, taking the dictionary as a starting point should be done with caution, because the words it contains have no

context. Context is sometimes necessary for the correct reading of language-coded meanings. It is, therefore, suggested to use the dictionary as a cumulative set allowing for the analysis of perceptual differences (De Raad, Barelds, 2008).

The lexical approach opens new possibilities in solving the emotion classification problem. In contrast to the taxonomy of personality traits, where due to lexical analysis relative agreement was achieved (Saucier, Srivastava, 2015), the potential of psycholexical research has not been used to extend classifications of non-personality differences. Only a few languages used lexical analysis to identify the structure of the worldview (Chen, Hsu, Zhou, Saucier, 2018; Krauss, 2006; Saucier, 2000), social reactions (Mlačić, Ostendorf, 2005) and appearance (Imperio, Church, Katigbak, Reyes, 2008; Ostendorf, Angleitner, 1994). However, despite more than a century of history of psycholexical research (De Raad, Mlačić, 2017), no attempt has been made to create a psycholexical taxonomy of emotions.

Considering the lexical assumption, it is worth noting that in many languages of the world there are definitely more words describing emotions than words used to describe other mental states, e.g. cognitive states (Mulligan, Scherer, 2012). It means that emotions have a special position in the description of individual differences in experiences.

A typical psycholexical study involves two key stages: (1) qualitative and (2) quantitative. In the first step, the task of the researcher is to define a subject of the study (e.g. personality trait, emotion) as precisely as possible. Then, a group of judges select from the dictionary terms which match the definition. The elimination of words considered ambiguous or slang is also required (John, Goldberg, Angleitner, 1984). Though, the exclusion of too many words might result in the creation of an unrepresentative sample of descriptors (Church, Katigbak, Reyes, 1996). In the second (quantitative) step, the researcher's task is to determine the similarities between all words describing, e.g. emotions due to the way terms are used by language users. This similarity is used as the basis for categorization created with factor analysis. In the lexical research, the respondent's knowledge of what emotion is and how to define or categorize it is not needed, but the person who develops the classification must have such knowledge.

At the stage of completing the emotion lexicon, the definition of emotion seems to be the biggest challenge because it is necessary to set clear criteria that judges have to follow. Unfortunately, there are many papers indicating a lack of consensus in the definition of emotions (e.g. Izard, 2010; Scherer, 2013) and previous attempts to create a non-controversial definition are formulated at a very high level of generality; such as: "[emotion is] complex response pattern that has physiological, experiential, cognitive (appraisal), and intentional elements" (Cardello, Jaeger, 2016, p. 167). Thus, performed at the qualitative stage of lexical research, solving the problem of accepting something as an emotion might also contribute to the development of non-language based scientific taxonomies.

Psycholexical studies are exploratory studies with as low number of theoretical assumptions as possible. Due to the lack of consensus in the scientific taxonomy of emotions, this should be seen as an advantage (De Raad, 1998). The starting point for psycholexical studies of emotions is to define the scope of the concept of emotion. The effect of psycholexical research is the categorization of the emotion lexicon at different levels of abstraction – from the most general to the most detailed, assuming hierarchical organization of the emotion lexicon. Research of the lexicon of emotions in various natural languages based on a unified methodology could show a universal structure of emotions for different languages and cultures. This should help researchers to answer the question whether the current classifications are exhaustive or some categories of emotions have been omitted, even though are recognized by language users as relatively independent categories associated with specific behavioral patterns. In the latter case, it would be necessary to reflect on whether the omitted categories have descriptive scientific value, or whether they are simply a delusion of a naive language user (*folk psychology*).

## SUMMARY

A review of the classifications of emotions indicates their diversity and lack of consensus. A lexical approach, in which natural language is a source of knowledge about human, is a proven alternative way of achieving consensus in taxonomies of individual differences. It is now a new trend in the study of emotions, although the first attempts to use the language to classify emotions were made in the 1980s. Exploiting the potential of the lexical research for the taxonomy of emotions is nowadays the challenge for psychology.

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# STRESZCZENIE

Pierwsze próby klasyfikacji emocji zostały podjęte jeszcze przed wyodrębnieniem psychologii jako nauki. Na przestrzeni wieków, ze szczególną intensyfikacją w ciągu ostatnich 50 lat, naukowcy podejmowali się prób osiągnięcia konsensusu w taksonomii emocji, jednakże – jak do tej pory – nieskutecznie. Pomimo względnej zgodności w podziale emocji na podstawowe oraz złożone nie osiągnięto porozumienia w zakresie kryteriów, jakie powinny stać się podstawą takiego podziału. Doprowadziło to do znaczącej rozbieżności w dotychczas opublikowanych wykazach emocji uznanych za podstawowe. Kolejne, coraz bardziej szczegółowe próby taksonomii emocji również nie doprowadziły do rozwiązania, które może zostać uznane za konsensus. W artykule omówiono wybrane sposoby klasyfikacji emocji oraz zaprezentowano alternatywną drogę w taksonomii emocji, traktując je jako różnice indywidualne w myśl podejścia ewolucyjnego. Potencjał taksonomiczny podejścia leksykalnego w systematyzacji różnic indywidualnych jeszcze nie został wykorzystany w obszarze klasyfikacji emocji, mimo że pozwolił osiągnąć względny konsensus w taksonomii cech osobowości. W artykule przedyskutowano najważniejsze problemy do rozwiązania, aby identyfikacja kulturowo uniwersalnych emocji na bazie języków naturalnych była możliwa.

**Słowa kluczowe**: taksonomia emocji; podejście leksykalne; różnice indywidualne