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Sources of data and methodological foundations of a contrastive linguistic analysis of emotion concepts

Abstract

The aim of the paper is a presentation of methodological foundations of semantics of emotion concepts in contrastive linguistic analyses and identifying the sources of data in Polish and English obtained by less frequently used research methods. The main assumption is the presence of not fully determinate concepts in linguistic semantics and the need to interpret emotion concepts in terms of prototypical meanings and cluster models. This requires the application of cognitive linguistics categories and cultural models of emotions and emotion events. The methodological part demonstrates the qualitative and quantitative nature of sources and research (GRID, sorting and ranking, cognitive linguistic analysis of corpus data, metaphoricity). The examples analyzed in fuller detail are Eng. *compassion* and Pol. *współczucie* in their respective emotion clusters. The conclusions present implications of this interdisciplinary and multi-method approach to develop a new methodology of contrastive research in emotion studies.

Keywords: cognitive linguistics, collocations, *compassion*, contrastive analysis, emotion, GRID, language corpora, semantic approximation, prosodic profiles, semantic clusters, sorting and ranking methodology, *współczucie*

Źródła danych i podstawy metodologiczne kontrastywnej analizy językowej pojęć wyrażających uczucia i emocje

Streszczenie

Celem artykułu jest prezentacja podstaw metodologii badań nad znaczeniem pojęć wyrażających emocje i uczucia w aspekcie kontrastywnym oraz wskazania na źródła danych do badań na przykładzie języka pol-

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[1] The authors' contributions to the research and text of the paper were equal.

skiego i angielskiego w kontekście rzadziej stosowanych metod badawczych. Głównym założeniem pracy jest obecność znaczeń nie w pełni określonych w semantyce językowej oraz konieczność interpretacji znaczeń emotywnych w kognitywnych terminach *znaczeń prototypowych* z jednej strony i *klasterów znaczeniowych* z drugiej. Wymaga to sięgnięcia do kategorii *językoznawstwa kognitywnego* oraz *kulturowych modeli uczuć* i emocji oraz zdarzeń emotywnych. W części metodologicznej pracy zaprezentowano źródła i badania *danych ilościowych* oraz, czerpiące z inspiracji językoznawstwa kognitywnego, badania jakościowe pojęć emotywnych i ich metaforyki (kwestionariusze GRID, zadania online sortowania i rankingu oraz badania korpusowe). Jako przykład omówiono angielskie pojęcie *compassion* w szerszym klasterze emotywnym oraz polskie pojęcie *współczucie*, jak też wzorce ich występowania w autentycznym materiale językowym. We wnioskach przedstawione są implikacje tak pojętych analiz interdyscyplinarnych, czerpiących z połączenia metodologii i źródeł badań psychologicznych, socjologicznych, kulturowych i językowych dla nowego podejścia w językowych badaniach kontrastywnych.

Słowa kluczowe: językoznawstwo kognitywne, kolokacje, *compassion*, analiza kontrastywna, emocje i uczucia, GRID, korpusy językowe, aproksymacja semantyczna, profile prozodyczne, klastery semantyczne, metodologia sortowania i rankingu, *współczucie*

1. Introduction

Studies of emotions, as expressed in language, methods of their investigation and sources of data, are related to the phenomena we consider crucial for our discussion, namely the relationship between external reality language and cognition, language and culture, and the status of meaning in language and in verbal communication in general. In other words, in Continental linguistic tradition, what is addressed in research concerning linguistic meanings are both onomasiological as well as semasiological phenomena and relations (Wierzchowski 1980: 31; Geeraerts 2002), immersed in a broad cultural context. The former lead to qualitative internal *meaning distinctions* between concepts (e.g. polysemy), the latter involve *the naming* of lexical senses and are related with the quantitative methods, identifying structural weight measures, tendencies, cognitive salience and prototypicality (Geeraerts 2002: 29). Numerous Polish scholars (for example, Wierzbicka 1985, 1999, 2004; Nowakowska-Kempna 1995; Mikołajczuk 2012, in preparation; Krawczak 2014) have been studying emotion concepts in terms of models within a Cognitive Linguistics tradition, which will also be a point of reference in our study. The phenomena signalled in the introduction are *meaning approximation* in interaction (Lewandowska-Tomaszczyk 2012) and *semantic reconceptualization* (Lewandowska-Tomaszczyk 2010), which are part and parcel of any communicative act, verbal or non-verbal, carried out in one or more languages, spoken or written. These assumptions are discussed within the claim of the present study, concerning the emotion cluster equivalence thesis both in monolingual (synonymy) as well as in translational contexts. This discussion will also show the reasons for the use of a multidisciplinary approach, involving a number of different research methods in emotion studies, which results in considering numerous sources of data in the research endeavor (consult also Wilson 2012 and Wilson and Lewandowska-Tomaszczyk 2012).

2. Meaning approximation in interaction

The concepts people use in communication exchanges are usually only partially overlapping (see Lewandowska-Tomaszczyk 2012 and 2017b for details). Some of our thinking tends to be more *effable*, that is, possible to express in a language (Katz 1978), while a large part of it such as some image-verbal thoughts, visions, emotions or dreams remain more felt than expressed, more imagined than put in words. In other words, meanings are, as we learn from Cognitive Linguistic paradigms, notoriously underdetermined by their fuzziness and absence of rigid categorial boundaries. Another crucial parameter of approximation is connected with the language typological parameter – a linguistic type a given system represents, in which some ontological categories are verbally marked and can be expressed, while some others are absent or left non-verbalized in the system. Connected with this is the type of linguistic construction, in which the speaker has to or can (considering the typological differences) choose to convey a message. The selection of a particular construction also symbolizes a particular semantic perspective conveyed by these forms via different *profiling* and cognitive *construal* of a given scene or event (Langacker 1987, 1991).

Consequently, the semantic scope of an individual interactant's meanings leaves an uncovered space in the interpretation of a message, as a part of a respective organization of mental structures. Its exponent is a system (language, visual system), which is complemented by *inferential structures* – an ability to complement a message with further (unexpressed) thought(s) or image(s), for example, by the activation of an Idealized Cognitive Model (cf. Lakoff 1987) of a respective scene. Although language users apply numerous strategies (synonymy, paraphrase, polysemy, super-/sub-ordinate category members, etc.) to achieve their communicative goal, such strategies are always used at the expense of maintaining the exact *sameness* of meaning either in one language or in translation. What takes place in such contexts is communication via monolingual or cross-linguistic meaning approximation rather than identity (Lewandowska-Tomaszczyk 2012).

The meanings of emotion terms are not very much like those of concrete concepts, which are more effable in terms of explicit semantic characterization and cover the necessary and sufficient properties of a given sense. Our position in this respect is rather that parts of the meanings of emotion concepts are accessible via behavioural and experiential properties; however, they are conceptualized not as direct meanings but as networks of different kinds of meaning, that is, in terms of figurative forms. Moreover, cross-linguistic comparisons also show that what is a fairly crisp concept in one language may be considered a blended notion in another (see Fauconnier and Turner 1998; consult also Wilson, Lewandowska-Tomaszczyk and Niiya 2013).

3. Emotion concepts in contrast

Emotions can be defined as bodily and mental states of arousal in an experiencer which develop as a consequence of some prior or co-temporal or co-temporally en-

visaged stimulation (cause). The rise of an emotion is conditioned both by the character of the stimulus, which triggers the experiencer's positive or negative reactions, the cultural and social conventions of the community they have been brought up in, which regulate their external behavior including language, and the experiencer's past experiences and their individual mental and behavioural predispositions.

Each of these facets of emotions can be taken as a subject of research scrutiny and adequately investigated. They can also be considered points of reference in a contrastive analysis of emotion concepts. Bodily effects can be adequately measured by means of observational, experimental and medical methods. Since the publication of the influential book by Ekman (2004) on the universality of basic emotion facial expressions, the thesis has been supported or challenged by numerous studies. One of the most recent publications by Gendron et al. (2014) argues against the universal status of perceptions of emotion from facial expressions. Instead, supporting their evidence with the emotion perception of participants from the United States and the Himba ethnic group from the Keunene region of northwestern Namibia, the authors hypothesize that evidence of universality depends on the conceptual and cultural context.

4. Culture

A common thread in many of the definitions of culture proposed throughout years of research involves a few *constitutive properties* (Kluckhohn and Kelly 1945; Damen 1987), which center on *patterning*, that is human models for behaviour and living, the *sharing* of these patterns, their *structure* and *repetitiveness*, *learnability* and *acquisition*, *cultural transmission* in terms of signs and symbols, and cultural *imagery* and its *embodiment* in artefacts and in human achievement in thought and language. Culture is a broad and elaborate concept that involves real or fictitious heroes and events, concerns symbols and imagery, describes verbal and non-verbal rituals such as speech events and hand shaking, profile values to identify good and evil, and creates or imposes numerous social practices (Lewandowska-Tomaszczyk 2011). However, a particular culture primarily involves *patterns of emotions and thoughts* shared by a given community of people. In the present paper we aim to determine how people's shared ideas and cultural practices, in other words the *cultural models* shared by a certain society, shape the feelings and emotions of that society.

5. Culture and emotions

There are a number of elements that can influence variation in emotion representation across cultures (cf. also Langacker 2014). As Lewandowska-Tomaszczyk and Wilson (2017) explain with respect to shame and guilt, these include religion, honour, face, and individualism vs. collectivism. Although it is beyond the scope of the present paper to provide a detailed assessment of how specific emotions are influenced by

such cultural elements, it should be noted that some of them (e.g. religion) are linked to what Lakoff discusses in his *Moral Politics* (1996), and synthetically in *Philosophy in the Flesh* (1999).

The cultural dimensions identified by Hofstede (1980) have provided an in-depth understanding of such cross-cultural variation. The specific dimensions identified by Hofstede (1980) are as follows: *collectivism versus individualism* – whether we construe ourselves as autonomous, self-determined entities vis-à-vis interdependent members of a group; *power distance* – the extent to which one accepts the unequal distribution of power by subordinate members of institutions; *masculinity versus femininity* – emphasis on success and money versus caring for others and quality of life, respectively; *uncertainty avoidance* – how much individuals are adversely affected by ambiguity or unknown situations in their lives; *long-term orientation* – the degree to which individuals are prepared to decline immediate social success in favour of greater emphasis on long-term aims; *indulgence versus restraint* – emphasis on fun, enjoyment, natural human desires and self-gratification versus the restriction, regulation and control of the indulgence in human desires and needs, respectively.

5.1. Individualism and collectivism

The collectivism-individualism dimension is central in the present chapter as it is key to the understanding of the differences between British English *compassion* and its Polish equivalent, *współczucie*, which is foregrounded in our explication of the compatability of the three methodologies that we employ, namely GRID, online emotions sorting methodology, and the corpus linguistics methodology. The emphasis on individualism-collectivism in the present paper is not an attempt to present a skewed representation of the importance of this dimension above other cultural elements such as religion, honour and face, but is determined by its relevance to the choice of emotions, namely *compassion* and *współczucie*.

5.2. Individualism

Individualism is characterised by the following central features (e.g. Hofstede 1980; Oyserman, Coon and Kemmelmeier 2002; Triandis 2001; Diener and Diener 1995):
  – The primacy of one's autonomy with personal aims, which places emphasis on the self as opposed to the in-group in terms of achieving success and fulfilling one's potential
  – The foregrounding of individual emotions, values and thoughts compared with those shared by the in-group; satisfaction in one's life is more central to self-construal
  – consistency with the main tenet of exchange theory, the weighting of beneficial and detrimental factors are central in social relationships
  – relationships are relatively more temporary, but emphasis is placed on respect

- a greater emphasis on rights and more social distance from in-groups; individuals have greater individual responsibility, have fewer duties towards the in-group and have greater freedom to make individual choices
- relationships within the professional sphere are based more on contractual obligations
- judgements regarding the causes of actions of others are based on the individual as opposed to the situational

5.3. Collectivism

Collectivistic cultures are underscored by the following features (e.g. Hofstede 1980; Oyserman, Coon and Kemmelmeier 2002; Triandis 1995; Markus and Kitayama 1991):
- a greater perceived social distance between in-groups and out-groups, with more of an impermeable border between them
- as opposed to individual autonomy, there are closer interpersonal relations in the in-group that are based on equality and principles based on generosity
- duties and obligations in the in-group are determined by social standing
- satisfaction and contentment are based on the construal of the self that centres on the successful execution of social roles and duties that are in turn derived from common aims and harmonious relations in in-groups that have a greater permanence and are characterised by a greater focus on the benefit of others
- due to the differences between members of the in-group the range of attitudes, values and behavior is broader in scope
- the regulation of the outward expression of emotions to mainatian harmony in in-group relationships
- attributing cause during interpersonal perception centres on situational and social factors as opposed to the individual

5.4. Individualism and Collectivism: Criticisms and Influences

More recent research has questioned the established view of the stable social constructs of individualism and collectivism presented above. The main focal point of this challenge has centred on both conceptual and methodological criticism. Other research has highlighted the possible dynamism in these constructs, calling in question whether the traditional distinction between the relatively more individualistic Britain and the more collectivistic Poland might need to be revised.

5.4.1. Conceptual and Methodological Criticism

One of the main criticisms is that individualism and collectivism are conceptually "fuzzy" with many definitions and assessments being too broad and diffuse (Brewer and Chen 2007). Bond (2002: 76) similarly calls for a more detailed understanding of these multifaceted constructs that permit "many different operationalizations". Fiske

(2002: 87) questions the validity of the "characterization of cultures according to IND and COL" and proposes that instead of merely identifying how collectivistic cultures differ from individualistic cultures, we need to gain a more complete understanding of the intrinsic nature of the many collectivistic cultures around the world. It has also been argued that the individualistic and collectivistic construct has been applied too readily in attempts to understand a wide range of diverse cross-cultural issues (Bond 2002; Earley and Gibson 1998).

A number of methodological criticisms have been directed at empirical investigations into individualism and collectivism. Oyserman, Coon and Kemmelmeier (2002) highlight a number of methodological limitations in their comprehensive review of the literature. By using undergraduate participants, who may be more individualistic and less collectivistic (Fiske 2002), the generalizability of the results of many studies to the wider society is restricted. Other studies restrict the generalizability of the results to other nations, racial groups, or ethnic groups, as they focus narrowly on a comparison between European American undergraduates and either undergraduates from a single Asian country or a single ethnic minority group within America. Another problem concerns the different ways that researchers use and conceptualise individualism and collectivism. For example, when collectivism is assessed on the basis of belonging to in-groups and seeking advice from others, Americans see themselves as relatively collectivistic; however, they rate themselves as low in collectivism when researchers use duty to in-group in their measurement of collectivism. Finally, Oyserman, Coon and Kemmelmeier (2002) found that very few of the cross-cultural comparisons that they reviewed provided information on the ethnic background of their samples.

This criticism of individualism and collectivism has not received unanimous support. Schimmack, Oishi and Diener (2005) argue in favour of individualism as an important and valid element of intercultural differences and that the apparent inconsistencies in the results can be explained by cross-cultural differences in self-report response styles. As noted by Brewer and Chen (2007: 134), when these response styles are statistically controlled "horizontal individualism shows high convergent validity with Hofstede's (1980) original rankings of emotions on the I-C dimension". However, in contrast with individualism, which is deemed to have a valid definition and assessment, Schimmack, Oishi and Diener (2005) propose that the concept of collectivism may need to be reassessed. Such a distinction alludes to a rejection of the position that individualism and collectivism are conceptual opposites. Accumulating evidence supports the statement by Oyserman, Coon and Kemmelmeier (2002: 8) that individualism and collectivism "are better understood as domain-specific, orthogonal constructs differentially elicited by contextual and social cues".

More research is required to address these conceptual and methodological concerns. The validity of these objections notwithstanding, the classification of cultures on the basis of individualism and collectivism has provided a great deal of insight in cross-cultural investigations.

6. Emotions: definition and types

As proposed by Cosmides and Tooby (2000), emotions are a set of superordinate programmes which coordinate or harmonize the activation of various componential subordinate programmes such as approach, avoidance, resting, etc. Distinct emotions are associated with a number of *Emotion Event-types* (Lewandowska-Tomaszczyk and Wilson 2013) that recur both in the course of evolutionary history and in child development and, when needed, the most successful programmes are activated. The *emotion clusters* that we refer to rely on material from close conceptual domains that are based on a form of family resemblance (e.g. joy, happiness) and exploit partial synonymity as well as hyponymy and metonymy links among emotion terms such as those between *sadness – sorrow – grief*. Emotion clusters can either be negative or positive (e.g. *anger and hate* or *compassion and kindness*). The values of such properties are not considered discrete as was argued above, but they are rather graded with blurred edges and boundaries[2].

In order to investigate a complex structure of emotions a number of methodological tools have been used in our study. They will be discussed in the sections to follow with the use of the concepts of English *compassion* and Polish *współczucie* and their cluster members as the subject of analysis in the present paper.

7. GRID method of emotion studies

The complex nature of emotions that are conceptually structured in clusters rather than single emotions underscores the need for empirical investigation to employ diverse methodologies in a cross-disciplinary approach. To meet these demands, the present study employed the GRID, online emotions sorting, and language corpus methodologies (see below). Dimensions and components are an integral part of the GRID instrument in its investigation of emotion prototype structure. Support for the dimensional structure of emotion concepts has come from a number of studies (e.g. Fontaine, Scherer and Soriano 2013). In addition to enabling analyses based on these emotion dimensions, the wide range of emotion features in the instrument allows relevant components to be isolated and analysed. The main advantage of the online emotions sorting methodology is the enriched meaning of emotion clusters that it provides, which extends horizontally, providing information on the relationships between clusters. Using this methodology we can not only establish that the British English version of *compassion* is more positive than its more negative Polish counterpart, *współczucie*, but additionally discover, by determining its prototypical location within clusters and how it relates to emotions in other clusters, the possible reasons for this cross-cultural difference. The corpus methodology provides more detailed materials

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[2] Emotion clusters are differentiated from the experience of ambivalent feelings, so-called *mixed feelings,* considered a mutually exclusive option such as a *love/hate relationship*, which represents an *approch-avoidance* conflict, a consequence of activating conflicting emotion subprogrammes.

on the specificity of particular emotion terms, which also includes information on how they function in various contexts. The context is recovered by examining the distribution (i.e. occurrence) of a particular term in various structures and identifying the frequency of their co-occurrence with neighboring words. The type of meaning they represent and the structure in which they are used make it possible to identify both the VALENCE and intensity with which the emotion terms are used in discourses.

The three methodologies that were employed, GRID, online emotions sorting, and the cognitive corpus methodology, were chosen on the basis of the broad aims of the study, which were to compare and contrast the structures of the British English and Polish emotion domains. As outlined above, each of these methodologies focus on different but compatible aspects of emotion meaning and it is the composite picture that emerges from these that provides an understanding of how such meaning is conceptualized.

7.1. GRID

The GRID instrument is a methodological tool of major importance that has been developed recently and implemented with good effect to investigate emotions in the cross-linguistic and cross-cultural domain (Scherer 2005; Fontaine et al. 2002, 2007, 2013; Fontaine, Scherer and Soriano 2013; Fontaine 2013). It employs a system of dimensions and components, which bring about insight into the nature of emotion prototypical structures. The GRID project is coordinated by the Swiss Center for Affective Sciences at the University of Geneva in collaboration with Ghent University and is a worldwide study of emotional patterning across 23 languages and 27 countries. The GRID instrument comprises a Web-based questionnaire in which 24 prototypical emotion terms are evaluated on 144 emotion features.

7.2. GRID Methodology

Participants completed the GRID instrument in a controlled Web study (Reips 2002), in which each participant was presented with four emotion terms randomly chosen from the set of 24 and asked to rate each in terms of the 144 emotion features[3]. They rated the likelihood that each of the 144 emotion features can be inferred when a person from their cultural group uses the emotion term to describe an emotional experience. A 9-point scale was employed that ranged from *extremely unlikely* (1) to *extremely likely* (9) – the numbers 2 to 8 were placed at equidistant intervals between the two ends of the scale, with 5 *neither unlikely, nor likely* in the middle and participants typed their ratings on the keyboard. It was clearly stated that the participants needed to rate the likelihood of occurrence of each of the features when somebody who speaks

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[3] Each participant rated a random selection of four of the emotion terms on the basis of the 144 emotion features as the task would have been too long and demanding if each participant rated all 24 emotions on each of these features.

their language describes an emotional experience with the emotion terms presented. Participants rated all four emotion terms on the basis of a certain emotion feature sequentially on separate screens before rating these four emotion terms on the next emotion feature and so on until all four emotion terms had been rated on the basis of all 144 emotion features.

The British English sample comprised 201 British English participants (124 females) with a mean age of 21.5 years (all born and raised in Britain and spent most of adult lives in Britain), and the Polish sample comprised 124 Polish participants (95 females) with a mean age of 23.2 years (all born and raised in Poland and spent most of adult lives in Poland). As each participant rated four emotion terms, the participant details are idiosyncratic to each of the emotion terms. For example, the participant details for the compassion emotion term are as follows: 33 British English-speaking subjects (21 females; mean age 23.2 years) rated *compassion* and 29 Polish-speaking subjects (26 females; mean age 25.6 years) rated *współczucie*.

7.3. Components of Emotion

The 144 GRID emotion features represent activity in all six of the major components of emotion. Thirty-one features relate to *appraisals*, eighteen to *bodily reactions*, twenty-six to *facial, vocal or gestural expressions*, forty to *action*, twenty-two to *feelings*, and four to *emotion regulation*. Three further features refer to other qualities, such as *frequency* and *social acceptability* of the emotion. Participants are asked to rate the likelihood of these features for the various emotions. This methodology is comprehensive in its scope as it allows the multicultural comparison of emotion conceptualisations on all six of the emotion categories recognised by emotion theorists (Ellsworth and Scherer 2003; Niedenthal, Krauth-Gruber and Ric 2006; Scherer 2005).

The significance of the GRID components of emotion is made clear when one considers the Component Process model of emotion (CPM, Scherer 1984, 2005), which proposes that rather being emotion states, emotions comprise a number of componential processes that are activated in response to certain events that encompass one's goals, values and needs. The main emotion components in the GRID methodology are *appraisals*, *bodily reactions*, *expressions*, *action*, and *feelings*, all of which have been shown to have a substantial representation in the meaning of emotion terms (Fontaine and Scherer 2013). Emotion words bear information about these components across different languages and cultures. Fontaine and Scherer (2013) observed that the *feelings* component contributes the most to differentiating between the meanings of different emotion words, with *appraisals*, *bodily reactions*, *expressions*, and *action*, having a lesser, albeit similar, influence.

7.4. Emotion Dimensions

In addition to its componential element the GRID also offers the means to analyse the dimensional structure of emotions. Fontaine (2013) identifies the assessment of ex-

periences relating to affect and emotions as being central to such dimensional approaches. Support for the dimensional structure of emotion concepts has come from a number of studies. However, how the emotional domain is organised in terms of the number and nature of these dimensions has been a matter of recent debate. In contrast with an earlier proposal of three dimensions (EVALUATION, POTENCY and ACTIVATION) by Osgood, May and Miron (1975), later suggestions have tended to settle on a two-dimensional model comprising VALENCE and AROUSAL (e.g. Yik, Russell and Feldman-Barrett 1999). Fontaine and Scherer (2013: 107) argue that when emphasis is placed on the *meaning* of emotion words, research shows that a three dimensional model, comprising VALENCE, POWER and AROUSAL, offers the most comprehensive representation of dimensional space (Shaver et al. 1987; Shaver, Wu and Schwartz 1992; Fontaine et al. 2002).

Analyses performed on GRID data have consistently produced four dimensions. In an initial study of the dimensional structure of emotions using the GRID instrument, Fontaine et al. (2007) derived a four-dimensional structure for English, French and Dutch that added the dimension of NOVELTY to the previous three-dimensional model of VALENCE, POWER and AROUSAL. Analyses conducted on the data from all of the languages represented in the GRID project have reproduced this four-dimensional structure (Fontaine, Scherer and Soriano 2013). To determine the dimensional structure of the Polish and British English data in the present study, principle components analysis (PCA) with varimax rotation was performed on the combined dataset of these two languages (see above for details). The four-dimensional solution that was selected comprised the same dimensions as Fontaine et al. (2007) and Fontaine, Scherer and Soriano (2013) and accounted for 81.9% of the total variance. The first dimension (VALENCE) accounted for 52.9% of the variance, the second dimension (POWER) for 15.5%, the third dimension (AROUSAL) for 8.3%, and the last dimension (NOVELTY) for 5.1%. A sensory cue GRID feature was included in a dimension if it achieved a 0.6 loading on this dimension *and* did not have a higher loading on another dimension. The VALENCE dimension is characterised by appraisals of intrinsic pleasure and goal conduciveness. Other features include action tendencies of approach versus avoidance, and pleasant emotions versus unpleasant emotions. Specific examples of features associated with this factor include "felt positive", "wanted to sing and dance", "in itself unpleasant for the person", "felt inhibited or blocked", and "incongruent with own standards and ideals". POWER includes appraisals of control, with the feelings of power and weakness being particularly salient. It is also characterised by appraisals of interpersonal dominance or submission, and by urges to either initiate action or refrain from this. This dimension includes features such as "assertive voice", "felt submissive", and "wanted to take the initiative her/himself". The AROUSAL dimension is mainly characterised by sympathetic arousal (e.g. rapid heartbeat and readiness for action). The features associated with this dimension include "breathing getting faster", "felt hot", "sweat", and "spoke faster". The fourth dimension is represented by NOVELTY. On this dimension, appraisals of novelty and unpredictability are compared with expectedness or familiarity. Fontaine et al. (2007) found that surprise was associated

more with the NOVELTY dimension than the other emotions they analysed. This dimension includes features such as "raised eyebrows", "jaw dropping", and "confirmed expectations". It is the profiling of these underlying dimensions that forms the basis of the main aim of GRID, which is to construct a world atlas of emotion terms.

7.5. The Componential Emotion Approach vs. the Dimensional Emotion Approach

To what extent do the componential emotion approach and the dimensional emotion approach offer compatible structures of the emotion domain? Fontaine and Scherer (2013) highlight the congruence between these two approaches that they find in their results, which demonstrates that the four-dimensional solution forms a stable structure that also provides a good representation of the componential data. The four-dimensional structure was mostly achieved even after the removal of each of the five emotion components one at a time. More specifically, the elimination of a single emotion component had no influence on the VALENCE and the POWER dimensions. The AROUSAL dimension is to some extent affected by the removal of the *feelings* component, showing that this dimension is characterised largely by feelings. Similarly, the elimination of the *appraisal* component has a moderate effect on the NOVELTY dimension, demonstrating the relative salience of this dimension in appraisal.

The scale and flexibility of the GRID paradigm, based on its wide range of 24 emotions and 144 features, has been taken advantage of by a number of studies focusing on both the componential and dimensional representations of emotion structure in cross-cultural studies of emotions. Studies that feature the componential approach include an investigation into the meaning of happiness in Japan and the United States (Ishii 2013). Consistent with the hypothesis, it was shown that happiness is relatively more characterised by pride in the US, because pride is a socially disengaging emotion that should be more associated with individualism, and that happiness is related more to love in Japan due to love being more of a socially engaging emotion denoting collectivism; however, crucially, this was found for the *bodily reactions* component, but not for the *appraisals*, *expressions*, *action*, and *feelings* components, suggesting that differences in happiness across cultures may be specific to certain types of features. Mortillaro et al. (2013) investigated the meaning of pride between Southern and Northern Italians on the *appraisals*, *feelings* and *expressions* components. Consistent with predictions, the results for the *appraisal* component showed that Southern Italians were more likely than Northern Italians to include other in-group members in their appraisals of pride. Predictions were also confirmed for the *feelings* component, with Southern Italians associating pride with negative feelings and Northern Italians evaluating pride in terms of positive feelings. However, contrary to predictions, the negative feelings that the Southern Italians associated with pride were not accompanied by more regulation strategies by Southern Italians. This pattern of results is consistent with the Southern Italians being relatively more collectivistic than the Northern Italians. There have also been a number of studies employing the GRID

methodology that feature the dimensional approach. In our research we have observed, for example, that British English *fear* is characterised by higher POWER than its Polish counterpart, *strach* (Lewandowska-Tomaszczyk and Wilson 2013), and that British English *pride* has a more negative VALENCE than the Polish equivalent, *duma* (Wilson and Lewandowska-Tomaszczyk 2017).

7.6. Analyses on GRID Features, Components and Dimensions

It is important to note that the selection of GRID features, components and dimensions in analyses comparing emotions in different cultures is determined by the specific elements of the comparative analyses that are deemed important. As specific emotions are influenced by certain cultural features, the necessity of such selection rather than broad spectrum analyses involving all features, components and dimensions, becomes clear, as illustrated in our own studies. For example, the POWER dimension is central to the study comparing British English *fear* vs. Polish *strach* outlined above as it is argued that this dimension is a function of the FIGHT (active opposition) that is relatively more salient in *fear*, as opposed to *strach*, which is characterised by FRIGHT (inactivity, freezing) (see Lewandowska-Tomaszczyk and Wilson 2013). In contrast, we have shown that the NOVELTY dimension is more fundamental to the comparison of British English *love* vs. the Polish equivalent, *miłość* (Lewandowska-Tomaszczyk and Wilson 2015). Specifically, the finding that *love* is more novel than *miłość* is consistent with the unpredictable, sudden nature of passionate love being more salient in *love* in comparison with more stable, long-lasting, companionate and patriotic types of love and love for God, which are relatively more characteristic of *miłość*. Components are more relevant than dimensions when it comes to the application of cultural variations in emotions in practical spheres such as social robotics. This is illustrated in our study highlighting differences in the expressive profile of GRID emotion features between British English and Polish that, we argue, need to be tuned accordingly if such robots are to successfully interact in social settings in these two cultures (Wilson and Lewandowska-Tomaszczyk 2014; Lewandowska-Tomaszczyk and Wilson 2016).

It is far beyond the scope of the present paper to provide a detailed account of which GRID dimensions, components or features are relevant to which emotions. However, in an attempt to provide deeper understanding, the following section outlines the relevance of the VALENCE dimension and a component pertaining to *desire to act* vs. *desire not to act* in analyses comparing British English *compassion* and its Polish counterpart, *współczucie*.

7.7. British English versus Polish Compassion

Componential and dimensional elements can be used effectively in tandem in GRID analyses to determine cross-cultural differences in emotion concepts. We have demonstrated the effective employment of such a combination in the analyses of

British English vs. Polish compassion - *compassion* and *współczucie*, respectively (Lewandowska-Tomaszczyk and Wilson 2016, in press).

Compassion is similar to sympathy as it is a response to the plight of others; however, it is characterised relatively more by a desire to help, which may or may not be manifested behaviourally (Gladkova 2010). The key feature of compassion is that it can be associated with both positive and negative VALENCE, which appears to be determined to some extent by individualism vs. collectivism. The independent, autonomous nature of individualism means that individualists such as the British are likely to have a self-directed focus in the presence of a suffering individual, which is likely to highlight the possible help that they can provide. In contrast, the outward orientation of focus, due to the salience of interpersonal relationships in more collectivistic cultures, such as Poland, is likely to highlight the pain and suffering of an individual who is in need of help and therefore sadness, sorrow and distress are possibly more foregrounded in *współczucie*[4]. An obvious prediction resulting from this is that British English *compassion* is characterised as relatively more positive than Polish *współczucie*. Additionally, the inward focus on the possible personal help given to a person who is suffering is likely to influence the extent to which that person would like to initiate an active response. The analyses that we have performed to compare *compassion* and *współczucie* in terms of VALENCE and the desire to initiate action are a good example of how the analysis of GRID components and dimensions can complement each other.

To compare *compassion* and *współczucie* on the VALENCE dimension a 2 x 2 Anova was performed on the positive VALENCE GRID features vs. the negative VALENCE GRID features (see Lewandowska-Tomaszczyk and Wilson (2016, in press) for further details on this analysis). Consistent with what one would expect on the basis of the relatively more individualistic British culture compared with the more collectivistic Polish culture, the results showed that *compassion* was characterized by more positive VALENCE than *współczucie*.

As predicted, the results of the componential analyses were consistent with the dimensional analyses. Apart from representing the six major components of emotion (i.e. *appraisals*, *bodily reactions*, *facial, vocal or gestural expressions*, *action*, *feelings*, and *emotion regulation*) that are outlined above, other, minor, more subordinate components can be represented by GRID features. The subordinate component identified as representing the desire to initiate action is *desire to act* (*wanted to go on with what doing, required immediate response, wanted to undo what was happening, felt urge to be attentive, felt urge to be active, wanted to act, wanted to tackle situation*) and opposes its opposite, *desire not to act* (*wanted to submit to situation, felt urge to stop what doing, wanted to do nothing, lacked motivation to do anything, lacked motivation to pay attention to what was going on*). All of these features are members of the

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[4] Although Poland cannot be deemed to be an individualistic culture, it scores 60 on the individualistic vs. collectivistic dimension, which means that it is more collectivistic in relative terms than Britain, which is considered to be an extremely individualistic society and has a score of 89 on this dimension (Hofstede, Country Comparison).

GRID *action* component, apart from *required immediate response*, which is included in the GRID *appraisals* component. To compare *compassion* and *współczucie* on *desire to act* vs. *desire not to act* a 2 x 2 Anova was performed on the means of these profiles of features (see Lewandowska-Tomaszczyk and Wilson 2016, in press). The results showed that there was a significantly greater *desire to act* for *compassion* than *współczucie*. The greater *desire to act* for *compassion* compared with *współczucie* is consistent with its more positive VALENCE. If an individualist conceptualises compassion more in terms of an inward focus on the help that they can offer, it is likely that it is characterised by both more positive VALENCE and a greater desire to help the suffering individual.

8. Online Emotions Sorting Methodology

The emotions sorting methodology involves the categorisation of emotion terms into groups. In the online version these terms are categorised on the computer desktop. This methodology can be deemed to be complementary to the componential and dimensional emotion approach of the GRID instrument with respect to the meaning of emotion terms. The main advantage of the online emotions sorting methodology is the number of emotion terms it can accommodate (135 vs. 24 GRID emotion terms). It can also enable a more enriched, elaborate understanding of relationships both within and between emotion clusters.

8.1. Selection of Terms

The selection of emotion terms was carried out on the basis of egalitarian principles[5]. To ensure the independence of the choice of emotion terms in each language, the selection of the British English and Polish emotion terms was carried out independently. This meant that neither language was dominant over the other and that neither was used as a point of reference to the other, ensuring a selection of British English emotion terms that are independent of the Polish emotion terms. Various references and Internet sources were initially consulted to compile a list of 569 British English emotion terms and 322 Polish emotion terms. Then each of these emotion terms was placed in one of the following categories: happiness/joy, love, anger, hate, fear, sadness, surprise, compassion, contentment, guilt, shame and pride. The authors then had consultations to decide on the emotion terms that were the most prototypical of the original lists of emotion terms in the respective languages. Care was taken to ensure that each of the above emotion categories was represented as equally as possible. There were 200 emotion terms in the list of the most prototypical British emotions and 199 emotion terms in the list of the most prototypical Polish emotions.

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[5] Due to space restrictions, what is presented in this section is a summary of the procedure followed to select the emotion terms.

In the next phase, the final list of 135 emotions was determined on the basis of participant ratings of prototypicality. There were 29 Polish participants (mean age = 33.8 years, 15 females) and 22 British English participants (mean age = 51.4 years, 11 females). The emotion prototypicality ratings task was the same for the British English and Polish participants, who were required to rate each of the emotion terms (200 for the British English participants and 199 for the Polish participants) on sheets of paper on the basis of the extent to which they deemed them to be emotions on a 9-point scale. The 135 British English emotion terms and the 135 Polish emotion terms that had the highest mean prototypicality scores were selected as the emotion terms to be used in the main experiment.

8.2. Methodology

Participants were informed that the study was concerned with finding out about how people think some emotions "go together" and other emotions belong in different categories. More detailed instructions regarding the specific sorting task were as follows:

> You will be presented with 135 emotions on the computer screen. We'd like you to sort these emotions into categories representing your best judgement about which emotions are similar to each other and which are different from each other. There is no one correct way to sort the emotions – make as few or as many categories as you wish and put as few or as many emotions in each group as you see fit. This study requires careful thought and you therefore need to think carefully about which category each emotion belongs to rather than just quickly put emotions in categories without much thought.

There were 58 British English participants (27 females, mean age = 42.7 years) and 58 Polish participants (27 females, mean age = 35.8 years).

8.3. NodeXL

We employ NodeXL (Smith et al. 2010), a network graph tool that is integrated in Microsoft Excel to perform analyses on social networks, to create graphical representations of the Polish and British English co-occurrence emotion matrices. The connection strength in our NodeXL graphs represent the co-occurring frequency of the emotion terms in the online emotions sorting data, and are hence referred to as *co-occurrences* or *interconnections*. For example, Figure 2, which is explained in more detail in the next section, shows that there is a co-occurrence value of 48 between *sympathy* and *empathy*, which is greater than the value of 28 between *empatia* 'empathy' and *sympatia* 'sympathy, fondness' (see Figure 3), meaning that there is a closer proximity between the English emotions than the corresponding Polish emotions. To illustrate more fully the nature of the co-occurrence matrices that are the basis of such diagrams, an example of the British English co-occurrence matrix pertaining to British English EMPATHY/SYMPATHY/COMPASSION cluster is shown in Figure 1. For example,

the relatively high co-occurrence value of 48 between *sympathy* and *empathy* in the co-occurrence matrix (Figure 1) is represented as a short line between these two emotions in the diagram in Figure two. This means that 48 British English participants placed these two emotions in the same group in the online emotions sorting task.

	Caring	Compassion	Concern	Empathy	Fondness	Love	Pity	Sympathy
Caring		43	26	37	42	31	19	37
Compassion	43		30	40	32	25	23	39
Concern	26	30		32	17	12	22	30
Empathy	37	40	32		29	22	28	48
Fondness	42	32	17	29		39	15	27
Love	31	25	12	22	39		9	21
Pity	19	23	22	28	15	9		30
Sympathy	37	39	30	48	27	21	30	

Figure 1: British English EMPATHY/SYMPATHY/COMPASSION cluster co-occurrence matrix

8.4. British English versus Polish Compassion

The value of the online emotions sorting methodology can be seen when one assesses what the analyses on compassion add to the GRID results on compassion. Specifically, the online emotions sorting results for compassion offer additional possible reasons for the more positive VALENCE of *compassion* in comparison with *współczucie* in the GRID results. Apart from the possible individualism-collectivism basis to this as the GRID results suggest, the online emotions sorting results point to two further possibilities, namely the structure of emotion clusters and the interconnection between *współczucie* and *politowanie* 'compassion with a sense of superiority'.

The first point to note in the possible emotion cluster structure basis to the more positive VALENCE of *compassion* vis-à-vis *współczucie* is the meaning of *sympatia*, which possesses uniquely positive VALENCE in Polish and is more of a member of the Polish LOVE cluster rather than the Polish EMPATHY/COMPASSION cluster, which contrasts with the central position of *sympathy* in the British English EMPATHY/SYMPATHY/COMPASSION cluster. This is clearly demonstrated in the comparison in Figure 3 between the relatively higher co-occurrences between *sympatia* 'sympathy, fondness' and *miłość* 'love, affection' (32) and between *sympatia* 'sympathy, fondness' and *lubienie* 'liking, fondness' (43) vis-à-vis the lower interconnections between *sympatia* 'sympathy, fondness' and *empatia* 'empathy' (28) and between *sympatia* 'sympathy, fondness' and *współczucie* 'compassion, sympathy' (16), and the opposite pattern in Figure 2: lower interconnections between *sympathy* and *love* (21), and between *sympathy* and *fondness* (27), compared with higher interconnections between *sympathy* and *empathy* (48), and between *sympathy* and *compassion* (39). Although English

sympathy does include the positive elements of liking, when used in the negative sense it typically refers to Emotion Events expressing an irreversible loss (*grief*), similar to Pol. *współczucie*. The relatively less presence of *sympatia* in the Polish EMPATHY/COM-PASSION cluster means that *współczucie* encompasses a greater semantic space than that covered by *compassion* in its respective cluster and *współczucie* is more negative as a consequence. This is most directly visible in the higher co-occurrences between *współczucie* and the Polish sadness cluster emotions in comparison with the inter-connections between *compassion* and the British English sadness cluster emotions. It can also be seen in the higher interconnections between the LOVE cluster emotions and *compassion* in comparison with the MIŁOŚĆ cluster emotions and *współczucie*.

The second possible reason for more negative VALENCE effects for Polish *współczucie* centers on the linguistic link between *współczucie* and the unambigu-ously negative *politowanie* (pity combined with a sense of contempt and superiority). This is illustrated in the interconnection value of 19 between *współczucie* 'compassion, sympathy' and *politowanie* 'compassion with a sense of superiority' in Figure 3.
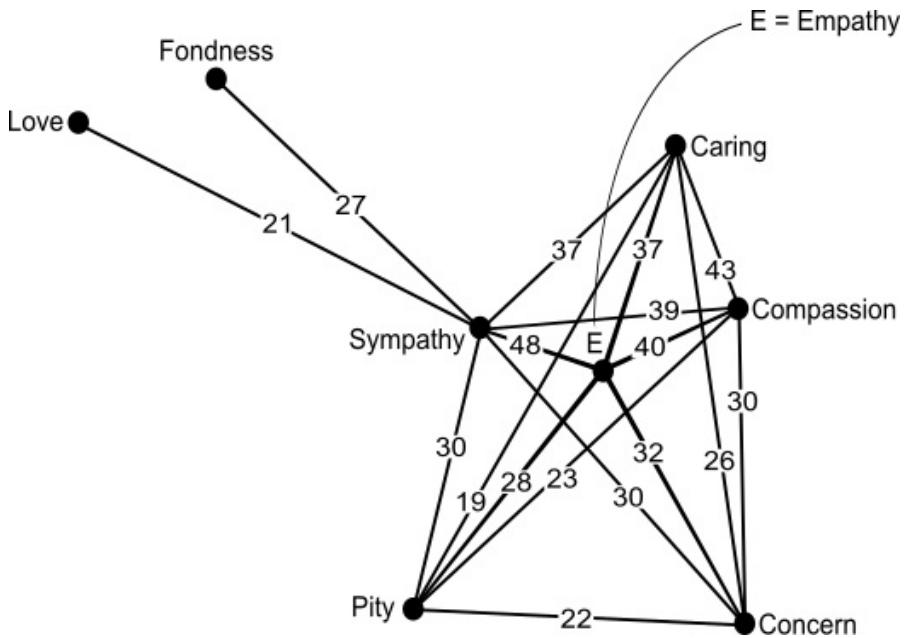

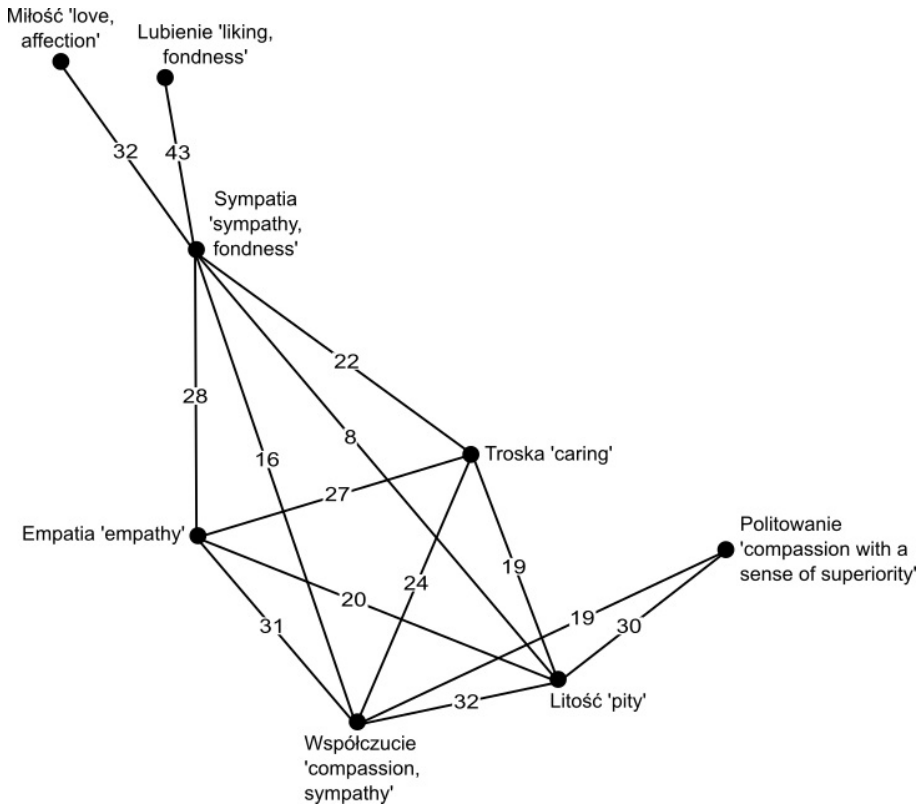Figure 2: British English EMPATHY/SYMPATHY/COMPASSION Cluster

Figure 3: Polish EMPATHY/COMPASSION Cluster

9. Corpus Linguistics methodology

As can be inferred from the above discussion, emotions can be investigated by a number of distinct, but frequently overlapping or complementary methods. The linguistic methods applied in the present study employed the use of large corpus data of British English and Polish to identify quantitative similarities and differences in the statistics of language expressions containing the emotion terms studied, as well as Polish-to-English and English-to-Polish translated texts from parallel corpora, in which, apart from the nominal emotion concepts used, adjectival and verbal collocations were studied, as well as the Adjectival and Verbal emotion forms. This list is not exhaustive, again for practical reasons. The concepts of Cognitive Linguistics are applied to identify similarities and differences in particular emotion conceptualizations in English and Polish, particularly the construal of schemata pertaining to the expression of emotions and *metaphoric uses* with reference to the emotion concepts discussed.

Parallel Polish-to-English corpus data are presented in the paper to support the claim that a translated text involves firstly equivalent structures from the core, as well as successively more and more peripheral areas of the SL-TL similarity space. The value of the relevant *meaning granularity* and *schematicity* is also investigated in the TL text, and juxtaposed to the original. Examples are drawn from the concordance materials referring to a number of *event clusters* in English and Polish, inter alia *Emotion Events* (Lewandowska-Tomaszczyk and Wilson 2013), collocational profiles of relevant items, and confronted with the results of the construal qualitative analysis and questionnaire-based methodology, which reveals high interconnectivity links between terms and structures within the same cluster.

10. Lexical signalling of emotions

Not all emotions have evolved distinctive verbal correlates. In a number of cases what is expressed by verbal correlates are Emotion Clusters. As to the numbers of emotion terms present and emerging in language, our materials include a few hundred of forms in English and a comparable number in Polish. It may be interesting to note that there is a majority of negative emotion terms on the lists. People have developed to signal *some negative* emotions more frequently than other negative emotions or than positive ones mainly in the context of a lowered degree of control or manifestation of power relationships (pain, disgust, anger). Positive emotions are more frequently signalled in terms of *Emotion Clusters* and can cover consequential or associated properties such as, for example, the position of *love* within the LOVE, JOY and HAPPINESS cluster.

11. Cognitive Linguistics

11.1. Emotion prototypes

We assume that concepts in general have a *prototype-periphery* structure. Some of them are vague, meaning that their sense is not crisp and determinate. Some others are ambiguous in different contexts, that is their cognitive content undergoes modulation in context. Sense modulations can be a consequence of a selection of a particular *perspective* taken on a scene by the viewer/speaker, and, connected with it, the selection of a different *construal* of the observed event (cf. Langacker 1987) in the conceptual structure, namely the way a given event is portrayed by the language user. Lexical shifts in meaning are accounted for in cognitive linguistics by assuming a prototype conception of lexical concepts, with no set of necessary and sufficient features, but with fuzzy boundaries. On the other hand, semantic differences between different construal types expressed in terms of varying syntactic patterns, as say between an active and passive sentence or nominal and verbal constructions, are captured precisely by differences in selected syntactic construal elements of a scene.

11.2. Construal of emotions in figurative language

Both intra-domain (metonymic) and cross-domain mapping are cognitive linguistic instruments of focal importance that can be perceived as "entrenched conceptual patterns" in figure of thought, particularly metaphor (Grady 2007: 196). We also come across the phenomenon of *metaphtonymy* such as *skakać z radości - jumping (with joy)* for *joy* (Goossens 2004), combining metaphor and metonymy.

We accept and use a meaning description in terms of semantic components and their physical physiological-psychological correlates, but make an attempt to enrich them with the analysis of *mental imagery* expressed in language, predominantly in terms of figurative uses. Metaphor is a cross-domain mapping, in which a conceptual domain is understood as a mental structure of related concepts expressing a body of knowledge. Metaphor refers to the understanding of one idea from a domain, or the whole domain (target domain), in terms of another (a source domain). A source domain is usually more basic and physically grounded, which functions as a mapping site for a given target domain; for example, the metaphor *Tom is a lion* is based on a source domain which includes the wide concept of lions, their looks, behavior, habitat, associations and evaluation, and can be taken as a source for a number of creative metaphorical mappings, although it is most frequently the mapping site for the conventional metaphor for Tom's courageous behavior. Emotions too can be mapped onto by a number of source domains, some of which are used, as will be discussed further, with *emotion* concepts.

Master metaphors (Lakoff et al. 1991) for emotions comprise a number of Source Domains. The basic one assumes that emotions are entities within a person, more particularly:

EMOTIONS ARE ENTITIES WITHIN A PERSON (Pol. *Napełniło mnie to radością*, Eng. *I was filled with joy*), EMOTIONS ARE PHYSICAL FORCES (Pol. *Wyładował na niej swoją złość*, Eng. *He discharged all his anger on her.*) or EMOTIONS ARE THINGS.

Whereas some emotion metaphors overlap in languages, some others possess a culture and languge-bound character: for example, in comparison with Polish *dotknięty*, which corresponds to the feeling of *hurt*, English *touched* may signify *sorrow* and/or *compassion.* In a fuller account of emotion research methodology, cognitive theories of metaphor and metonymy developed by numerous scholars, also in Poland (e.g. Bierwiaczonek 2013), would need to be accounted for (compare comments to noun collocates in Table 1 and Table 2 in section 12.2 below). The focus of the present paper is primarily on the less frequently used emotion research methods and sources of data.

12. Language corpora and the quantitative data

12.1. Materials

In order to extend the context of the use of emotion terms in English and Polish, we resort to large corpus data, particularly collocations and their frequencies. By an-

alyzing authentic language, we can detect shifts in meaning for the same linguistic form and we can also describe the contexts which support such shifts. Based on the frequency of occurrence, corpus-based methods let us statistically determine which linguistic meanings are most salient. The materials we use come from several sources: the British National Corpus (100 million words) and the National Corpus of Polish (NKJP), which contains 300 million units of balanced data and a growing reference corpus exceeding one and a half billion units at present. We conduct automatic analyses of word frequencies and lexical (adjectival, verbal, and, when possible, nominal) collocations of the emotion words in spoken and written texts (Pęzik 2014). We also manually extract contexts of relevant words, the axiological charge of emotions (positive-negative) and relevant metaphors (cf. Lakoff and Johnson 1980, Lakoff and Kövecses 1987, Kövecses 2000). The manual analyses we conduct are annotations for metaphoricity and particular metaphorical scenario membership.

The BNC and NKJP used are either of a comparable size or normalized to identical values. We calculate how many times a word or collocation occurs per one hundred million words in a process called 'normalization'. This enables comparison across these differently sized large datasets. They cover well-balanced language materials of different genres and styles, including both written and spoken (ca. 10 %) conversational data. The search tools Wordsmith Tools, SlopeQ (http://tnij.org/slopeq1), and HASK were applied to generate frequencies of occurrences and (parts of speech-sensitive) collocations (Pęzik 2015). Corpus studies are carried out most commonly by looking at words and their contexts (so-called KWIC searches: Key Word In Context) in large collections of authentic natural language, compiled from written and oral sources. Quantitative data sets are compared to see if an observed phenomenon (e.g. a co-occurrence) is significantly more frequent than another; frequencies of lexical co-occurrences are also used for descriptive purposes and exemplification.

The overall frequency of all emotion terms is higher in Polish than in English, which can be interpreted as typological differences between the two languages with respect to the part-of-speech preference patterns rather than evidence of the linguistic preferences of the relevant speakers and writers[6]. Spoken language, although clearly marking emotional layers of meaning, will often perform this indirectly with a more constrained use of explicit emotion terms.

A word of caution referring to the reaction type frequencies should also be added in connection with the corpus methodology. Corpora have their limitations. There are

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[6] See Wierzbicka (1992, 1994) and Dziwirek and Lewandowska-Tomaszczyk (2010) for a discussion of the part-of-speech based differences of expressing emotions between Polish and English. As is also found in Lewandowska-Tomaszczyk and Wilson (2013), Polish emotion terms are more frequently expressed in some types of discourse as adjectives, while in their English (translational) equivalents it is the corresponding nominal structures that are preferred in the examined data as, for example, in: Lennie dropped his head *in shame* at having forgotten./Lennie spuścił głowę *zawstydzony* tym, że się zapomniał. He lowered his head *in shame*/ Opuścił głowę *zażenowany*. And yet, in larger samples, the proportions are different: BNC (100 mln segments): *ashamed* 1023, *with shame* 49, *in shame* 36, *of shame* 135; NKJP (ca. 240 mln segments): Adj *zawstydzon** 787, Prep N *ze wstydem* 223, *ze wstydu* 473).

tools available to generate frequencies of individual items and phrases, concordances with expanded contexts, collocations and keywords. There are also encouraging results of automatic metaphor identification (e.g. Stefanowitch and Gries 2007). However, when it comes to semantic and pragmatic annotations of meanings in use, particularly in large corpora, adequate corpus tools are not yet fully developed. Furthermore, one should be advised to exercise some caution with regard to far-reaching generalizations about direct correlation patterns between frequencies of use of particular items and basic cultural dimensions. Batteries of diverse multiple methods are recommended to capture both crucial and more nuanced inter-cultural preferences.

12.2. Collocations

The extraction of collocational combinations is an important methodological tool in corpus analysis. Collocations show the closest lexical units in terms of contextual distance, which are used with particular emotion words. The interesting property of this aspect of corpus methodology is the fact that, as consonant with the *Iconicity Principle* (Haiman 1985), closeness of forms signifies also closeness in meaning. This means that the closer a form is to another one in an utterance and the more frequent such combinations are in discourses, the closer are the semantic links between them.

We resort to the data generated by the collocator HASK and Colosaurus, comparing the collocations of synonymous forms, which are developed by Piotr Pęzik (2014) for the Polish and English corpora. HASK generates lists of all collocates based on the respective corpora and grouped according to main parts of speech: Nouns, Adjectives, and Verbs, and with respect to the term position referring to the collocate (preceding or following). The collocation window ranges from three positions to the left and to the right and the minimal frequency is set to 5 occurrences of the phrase. Tables 1 and 2 below present top noun collocates of the Adjectives *współczujący* 'compassionate' and *compassionate*, respectively, in English and Polish.

A number of *association scores* are computed for each collocational combination: *t*-score, mutual information, chi-square, log-log, Dunning's log-likelihood, and Dice score[7]

#	Collocate	POS	A	TTEST	MI3	English equivalent
1	spojrzenie	noun	29.0	5.3	17.2	look
2	Serce	noun	17.0	4.0	13.4	heart
3	Twarz	noun	10.0	2.9	10.8	face
4	Głos	noun	10.0	2.8	9.7	voice
5	Mina	noun	8.0	2.7	10.8	facial gesture
6	Miłość	noun	6.0	2.2	8.9	love
7	Ton	noun	5.0	2.1	10.5	tone
8	Gest	noun	5.0	2.1	10.1	gesture
9	westchnienie	noun	4.0	1.9	11.9	sigh
10	zrozumienie	noun	4.0	1.9	9.1	understanding

Table 1. Top noun collocates of Polish *współczujący* 'compassionate'

[7] All association scores can be generated with the publicly available tools at http://pelcra.clarin-pl.eu/.

The noun collocates of Pol. *wpółczujący* 'compassionate' in Table 1, particularly those referring to body parts, are characteristic for the construction of the metonymic portrayal of compassion, e.g. *miał <u>współczujące serce</u> dla każdej niedoli* 'he had <u>a compassionate heart</u> for all the misery', *szukając pokrzepienia i ucieczki w cierpliwej, <u>współczującej twarzy</u> swojej kobiety* 'searching reinvigoration and escape in his woman's patient, <u>compassionate face</u>'. A similar regularity can be identified in English, e.g. *Andrew's <u>compassionate brown eyes</u> registered shock, and then regret* (Table 2).

#	Collocate	POS	A	TTEST	MI3	Polish equivalent
1	Leave	N%	25.0	4.9	16.5	urlop okolicznościowy
2	Grounds	N%	7.0	2.5	10.1	negatywne okoliczności dla przyznania wizy imigracyjnej
3	circumstance	N%	4.0	1.7	6.8	negatywne okoliczności dla przyznania urlopu (uniwersytet)
4	Attitude	N%	3.0	1.4	5.6	postawa współczująca
5	look/eye	N%	3.0	1.3	5.5	spojrzenia/wzrok współczujące/y
6	Home	N%	4.0	1.0	5.1	dom pełen współczucia
7	Man	N%	7.0	0.8	6.1	współczujący człowiek
8	Woman	N%	3.0	0.0	3.2	współczująca kobieta

Table 2. Top noun collocates of English *compassionate*

As observed in the corpus data, Polish w*spółczując** (- *y*, -*a*, -*e*) has a higher frequency of use[8] and a wider range of, more general, applications, while English, apart from describing people's and communities' (*home*) attitude, is clearly more specialized – used as part of terminological phraseology, applicable in a number of cases in which official policy is to help society (employees, immigrants, students). This active attitude in English is also marked in the results of the GRID method.

13. Corpus data interpretation

There are certain difficulties in coding emotion scenario identification. Unlike the GRID methodology in which the questionnaire is administered to native speakers of a language to get their native judgments, in the corpus data, language involving an emotion is used with reference to a variety of different experiencers – not only English in English texts or Polish in the Polish corpus data. Corpus examples do not necessarily describe Polish or English people's experiences of this emotion. The experiencers vary – they can be from different cultures and backgrounds. Nevertheless, they are described in Polish and English, respectively, in terms of an English or a Polish perception of this emotion. When we use corpus data, we assume that (native) speakers use their own language-specific conceptualizations even when they talk about and describe other people or events they have not personally experienced.

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[8] One of the reasons, although not significant, of the higher raw frequency is the fact that the participial form *współczując*, Eng. 'sympathizing/expressing compassion (participle)', is also included in the count.

14. Spoken corpus and linguistic emotion expression

To investigate the processes of linguistic emotion expression an analysis of spoken corpus materials is also undertaken. Particular phraseology and lexical uses (e.g. *You dirty old bugger, leave her alone!*; *You dirty little faggot! Call the manager! I'm tired of listening to this*) correspond to clusters of emotional meanings (*anger* in this case) and uncover possible states of arousal in terms of emotional language use. Another spoken language corpus tool identifies particular utterance *prosodic profiles* (Pęzik 2015). The prosodic profiles generated for utterances make it possible to identify the intensity of emotion expression in particular contexts in terms of pitch dynamics and amplitude. The observation we make with reference to prosodic differences (in a number of cases more intensive emotion expression for some Polish emotions) can be interpreted with reference to the theory of *politeness* profiles (Brown and Levinson 1987; Scollon 1996; Scollon and Wong Scollon 1995), which differ in Polish and English. So-called positive politeness in Polish culture involves preferences for full personal emotion expression, while English *negative politeness*, more individualistically inclined, generates an interactional attitude that is relatively less imposing.

15. Contrastive analysis and parallel corpus

Translation involves a number of cycles of the *re-conceptualization* of an original source language (SL) message, expressed eventually in a target language (TL) (Lewandowska-Tomaszczyk 2010). The translator's *construal* of an original scene contributes to a modified (TL directed) mental model of the original SL scene. Translation thus has to do with various *re-conceptualization* processes, which are expressed in terms of *qualitative* and *quantitative parameters*. Qualitative changes primarily cover differences between Source Culture and Target Culture world-views, related to properties specific to a given culture. Apart from the *qualitative changes*, *quantitative linguistic* parameters such as the frequency of occurrence of a language form, its combinatorics with other items in discourse, as well as patterns of semantic similarity, oppositeness and inclusion, all contribute to the language specific character of SL and TL forms. Collocational patterns studied cross-linguistically are revealing when analyzed in parallel (translated) texts. They contribute to the identification of typological differences between text types of the languages compared, as well as those between the original and the translated text.

15.1. PARALELA tools

We resort to fuller contexts and, apart from the analysis of words and sentences, we investigate equivalence patterns as discussed above, looking primarily at the Polish-to-English and English-to-Polish parallel corpora as collected at the PELCRA Corpus and Computational Linguistics Lab of the Institute of English Studies at Lodz Univer-

sity (pelcra-clarin.pl.eu). The corpora represent a variety of genres and styles; however, it is primarily literary texts that provide the most extensive and varied language materials for emotion discussion. Recorded spoken materials, mainly spontaneous conversational data, provide additional enrichment of the direct properties of emotional language. However, as they are non-surreptitiously recorded, the range of emotional expressions and topics might not be equivalent to natual, unrecorded language.

PARALELA (http://paralela.clarin-pl.eu/) is a corpus search engine developed in the CLARIN-PL project for a large collection of annotated Polish-English parallel texts (Pęzik 2014, 2015). The publicly available Paralela index currently contains over 200 m words in close to 6 m parallel segments from Polish-English and English-Polish text translations. More than 8 million words in the corpus were manually aligned and annotated for equivalence types. PARALELA supports both mono- and bilingual corpus queries formulated in the SlopeQ query syntax. Search results can be filtered with facets and query filters. Since both the Polish and English segments in the corpus were part-of-speech tagged, it is also possible to formulate queries for terms and complex phrases matching specific morphosyntactic criteria. For example, a concept corresponding to Polish *współczucie* obtains more granular shades of meaning in translational context, either in terms of its cluster polysemic chain including *litość* 'pity' or *troska* 'concern' or can be replaced by a hyperonym (e.g. the word *uczucie* 'emotion') as in:

(1) Pol. Halleck wahał się, wyczuwając mądrość i <u>współczucie</u> w słowach Tueka.
(1a) Eng. Halleck hesitated, sensing wisdom and <u>sympathy</u> in Tuek's words.

(2) Pol. Ogarnęło go niezmierne <u>współczucie</u> dla niej.
(2a) Eng. A profound <u>compassion</u> for her swept through him.

(3) Pol. nigdy nie skąpił swojego pobłażliwego <u>współczucia</u>
(3a) Eng. he had always been treated with indulgent <u>commiseration</u>

(4) Pol. w jego głosie niewiele było <u>współczucia</u>
(4a) Eng. without sounding <u>sorry</u>

(5) Pol. Aragorn popatrzył na niego łagodnie i ze <u>współczuciem</u>.
(5a) Eng. Aragorn looked at him with kindly with <u>pity</u>.

(6) Pol. W jego oczach jakoś nie było <u>współczucia</u>.
(6a) Eng. There was no <u>empathy</u> in his eyes.

(7) Pol. nie znajdowała dla niego <u>współczucia</u>
(7a) Eng. she had been rendered incapable of any <u>emotion</u> for her son

The results of our analysis confirm the thesis of *cluster equivalence* (Lewandowska-Tomaszczyk 2017a, 2017b) manifested in translational data. Cluster equivalence is different from that found in lexicographic reference sources. Instead of word-based equivalence patterns as identified in dictionaries, it assumes the emer-

gence of patterns based on the resemblance of clusters of concepts, manifesting different forms of internal composition. These facts further contribute to the thesis concerning translational reconceptualizations of meaning and can account for partial incommensurability (Lakoff 1987) and untranslatability of texts in distinct languages.

16. Conclusions: Semantic approximation and emotion clustering

Emotion terms are, according to the principle of Semantic Approximation, discussed in Section 2, inter-substitutable in discourse and in translation within the same broad emotional cluster of concepts. At the same time, this inter-substitution brings about definite effects. The replacement of *pity* for *compassion*, *joy* for *love* or *anxiety* for *fear* in one language, or rendering the English form *pride* into Polish *pycha* or choosing the Polish term *duma*, introduces, as predicted by the Re-conceptualization Principle (Section 15), a substantial conceptual change or modification, in other words, a reconceptualization of the original sense.

Conceptual EMOTION clusters themselves enter larger constructions with other clusters to form various forms of EMOTIONAL, COGNITIVE and/or VOLITIONAL clusters (Dziwirek and Lewandowska-Tomaszczyk 2010). In the case of *compassion*:

Prototypical *compassion* Emotion concept
Eng. *sympathise <u>with</u> sb* > partly corresponds to < Pol. *<u>współczuć komuś</u>* in terms of the COMPASSION/WSPÓŁCZUCIE clusters
Eng. *compassion* and *feel compassion with/for* > corresponds to Pol. *współczucie* and *współczuć*, respectively

Megacluster of emotive and cognitive meanings
Pol. *Współczuję, że*; Eng. */I am sorry that/I sympathise about*

Megacluster of emotive, cognitive and volitional meanings
Eng. *sympathy* > *sympathize* – identified in the polysemic Eng. COMPASSION/LOVE megacluster – corresponds, respectively, to Pol. *sympatia* and *Rozumiem, popieram ten pomysł/zachęcam do działań w tym kierunku* 'I sympathize (i.e. understand, support, align, encourage) with the idea'

17. Conclusions: Multiple methodologies and sources of data

The complexity inherent in the mapping of emotion concepts between cultures demands the employment of complementary methodologies to identify the nuanced differences that exist between, for example, British English *compassion* and Polish *współczucie*. The emotion terms and features of the GRID instrument allow emotion prototype structure to be analyzed on the basis of dimensions and components. With respect to the former, we have shown that *compassion* has a more positive VALENCE than *współczucie*. In terms of the latter, further analyses on the emotion features in the

sub-component *desire to act* vs. *desire not to act* produced consistent results demonstrating that *compassion* is characterized relatively more than *współczucie* by the wish to engage in action. However, other paradigms, such as the online emotion sortings methodology and the cognitive corpus linguistics methodology, are necessary to determine possible reasons underlying these effects. The online emotions sorting methodology provides enriched information about the meaning of emotions by analyzing the relationships between emotions both within and across emotion clusters. For example, apart from showing, consistent with the GRID results, that *compassion* has a more positive VALENCE than *współczucie* on the basis of the higher interconnections between the British English LOVE cluster emotions and *compassion* and the lower co-occurrences between the British English SADNESS cluster emotions and *compassion* relative to the corresponding relationships for *współczucie*, the online emotion sortings results offer possible explanations for this pattern. The first of these centers on the wider semantic space, including negative elements, covered by *współczucie* in its respective cluster as a consequence of the relative greater inclusion of *sympatia* in the the MIŁOŚĆ (love) cluster. The conceptual proximity between *współczucie* and the negative *politowanie* offers a second possible reason.

The corpus data also uncover interesting correlations. Polish *współczucie* 'compassion' is used with respect to a wider range of referents and contexts, while English *compassion*, as observed in the selection of collocates of the relevant adjectives (Tables 1 and 2), is shown to be used in terminology addressing people's needs. These corpus results are corroborated in the GRID method and the online sorting task.

Due to the reasons of space the present paper does not aspire to present all exising methods of emotion research. We did not deal in detail with cognitive linguistics findings in extensive metaphor and metonymy studies (Lakoff, Kövecses 1987; Bierwiaczonek 2013; Mikołajczuk 2009). Nor did we specify, for example, prosodic and paralinguistic properties accompanying spoken language in emotional interaction. Rather, the focus of the paper was a presentation and discussion of the less frequent methodologies (GRID, online emotions sorting, and corpus analysis) we have been employing to shed a new light on emotion concepts, in particular the meanings of Polish and English compassion clusters in contrast.

To suggest a wider perspective, it can be concluded that the research experience in the study of cross-linguistic emotion concepts strongly supports a multimethod approach to investigate such complex phenomena, and present ways of taking advantage of qualitative and quantitative sources of data from linguistic, psychological and culture studies paradigms. Attempts to uncover nuances of a relationship between external reality world, mind, language, and culture with respect to the concepts of the 'third kind' such as emotions, in which concrete, physical and biological sensations closely intertwine with more abstract, cognitive phenomena and their linguistic and culture-bound expression, will only be successful when such an approach is adopted. The present paper highlights some new aspects of research in emotion systems in contrast. An answer to the question as to whether it is possible to develop a fully comprehensive model of emotions that would account for all cognitive, social, cultural and lin-

guistic conditioning as well as interrelationships between all emotion clusters in one language or across languages, needs further detailed analyses and certainly exceeds the scope of the present discussion.

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