"Something bad can now happen to me here": Meaning components of emotion words

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Abstract

This paper reports on how people connect explications of emotion words to the terms they are meant to explicate. We focused on the Finnish counterparts to the following words: *anger*, *disgust*, *fear*, *joy*, *love*, *sadness*, and *surprise*. Our primary findings show that our participants, who were native speakers of Finnish, made the expected matches between Natural Semantic Metalanguage-based explications and the corresponding emotion words. However, there were significant differences between the emotion words, with the match rate ranging from 93% for 'love' to 51% for 'sadness'. This research also contributes to our understanding of the meaning components of emotion concepts, and it may help people to talk about emotions in depth without using the conventional vocabulary for emotions.

Keywords: emotion words, Finnish, meaning components, Natural Semantic Metalanguage (NSM), survey

1 Introduction: The need for empirical testing of NSM explications of emotion words

Talking about emotions is a quotidian and ubiquitous action. People talk about emotions such as 'anger', 'joy', 'sadness', 'fear', 'surprise', and 'love' in

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everyday language. These concepts are also taught to children and young people in schools and in official materials that support recognizing and managing emotions (e. g. The Finnish Association for Mental Health 2019). Emotion words are labels for these concepts, and they guide our common conceptions of emotions. However, their meaning may vary from person to person. A more analytical and simple way of defining and describing emotions could be useful. Thus, in our study we sought to test how well so-called Natural Semantic Metalanguage explications really describe and define emotion words in Finnish.

For 40 years or so, proponents of Natural Semantic Metalanguage (NSM) have claimed that concepts of emotions can be explicated by simple words (Wierzbicka 1999; Harkins & Wierzbicka 2001; Goddard 2002). Yet, there has been little empirical proof for these claims. Regardless of what at first glance appears to be its theoretical and linguistic nature, the question has a strong practical impact on many fields outside of linguistics. Rapidly gaining ground is the argument that simple language can discuss issues as complex as emotions. In this paper, we test whether laypeople really understand the meaning components suggested by linguists. We approach the question by investigating how well native speakers of Finnish can match emotion explications with the term they are meant to explicate and identify the components of meaning.

The explications and meaning components used in this study are based on Natural Semantic Metalanguage (NSM). NSM is a mini-language consisting of about 65 simple words, the so-called semantic primes. According to NSM theory, these primes are universal concepts and can be found in all languages of the world. With these 65 words, all the remaining words in any language can be explained. This linguistic theory, originally proposed by Anna Wierzbicka and further developed by Cliff Goddard and others, combines structural and cognitive aspects of word meaning (e. g. Wierzbicka 1992a; Goddard 2008). Lexical meaning is seen as being both deconstructable and explicable. Table 1 lists the semantic primes in English, showing how they correspond to simple concepts that people can be expected to be familiar with without further explanation.

Emotion vocabulary has been the focus of many NSM studies over the last several decades, and a wide selection of explanations has been published, covering various languages and emotion concepts (e. g. Wierzbicka 1999; Harkins & Wierzbicka 2001). One of the revolutionary notions in NSM emotion studies is related to categorizing emotions: most emotion

Table 1. Semantic primes (English exponents; Goddard & Wierzbicka 2014). Exponents of primes can be polysemous (i. e. they can have other additional meanings). Exponents of primes may be words, bound morphemes, or phrasemes. They can be formally, that is, morphologically, complex. They can have combinatorial variants or allolexes (indicated with ~). Each prime has well-specified syntactic (combinatorial) properties.

substantives:	I, YOU, SOMEONE, SOMETHING~THING, PEOPLE
relational substantives:	BODY KINDS, PARTS
determiners:	THIS, THE SAME, OTHER~ELSE
quantifiers:	ONE, TWO, SOME, ALL, MUCH~MANY, LITTLE~FEW
evaluators:	GOOD, BAD
descriptors:	BIG, SMALL
mental predicates:	KNOW, THINK, WANT, DON'T WANT, FEEL, SEE, HEAR
speech:	SAY, WORDS, TRUE
actions, events, movement:	DO, HAPPEN, MOVE
location, existence, specification:	BE (SOMEWHERE), THERE IS, BE (SOMEONE/SOMETHING)
possession:	(IS) MINE
life and death:	LIVE, DIE
time:	WHEN~TIME, NOW, BEFORE, AFTER, A LONG TIME, A SHORT TIME, FOR SOME TIME, MOMENT
place:	WHERE~PLACE, HERE, ABOVE, BELOW, FAR, NEAR, SIDE, INSIDE, TOUCH
logical concepts:	NOT, MAYBE, CAN, BECAUSE, IF
augmentor, intensifier:	VERY, MORE
similarity:	LIKE

explications include either a "feeling something good" or "feeling something bad" component (Wierzbicka 1999). Emotion words can thus be divided roughly into two categories, within which they can be further differentiated by using simple, language-independent prime words. Emotion words can be deconstructed into components of meaning; if needed, they can also be compared component by component in different languages. Many (e. g. Harkins 2001) of the published NSM-based emotion word explications are based on linguistic analyses by author introspection and supported by examples from linguistic corpora. The explications typically follow the semantic template specifically constructed for an emotion-based vocabulary, as can be seen in the cases of the English word *happy* or the non-translatable Japanese *amae*:

(1) **someone X is happy (at this time):**
     Someone X thinks like this at this time:

          "many good things are happening to me as I want
          I can do many things now as I want
          this is good"

     because of this, this someone feels something good at this time
     like someone can feel when they think like this
     (Goddard & Wierzbicka 2014)

(2) **someone X feels *amae* (towards Y) at this time:**
     someone X thinks like this at this time (about someone Y)

          "this someone can do good things for me
          this someone wants to do good things for me
          when I am with this someone, nothing bad can happen to me
          I want to be with this someone"

     because of this, this someone feels something good at this time
     like someone can feel when they think like this
     (Wierzbicka 1998)

As can be seen from the above explications, NSM focuses on people's thoughts about the emotion they experience. Another way to approach emotions would be to focus on how the specific emotion is felt in the body, as in the GRID paradigm. Ye (2013) has compared the NSM and GRID paradigms and suggested that they complement each other.

According to the principles of NSM, explications of words must be simple enough to be understood by laypeople (Goddard 2011: 65). The

necessity of testing the empirical evidence of explications has been discussed, and at least one study on the empirical testing of NSM explications has been carried out. Gladkova et al. (2016) conducted a study on the English interjections *wow*, *gosh*, *gee*, *yikes*, *yuck*, and *ugh*, in which they used a survey technique to collect experimental data ($N = 101$). The purpose was to evaluate a set of NSM explications of interjections. Their results show that the explications of interjections were well accepted by laypeople overall, with the proposed explications receiving positive rankings on a Likert scale of 1–7 (grand mean score = 5.38, range = 4.6–6.2). Gladkova et al. (2016) observed that the differences in the scores for different words could be associated with the clarity of the explications or even with the level of the participants' familiarity with the words in question. They also assessed the effect of background variables (age, gender, [non-]native speaker status, and background knowledge about NSM) on the respondents' evaluations, noting that the background variables had little impact on the results.

Gladkova et al. (2016) made a solid beginning with their systematic empirical testing of NSM explications, yet there is still a need to continue the research. A key question is whether their findings on interjections hold true for other word classes or semantic fields, such as emotion vocabulary. Harkins's study (2001) on words for anger in Central Australia is relevant for a different reason, because she worked with aboriginal speakers to collect, understand and explain words and their nuances. In our study, the informants did not play an equally active role in contributing to how the words should be explicated.

Recently, there has been growing interest in the use of NSM-based applications outside of linguistics and outside of academia (e. g. Goddard 2018; Vanhatalo & Torkki 2018). This kind of non-academic usage shows the practical value of the NSM approach. The NSM primes themselves seem to be intuitively accepted by ordinary people. But are the NSM explications or some parts of them accepted as well? Could the meaning components of emotion words be used in psychological practice, for instance?

Another aspect to consider is the translatability of the NSM explications and the emotion concepts. Nearly all of the semantic primes can be found in most languages. The explications themselves, if carefully crafted, should be translatable, at least to some extent. Yet, the conventional vocabulary of emotions is often culturally dependent, and meanings may vary radically from one language to another. However, it appears that this kind of semantic diversity does not apply to all emotion concepts equally. While some concepts

are almost impossible to translate (e. g. German *Angst*, Wierzbicka 1999; Japanese *amae*, Wierzbicka 1998), other concepts seem to be almost the same across languages (e. g. *fear*-like concepts, Wierzbicka 1999).

The ultimate goal of this study is to determine if the explications and meaning components of emotion words, as suggested by NSM-oriented linguists, could be useful for non-linguistic purposes. Our purpose in this particular study is not to convince readers of the selection of the NSM primes; there is already abundant literature on various aspects of NSM, including critiques. Nor do we try to convince readers of the accuracy of the current NSM explications. Rather, we take both the primes and the explications as they are published in previous NSM literature. We agree with some but not all aspects of NSM, and we recognize that there are some controversial issues in the theory. Nevertheless, what we try to do is to increase the mutual discussion between NSM and other approaches (such as linguistic survey studies) to emotion vocabulary. Our strategy here is to expand the number of methodological devices traditionally used in the NSM framework and, by doing so, seek acceptable and valuable parts of NSM explications of emotion concepts.

2   Materials and method

For the current study, we selected six emotion concepts: 'anger', 'disgust', 'fear', 'joy', 'sadness', and 'surprise'. We added the concept of 'love' to the set. Although contemporary psychological emotion research does not support traditional basic emotion theory any more (Scarantino 2014: 334–376), these six concepts are the same as Ekman's classic concepts (Ekman later dropped 'surprise' from the list). However, our list is not based solely on these "universal emotion concepts" but also on the research findings of Tuovila (2005), who made Finnish speakers write down all the emotion words they could remember. There were twenty words that were mentioned most frequently. These words were (the order is the frequency order) *viha* 'hatred', *ilo* 'joy', *rakkaus* 'love', *suru* 'sadness', *pelko* 'fear', *onnellisuus* 'happiness', *kateus* 'envy', *ahdistus* 'anxiety', *väsymys* 'tiredness', *masennus* 'depression', *tuska* 'agony', *ihastus* 'admiration', *tyytyväisyys* 'contentment', *inho* 'disgust', *jännitys* 'excitement', *pettymys* 'disappointment', *kaipaus* 'longing', *rauhallisuus* 'tranquility', *ikävä* 'longing', and *toivo* 'hope'. Here we can see that the emotion terms that come to the minds of Finnish speakers

indeed include: 'hatred' (*viha*), 'joy' (*ilo*), 'love' (*rakkaus*), 'sadness' (*suru*), 'fear' (*pelko*), and 'disgust' (*inho*). The term *hämmästys* 'surprise' is missing from this list; we took it from Ekman's classic list of emotions.

We created an online survey and checked how well our participants, all of whom were native speakers of Finnish, could match NSM-based emotion explications and meaning components with the words they are meant to explicate. We tested both the full explications and the separate parts. Participants matched both the explications and the parts with emotion words, so that they could choose one or more, depending on their preference. They could also suggest an emotion word themselves.

Even though this paper has somewhat similar objectives to those of Gladkova et al. (2016), our setting differs in several ways. Partly based on the suggestions made there, we chose nouns (instead of interjections) and made sure our words were normal standard language (no infrequent or possibly unfamiliar words). We also asked our participants to match explications and parts of explications with the explicated words instead of seeking mutual similarity between words and explications by a Likert scale, as done by Gladkova et al.

2.1 Choosing the emotion words

Seven emotion words were ultimately chosen for this study: *viha* 'anger, hatred', *inho* 'disgust', *pelko* 'fear', *ilo* 'joy', *rakkaus* 'love', *suru* 'sadness' and *yllätys* 'surprise'.[1] These words are based, on one hand, on Ekman's well-known facial expression studies (Ekman 1993; 1999a; 1999b) and, on the other hand, on Tuovila's (2005) studies on basic Finnish emotion terms. The set includes the concept of love, which is included in Tuovila's list of 20 basic emotion terms in Finnish, although it is left out of Ekman's list (Ortony & Turner 1990).

There were several aspects to consider as we started to select emotion words for our study. First of all, we had to find words that had been studied and explicated in NSM terms. As there are no established explications available for Finnish emotion vocabulary (Tuovila 2005),[2] we had to begin with work

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[1] In order to make this paper easier for a non-Finnish reader, we use the English translations throughout the text. The original survey was addressed to a Finnish audience and was entirely in the Finnish language. Some translations are provided in the appendices to this paper.

[2] Tuovila (2005) presents many Finnish NSM explications of Finnish emotion words. Many of these seem to be translated more or less directly from English, yet the translation process has not

that had been done for the English language. Second, we mainly chose words with explications intuitively matching those in Finnish (*disgust*, *fear*, *joy*, *sadness*, *surprise*), although we were well aware of the mismatch between the English word *anger* and Finnish *viha*, which we have studied separately (Tissari et al. 2019). Third, we wanted to use words with substantially different meanings, as the study was not going to focus on synonyms. Fourth, we wanted to link our study with psychology, and thus we chose emotions that have been the focus of psychological studies.

While separating the explications into individual meaning components, we realized that four out of the six emotion words in the Ekman set were negative (*viha* 'anger, hatred', *inho* 'disgust', *pelko* 'fear', *suru* 'sadness'), and all have the component of "feeling something bad". Only one word (*ilo* 'joy') had the component of "feeling something good", while one word (*yllätys* 'surprise') was without a component of "feeling something good/bad". The dichotomy between positive and negative emotions has also been observed and discussed in research on the structure of emotions (Watson & Tellegen 1985; Barrett & Russell 1998). Positive psychology argues that focus on the latter is due to the long tradition of clinical psychology's emphasis on the negative, diseases and illnesses (Wood & Johnson 2016). Suggestions have been made to shift the discipline of clinical psychology to have an integrated and equally weighted focus on both positive and negative functioning, also in emotion research (Wood & Tarrier 2010: 819). Instead, there has been surprisingly little concrete change in the conceptualizing of basic emotions, considering the vast amount of lateral theories about emotions that exist. In basic emotion research, the Ekman set has persisted (Ekman 2016). The other commonly used and frequently studied sets of emotions mainly concentrate on the same vocabulary: *fear*, *sadness*, *anger* and *joy* are usually included, while *disgust* and *surprise* are often the first to be left out (e. g. Jack et al. 2014).

The larger number of negative emotions should not be a problem for NSM, as one of its crucial methodological features is the power to differentiate between close meanings. However, too many components with negative meaning may have confused our study participants; therefore, in order to balance our study setting, we decided to include a positive emotion – the word

been justified or examined in detail. As in NSM literature based on the English language, here too there are various explications (some made after 2005) for the words studied in this paper. We thus decided to choose our explications independently. The only explication from Tuovila that we chose is 'love'.

rakkaus 'love' – in the set. The explication of the word *rakkaus* 'love' in our study is special compared to the other explications. Perhaps a bit surprisingly, it was hard to find published explications of the English word *love* in the NSM literature. We first only found Wierzbicka's (1999: 293–294) discussion of the Ifaluk concept of *fago*, which can be glossed as 'love' or 'compassion'. The word *love* is challenging to define, of course, because it can be used for different degrees of emotion and loves of different kinds, as in "I love it!".[3] As *rakkaus* 'love' is one of the top four emotion words (*viha*, *ilo*, *rakkaus*, *suru*) in Finnish (Tuovila 2005), and there also happens to be a published explication for that word in Finnish (Tuovila 2005), we found *rakkaus* to be the perfect addition to our otherwise fairly negative emotion set. We decided to use Tuovila's definition, an extended version of the rather simple definition of *love* that Wierzbicka (1992b: 145) presents. We also discussed the possible polysemy or synonymy of the words selected for this study, especially with the concepts of *ilo* 'happiness, joy' and *hämmästys* / *yllätys* 'surprise', but did not find that to be a problem.

2.2   Choosing, translating, adjusting, and deconstructing the semantic explications

Transforming the explications from the previous NSM research for our current survey required a process of choosing the most appropriate explications, translating these from English-based NSM to Finnish-based NSM, adjusting some parts to be more readable by laypeople, and, finally, separating the full explications into independent meaning components. In this section, we describe the main steps in the process.

The emotion concepts chosen for this research have been examined in multiple earlier studies: *anger* and *anger*-like or *wut*-like emotions (Wierzbicka 2014: 80–83), *disgust* (Goddard 2014: 79–81), *fear* and *fear*-like emotions (Wierzbicka 2014: 82), *joy* (Wierzbicka 1999: 50), *happy* (Wierzbicka 1999: 52; Goddard 2011: 110), *rakkaus* 'love' (Tuovila 2005: 112; Wierzbicka 1999: 293–294), *sadness* (Wierzbicka 1998) and *surprise* (Goddard 2015: 298). Most of the emotion words have several published explications, some of which have been rethought and rewritten by the original author, while other explications have been published by different authors. We compared the published versions and applied our intersubjective

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[3] We thank an anonymous reviewer for pointing this out.

linguistic intuition in choosing explications from those available. Our aim was to find the versions which sounded the most accurate to us. We did not mix the versions of explications. Instead, we stuck to the one that we found the most convincing. The explication of *rakkaus* 'love' was based on emotion studies in the Finnish language and published in Finnish (Tuovila 2005). All other explications involved English emotion words and were published in English. The semantic template of the explication of *rakkaus* 'love' was somewhat different from the others, as it included parts not widely used in the NSM literature. These observations may indicate that the explication process of love had been done separately from the NSM community.

All the explications originally published in English-based NSM were collaboratively translated into Finnish-based NSM by the authors of the study. There were no specific challenges in the translation process. All the translations can be found in Appendix A.

Our goal was to make the survey questions short, unambiguous, and easy and quick to answer. In relation to this adjustment process, we separated the full explications into parts, in order to obtain individual meaning components for each word. We provide the original explication of 'fear' here as an example:

(3) **fear**-like emotions (Wierzbicka 2014: 78)
It can be like this:
Someone thinks like this:

> "Something bad can happen to me here now
> I don't want this
> I don't want to be here
> I want to do something because of this"

When this someone thinks like this, this someone feels something bad because of this, like people often feel when they think like this

After the translation and adaptation process, the meaning components of 'fear' looked like this:

(4) *minulle voi tapahtua täällä nyt jotain pahaa* 'something bad can now happen to me here
en halua tätä 'I don't want this'
en halua olla täällä 'I don't want to be here'
tämän takia haluan tehdä jotain 'I want to do something because of this'
kun ajattelen tätä, minusta tuntuu pahalta 'when I think about this, I feel bad'

All the original explications and adjusted versions used in our survey can be found in Appendix A. In the adjustment process, we used the following techniques:

a) As all the words belong to the same semantic field, the outer parts of the semantic templates (mainly the so-called lexico-syntactic frames) were removed as they were unnecessary (see similar processes in Gladkova et al. 2016). For example, we removed parts such as *it can be like this* or *X felt something because X thought something* or *sometimes a person thinks*.

b) The questions were made personal by changing the point of view from third-person observing to first-person experiencing. This happened partly in the course of removing the lexico-syntactic frames, partly by changing the actual personal pronouns; for instance, the original *when this person thinks this, this person feels something very good* became *kun ajattelen tätä, minusta tuntuu hyvältä* 'when I think this, I feel good', or the original *sometimes a person thinks* became *joskus ajattelen näin* 'sometimes I think like this'.

c) Some pronouns were replaced with nouns; for example, *haluan hänelle hyvää* 'I want good for him/her' was changed to *haluan toiselle ihmiselle hyvää* 'I want good for another person', or *I didn't think before that this someone can do something like this* was changed to *en ollut ennen ajatellut, että tämä ihminen voi tehdä jotain tällaista* 'I had not previously thought that this person could do something like this'. These changes were necessary, especially for survey questions including individual components.

d) Finally, we checked the overall reading of all the questions. Minor changes (e. g. involving time or syntax) were made.

The outcome of these processes was a set of 33 questions, including 7 full explications and 26 individual semantic components.[4] We first tried out the

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[4] An unfortunate error in the questionnaire was revealed during manuscript proofreading. One component of *rakkaus* 'love' had accidentally occurred twice in the survey. Two alternative wordings had been used: *haluan hyvää toiselle ihmiselle* and *haluan toiselle ihmiselle hyvää* 'I want good for another person'. We apologize for our mistake. Fortunately, this error does not seem to have influenced the other emotion words in this study. Interestingly, the error shows over 8% variation in acceptance rates between the two alternative components, see Figures 4 and 5.

questions in a pilot project with 16 participants, at which point further minor adjustments were made.

In the course of this process of making changes, we sought a balance between faithfulness to the original NSM research and the feasibility of the survey setting. It was clear that the original explications as such would not have worked in a survey, but we did not want to change them too much, so as not to lose the possibility of comparison between NSM studies. We made great efforts to determine the minimal changes needed. Even if most of the individual meaning components worked very well, we were – and are – aware of the slightly unnatural tone of some of the components, such as the Finnish wording in the phrase *on olemassa joku ihminen* 'there is someone / a person' (a component of *rakkaus* 'love'). Yet, we did not want to change the words too much, and we wanted to keep to the original explications as much as possible. It should also be emphasized here that no new semantic components were created by our team; instead, all the components came from previous studies.

2.3 The questionnaire and data sampling

2.3.1 The questionnaire

The online questionnaire consisted of 33 questions, including 7 questions with full explanations and 26 questions with individual semantic components. The core question was: "To which emotion is this [expression] linked? Choose one or more options." In addition to these multiple choice questions, the questionnaire included translation tasks, background questions, and the "consent to participate" portion. Participants saw just one question at a time on the computer screen, as shown in Figure 1.

The core questions were all multiple choice, and the same set of answers was always provided. The choices were 15 emotion words together with "I don't know" and finally "some other word; specify which". This meant that the participant was not forced to choose between the 15 emotion words but could suggest his or her own. Among the 15 emotion words, the seven tested words (*viha* 'anger, hatred', *inho* 'disgust', *pelko* 'fear', *ilo* 'joy', *rakkaus* 'love', *suru* 'sadness' and *hämmästys* 'surprise') always appeared. In addition, there were filler words, consisting of *ahdistus* 'anxiety', *häpeä* 'shame', *kateus* 'envy', *onnellisuus* 'happiness', *riemu* 'elation', *tyytyväisyys* 'contentment', and *ylpeys* 'pride'. Four of these refer to different emotions (*ahdistus* 'anxiety', *häpeä* 'shame', *kateus* 'envy', *ylpeys* 'pride'), while three

minulle voi tapahtua täällä nyt jotain pahaa
en halua tätä
en halua olla täällä
tämän takia haluan tehdä jotain
kun ajattelen tätä, minusta tuntuu pahalta

Mihin tunteeseen tämä mielestäsi liittyy? Merkitse rastilla yksi tai useampi vaihtoehto.

☐ ahdistus
☐ hämmästys
☐ häpeä
☐ ilo
☐ inho
☐ kateus
☐ onnellisuus
☐ pelko
☐ rakkaus
☐ riemu
☐ suru
☐ tyytyväisyys
☐ viha
☐ ylpeys
☐ en osaa sanoa
☐ jokin muu, mikä?

[ ]

[<< Edellinen] [Seuraava >>]

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tiedän, että en voi tehdä mitään

Mihin tunteeseen tämä mielestäsi liittyy? Merkitse rastilla yksi tai useampi vaihtoehto.

☐ ahdistus
☐ hämmästys
☐ häpeä
☐ ilo
☑ inho
☐ kateus
☐ onnellisuus
☐ pelko
☐ rakkaus
☐ riemu
☐ suru
☐ tyytyväisyys
☐ viha
☐ ylpeys
☐ en osaa sanoa
☐ jokin muu, mikä?

[ ]

[<< Edellinen] [Seuraava >>]

Figure 1. Two screenshots of the survey form. Translation of the upper part: 'Something bad can now happen to me here / I don't want this / I don't want to be here / I want to do something about this / When I think about this, I feel bad / To which emotion is this statement linked? Choose one or more alternatives'. Translation of the lower part: 'I know that I cannot do anything / To which emotion is this linked? Choose one or more alternatives'.

had meanings fairly similar to the words studied (*onnellisuus* 'happiness', *riemu* 'elation', *tyytyväisyys* 'contentment'). The words were always in the same alphabetical order. What is also important to remember is that the respondents had to make at least one choice, but multiple choices were also possible. This means that the participants may have used different strategies in selecting their answers. Participants could select multiple words, just one, or suggest one that was completely their own.

2.3.2   Participants

The data were gathered as convenience samples from two groups of Finnish university students in supervised situations. The students answered the questions as a part of their coursework in Introduction to Cognitive Psychology and Introduction to General Linguistics. The allotted time to answer the questionnaire was limited to 15–20 minutes, but many participants completed the survey in 10 minutes. The online questionnaire platform that we used did not allow us to deny access to participants to go back to their answers and change them, but in the directions on how to fill out the survey we stressed the importance of participants not returning to their previous answers and making changes. Because the situation was supervised, it was also possible to monitor the completion process. The participants were not allowed to see the survey beforehand. We received 147 answers, out of which 130 were chosen for the final analysis, since 17 respondents had another language than Finnish as their first language. There were 97 female and 30 male respondents (and 3 other). Their ages varied from 18 to 54 years, with a mean age of 26.8 years and a median of 24.0 years. Because previous research on Natural Semantic Metalanguage explications of interjections has shown that respondents' background variables (age, gender, linguistic study) did not significantly influence the results (Gladkova et al. 2016), we did not analyse our results with respect to these.

3   Findings

Our primary findings answer our research question positively: our participants were often able to match the explications with their intended emotion words. However, there were significant differences in the matches between the emotion words and the explications: the match rate ranged from 93% for *rakkaus* 'love' to 51% for *suru* 'sadness'. Our secondary findings deal with

individual meaning components, which were also matched with the words explicated; here the match rate varied even more.

In this section, we first present the overall picture of the primary findings for the full explications, followed by comments on each emotion word, including observations on the top unexpected matches. Second, we point out some notions about matching individual components with the words explicated. In evaluating the findings, we must emphasize that the participants were allowed to choose more than one answer per question. This means that the same participant may have both matched a particular explication or meaning component with the intended word and matched it with some other word.

3.1   Matching the full explications with the emotion words

Rakkaus 'love' and *pelko* 'fear' were the two best recognized emotion concepts in our study, *rakkaus* being matched with its explication by 93% of the participants and *pelko* by 76%. *Yllätys* 'surprise' and *suru* 'sadness' were matched with their explications relatively poorly, with roughly half of the participants recognizing them. The overall findings on matching the emotion words and their full explications are presented in Figure 2. Interestingly, many participants made frequent matches between the explanations given and unexpected words, including the filler words (Figure 3). Remarkably few participants chose the option "I don't know". The percentage of informants who did this ranged mostly from 0% (*pelko* 'fear', *viha* 'anger', *rakkaus* 'love', *ilo* 'joy') to 2% (*suru* 'sadness'), with the case of *yllätys* 'surprise' being exceptional: 14% of the participants chose "I don't know".

Below we take a closer look at each emotion word separately, giving special emphasis to certain findings.

- *rakkaus* 'love': The match rate for 'love' was 93%, meaning that 121 participants connected 'love' with the explication, while 7% (9) participants did not make that connection. However, the participants also connected some other words with this good feeling. 76% (99) suggested the word explicated here could be *onnellisuus* 'happiness', while 54% (70) suggested *ilo* 'joy' and 44% (57) *tyytyväisyys* 'contentment'. No one chose "I don't know" and just 2% (2) provided an answer to the open question.

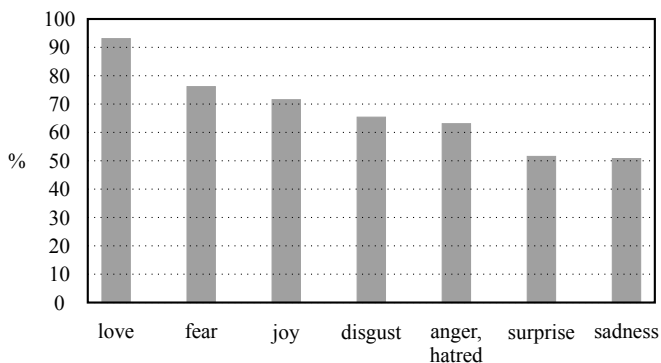- *pelko* 'fear': 76% of the participants (99) made the expected choice

Figure 2. The bars show the percentages of participants ($N = 130$) who made the expected matches between emotion words and their explanations. The participants were allowed to choose more than one answer per question. This means that besides an expected answer, the same participant may also have selected an unexpected answer for some word(s).

by connecting 'fear' with the given explication, while 24% (31) did not make this connection. Curiously, the most common other answer, *ahdistus* 'anxiety', got a much higher score than the expected answer, with 92% of the participants (120) choosing it. The next two most common other answers were *inho* 'disgust' 32% (41) and *häpeä* 'shame' 28% (36). None of the participants chose "I don't know", while 4% (5) provided open answers.

- *ilo* 'joy': 72% of the participants (93) chose 'joy' for the given explication, while 28% (37) did not make this choice. The top three other answers got scores close to the word in question, as *onnellisuus* 'happiness' was chosen by 67% (87), *tyytyväisyys* 'contentment' by 55% (71), and *riemu* 'elation' by 48% (62) of participants. "I don't know" was chosen by 0% of participants, while 2% (3) provided answers to the open question.

- *inho* 'disgust': 65% of the participants (85) recognized 'disgust' as the word explicated, and 35% of the participants (45) did not make the connection. The top three other answers were *ahdistus* 'anxiety'
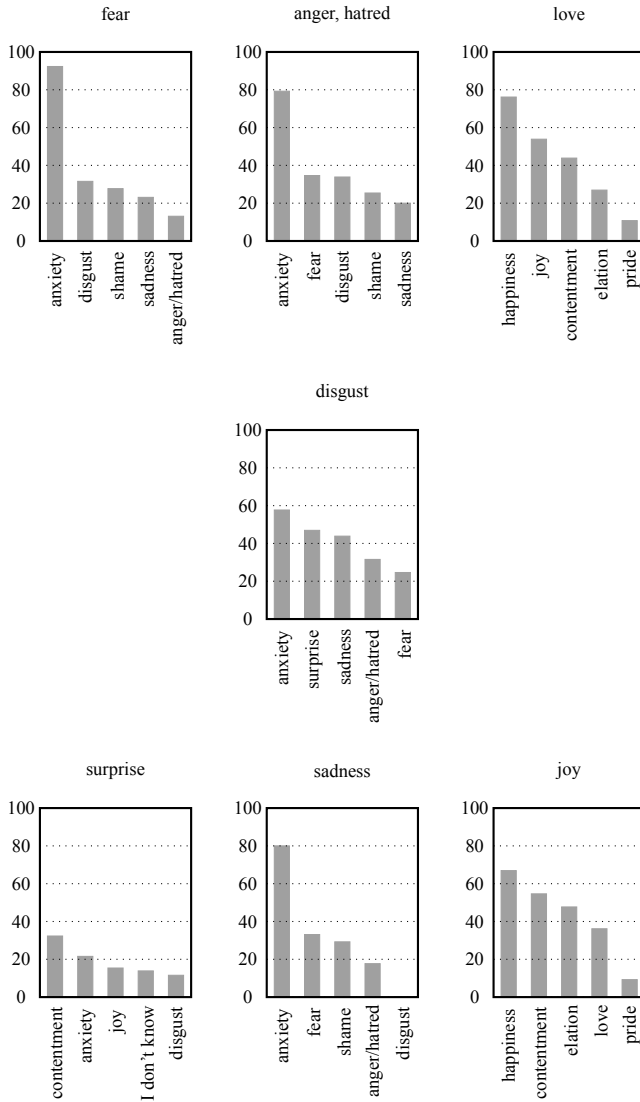
Figure 3. Findings on unexpected answers. The headings give the word actually explicated. The numbers on the left show the percentage of participants ($N = 130$) who chose other words to match the explication. The other words included other emotion words studied in this setting as well as filler words.

58% (75), *yllätys* 'surprise' 47% (61), and *suru* 'sadness' 44% (57). "I don't know" was chosen by 1% of the participants (1), and 5% of the participants (6) gave open answers.

- *viha* 'anger, hatred': 63% of the participants (82) made the connection to 'anger, hatred', while 37% (48) did not. Surprisingly, the most popular unexpected answer got a much higher score than *viha* 'anger, hatred' itself, with 79% of the participants (103) connecting *ahdistus* 'anxiety' with the explication for *viha* 'anger, hatred'. Much less popular but still significant in number were the next most frequent unexpected answers: *pelko* 'fear', suggested by 36% of the participants (45), and *inho* 'disgust', suggested by 32% of the participants (41). "I don't know" was not chosen at all, and 2% of the participants (3) gave open answers.

- *yllätys* 'surprise': Slightly more than half of the participants, 52% (67), connected 'surprise' with its explication, with nearly half not making the connection. The top three other answers leave a great deal of room for interpretation, the most popular choices being *tyytyväisyys* 'contentment' by 32% of the participants (42), *ahdistus* 'anxiety' by 22% of the participants (28), and *ilo* 'joy' by 15% of the participants (20). "I don't know" has the only remarkably high score here, 14% (18), followed by a relatively high score of open answers, 5% (7).

- *suru* 'sadness': Roughly half of the participants 51% (66) made the connection between 'sadness' and its explication, while almost the same number (64) did not make the connection. Significantly, *ahdistus* 'anxiety' stands out as very high, compared to the other answers: 80% of the participants (104) thought that it would be the emotion word connected with the explication for *suru* 'sadness'. The two next most popular answers were *pelko* 'fear', chosen by 33% of the participants (43) and *häpeä* 'shame', chosen by 29% of the participants (38). "I don't know" was chosen by 2% of the participants (2), and open answers were given by 8% (11).

In Figure 3, we show the top five unexpected word choices for each explication. Along with the statistics concerning expected answers presented earlier in this subsection (Figure 2), these statistics provide useful insights into how the participants in this study connected the semantic fields of the

emotion words. The highest percentages, especially for *pelko* 'fear', *viha* 'anger, hatred', *rakkaus* 'love', and *suru* 'sadness', indicate that the meaning explications of these words are very close to those for some other emotion words. Our findings suggest that there may be a particularly strong connection between the semantic explications of fear, anger, sadness, and anxiety.

3.2 Matching the individual components and emotion words

The most striking finding with regard to the individual meaning components was the very high match rate between some components and related emotion words, suggesting that these components could be a crucial part of the word in question. The low match rates, in turn, may indicate several conditions, ranging from the translation or issues in the current study to the participants' doubt that the component was in fact part of the explication.

We view our secondary data on individual meaning components from two perspectives: 1) all the meaning components of all words considered as one list, focusing on the top eight best matched components and the emotion words (Figure 4), and 2) seven sets of related individual components grouped according to the emotion words in question (Figure 5).

When considering the findings in this subsection, we must keep in mind that, unlike Section 3.1 with its "one emotion word – one explication" matches, here one single component could be part of the original explication of several emotion words. For example, the component "I'm feeling (something) bad" belonged both to *pelko* 'fear' and *viha* 'anger, hatred'. As with the questions in Section 3.1, the participants were able to choose one or more answers.

Figure 4 shows the results of all the meaning components in one list, the point being that there were large differences in matching the components with the emotion words originally explicated. The Finnish versions are presented in Appendix B. The plot shows that several components had a very high match rate, six components had well above a 50% match rate, and the remaining components were connected with the original emotion word only fairly loosely or even very poorly. In the best case, more than 95% of the participants connected the component "something bad can now happen to me here" with *pelko* 'fear', while at the other extreme, fewer than 8% of the participants made a connection between the component "I want to do something" and *pelko* 'fear'.[5] Interestingly, the parts of *pelko* 'fear' were

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[5] The exceptionally low match rate was possibly related to the complex syntax of the component,
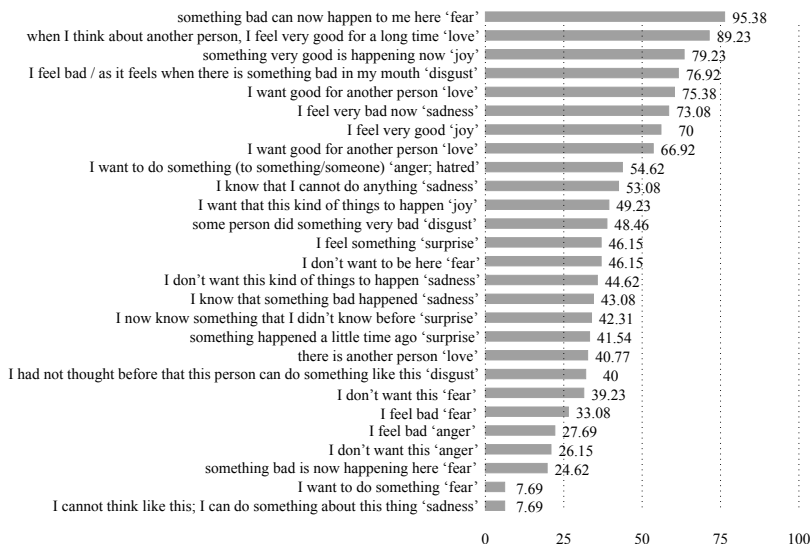
Figure 4. Findings on expected matching of individual meaning components with emotion words. The horizontal axis shows the percentage of participants ($N = 130$) making the expected match between a given component and the related word(s).

among both the best and the poorest matched individual meaning components: from 95% (124) on "something bad can now happen to me here" to 8% (10) on "I want to do something".

Figure 5 shows seven complete sets of individual meaning components.[6] Comparison between the sets shows how, within certain sets, there is great variation in matching the component rates (e. g. *pelko* 'fear' or *suru* 'sadness'), while within some sets (e. g. *yllätys* 'surprise') all the components are equally

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even if intuitively; thus, the match rate should have been fairly high. Based on our experience and intuitive understanding, sadness could be linked with powerlessness and incapability. In terms of the NSM, this semantic feature of sadness could be captured with phrases such as "I can't think like this: I can do something about this thing". We did pay attention to the potentially problematic formation of this particular component in the planning phase of the study but in the end we decided to stay with the original formulation. Reformulating and retesting this component might be worth considering in future studies.

[6] Taken together, each of these sets would provide a suggestion for a full explication of one of the emotion words.
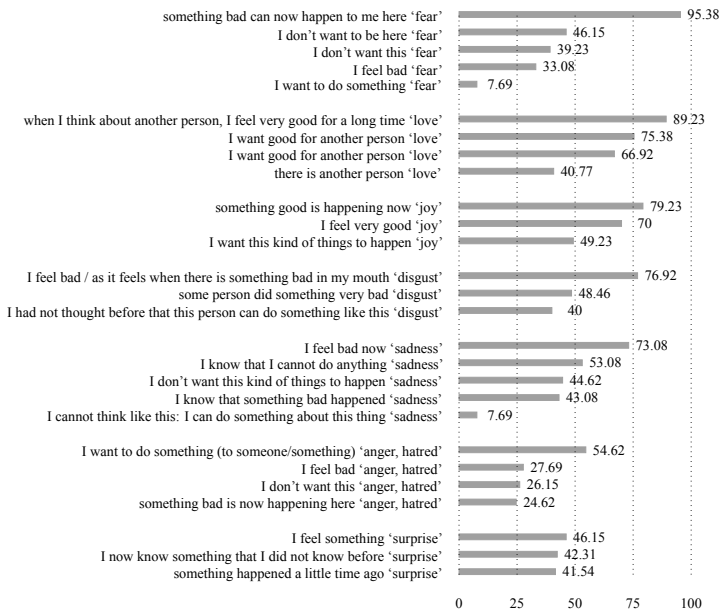
Figure 5. The seven sets of related individual components, grouped according to the emotion words in question. The sets are organized according to the highest percentages of matches for each emotion word. The horizontal axis shows the percentage of participants ($N = 130$) who made the expected match with a given component and the related emotion word(s).

(loosely) connected to the emotion word in question. The figure makes clearly visible how some of the components are particularly well matched with the original explication. Figure 5 allows us to compare the best meaning components of each emotion word. A complete list of the original Finnish of the translations in Figure 5 is presented in Appendix C.

4 Discussion

In the discussion, we approach our findings from three perspectives. First, we address whether or not we found empirical evidence for NSM-based meaning

descriptions of emotion vocabulary. Second, we assess our current study and make suggestions for further research. Finally, we offer some preliminary hypotheses on how NSM-based emotion explications could be used outside linguistics, especially in psychology.

4.1 Empirical evidence for NSM-based meaning components of emotion vocabulary

Our study was motivated by the forty-year-old linguistic debate over empirical evidence of meaning components of emotion words. So, did we find the evidence? The answer is both yes and no. With some (but not too many) words, explications, and individual meaning components, there were very high match rates, suggesting that the original NSM-based explications or some parts of them could be closely connected with the emotion words they have been explicating. With the majority of the explications and components, however, the match rate was relatively moderate, and in some cases it was even poor. Interestingly, our participants seemed to be quite certain of their answers: they very seldom chose the answer "I don't know" (the percentage with *pelko* 'fear', *viha* 'anger, hatred', *rakkaus* 'love' and *ilo* 'joy' was in fact 0%; 'surprise' was the big exception, with 14% of participants choosing "I don't know").

The most provocative result of the present paper pertains to the individual meaning components. The case of 'fear' was especially interesting: 95% (124) of the participants found that the component "something bad can now happen to me here" is connected with *pelko* 'fear', while just 8% (10) found the component "I want to do something" connected with 'fear'. These findings suggest that the component "something bad can now happen to me here" is a dominant part of the negative feeling of 'fear'. These findings suggest that the component "something bad can now happen to me here" is a dominant part of the negative feeling of 'fear'. In other words, this component seems to be a part of not only the English word *fear* but also the Finnish word *pelko* 'fear'. In contrast, the component "I want to do something" does not seem to be an actual meaning component of *pelko* 'fear' in Finnish, while it may be a component of English *fear*.

Despite the translation and adaptation process from English to Finnish, some meaning components were very strongly connected with certain emotion words. This may also indicate the universality of some individual meaning components, even if the full explications of the emotion in question are

language-dependent. It is to be noted that our current study does not provide any empirical evidence for the meaning component in the English language. The findings from our study can only suggest support for some highly accepted components or full explications. Especially in the situation of a translated (English to Finnish) study setting, we cannot even think about falsifying any of the original English explications.

As reported in our findings, the results show a great deal of variation. First of all, there was variation between the participants' responses. Second, there was variation within the responses of the individual participants. This calls for further discussion, which is beyond the scope of this paper. The variation may be linked to various aspects, such as the distinguishing power of NSM as a method for semantic analysis (Tissari et al. 2019; see also Gladkova et al. 2016), and the completeness and distinctiveness of the original explications. Also, we need to be aware of co-existence and the mixing of emotions (e. g. Tissari 2011). A person in love is often a happy person, too.

Naturally, the findings presented in this paper could be analysed in multiple ways. For example, one could focus on the variety of unexpected answers or one could seek to find which were the most popular combinations of choices when the participants selected more than one answer.

4.2 Assessment of the current study and suggestions for further settings

The very idea of the current study, a question that has been asked over and over again during past decades, seems simple: do laypeople recognize NSM-based explications of emotion words? Combined with an empirical survey, statistical analysis, and a language other than English, the question becomes very complicated. After all the translating, adjusting, and deconstructing, what is ultimately the actual phenomenon to be tested? In our view, the overall study setting worked out well. The survey form was constructed and carefully piloted with the help of a professional statistician, and the data were collected in a controlled situation.

Regarding some details on the questionnaire form, we had to make compromises to find the best possible solution. We were well aware of the few slightly unnatural formulations, and we took these cases into account when analysing and discussing the results. Especially in the case of *viha* 'anger, hatred', we noted the linguistic and cultural differences between Finnish and English. In the case of *inho* 'disgust', a friendly colleague pointed out a minor

translation error in the form; this is regrettable, although not fatal. In addition to the seven emotion words used as the focus of this study, there were seven filler words among the answers. Most of these referred to different emotions, while some had meanings fairly similar to the words studied, which caused some synonymy in the setting.

One possible concern is related to the alphabetical order of the emotion words in the questionnaire, with *ahdistus* 'anxiety' being the first on the list. As seen in the findings, the filler word *ahdistus* 'anxiety' received many answers. Was this because the informants really meant to choose it or was it just because of its place at the beginning of the list? This question cannot be clarified in hindsight. Yet, taking this into account would possibly not have been an option, since randomizing the word list for each questionnaire page would have slowed the answer process too much. One option would be to have the word list randomized for each participant separately; unfortunately, the survey program that we used did not allow this. Having shared all this information, however, our understanding is that these issues did not ultimately have a significant effect on the study.

In future studies the current setting could be repeated with native speakers of English and an English-language questionnaire; this would enlighten the universal aspect of the emotion vocabulary.[7] Also, it would be interesting to focus on the unexpected matches – those components which were not matched in an expected way and why. From the current perspective, and after seeing the quantitative data, obtaining open-ended answers would be very attractive. We carefully considered this option at the beginning of our study, but dropped the plan because of statistical challenges with qualitative data.

4.3   Could our findings be used in psychology
or other fields outside linguistics?

There is a vast body of research literature on the intersection of linguistics and psychology, which notes that the language we use affects our experience of emotions (see, for example, Russell et al. 1995; Wierzbicka 1999; Harkins & Wierzbicka 2001; Fontaine et al. 2013; Kövecses 2005). Language is also the primary method for analysing our emotional experiences (e. g. Barrett et al. 2007: 374–377). There are still major challenges related to emotion analysis, two of which are closely related to the topics studied in the NSM

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[7] Open data available at https://github.com/KimmoVehkalahti/Emotions (accessed 2020-04-17).

framework. One is the circularity of meaning descriptions, which means that the term being defined is ultimately used as a part of the definition by creating a definitional chain: a word is explained by other words, which are explained by using the first word. Another is the language dependence of emotion concepts. Findings in the current study and NSM in general may help people in describing or analysing emotions from at least three perspectives.

First, semantic primes allow people to talk about emotions in depth without using the more polysemous everyday word for emotions. This may be helpful in numerous situations: for example, with people who feel that "emotion labels" do not fit the actual feeling they are experiencing, or when someone for various reasons does not recognize or master the standard language emotion vocabulary. The challenges of explaining emotion word content are not limited to cross-linguistic situations. Instead, problems often occur in interaction between speakers of the same language. If a couple in marital therapy, for example, could address dozens of possible unambiguous non-circular meaning components of love, instead of talking about love in conventional terms, would this bring their discussion to the next level?

Second, based on the results from earlier NSM studies and the empirical findings in this study, it seems very likely that recognizable key components are closely connected to each emotion concept; for example, fear-like concepts include the elements "thinking that bad things can happen" and "feeling bad because of it", or joy-like concepts which include the elements "something very good is happening now" and "feeling very good". We want to emphasize here that we are not supposing that these kinds of components would make a full or exhaustive explication of the concept of fear. Rather, we would say that it is hard to think that these suggested components of 'fear', published in previous studies and empirically confirmed in this paper, would *not* be part of the central meaning of *pelko* 'fear' in Finnish or English.

Third, NSM-based meaning components may be more or less universal, as different languages may conceptualize and verbalize emotions differently. The meta-language used to make the elements, however, makes it possible to compare the conceptualizations and to find similarities and differences between languages or cultures. Considering that these elements are: a) written in a non-circular and non-technical meta-language and b) are fairly well (if not fully) translatable to many (if not all) languages, this remarkable notion has gained empirical evidence, and it is of great interest today in cross-cultural psychology and psychiatry.

Finally, the overall results of this study support earlier empirical findings

(Gladkova et al. 2016; Vanhatalo & Torkki 2018) on laypeople's general ability to operate with NSM explications. Besides contributing to the theoretical assumptions on laypeople's ability to conceive NSM concepts, this notion emphasizes the practical value of NSM in helping laypeople to analyse lexical meaning in various contexts (such as earlier studies on pain; see Wierzbicka 2012). It must be kept in mind, however, that making a complex piece of language (such as an emotion or a form or instruction) simple is not necessarily easy as a process; it may require a great deal of effort by professional semanticists. An intriguing meta-methodological and philosophical question is whether we can trust the semantic assessments given by laypeople. Are not experienced and well-trained semanticists much more likely to capture the meaning components of a word? In our understanding, explications created by professionals must be tested by non-linguists. Here we agree, for example, with Ye (2013: 404), who claims that ordinary people's language use gives us access to their "raw experience" of emotion (see Goddard 2002: 19–24).

5   Conclusion

Our hypothesis is that NSM could be used to explain emotion words in both research and intervention settings, involving laypeople and cross-linguistic perspectives. An especially promising aspect is related to speakers needing easy languages. There is a great need for methods to talk about emotions among people with cognitive disabilities, memory disorders, and other language-related problems. The need for simple language with which one can discuss complex issues, including emotions, is also well recognized by those working with immigrants and speakers of second languages. The option of identifying meaning components of emotion concepts instead of trying to deal with cross-linguistic (mis)matches of emotion vocabulary might crucially improve mutual understanding across languages and cultures, for instance, in therapy sessions. We are calling for new test settings, combining psychology and linguistics, to explore these ideas further and assess these possibilities.

Appendix A

The original NSM explications chosen for this study, followed by the translated and adjusted Finnish versions used in the questionnaire.

surprised 'someone was **surprised**' (Goddard 2015: 298)

this someone X thought something about something at that time
at the same time this someone felt something because of it
a short time before it was like this:
– something happened
– because of this, this someone knew something about something
after this, this someone thought about it like this:
"I didn't know before that it will be like this
I know it now"
when this someone thought like this, this someone felt something
like people feel at many times when they think like this
- - -
vähän aikaa sitten tapahtui jotain 'something happened a little time ago'
tämän takia tiedän nyt jotain 'because of that, I know something now'
tätä en ennen tiennyt 'I didn't know this before'
kun ajattelen tätä minusta tuntuu joltakin 'when I think about this, I feel something'
- - -

fear-like emotions (Wierzbicka 2014: 78)

It can be like this:
Someone thinks like this:
"Something bad can happen to me here now
I don't want this
I don't want to be here
I want to do something because of this"
When this someone thinks like this, this someone feels something bad because of this, like people often feel when they think like this
- - -
minulle voi tapahtua täällä nyt jotain pahaa 'something bad can now happen to me here'
en halua tätä 'I don't want this'
en halua olla täällä 'I don't want to be here'
tämän takia haluan tehdä jotain 'I want to do something because of this'
kun ajattelen tätä, minusta tuntuu pahalta 'when I think about this, I feel bad'
- - -

anger-like and **wut**-like emotions (Wierzbicka 2014: 83)

It can be like this
Someone thinks like this:
"Something bad is happening here now
I don't want this

I want to do something (to something) because of this"
When this someone thinks like this, this someone feels something bad because of this.
- - -
täällä tapahtuu nyt jotain pahaa 'something bad is now happening here'
en halua tätä 'I don't want this'
haluan tehdä jotakin (jollekin) tämän takia 'I want to do something (to something/someone) because of this'
minusta tuntuu pahalta tämän takia 'I feel bad because of this'
- - -

joy (X felt joy) (Wierzbicka 1999: 50)

X felt something because X thought something
Sometimes a person thinks:
"Something very good is happening
I want this to be happening"
When this person thinks this, this person feels something very good
X felt something like this
Because X thought something like this
- - -
nyt tapahtuu jotain oikein hyvää 'something very good is happening now'
haluan, että tällaista tapahtui 'I want this kind of things to happen'
minusta tuntuu oikein hyvältä, kun ajattelen tätä 'when I think about this I feel very good'
- - -

sad / **sadness** (Goddard 2011: 112)

Someone X is sad at this time:
a. someone X thinks like this at this time:
"I know that something bad happened
I don't want things like this to happen
I can't think like this: I can do something because of this
I know that I can't do anything"
b. because of this, this someone feels something bad at this time
c. like people often feel when people think like this
- - -
tiedän, että jotain pahaa tapahtui 'I know that something bad happened'
en halua, että tällaisia asioita tapahtuu 'I don't want this kind of thing to happen'
en voi ajatella näin: tälle asialle voin tehdä jotain 'I can't think like this: I can do something about this thing'
tiedän, että en voi tehdä mitään 'I know that I can't do anything'
tämän takia minusta tuntuu nyt pahalta 'I feel bad because of this'
- - -

disgust (Goddard 2014: 81)

Someone X is disgusted (with someone) at this time.
a. someone X thinks like this about someone at this time:

"this someone did something very bad
I didn't think before that this someone can do something like this"
b. because of this, this someone feels something very bad at this time
c. like someone can feel when something bad happens in this someone's mouth [m]
because there is something very bad inside this someone's mouth [m]
d. this someone can't not feel like this
- - -
eräs ihminen teki jotain oikein pahaa 'some person did something very bad'
en ollut ennen ajatellut, että tämä ihminen voi tehdä jotain tällaista 'I had not thought before that this person could do something like this'
tämän takia minusta tuntuu pahalta 'I feel bad because of this'
niin kuin minusta tuntuu silloin kun suussani on jotain pahaa 'like I feel when there is something bad in my mouth'
- - -

rakkaus **'love'** (Tuovila 2005: 112, translated into English by the authors)

X tuntee jotakin, koska hän ajattelee jotakin 'X feels something, because s/he thinks about something'
joskus ihminen ajattelee 'sometimes a person thinks'
ajattelen: on olemassa toinen ihminen 'I think: there is another person'
kun ajattelen häntä, minusta tuntuu erittäin hyvältä 'when I think about her/him, I feel very good'
haluan hänelle hyvää 'I want good for her/him'
kun ihminen ajattelee tätä, hänestä tuntuu hyvin hyvältä kauan aikaa 'when a person thinks this, s/he feels good for a long time'
X tuntee jotakin tämän kaltaista, koska hän ajattelee jotakin tämän kaltaista 'X feels something like this, because s/he thinks something like this'
- - -
on olemassa toinen ihminen 'there is another person'
kun ajattelen häntä, minusta tuntuu erittäin hyvältä 'when I think about her/him, I feel very good'
haluan hänelle hyvää 'I want good for her/him'
kun ajattelen tätä, minusta tuntuu hyvin hyvältä kauan aikaa 'when I think about this, I feel good for a long time'
- - -

Appendix B

The match rate of individual meaning components and originally explicated emotion words. The percentage refers to the number of participants making the expected match. The list also presents all the individual components used in this study. The Finnish version is provided in brackets.

95.38   something bad can now happen to me here (*minulle voi tapahtua täällä nyt jotain pahaa*), 'fear'
89.23   when I think about another person, I feel very good for a long time (*kun ajattelen toista ihmistä, minusta tuntuu erittäin hyvältä kauan aikaa*), 'love'

79.23   something very good is happening now (*nyt tapahtuu jotain oikein hyvää*), 'joy'
76.92   I feel bad / as it feels when there is something bad in my mouth (*minusta tuntuu pahalta / niin kuin tuntuu silloin kun suussani on jotain pahaa*), 'disgust'
75.38   I want good for another person (*haluan hyvää toiselle ihmiselle*), 'love'
73.08   I feel very bad now (*minusta tuntuu nyt pahalta*), 'sadness'
70   I feel very good (*minusta tuntuu oikein hyvältä*), 'joy'
66.92   I want good for another person (*haluan toiselle ihmiselle hyvää*), 'love'
54.62   I want to do something (to something/someone) (*haluan tehdä jotakin (jollekin)*), 'anger, hatred'
53.08   I know that I cannot do anything (*tiedän, että en voi tehdä mitään*), 'sadness'
49.23   I want this kind of things to happen (*haluan, että tällaista tapahtuu*), 'joy'
48.46   some person did something very bad (*eräs ihminen teki jotain oikein pahaa*), 'disgust'
46.15   I feel something (*minusta tuntuu joltakin*), 'surprise'
46.15   I don't want to be here (*en halua olla täällä*), 'fear'
44.62   I don't want this kind of things to happen (*en halua, että tällaisia asioita tapahtuu*), 'sadness'
43.08   I know that something bad happened (*tiedän, että jotain pahaa tapahtui*), 'sadness'
42.31   I now know something that I didn't know before (*tiedän nyt jotain, jota en ennen tiennyt*), 'surprise'
41.54   something happened a little time ago (*vähän aikaa sitten tapahtui jotain*), 'surprise'
40.77   there is another person (*on olemassa toinen ihminen*), 'love'
40   I had not thought before that this person can do something like this (*en ollut ennen ajatellut, että tämä ihminen voi tehdä jotain tällaista*), 'disgust'
39.23   I don't want this (*en halua tätä*), 'fear'
33.08   I feel bad (*minusta tuntuu pahalta*), 'fear'
27.69   I feel bad (*minusta tuntuu pahalta*), 'anger'
26.15   I don't want this (*en halua tätä*), 'anger'
24.62   something bad is happening now here (*täällä tapahtuu nyt jotain pahaa*), 'anger'
7.69   I want to do something (*haluan tehdä jotain*), 'fear'
7.69   I cannot think like this: I can do something about this thing (*en voi ajatella näin: tälle asialle voin tehdä jotain*), 'sadness'

Appendix C

The match rates of sets of individual meaning components and the originally explicated emotion words, grouped according to the emotion words. The percentage refers to the number of participants making the expected match.

'fear' (pelko)
95.38   something bad can now happen to me here (*minulle voi tapahtua täällä nyt jotain pahaa*)
46.15   I don't want to be here (*en halua olla täällä*)

39.23   I don't want this (*en halua tätä*)
33.08   I feel bad (*minusta tuntuu pahalta*)
7.69   I want to do something (*haluan tehdä jotain*)

'love' (*rakkaus*)
89.23   when I think about another person, I feel very good for a long time
        (*kun ajattelen toista ihmistä, minusta tuntuu erittäin hyvältä kauan aikaa*)
75.38   I want good for another person (*haluan hyvää toiselle ihmiselle*)
66.92   I want good for another person (*haluan toiselle ihmiselle hyvää*)
40.77   there is another person (*on olemassa toinen ihminen*)

'joy' (*ilo*)
79.23   something good is happening now (*nyt tapahtuu jotain oikein hyvää*)
70   I feel very good (*minusta tuntuu oikein hyvältä*)
49.23   I want this kind of things to happen (*haluan, että tällaista tapahtuu*)

'disgust' (*inho*)
76.92   I feel bad / as it feels when there is something bad in my mouth (*minusta tuntuu
        pahalta / niin kuin tuntuu silloin kun suussani on jotain pahaa*)
48.46   some person did something very bad (*eräs ihminen teki jotain oikein pahaa*)
40   I had not thought before that this person can do something like this
        (*en ollut ennen ajatellut, että tämä ihminen voi tehdä jotain tällaista*)

'sadness' (*suru*)
73.08   I feel bad now (*minusta tuntuu nyt pahalta*)
53.08   I know that I cannot do anything (*tiedän, että en voi tehdä mitään*)
44.62   I don't want these kinds of things to happen (*en halua, että tällaisia asioita
        tapahtuu*)
43.08   I know that something bad happened (*tiedän, että jotain pahaa tapahtui*)
7.69   I cannot think like this: I can do something about this thing (*en voi ajatella näin:
        tälle asialle voin tehdä jotain*)

'anger; hatred' (*viha*)
54.62   I want to do something (to someone/something) (*haluan tehdä jotakin* (*jollekin*))
27.69   I feel bad (*minusta tuntuu pahalta*)
26.15   I don't want this (*en halua tätä*)
24.62   something bad is happening now here (*täällä tapahtuu nyt jotain pahaa*)

'surprise' (*hämmästys*)
46.15   I feel something (*minusta tuntuu joltakin*)
42.31   I now know something that I did not know before (*tiedän nyt nyt jotain,
        jota en ennen tiennyt*)
41.54   something happened a little time ago (*vähän aikaa sitten tapahtui jotain*)

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