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# Tiers for Fears and Other Emotions: A Cross-Linguistic Approach to Psych Lexis and Syntax

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## 1 Introduction

Approaching lexical structures from a typological perspective is a task fraught with pitfalls. The necessity of deciding on a linguistic vantage point introduces a host of potential biases which may skew results in a particular direction or cause important distinctions to be overlooked, at worst defeating the very purpose of broad-scale language comparison (Heider, 1991: 52ff). One possible solution is to avoid linguistic stimuli altogether, e.g., by using storyboards (see, e.g., Bochnak & Matthewson, 2015). However, this may not be entirely suitable for investigating certain phenomena such as specific syntactic processes, since the required cross-modal transfer introduces additional cost for both informants and researchers. In this paper, we present a survey method developed for research on the typology of structural alternations in psych verbs. With this method we hope to find an alternative way of lifting the burden of lexical perspective-taking from the researcher's shoulders by leveraging insights from a number of disciplines such as psychology and anthropology. Cross-cultural human events are established and employed in an oral elicitation task in order to incite speakers to provide material based on their own emotional ontologies, thus reconciling the conflicting requirements for cross-linguistic comparability and naturalness in target language data.

The paper is structured as follows: Section 2 addresses the general issues of assuming correspondences between the predicates of a given lexical domain across different languages. Section 3 focuses on the phylogenetic and ontogenetic properties of human emotional experience which provides the concepts underlying any language's emotion lexicon. Following a brief review of previous methodological advances targeting the structures of the latter, we describe our method and relate a practical evaluation in Section 4. Section 5 closes with an outlook for future applications.

## 2 The problem of translational equivalence

A central problem in any comparative study on the patterns of a given linguistic category<sup>1</sup> is the selection of representative exponents of that category across multiple languages, as well as establishing a robust correspondence between them. That is, how do we ensure that any two lexical items from a set of languages  $L_1, L_2, L_3, \dots, L_n$  are actually meaningfully comparable for our purposes? One possible route is to appoint one language, e.g.,  $L_1$ , to pivot and let its structures guide all further methodological choices. A frequent instantiation of this is translation of  $L_1$  lexemes via  $L_n$ -speaker inquiry and/or  $L_1/L_n$ -dictionaries, a form of appeal to authority, which has seen wide-spread usage in large-scale cross-linguistic research due to its accessibility and economy. The most common choice for  $L_1$  is of course English (cf. the

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<sup>1</sup> This article focuses on structural levels of morphology and higher, assuming that one is certain that the category under investigation is tenable across languages (Haspelmath, 2010).

methods in, e.g., Haspelmath, 2015; Hupka et al., 1999; Malchukov et al., 2015; Nichols et al., 2004; Russell, 1983). However, most studies acknowledge that this approach is approximative at best, since it arbitrarily imposes specific taxonomies onto conceptual spaces whose boundaries cannot a priori be assumed to line up neatly. The crux of the matter lies in the implicit assumption of translation equivalence. According to Catford (1965: 49), two translationally equivalent items can “never have ‘the same meaning’ in a linguistic sense; but they can function in the same situation”. Equivalence, then, arises from “the greatest possible overlap in situational range” (idem.), i.e., a large sum of identical values in a pre-selected list of grammatical and semantic features. While this definition works well in theory, it is hard to operationalize for cross-linguistic research on psych verbs for two reasons (see also Anderson, 1967): First, assuming that the goal is to achieve the highest possible level of inter-item comparability in the data set, the number of dimensions to be taken into consideration for each item grows exponentially upon the inclusion of more typologically diverse languages. Second, lexical domains rendering subjective and highly culturally informed phenomena such as emotion and perception may make the task of identifying the relevant features extremely difficult in the first place (Apresjan, 1997). Consider the following selection of predicates:

- (1) a. Finnish *jaksaa* ‘have enough (mental) strength to do sth.’  
 b. Chinese 后怕 *hòupà* ‘experience lingering fear after an event’  
 c. German *sich fremdschämen* ‘be embarrassed witnessing someone else’s actions’  
 d. Turkish *sikmak* ‘irritate’ ~ ‘bore’

The above examples illustrate different kinds of deviations from their respective English equivalents. The item in (1a) lacks a straightforward English translation altogether.<sup>2</sup> In (1b) and (1c), there is conceptual overlap with English terms, but the full semantic scope of the predicates cannot be captured in a single English expression. The difference between these items is the dimension on which they diverge: In the former, there is a temporal distance between the stimulus and the resultant emotion; in the latter, the emotion arises via complex processes of social evaluation on the part of the experiencer. Lastly, (1d) has two equally suitable English translations, the choice of which can only be determined by context. Crucially however, the English translations are largely unrelated, which is indicative of the fact that the situational range of the Turkish lexeme has entirely different boundaries.<sup>3</sup>

Extrapolating from these minor differences to a large typologically adequate dataset, the fallibility of the translation approach becomes clear: The features of a given item in  $L_1$  may only partially converge with those of an item in  $L_n$ , which in turn may converge only marginally with an item from another  $L_m$  (cf. Anderson, 1967; Boster, 2005; Scherer et al., 1988: 26ff), thus rendering the semantic connections between items potentially tenuous. Indeed, the “reification of concepts derived from English” (Wierzbicka 2009: 9), or really any  $L_1$  (Haspelmath, 2010), has been criticized by a number of researchers (see, e.g., Lutz & White, 1986, and the contributions in Fontaine et al., 2013). As Wierzbicka (1992: 546) states:

Every language imposes its own classification upon human emotional experience, and English words such as anger or sadness are cultural artifacts of the English language, not culture-free analytical tools.

Finding a non-translational approach is therefore strongly indicated for research that ventures to cover the specific properties of a special lexical domain such as psych predicates in a comparative manner (cf. Croft, 1993; Landau, 2010; see also Silverstein, 1976).

<sup>2</sup> The meaning can be approximated by assembling a host of English terms, e.g., *manage*, *cope*, *bear*, *handle*, *bother* and it could be argued that it might be regarded as a equivalent of any one of these.

<sup>3</sup> Similar mismatches are found, e.g., in Dutch *vervelen* ‘bore, annoy’, Icelandic *leiðast* ‘be bored, be sad’, Spanish *aburrir* ‘bore, tire, make fed up’, Korean 지치다 *cīchita* ‘be tired of, be bored of’.

### 3 Emotion theory

The experiential vocabulary of any language renders a domain of predicates with psychological entailments. Landau's (2010: 137) defining criterion for the latter is that they have a proposition which "involves an individual being in a certain mental state". As shown in Section 2 however, the broad category of 'mental states' cannot be reliably subdivided on the basis of the coarse lexical grids found in individual languages. At first glance, this might be taken as evidence that the underlying domain is structured in a continuous manner rather than discretely. If true, this would leave little foothold for a non-translational approach, since any other classification would be equally arbitrary. Fortunately, the extralinguistic properties of human emotions offer a viable starting point, allowing us to sidestep language barriers.

Johnson-Laird & Oatley (1992) propose a cline between fixed action patterns and absolute rationality on which systems with some sort of cognitive endowment can be situated. In the former, specific environmental triggers have evolved to be biologically associated with certain behavioral responses. The latter is, to date, a purely philosophical concept, "a paragon that cannot be realised by any finite device" (Johnson-Laird & Oatley, 1992: 205). While entities on either end of this spectrum are theoretically prepared to cope with all contingencies either through anticipation or inertia, humans hold an intermediate position, facing an enormously complex world with limited resources (cf. also Simon, 1967). Hence they require a more intricate set of mechanisms to deal with what Ekman (1999) calls 'fundamental life tasks', a concept which we will discuss shortly. This adaptive need may at least be partially fulfilled by innate emotional response patterns (Oatley & Johnson-Laird, 1990: 131f; see also Plutchik, 2001): Intrapersonally, they serve to economically prepare an individual for general courses of action while interpersonally, they allow a social group to prepare for coordinated behavior or beneficially structure interactions by providing rudimentary clues about an individual's responsive state. The dual function of emotions is also reflected in much of the psychological and anthropological research concerning their origin and constitution, which can traditionally be divided into two main strands (Ortony & Turner, 1990; Reisenzein, 2000).

The *phylogenetic approach* focuses on universal somatic phenomena which accompany different emotions. Since bodily reactions are assumed to precede learning (Hupka et al., 1999), the emotions they are triggered by should hold across cultures (cf. Wallbott & Scherer, 1986). The exact nature and number of the proposed discrete categories varies, but most studies seem to converge on a core set of emotions which we label HAPPINESS, SADNESS, ANGER and FEAR<sup>4</sup>, with DISGUST and SURPRISE often included as well. The bulk of the empirical evidence here comes from observations of facial expressions and their cross-cultural recognition (Ekman et al., 1969; Ekman, 1973; Rosenstein & Oster, 2005; Rozin & Fallon, 1987; Sauter et al., 2011) as well as reactions of the autonomous nervous system (Ekman et al., 1983).

In contrast, the strict *ontogenetic* view claims that any and all human emotions are the product of socialization, which implies that they must be entirely culture-specific (Frijda & Mesquita, 1998; Lutz & White, 1986; Ortony & Turner, 1990). One prediction of approaches in this vein is that increasing geographic and cultural distance between two communities should correlate with a decrease in categorical overlap in the emotional domain.

Roughly since the 1990s, researchers have begun to integrate aspects from both perspectives, acknowledging that the complexities of human emotion and cognition are likely the product of nature as well as nurture (Damasio, 1994; Ekman, 1999; Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987, 1990; Prinz, 2004; Scherer et al., 1988; see also Tomkins, 1962). This paradigm shift is encapsulated by Ekman (1999: 55), who equates the relationship of culture-specific exponents and their underlying discrete basic emotions to

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<sup>4</sup> Note that the usage of English terms as labels for these abstract categories is a mere mnemonic vehicle and should be taken to bear on their exact nature.

variations on a theme. The two-tier view is further corroborated by the large-scale cross-cultural comparative study on emotional experience conducted by Wallbott & Scherer (1986), who report that across participants from 27 countries on five continents, the differences between emotion categories are significantly more pronounced than the differences between the individual countries; at the same time, they do find significant cross-cultural differences in various aspects within individual emotions such as duration and intensity (see also Elfenbein et al., 2007; Scherer et al., 2011). These findings can be easily accommodated in the hybrid framework of Johnson-Laird & Oatley (1989) and Oatley & Johnson-Laird (1987, 1990), who assume that basic emotions are implicated by innate human social plans which are centered around the achievement of goals. They propose the following broad categories:

- (2) a. HAPPINESS
- b. SADNESS
- c. ANGER
- d. FEAR
- e. DISGUST

Each of these five ‘basic modes’ is predicated on prototypical triggers, or Universal Antecedent Events in Ekman’s (1994) terminology (see also Boucher & Brandt, 1981; Ekman, 1999; Hupka et al., 1999; Wallbott & Scherer, 1989), illustrated below with definitions loosely based on Johnson-Laird & Oatley (1989) and Ekman (1994) (numbering corresponds to (2)):

- (3) a. Achievement of goal
- b. Failure or loss of goal
- c. Obstruction of goal
- d. Threat to self-preservation goal
- e. Threat to physical or mental noxiousness avoidance goal

A more comprehensive overview of various definitions and prototypical triggers found in the literature is given in Appendix A.

At the infant stage, (3) primarily concerns the relation with the caregiver and serves as a communicative vehicle. Since this stage precedes acculturation, the five modes are assumed to be universal. As the individual matures, (3) comes to figure in increasingly cognitively complex commitments and intricate social contexts which eventually involve mutual plans involving other individuals. Consequently, complex emotions as they are encountered at the adult stage stem from the same five modes but involve additional layers of appraisal and evaluation (Johnson-Laird & Oatley, 1989; see also Damasio, 1994; Scherer, 1984). The exact nature of the latter is of course extremely hard to pinpoint and likely too variegated to render exhaustively. However, three robust cross-cultural dimensions have been proposed in the literature:

- (4) a. Temporal structure of the experience (Johnson-Laird & Oatley, 1989; Katz, 1980; Ortony & Turner, 1990; Turner, 1999)
- b. Degree of emotion (Ekman, 1999; Johnson-Laird & Oatley, 1989; Plutchik, 2001; Scherer, 1984; Turner, 1999, 2007; Wallbott & Scherer, 1986; Wierzbicka, 1986)
- c. Social evaluation (Damasio, 1994; Johnson-Laird & Oatley, 1992; Scherer, 1984, 2001; Turner, 1999)

While the elements in 0 arise from the interaction of the various components involved in emotional processing (Scherer, 1984) which may themselves be universal (Elfenbein et al., 2007; Scherer et al., 2011), they require reference to a model of self which each individual has to acquire over time (Damasio, 1994; Oatley & Johnson-Laird, 1989; Prinz, 2004).

It follows that emotions in adults are bound to be more strongly informed by the circumstances said individual grows up in, as Frijda & Mesquita (1998: 277f) point out:

Different environments may [...] offer drastically different classes of antecedents because of [...] explicitly cultural factors. Social-status distinctions and the rules of respect that they prescribe are considerably stronger in one culture than in another, and educational rules differ in strictness, thus providing for different numbers of occasions for shyness, shame, and fear, and for satisfaction upon smooth conformity. Religious and supernatural beliefs and practices of magic provide other instances that are emotionally important also in that they may form occasions for belongingness [...] and self-loss [...], as well as particular forms of threat [...].

Their view is in line with the approach by Johnson-Laird & Oatley (1989: 93) who state that “the members of a culture have a prototype for the sorts of events that cause an emotion [...], and for the sorts of events that ensue; but they do not have a prototype for the subjective feeling itself” (see also Ogarkova, 2013).

The difference between the uniformity of the emotional triggers at the outset of an individual’s lifespan and the diversity found later on is striking. We can thus reframe the pervasive culture-specificity of emotional expression as a function of ontogeny. This bears directly on the issue of linguistic expression: While the basic emotion modes are ‘ineffable primes’ (see Wierzbicka, 1992, 2009; Levinson et al., 2007) which cannot be expressed themselves, it suggests that if it is possible to abstract away from the ontogenetic, that is, cultural aspects of a given speaker’s emotional lexicon, it should be possible to elicit comparable items across languages without having to rely on translations. One attempt at achieving this will be presented in the following section.

## **4 Operationalization**

### **4.1 Previous approaches**

The bulk of comparative studies focusing on, or involving, psych predicates has taken one of two routes with regard to choosing which lexemes to base their investigation on: In accounts which focus on syntax and semantics, researchers most commonly select a small number of exponents based on specific structural properties and treat them as representatives of the domain at large (see, e.g., Alexiadou & Iordăchioaia, 2014; Landau, 2010; McGinnis 2001). Since studies in this vein rarely attempt to establish inter-item correspondences beyond the purposes of illustration, i.e., to show that they evince a common underlying theoretical architecture, the concerns raised here may not be entirely applicable to them.<sup>5</sup> Typological studies on the other hand tend to rely on word lists, asking participants to translate preselected English terms into the target language. The drawbacks of this latter approach have already been discussed in Section 2.

More recently, a group of researchers at the Max Planck Institute for Psycholinguistics in Nijmegen has created an elicitation toolkit which uses short, localized story vignettes. These narrative fragments are presented to speakers, who are then asked to describe in the target language what the characters may be feeling in that given situation (Levinson et al., 2007; Sauter, 2009). Their responses are recorded. This fits nicely with the observations made by Ogarkova (2013), who reports that many non-Western cultures focus on the relational aspects of emotions (interpersonal or person-event relations), categorizing them according to the types of situations they are elicited by rather than the mental reaction. While the emotion categories and stimuli in the ‘Nijmegen approach’ are grounded in the psychological literature, there are a number of shortcomings: First, the proposed list of emotions is rather extensive

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<sup>5</sup> Which is not to say that it would not be advisable to heed them.

and lacks internal coherence, which may be desirable when attempting to approach a domain which can be assumed to have internal structure (see Section 3). Second, while the precise categories selected for the investigation do cover a large emotional range, they seem to be intuitively chosen and lack theoretical motivation. Third, the categories do not distinguish systematically between different types of internal temporal structures (see (4a)) and thus conflate concepts such as emotions and moods, a pertinent distinction in psychological models (see Ekman & Davidson, 1994) which is likely also represented in the lexicon to some degree. Lastly, the stimuli do not take into account the fundamental role of animacy in human cognition (see, e.g., Langacker, 1991), variously using humans, animals and objects as triggers. These methodological quibbles notwithstanding, we appreciate that the Nijmegen approach takes into account the specific pragmatic requirements of cross-linguistic field research such as varying time constraints as well as allowing for flexibility within stimulus wording and choice of situation to accommodate unanticipated cultural differences. We therefore intend to expand upon this foundational work by adapting the vignette-based elicitation protocol to the theory-driven layout as described in Section 3.

## 4.2 From Nijmegen to Berlin: An extended method

The two-tier approach to emotional ontology is directly reflected in the structure of our method. To recapitulate, we propose the following two main components:

- (5) a. Basic emotion modes
- b. Ontogenetic factors (acculturation)

Recall further that the present method was developed for a study on psych predicates, which are conventionally defined as involving two participants (see, e.g., Belletti & Rizzi, 1988), one of which is affected by the emotion (the experiencer) and one which effects it (the stimulus). These concepts play a central role in the layout of the operationalization of both of the above components.

In the following, we describe how (5) translates to an oral or written elicitation task consisting of two practicable parts. The basic procedure is such that first, vignettes are presented to informants to lay the foundation for lexical retrieval and limit its scope to one of the basic emotion modes. Then, speakers are guided through their emotional ontology in a bottom-up fashion by responding to question prompts targeting specific conceptual subcomponents which are intended to mediate the culture-specific differences. Both steps will be discussed in detail below. Furthermore, we illustrate how our method can be used to address specific questions of syntactic psych phenomena (cf. Landau, 2010).

### 4.2.1 Setting up the main components

For (5a), we adapt the ‘empathic introspection’ protocol developed by Levinson et al. (2007) and Sauter (2009) to the five basic emotion modes given in (2). In order to target these in a culturally neutral way, scenarios are created based on the Universal Antecedent Events which were broadly defined in (3). The scenarios should be kept simple and should contain as little information as possible beyond what is needed to adequately contextualize the two entities involved in the experiential situation. Note that while the experiencer is necessarily sentient and therefore animate (see, e.g., Verhoeven, 2007), the stimulus is largely unspecified with regard to inherent or relational semantic properties. It is widely recognized that stimulus animacy impacts the behavior of psych predicates in various ways (see, e.g., Dahl & Fraurud, 1996; Verhoeven, 2015). This is captured by systematically varying this factor across all emotion modes. The anthropocentrism of human verbal accounts suggests interpersonal relations have a privileged status (Bossong, 2006; Siewierska, 1994). Therefore, we opted for a feature contrast of [ $\pm$ human] rather than the broader [ $\pm$ animate], yielding a total of  $5 \times 2 = 10$  scenarios to be generated. We pose the following requirements for their creation, extrapolated in part from the patterns in the Nijmegen materials:

- (6) a. Use generic human referents (e.g., *woman, man, child, girl, boy, ...*).  
 b. Ensure equal distribution of gender across experiencers.  
 c. Vary the age of experiencers.  
 d. Avoid emotionally loaded wording.

Scenarios should be formulated in a way that allows covering a broad range of emotive and cognitive concepts. It is of utmost importance to work from (3) rather than the arbitrary English labels given to the modes to obtain exponents such as, e.g., English *interest* under HAPPINESS and moral indignation under DISGUST (see Lee & Ellsworth, 2013). Ideally, the resulting story vignettes should be given in the target language. When this is not feasible, the above constraints are intended to ensure maximal neutrality regardless of language of presentation. Here it is especially important to observe (6d), as using emotionally charged vocabulary in the vehicular language may interfere with the production of target language concepts (cf. Wierzbicka, 1986, 1992, 2009). It may also be desirable to intersperse the scenarios with additional localization markers such as typical personal names and toponyms to promote role-taking on the part of the informant and thus potentially facilitate access to the target language lexicon. These means must be used with caution however, as certain names, especially in hypocoristic form, may evoke very specific cultural references which would, in turn, jeopardize inter-language comparability. Table 1 gives examples for each of the ten scenarios in English which have been employed successfully in a large-scale study (see Section 4.2.3). Optional localizers are given in parentheses.

**Table 1.** Examples of scenarios based on (3) and (6). Core entities are underlined and marked for thematic role (EXP = experiencer, STM = stimulus)

Mode	Animacy	Scenario
HAPPINESS	non-human	A <u>young man</u> <sub>EXP</sub> hears an old <u>fairy tale</u> <sub>STM</sub> from his childhood (about a boy called X) that he had completely forgotten about.
	human	A <u>woman</u> <sub>EXP</sub> returns to her childhood home (in X) where many of her friends still live. She has not seen them in a long time as she has been away. One of her <u>best friends</u> <sub>STM</sub> from her childhood comes to her.
SADNESS	non-human	A <u>girl</u> <sub>EXP</sub> loses her favorite <u>toy</u> <sub>STM</sub> and is unable to find it again.
	human	A <u>man</u> <sub>EXP</sub> comes home after a journey and learns that a <u>friend</u> <sub>STM</sub> of his has died.
ANGER	non-human	A <u>middle-aged woman</u> <sub>EXP</sub> needs to go to town (to X). She gets in her <u>car</u> <sub>STM</sub> , but finds that it doesn't work.
	human	A <u>boy</u> <sub>EXP</sub> has spent the whole morning drawing a picture. Then his <u>older brother</u> <sub>STM</sub> takes it away from him and tears it to shreds.
FEAR	non-human	A <u>man</u> <sub>EXP</sub> is lost in the woods at night. He hears a <u>loud noise</u> <sub>STM</sub> coming from behind some nearby trees.
	human	A <u>woman</u> <sub>EXP</sub> encounters a <u>robber</u> <sub>STM</sub> .
DISGUST	non-human	A <u>man</u> <sub>EXP</sub> has prepared a meal (has prepared X). While eating, he finds that his ingredients were infested with <u>maggots</u> <sub>STM</sub> .
	human	A <u>woman</u> <sub>EXP</sub> sees a <u>man</u> <sub>STM</sub> who is laughing and joking loudly at an old lady who fell after struggling to get up a flight of stairs.

Table 1 is meant to be more or less culturally neutral, however the wording of the scenarios is malleable and can be adapted if certain parts of a scenario do not fit a given cultural context, as long as (6) is adhered to. It bears repeating that while it has been tested in the field, the material provided above serves merely as an illustration. Since it is in essence creative prose, researchers may wish to invent their own stimuli should the above not suit their needs. This

flexibility notwithstanding, it is of course ideal to keep the scenarios more or less constant across languages while keeping a close record of any adaptations.

In order to make (5b) actionable in the form of targeted prompts, we expand 0 by specifying levels for each dimension, resulting in nine question conditions:

(7) **Temporal structure**

*External onset: Relative position of stimulus in mental time model of experiencer*

- a. NOW            Emotion is triggered by stimulus at present
- b. PAST           Emotion is triggered by memory of stimulus
- c. FUTURE        Emotion is triggered by anticipation of stimulus / future prospects

*Internal onset: Latency between occurrence of stimulus and emotion*

- d. SHORT         Emotion emerges suddenly and unexpectedly (surprise states<sup>6</sup>)
- e. LONG          Emotion emerges gradually or persists (moods)

**Degree**

- f. WEAK          Emotion is mild or barely noticeable
- g. STRONG        Emotion is overwhelming

**Social evaluation**

- h. SELF          Emotion emerges from cognitive evaluations regarding experiencer's own situation
- i. OTHER         Emotion emerges from cognitive evaluations regarding experiencer's situation in relation to peers

Since the above is necessarily a rough approximation of a subset of the multitude of ontogenetic factors underlying culture-specificity, we further add a final condition ELSE in hopes of capturing terms outside the scope of the discussed prompts, bringing the number of questions up to a total of ten. The full elicitation task therefore consists of  $5 \times 2 \times 10 = 100$  questions.

Next, (7) is applied to all scenarios in Table 1 (or their corresponding versions created by the investigator) in order to generate questions for each level. The questions contain the explicit instruction to come up with lexical material. Therefore, they also form an interface at which the particular object of the linguistic investigation comes into play. We will revisit this point in detail in Section 4.2.3., but it is worth noting here, as all further material shown here for the purposes of illustration is informed by the particular research question it was created for and may need to be altered to suit other needs. In general, questions are formed by using elements from the scenarios and recontextualizing them in order to evoke the desired condition. Again, it is imperative that (6) be observed. As with the scenarios, administering them requires some degree of inventiveness and flexibility, and they may need to be adapted or rephrased if the informant does not respond in a way that indicates that the prompt has been followed. However, since the semantic distinctions arising from (7) are rather fine-grained, it is very likely that the target language will simply not have exponents that fit a given combination of basic emotion mode and question condition. It is up to the researcher to decide whether to accept a lack of material or whether to keep probing. Table 2 illustrates the questions we created for the basic emotion mode FEAR with a non-human stimulus. A full account of all scenarios and questions used in our studies is given in Appendix B.

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<sup>6</sup> It is due to the inclusion of this level that we chose to forego an explicit SURPRISE mode which is commonly seen in work, e.g., by Ekman and colleagues (see, e.g., Ekman et al., 1969; Ekman, 1973; and others). In this we follow Johnson-Laird & Oatley (1989: 102), who posit that surprise does not have emotional valency itself, and as such is “a reaction to an unexpected event that can be the precursor to any of the five emotion modes”.

**Table 2.** Examples of questions rendering (7) for FEAR, [-human]

Prompt	Question
NOW	Which words could be used to describe the thoughts and feelings the man has when he hears the noise?
PAST	Which words could be used to describe how the man feels at a later time when remembering the noise in the woods?
FUTURE	Which words can be used to describe how the prospect of being faced with the origin of the noise makes the man feel?
SHORT	Which words could be used to express how the sudden noise makes the man feel?
LONG	Which words might be used to describe the way that wandering the forest for hours made the man feel?
WEAK	Which words could be used to describe how hearing a soft rustling sound instead of a loud noise makes the man feel?
STRONG	Which words can best describe how the man feels when he sees that the noise was caused by a large dangerous animal?
SELF	Which words can be used to describe the way that thinking about his situation makes the man feel?
OTHER	Which words might be used to describe how the man feels about the noise, being alone in the woods with no way to contact anyone?
ELSE	Which other words might be used to describe how the man feels when he hears the noise?

#### 4.2.2 Presentation forms and participant instruction

Before beginning the elicitation proper, speakers must of course be instructed on what exactly their task will be. As with the phrasing of the questions discussed in the previous section, the exact nature of the instructions depends largely on the object of study at hand. We will give an example for how to do this for a specific task in the next section. However, we advise that the following general remarks be kept in mind in the interest of reducing biases and improving the representativeness of the data:

- (8)
- a. Unless necessitated by the research question, avoid using category labels such as *noun, verb, adjective*. These may not be how the target language renders the domain (cf. Haspelmath, 2010).
  - b. Stress that it is acceptable if target language lacks words for certain questions.
  - c. Encourage finding new lexemes in each response while allowing repetition if informant feels certain that a given item fits multiple questions.
  - d. Ask for meta-information about the elicited material such as information on register or selectional restrictions.
  - e. Ask for both negative and positive evidence in order to gain a comprehensive picture of the patterns at hand.

The method introduced here is designed for oral interviews and we find that it works best when used in an interlocutory fashion, as this enables the researcher to give additional guidance and make observations about the emerging structures as the elicitation proceeds. Since informants may require some time to familiarize themselves with the procedure, we advise to complete the entire task with a single speaker or a group of speakers. Due to its extensiveness, the task is best broken down into multiple sessions each lasting around one to three hours, with cut-off points ideally placed after the completion of a scenario. While we appreciate that the method can be quite time-consuming this way, we believe that this is justified by the quality and richness of the resulting data. However, should resource constraints not allow for the full task to be completed, the number of questions per domain may be reduced. We suggest

the three alternative protocols based on our experience from working with speakers of Icelandic, Spanish, Finnish, Korean, Chinese, Bété, Turkish and Tamil (see Rott et al., *forthc.*):

- (9) a. Long form (full task = 100 questions,  $\emptyset \approx 24$  net work hours)  
 b. Medium form (NOW, SHORT, STRONG, ELSE = 40 questions,  $\emptyset \approx 10-12$  net work hours)  
 c. Short form (NOW = 10 questions,  $\emptyset \approx 2-3$  net work hours)

The categories in (9b) were chosen as we found that on average speakers provided the highest number of lexemes across the languages in our sample. When a direct interview is not feasible, it is also possible to provide a speaker with the scenarios and questions and extend the instructions so as to enable them to complete the task on their own. Here it is useful to review the progress on a regular basis to ensure that the elicitation is being carried out correctly.

Since each basic emotion mode is targeted twice across the task, the scenarios must be presented in randomized or pseudo-randomized order. If the interviews are split into multiple sessions, allowing some time to pass between the elicitations for a given domain is conducive to maximizing the inventory, as speakers may think of different words on different days.

#### 4.2.3 Fitting the task to a research question: The psych alternation

As mentioned in the Section 4.2.1, the questions exemplified in Table 2 are not a neutral template, but reflect the needs of a particular research undertaking, specifically investigating the morphosyntactic realization of alternating psych predicate constructions. Two properties are relevant to our methodological account: First, languages seem to fall into different classes with regard to unmarked argument linking (Nichols et al., 2004). Depending on this basic valence orientation parameter, the alternation is then typically achieved by means of causativization, as in (10), or anticausativization, as in (11), as well as other measures (see, e.g., Alexiadou & Iordăchioaia, 2014; Landau, 2010; Nichols et al., 2004; Verhoeven, 2015). This is illustrated below with material from our elicitation data:

##### (10) Chinese

- a. 这个男人害怕这个响声。  
*zhège nánrén hàipà zhège xiǎngshēng.*  
 this man fear this noise  
 ‘The man fears the noise.’
- b. 响声让这个男人害怕。  
*xiǎngshēng ràng zhège nánrén hàipà.*  
 noise make this man fear  
 ‘The noise scares the man.’

##### (11) Icelandic

- a. *Hljóð-in hræð-a mann-inn.*  
 noises:NOM-DEF scare-3PL man:ACC-DEF  
 ‘The noises scare the man.’
- b. *Mað-ur-inn hræð-i-st hljóð-in.*  
 man-NOM-DEF scare-3SG-MID noises:ACC-DEF  
 ‘The man fears the noises.’

We took heed of these structures by systematically varying the use of causative structures vs. simple verbs in the phrasing of the questions in order to prevent their morphosyntax from biasing the elicited material. Second, the experiencer and the stimulus tend to be preserved in both alternants, which is atypical in anticausative constructions outside the psych domain and hence appears to be a special property of psych predicates (Landau, 2010). We therefore attempted to keep the referents for both arguments in prominent positions in the questions. It is

clear that different research objectives will require different structures, or possibly fewer restrictions, in the question component.

We asked participants who completed the long form (9a) of the task to think of expressions which could be used in short, simple declarative sentences without coordination or subordination which contained both the experiencer and the stimulus from the question. For informants who could only carry out (9b), we chose to specify the category of verbs in the instructions in the interest of saving time. We operationalized the alternation by adding a secondary production task, asking for ‘inversions’ of the declarative sentences, i.e., sentences which had the other argument in subject position but still contained both arguments, if possible. Further, participants provided citation forms for the predicates as well as approximative post-hoc English translations for all materials. We also recorded interlexical relations which were intuitively clear to the informants as well as details about the morphological structure if provided. All information was processed and entered into a searchable database. The entries were then further substantiated using information from the literature, where available.

Using our method, we were able to gather extensive comparable inventories of alternating predicates from a highly subjective and culture-specific domain across a typologically diverse set of languages, both including verbs commonly seen in the literature as well as many other verbs lacking straightforward translations similar to those exemplified in (1). For details of these findings and an analysis of the first sample, see Rott et al. (forthc.).

## **5 Future applications**

We hope that our contribution can help to counteract the apriorism and ethnocentrism commonly seen in linguistics (Haspelmath, 2012) and believe that the method is flexible enough to be adopted for many research questions from various linguistic subdisciplines. Lexicological studies may want to change the instructions to be more inclusive, or do away completely with restrictions on material fitting the questions. Studies targeting parts of speech other than verbs or studies with a different scope regarding the categorical status of the exponents of (2) may embed the lexical retrieval questions in contexts other than simple declarative sentences. Syntactic research questions can be tackled by adding a different secondary production task and asking participants to perform operations such as passivization or extraction on the material they have produced. Further, the richness of the data acquired using this method may be of use in gaining a more holistic insight into the architecture of the complex domain of emotion lexis and syntax by providing more context to common phenomena, potentially preventing researchers from jumping to conclusions based on a few ‘well-behaved’ examples.

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## **References**

- Alexiadou, A., & Iordăchioaia, G. (2014). The psych causative alternation. *Lingua*, 148, 53-79.
- Anderson, R. B. W. (1967). On the comparability of meaningful stimuli in cross-cultural research. *Sociometry*, 30(2), 124-136.

- Apresjan, V. Ju. (1997). 'Fear' and 'pity' in Russian and English from a lexicographic perspective. *International Journal of Lexicography*, 10(2), 85-111.
- Belletti, A., & Rizzi, L. (1988). Psych-verbs and  $\theta$ -theory. *Natural Language & Linguistic Theory*, 6, 291-352.
- Bochnak, M. R., & Matthewson, L. (Eds.) (2015). *Methodologies in Semantic Fieldwork*. Oxford: Oxford University Press.
- Bossong, G. (2006). Meaning, form and function in basic case roles. In I. Bornkessel, M. Schlesewsky, B. Comrie & A. Friederici (Eds.), *Semantic Role Universals and Argument Linking. Theoretical, Typological and Psycholinguistic Perspectives* (pp. 237-262). Berlin: De Gruyter.
- Boster, J. S. (2005). Emotion categories across languages. In H. Cohen & C. Lefebvre (Eds.), *Handbook of Categorization in Cognitive Science* (pp. 188-223). London: Elsevier.
- Boucher, J. D., & Brandt, M. E. (1981). Judgment of emotion: American and Malay antecedents. *Journal of Cross-Cultural Psychology*, 12(3), 272-283.
- Catford, I. (1965). *A Linguistic Theory of Translation*. Oxford: Oxford University Press.
- Croft, W. (1993): Case marking and the semantics of mental verbs. In J. Pustejovsky (Ed.), *Semantics and the Lexicon* (pp. 55-72). Dordrecht/Boston, MA/London: Kluwer.
- Dahl, Ö., & Fraurud, K. (1996). Animacy in grammar and discourse. In T. Fretheim & J. K. Gundel (Eds.), *Reference and referent accessibility* (pp. 47-64). Amsterdam/Philadelphia, PA: John Benjamins.
- Damasio, A. (1994). *Descartes' Error, Emotion Reason and the Human Brain*. New York City, NY: Avon Books.
- Ekman, P. (1973). Cross-cultural studies of facial expression. In P. Ekman (Ed.), *Darwin and Facial Expression: A Century of Research in Review* (pp. 221-238). New York City, NY: Academic Press.
- Ekman, P. (1994). Antecedent events and emotion metaphors. In P. Ekman & R. J. Davidson (Eds.), *The Nature of Emotion. Fundamental Questions* (pp. 146-149). Oxford: Oxford University Press.
- Ekman, P. (1999): Basic emotions. In T. Dalgleish & M. Power (Eds.), *Handbook of Cognition and Emotion* (pp. 45-60). New York City, NY: John Wiley & Sons.
- Ekman, P., & Davidson, R. J. (Eds.) (1994). *The Nature of Emotion: Fundamental Questions*. Oxford: Oxford University Press.
- Ekman, P., Levenson, R. W., & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions. *Science*, 221, 1208-1210.
- Ekman, P., Sorensen, E. R., & Friesen, W. V. (1969). Pan-cultural elements in facial displays of emotion. *Science*, 164, 86-88.
- Elfenbein, H., Lévesque, M., Beaupré, M., & Hess, U. (2007). Toward a dialect theory: Cultural differences in the expression and recognition of posed facial expressions. *Emotion*, 7, 131-146.
- Fontaine, J. J. R., Scherer, K. R., & Soriano, C. (Eds.) (2013). *Components of Emotional Meaning. A Sourcebook*. Oxford: Oxford University Press.

- Frijda, N. H., & Mesquita, B. (1998). The analysis of emotions: Dimensions of variation. In M. F. Mascolo & S. Griffin (Eds.), *What Develops in Emotional Development?* (pp. 273-295). New York City, NY: Plenum Press.
- Haspelmath, M. (2010). Comparative concepts and descriptive categories in crosslinguistic studies. *Language*, 86(3), 663-687.
- Haspelmath, M. (2012). Escaping ethnocentrism in the study of word-class universals. *Theoretical Linguistics*, 38(1-2), 91-102.
- Haspelmath, M. (2015). Transitivity prominence. In A. Malchukov & B. Comrie (Eds.), *Valency Classes in the World's Languages* (pp. 131-148). Berlin: De Gruyter.
- Heider, K. G. (1991). *Landscapes of Emotion: Mapping Three Cultures of Emotion in Indonesia*. Cambridge: Cambridge University Press.
- Hupka, R. B., Lenton, A. P., & Hutchinson, K. A. (1999). Universal development of emotion categories in natural language. *Journal of Personality and Social Psychology*, 77(2), 247-278.
- Johnson-Laird, P. & Oatley, K. (1989). The language of emotions: An analysis of a semantic field. *Cognition & Emotion*, 3(2), 81-123.
- Johnson-Laird, P., & Oatley, K. (1992). Basic emotions, rationality, and folk theory. *Cognition & Emotion*, 6(3-4), 201-223.
- Katz, J. M. (1980). Discrepancy, arousal and labeling: Towards a psychosocial theory of emotion. *Sociological Inquiry*, 50(2), 147-156.
- Landau, I. (2010). *The Locative Syntax of Experiencers*. Cambridge, MI/London: MIT Press.
- Langacker, R. W. (1991). *Foundations of Cognitive Grammar. Descriptive Application, Vol. 2*. Stanford, CA: Stanford University Press.
- Lee, S. W. S. & Ellsworth, P. C. (2013). Maggots and morals: Physical disgust is to fear as moral disgust is to anger. In J. J. R. Fontaine, K. Scherer & C. Soriano (Eds.), *Components of Emotional Meaning. A Sourcebook* (pp. 271-280). Oxford: Oxford University Press.
- Levinson, S. C., Senft, G., & Majid, A. (2007). Emotion categories in language and thought. In A. Majid (Ed.), *Field Manual, Vol. 10* (pp. 46-52). Nijmegen: Max Planck Institute for Psycholinguistics.
- Lutz, C., & White, G. M. (1986). The anthropology of emotions. *Annual Review of Anthropology*, 16, 405-436.
- Malchukov, A., & Leipzig Valency Classes Project Team (2015). Leipzig questionnaire on valency classes. In A. Malchukov & B. Comrie (Eds.), *Valency Classes in the World's Languages* (pp. 27-40). Berlin: De Gruyter.
- McGinnis, M. (2001). Semantic and morphological restrictions in experiencer predicates. In J. T. Jensen & G. van Herk (Eds.), *Proceedings of the 2000 CLA Annual Conference* (pp. 245-256). University of Ottawa: Department of Linguistics.
- Nichols, J., Peterson, D. A., & Barnes, J. (2004). Transitivity and detransitivizing languages. *Linguistic Typology*, 8, 149-211.
- Oatley, K., & Johnson-Laird, P. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion*, 1(1), 29-50.

- Oatley, K., & Johnson-Laird, P. (1990). Semantic primitives for emotions: A reply to Ortony and Clore. *Cognition & Emotion*, 4(2), 129-143.
- Ogarkova, A. (2013). Folk emotion concepts: Lexicalization of emotional experiences across languages and cultures. In J. J. R. Fontaine, K. R. Scherer & C. Soriano (Eds.), *Components of Emotional Meaning: A Sourcebook* (pp. 46-62). Oxford: Oxford University Press.
- Ortony, A., & Turner, T. J. (1990). What's basic about basic emotions? *Psychological Review* 97(3), 315-331.
- Plutchik, R. (2001). The nature of emotions. *American Scientist*, 89(4), 344-350.
- Prinz, J. (2004). Which emotions are basic? In D. Evans and P. Cruse (Eds.), *Emotion, Evolution, and Rationality* (pp. 69-87). Oxford: Oxford University Press.
- Reisenzein, R. (2000). Worum geht es in der Debatte um die Basisemotionen? In F. Försterling, J. Stiensmeier-Pelster & L.-M. Silny (Eds.), *Kognitive und emotionale Aspekte der Motivation* (pp. 205-237). Göttingen: Hogrefe.
- Rosenstein, D., & Oster, H. (2005). Differential facial responses to four basic tastes in newborns. In P. Ekman & E. L. Rosenberg (Eds.), *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial-Action Coding System (FACS)*, 2<sup>nd</sup> ed. (pp. 302-319). Oxford: Oxford University Press.
- Rott, J. A., Verhoeven, E., & Fritz-Huechante, P. (forthc.). Morphological directionality and psych effects: Towards a typology of the psych alternation. In Kimmelman, V. (Ed.).
- Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review*, 94(1), 23-41.
- Russell, J. A. (1983). Pancultural aspects of the human conceptual organization of emotions. *Journal of Personality and Social Psychology*, 45(6), 1281-1288.
- Sauter, D. (2009). Emotion concepts. In A. Majid (Ed.), *Field Manual, Vol. 12* (pp. 20-30). Nijmegen: Max Planck Institute for Psycholinguistics.
- Sauter, D., Le Guen, O., & Haun, D. B. M. (2011). Categorical perception of emotional expressions does not require lexical categories. *Emotion*, 11(6), 1479-1483.
- Scherer, K. R. (1984). On the nature and function of emotion: A component process approach. In K. R. Scherer & P. Ekman (Eds.), *Approaches to Emotion* (pp. 293-317). Hillsdale, NJ: Erlbaum.
- Scherer, K. R. (2001). Appraisal considered as a process of multi-level sequential checking. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal Processes in Emotion: Theory, Methods, Research* (pp. 92-120). New York City, NY: Oxford University Press.
- Scherer, K. R., Clark-Polner, E., & Mortillaro, M. (2011). In the eye of the beholder? Universality and cultural specificity in the expression and perception of emotion. *International Journal of Psychology*, 46(6), 401-435.
- Scherer, K. R., Wallbott, H. G., Matsumoto, D., & Kudoh, T. (1988). Emotional experience in cultural context: A comparison between Europe, Japan, and the United States. In K. R. Scherer (Ed.), *Facets of Emotion* (pp. 5-30). Hillsdale, NJ: Erlbaum.
- Siewierska, A. (1994). Word order and linearization. In R. E. Asher (Ed.), *The Encyclopedia of Language and Linguistics, Vol. 9* (pp. 4993-4999). Oxford: Pergamon.

- Silverstein, M. (1976). Hierarchy of features and ergativity. In R. M. W. Dixon (Ed.), *Grammatical Categories in Australian Languages* (pp. 112-171). Canberra: Australian National University.
- Simon, H. A. (1967). Motivational and emotional controls of cognition. *Psychological Review*, 74(1), 29-39.
- Tomkins, S. (1962). *Affect, Imagery, Consciousness, Vol. 1*. New York City, NY: Springer.
- Turner, J. H. (1999). Towards a general sociological theory of emotions. *Journal of the Theory of Social Behavior*, 29(2), 133-162.
- Turner, J. H. (2007). *Human Emotions: A Sociological Theory*. London/New York City, NY: Routledge.
- Verhoeven, E. (2007). *Experiential Constructions in Yucatec Maya: A Typologically Based Analysis of a Functional Domain in a Mayan Language*. Amsterdam/Philadelphia, PA: John Benjamins.
- Verhoeven, E. (2015). Thematic asymmetries do matter! A corpus study of German word order. *Journal of Germanic Linguistics*, 27(1), 45-104.
- Wallbott, H. G., & Scherer, K. R. (1986). How universal and specific is emotional experience? Evidence from 27 countries on five continents. *Social Science Information*, 25(4), 763-795.
- Wierzbicka, A. (1986). Human emotions: Universal or culture-specific. *American Anthropologist*, 88(3), 584-594.
- Wierzbicka, A. (1992). Defining emotion concepts. *Cognitive Science*, 16, 539-581.
- Wierzbicka, A. (2009). Language and metalanguage: Key issues in emotion research. *Emotion Review*, 1(1), 3-14.

## Appendix A Definitions for Universal Antecedent Events and typical reactions

HAPPINESS	SADNESS	ANGER	FEAR	DISGUST
<b>Natural Semantic Metalanguage (Wierzbicka 1986, 1992)</b>				
<p>X feels something sometimes a person thinks something like this:</p> <ul style="list-style-type: none"> <li>· something good happened to me</li> <li>· I wanted this</li> <li>· I don't want other things</li> </ul> <p>because of this, this person feels something good X feels like this</p>	<p>X feels something sometimes a person thinks something like this:</p> <ul style="list-style-type: none"> <li>· something bad happened</li> <li>· I would want: this didn't happen [i.e., I wish it hadn't happened]</li> <li>· if I could I would want to do something because of this</li> <li>· I can't do anything</li> </ul> <p>because of this, this person feels something bad X feels like this</p>	<p>X feels something sometimes a person thinks something like this:</p> <ul style="list-style-type: none"> <li>· this person did something bad</li> <li>· I don't want this</li> <li>· because of this, I want to do something</li> <li>· I would want to do something bad to this person</li> </ul> <p>because of this, this person feels something bad X feels like this</p>	<p>X was afraid = X felt as one does</p> <ul style="list-style-type: none"> <li>· when one thinks that something bad can happen to one</li> <li>· when one wants to do something to cause it not to happen</li> <li>· and when one thinks that one cannot cause it not to happen</li> </ul>	<p>X found Y revolting</p> <ul style="list-style-type: none"> <li>· when X perceived that a part of his or her body was in contact with Y he or she felt something bad because of that</li> <li>· he or she wanted at once to cease to be in contact with Y</li> </ul>
<b>Junctures in cognitive social plans (Oatley &amp; Johnson-Laird, 1987)</b>				
<p>Sub-goals being achieved → Continue with plan, modifying as necessary</p>	<p>Failure of major plan or loss of active goal → Do nothing/search for new plan</p>	<p>Active plan frustrated → Try harder, and/or aggress</p>	<p>Self-preservation goal threatened → Stop, attend vigilantly to environment and/or escape</p>	<p>Gustatory goal violated → Reject substance and/or withdraw</p>
<b>Culturally weighted Antecedent Events across US, Europe, Japan (Scherer et al., 1988)</b>				
<ul style="list-style-type: none"> <li>· Cultural pleasures (US, EU)</li> <li>· Birth of a family member (US, EU)</li> <li>· Body-centered 'basic pleasures' (US, EU)</li> <li>· Personal achievements (US, EU)</li> <li>· Group achievements (JP)</li> <li>· Interpersonal relationships</li> </ul>	<ul style="list-style-type: none"> <li>· Death of a family member or close friend (US, EU)</li> <li>· Relationship problems (everywhere, particularly JP)</li> <li>· Separation from loved ones (US)</li> <li>· Tragic global events (US, EU)</li> </ul>	<ul style="list-style-type: none"> <li>· Conflicts in relationships (US)</li> <li>· Behavior of strangers (JP)</li> <li>· Injustice (US, EU)</li> </ul>	<ul style="list-style-type: none"> <li>· Fear of strangers (US)</li> <li>· Failure in achievement situations</li> <li>· Fear of novel situations (JP)</li> <li>· Traffic (EU)</li> <li>· Risky situations, i.e., threat of harm (US, EU)</li> <li>· Fear of hurting or angering others (JP)</li> </ul>	N/A

**Universal Antecedent Events (Ekman, 1994)**

· Sensory pleasure	The loss of an object to which one is attached	· Frustration resulting from interference with one's activity	An actual or threat of harm	Something that is repulsive, to the senses or to one's beliefs
· Excitement		· A physical threat		
· Praise		· An insult		
· Relief when something unpleasant has ceased		· Seeing someone do something that violates one's values		
		· Another person's anger directed at oneself		

**Stimulus event → overt behaviour → effect (Plutchik, 2001)**

Gain of valued object	Loss of valued object	Obstacle	Threat	Unpalatable object
→ Retain or repeat	→ Cry	→ Attack	→ Escape	→ Vomit
→ Gain resources	→ Reattach to lost object	→ Destroy obstacle	→ Safety	→ Eject poison

**Prototypical scenarios (Levinson et al., 2007)**

Ramu has been away working in the city/other place for six months. He walks into the village after being away for so long and his children run and jump on him.	While he is away, Ramu's mother dies suddenly from an unknown disease. When he returns, someone tells him.	Ramu has a favorite pot/necklace/amulet that his grandfather gave him. A village boy picks it up and breaks it.	Ramu is walking home through the forest/on the mountain in the dark. Suddenly he hears a loud noise nearby and sees that something is moving quickly towards him.	Ramu wants to eat some of the leftovers of yesterday's meal. When he opens the cooking pot he sees that it is full of cockroaches and maggots.
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**Definitions and prototypical scenarios (Sauter, 2009)**

Enjoyment of an event or experience	Experiencing the irrevocable loss of a loved one	Being offended by someone and intending to defend oneself	You are faced with physical danger	Coming in contact with something physically noxious and/or contaminating
You are at a wedding in your village with everyone having a good time.	You find out that a close member of your family has died.	Somebody is very rude and disrespectful to you on purpose, insulting you.	You are alone and suddenly confronted with a dangerous animal, and you have no weapon with which to defend yourself.	You have just eaten rotten food.

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## Appendix B Full overview of sample questions for the scenarios in Table 1

Prompt	Question
<b>HAPPINESS, Stimulus [+human]</b>	
NOW	Which words would best describe how the friend makes the woman feel in this situation?
PAST	Which words would best describe how the woman feels at a later point in time when she thinks of her friend on that day?
FUTURE	Which words would best describe the woman's feelings and thoughts while she was still away but already knew she would see her friend soon?
SHORT	Which words would best describe how the sudden arrival of her group of friends makes the woman feel?
LONG	Which words would best describe the feeling that her friend gave the woman by staying with her the whole day?
WEAK	Another person that the woman does not know as well as her friend comes to welcome her. Which words would best describe how the woman feels about this person?
STRONG	Which words would best describe how the woman feels upon seeing her friend when it has been all she has wanted for a long time?
SELF	The woman will stay there/in PLACE for a few weeks. Which words would best describe how the woman feels about her situation with her friends there?
OTHER	Which words would best describe the feelings that the woman's friend caused her to have, welcoming her so warmly after such a long time?
ELSE	Which other words could describe the way the woman's friend made her feel on that day?
<b>HAPPINESS, Stimulus [-human]</b>	
NOW	Which words would best describe how the fairy tale makes the man feel?
PAST	Which words would best describe what goes on in the man's mind when he thinks of the time when he first heard the fairy tale?
FUTURE	The man imagines passing on the fairy tale to his future children. Which words would best describe the feelings the fairytale gives the man in this context?
SHORT	Which words would best describe what goes on in the man's mind when the person telling the fairy tale suddenly starts telling the story in a really vivid manner?
LONG	Which words would best describe the feelings and thoughts the man has while hearing the whole fairy tale?
WEAK	The man hears a funny part of the story which he knows by heart. Which words would best describe the feelings and thoughts that this gives the man?
STRONG	Which words would best describe what hearing an excellent recital of his favorite part of the story causes the man to feel or think?
SELF	Which words would best describe the thoughts and feelings of the man as he thinks of himself as taking part in the fairy tale?
OTHER	The last lines of the fairy tale are very famous. How does the man feel when everyone including himself starts speaking along?
ELSE	Which other words could describe what the fairy tale made the man feel or think?
<b>SADNESS, Stimulus [+human]</b>	
NOW	Which words could be used to describe how the man feels about his friend dying?
PAST	Which words might best describe the way the man feels about his dead friend years later?
FUTURE	Which words best describe how the man may have felt back while his friend was still alive when thinking about how his friend could die?
SHORT	Which words could be used to describe how the sudden news of his friend dying makes the man feel when he has just come back?
LONG	Which words could be used to describe how the days after the friend had died made the man feel about him?
WEAK	Which words can be used to describe how the death of a distant relative might have made the man feel instead?

- STRONG Which words could be used to describe how the man feels if his dead friend was his best and most trusted friend?  
SELF Which words could describe how the man feels when thinking about how he can never talk to his friend again?  
OTHER Which words might be used to describe the thoughts and feelings the man has about his dead friend's family?  
ELSE Which other words could be used to describe how the man feels about his dead friend?

**SADNESS, Stimulus [-human]**

- NOW Which words would best describe the way the loss of her favorite toy makes the girl feel?  
PAST Which words might be used to describe how that memory makes her feel years after the toy was lost?  
FUTURE Which words would best describe how the thought of losing her toy made the girl feel while she still had it?  
SHORT Which words could be used to describe the way the girl felt in the very moment when she noticed that she had lost the toy?  
LONG Which words might be used to describe how the girl felt during the days following the loss of her toy?  
WEAK The toy the girl lost was not her favorite but a different one that she only played with occasionally. Which words might be used to best describe the feelings she has in this situation?  
STRONG Which words could be used to best describe the way the girl felt if the toy she lost was not only her favorite, but also the only one she owned?  
SELF Which words could be used to describe how not having her toy to play with now makes the girl feel?  
OTHER The girl did not lose her toy, but instead it happened to a friend of hers. Which words could be used to describe how the loss of her friend's toy makes the girl feel?  
ELSE Which other words might be used to describe the way the girl feels when losing her toy?

**ANGER, Stimulus [+human]**

- NOW Which words could be used to describe how the brother makes the boy feel?  
PAST Which words might be used to describe how the boy feels about his brother when a few years later, he remembers what his brother did that morning?  
FUTURE Which words could be used to best describe how the boy feels while sitting down to draw another picture some days later, when thinking about how his brother might come and destroy this picture too?  
SHORT Which words can be used to describe how his brother makes the boy feel in the moment when he suddenly takes the drawing away from him and destroys it?  
LONG Which words could be used to describe how the boy feels about his brother if things like this occur regularly?  
WEAK Which words might be used to describe how the boy feels while his brother is tearing up the drawing when he was not happy with it anyway?  
STRONG Which words can be used to best describe how his brother tearing up the picture made the boy feel when it was meant to be a birthday gift for their mother?  
SELF Which words could be used to express how the boy feels about his situation, always being treated meanly like this by his own brother?  
OTHER Which words could be used to describe how his brother being able to always use his strength against him makes the boy feel?  
ELSE Which other words could be used to describe how the boy feels about his brother?

**ANGER, Stimulus [-human]**

- NOW Which words can be used to best describe the way the woman feels about her car being broken?  
PAST Which words could be used to describe how the woman feels later when remembering that her car broke down that day?  
FUTURE Which words can be used to describe the way the car's strange noises make the woman feel?  
SHORT Which words could describe how the woman feels if the car works at first, but then suddenly breaks down while she is driving?  
LONG Which words might be used to describe the thoughts and feelings the woman has in the following days when she has to deal with getting the car fixed?

WEAK	After a brief hiccup, the car works fine again. Which words might be used to describe the way the car delaying the woman by a just few minutes makes her feel?
STRONG	Which words can be used to describe how the broken car makes the woman feel when she urgently needs to get going?
SELF	Which words could be used to describe how thinking about all the ways the broken car inconveniences her makes the woman feel?
OTHER	Which words might be used to describe how being unable to help her mother go places due to the car not working makes the woman feel?
ELSE	Which other words could be used to describe the thoughts and feelings the woman has about her broken car?

**FEAR, Stimulus [+human]**

NOW	Which words could be used to describe how the robber makes the woman feel?
PAST	Which words might be used to describe the way the memory of meeting the robber makes the woman feel?
FUTURE	Which words could be used to describe the way the woman may have felt about a robber appearing before she had encountered him, but she knew that she was entering a dangerous area?
SHORT	Which words could be used to describe the way the robber made the woman feel by suddenly appearing in front of her?
LONG	Which words could be used to describe how the woman feels about the robber in the time following the robbery?
WEAK	Which words could be used to describe how the robber causes the woman to feel when he does not pose a real threat to her?
STRONG	Which words could be used to best describe the way the woman feels about the robber when he pulls a gun on her and threatens to kill her?
SELF	Which words could be used to describe how the woman feels when the robber takes away her money which she needed badly?
OTHER	Which words could be used to describe how the woman feels about the robber when she thinks about why he chose her as his victim?
ELSE	Which other words could be used to describe how the robber makes the woman feel?

**ANGER, Stimulus [-human]**

NOW	Which words could be used to describe the thoughts and feelings the man has when he hears the noise?
PAST	Which words could be used to describe how the man feels at a later time when remembering the noise in the woods?
FUTURE	Which words can be used to describe how the prospect of being faced with the origin of the noise makes the man feel?
SHORT	Which words could be used to express how the sudden noise makes the man feel?
LONG	Which words might be used to describe the way that wandering the forest for hours made the man feel?
WEAK	Which words could be used to describe how hearing a soft rustling sound instead of a loud noise makes the man feel?
STRONG	Which words can best describe how the man feels when he sees that the noise was caused by a large dangerous animal?
SELF	Which words can be used to describe the way that thinking about his situation makes the man feel?
OTHER	Which words might be used to describe how the man feels about the noise, being alone in the woods with no way to contact anyone?
ELSE	Which other words might be used to describe how the man feels when he hears the noise?

**DISGUST, Stimulus [+human]**

NOW	Which words might be used to describe how the man makes the woman feel?
PAST	Which words can be used to best describe how the woman feels about the man when remembering the incident years later?
FUTURE	Which words can be used to describe how the woman feels about the man while the old lady is about to lose her balance and she can already see him watching and grinning?
SHORT	Which words can be used to describe how the man makes the woman feel in the moment when the lady fell and he suddenly started laughing?
LONG	Which words could be used to describe how the woman feels about the man during the rest of the day?

WEAK	Which words could be used to describe the way the man makes the woman feel when he stops laughing and helps the lady after all?
STRONG	Which words could be used to describe how the woman feels about the man when the injured lady is her own grandmother?
SELF	Which words can be used to describe how the man makes the woman feel when trying to figure out how to handle the situation after he left?
OTHER	Which words could be used to describe the thoughts and feelings the woman has towards the man when she has to take care of the woman and get other passers-by to get help?
ELSE	Which other words could be used to describe the thoughts and feelings the man gave the woman?

**DISGUST, Stimulus [-human]**

NOW	Which words could be used to describe the way the man feels about the maggots in his food?
PAST	Which words might be used to describe how the memory of the maggots in his food makes the man feel while eating a dinner a day later?
FUTURE	Which words can be used to describe how the man feels when he imagines finding maggots in his food again when he is cooking a new meal?
SHORT	Which words can be used to describe how the man feels about the maggots in the moment when he suddenly sees them in his food?
LONG	Which words might be used to describe how having eaten rotten food makes the man feel during the rest of the day?
WEAK	Which words can be used to describe how realizing that his food is not spoiled after all makes the man feel?
STRONG	Which words might be used to describe how the man feels about the maggots when notices that he has one of them in his mouth?
SELF	Which words could be used to describe how the man feels about the maggots when he thinks about the possible health issues resulting from having eaten rotten food?
OTHER	Which words could be used to describe how the maggots make the man feel after he has shared some of his food with others?
ELSE	Which other words might be used to describe how the maggots in his meal made the man feel?

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