

Motion for emotion: an empirical cross-linguistic study of conceptual construals

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ABSTRACT

This study reports a methodological itinerary aimed at developing a statistically supported investigative procedure useful for the empirical verification of hypotheses in Cognitive Linguistics research. It targets motion–emotion construals and explores the possible conceptual link between upward-oriented movements encoded in some motion verbs and the emotional state of happiness. The results emerging from the observation of two typologically different languages (English and Italian) lend empirically verified evidence for basic hypotheses in cognition and language research regarding the conceptualization of emotions and also for findings in cross-linguistic research on emotion representation.

KEYWORDS: conceptual construals, empirical methods, cross-linguistic, motion verbs, emotion.

1. Introduction

Within the framework of Cognitive Linguistics, research on the emotions has been heavily influenced by Conceptual Metaphor Theory (CMT), which has posited a metaphorical motivation for linguistic expressions representing emotional states (cf. inter alia Kövecses, 1986, 1995). These studies have been essentially qualitative, and from a methodological point of view have relied on introspective evidence. Criticism of this methodological perspective, of what has been labelled ‘intuitive metaphor analysis’, can be found inter alia in studies by Dobrovolskij and Piirainen (2005), Pragglejaz Group (2007), and Stefanowitsch (2006); cf. also pertinent responses in Kövecses (2011). What seemed to be missing in the early phases of conceptual metaphor research was sound quantitative investigation to support theoretical tenets and hypotheses. Empirically oriented studies began to appear when the question of the role of conceptual metaphor in discourse and text was posed, and this research direction was strengthened with the development of Corpus Linguistics. The tools developed by Corpus Linguistics offer researchers the

possibility of mining large quantities of data and of accessing frequency and concordance algorithms, thereby permitting statistically supported quantitative analysis which can more safely warrant qualitative conclusions. Among the many metaphor scholars working in this direction we can mention, for example, Deignan (2005), Semino (2002), and Stefanowitsch and Gries (2006). As far as metaphor research on emotions is concerned, we can cite the study on the emotion “fear” by Oster (2010), using the COCA corpus (<http://corpus.byu.edu/coca/>), a significant example of the contribution that Corpus Linguistics research can offer for our understanding of the linguistic representation of the emotions. Recent studies by Ogarkova and Soriano (2014a, 2014b) on metaphors for the emotion “anger” go a step further providing Corpus Linguistics evidence from a cross-cultural point of view. However, many questions remain in contemporary metaphor theory, and research still struggles with the methodological strategies required to adequately explore its object of investigation.

The complexities of these methodological issues have been repeatedly posed in several noteworthy studies (cf. *inter alia* Barcelona, 2002, 2003a [2000]; Cameron & Low, 1999; Kövecses, 2011; Pragglejaz Group, 2007; Steen, Dorst, Herrmann, Kaal, Krennmayr, & Pasma, 2010; Valenzuela & Soriano, 2005). Nevertheless, empirical/experimental evidence in Cognitive Linguistics, which could be derived from investigations with human subjects themselves, and thereby support the reality of the cognitive processes behind the conceptual and linguistic representation of emotions, is still insufficient. Thus, the present study attempted to address this issue by developing a statistically supported empirical procedure with human subjects in order to verify further the psychological reality of the conceptual construals often claimed to motivate linguistic representations. The study moved through several pilot investigations, two of which are reported in Ponterotto (2012, 2014), and which led to the more formalized statistically supported methodology of the present study. After a brief review of the pilot phases, the results of the final investigation are presented.

The empirical procedure is developed and verified through the exploration of the conceptual link between motion and emotion. A test protocol was constructed aimed at eliciting judgements by human subjects regarding the possible link between motion verbs and emotional states. In particular, the study investigates the possible conceptual connection between the physical movement of jumping and the emotional state of happiness.

2. Aims

The aim of this paper is thus first of all methodological. By means of a statistically supported investigation designed to uncover the possible existence

of a conceptual construal linking motion and emotion, it attempts to suggest methodological strategies useful for research in Cognitive Linguistics on this topic. For this specific study, this motion/emotion construal is hypothesized to be represented linguistically in some contexts by the use of several motion verbs. The investigation focuses on motion verbs featuring the semantic trait of jumping, or jump-like movement, to evoke the emotional state of happiness. The study is also cross-linguistic. By observing two typologically different languages (English and Italian), it aims to lend further support on the one hand to theoretical positions in cross-cultural/linguistic research regarding the co-presence of similarity/difference in conceptualization and, on the other hand, to the methodological framework for its investigation.

3. Research rationale

We shall now briefly refer to the major theoretical and methodological questions which motivated this research direction.

Within research on the cognitive processes underlying emotion representation, many studies have focused on the role of metaphor and its ability to convey the subtle nuances of emotional experiences (cf. *inter alia* Athanasiadou, 1998, 2014; Fainsilber & Ortony, 1987; Foolen, Lüdtkke, Racine, & Zlatev, 2012; Fussell, 2002; Fussell & Moss, 1998; Gibbs, Leggitt, & Turner, 2002; Kövecses, 1990, 2000, 2002b, 2003; Ortony, 1975). In Psychology, several studies have pointed to the presence of metaphorical links between spatial location and affect (for instance, *feeling up* or *feeling down*). The study by Meier and Robinson (2004), for example, provides experimental evidence for an association between affect and vertical position, evidence which seems to support hypotheses concerning the grounding of affect in sensorimotor perception (cf. *inter alia* Casasanto & Dijkstra, 2010; Crawford, Margolies, Drake, & Murphy, 2006; Lakoff & Johnson, 1999; Neumann, Förster, & Strack, 2003). In Cognitive Linguistics, it has been suggested that emotions are embodied, i.e., grounded in human bodily experiences (cf. Evans & Green, 2006; Gibbs, 2005). In Conceptual Metaphor Theory, it is commonly argued that, although constrained by differences determined by both cultural specificity and individual life situations, emotions present shared conceptual configurations, and consequently similar linguistic realizations (cf. for example, Athanasiadou & Tabakowska, 1998; Kövecses, 2002a; Lakoff & Johnson, 1999; Zlatev, Racine, Sinha, & Itkonen, 2008).

One of the emotions extensively studied is “happiness”, an emotional state claimed to be conceptualized through a wide range of metaphorical frameworks, among which are found a set of evaluatively positive metaphors, such as: HAPPINESS IS FEELING LIGHT (not heavy) (*I was floating*), HAPPINESS IS UP (*I’m feeling up today*), HAPPINESS IS BEING IN

HEAVEN (*I was in seventh heaven*) (cf. Kövecses, 1991, 2008). In both English and Italian, we can find many conventionalized expressions apparently motivated by such a metaphorical conceptualization; in English: *flying high, in seventh heaven, on cloud nine, over the moon, walk on air*; in Italian (with their literal glosses): *essere al settimo cielo* [to be in seventh heaven], *salire alle stelle* [to climb up to the stars], *toccare il cielo con un dito* [to touch the sky with your finger], *volare dalla gioia* [to fly for joy], *sentirsi su* [to feel up].

Some scholars have described the role apparently played by motion verbs in representing emotional states. Faber and Mairal Usón (1999) highlight how choice of verb in English conveys the subject's perception of a particular emotion. Against the background of research on the typological differences of motion event representation (Özçalışkan & Slobin, 1999; Slobin, 1996, 1997, 2004, 2006; Talmy, 1985, 1991, 2000), the question of 'metaphorical motion events' has been posed (Özçalışkan, 2004) and has also been explored from a cross-linguistic perspective (cf. Özçalışkan, 2003, 2005; Athanasadiou, 2014; Zlatev, Blomberg, & Magnusson, 2012).

Now the emotional state of happiness is often evoked through the use of a motion verb like "jump". In fact, in English we find the conventionalized expression *Maria was **jumping for joy***; in Italian, we likewise find the expression *Maria **saltava dalla gioia*** [*Maria was **jumping for joy***]. This line of reasoning led us to our basic research question, i.e., the possible existence in both English and Italian of an association in conceptualization between the movement "jumping" and the emotion "happiness". The present research then attempted to develop a cross-linguistic investigative method for verifying the existence of a conceptual link between the emotional state of happiness and some motion verbs encoding the semantic feature of "jumping".

4. The pilot studies

Before presenting the data of the present study, this section summarizes the pilot phases of this investigation (in this paper labelled 'Pilot Study 1', 'Pilot Study 2', and 'Pilot Study 3') on the link between motion verbs and the domain of emotional states.

4.1. PILOT STUDY 1

The first pilot study, reported in Ponterotto (2012), made a random selection of fifty verbs in both languages (English and Italian) and submitted a questionnaire to two small groups of subjects (English-speaking and Italian-speaking), who were asked to describe for each verb the type of movement encoded and then to state if, in their opinion, the verb evoked an emotional state, and which emotional state. The stimulus items (the motion verbs) were presented with a model

TABLE 1. *Example of presentation of target items in the English questionnaire*

Verb	Type of movement (or movements)	Does the verb evoke an emotional state? If so, which one?
<i>She went across the room</i>		
... bolted ...		
... bounced ...		
etc.		

sentence which included the path as “across the room” (e.g. *She went across the room*). An example from the English is given in Table 1.

For most verbs, the subjects of both language groups produced detailed descriptions for movements and consistently associated emotional states with them. Moreover, in this first pilot study, the emotion “happiness” emerged frequently. When we considered the verbs associated by the English-speaking subjects with this emotion, we found a somewhat systematic response across the subjects linking certain verbs with this emotion (like *bounce*, for example). Then, when we looked at the terms given by the subjects to describe the movements, we noted that despite the presence of a wide variety of descriptions, most of the responses included terms like *jump*, *up*, *up and down*, *airy*, and *lightly*. A similar pattern emerged for the Italian language where the responses included terms like *salti* [jumps], or *su* [up], or *su e giù* [up and down], or *staccandosi da terra* [lifting oneself off the ground].

On the basis of this first data collection, a specific hypothesis began to take shape. First of all, the verb/movement/emotion associations seemed to confirm that, in both languages, specific movements encoded in the motion verbs are often associated with specific emotional states. Second, as far as “happiness” is concerned, the emotion often seemed to be represented by several motion verbs, encoding a specific type of upward movement, which we termed “jump-like”. These observations led to the hypothesis of a conceptual construal linking this specific emotion, happiness, with some verbs encoding upward movement and in some cases with a specific manner of motion: jumping.

4.2. PILOT STUDY 2

In order to verify this hypothesis, the next step was to narrow the focus of the investigation and to refine the investigative design. For this second phase, it was decided to elicit judgements referred only to the emotional state of happiness, to use a larger number of subjects (35 subjects for each language group), and to incorporate statistical tools for the quantitative analysis. The results, reported in Ponterotto (2014), revealed a statistically significant association between “happiness” and some verbs encoding jump-like

movements for both groups: in the Italian-speaking group, the verb *saltellare* [skip, hop], (z -test for proportions-Dependent Groups $p < .05$); in the English-speaking group, the verbs *bounce*, *hop*, and *skip* (z -test for proportions-Dependent Groups $p < .05$). Moreover, in the inter-group comparison between the highest-ranking verb in the English group (*bounce*) and the highest-ranking verb in the Italian group (*saltellare* [skip, hop]), a z -test for proportions-Independent Groups revealed no significant differences, leading to a conclusion of similarity. In other words, the statistically supported results pointed to an association in both the English and Italian groups between a jump-like upward movement and the emotional state of happiness.

4.3. PILOT STUDY 3

However, despite the basic similarity which emerged in the second study, an ex-post re-examination of the data led us to reflect on the wide variety of terms produced by both the Italian-speaking subjects and the English-speaking subjects for both movements and emotions. Responses were by no means totally similar across informants, a fact which suggested the existence of a complex, articulated conceptualization both of the types of movement encoded in the verbs and of the emotional states associated with them. A closer investigation of these descriptive terms was thought to be in order for those motion verbs which had emerged statistically in Pilot Study 2 as more salient, and which is reported in the following section.

4.3.1. Procedure

Following McNaught and Lam (2010), where the *Wordle* software tool is used to analyze qualitative data of informants' responses, we submitted our data to the program *Wordle* (available on the website, www.wordle.net). A word cloud is a special visualization of text in which the more frequently used words are effectively highlighted by occupying more prominence in the pictorial representation. This prominence emerges by means of graphic highlighting, including font size, and position, as well as depth, breadth, and, if required, colour of lettering. The algorithms used to balance various aesthetic criteria and create the distinctive *Wordle* layouts are described in Viegas, Wattenberg, and Feinberg (2009) and in Feinberg (2010).¹

[1] Briefly, from a technical point of view, *Wordle* assigns a numeric weight to each word. The formula is: weight = word count. *Wordle* normalizes the weights to an arbitrary scale, which determines the magnitude of various constants that affect the resulting image. It is then able to turn words into graphical objects and to position those objects in space. For each word, *Wordle* constructs a font with a point size equal to the word's scaled weight, then uses the font to generate a Java2D (Feinberg, 2010; Viegas et al., 2009). For the advantages and limits of the tool, see Sinclair and Cardew-Hall (2008) and McNaught and Lam (2010).

It was thought that such a graphic representation could reflect the conceptual map, so to speak, of the entire group of informants, i.e., which semantic traits were more salient for movements and which descriptive terms were more frequently used for the emotional state.

Thus, in order to give a visual description of the major differences between the Italian-speaking subjects and the English-speaking subjects in the conceptualization of the link between motion verbs and the emotional state of happiness, ‘word clouds’ were generated for those verbs which had registered the highest statistically significant values in the results of Pilot Study 2, i.e., *bounce*, *skip*, and *hop* for English and *saltellare* [skip, hop] for Italian. For each motion verb, all the responses (whether single-word or multi-word units) of all the thirty-five subjects for each group were inserted into the source text file of the *Wordle* software program, first for movements and then for emotions, and relative ‘word clouds’ were generated.

We here suggest that the ‘word cloud’ can be said to approximate a representation of the most salient conceptualization of each group of thirty-five speakers. In other words, by means of graphic letter evidencing, it represents the movement-related and emotion-related senses judged by the speakers to be potentially encoded in the verbs.

4.3.2. Results of the word-cloud analysis

We now give the generated images, first for “Movements” and then for “Emotions”, of the statistically significant verbs (Italian *saltellare* [skip, hop] and English *bounce*, *skip*, and *hop*).

In Italian, for movements, the most salient terms are *salti* [jumps], *camminare* [walk] *piccoli* [small]. In fact, the protocols often reported *camminare con piccoli salti* [walking with small jumps] (Figure 1).

For emotions, it can be seen in Figure 2 that what emerges is a group of terms synonymous with, or related to “happiness”. They were *gioia* [joy], *allegria* [glee, mirth], *felicità* [happiness], followed by words clustering close to the central terms like *spensieratezza* [carefreeness, lightheartedness], *contentezza* [contentment, gladness].

In English, for movement, the most prominent terms for **bounce** were *lightly*, *fast*, *quickly*, *jump*, *light*, followed by terms clustering close to the central terms like *hopping*, *spring*, *hop*, *energetic*, *airy*, and we can also see the assignment of emotional terms like *easy* or *happily* (Figure 3).

For **skip**, the most prominent descriptors are *hop*, *fast*, *quickly*, *alternating*, *bounce*, *feet*, *forward*, *prancing*, *light*, *foot* (Figure 4).

For the motion verb **hop**, the sense of “jumping” is obviously extremely salient, since besides the terms *one*, *foot*, *leg*, the word cloud yielded the prominent visualization of *jump*, *jumping*, and *jumps* (Figure 5).



Fig. 4. Wordle cloud layout for total responses of informants for “movements” associated with the English word *skip*.



Fig. 5. Wordle cloud layout for total responses of informants for “movements” associated with the English word *hop*.

For emotions, for the word **bounce**, the term *happiness* emerges with evident prominence; other terms are only very slightly associated: *excitement*, *playful*, *fun*, *exhilaration*, and *active* (Figure 6).

For the motion verb **skip**, the term *happiness* is again salient, and we find a minor presence of the terms *carefree*, *fun*, and *joy* (Figure 7).

For the motion verb **hop**, *happiness* again emerges as a very prominent term, but is associated with several related terms: *playfulness*, *fun*, *playful*, *excitement* (Figure 8).²

[2] For this verb, we also find words which are unrelated to the emotion “happiness”, terms such as *embarrassing*, *anxiety*, *speed*, *goofy*, and *pain*. However, this is probably due to associations of *hop* also to negative situations of difficulty in ambulation. At any rate, the association of the motion verb *hop* with the emotion “happiness” emerged saliently.



Fig. 6. *Wordle* cloud layout for total responses of informants for “emotions” associated with the English word *bounce*.



Fig. 7. *Wordle* cloud layout for total responses of informants for “emotions” associated with the English word *skip*.



Fig. 8. *Wordle* cloud layout for total responses of informants for “emotions” associated with the English word *hop*.

4.3.3. *Conclusions of the word cloud analysis*

The similarities and differences emerge clearly from the word cloud maps.

The Italian subjects associated “happiness” mainly with one verb *saltellare* [skip, hop], perceived as walking accompanied by small jumps. The emotional state of happiness, however, is expressed by a set of related terms: *gioia* [joy], *allegria* [glee, mirth], *felicità* [happiness], *spensieratezza* [carefreeness, lightheartedness], *contentezza* [contentment, gladness]. So the conceptualization of “happiness” in the Italian group seemed to be somewhat complex, encompassing various nuances and multiple labels for this emotional state.

The English speakers, on the other hand, associated more than one verb with the emotional state, *bounce*, *skip*, and *hop*, each one foregrounding differently clustered associations but all three featuring a jump-like movement. In comparison with the Italian speakers, the English speakers seemed to produce fewer descriptive terms for the emotional state and indicated instead a consistent preference for the emotion term: *happiness*.

We can also note that the preferred choice of emotion term seemed to be “happiness” in the group of English-speaking subjects and “gioia” [joy] in the group of Italian-speaking subjects.

5. The present study

Although the use of word clouds can contribute to the interpretation of results, it can only be used as an adjunct tool. As suggested by McNaught and Lam (2010), *Wordle* is useful primarily either for preliminary analysis or for ex-post validation of previous findings. Thus, further empirical evidence seemed to be required.

The results of the pilot investigations revealed for both English and Italian an association between a jump-like upward movement and the emotional state of happiness. Thus, it was then decided to focus on the sense of “jumping” and explore this association for a larger set of similar motion verbs with statistical tools for the quantitative analysis. Thus, the last study posited a more focused hypothesis which can be formulated thus:

For some motion verbs encoding a jump-like upward movement, both speakers of English and speakers of Italian perceive the possibility of a conceptual link with the emotional state of happiness.

5.1. PROCEDURE

5.1.1. Target items

This empirical procedure again used a questionnaire. The target items, however, were selected in the following way. In the pilot studies, statistically significant values emerged for the English verbs *bounce*, *skip*, and *hop*, and for the Italian verb *saltellare* [skip, hop]. Since these verbs encode a manner sense whose dictionary definitions include a “jump-like” movement (a connotation which had emerged in our pilot data), it was decided to focus on this connotation of “jumping” by incorporating a larger set of similar motion verbs in the investigative design. A dictionary search enabled us to select other verbs, lexicographically recorded as equivalent, near-synonymous, or related to those resulting from the previous pilot studies. Thus, eight verbs were chosen for English and eight for Italian, all of which include, in some form or another or to some extent, the semantic trait of jumping. For the English language, the verbs were: *bounce*, *bound*, *hop*, *jump*, *leap*, *lollop*, *skip*, *spring*; for the Italian language, the verbs (indicated here with their dictionary equivalents in brackets) were: *ballonzolare* [skip about], *balzare* [leap, jump], *balzellare* [skip, hop], *saltare* [jump], *saltellare* [skip, hop], *salterellare* [hop,

skip], *scattare* [spring up], *sobbalzare* [jerk, start].³ For the present study, it was also decided to insert into the questionnaire a larger number of distractor items.⁴ Thus, the questionnaire in this study presented the eight target items along with eight distractor items. The sixteen verbs for each group were listed in random order. Since all the motion verbs selected as target items included the semantic feature of jumping or jump-like movement, the questionnaire in this study excluded the requirement of movement description and simply asked the subjects to state whether or not they associated the verb with the emotion “happiness”. Thus, unlike the open-ended format of the pilot studies, the subjects were given a closed questionnaire (yes/no). In other words, they were asked to check for each stimulus item either the yes column (+happiness) or the no column (–happiness). Examples of the questionnaires are found in ‘Appendix 3’.

5.1.2. Subjects

Each group of subjects (Italian-speaking and English-speaking) included thirty adults, male and female, between the ages of 18 and 35, making a total of sixty subjects. The Italian informants were university students primarily from the area of Rome, in central Italy. The English informants were from Canada, England, Ireland, and the United States, and included students and young teachers living temporarily in Rome or acquaintances contacted by email. The questionnaire was administered in person for the Italian-speaking group and both in person and on-line for the English-speaking group.

[3] For the English glosses, the bilingual dictionaries consulted were: *Oxford Dictionaries* (<<http://oxforddictionaries.com>>), *Collins Dictionary* (<<http://www.collinsdictionary.com>>), *bab.la* (<<http://en.bab.la>>), *The Free Dictionary* (<thefreedictionary.com>), *WordReference* (<www.wordreference.com>). However, the dictionaries often gave several equivalents such as: *balzare* [leap, jump, lollop, hop, skip, trip, dance, jig, bob, bounce], *balonzolare* [skip about, hop, skip, trip, dance, jig, bob, lollop, bounce], *balzellare* [skip, hop, dance, trip, cavort, prance], *saltare* [jump, leap, bound, spring, hop], *saltellare* [skip, hop, leap, bound, dance, trip, caper, frisk, cavort, prance], *salterellare* [hop, skip, trip], *scattare* [spring up, jump, leap, spring, dart], *sobbalzare* [jerk, start, bounce along, jump].

[4] The distractor items were not computed in the quantitative analyses. Distractors are used to control for study demand characteristics so that subjects are responding to the task at hand and not responding as they think the investigator wants them to. Distractors help mask the overall purpose of the study in order to ensure that responders answer objectively. In that way, by concealing, at least in part, the guiding research question, they reduce response set bias, thereby enhancing the objectivity, validity, and reliability of the responses. For English, the distractor items were: *creep*, *drop*, *limp*, *meander*, *slip*, *stagger*, *stumble*, *trudge*; for Italian, the distractor items were: *arrancare* [limp, hobble], *barcollare* [stumble, stagger], *inciampare* [stumble], *serpeggiare* [wind, meander], *piombare* [fall, drop], *scivolare* [slip, slide], *strisciare* [crawl], *zoppicare* [limp].

5.1.3. *Data analysis*

The results were quantified for the target items (the eight motion verbs) for both groups, English and Italian. The relative values which emerged were submitted to non-parametric statistical analysis.

5.2. RESULTS⁵5.2.1. *English data*

Table 2 reports the relative values of responses of total number of English-speaking subjects (30), associating motion verbs with jumping movement and the emotion “happiness” (in decreasing order and with bold face and shading of the highest percentages).

The highest percentages in the English group emerged for *bounce* and *jump* (both 100%), followed by *spring* (96.6%), *skip* (86.6%), *hop* (83.3%), *leap* (80%), and *bound* (73.3%). The lowest value resulted for the verb *lollop* (53.3%).

Z-tests for proportions-Dependent Groups were conducted in order to determine if there were statistically significant differences among the verbs regarding the strength of association between the motion verbs and the emotion “happiness”. The results of the statistical analysis for the English data are detailed in ‘Appendix 1’.

In the English data, *bounce* and *jump* score significantly higher than *bound* and *lollop* ($p < .001$), as well as *leap* ($p < .01$), and also *hop* and *skip* ($p < .05$); *spring* scores significantly higher than *lollop* ($p < .001$), *bound* ($p < .01$), and *leap* ($p < .05$); *skip* and *hop* are higher than *lollop* ($p < .01$). Thus, it would

TABLE 2. *Percentage of English-speaking subjects associating motion verbs with the emotion “happiness”*

English	
MOTION VERB	Emotion: HAPPINESS (%)
Bounce	100
Jump	100
Spring	96.6
Skip	86.6
Hop	83.3
Leap	80
Bound	73.3
Lollop	53.3

[5] I am especially indebted to Professor Joseph Ponterotto of the Fordham University Graduate School of Education, New York, for his invaluable feedback on the interpretation of the statistical data of this study.

seem that the strength of the association differs. In other words, in English, some motion verbs encoding a jumping movement display a stronger conceptual link with the emotional state. The strongest associations emerged for the set of verbs *bounce* and *jump*, followed closely by *spring*. The set *leap*, *hop*, *skip*, and *bound* follows, with the weakest association resulting for *lollop*.

5.2.2. Italian data

Table 3 reports the relative values for the responses of the total number of Italian-speaking subjects (30), associating motion verbs with the emotion “happiness” (ordered alphabetically and with bold face and shading of the highest percentages).

The highest percentage in the Italian group is for *saltellare* [skip, hop] registering 93.3% of positive responses. This was followed closely by the verb *saltare* [jump] (90%). Both *balzare* [leap, jump] and *salterellare* [hop, skip] emerged with a result of 76.6%, followed by *balzellare* [skip, hop] (66.6%), *sobbalzare* [jerk, start] (56.6%), and *ballonzolare* [skip about] (53.3%). The lowest value was for *scattare* [spring up] (40%).

Z-tests for proportions-Dependent Groups were conducted in order to determine if there were statistically significant differences among the verbs regarding the strength of association between the motion verbs and the emotion “happiness”. The results of the statistical analysis for the Italian data are detailed in ‘Appendix 2’.

In the Italian data, *saltellare* [skip, hop] scored significantly higher than *ballonzolare* [skip about] ($p < .001$), *balzare* [leap, jump] ($p < .05$), *balzellare* [skip, hop] ($p < .005$), *salterellare* [hop, skip] ($p < .05$), *scattare* [spring up] ($p < .001$), and *sobbalzare* [jerk, start] ($p < .001$). No significant difference emerged between *saltellare* [skip, hop] and *saltare* [jump]. The verb *saltare*

TABLE 3. *Percentage of Italian-speaking subjects associating motion verbs with the emotion “happiness”*

Italian	
MOTION VERB	Emotion: HAPPINESS (%)
Saltellare [skip, hop]	93.3
Saltare [jump]	90.0
Balzare [leap, jump]	76.6
Salterellare [hop, skip]	76.6
Balzellare [skip, hop]	66.6
Sobbalzare [jerk, start]	56.6
Ballonzolare [skip about]	53.3
Scattare [spring up]	40.0

[jump] follows, being significantly higher than four other verbs: *ballonzolare* [skip about] ($p < .001$), *balzellare* [leap, jump] ($p < .01$), *scattare* [spring up] ($p < .001$), and *sobbalzare* [jerk, start] ($p < .001$). Then comes *balzare* [leap, jump], significantly higher than three other verbs: *salterellare* [hop, skip] ($p < .05$), *scattare* [spring up] ($p < .001$), and *sobbalzare* [jerk, start] ($p < .05$), followed by *salterellare* [hop, skip], significantly higher than two other verbs: *scattare* [spring up] ($p < .001$) and *sobbalzare* [jerk start] ($p < .005$).

Thus, in the Italian-speaking group also, it would seem that the strength of the association differs. In other words, in Italian, some motion verbs encoding a jumping movement display a stronger conceptual link with the emotional state. The strongest association emerged for the set *saltellare* [skip, hop] and *saltare* [jump]. Then comes the set *balzare* [leap, jump] and *salterellare* [hop, skip], followed by *sobbalzare* [jerk, start] and *ballonzolare* [skip about], with the weakest association for *scattare* [spring up].

5.3. ENGLISH-ITALIAN COMPARISONS

An analysis of the global results reveals that, in both language groups, the emotion “happiness” was associated with some motion verbs encoding a jumping movement. Figure 9 presents a comparative view of the highest rankings in each group.

The relative frequencies for the association between motion verbs and the emotion “happiness” reported in Figure 9 revealed higher values for the English verbs *bounce* and *jump* compared to the Italian verbs *saltellare* [skip, hop] and *saltare* [jump]. This also suggested a stronger association for the English verb *jump* than for its Italian equivalent *saltare* [jump].

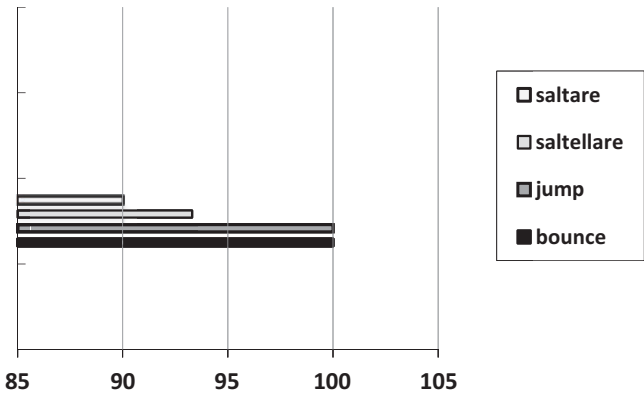


Fig. 9. Comparison of motion verbs with highest relative values of subjects associating motion verbs featuring jumping movement and the emotion “happiness” (English *bounce* and *jump*, Italian *saltellare* [skip, hop] and *saltare* [jump]).

A z -test for proportions-Independent Groups was then performed to determine if there exists a difference between the highest-ranking items of the set of Italian verbs (*saltare* [jump] and *saltellare* [skip, hop]) and the set of English verbs (*bounce* and *jump*). A statistically significant value ($p > .05$) emerged for the difference between *saltare* [jump] and both *bounce* and *jump* (to the advantage of *bounce* and *jump* (z -score = 1.80, 1 tail $p < .05$). No significant difference resulted for the comparison between *bounce* and *saltellare* [skip, hop], nor between *jump* and *saltellare* [skip, hop]. In other words, for the Italian verb *saltellare* [skip, hop]⁶ and the English verbs *bounce* and *jump*, the strength of the emotive association is equally potent. A z -test for proportions-Independent Groups was also performed for a comparison between the two groups of the mean values of the entire set of verbs (all 8 English verbs vs. all 8 Italian verbs). No significant difference emerged (z -score = 1.37; n.s.). The comparison was also conducted for the top (highest) four verbs across languages (z -score = 1.51; n.s.) and for the bottom (lowest) four verbs across languages (z -score = 1.48; n.s.). Again, no significant differences emerged. Thus, although to varying degrees, both groups of subjects (English and Italian) associated “jumping” movement with the emotional state of happiness.

From a semantic point of view, if we wished to compare the meanings of the top English words *bounce* and *jump* and the top Italian words *saltare* and *saltellare*, we could note how dictionary definitions register some subtle differentiating nuances. The *Collins* dictionary definition of the English word *jump* is “to move your body upward from the ground and often forward, backward, or sideways through the air by pushing with your legs”. This is similar to the *Treccani* dictionary definition for the Italian word *saltare*: “staccarsi di slancio da terra, rimanendo per un attimo sospeso in aria, con tutti e due i piedi sollevati, e ricadendo poi sullo stesso punto o a una certa distanza” [remove oneself with a leap from the ground, remaining suspended for a moment in the air, with both feet raised, and then falling on the same spot or at a certain distance]. Both seem to feature the image of the legs pushing the body into the air. The definition for English *jump*, however, also highlights direction: “often forward, backward,

[6] A lexicographical comment is in order here. For the glosses of the Italian verbs, we have given the most common equivalents in various bilingual dictionaries. For the purposes of this study, however, which focuses on the manner sense of jumping, we should perhaps report the definition found in the Italian monolingual dictionary *Treccani* (<www.Treccani.it/vocabolario>) of the word *saltellare*, which is entered as an intransitive verb deriving from *saltare* [jump] and is specified as “Fare dei salti piccoli e frequenti, procedere a saltelli; saltare continuamente...” [To make small and frequent jumps, to proceed by jumps, to jump continuously...]. Likewise we find in the *Oxford Dictionaries* the definition for *bounce* as “jump repeatedly up and down, typically of something springy” (<www.oxforddictionaries.com/definition>). Thus, the semantic feature of jumping is central to the verb *bounce* as well as to the verb *jump* in English. It is also central to the Italian word *saltellare* [skip, hop] as well as the verb *saltare* [jump].

or sideways”, and the action of “pushing”. The dictionary definition for the Italian verb *saltare* highlights position off the ground “remaining suspended for a moment in the air” and the aspect of falling down again. The dictionary definition of the English word *bounce* emphasizes a movement in one and then in an opposite direction. It also includes the connotation of the energetic “to move with a lot of energy and excitement”. The dictionary definition of the Italian word *saltellare* includes the word “salti” [jumps], highlighting, however, small repeated jumps: “fare dei salti piccoli e frequenti” [make frequent small jumps]. Similar to the connotation of energetic in the English word *bounce*, the Italian word *saltellare* includes liveliness in its definition “vivacemente” [lively].

5.4. CONCLUSIONS

First of all, by means of a different investigative design, the results confirmed the findings in the previous pilot study (Ponterotto, 2014), which had revealed significant values for the English verb *bounce* and the Italian verb *saltellare* [skip, hop]. More importantly, the results verify the hypothesis stated for the investigation: *for some motion verbs encoding a jump-like upward movement, both speakers of English and speakers of Italian perceive the possibility of a conceptual link with the emotional state of happiness*. Those verbs are primarily in English *bounce* and *jump* followed closely by *spring*, and in Italian *saltellare* [skip, hop] and *saltare* [jump]. Other similar verbs emerged, especially in English, although with a lower level of statistical significance. Thus, there seem to be sets of motion verbs which can carry the function of such a conceptual association. As far as the difference between the two groups is concerned, a greater number of verbs seems to constitute the English set.

These results point to the existence of a conceptual link between some motion verbs encoding a jump-like movement and a happiness-related emotional state. It seems that, despite the range of lexical meanings of the motion verbs investigated, the presence of a common semantic feature (jumping) can trigger an affective connotation, at least for the emotion under investigation here, i.e., “happiness”.

6. Discussion

The series of investigations provides empirical support for the hypothesis of a mental construal associating the concept of movement with the concept of emotion. For both groups of speakers, a link was confirmed between some motion verbs encoding a jump-like movement and the emotion happiness.

In other words, one of the ways this emotion finds its lexical realization is in several motion verbs which share the semantic feature of “jumping”. Thus we find partially fixed conventionalized expressions like *She/He was jumping for joy*

in English and *Saltava dalla gioia* [She/He was jumping for joy] in Italian, which are frequent in many contexts in contemporary discourse,⁷ as in the following examples:

- (1) London 2012 Olympics: *not jumping for joy* doesn't make you a traitor. (Alex Andreou) <<http://www.theguardian.com/commentisfree/2012/jul/27/london-2012-olympics-not-jumping-for-joy>>
- (2) Quanti neopadri si sono messi a *saltare per strada dalla felicità*...! (Natalia Aspesi, Festa d'aprile)
[How many brand new fathers began *jumping down the street from happiness*...!] <<http://d.repubblica.it/dmemory/1998/04>>
- (3) For a second she thought she couldn't look as the little dial spun toward a number. It stopped. She was almost a full 6 pounds lighter! She wanted to *jump for joy*. This was going to be a very good day! This was going to be the start of something great. ... The world looked brighter and she was happier. (*Shape*, 2006) <<http://corpus.byu.edu/coca>>
- (4) Il Pontificato di Francesco: "Un *saltare di gioia*" [The Papacy of Frances: "A *jumping for joy*"] <<http://vaticaninsider.lastampa.it/>> (last accessed 17 November 2015)

However, distinct differences also emerged in the study, consisting in both within-group and across-group variation. First of all, within both groups, statistically significant differences emerged among the verbs regarding the **strength of association**. In the set of Italian verbs, *saltellare* [skip, hop] and *saltare* [jump] and, to a lesser extent, *balzare* [leap, jump] and *salterellare* [hop, skip], seem to have strong associations with the emotion; in the set of English verbs, the strong associations resulted for *bounce*, *jump*, and *spring*, and, to a lesser extent, *hop*, *leap*, and *skip*. Moreover, the statistically significant difference which emerged between the English verbs *bounce* and *jump* and the Italian verb *saltare* [jump] suggests a stronger association for English *bounce* and *jump* than for Italian *saltare* [jump].

Furthermore, as illustrated in the word clouds in Section 4.3.2 above, it should also be emphasized that, in the pilot investigations, our subjects gave different and differentiated descriptions for the movements perceived in each motion verb. This points to the complex multiplicity of movement types as well as to the heterogeneity of their verbal representation.

In addition, it should likewise be noted that in the pilot studies the subjects also produced differentiated labels of the emotional states associated with the verbs. Within-group and across-group differences emerged in the happiness-related labels given by the subjects. The English language data seemed to

[7] A Google.com search for the expression "jumping for joy" revealed 4,000,000 hits. A *Google.it* search for "saltando dalla gioia" [jumping for joy] revealed 951,000 hits.

converge on the term “happiness”; the Italian language data, on the other hand, foregrounded several terms: “goia” [joy], “allegria” [glee, mirth], “felicità” [happiness], “spensieratezza” [carefreeness, lightheartedness], “contentezza” [contentment, gladness].⁸ Thus, what emerged was a cross-cultural difference in emotion labelling, an effect coinciding with reflections by Wierzbicka (1990, 1992a, 1992b, 1999, 2009) on the cross-linguistic and cross-cultural specificity of emotion terms.

7. Further reflections

The investigation reported here therefore can advance a number of conclusions, but leaves several theoretical and methodological problems unresolved.

The study explores an empirical approach for an investigation into similarities and differences across languages and cultures on the conceptualization of emotions. As far as the specific object of investigation is concerned, the conceptual association between movement and emotion, it developed a methodological strategy for deriving statistically supported empirical evidence for the role of motion verbs in representing emotional states. By eliciting judgements from human subjects, and by using statistically elaborated data analysis, the study was able to verify for the emotion “happiness” one of the many conceptual construals claimed to motivate its linguistic representation. Although represented by different formal configurations, i.e., different sets of motion verbs, the emotion “happiness” was associated by our subjects, although to varying degrees, with a physical jump-like movement. Second, the study confirms the centrality of the question of universality vs. cultural variation in research on conceptual construals. On the one hand, the data revealed fine-tuned differentiated subtleties in movement description and various labels for emotions, lending support both to the variationist perspective in Cognitive Linguistics (cf. Kövecses & Koller, 2006; Kristiansen & Dirven, 2008) and to the cross-cultural perspective in emotion research (cf. Ogarkova & Soriano, 2014a, 2014b). On the other hand, while unveiling the many differences between the two languages in the specific articulation of conceptual associations, the data also pointed to common patterns.

Nonetheless, several theoretical and methodological problems remain which could indicate future research avenues. We have shown that a common

[8] An anonymous reviewer has rightly called my attention to the need to explain these differences. It would be reasonable to suggest that differences between English and Italian are due to a complex cultural specificity, a hypothesis, however, which is beyond the scope of this argumentation and would require a dedicated interdisciplinary study encompassing, along with cognitive considerations, also historical, social, and anthropological reflections.

pattern in the construal motion verbs / emotion may lie in the coincidence of one or more of their shared semantic features. In our investigation, both our Italian-speaking and English-speaking subjects seemed to perceive an association between the emotion happiness and some motion verbs encoding jumping movements, which then led us to postulate a potential motion/emotion conceptual construal linking jumping upward movements with “happiness”.

Jumping is a physical behaviour which often accompanies the experience of this emotion. Would the semantic trait of jumping be merely the literal fact that people jump when happy?⁹ To what extent can we claim that this conceptual association is motivated by other cognitive processes?¹⁰

Now, the literature in CMT definitely seems to agree on the existence of the CM: HAPPY IS UP, whose cognitive reality has been demonstrated in psychologically oriented experimental research (cf. for example, Meier & Robinson, 2004; Weger, Meier, Robinson, & Inhoff 2007). In fact, Crawford et al. (2006, p. 1166) comment on the connection between the concept of verticality and that of happiness:

According to Lakoff and Johnson (1980, 1999), spatial concepts are learned through sensorimotor experience, and, as a result, are some of the few concepts that are understood directly rather than metaphorically. They note that such sensorimotor experiences often accompany subjective experiences; for example, happiness is accompanied by upright posture. Consequently, associations are learned between the subjective domain of happiness and the sensorimotor domain of verticality, producing a cross-domain mapping that allows spatial concepts to be used to conceptualise and describe the subjective experience of happiness.

Can we hypothesize that, along with verticality, the domain of movement also triggers mental access to the emotional domain of happiness through other cognitively motivated processes? Indeed, this association may be rooted in metonymical relations based on a behavioural response (cf. Barcelona, 2003b [2000]); Kövecses, 2008, 2013; Panther & Radden, 1999; Panther & Thornburg, 2007; Radden, 2002) to an emotional experience. In this case, when a person experiences a happy or joyful reaction to an event, her/his body tends to project itself upward. This physical response to felicitous events perhaps triggers a mental image of the body rising by means of slight jumping and extending upward into the air, as often represented in the common iconic

[9] I sincerely thank an anonymous reviewer for posing this question.

[10] Again, I thank an anonymous reviewer for directing my attention to this debatable issue. I am also indebted to Zoltan Kövecses on this point for his personal suggestions.



Fig. 10. A Google image featuring the emotion “Happiness”.

imagery of all kinds of print and digital media (cf. Forceville & Urios-Aparisi, 2009), for which the image in Figure 10 is an example.¹¹

We can also note that the etymological basis of both the English word “emotion” and the Italian word “emozione” [emotion] refers to movement. The *OED* notes the etymological origin as Latin *emovere*, from *e-* (variant of *ex-*) ‘out’ + *movere* ‘move’.¹² This historically encoded lexical association could point to an added culturally motivated correlation in conceptualization, at least where both Romance and Anglophone speakers are concerned, between emotions and movements. Thus, by way of both correlated experiential relations (jumping when happy) and perhaps metonymical processes (jumping for happiness), we may suggest that a mental frame can emerge, become schematized, and represent a link between affect and movement. This mental frame, in addition to the basic association of verticality (upward) with happiness, would also encode the added connotation of motion (jumping),

[11] Downloaded from Google images <<http://focusnjoy.com/wp/wp-content/uploads/2012/04/Happiness-needs-no-cause.jpg>>.

[12] It is interesting to note the reference to the etymological origin of the word by Zlatev, Blomberg, and Magnusson (2012, p. 424) in Foolen et al. (2012), which appears also in the John Benjamins presentation of the volume <<https://benjamins.com/#catalog/books/ceb.6/main>>.

at least for some motion constructions and in some contexts. However, evidence for the exact nature of this conceptual link between “jumping” and the emotional state of happiness can only be determined by additional experimental research.

Another methodological problem concerns the choice of emotion labels to be used in experimental/empirical investigations. In this study, for purposes of symmetry in our cross-linguistic comparison, the question to the informants used the word “happiness” for the English-speaking subjects and the word “felicità” [happiness] for the Italian-speaking subjects. But on what basis can we say that they are always equivalent? If it is difficult to establish equivalence of emotion labels across languages, as argued by Ogarkova, Soriano, and Lehr (2012), if emotion categories from two different cultural scripts are sometimes untranslatable, as affirmed by Wierzbicka (2004), then we have an additional complication which should always be taken into consideration for methodological procedures in cross-linguistic research on emotion representation.

As a concluding point, this study calls attention to the need for more empirically/experimentally grounded research in the exploration of the link between motion and emotion, whereby the investigative strengths of various theoretical/methodological frameworks (typology, cognitive grammar, construction grammar, corpus linguistics, but also experimental psychology and psycholinguistics) can be harnessed to devise valid scientific hypotheses and sound methodological procedures for future research. A substantial addition of solid experimental evidence would confirm the depth of knowledge and wealth of language data which to date have been produced by qualitative analysis in contemporary Cognitive Linguistics. In that way, research can move more safely towards the verification of the psychological reality of mental construals, hypothetically suggested in the literature to be present in people’s minds when giving voice to their conceptualizations.

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APPENDIX 1

Statistical data for English verb comparisons

English verbs		<i>z</i> -score	1 tail sig.	2 tail sig.	Conf. level
Bounce vs.	bound	3.25	.001	.001	99
	hop	2.41	.005	.05	95
	jump	0.0	n.s.	n.s.	
	leap	2.69	.005	.01	99
	lollop	5.04	.001	.001	99
	skip	2.12	.05	.05	95
	spring	1.01	n.s.	n.s.	
Bound vs.	hop	0.93	n.s.	n.s.	
	jump	3.25	.001	.001	99
	leap	0.60	n.s.	n.s.	
	lollop	1.62	n.s.	n.s.	
	skip	1.28	n.s.	n.s.	
	spring	2.62	.005	.01	99
Hop vs.	jump	2.41	.01	.05	95
	leap	0.32	n.s.	n.s.	
	lollop	2.69	.005	.01	99
	skip	0.35	n.s.	n.s.	
	spring	1.73	.05	.08	90
Jump vs.	leap	2.69	.005	.01	99
	lollop	5.04	.001	.001	99
	skip	2.12	.05	.05	95
	spring	1.01	n.s.	n.s.	
Leap vs.	lollop	2.25	.05	.05	95
	skip	0.68	n.s.	n.s.	
	spring	2.04	.05	.05	95
Lollop vs.	skip	3.0	.01	.01	99
	spring	4.39	.001	.001	99
Skip vs.	spring	1.40	n.s.	n.s.	

APPENDIX 2

Statistical data for Italian verb comparisons

Italian verbs		<i>z</i> -score	1 tail sig	2 tail sig.	Conf. level
Ballonzolare vs.	balzare	1.92	.05	.06	90
	balzellare	1.04	n.s.	n.s.	
	saltare	3.39	.001	.001	99
	saltellare	3.86	.001	.001	99
	salterellare	1.92	.05	.06	90
	scattare	1.02	n.s.	n.s.	
	sobbalzare	0.25	n.s.	n.s.	
Balzare vs.	balzellare	0.85	n.s.	n.s.	
	saltare	1.39	n.s.	n.s.	
	saltellare	1.83	.05	.07	90
	salterellare	0.0	n.s.	n.s.	
	scattare	3.04	.001	.005	99
	sobbalzare	1.65	.05	.10	90
Balzellare vs.	saltare	2.25	.01	.05	95
	saltellare	2.69	.005	.005	99
	salterellare	0.85	n.s.	n.s.	
	scattare	2.11	.05	.05	95
	sobbalzare	0.79	n.s.	n.s.	
Saltare vs.	saltellare	0.46	n.s.	n.s.	
	salterellare	1.39	n.s.	n.s.	
	scattare	4.69	.001	.001	99
	sobbalzare	3.10	.001	.005	99
Saltellare vs.	salterellare	1.83	.05	.07	90
	scattare	5.22	.001	.001	99
	sobbalzare	3.56	.001	.005	99
Salterellare vs.	scattare	3.04	.001	.005	99
	sobbalzare	1.65	.05	.10	90
Scattare vs.	sobbalzare	1.28	n.s.	n.s.	

APPENDIX 3

Questionnaires

A. Questionnaire for English-speaking subjects

I would like to ask your help with an experiment about emotional states. For example, to express sadness, sometimes we use the verb: *to fall* (“I fell into a deep depression”).

This questionnaire is about HAPPINESS. In the following list, can you indicate which verbs are sometimes used to express feelings of happiness?

Put a tick in the column yes or the column no.

	Verb associated with HAPPINESS	Yes	No
1	hop		
2	spring		
3	stagger		
4	trudge		
5	lollop		
6	creep		
7	leap		
8	stumble		
9	slip		
10	limp		
11	drop		
12	skip		
13	bounce		
14	bound		
15	jump		
16	meander		

B. Questionnaire for Italian-speaking subjects

Vorrei chiedere il tuo aiuto con un esperimento sugli stati emotivi. Per esempio in italiano per indicare la depressione si usa il verbo “cadere” (“Sono caduto in una profonda depressione”).

Questo questionario tratta l’emozione della FELICITÀ.

Nell’elenco che segue puoi indicare quali verbi possono essere usati per esprimere uno stato di felicità?

Metti una crocetta nella colonna Sì o la colonna No.

Verbi associati con la FELICITÀ		Sì	No
1	balzellare		
2	scattare		
3	barcollare		
4	arrancare		
5	ballonzolare		
6	strisciare		
7	balzare		
8	inciampare		
9	scivolare		
10	zoppicare		
11	piombare		
12	saltellare		
13	sobbalzare		
14	salterellare		
15	saltare		
16	serpeggiare		

NOTE: Translation of the instructions of the Italian questionnaire: I would like to ask your help with an experiment about emotional states. For example, to express sadness, sometimes we use the verb: cadere (“Sono caduto in una profonda depressione” [I fell into a deep depression]). This questionnaire is about HAPPINESS. In the following list, can you indicate which verbs are sometimes used to express feelings of happiness? Put a tick in the column yes or the column no.