

## Mechanisms involved in the formation of metaphorical classes within the framework of the class-inclusion model of metaphor comprehension

Omid Khatin-Zadeh, Danyal Farsani and Florencia Reali

According to Glucksberg's class-inclusion model of metaphor comprehension, metaphors are understood by the inclusion of the *topic* X into a metaphorical class of the *vehicle* Y. But what is the cognitive mechanisms through which X is included in the metaphorical class of Y? Drawing on previous literature on the roles of semantic features, metonymy, and relations in metaphor processing, this article presents a new proposal according to which every metaphorical class is defined by one of three categories of a concept's characteristics: *semantic features*, *metonymic aspects*, or *relational aspects*. Each category may consist of a large set of such characteristics. One characteristic (or at most several characteristics) usually defines the metaphorical class of Y. Additionally, it is proposed that the metaphorical class is created by the suppression of metaphorically-irrelevant characteristics, consistent with ideas from Relevance Theory. The result of this process is a metaphorical class which has a higher degree of abstractness compared to the literal class of Y. Finally, it is proposed that the three categories of characteristics may be in interaction with each other. Therefore, in some cases, two or even three categories of characteristics may be involved in the formation of a metaphorical class, but one specific category plays the main role in the process.

**Keywords:** class-inclusion, metaphor comprehension, semantic features, metonymic aspects, relational aspects

### 1. Introduction

Metaphor is a power expressive tool of language and other semiotic systems (e.g., pictures, gestures) in our daily lives. Although metaphor is a prevalent feature of our daily communication, it is so complex that it has generated a huge body of discussions and opposing views (e.g., Cameron, Maslen, Todd, Maule, Stratton, & Stanley, 2009; Lakoff & Johnson, 2003; Steen, 2015). It has been proposed by proponents of the Conceptual Metaphor Theory (e.g., Lakoff & Johnson, 1999) that metaphorical mappings are essential for how we conceive abstract concepts from concrete ones. In this and other similar traditions, the label "X IS Y" is used to refer to the conceptual mapping underlying a metaphorical expression. For example, the metaphorical mapping X IS A PIG is a mapping between the domain of pig life and the life of a particular person X. This may appear in language as the metaphorical expression *John is rolling around in the mud of his miserable life* or as millions of other metaphorical expressions. The terms *topic* and *vehicle* have been used to refer to X and Y, respectively. In a metaphorical mapping, Y is used to represent X, although there might be no literal similarity between them. In addition to verbal language, metaphorical expressions can be found in other semiotic systems such as still images, moving pictures (e.g., Forceville, 2007; Stampoulidis, Bolognesi, & Zlatev, 2019; Zlatev & Stampoulidis, 2018) and gestures (e.g., Khatin-Zadeh, Farsani, & Reali, 2022; Kimmel, 2014; Poppi & Kravanja, 2017; Farsani, Lange, & Meaney, 2022).

A question that is commonly raised is how people can interpret *metaphorical expressions*, which for simplicity are called metaphors in this paper. A variety of theories have been suggested to describe how metaphors are produced and how they are comprehended. Among theories of metaphor comprehension, *comparison* and *categorization* theories are often contrasted with one another. Comparison theories (e.g., Gentner, 1983; Ortony, 1979; Tversky, 1977) hold that every metaphor is understood on the basis of a comparison or an analogy between two domains (X and Y). On the other

hand, categorization theories (e.g., Glucksberg, 2001, 2003) assume that every metaphor is understood through a categorization process.

The *class-inclusion model* of metaphor comprehension, one of the main categorization views of metaphor comprehension, proposes that metaphors of the type X IS Y are understood through the direct inclusion of X into an abstract class represented by Y (Glucksberg & Keysar, 1990, 1993; Glucksberg, McGlone, & Manfredi, 1997). According to this model, the metaphor *my job is a jail* is comprehended as a class-inclusion statement that puts *my job* and *jail* into a common class of entities that are restrictive and confining (Glucksberg, 2001; Glucksberg & Keysar, 1990, 1993; Glucksberg, McGlone, & Manfredi, 1997; Glucksberg, Manfredi, & McGlone, 1997; Glucksberg, Newsome, & Goldvarg, 2001). All members of this class have some kind of association with the features of “being confining” and “being restrictive”. In this metaphor, *jail* represents a category of entities that may include many members other than *my job*, such as my boss, my illness, and my exams. All of these entities can create some kind of restriction for people. According to Khatin-Zadeh and Vahdat (2015) this class is best represented by the most typical member: the best one to be placed in the vehicle position (Y) of the metaphor. Members of this class may have very different concrete characteristics. Prison, as a building, is a member of this class. Walls and bars of prison are restricting. My boss and my illness could be two other members, which can also be restricting and confining. However, these members share very little concrete features. In other words, members of a single metaphorical class may be very different in terms of their concrete features. However, they can be included into a single metaphorical class represented by a typical member. The proposal is that the high typicality of this member is a critical factor in the formation of an *apt metaphor*: a metaphor that can be easily understood by the comprehender, even if it is heard for the first time. In fact, this is the core claim of the class-inclusion model of metaphor comprehension, according to which literal and metaphorical class-inclusion statements are understood via similar processing mechanisms and communicative principles (Keysar & Glucksberg, 1992).

However, it is less clear how a metaphorical class is formed by comprehenders during metaphor comprehension. This is the main question that this article intends to answer. Previous work has discussed the roles of semantic features, metonymy, and relations in metaphor processing. Each one of the following three sections reviews one group of these approaches. Then, in Section 5, we synthesize and suggest that every metaphorical class is defined by one of the three categories of a concept’s characteristics: a semantic feature of the vehicle, a metonymic aspect of the vehicle, or a relational aspect of the vehicle. In Section 6, based on this synthesis and the assumptions of *Relevance Theory* (Wilson & Carston, 2006), we propose that metaphorical classes are created by the suppression of metaphorically-irrelevant characteristics that can be different in type, and as the number of defining characteristics diminishes in the class, the degree of abstractness increases. In Section 7, we discuss abstractness/concreteness of metaphorical classes on the basis of our proposal. We conclude in Section 8 that our proposal is in fact an extension of the class-inclusion model of metaphor comprehension (e.g., Glucksberg, 2002, 2003) and offers a more comprehensive picture of how metaphorical classes are formed in the mind of the comprehender during the process of metaphor comprehension.

## 2. Metaphorical classes defined by a semantic feature

According to Khatin-Zadeh and Vahdat (2015) the metaphorical mapping X IS Y is understood by including X into a metaphorical class that is defined by one or at most several salient semantic features of Y. They further suggest that the metaphorical class of Y is a general category that may include a variety of entities sharing a salient semantic feature (p. 358). From this perspective, metaphorical classes are general because they are defined by one or at most several semantic features. More specific

classes (literal classes) are defined by a large number of semantic features. Since members of a metaphorical class share just one or several semantic features, they could be very different in terms of their other semantic features. Therefore, members of a metaphorical class may be very different in terms of their superficial concrete features. For example, in the metaphor *a rumor is a virus*, the metaphorical class of *virus* includes all fast-spreading things. In other words, the semantic feature of FAST SPREAD defines the metaphorical class of *virus*. This metaphorical class has a large number of concretely different members, all of which share the single semantic feature that defines the metaphorical class; however, these members are very different in terms of their other semantic features.

It has been suggested that during the processing of the metaphorical mapping X IS Y, the metaphorically-irrelevant features of Y are filtered out or inhibited (Glucksberg, Newsome, & Goldvarg, 2001). Gernsbacher and Robertson (1999) use the term “suppression” to describe a very similar process through which the interference of extraneous or unnecessary information is attenuated. From the perspective of the model suggested by Khatin-Zadeh and Vahdat (2015), it can be said that during the processing of the metaphorical mapping X IS Y, a salient feature of Y is activated and creates the metaphorical class, while the metaphorically-irrelevant features are suppressed (Khatin-Zadeh, Khoshshima, & Yarahmadzahi, 2018). For example, in the processing of the metaphor *my job is a jail*, the feature RESTRICTIVE of *jail* defines a metaphorical class in which *my job* is included. The remaining features of Y (WALLS, GUARDS, etc.) are suppressed throughout processing. However, these features may be activated later to elaborate on the metaphor via analogy. For example, one may say *my boss is a jail guard, and the bills I have to pay are like chains around my ankles*. Here, the main metaphorical expression (*my boss is a jail guard*) is initially comprehended through the activation of relevant salient features of the topic. However, as discourse unfolds, the metaphor may be elaborated through the activation of additional features. Although activating metaphorically-irrelevant features is not necessary for understanding the main metaphorical expression, they may serve to elaborate on it. In fact, the main metaphorical expression can be understood before this additional information is provided. The empirical evidence for the formation of metaphorical classes on the basis of a single semantic feature and the suppression of metaphorically-irrelevant features has been provided by several past studies (e.g., Glucksberg, 2003; Glucksberg, Newsome, & Goldvarg, 2001; Khatin-Zadeh & Khoshshima, 2021).

This analysis, of course, assumes a componential nature for the meaning of concepts. That is, the whole meaning of a concept consists of a set of separable semantic features or components. When these components of meaning are combined, the whole meaning of the concept is created. This assumption is compatible with distributed models of conceptual representations, according to which concepts are represented by a connectionist network of nodes (Caramazza, Hillis, Rapp, & Romani, 1990; Masson, 1995). In such networks, every semantic feature is represented by a node, and conceptual processing is conducted through the coactivation of a concept’s features or the coactivation of corresponding feature nodes (McRae, de Sa, & Seidenberg, 1997; Moss, Tyler, & Taylor, 2007; Tyler, Durrant-Peatfield, Levy, Voice, & Moss, 1996; Tyler & Moss, 2001; Tyler, Moss, Durrant-Peatfield, & Levy, 2000; Vigliocco, Vinson, Lewis, & Garrett, 2004).

### 3. Metaphorical classes defined by a metonymic aspect

Metonymy is a special phenomenon of figurative language (or other semiotic systems) where one sign (e.g., a word) is used in place of sign denoting a closely related concept (e.g., Yule, 2006). For example, when we say *Hemingway is in my bag*, we mean a book written by Hemingway. The topic of relating metaphor and metonymy has been discussed much in the literature, but here we can illustrate this with the help of the work of Kövecses (2000, 2005, 2013).

According to Kövecses (2005) many metaphors have a metonymic basis. For example, the emotional state of anger is accompanied by an increase in body heat. Therefore, ANGER is metonymically associated with hot objects. Kövecses (2000) proposes that physiological features that accompany anger provide the cognitive motivation to metaphorically describe the angry person in terms of a pressurized container. Discussing the conceptual metaphor HAPPY IS UP, Kövecses (2005) proposes that this metaphor is motivated by bodily experiences that accompany the state of happiness. When we are happy, we move around, are active, and jump up and down. In such cases, a certain metonymic aspect could be the defining feature of a metaphorical class. For example, all concepts that are metonymically related to heat may be included in a metaphorical class defined by the metonymic aspect of heat. Finally, Kövecses (2013) argues that correlation-based metaphors emerge from a metonymic stage in which the elements of a frame-like mental structure are generalized to a concept that lies outside the initial frame. For example, in HAPPY IS UP, the element UPWARD is generalized to the domain (frame) of HAPPY and is used to represent the whole domain (frame).

#### 4. Metaphorical classes defined by a relational aspect

According to Gentner's (1983) structure-mapping theory, metaphoric expressions are understood via the mapping of relations among elements in the vehicle Y (which is called "base") into relations present in the topic X (called "target"). That is, every relation between two elements in the vehicle is mapped into a corresponding relation in the target domain. According to Bowdle and Gentner (1999), the system of relations that holds among elements in the vehicle is similar to the system of relations that holds among elements in the target domain, no matter whether the elements are similar to each other or not. The relations in the target domain are understood in terms of the relations in the vehicle. An example discussed by Bowdle and Gentner (1999) is *Socrates was a midwife*. This metaphor is understood by the highlighting and the mapping of relations: Socrates helped his students to produce ideas in the same way that a midwife helps a mother to produce a baby.

Some mechanisms proposed by the structure-mapping theory for analogical reasoning are used to understand metaphor comprehension when metaphorical classes are defined by a relational aspect. In analogical reasoning, the syntactic properties in the compared domains are the relevant ones in the mapping operation, rather than the specific semantic attributes. That is, when an analogical mapping takes place, relations between objects, rather than semantic attributes of objects, guide the mapping from the vehicle domain to the target domain (Gentner, 1983). In the *Socrates was a midwife* example, it may be said that a metaphorical class is formed on the basis of the relationship between an object that HELP PRODUCTION (*Socrates* and *midwife*), PRODUCER (*mothers* and *students*) and PRODUCED (*children* and *ideas*). Then, for example, the concepts of "Socrates" and "midwife" are elements of the same metaphorical class because they share the relational attribute of being "facilitators in the production of something". The concept of "midwife" is a typical member of this metaphorical class, and therefore, it is well suited for representing this class. Additional objects involved in the relation are mapped as well: Socrates helped "his students" produce ideas in a way comparable to the way in which a midwife helps "a mother" produce "a baby". When the metaphor *Socrates was a midwife* is processed, the concept of "students of Socrates" is automatically included in a metaphorical class understood in terms of being "aided producer of something".

### 5. Three categories of meaning aspects

The semantic space of concepts has been the subject of many studies in recent years. Among the models that have been proposed, distributed models of conceptual representation have been particularly noteworthy. In so-called “localist” connectionist models, concepts are represented by smaller units of meaning (Moss, Tyler, & Taylor, 2007; Taylor, Devereux, & Tyler, 2011), each represented by a node in the neural network. From this perspective, the meaning of any concept has a componential nature; that is, the small units of meaning, which are represented by nodes in a connectionist network, combine and create the whole meaning of the concept.

Drawing on the assumptions of such models of conceptual representation, and the ideas summarized in the previous three sections, we distinguish between three categories of concepts’ characteristics:

- **Semantic features:** those characteristics that are inherent in the concept itself. These features have almost nothing to do with the associations and relationships of that concept and other concepts. For example, the feature SLIM is a semantic feature of needle. In the metaphor *Sara is a needle*, the metaphorical class of *needle* is defined by this semantic feature. Here, Sara is included in a metaphorical class that consists of all slim things. Other features of needle such as METALLIC and PAINFUL have no role in this metaphorical class. Similarly, other features of Sara such as HUMAN and FEMALE do not have any role when Sara is included in this metaphorical class. The only thing that is important is the feature SLIM.
- **Metonymic aspects:** characteristics of a concept that have a metonymic nature. According to Yule (2006), metonymic aspects of a concept can be based on a container-content relation (*bottle/water*), a whole-part relation (*car/wheels*), or a representative-symbol relationship (*president/the Whitehouse*). As mentioned in Section 3, the metonymic aspect UPWARD defines a metaphorical class that includes a set of concepts such as *healthy*, *good social position*, *happy*, and *virtue*. All of these concepts have some kind of metonymic relationship with the concept of “up”. The conceptual metaphorical mapping HAPPY IS UP is one of such metaphorical mappings that is widely used. In this metaphorical mapping, the concept HAPPY is included in a metaphorical class that consists of all concepts that have a metonymic relationship with the concept UP.
- **Relational aspects:** characteristics of a concept that are based on a relation between two elements in the domain of that concept. As pointed out in Section 4, according to Gentner’s (1983) structure-mapping theory, metaphors are understood through alignment and mapping of these relations from the vehicle into relations in the topic. The relation between two elements in the domain of a concept could be the defining feature of a metaphorical class. For example, the relationship between *originator* and *originated* could be the defining feature of a metaphorical class that has many members. The metaphor *Descartes is the father of analytic geometry* is one of such metaphors. In this metaphor, Descartes is included in the metaphorical class of *father*. All scientists and artists who have been the originators of a field of science or art are members of this metaphorical class. This metaphorical class is defined on the basis of the relationship between an originator (a producing element) and an originated (a produced element). The rest of the characteristics of these members play no role in the metaphorical class.

We propose a synthetic account according to which we cannot say that every metaphorical class is always defined by only one category of characteristics. In the definition of a metaphorical class, two or even three categories may be involved. Distinguishing between different types of defining characteristics could give us a clearer picture of how metaphorical classes are created. For example, a metaphorical class defined by a simple semantic feature may be processed differently from a relational metaphor where what defines the metaphorical class is the relation between objects rather than a simple attribute. This is supported by the findings of the studies that have provided evidence suggesting that while some metaphorical expressions are understood via a relation-based process (Gentner, 1983), other metaphors are understood through a property-based process (Glucksberg, 2003).

Depending on the nature of the metaphor and its metaphorical class, one of these categories of characteristics may play the main role in the definition of the metaphorical class, while one or two categories of characteristics may play a less significant role. This can be explained by the possible existence of some degree of overlap between categories of characteristics. For example, semantic features of a concept and its relational aspects may share some points. In other words, although we can talk about three categories of characteristics, we cannot say that for all concepts these categories of characteristics are completely separated. Therefore, in some cases, a feature-based mechanism could explain the other two mechanisms.

## **6. Metaphorical classes from the perspective of the Relevance Theory**

According to our proposal, every metaphorical class may be defined by a semantic feature of the vehicle, a metonymic aspect of the vehicle, or a relational aspect present in the domain of vehicle. When a metaphor is processed in a certain context, metaphorically-irrelevant information is excluded or suppressed by the comprehender. The excluded or suppressed information could be semantic features of the vehicle, metonymic aspects of the vehicle, or relational aspects in the domain of the vehicle. Here, we are faced with a challenging question: How are relevant aspects identified and irrelevant aspects excluded during the processing of metaphors? Relevance Theory information (Carston, 2002; Sperber & Wilson, 1995, 2008; Wilson & Carston, 2006) can help us describe this suppressive-oriented mode of processing. According to this theory, the understanding of an utterance is achieved through a process in which the comprehender's attention is drawn toward the most-relevant and the most-expected. In other words, the process of understanding is geared toward maximization of relevance (Gibbs & Colston, 2012).

The context of an utterance and the expectations of the addressee play a key role in making certain information relevant. In fact, the context of any utterance suggests which possible interpretations are relevant and which ones are irrelevant. Based on the context and expectations of the addressee, some parts of information are identified as irrelevant and are suppressed. If the context strongly suggests a metaphoric interpretation, the metaphorically-irrelevant information may be inhibited from the very beginning of processing. If a metaphoric statement is complex or if the context does not suggest a certain metaphorical interpretation, the comprehender may become engaged in complex inferential processes. In such cases, the comprehender may need additional time to understand that statement. However, this does not mean that comprehenders first analyze the statement and then reject the literal meaning (as suggested by standard pragmatic view of metaphor comprehension); rather, they continue processing the utterance until expectations of maximal relevance are satisfied (Gibbs & Colston, 2012). This is achieved after the maximal suppression or elimination of irrelevant information. In fact, it can be argued that this is the case with both literal and metaphorical sentences. As Giora (1998) argues, Relevance Theory assumes that literal and nonliteral utterances involve similar processes.

In the three mechanisms proposed for metaphorical class formation, metaphorical class is created by the suppression of metaphorically-irrelevant information. In these three suppressive processes, certain types of information are eliminated. In this sense, we can talk about three types of information that are involved in the formation of metaphorical classes. During the processing of a metaphor and the formation of a metaphorical class, some parts of these three types of information are suppressed or eliminated and the remaining parts are processed until the expectations of maximal relevance are fulfilled (Gibbs & Colston, 2012).

The selection of a semantic feature, a metonymic aspect, or a relational aspect is dependent on the saliency of these characteristics. If a semantic feature of the vehicle is very salient and fits the aspects of the topic that need to be highlighted, the metaphorical class is formed on the basis of this feature. This idea is compatible with Ortony's (1979) *saliency imbalance model*, according to which every metaphor is understood by attributing one salient feature of the vehicle to the topic. While the metaphorical class is formed on the basis of such salient semantic feature, other non-salient features, metonymic aspects, and relational aspects are suppressed. Conversely, if a metonymic or relational aspect is the salient one in the domain of the vehicle, the metaphorical class is formed on the basis of it, while other non-relevant features and aspects (semantic, metonymic, and relational) are suppressed. In other words, the mechanism of suppression is largely dependent on the degree of saliency of a semantic feature, a metonymic aspect, or a relational aspect in the light of the topic. As mentioned at the end of the previous section, sometimes the distinction between semantic features, metonymic aspects, and relational aspects is not clear cut. A certain feature may result from a combination of these three aspects. Still, we claim that the three kinds of characteristics are in principle distinct, at least from a theoretical point of view.

Throughout the discussions, we assumed that during metaphor processing, metaphorically-irrelevant features are suppressed. On the other hand, approaches that focus on the negotiability of metaphorical meaning, such as the Discourse Dynamic Approach (Cameron et al., 2009), assume that metaphorically-irrelevant information may be used –at least partly– to elaborate on metaphorical meaning. A question that is raised here is how such an apparent contradiction can be resolved. To answer this question, it should be noted that these two views are not essentially opposed to one another. The suppression of metaphorically-irrelevant information takes place when the metaphor is processed in a short period of time. However, when a metaphor is used and comprehended in the context of an extended discourse, the metaphorically-irrelevant information may be used to elaborate on the metaphorical meaning. When a metaphor is not completely comprehended or needs more elaboration, the metaphorically-irrelevant information may be used to clarify the metaphorical meaning.

## **7. Range of abstractness of metaphorical classes**

So far we have argued that the creation of metaphorical classes involves the suppression of metaphorically-irrelevant types of characteristics, a process that bears a relation to the resulting level of abstractness of the created class. As irrelevant types of characteristics are suppressed and the number of defining features diminishes in the metaphorical class, the degree of abstractness increases.

The nature of abstract concepts and the ways in which they are processed have been the subject of a large body of work in the literature of cognitive science and related fields. Abstract concepts do not have perceptually bounded referents (Borghi, Barca, Binkofski & Tummolini, 2018), and do not refer to concrete and easily identifiable entities (Borghi, Binkofski, Castelfranchi, Cimatti, Scorolli, & Tummolini, 2017). However, it has been argued that abstract concepts may have some concrete associations (Guan, Meng, Yao, & Glenberg, 2013). Crutch and Jackson (2011) propose that the abstractness of concepts is not a binary but graded characteristic. The idea of an

abstractness/concreteness continuum has some implications for the nature of metaphorical classes. Glucksberg (2003, p. XX) calls metaphorical classes “abstract superordinate categories”. Here, we are faced with two questions: Are metaphorical classes really abstract? How can the degree of abstractness of a metaphorical class be determined?

As suggested, metaphorical classes are formed by the exclusion of the major part of the information (semantic features, metonymic aspects, and relational aspects) associated with a concept. In this process, a large part of information related to concrete features of the concept is eliminated, and the small remaining part of the information defines the metaphorical class. Therefore, it can be argued that the metaphorical class of the vehicle of a metaphor has a higher degree of abstractness compared to its literal meaning. The degree of abstractness of a metaphorical class depends on the amount of suppressed information. The greater the amount of suppressed information, the higher the degree of abstractness.

## 8. Conclusion

According to componential theories, concepts have a large number of components, which combine and create the whole meaning of that concept. Drawing on Khatin-Zadeh and Vahdat’s (2015) proposal, it was suggested that in the processing of the metaphorical mapping X IS Y, the metaphorical class of the vehicle is usually defined by one (or at most several) characteristic of one of these categories. In other words, the metaphorical class of the vehicle is usually defined on the basis of a certain category of characteristics. When the metaphorical mapping X IS Y is processed, that characteristic (or those characteristics) that defines the metaphorical class remains active in the mind of the comprehender, while the rest of the characteristics are suppressed. In fact, the metaphorically-relevant characteristics (defining characteristics of a metaphorical class) remain active, while the metaphorically-irrelevant characteristics are inhibited. The process of suppressing metaphorically-irrelevant characteristics continues until the requirements of relevance are satisfied, consistent with assumptions from Relevance Theory. This is the point where maximal suppression or elimination of the metaphorically-irrelevant information takes place, and the metaphor is understood, at least to a certain degree.

The discussion was then extended into abstract/concrete nature of metaphorical classes. Since metaphorical classes are formed by the suppression of a large part of information or characteristics associated with concepts, these classes have a higher degree of abstractness compared to literal classes of concepts. In terms of abstractness, metaphorical classes may not be similar to each other. It was suggested that the degree of abstractness of a metaphorical class depends on the amount of suppressed information or characteristics associated with that concept. In other words, some metaphorical classes may have a higher degree of abstractness compared to other metaphorical classes.

In sum, the main contribution of this paper is to provide an extension of the class-inclusion model of metaphor comprehension (e.g., Glucksberg 2001, 2003), which holds that metaphorical expressions are understood as class-inclusion statements. However, this model does not say anything about the possible mechanisms of formation of metaphorical classes. Also, it does not say anything about the possible differences between varieties of metaphorical classes. Our proposal adds these two elements to the class-inclusion model of metaphor comprehension, offering a more comprehensive description of how metaphorical classes may be created and what differences may exist between varieties of metaphorical classes. However, our proposal does not present a complete picture of how the three categories of characteristics may interact during the formation of a metaphorical class. This is a question that remains to be answered in future work.



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#### *About the authors*

Omid Khatin-Zadeh is an associate researcher at School of Foreign Languages, University of Electronic Science and Technology of China, Chengdu, China. He obtained his PhD in TEFL from Chabahar Maritime University, Iran. In addition to language processing, he is interested in mathematical cognition. His research areas include embodied cognition, metaphor processing, and the role of gesture in thought processes.

Email address: [khatinzadeh.omid@yahoo.com](mailto:khatinzadeh.omid@yahoo.com)

Dr. Danyal Farsani is a body language expert and a teacher educator. He is particularly interested in examining verbal, vocal and visual aspects of human interaction.

Email address: [danyal.farsani@unesp.br](mailto:danyal.farsani@unesp.br)

Florencia Reali is an Associate Professor in the Psychology Department at Universidad de los Andes (Bogotá, Colombia), where she teaches courses in the area of Psycholinguistics. She obtained her PhD in Psychology from Cornell University in 2007. Her multidisciplinary research traverses the areas of psychology of language, language evolution, literary theory, linguistics and education.

Email address: [f.reali96@uniandes.edu.co](mailto:f.reali96@uniandes.edu.co)