

The Development of Metaphorical Competence

Introduction

From a psychological point of view, metaphor highlights the phenomenon of semantic creativity, the capacity of language users to create and understand novel linguistic combinations that may be literal nonsense. The comprehension of metaphor is basically a cognitive problem which centers around the following question: how does a novel conceptual entity arise from apparently disparate parts? And, how do children derive significant meaning from a metaphorical utterance? The cognitive psychologist is concerned with when and why people use metaphors, and when and how they develop the competence to understand them. Metaphorical competence includes the ability to detect the similarity between disparate domains and to use one domain to talk about or to understand something about another domain. The task for psychologists is to characterize the structure of the apprehended resemblance, its relationship to the terms that appear in a sentence, and the process by which the resemblance is discerned.

The purpose of this paper is summarize the main theoretical positions and the major empirical findings about the development of metaphorical competence. After discussing the theoretical framework needed to homogenize the concepts and to understand the topic itself, I will present the main empirical research conducted from a psychological point of view, as well as a discussion of some of the possible reasons which explain the outcomes of these studies.

I. A brief theoretical framework about metaphors

What is a metaphor?

The topic has been discussed by many eminent writers, and one might expect to find an acceptable definition among such writings. However, we cannot find agreement about what a

metaphor is. As Ortony (1978) says, “metaphors may be easy to recognize, but they are difficult to define” (p. 920).

It is possible to find different approximations of the term “metaphor”. Essentially, a metaphor can be defined as something which proposes or asserts an identity between two disparate entities, and invites the listener to construct a resemblance between them (Boswell, 1979). Gardner (1982) defines metaphor as the “capacity to perceive a resemblance between elements from two separate domains or areas of experience and to link them together in linguistic form”. According to Fraser (1979) a metaphor is “an instance of the nonliteral use of language in which the intended propositional content must be determined by the construction of an analogy”. According to Barlow et. al. (cited by Ortony et. al., 1978), a metaphor is “an implied comparison between two things of unlike nature that have something in common”.

However, in spite of this lack of unanimity there is fairly wide agreement that metaphor involves, or is, the transfer of meaning. The important point in the construction of a metaphor is that the speaker *intends* the expression to be taken nonliterally. To understand this formal view of the metaphor, we need to make a distinction between two aspects of meaning: sentence meaning and speaker meaning. Sentence meaning is the “context-free, literal meaning of the words themselves, the meaning that is understood by a listener without knowing who said the sentence or the situation in which it was uttered”, while speaker meaning is “the meaning that the speaker intends to convey by means of the sentence” (Winner, 1988, p. 5). In metaphoric utterances, the essential point is that the speaker does not mean what he says, but instead means *something else*. Figurative speaking and understanding always occur while trying to achieve some linguistic goal. For example, if one person says “Steven was tied up at the office”, we can suppose that the person does not mean that Steven was physically tied up with a rope. In fact, the meaning of this sentence goes beyond the literal form, and we will not be wrong if we say that the intention of the speaker goes beyond the information given. In this case he probably wants to suggest that Steven was so busy at the office that he couldn’t do anything else.

A metaphor brings to light certain attributes of an object, event or situation and thereby conveys new information about it. The locus of metaphoricity lies not in the surface structure of a statement but in the underlying comparison itself. The idea is that the two terms (the topic and the vehicle) in a metaphor somehow interact to produce some new emergent meaning. In the following section we are going to explain these two terms.

Terms of the metaphor

To understand how a metaphor works, it is necessary to go over its four constitutive parts. The principle subject or topic of a metaphor is frequently referred to as the tenor (or simply “the topic”), and that to which it is being compared, the vehicle. The perceived resemblance between the two is known as the ground. Vehicle words are particularly effective in the communicative use of metaphor because vehicles reference concrete perceivable objects that are well-known in the culture. For many metaphors, the ground is also directly perceivable. The role of a good metaphor is to relate the topic and the vehicle to produce a resulting meaning that is new and transcends both. In the expression “Peter is a pig” the topic is “Peter” and the vehicle is “pig”. Whatever it is that they have in common that permits a figurative interpretation is the ground. We can see that the topic is what the metaphor is about, and the vehicle is an expression used to say something about the topic. The interpretation of the metaphor must be grounded in some feature of experienced reality that is common to the topic and vehicle. A given metaphor may offer multiple potential grounds, and a given ground multiple potential interpretations. In the case of our example, different persons can take this metaphor to mean different things, like “he is a dirty, messy person,” “he is a womanizer” “he is a very bad person” or “he eats a lot.”

Another important term of the metaphor is called the tension, that is, the dissimilarity between the two terms being compared, the literal incompatibility of the topic and the vehicle. In the example above, the metaphorical tension arises from the literal incompatibility of Peter (a person) and pigs.

It has been proposed (Ortony, 1979a) that it is necessary to distinguish between literal and metaphorical similarity. According to Ortony, in cases of literal similarity the points of similarity are of high salience of both terms, whereas in case of metaphorical similarity the points of similarity are of high salience to the vehicle and of low salience to the topic. If the prominence imbalance is reversed, so that the properties shared are of high salience to the topic and of low salience to the vehicle, an anomalous utterance results. The statement “books are gold mines” is a metaphor because the property of being valuable is of higher salience to the vehicle than to the topic (“gold mines” means money, richness, abundance). In contrast, the statement “gold mines are books” is anomalous because the ground is composed of properties of high salience of the topic but of low salience to the vehicle.

It is also important to make a distinction between “novel” and “frozen” (or dead) metaphors. Frozen metaphors would be defined as metaphors that at one time were novel but through consistent use have become integrated into the language. A phrase as “foot of the bed” is an example of a frozen metaphor. In contrast, truly novel metaphors constitute an original contribution to the expressive power of the language.

Why are metaphors so important?

One reason metaphoric expressions are important is because they abound in every day life and may form the basis of the conceptual world. The ordinary linguistic experience shows that metaphors sometimes must be used even in the generally literal conversation, and precisely because it is impossible to find adequate literal expressions to achieve our linguistic goal. As Verbrugge and McCarrel (1977) state,

“metaphoric language is endemic to ordinary communication. It is common in day-to-day conversation, narrative, popular songs, newspapers articles, effective teaching and problem solving. In fact, metaphor may be the basic to *all* growth in understanding, whether in the

playroom, the classroom, the psychotherapeutic setting, the scientific laboratory, or the theater.”

Sometimes metaphors are so conventionalized that they became an integral part of the language that we know as literal (that is why a novel metaphor can become frozen, as we have already seen). Important concepts are frequently conceptualized as metaphors. So we can speak of love as a journey (“we’ve come a long way together”), of psychological traits as temperatures (“Sally is a block of ice”) and of ideas as containers (“there is nothing in that notion”). Good metaphors can literally lead to reasoning by analogy, which can give further insight into the extent and nature of concept interrelation, both in suggesting theoretical test of hypothesis and in personal world views. An example in the scientific domain would be the comparison between the atom and the solar system, which suggested a new view of atoms and led to innovative experimentation to explore the extent of the analogy. The important role that metaphors play in the development of science can be appreciated in our own field: Freud used literary metaphors (the story of Oedipus the King) to explain one kind of relationship between mother and son; Piaget used a biological metaphor to understand how the intelligence develops; Information-Processing theories used the computer metaphor, and Connectionism uses now the brain as a metaphor of the mind. Advertisements also use metaphors every day. The phrase “Put a tiger in your tank” is a good example of the use of a metaphor in an advertisement.

Metaphors serve many functions. They are vehicles for linguistic change, effected by the gradual absorption into the *lingua franca* of expressions that were once novel. They also permit the communication of things that cannot be literally expressed. As metaphors are powerful in their capacity to relate new knowledge to old, they are said to have great pedagogical value. In fact, as Ortony (1975) points out, metaphors have been used as teaching devices since the earliest writings

of civilized humanity. The Plato dialogues and the Bible are just two examples of good sources of metaphor. For example, it is possible to find in the Bible phrases like the following:

“Most assuredly, I say to you, unless you eat the flesh of the son of Man and drink this blood, you have no life in you” (John 7, 53).

As metaphor is an essential ingredient of communication, it is consequently of great educational value. The child’s ability to comprehend metaphors is not only of theoretical interest, but of practical importance as well, particularly in reading. Ortony et. al (1978) stress that children need to be able to understand metaphors to understand the text they typically encounter in school. The great pedagogical value of metaphors is to be found in “their potential to transfer learning and understanding from what is known to what is less well-known and to do so in a very vivid manner” (Ortony, 1975). For example, one study carried out by Reategui in Bolivia, showed that the only way for Andean women to understand the meaning of a “clean birth” (a safe birth, a birth that does not hurt the baby and that takes into account his/her needs) was through metaphors of nature. Several intervention programs failed in the past trying to change Andean women’s attitudes toward birth (in some areas of the Andes, it is a common cultural practice to neglect the newborn and to take care of the placenta, because it is believed that the placenta is alive and has a soul.) Only using metaphors of nature (animals and their babies) women could get the message about a “clean birth” and about the caring and nurturing relationship between the newborn and the mother.

II. Conceptual frameworks in the comprehension of metaphors

In the classical research about metaphors, it is possible to find two traditions: associationism and transformational linguistic. Associationism proposes that words are associated with an array of elemental ideas (concepts, images) and that a probability can be assigned to each of these links. Metaphors are viewed as accidental, low-probability associations, governed by the

usual laws of conditioning and transfer. One option in this tradition is to view the topic and vehicle as having common associates: Words with “stimulus equivalence” are linked when producing the metaphor, and comprehension involves activating the common associate. In fact, this is what Skinner holds in his book “Verbal Behavior” (1957). Another related view is that metaphor involves the substitution of a response for one that is more typical and appropriate. Verbrugge and McCarrell (1977) present the following example: The sentence “The baritone’s voice was heavy” might be spoken in response to hearing a singer’s voice, due to the strong associations between low-pitched voice, large body, heavy, loud, etc., in prior experience. Comprehension involves activating these high-frequency associates and linking them to the topic. In a more sophisticated mechanistic theory (for example, theories of associative networks), comprehension of a metaphoric sentence also involves detecting common associated predicates in the network or transferring predicates from one node to another.

A different and also influential approach to the psychology of metaphor is an outgrowth of transformational linguistics. In this point of view, held mainly by Katz and Fodor (1963) and Chomsky (1965), sentence constituents were indexed in a lexicon by grammatical category, a set of distinctive semantic features, and selection restrictions which defined the contexts in which a term could appear. Expressions which do not follow these restrictions were labeled deviant (and so, semantically unacceptable). In this tradition metaphor is a semantic violation; its identity and interpretation is to be characterized without reference to the intentionality, nonlinguistic knowledge or processing strategies of language users. In a discussion of these two traditions, Verbrugge and McCarrell maintain that the transformational linguistic approach is “similar to traditional associationism, except that a highly constrained structural organization of features is proposed.” (p. 497).

Indeed, metaphors have been traditionally treated as ambiguous, imprecise and illogical manifestations of language. The old and traditional debate about the nature of metaphors was concerned about the epistemological status of this phenomenon. Since Aristotle, the nonconstructivistic position about metaphor holds that metaphors are “rather unimportant, deviant and parasitic on normal usage” (Ortony, 1979b, p. 2). All explanation about metaphors will be in terms of violations of linguistic rules, as they are considered fuzzy and vague, appropriate only for the politician or for the poet, but completely inappropriate for the scientist. For Aristotle, the metaphor is constructed on the principles of analogy. In his point of view metaphors are infrequent and are used almost primarily for stylistic purpose, to make language more beautiful rather than more meaningful. In a similar tradition, twentieth-century thinking about metaphor has been carried on within a context defined by the logical positivist view that sentences could be divided into those that are cognitive (assertions making truth claims) and those that are merely emotive. Metaphors were classified as a emotive utterances that make no truth claims, but serve only to the expression of emotions and moods.

However, dissatisfaction with this point of view has grown in recent years. The constructivist approach to human cognition assumes that cognition is the result of mental construction, that is, that knowledge of reality always consists in going beyond the information given. It arises through the interaction between that information, the context in which it is presented and the knower’s preexisting knowledge. In this kind of view, language, perception and knowledge are inextricably interdependent.

This constructivistic approach plays an important role in the understanding of metaphors, and entails an important role for metaphors in both, language and thought. As Ortony points out, the constructivistic approach

...tends to break down the distinction between the metaphorical and the literal. Since, for the constructivist, meaning has to be constructed rather than merely ‘read off’, the meaning

of nonliteral uses of language does not constitute a special problem. The use of language is an essentially creative activity, as is comprehension. To be sure, metaphors and other figures of speech may sometimes require a little more creativity than literal language, but the difference is quantitative, not qualitative. (p. 2)

III. The development of metaphorical comprehension

In a review of several psychological studies carried out on metaphorical competence, there are two major points of view. On one hand there are several studies which conclude that the ability to think metaphorically only develops during adolescence; on the other hand, it is possible to find studies that show that even very young children have some kind of metaphorical competence.

The first point of view: metaphorical competence as an ability of adolescents and adults

According to Gardner et. al (1978), perhaps the first study in metaphoric understanding was carried out by Asch and Nerlove in 1960. These authors interviewed 40 children ranging in age from 3 to 12, who were first questioned about the literal meanings of certain dual-function adjectives (common adjectives which refer to both physical and psychological properties). After literal comprehension of objects' characteristics had been verified ("sweet" for a cube of sugar, "cold" for ice water and so on), subjects were asked for people's characteristics (Are people cold? Do you know any cold people? How do you know they are cold?). The investigators found little awareness of the psychological meanings of these adjectives before age of six. And while seven and eight year-olds often understood the psychological meaning of the terms, they encountered great difficulty in formulating a connection between the psychological and physical senses. Nine and ten year-olds showed greater sensitivity both to psychological meanings and to the connection with the physical domains, but even when probed, subjects showed little awareness of the dual function of such terms. Only the oldest subjects proved able to pinpoint the connections between

the domains. Asch and Nerlove concluded that the capacity to appreciate and produce good metaphors does not emerge until adolescence.

Gardner points out that almost a decade passed before the Ash and Nerlove study was followed up. However, beginning in the 70's, a number of investigators began to examine various facets of metaphorical understanding. Indeed, the 1970s saw an explosion of interest in figurative language. Lesser and Drovin (1975, cited by Gardner et. al., 1978) verified Asch and Nerlove's basic findings concerning dual-function terms and suggested that words with tactile referents (for example, warm) are understood easier in a dual sense than words with visual referents (for example, bright). This assertion is linked with the role of perception in metaphorical understanding, as we are going to see later.

In his book *The Language and Thought of the Child*, Piaget points out that most of the younger children he worked with in a proverbs comprehension task did not understand the proverbs in the least. One interesting aspect of his research was that the children were not aware of their misunderstanding and usually felt that they had fully understood the proverbs. Since proverbs are based on the same kind of similarity as metaphors, Piaget's study of proverbs suggests that the ability to understand metaphor is one of the last facets of language to develop, one which might require the structures of formal operations. Several researchers share Piaget's position (see Winner, 1988). Indeed, several investigations provide evidence for a general shift in the nature of children's interpretation of metaphor. It seems to correspond generally to the qualitative differences between early "literal" permutations of the content of the metaphor which change gradually to increasingly more "appropriate" metaphorical transfer of characteristics from vehicle to tenor. However, in spite of the recognition of this pattern of change, not all researchers agree with the point that formal operations are a pre-requisite for full metaphorical competence.

Several studies have been carried out in a Piagetian perspective. Inhelder and Piaget (1969) have described how children develop the cognitive ability to make classifications (i.e. collections involving the concept of class inclusion) based on similarity during the concrete stages of cognitive

development, while they develop the ability to make classifications based on proportionality only during the stages of formal operations. Taking this paradigm, Billow (1975) argued that metaphor comprehension may be considered a type of classificatory behavior. From this, it would follow that there should be a relationship between comprehension of the kind of metaphor based on proportionality and formal operational thinking. Billow presented subjects -50 boys, ages 5-13 years- with two kinds of metaphor: similarity metaphors, which equate two similar terms (“hair is spaghetti”) and proportional metaphors, which involve an analogical relationship among four terms, one of which must be inferred (“my head is an apple without a core”). Billow found that the ability to understand similarity metaphor emerges first and is correlated with the acquisition of concrete operations. He also found that proportional metaphors, which require analogic thinking, are only understood at preadolescence and that some pre-operational children can solve similarity metaphors on an intuitive basis. He also concluded that metaphoric understanding is aided only slightly when the metaphor is illustrated pictorially.

In another study, Cometa & Eson (1978) also followed Piaget’s perspective. They held that a child’s entry into the stage of concrete operations signals the onset of intersectional classification; yet the completed development of intersection and its application to a verbal plane are delayed until the latter phase of concrete operations. Cometa & Eson argue that after the child’s acquisition of concrete operations, he/she is able to apply his/her gradually evolving skill at intersectional classification so as to paraphrase, but not to *explain* metaphors. Children will be able to explain metaphors only when their grasp of intersectional classes is fully operational. In this framework, Cometa & Eson developed a study and found that, as they predicted, preoperational children were totally unable to paraphrase (much less to explain) metaphors.

The second point of view: Even young children have some kind of metaphorical competence

Winner et. al. (1979b) report several studies carried out by themselves to determine why simple psychological-physical metaphors pose problems for young children. They mainly focus on

three types of metaphors: psychological-physical metaphors, which are based on similarities perceived between an emotional state and a psychological property (such as unkind person - ice); cross-sensory metaphors, based on similarities perceived between sensory modalities (such a loud sound - bright color) and visual metaphors, based on visual similarities in the physical properties of two objects (such a streak of skywriting in the sky - scar on the skin). Their previous studies show that preschool children are rarely stumped by visual metaphors, that they rarely take them literally and that they understand them like adults. But psychological-physical metaphors and cross-sensory metaphors seem to be of great difficulty for young children. Several hypotheses speak to the source of this difficulty: 1) miscomprehension reflects unfamiliarity with one of the terms of the metaphors rather than a difficulty with metaphoric comparisons themselves; 2) children need a context (pictures, etc.) to understand metaphors. Children encounter difficulties with such metaphors only when they are presented out of context; 3) because of their metalinguistic nature, paraphrase task underestimate the child's level of comprehension, and 4) children are at first only able to apprehend the general connotation of the metaphor, even when they recognize that a psychological state is being described (the overall polarity of the psychological dimension is apprehended before the dimension itself is grasped). In order to test these hypotheses, Winner et. al. carried out two studies, one for the first hypotheses and the other for the remaining three. As a result, they conclude that the capacity to comprehend psychological metaphors is a function of the measure used to assess comprehension (an argument that have been into discussion since a long time ago, as we are going to see later). They also concluded that understanding psychological-physical metaphors and cross-sensory metaphors involves grasping both polarity and dimension, two steps that develop not simultaneously but sequentially.

Another classic study reported by Winner, Rosenstiel and Gardner (1976) holds that investigators have not adequately differentiated kinds of metaphoric skill; this insufficient attention to sources of variation in metaphoric competence has diluted the significance of early studies and

has highlighted the need for careful attention to the linguistic form of specific metaphors. This study hypothesized three levels of metaphorical understanding prior to mature comprehension: the “magical level,” the “metonymic” and the “primitive metaphoric.” At the magical stage interpretation is made literal by the mental construction of a suitable scenario. At the metonymic stage the terms in the metaphor are taken to be somehow associated, and at the primitive stage comprehension is partially present. They suggested that each of these levels can be regarded as a stage in the development toward the mature comprehension of metaphors. The result of their study showed that metonymic and primitive responses were predominant for 6 and 7 year-olds. Genuine metaphoric responses were prevalent for 10, 12 and 14 year-olds. The younger children had fewer magical responses than metonymic and primitive ones but still more than the older children. The conflict posed by rejecting the logical absurdity of a magical interpretation and at the same time honoring only the literal meaning of individual words was solved metonymically by many of the children, who altered the expressed relationship from one of identity to one of contiguity. A comparison of the two types of items revealed that cross-sensory metaphors posed less difficulty than psychological-physical ones. Taken together with results of prior research on metaphor, these findings suggest that spontaneous production occurs first, followed by comprehension and then by the ability to explain the rationale of a metaphor.

It is important to point out that Winner et. al (1979b) emphatically assert that rudimentary metaphorical capacities can be found at an early age. In fact, they said that:

We have already noted that preschool children demonstrate no difficulty in understanding visual metaphors . . . and, given a simple enough task, children can even effect cross-sensory metaphoric matches . . . And finally, early language is replete with spontaneous metaphorical renamings. To cite just a few examples, a three-year-old pointed to freckles spotting her mother’s arm and laughingly called them cornflakes; a four-year-old labeled a

group of nuns dressed in their black and white robes as penguins; and another child of this same age playfully called a curled potato chip cowboy hat. (p. 73)

Based on these and other studies, these authors assert that even if the ability to decode complex linguistic metaphors takes many years to develop, the basic constitution on which such understanding rest emerges during the first year of life.

Epstein and Gamlin (1994) carried out a study using pictures and words, in order to allow the children (3, 4 and 5 years old) to produce similarity judgments based on perceptually explicit criteria as well as implicit criteria. These authors were interested in determine whether young children could demonstrate metaphoric competence equally in both media. The results showed that children as young as three years old are able to metaphorically relate and explain domain resemblances based on implicit, as well as explicit, criteria. Across all material, children were better able to perceive metaphorical relations in pictures than in words. As a conclusion, the authors suggest that metaphoric competence is present at an early age, and that it represents more than the ability to see perceptual relations between things.

The case of metaphorical production

It is important to remember that the case of metaphoric production seems to be more complicated than metaphoric comprehension. Although the amount of research conducted on the development of metaphoric production is smaller than that carried out on metaphoric comprehension, findings show systematically that metaphoric production follows a U-shaped curve. Gardner et. al. (1978) point out that college students and pre-schoolers are more likely than elementary school children to produce imaginative endings. Several studies show that pre-schoolers were more likely than any other group to produce endings which were unusual but apparently devoid of sense. Gardner et. al. conclude that the egocentrism of young children may prevent them from sifting out figures not likely to be understood by others. It is relevant that

subjects in between the pre-schoolers and the college students frequently resist attempts to engage in figurative language. The investigators call this phenomena a manifestation of a “literal stage”, a time when children are reluctant to countenance any violations of their recently consolidated literal meanings of words. They also conclude that it is possible that figurative language declines during the early years of school, and that this decline can be slowed down to some extent by environmental factors such as explicit training programs.

Some theoretical and methodological reasons why studies in metaphorical competence show contradictory results

Research concerning the development of the production and comprehension of metaphors clearly shows contradictory findings. One group of studies (for example the work of Gardner and Winner) has suggested that even young children (age 5 or younger) are capable of using and understanding figurative language. Other research (for example, Asch & Nerlove and Billow) has suggested that these capacities do not emerge until the child reaches adolescence.

As an explanation of these contradictory findings, Pickens and Pollio (1979) asserted that figurative language competence depends on what subjects are asked to do. It is the same argument introduced by Winner et. al (1979b). Competence may not be a unitary process but instead one that is strongly affected by specific task and situational constraints. In an experiment on metaphor comprehension, participants traditionally engage in four different task: composition writing, simile production, simile preference and comprehension. It was found that each specific task requirement affected the pattern of results obtained.

On the other hand, and with a more radical explanation, Ortony (1978) argued that one of the reasons (and maybe the most important one) for the inconsistent findings in the area of the comprehension of metaphor is that research seem not to have been grounded in an adequate understanding of what metaphor is. It seems to be the case that the differences in the results of the

research often are really differences in what kinds of questions are being asked or in what kinds of phenomena are being examined; and more profoundly, they are often differences in the conception of metaphor itself. The point about the definition of metaphor seems to be a very essential one. As we have already seen, there is an agreement about that linkage between the topic and the vehicle of a metaphor must be “intentional and conscious”, and that it must evidence an “awareness of tension”. However, some authors disagree at this respect. For example, Verbrugge (1979) asserts that findings measures for consciousness and intent are obviously problematic, and that there is a great risk that one’s definition will be so laden with adult connotations as to put metaphors out of the reach of the young child.

Ortony also points out that the contradictory findings in metaphorical competence research seem to be completely contrary to what is generally believed about language acquisition, namely, that comprehension precedes production. As we have seen, Winner et. al. tried to resolve the paradox by distinguishing between various levels of metaphoric comprehension, attempting to show that very young children do have some rudimentary forms of metaphoric comprehension after all. But Ortony argues that another explanation can be made. It could be argued that preschool children who are apparently producing metaphors are instead producing statements based on underlying literal similarities *from their perspectives*. Ortony is very emphatic when he argues that very young children lack the metalinguistic awareness needed to speak metaphorically (the explicit intention of meaning something else). From the adult’s perspective, productions of children appear to be metaphorical because the adult has substantially differently structured schemata and (presumably) more highly differentiated salience information for their components. The child, on the other hand, perceives the two things in question as being *really* similar. Basically, the argument is that if children are using metaphors at all, they use them inadvertently; they say something which “sounds” metaphoric because they have an insufficient vocabulary or because they are unaware of the linguistic constraints inherent in the words. They can also use metaphors unintentionally when merely playing with language. Ortony introduces an example to clarify this point. If a child talks

about the moon saying that it is “a cake”, it seems to be the case that the child is really perceiving them as being very similar (the same shape, maybe the same size), and has not the intention of going beyond the information given and meaning something else. Ortony stresses that it is very important to recognize that knowledge representations of adults and children are often substantially different. Particularly, it seems to be a good point to me. If we analyze the examples presented above by Winner et. al. (1979b) it is possible to see that they are not real metaphors in the theoretical sense we have described earlier. Moreover, it seems to be true that in those examples children are taking into account mainly physical common properties of both objects, but they do not seem to be trying to go beyond these physical properties to mean something different, a new meaning which transcends both, the topic and the vehicle. Furthermore, it is difficult to speak about a topic and a vehicle in those examples, because they are not observing their specific functions at all. This important problem about of children’s metaphoric usage is linked to formal and functional views of metaphor. A formal view of metaphor, as we have already seen, holds that metaphor is a deliberate, purposeful deviation from the literal based upon a deep understanding and knowledge of all of the characteristics of the literal meaning as well as of the ramifications of metaphoric usage. By contrast, a functional view would address itself to the purpose or function of the usage for the speaker. It holds that if the use of figurative language serves a definite purpose at either a reflected or an unreflected level, then it was a valid figure. These are problems of conceptualization, and we agree with Ortony when he points out that the problem of conceptualization of metaphor as a phenomena is one of the most essential ones.

The manner that researches use to measure metaphoric competence is another factor directly related to the results they obtain. Vosniadou & Ortony (1986) suggest that children’s difficulties in comprehending metaphorical language often arise from factors unrelated to metaphors per se. Such factors are limited knowledge of the world, limited knowledge of the language, difficulty in creating an appropriate context for interpreting metaphorical language, and difficulty in

providing verbal explanations of metaphors. They argue, taking into account the last difficulty, that enactment is a better measure of metaphor comprehension than paraphrase. There are three possible reasons why the enactment task might be easier than the paraphrase task. First, acting out the metaphorical sentences does not impose additional metacognitive requirements on the comprehension task. Second, acting out the stories makes it more likely that the children will process the information contained in these stories. Finally, the toy-world environment provides a situational context which further restricts the range of possible interpretations of the metaphorical sentences. Vosniadou and Ortony conclude that paraphrase task probably underestimates the young child metaphorical abilities. Gardner et al. (1978) also assert that when comprehension is tested by requiring the child to verbally paraphrase a metaphor, clear signs of metaphoric competence appear only in the pre-adolescent years. By adopting a more indirect approach, investigators have found evidence of metaphoric sensitivity earlier in life. In addition to this, Honeck et al. (1978) also conclude that perceptual information facilitates the comprehension of figurative language. It seems to be an agreement among psychologists, at least for the study of very young children. In fact, Verbrugge (1986), summarizing the conclusions of the symposium named "The Development of Metaphorical Competence" points that "in studying metaphoric development at earlier ages, it is important to use task that demand a minimum of metalinguistic skill". He stress that the studies presented in that symposium provide a strong evidence that tasks can make an important difference in the skills children manifest to adults experimenters. It seems to be the case that young children find it comparatively easy to detect metaphoric relations in the context of a story (see the study of Windmueller, 1986), and that they find it easier to express their comprehension by acting out a metaphoric relationship than by paraphrasing it in words. In the same context, Verbrugge also points that "children's skills in linguistic metaphor have roots in metaphoric perception and action", and that so the study of metaphoric development needs to go beyond the study of skills in using linguistic forms, and to include the study of metaphoric processes in nonverbal play, nonverbal thought and perception. In fact, Verbrugge (1979) points out that one problem that has not received

sufficient attention is the developmental relation between linguistic and non-linguistic metaphor, maybe because it is problematic to make a distinction between metaphoric extension from other extensions predicted on similarity.

Lack of control for relevant factors is presented as another variable that can explain the contradictory findings. Ortony et. al. (1978) point that several studies have failed in controlling for the subjects' pre-existing knowledge, for example, the study carried out by Billow (1975). They assert that pre-existing knowledge is a crucial factor in the development of metaphorical understanding that must be taken into account in the design of the study; the failure to control for this factor renders the Billow study rather unrevealing. Verbrugge (1979) also argue that Billow's (1975) conclusion that younger children cannot handle propositional metaphors is unconvincing. For him, Billow' study misconstrues and thereby underestimates children's ability to handle relational grounds. In the same sense, Ortony et. al (1978) also made a critique to the study described by Winner, Rosenstiel and Gardner (1976), pointing out that the results of this study do not really establish that younger children cannot properly interpret metaphors. They argue that young children are frequently exposed to stories about magical worlds, and this can elicit a response bias in favor of the interpretations consistent with the kind of stories children read. A more serious problem in this study, always according to Ortony, is linked to the kind of material used to measure the metaphorical competence. Ortony et. al. assert that the stories used were not really stories at all; they were isolated sentences without contextual support. It constitutes a disadvantage against younger children, because it is almost certainly the case that the ability to deal with isolated sentences improves with age.

Another interesting point that Verbrugge introduces into discussion is the fact that the majority of studies have focused more on the stages of comprehension than on the processes whereby understanding occurs. The typical methodological rationale has been that if children

understand metaphor, then they should be able to paraphrase it (or select a picture, choose an action, select and interpretation, etc.). However, one problem here is that comprehension is only one of the necessary conditions for success on these tasks; failure does not, therefore, entail inability to comprehend, though such a conclusion is often drawn. Verbrugge maintains that this inferential problem is inherent in all the research carried out by Winner & Gardner and the research group at Project Zero.

Conclusions

Johnson and Pascual-Leone (1989) point out that the large amount of research published over the last years has focused on developmental change in ability to interpret metaphors, but has failed to describe in detail the types of interpretations children give. More research should be conducted for this purpose. Also important is the fact that it is necessary to know the specific metaphors a culture use in order to understand its own meanings. This is particularly important when we are going to deal with diversity, and especially in countries such as Peru, where there are different kinds of languages and cultural backgrounds coexisting together in the same territory.

There is still an unresolved question: what is the origin of the ability to effect and perceive metaphorical links? Winner et. al. (1979b) suggested that it is possible that metaphorical perception depends on exposure to conventional linguistic norms. But it is also possible that we are born with either a proclivity or an inherent capacity to perceive nonarbitrary similarities across domains. In the later case, such a prelinguistic capacity would be the first manifestation of metaphorical skill and the ancestor of all later linguistic metaphorical capacities. For example, Winner et. al. (1979b) presented a study carried out in collaboration with Sheldon Wagner and Dante Cicchetti, in which they investigated whether infants were capable of mapping stimuli between the auditory and visual modalities. Sixty one infants, ranging in age from 6 to 15 months participated in a visual preference paradigm, As a result, it appears that infants were able to dimensionalize values in one sensory

modality in terms of the corresponding values of another modality. The researchers assert that such intersensory connections form the ground of many linguistic metaphors (such as “high tone,” and “bright sound”).

Based in the studies revised, we can make the following general conclusions:

1. There are many studies that show that young children (3-4-5 years) are able to produce and to understand metaphorical utterances, at least in a rudimentary form.

2. On the other hand, other studies show that only metaphors based on shared attributive features are comprehensible before the Piagetan stage of formal operations. All other kinds of relationships that demand sensitivity in relations over elements are late acquisitions (for example, proportional metaphors -Billow, 1975- and proverbs -Piaget, 1959-).

3. As a partial reconciliation of these two postures, research has shown the following general steps in the development of metaphorical competence:

- a. By 11 to 12 years of age children seem to be able to interpret reliably most types of metaphors, even those that require fairly precise conceptualization (as for example proportional metaphors).

- b. Nine to 10 years old seem to be a transitional age, when children can interpret metaphors only if they are grounded on direct physical resemblance. They also show some ability to interpret metaphors grounded on less immediate relations.

c. Seven to 8 years old can process metaphors grounded on physical resemblance or close, quasi-perceptual similarity in action, but tend to have difficulty when metaphors are based on other grounds

d. Young children have problems with most standard metaphor interpretation tasks, but may show understanding of physical -or action- resemblance metaphors. Prior to ages 5-7 years, the responses of children are mostly syncretic.

4. It is important that investigators develop an accurate understanding of the meaning of metaphor. It needs to be differentiated from other figures of speech, such as analogy and simile. It seems to be the case that confusion between these three related concepts is one of the reasons for the contradictory findings that research to date, has shown.

5. Finally, we can conclude that the psychological study of metaphors is complex. Researchers require not only an impeccable definition and operationalization of metaphor but also knowledge of the speaker's intention and unambiguous evidence of the child's goals.

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