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Title
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Journal
Proceedings of the Annual Meeting of the Cognitive Science Society, 3(0)

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Publication Date
1981

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METAPHOR AS NONLITERAL SIMILARITY

Odella E. Schattin and Hartvig Dahl

INTRODUCTION. In many current theories, metaphors are thought of as covert or implied nonliteral comparisons, which are comprehended by reference to their underlying literal comparison statements, i.e. similes. This view can be traced back to Aristotle, and is evident in more recent accounts of metaphor comprehension (e.g. Kintsch, 1974; Miller, 1979; Searle, 1979).

This prevalent theory of metaphors is challenged by that of Ortony (1979a, 1979b, in press). While Ortony agrees with the notion of metaphors as implied comparisons, he contends that this "reduction" theory does little to explain the comprehension process involved in understanding metaphors. It is misleading, Ortony argues, to understand a metaphor in terms of its corresponding simile because the comparison referred to in the simile itself is often metaphorical in nature. In his words:

> "... the difference between the metaphor and its corresponding similarity statement is not that one is metaphorical and the other literal; the difference is that one is an indirect statement whereas the other is a direct one."
>
> (Ortony, 1979a, p. 177)

He proposes an alternative theory based on Tversky's (1977) contrast model which utilizes feature matching.

According to Ortony, the comprehension of a metaphor involves assessing the attributes or features which its topic and vehicle have in common. What is required for a good metaphor is that these shared attributes be more highly salient features of the vehicle term than of the topic term. This salience imbalance is one important mechanism which is involved in metaphor comprehension.

Another important aspect of Ortony's account is that the attributes shared by the topic and vehicle need not be identical. They need only be similar to each other. This similarity between the shared attributes can be, and often is, metaphorical in nature. Thus, another major concept in Ortony's theory is that of metaphorical or nonliteral similarity.

The present experiment is a preliminary study intended to test this notion that the basis for a good metaphor is nonliteral similarity. It is expected that the judged goodness of a metaphor will depend on two factors: a perceived similarity between the statement's two components, and the characterization of this similarity as nonliteral. Statements whose components are perceived to be literally similar will be judged low in quality, as will statements whose components are exceedingly dissimilar. It is also hypothesized that similarity and literalness are different, although related, dimensions.

METHOD. Design. The main part of the experiment involved obtaining ratings on three dimensions of 25 comparisons in the form of "Topic is like Vehicle", chosen in pretesting to represent the full scale range of "goodness" on a 9-point scale. The 25 statements ranged from 4 to 10 words in length with a mean length of 6 words.

Procedure. Six subjects, three males and three females, were asked to rate the statements first on similarity, then on literalness and finally on goodness or aptness. The order of tasks remained constant across subjects, but the statements were randomized differently for each of the three scales, and these randomizations were different for each subject.

RESULTS. The results indicate that the raters used the three scales reliably; the mean Coefficient Alpha was .82. Furthermore, the 25 statements used in the study provided a representative sample which extends over the range of each scale. Thus the implications pointed out below (see Discussion) are backed by a set of reliable scales and by metaphors which distribute uniformly along these scales.

Figure 1 is a scatterplot of the relationship between literalness and goodness. There is a significant negative linear correlation between these two scales ($r = -.67$, $p < .0001$).

As can be seen in Figure 2, although there is no significant linear correlation between similarity and goodness, there is a significant ($r = .60$, $p < .006$) curvilinear relationship. In fact, a good fit was obtained using a quadratic relationship between similarity and goodness, as represented by the equation underneath Figure 2.

While predictions of goodness from literalness were quite successful, they do not take into account the interaction of literalness with similarity. This interaction is evident in Figure 3, which is a scatterplot of the relationship between similarity and literalness. This figure indicates that at low values of literalness, similarity is only marginally related to literalness but at high values of literalness, similarity is rather well predicted by literalness.

As it turns out, this variance along the similarity dimension can be used to further improve our predictions of goodness (G). The best fitting quadratic relationship incorporating both similarity (S) and literalness (L) is represented by the following equation:

$$G = 1.86 + .74L - .16L^2 + .77S$$

Using this model, the predicted goodness ratings were plotted as a function of the observed goodness ratings. The resulting scatterplot can be seen in Figure 4. There is a highly significant positive correlation ($r = .92$, $p < .00003$) between the values generated by the model (predicted goodness) and those generated by the raters (observed goodness), thus accounting for 84% of the variance in the goodness ratings.

DISCUSSION. Our results support Ortony's rejection of the "reductionist" viewpoint of metaphor comprehension. We have shown that even statements traditionally referred to as "similes" vary in the degree to which their components are perceived as literally similar. Thus, the "reductionists'" claim that a metaphor must be converted to its underlying "simile" in order to be understood, is not well founded. Instead, we offer an alternative theory incorporating the notion of nonliteral similarity as the basis for good metaphoricity.

A viable interpretation of our model requires examining each component of the best fit quadratic equation:

$$G = 1.86 + .74L \quad .16L^2 + .77S$$

Note that at low levels, the literalness components become positive and the relationship becomes additive. As we have already noted in our discussion of Figure 3, at low levels of literalness, similarity can vary over a large range. Thus, at these low levels of literalness, if similarity is low then the goodness of a metaphor will also be low. If, on the other hand, while literalness is low similarity is high, the resulting goodness value will also be high. So, we have arrived at a quantitative illustration of nonliteral similarity as the best predictor of a good metaphor.

REFERENCES

Kintsch, W. The representation of meaning in memory. Hillside, N.J.:Erlbaum, 1974.

Miller, G. A. Images and models, similes and metaphors. In A. Ortony (Ed.) Metaphor and thought. Cambridge, England:Cambridge University Press, 1979.

Ortony, A. Beyond literal similarity. Psychological Review, 1979a, 86 (3), 161-180.

Ortony, A. The role of similarity in similes and metaphors. In A. Ortony (Ed.) Metaphor and thought. Cambridge, England:Cambridge University Press, 1979b.

Ortony, A. Understanding metaphors. In D. O'Hare (Ed.) Psychology and the arts. Hassocks, England:Harvest Press, in press.

Searle, J. Metaphor. In A. Ortony (Ed.) Metaphor and thought. Cambridge, England:Cambridge University Press, 1979.

Tversky, A. Features of similarity. Psychological Review, 1977, 84, 327-352.

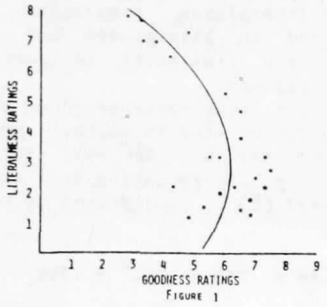


FIGURE 1

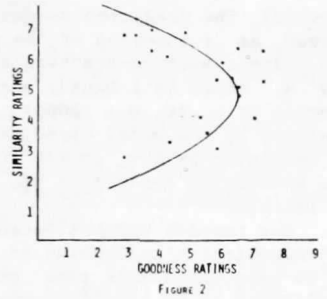


FIGURE 2

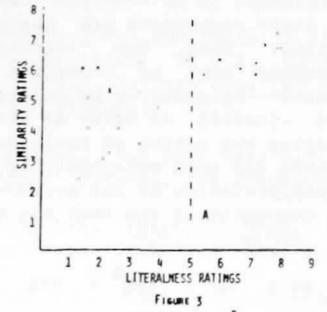
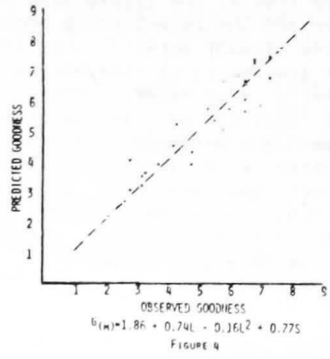


FIGURE 3

$G = -4.80 + 4.77S - .51S^2$



$G_{(M)} = 1.86 + 0.74L - 0.16L^2 + 0.77S$

FIGURE 4