Imagining the Impossible

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Research on conceptual combination has followed two main paths. One has examined the representation of logical conjunctions of concepts, such as A FISH THAT IS ALSO A PET. The Attribute Inheritance model posits that conjoint concepts will inherit attributes that are necessary for (or salient in) either of the parent concepts, and will not inherit attributes that are impossible for either of the parent concepts (Hampton, 1987, 1997). The other path has considered the process of combining nonconjunctive concepts, such as ZEBRA CLAM. The Alignment model claims that conceptual combination entails an alignment and comparison of conceptual structures (Wisniewski, 1996). The aim of the current studies was to bridge these two paths by testing whether the alignment and comparison processes ordinarily used in nonconjunctive combination might be the mechanism by which attribute inheritance occurs in conjunctive combination as well.

With most conjunctive combinations, the necessary and impossible attributes of one constituent concept tend to be compatible with the necessary and impossible attributes of the other concept, thus producing a comprehensible combination. Because of this compatibility, unfortunately, such conjunctions do not provide clear evidence either for or against the use of alignment in attribute inheritance. That is, it is unclear whether the attributes are simply inherited by the conjunction, or whether the concepts must first undergo alignment and comparison processes.

One way that alignment and comparison can be observed in attribute inheritance is to present concepts that are incompatible in important respects. Where an attribute is necessary for one concept in a conjunction but impossible for the other, if alignment and comparison occur, then the incompatibility should be detected and somehow resolved. If alignment does not occur, then the incompatibility need not be detected. Thus, we asked participants to imagine the impossible – that is, to conjunctively combine concepts that are in reality disjunctive (e.g., A COMPUTER WHICH IS ALSO A TEACUP).

Study 1

Students were asked to imagine 9 conjunctions (e.g., A FRUIT WHICH IS ALSO FURNITURE) and to describe them in words or pictures. Analysis of the solutions suggested two main findings. First, concepts tended to be instantiated at the basic level (e.g. BANANA for FRUIT, COUCH for FURNITURE). And more importantly, there was strong evidence for alignment and comparison in conjunctive combination. Specifically, the concepts were aligned (e.g., the skin of the banana was aligned with the covering of the couch), conflicting attributes were identified (e.g., bananas rot, couches should not), and emergent attributes were constructed in order to resolve those conflicts (e.g., genetically modified bananas that do not rot). Thus, alignment did indeed appear to be the process by which attributes were inherited in concept conjunction.

Study 2

Given that superordinate classes impose fewer constraints on interpretation than do basic level concepts, one might expect greater success at conjoining superordinate concepts than basic level concepts. On the other hand, superordinate concepts tend not to be alignable with one another. If alignment is necessary for concept conjunction, then superordinates should instead be difficult to conjoin (Markman and Wisniewski, 1997). Study 2 independently manipulated whether the modifier and head concepts in a conjunctive combination were basic (e.g. BANANA) or superordinate (e.g. FRUIT). Solutions were rated by independent judges for their success in terms of conjunctive interpretation. Rated success of solutions did not differ between conditions, suggesting that any advantage superordinates may have had by way of less constraints was offset by their disadvantage of being less alignable as well. Across both experiments, then, there was evidence that attribute inheritance in concept conjunction occurs via alignment and comparison.

References

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