PERCEPTION AND JUDGMENT OF ABSTRACT SAME-DIFFERENT RELATIONS BY MONKEYS, APES AND CHILDREN: DO SYMBOLS MAKE EXPLICIT ONLY THAT WHICH IS IMPLICIT?

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Recent studies of conceptual capacities in primates point to a fundamental distinction between monkeys on the one hand, and apes and humans on the other (Thompson & Oden, in press). The overall pattern of results suggests that monkeys, but not apes and humans, might be best regarded as "paleo-logicans" in the sense that they form class concepts on the basis of identical predicates (i.e., shared features). Their discrimination of presumably more abstract relations commonly involves relatively simple procedural strategies mediated by associative processes likely shared by all mammals. There is no compelling evidence that monkeys can perceive relations-between-relations, let alone judge them as equivalent. Thus far, this conceptual capacity for analogical reasoning has been found only in chimpanzees and humans.

Key words: **conceptual capacity, analogical reasoning, abstract relations, apes perception, human primates perception**

Interestingly, the "analogical ape", like the child, can make its analogical knowledge explicit only if it is first acquires a language or a symbol system by which propositional representations can be encoded and manipulated (e.g., Premack, 1983; Rattermann & Gentner, 1998; Thompson & Oden. 1993, 1996; Thompson, Oden, & Boysen, 1997; Tyrrell, Stauffer and Snowman, 1991).

Language-naive chimpanzees and prelinguistic human infants perceive relations (identity or nonidentity) to be the same or different as measured by either visual gaze or object handling in preference-for-novelty tasks like 'paired-comparison' and 'habituation/ dishabituation'. Interestingly, however, only those humans and chimpanzees exposed to a regime of language or symbolic token training can judge abstract relations-between- relations as being the same or different (cf., House, Brown & Scott, 1974; Premack, 1983; Sidman, 1994; Thompson, et al., 1997). This judgmental capacity is revealed in conceptual matching-to-sample tasks. In this problem a chimpanzee or child is correct if they match a pair of shoes with a pair of apples, rather than to a paired eraser and padlock. Likewise, they are correct if they match the latter nonidentical pair with a paired cup and paperweight. The conceptual matching-to-sample task can be conceived of as a non-linguistic analogy problem involving a single abstract relationship of same or different. Prior to their exposure to language or analogous symbolic token systems both humans and chimpanzees fail to match one identity relation with another and to match one nonidentity relation with another (Oden, Thompson, & Premack, 1990; Tyrrell, Zingaro, & Minard, 1993).

These findings imply that language or symbol training does not instill propositional knowledge about abstract relations of the