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WHY DOES A SAILBOAT GO WITH A POSTMAN? SCRIPT

JUSTIFICATIONS OF 5-YR-OLDS & ADULTS

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This report addresses the general question of how we expand or contract schemata of everyday events to take account of new factors. Schemata for mail delivery in suburban settings seldom include sailboats, but if asked "How could a sailboat go with a postman?" you could easily think of several ways -- the postman could go sailing on his day off, mail could be delivered to islands on sailboats, walking around to deliver mail and sailing are both forms of movement, etc. Alternatively, you could if necessary exclude items that are normally part of everyday scripts. Asked "How could a letter not go with a postman?" you would probably cite computer mail -- but note that what you did was generate a whole alternative script around the letter. The questions before us: Can general strategies for script expansion or contraction be identified? And, if so, do they develop?

By way of background, in addition to the sparse current literature on script development (e.g., Nelson, 1978; Schank, 1982) there is an older literature on over- and under-inclusion stemming from attempts to diagnose defective thinking from categorization behavior (e.g., Goldstein & Scheerer, 1941). This was eventually absorbed into the more complex models of category decision making that we have today (Rosch & Lloyd, 1978; see especially the article by Miller, 1978).

Procedure

The studies reported here used the following procedures: subjects first saw a slide of an everyday scene familiar even to 5-yr-olds (e.g., a postman delivering mail, a girl combing her hair, a baby in a tub, a dentist in his office, etc.). Following the scene, subjects were shown a slide of an object which bore (in the opinion of judges) a varying degree of relationship to the scene. Type A objects (e.g., postman: letter; baby: towel) were clearly part of the scene though not visible in the preceding slide; Type B objects (postman: mailtruck; baby: sink) were less clearly related; Type C objects (postman: sailboat; baby: baby carriage) could not be part of the scene; and Type D objects (postman: tricycle; baby: stove) were even more remote. There were 10 scenes and 4 types of objects for each, randomly interspersed.

There were free choice and forced choice studies. In the free choice study, subjects decided whether or not an object went with a scene, and then explained the basis of their decisions. Decision times from onset of the object slide to the subject's

"yes" or "no" vocalization were obtained. Justification protocols were then requested.

In the forced choice study, subjects were required to give reasons why all objects either did (inclusion condition) or did not (exclusion condition) go with the preceding scene. Only justification protocols were collected, decision time variance being typically overwhelmed by response set factors.

Results

In the free choice study, the pattern of inclusion and exclusion decisions were predictable functions of the degree of object relatedness (Type A through D). Of main interest were the nature of the justifications, the decision times that preceded them, and developmental effects. Justifications fell reliably into 3 overall categories:

1. Given Script justifications -- the initial scene is the referent and the object is tested for inclusion suitability. E.g., given Girl Combing Hair followed by Pliers:

Adult: No... She wouldn't be using pliers for any sort of grooming.

Child: No... She doesn't use the pliers to brush her hair.

2. New Script justifications -- a new script is generated around the object; this new script becomes the referent, and the agent of the preceding scene is tested for inclusion suitability. E.g., given the above sequence:

Adult: No... They're rather sophisticated cutting tools which I don't think a child would use.

Child: No... Because she isn't cutting any flowers.

Note that the role of the object in both Given and New scripts can be classified as object of a direct action, instrumental, or part of the general scene.

3. Dual Script justifications -- both given and new scripts are constructed, and their compatibility is tested. If it is decided they are incompatible, exclusion results. E.g., Girl Combing Hair followed by Book:

Adult: No... A little girl combing her hair probably wouldn't be very interested in reading a book, at the same time anyway.

Child: No... Because she can't read a book if she's combing her hair.

However, subjects could also construct a higher-order script that relates the given and new scripts. E.g., Dentist at Work on a Patient followed by Kleenex box:

Adult: Yes... Because if the poor fellow starts crying from the pain he'll have to blow his nose and wipe his eyes.

Child: Yes... If he wants to blow his nose while the dentist cleans his teeth he could.

As the examples suggest, children produced about the same percentage of Given Script, New Script and Dual Script justifications as adults did. However, children were more likely to base Given Script justifications on the direct object role of the item being tested.

Decision times for both groups reflected the mental sequence of first representing the given script, then generating the new one, and then comparing the two. In the adult group but less so in the children's group there was also an effect of negation.

The forced choice study corrected for scene-specific response patterns. If either inclusion or exclusion were required for all scene-object pairs, would the same frequency of justifications appear?

In general, across the object types (A to D), children were like adults in both inclusive and exclusive Given Script justifications. However, they were far more likely than adults to use New Script justifications, and less likely to use Dual Script justifications.

The general implication is that 5-yr-olds are well-equipped with the logical reasoning mechanisms needed for expanding and tuning schemata for everyday events. Their conceptual development would thus be primarily a function of the experiential opportunities available to them.

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