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**NUMBER ASSOCIATIONS
OF
SOME CHILDREN**

**AN ABSTRACT OF
A THESIS
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Some children have number associations of an unusual nature. The purpose of this study is to present these number associations and to analyze both their general characteristics and individual qualities in the hope of gaining further insight into how children think about numbers.

An investigation into the general area of perception uncovered a body of literature on the topic of synesthesia, in which one type of stimulus produces a secondary, subjective sensation. Similarities between number associations of some children tested in this study and past cases of synesthetic subjects were recognized.

Associating numbers with definite colors is a characteristic of pure synesthesia and was illustrated by several students among the fourth, fifth and sixth graders tested. The perception of number forms in a particular spatial arrangement and the association of numbers with human characteristics is also considered to be an aspect of synesthesia. Some children also indicated number associations in this category.

Aside from those few responses illustrating synesthetic qualities, other number associations of some children indicated the influence of past teaching. Various number concepts including place value, quantitative and chronological relationships were presented by children in verbal and graphic representations.

Other responses of children made use of the concrete number

symbol itself in forming associations. Although they were selected on the basis of this general characteristic, individual elements were noted. Digits were represented as parts of whole objects and seemed quite unrelated to any mathematical concepts. These relationships seemed to represent momentary images rather than fixed associations, although retesting after a time period would present needed evidence for making more definite conclusions.

A selection of miscellaneous responses was made in order to illustrate the various individualistic qualities in student responses. Included in this selection of responses were representative samples of the total group tested.

In comparing the number associations of a small group of students over a one-year time period, some changes were noted although the original structure of the perception remained relatively constant. This comparison also helped to establish the credibility of the initial responses of the students in this group.

The number associations which have been illustrated by thirty-eight plates in this study indicate that some children have definite number associations and that the perception of numbers varies greatly with each individual child. Even within the categories included, each response reveals individualistic elements. Through an awareness of this phenomenon we are able to gain some further insight into the process of how some children think about numbers. However, this awareness raises many further questions as to the origin of children's number associations, their importance in the learning process itself and the awareness of the individual

concerning the presence or absence of this phenomenon.

Until these questions are answered through further research into the area of number associations or the phenomenon of synesthesia itself, teachers and others interested in the development of number concepts might reflect upon the number associations of some children that have been presented and consider this insight into one of the many facets of perception as a part of their total understanding of the individual child.