The Visual Minority Effect on Children's Choice Behavior

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Young children choose the minority option (the option that appears fewest times in the choice-set) in food and non-food choice tasks when options are visually different. Adults do not show this tendency. Children also favor grapes over crackers when the grapes become the minority option.

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The Visual Minority Effect on Children’s Choice and Consumption
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EXTENDED ABSTRACT

The increasing rate of children obesity (Hedley et al. 2004; Troiano and Flegal 1998) highlights the importance of encouraging children to consume healthy food from young age. Because younger children are guided primarily by perception, it is possible that providing them with simple visual cues may improve their food and other choices. This paper establishes that this is indeed the case: children tend to choose the minority option when items are visually different from one another and this can influence their food choices.

We study the choice behavior of children four and five years old. Children this age rely on visual and other perceptual features more than on abstract thought (Flavel 1963; Ginsburg and Opper 1988; John 1999). We extend this developmental theory to the context of children’s decision making and postulate that children tend to choose objects that visually stand out in the choice set even when they prefer another object in the set. We focus on choice sets in which each object appears multiple times. We conjecture that when objects are visually different, the minority object (i.e., appears fewest times) stands out visually relative to other objects. Because children are affected by perception, they will tend to choose the minority object more frequently than dictated by their preferences. On the other hand, when objects are visually similar, the minority object does not stand out visually, so children choose based on their preferences. We call the tendency of children to choose the minority object when objects are visually different the visual minority effect.

We conducted four experiments to test our theory and its policy implications. Experiments 1, 2 and 3 were conducted in a local preschool. These experiments involved individual sessions in which 4 to 5.5 year old children interacted with an experimenter who was blind to the research hypothesis. Experiment 1 and 2 demonstrate the visual minority effect in food and non-food choice tasks. Experiment 3 illustrates that the visual minority effect may lead children to favor fruits over crackers. Experiment 4 illustrates that adults do not demonstrate the visual minority effect.

In experiment 1, children (N=61) chose an apple, a bag of crackers, a magnifying glass and a bag to put all their chosen products. Specifically, about half of the children choose an apple from a bowl with five green apples and two red apples (i.e., red is minority). The rest choose from a bowl with five red apples and two green apples (i.e., green is minority). Children also chose a bag of Wheat-thins or Cheez-it crackers, such that either the Wheat-thins or the Cheez-it was the minority option. Children then chose a yellow or red bag to put their apple and crackers, such that either the yellow or the red bags were the minority option. Finally, children chose a green or blue magnifying-glass, such that either the green or the blue magnifying-glass were the minority option. In all tasks the minority option appears twice in the choice set and the other option appears five times.

In line with our theory, children tend to choose the minority option when options are visually different: The proportion of children choosing a particular apple type increases by 31% percentage points when this apple type becomes the minority option. For the red apple, the proportion increases from 50% to 81% and for the green apple from 19% to 50%. Similarly, when a particular bag becomes the minority option, the likelihood of choosing it increases by 22 percentage points. We observe similar increase for the magnifying glass (35 percentage points). Thus, when options are visually different from one another, children tend to choose the minority option.

In contrast, when options are visually similar, as in the crackers task, becoming the minority option has no effect on children’s choices. About 60% of the children choose the cheez-it crackers independently of the experimental manipulation. Note that it is clear that children recognize the different types of crackers when making a choice and make deliberate rather than random choices. Otherwise, the proportion of children choosing the minority option should have been 2/7≈29%, which is very different from the results when cheez-it is the minority option (57%).

Experiment 2 further demonstrates the importance of visual differences between the options in driving the visual minority effect. Forty children were offered a choice of a photo featuring a puppy from a set with photos of white puppies and light brown puppies (options are visually similar) and a choice of a finger puppet from a set with zebra and giraffe finger-puppets (options are visually different). As in experiment 1, the minority option appears twice in the choice set and the other option appears five times.

About 62% of the children chose the white puppy photo independently of the experimental manipulation. As in experiment 1, children made deliberate rather than random choices. Otherwise, the proportion of children choosing the minority option should have been 2/7≈29%, which is very different from the results when white-puppy is the minority option (61%). The finger-puppet task results replicate experiment 1’s results regarding visually different options: When a particular finger puppet became the minority option, the likelihood of choosing it increased by 35 percentage points.

The visual minority effect may be policy-relevant. Experiment 3 provides some evidence in this direction by illustrating that children favor a fruit over crackers when the fruit becomes the minority option.

In Experiment 3 (N=56), children chose between grapes and crackers. About half the children chose from a set with two boxes of grapes and six boxes of crackers, and the rest chose from a set with equal number of boxes of grapes and crackers. When grapes become the minority option, 52% of the children chose grapes compared to 26% in the control condition. This finding may hint at straightforward ways to encourage children to choose fruits.

Experiment 4A (N=70, mean age =20.0) and 4B (N=55, mean age =20.2) show that adults do not show the visual minority effect. In experiment 4A they chose an apple, as in the apple task in experiment 1. In experiment 4B, they chose between yellow and green highlighter, such that either the yellow or the green highlighter were the minority option. In both tasks, adults do not favor the minority option. Thus, it seems that children’s sensitivity to visual cues indeed plays a role in driving the effects we observe. Moreover, it seems that general theories of uniqueness-seeking and scarcity cannot explain the discrepancy between adults’ and children’s behavior.

REFERENCES
