

Organization Skills for Toddlers

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Abstract

This paper explores the ability of 3 and 4 year olds to group different objects according to their sizes, shapes and colors. The criteria that the children used to group these objects will be correlated with their age, gender, the shape of the objects, their previous experience, whether or not they are eager to participate in class activities, and finally their interaction with their peers.

Introduction

When looking at the grouping or organization skills that children develop throughout their childhood, one age range had me captivated. I was particularly interested in the 3 and 4 year old kids who had just been introduced to the educational system, and to the social life and the interactions that come with it. Henderson State University has a child care center at which 35 children are currently enrolled, but I interviewed only 30 children (16 four year olds and 14 three year olds). With the help of the interns, I was able to collect data using a survey, analyze it and make some interesting conclusions.

Survey, Collection of Data, and Definitions

The children were given 3 sets of different shapes, sizes and colors of objects already mixed together and were asked to group them together. They were given 3 yellow triangles (big, medium, small), 3 red circles (big, medium, small) and 3 blue rectangles (big, medium and small). The data (Appendix B) were based on my observations, comments made by the teacher, and the survey (Appendix A).



Age: the age in years of the child

Sex: the gender of the child

Previous Experience: whether or not the child has ever participated in that type of activity (“0”: no, “1”: yes)

Group: the method by which the children group the objects

- Sh: grouped by shape
- Sh&co: grouped by shape and color
- Co: grouped by color
- Si: grouped by size
- Sh&si: grouped by shape and size
- Co&si: grouped by color and size
- None1: refused to do it
- None 2: grouped it but without any visible patterns

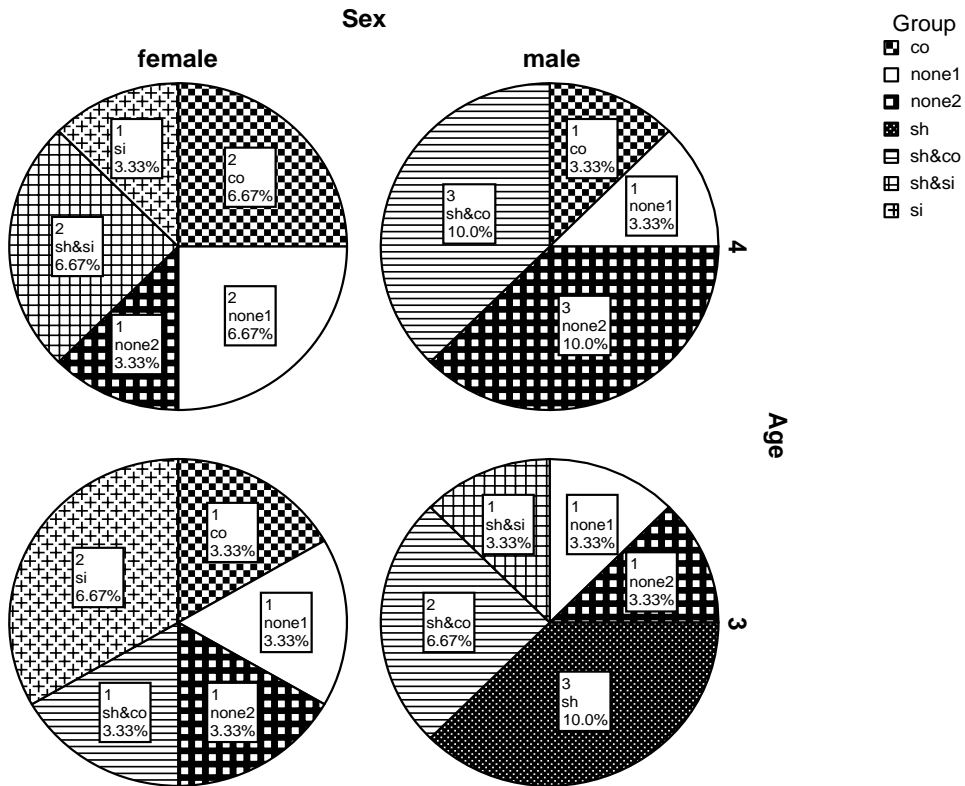
Eagerness: whether or not the child is eager to participate in the class activities (“0”: no, “1”: yes)

Social: whether or not the child interacts with his classmates (“0”: no, “1”: yes, “0.5”: sometimes)

Analysis of Data

Based on the pie graphs shown below, the males no matter what their age grouped more by shape. Also, a number of four-year-old males group with no precise patterns. While being in the classroom with those children, I noticed that they were stacking the objects given to them.

Gender Versus Age according to their grouping method

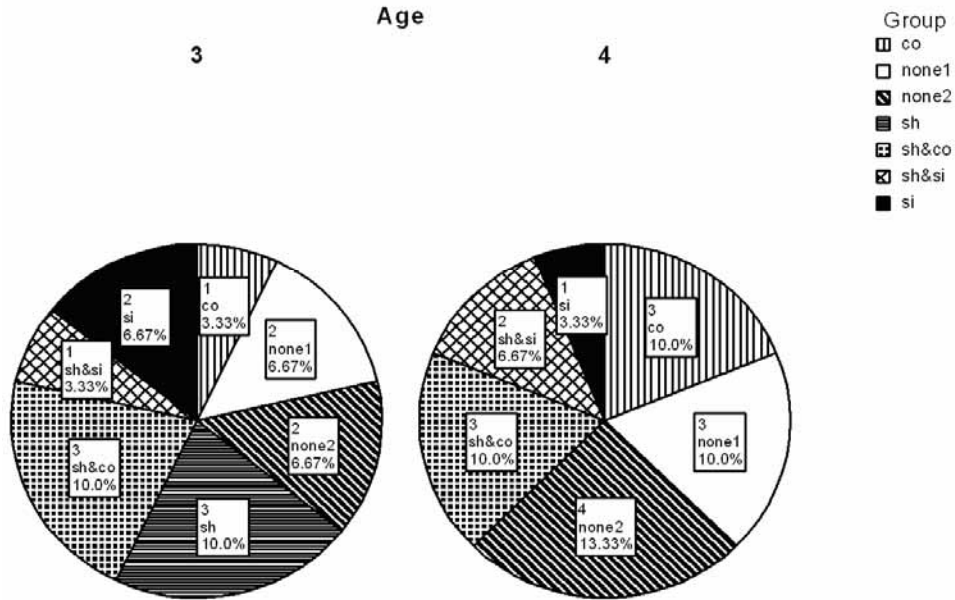


This can be a result of the fact that at the age of 1 year, a toddler goes through changes in physical and mental development. He learns through handling and touching and attains at that age, symbolic presentation which means that he considers what he will do and visualizes it before representing it.

The following graphs show the number and the percentage of the 3-4 year-old children who used the grouping method listed above. It appears that the 3-year-olds group more by

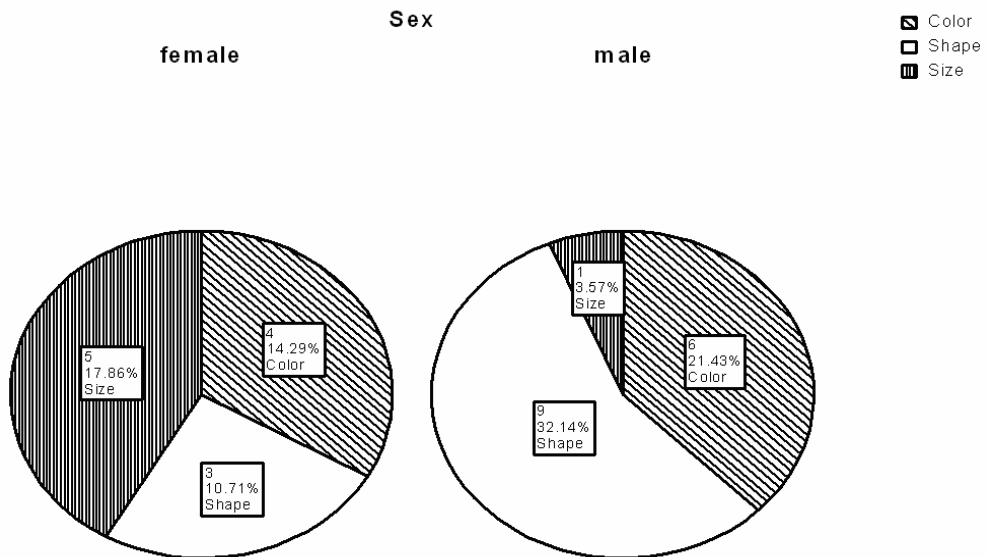
shape than the 4 year olds, however, using the proportion test, I found that the correlation between the 3 and 4 years old and their grouping methods was insignificant.

Representation of The different grouping Methods according to their age



Thus, for the remainder of the paper, I will look only for gender differences. Consider the following graphs where this is illustrated.

Proportion Of males & grouping method versus Females & grouping method



I will use the proportion test to find differences between the genders for preferences to group by color or shape or size.

Count of Females and Males Grouping by Color

		Sex		Total
		female	male	
Color	No	10	9	19
	Yes	4	6	10
Total		14	15	29

The p-value is 0.52, so it appears that percentage of females grouping by color and males grouping by color are about the same.

Count of females and males grouping by shape

		Sex		Total
		female	male	
Shape	No	11	7	18
	Yes	3	9	12
Total		14	16	30

The p-value is 0.052, so there is some evidence that males group more by shape than the females.

Count of Females and Males Grouping by Size

		Sex		Total
		female	male	
Size	No	9	15	24
	Yes	5	1	6
Total		14	16	30

The p-value is 0.044, so we have evidence that the females group more by size than the males.

Precious Experience and Eagerness

It is reasonable to assume that for a child to be able to group or want to participate in that type of activity, he should have a previous experience of the game, be eager to participate or be socially interactive. The following test is going to verify those assumptions.

Count of Children Who Grouped and by Previous Experience

		Previous experience		Total
		No	Yes	
GroupA	No	5	1	6
	Yes	8	14	22
Total		13	15	28

It seems like every child who grouped the objects usually participated in that type of activity before. Using the Chi-square test of independence, we find a p-value of 0.041, so there is evidence for a correlation between willingly grouping and previous experience.

Count of Children Who Grouped by Eagerness

		Eagerness		Total
		No	Yes	
GroupA	No	5	1	6
	Yes	0	22	22
Total		5	23	30

Every child who grouped the objects showed an interest most of the time for every activity while being in class. Using the Chi-square test of independence, we find a p-value of 2.309×10^{-6} . Thus, there is very strong evidence that there is a correlation between a willingly grouping and eagerness to participate in class.

Count of Children Who Grouped by Social Interactiveness

		Social		Total
		No	Yes	
GroupA	No	2	1	6
	Yes	0	22	22
Total		2	25	30

Most children who grouped the objects liked to play with his classmates and liked being involved in class activities and are very outgoing. Using the Chi-square test of independence, we find a p-value 6.53×10^{-5} . Thus, there is very strong evidence that there is a correlation between willingly grouping and social interaction with classmates and society.

Conclusion

If the sample size were larger, then it would have been easier to detect patterns and dependencies. In spite of the small sample, we have evidence that there is a correlation between gender and grouping methods. Specifically, a male is more likely to group by shape than is a female; likewise a female will more likely group by size than is a male. We found strong evidence that when a child is active in class, eager to socialize and participate in class activities, and has experience in grouping objects, then he shows more intellect in his organization skills than another child who is antisocial and really shy.

Appendix A. Survey form for each child.

Organization Skills for Toddlers
Statistical Analysis Survey Presented By Linda Njoh
Henderson State University

<p>How old is the Child? <input type="checkbox"/> 3 years old <input type="checkbox"/> 4 years old</p> <p>What is the child's gender? <input type="checkbox"/> Male <input type="checkbox"/> Female</p> <p>How did the child group the objects presented to him? <input type="checkbox"/> Shape <input type="checkbox"/> Color <input type="checkbox"/> Size <input type="checkbox"/> Shape and Color <input type="checkbox"/> Shape and Size <input type="checkbox"/> Size and Color <input type="checkbox"/> No precise patterns</p>	<p>Did the child ever participate in this type of activity before? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Is the child eager to participate in activities while being in class? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Does the child play with his classmates? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes</p>
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Appendix B. Data

Age	Sex	Group	GroupA	Color	Shape	Size	Previous Experience	Eagerness	Social
3	female	si	1	0	0	1	1	1	1
3	female	none1	0	0	0	0	0	0	0
3	female	co	1	1	0	0	0	1	1
3	male	sh	1	0.01	1	0	0	1	1
3	male	sh	1	0	1	0	0	1	1
3	male	sh&co	1	1	1	0	1	1	1
3	male	sh&si	1	0	1	1	1	1	1
3	male	none2	0.5	0	0	0	1	1	1
3	female	si	1	0	0	1	1	1	1
3	male	sh	1	0	1	0	1	1	1
3	female	sh&co	1	1	1	0	0	1	1
3	male	sh&co	1	1	1	0	1	1	1
3	female	none2	0.5	0	0	0	0	1	1
3	male	none1	0	0	0	0	0	0	0
4	female	si	1	0	0	1	1	1	1
4	female	none1	0	0	0	0	0	0	0.5
4	male	none2	1	0	0	0	1	1	1
4	male	sh&co	1	1	1	0	1	1	1
4	male	none2	1	0	0	0	1	1	1
4	male	co	1	1	0	0	1	1	1
4	male	none1	0	0	0	0	1	0	0.5
4	male	none2	1	0	0	0	1	1	1
4	male	sh&co	1	1	1	0	1	1	1
4	male	sh&co	1	1	1	0	1	1	1
4	female	sh&si	1	0	1	1	0	1	1
4	female	none2	0	0	0	0	0	1	1
4	female	co	1	1	0	0	0	1	1
4	female	sh&si	1	0	1	1	0	1	1
4	female	none1	0	0	0	0	0	0	0.5
4	female	co	1	1	0	0	0	1	1