

CATEGORIZATION/SORTING STRATEGY

CHARACTERISTICS OVERVIEW CHART

Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
<input checked="" type="checkbox"/> Nonverbal	<input type="checkbox"/> PK	<input checked="" type="checkbox"/> Classic	<input checked="" type="checkbox"/> (Pre)Academic/Cognitive/Academic
<input checked="" type="checkbox"/> Mixed	<input checked="" type="checkbox"/> Elementary	<input checked="" type="checkbox"/> High Functioning	<input checked="" type="checkbox"/> Adaptive Behavior/ Daily Living
<input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> Middle/High		<input type="checkbox"/> Behavior <input type="checkbox"/> Communication/Speech <input type="checkbox"/> Social/Emotional

BRIEF INTRODUCTION

The cognitive deficits of individuals with autism (AU) have been thoroughly documented. Many have challenges with matching, sorting, and categorization. Bock (1994, 1999) has created a categorization strategy that teaches how to sort items by dimension, including size, shape, and color.

DESCRIPTION

Categorization is classified as a cognitive learning strategy. Schumaker, Deshler, and Denton (1984) described cognitive learning strategies as techniques, rules, or principles that can be systematically applied to arrive at a successful solution to a problem situation. Such strategies typically consist of a series of steps that must be completed to achieve specific outcomes.

Bock has created a procedure to teach children and youth with autism how to sort items by multiple dimensions, (e.g., by color, shape, and number). The strategy has included generalization probes involving sorting grocery items by size, brand, and type. For example, individuals taught the strategy could sort green beans by brand (e.g., Green Giant), type (e.g.,

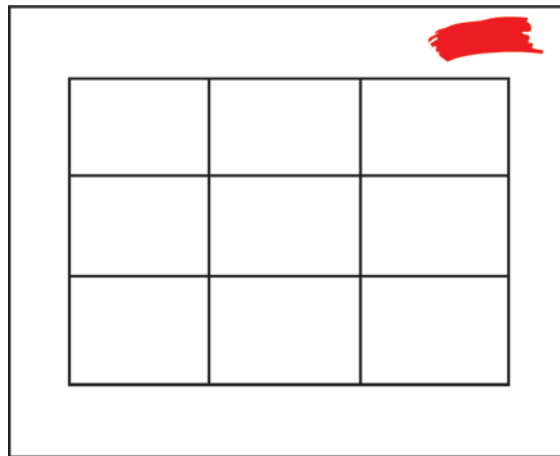
waxed), and size (e.g., 8 oz.), and laundry by color (e.g., darks), cycle (e.g., delicate), and water temperature (e.g., hot).

STEPS

The following steps can be used to teach multiple-dimension categorization: Bock teaches categorization in three stages: unidimensional, bidimensional, and tridimensional.

Unidimensional Sorting (sorting by one attribute, such as color)

- Create a 3 x 3 grid with 9 empty squares (see sample below) and place the sorting key (i.e., color) in the upper corner.
- Create an envelope with 10 to 15 items. Nine should match the sorting label. The remaining should not.
- Model sorting and then teach using backward chaining and prompting. Fade prompts as soon as possible.



Adapted from Bock, M.A. (1994). Acquisition, maintenance, and generalization of a categorization strategy by children with autism. *Focus on Autism and Other Developmental Disabilities, 14*, 220-230.

Bidimensional Sorting (sorting by two attributes, such as color and shape)

- Create grid as in 1 (above). However, there will be two sorting keys (i.e., color red; shape circle)
- Create an envelope with 10 to 15 items. Nine should be of the correct color with the correct number (i.e., red circles). The remaining should not have this combination.
- Teach as in unidimensional sorting.



Tridimensional Sorting (sorting by three attributes, such as color, shape and number)

- Create grid with three sorting keys (i.e., color red; shape circle; number 6)
- Create an envelope with 10 to 15 items. Nine should contain the correct color, shape and number. The others should not.
- Teach as in unidimensional sorting.



BRIEF EXAMPLE

Maria is a 16-year-old girl with autism who is doing work experience in a grocery store. She learned the sorting strategy so that she could begin her job as a stockperson. She was taught the strategy using multi-shaped, multi-colored items and was able to generalize to stocking shelves throughout the grocery store.

SUMMARY

This categorization strategy is a visual, systematic strategy that can be taught using behavioral techniques. This type of strategy appears to hold promise for individuals with autism.

RESEARCH TABLE

Number of Studies	Ages (year)	Sample Size	Area(s) Addressed	Outcome
2	6-16	9	Sorting, categorization	+

STUDIES CITED IN RESEARCH TABLE

1. Bock, M. A. (1999). Sorting laundry: Categorization application to an authentic learning activity by children with autism. *Focus on Autism and Other Developmental Disabilities, 14*, 220-230.
Five children with AU participated in the study, which replicates an extended learning strategy investigation of the effects of categorization strategy training. The results substantiated the value of categorization strategy training for children with autism.
2. Bock, M. A. (1994). Acquisition, maintenance, and generalization of a categorization strategy by children with autism. *Journal of Autism and Developmental Disabilities, 24*, 39-51.
This study assessed the effects of a categorization strategy on the acquisition, maintenance, and generalization of four children with AU to accurately complete uni-, bi-, and tridimensional sorting tasks. Results indicated that categorization strategy training resulted in increased performance on the sorting tasks.

REFERENCES

Bock, M. A. (1994). Acquisition, maintenance, and generalization of a categorization strategy by children with autism. *Journal of Autism and Developmental Disabilities, 24*, 39-51.

Bock, M. A. (1999). Sorting laundry: Categorization application to an authentic learning activity by children with autism. *Focus on Autism and Other Developmental Disabilities, 14*, 220-230.

Schumaker, J. B., Deshler, D. D., & Denton, P. (1984). *The learning strategies curriculum: The paraphrasing strategy*. Lawrence: University of Kansas Center for Research on Learning.

RESOURCES AND MATERIALS

- Bock, M. A. (1994). Acquisition, maintenance, and generalization of a categorization strategy by children with autism. *Journal of Autism and Developmental Disabilities, 24*, 39-51.
- Bock, M. A. (1999). Sorting laundry: Categorization application to an authentic learning activity by children with autism. *Focus on Autism and Other Developmental Disabilities, 14*, 220-230.
These articles describe the categorization strategy steps and details how to use this strategy.

GENERAL RESOURCES

- Autism Internet Modules (AIM) www.autisminternetmodules.org. The Autism Internet Modules were developed with one aim in mind: to make comprehensive, up-to-date, and usable information on autism accessible and applicable to educators, other professionals, and families who support individuals with autism spectrum disorders (ASD). Written by experts from across the U.S., all online modules are free, and are designed to promote understanding of, respect for, and equality of persons with ASD.

- The Autism Web Course: http://cdd.unm.edu/swan/autism_course/about/index.htm. This web course was developed out of materials from the Interactive Collaborative Autism Network (ICAN). The Autism Programs at the University of New Mexico has updated and added information to this web course.
 - Characteristics
 - Assessment
 - Academic Interventions
 - Behavioral Interventions
 - Communication Interventions
 - Environmental Interventions
 - Social Interventions
 - Family Support Suggestions

- Indiana Resource Center for Autism (IRCA) <http://www.iidc.indiana.edu/irca/fmain1.html>. The Indiana Resource Center for Autism staff's efforts are focused on providing communities, organizations, agencies, and families with the knowledge and skills to support children and adults in typical early intervention, school, community, work, and home settings.
 - IRCA Articles: <http://www.iidc.indiana.edu/index.php?pagelid=273>

- Texas Statewide Leadership for Autism www.txautism.net. The Texas Statewide Leadership for Autism in conjunction with the network of Texas Education Service center with a grant from the Texas Education Agency has developed a series of free online courses in autism. Please check the training page, www.txautism.net/training.html, for update lists of courses, course numbers and registration information. Current courses include the following:
 - Asperger Syndrome 101
 - Augmentative and Alternative Communication and the Autism Spectrum
 - Autism for the General Education Teacher
 - Autism 101: Top Ten Pieces to the Puzzle
 - Classroom Organization: The Power of Structure for Individuals with ASD
 - Communication: The Power of Communication for Individuals with ASD
 - Futures Planning for Students with Autism Spectrum Disorder
 - Navigating the Social Maze: Supports and Interventions for Individuals with ASD
 - Solving the Behavior Puzzle: Making Connections for Individuals with ASD