

# Teaching object permanence: An action research study

Authors: Susan Bruce, Claudia Vargas

Persistent link: <http://hdl.handle.net/2345/3250>

This work is posted on [eScholarship@BC](#),  
Boston College University Libraries.

---

Post-print version of an article published in Journal of Visual Impairment & Blindness  
107(1): 60-64.

These materials are made available for use in research, teaching and private study, pursuant to U.S. Copyright Law. The user must assume full responsibility for any use of the materials, including but not limited to, infringement of copyright and publication rights of reproduced materials. Any materials used for academic research or otherwise should be fully credited with the source. The publisher or original authors may retain copyright to the materials.

Teaching Object Permanence: An Action Research Study

Susan M. Bruce, Ph.D.

Associate Professor

Claudia Vargas, Ph.D. Candidate

Boston College

120 Champion Hall

140 Commonwealth Avenue

Chestnut Hill, MA 012467

[susan.bruce@bc.edu](mailto:susan.bruce@bc.edu)

### Teaching Object Permanence: An Action Research Study

Object permanence, also known as object concept in the field of visual impairment, is one of the most important early developmental milestones (Fazzi & Klein, 2002; Morss, 1984). The achievement of object permanence is associated with the onset of representational thought and language (Bruce & Zayyad, 2009; Lewis, & Collis, 2006). Object permanence is important to orientation, including the recognition of landmarks (Anthony, Bleier, Fazzi, Kish, & Pogrud, 2002). Independent mobility (such as crawling) improves visual attentiveness, which is critical to the achievement of later object permanence tasks (Bozeman & McCulley, 2010). Direct instruction can accelerate the mastery of object permanence in children with disabilities (Kahn, 1976; 1984; Morss, 1984; Rogers & Puchalski, 1988) and is more effective than general stimulation programs (Sloper, Glenn, & Cunningham, 1986).

This article presents an action research study on teaching object permanence to a child with multiple disabilities and visual impairment. This study illustrates some of the principles of assessment and instruction described in Bruce and Vargas (in review). The Institutional Review Board at Boston College approved this study, which was part of a set of action research studies on pivotal milestones that were conducted with children with multiple disabilities.

#### **Participant Description**

Jamie, the participant in this study, was a four-year old girl with severe, global developmental delays, a seizure disorder, and non-ambulation (with no other independent means of mobility). Jamie had progressive myopia (with higher myopia in right eye), staphyloma and tilted optic disc in right eye, hypoplasia (both eyes), nystagmus, and

probable ocular motor apraxia. Although Jamie's visual acuity for stripes was measured at 20/94 with best correction, this method underestimates visual responses to more complex and typical visual stimulus. Thus, her ophthalmologist determined that she was legally blind and referred her for registration with the state's Commission for the Blind. Jamie had very poor visual attention. Jamie struggled to make eye contact and to share joint visual attention on an object. Her visual attentiveness improved with prompts paired with pause that allowed her time to direct her visual attention. Jamie had a history of sporadic ear infections and she had tubes in her ears. Although later testing indicated normal hearing it is reasonable to suspect that she may have had a history of intermittent, mild hearing loss due to ear infections. However, she was consistently able to respond to verbal input during the study and was often observed to smile when provided with verbal praise. Jamie was also non-ambulatory and displayed immature grasp patterns.

### **Assessment Results**

The action research team selected the following three assessment tools to determine Jamie's present level of performance on object permanence tasks: *Hawaii Early Profile* (Parks, 2004); *Assessment, Evaluation, and Programming System for Infants and Children, Second Edition, Volume 2, Test Birth to Three Years and Three to Six Year* (Bricker, et al., 2003); and *Structured Informal Assessment of Object Permanence* (Bruce, 2008). Baseline assessment revealed that Jamie had achieved the following precursor behaviors to object permanence: visually focused on person or object (when prompting and pause were provided), visually followed an object moving in horizontal and vertical directions, and reacted to disappearance of slow moving object or person (with a smile), She also exhibited the following early object permanence

behaviors: located a partially hidden object when concealment was observed, and occasionally located a concealed object (when concealment was observed) and a constant auditory sound (emitting from the concealed object ) was provided. Jamie was not able to locate a concealed object without sound cues or when concealment was not observed. Since her performance of object permanence tasks had not changed in over a year, it was determined that she might benefit from direct instruction.

### **Jamie's Lessons**

Team members collaborated on the development of Jamie's lesson plans. The point of instruction was selected based on assessment. Lessons were grounded on research evidence that indicated that direct instruction was valuable for children with multiple disabilities with the following research-based practices applied: instruction was based on thorough assessment, the object hidden was directly reinforcing to Jamie, visual attention to the object was established prior to occlusion, the object to be hidden was repeatedly named, and varied objects, varied barriers, and several instructors were used to support generalization (Bell & Richmond, 1984; Pasnak & Pasnak, 1987; Spence & Capt, 1994). Only highly desirable objects that Jamie had tactilely explored in the past were used. Her preferred objects emitted a high pitch sound that she could activate by squeezing independently and they were brightly colored. In an effort to keep the lesson interesting and motivating, each instructional session provided only three opportunities for Jamie to perform the object permanence task. Three adults (classroom teacher, occupational therapist, and the teacher consultant of children who are visually impaired) taught Jamie's lessons a total of five times each week. Data were taken each time the lesson was taught and baseline and monthly videotape evidence was collected. Jamie's

initial lesson focused on increasing her consistency in demonstrating emerging object permanence knowledge when a continuous auditory signal was provided. It should be noted that the script below was a “minimal script” meaning that the instructors had the freedom to make slight changes (such as making varied reinforcing comments). Thus, the goal was to provide systematic instruction without stifling the unique ways that Jamie interacted with individual staff. The initial lesson follows:

### **Lesson #1**

1. Adult will show Jamie the object to be concealed, saying “Look Jamie.”
2. Adult will praise Jamie: “Good looking at X (object name)” or similar positive comment expressed energetically while smiling.
3. Adult will place the object under a cover while the object makes a noise (continue noise after it is concealed).
4. Jamie will locate the concealed object by removing the cover and taking the object (with any necessary prompting). Jamie will use her vision and touch to locate the object she is hearing.
5. Adult will praise Jamie: “Good, you found X (object name)” (or similar positive comment expressed energetically while smiling). Jamie is allowed for play with the object for a few minutes.

Prompt levels were defined and coded as follows: refusal (R), no response (N), hand over hand over hand or hand under hand guidance (H/H) defined at three levels of assistance-continuous (H/H-C, frequent (50% or more) (H/H-F), and infrequent (less than 50%) (H/H-I), physical cue (P), modeling (M), gestural prompt (G), verbal prompt (V), and independent (I). Within a few weeks, the team was able to move from objects that

emitted continuous sound to the use of objects with an intermittent auditory cue. Within three months, Jamie achieved consistency in locating completely hidden objects without the auditory signal. See Figure 1 for her progress. It was the team's judgment that the combination of her performance at the levels of independence, verbal, and gestural prompting warranted moving her instruction forward, as opposed to waiting for independent performance to reach a specified level of performance.

<See Figure 1>

Instruction continued with Lesson #2 to address the A-not-B error level. Lesson #2 follows:

### **Lesson #2**

1. Adult will show Jamie the object to be concealed saying, "Look Jamie."
2. Adult will praise Jamie: "Good looking at X (name of object)."
3. Adult will place the object under Cover #1 while the object makes a noise (continue noise after concealed).
4. Jamie will locate the concealed object (with any necessary prompting).
5. Adult will praise Jamie: "Good, you found X (name of object)."
6. Repeat Steps #3-5 a 2<sup>nd</sup> time, concealing the object at the same location.

Record result.

7. Repeat Steps #3-5 at a new location. Record result.

Jamie was allowed to play with the toy for a few minutes each time she located it. The sound cue was added back into Lesson #2 due to the increased difficulty of the task but it was faded as she gained success. Jamie struggled with eye contact and with joint attention; therefore, emphasis was placed on first gaining her visual attention to the object

prior to displacement. The lessons also held the benefit of providing her with additional opportunities to track objects and to work on visual attention. The same prompting code was used as in the first lesson. See Figure 2 for her progress. Note that although Jamie's performance declined in the final month, the team regarded the A-not-B error level to be mastered because her performance was at 70% or higher for 5 months and at 90-100% for two of those months. In addition, Jamie was observed to use her object permanence knowledge in functional ways such as looking for toys that she dropped, a behavior she did not demonstrate prior to direct instruction.

<See Figure 2>

### **Conclusion**

This study demonstrated that a consistent team approach to direct instruction of object permanence was of benefit to Jamie, a young child with multiple disabilities and visual impairment. Using three different assessment tools informed the development of the lessons and collaborative team decision-making was important to knowing when Jamie was ready for the second action cycle (Lesson Plan #2). Research-based instructional practices, especially gaining Jamie's visual attention, use of pause, and use of preferred objects that provided the additional cue of sound supported Jamie's mastery of object permanence. Since this was a case study on one child, generalizability is a serious limitation of this research.



## References

- Anthony, T. L., Bleier, H., Fazzi, D. L., Kish, D., & Pogrund, R. L. (2002). Developing early skills for orientation and mobility. In R. Pogrund and D. Fazzi (Eds.), *Early Focus: Working with young children who are blind or visually impaired and their families*. 2<sup>nd</sup> edition. (pp. 326-355). New York: AFB Press.
- Bell, J. & Richmond, G. (1984). Improving profoundly mentally retarded adult's performance on position discrimination. *American Journal of Mental Deficiency*, 89(2), 180-186.
- Bozeman, L. & McCulley, R. M. (2010). Improving orientation for students with vision loss. In W. R. Wiener, P. L. Welsch, & B. B. Blasch (Eds). *Foundations of Orientation and Mobility. Volume II: Instructional strategies and practical applications*. (pp. 27-54). New York; AFB Press.
- Bricker, D., Capt, B., Pretti-Frontczak, K., Johnson, J., Slentz, K., Straka, E. & Waddel, M. (2003). *Assessment, evaluation, and programming system for infants and children (AEPS). Volume 2. Birth to Three Years and Three to Six Year*. Second Edition. Baltimore: Paul H. Brookes.
- Bruce, S. (2008). Structured informal assessment of object permanence.
- Bruce, S. & Zayyad, M. (2009). The development of object permanence in children with intellectual disability, physical disability, and autism, and blindness. *International Journal of Disability, Development, and Education*, 56(3), 229-246.
- Fazzi, D. L. & Klein, M. D. (2002). Cognitive focus. In R. Pogrund & D. Fazzi (Eds.), *Early focus: Working with young children who are blind or visually impaired and their families*. 2<sup>nd</sup> Edition. (pp. 107-153). New York: AFB Press.

- Kahn, J. V. (1976). *Acceleration of object permanence with severely and profoundly retarded children*. ED 125 296.
- Kahn, J. V. (1984). Cognitive training and initial use of referential speech. *Topics in Language Disorders, 5*, 14-28.
- Morss, J. R. (1984). Enhancement of object-permanence performance in the Down's syndrome infant. *Child: Care, Health and Development, 10*(1), 39-47.
- Parks, S. (2004). *HELP Strands. Curriculum-Based Developmental Assessment. Birth to Three Years*. 2<sup>nd</sup> Edition. Adapted from the *Hawaii Early Learning Profile*. Palo Alto, CA: Vort Corporation.
- Pasnak, C. F. & Pasnak, R. (1987). Accelerated development of object permanence in Down's syndrome infants. *Child, Care, Health and Development, 13*(4), 247-255.
- Rogers, S. J. & Puchalski, C. B. (1988). Development of object permanence in visually impaired infants. *Journal of Visual Impairment and Blindness, 82*(4), 137-142.
- Sloper, P., Glenn, S. M. & Cunningham, C. C. (1986). The intensity of training on sensori-motor development in infants with Down's syndrome. *Journal of Mental Deficiency Research, 30*(2), 149-162.
- Spence, M. J. & Capt, D. B. (1994). The effect of multimodal reinforcer of object concept performance and off-task behavior of children with Down syndrome. *Infant-Toddler Intervention: the Transdisciplinary Journal, 4*(2), 75-85.
- Wright, L., Lewis, V., & Collis, G. M. (2006). Imitation and representational thought in young children with Down syndrome. *British Journal of Developmental Psychology, 24*, 429-450.

Figure 1

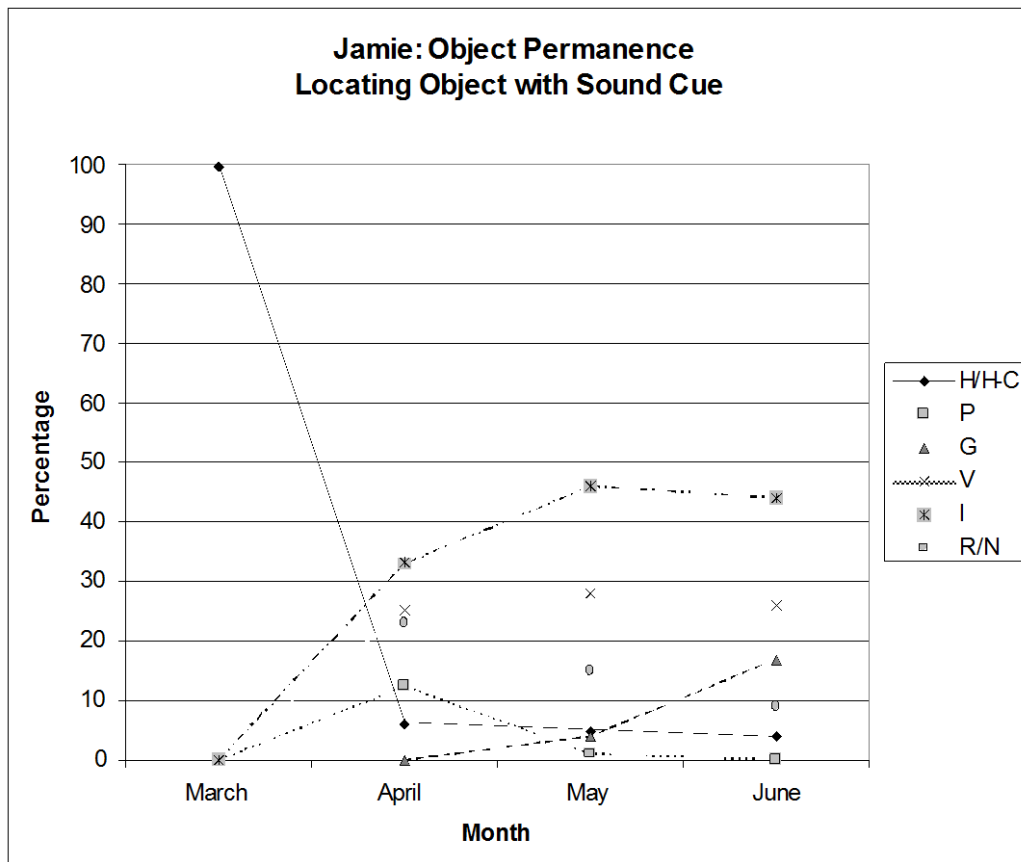


Figure 2

