Teaching Picture Recall for Older Adults: A Comparison of Two Verbal Behavior Protocols

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A Problem Within Our Field

• The number of people aged 65 years or older has reached 39.6 million since 2009 according to Aging Statistics (2011).

• It is estimated that 4.8 million individuals, over the age of 65, experience some cognitive impairment that is not dementia (Plassman et al., 2011) (i.e., normal aging).

• There is a lack of behavior analytic research on memory.
**Intraverbal Research**

- Skinner (1957, p. 71) defined the intraverbal as “a verbal response with no point to point correspondence to the evoking stimulus.”
  - Braam and Poling (1983) extended the definition to include answering questions about category membership.

- Sautter et al. (2011) and Kisamore et al. (2011) focused on intraverbal problem solving in children.
  - Category membership.

- Dixon et al. (2011) investigated teaching older adults with dementia to recall pictures on a screen using intraverbal questions.
  - Tacts, echoics, and intraverbals.
Purpose

• The purpose of this study was to compare and systematically replicate two previous studies, Sautter et al. (2011) and Dixon et al. (2011), to investigate if older adults without dementia can learn to recall names of famous people.

• Plaud et al. (2000) suggests that research with older adults should be done using individuals without dementia, so research with older adults with dementia can be compared to a normative base.

• Therefore, this study was conducted with older adults without dementia.
Methods

• Four older adults with no cognitive impairment.
  – Nikki, 83, no glasses or hearing aid, MMSE - 28
  – Gina, 77, glasses, no hearing aid, MMSE - 27
  – Diane, 68, no glasses or hearing aid, MMSE - 28
  – Lucy, 65, glasses, no hearing aid, MMSE - 30
Methods

- Dependent Variable
  - The number of correct intraverbal responses emitted.
  - Secondary
    - Number of audible self-prompts.

- Frequency count of these variables was recorded via video recorder and primary researcher.
Methods

• IOA
  – Nikki: BL (44%; 100%) TX (49%; 100%)
  – Gina: BL (45%; 100%) TX (57%; 100%)
  – Diane: BL (39%; 100%) TX (57%; 100%)
  – Lucy: BL (47%; 100%) TX (52%; 100%)

• Treatment integrity: 100%

• The research design was a concurrent multiple baseline across participants with alternating treatments.
**Category**
Famous Musicians from the 1980s

**Group**
- **Rock**
  - **Stimuli**
    - Jani Lane
    - Kip Winger
    - Jon Bon Jovi
    - Axl Rose
    - Steven Tyler
    - Steve Perry
    - David Coverdale
    - Joe Elliot
    - Bret Michaels

- **Group**
  - **Pop**
    - **Stimuli**
      - Elton John
      - Prince
      - Boy George
      - John Mellencamp
      - Bryan Adams
      - Bruce Springsteen
      - Billy Idol
      - David Bowie
      - George Michael

- **Group**
  - **Country**
    - **Stimuli**
      - Mel McDaniel
      - Ronnie McDowell
      - Chris LeDoux
      - Eddie Rabbitt
      - Keith Whitley
      - Eddy Raven
      - Earl Thomas Conley
      - Steve Wariner
      - Johnny Lee
Procedures

• Prior to baseline: Exposure to stimuli.

• Baseline: “Can you tell me who are some famous musicians from the 1980s?”

• No consequences provided.
Procedures

• Training Part I
  – Nikki: Sautter - Dixon
  – Gina: Dixon - Sautter
  – Diane: Sautter - Dixon
  – Lucy: Dixon - Sautter

• Training Part II
  – Nikki: Sautter
  – Lucy: Sautter
Procedures – Sautter et al. Protocol

• Prerequisite skills training:
  – Multiple Tact Training (MTT)
  – Intraverbal Training (IVT)
  – Mediating Response Training (MRT)
Procedures – Multiple Tact Training

• Stage 1 – Learned the name and the group that the stimulus belonged to.
  – “Can you tell me who this is?”
  – No response = echoic prompt, “This is Bret Michaels and he is a rock star.”

• Stage 2 – Learned to name the category and group that the stimulus belonged to.
  – “Can you tell me who this is?”
  – No response = echoic prompt, “This is a rock star and he is a famous musician from the 1980s.”

• Participant was allowed to recall stimuli that she just learned.

• The participant must reach criteria (give correct response twice for each picture at random trials) before she can move into the next training phase.
Procedures – Intraverbal Training

• Stage 1 – Responded to intraverbal questions about groups.
  – “Can you tell me some (group name)?”
  – If omission of stimuli occurred → echoic prompt.

• Stage 2 – Responded to intraverbal questions about the category.
  – “Can you tell me some groups of famous musicians from the 1980s?”
  – Omission of stimuli → echoic prompt.

• The participant must reach criteria (give correct responses twice for each intraverbal question at random trials) before she can move into the next training phase.
Procedures – Mediating Response Training

• **Stage 1** - Learned strategies that could be used when asked a category question.
  – Four strategy statements: “Say three groups,” “Pick a group,” “Pick a different group,” and “Say the last group.”

• **Stage 2** – Participants learned to apply each strategy.
  – State the strategy then respond to the statement.
  – “What is your first strategy?”
  – Target response = “Say three groups…Rock, Pop, Country.”
Procedures – Dixon et al. Protocol

• Instructions read.
• Presentation of picture.
• “Can you tell me who this is?”
• Target response = “Billy Idol.”
• “Who is Billy Idol?”
• Target response = “Billy Idol is a pop star.”
• No consequences provided.
Procedures – Dixon et al.

• Process continued until all pictures in the targeted group were exposed.

• “Who were some of the people that you just saw?”

• The participant was allowed to recall as many of the stimuli as she could.
Follow-Up

• Two weeks following the completion of both training phases, Lucy was exposed to a follow-up session.
  – Nikki could not complete MRT.
  – Gina and Diane did not complete MTT.

• “Can you tell me who are some famous musicians from the 1980s?”
Results - Baseline

• Nikki – 0% correct responding

• Gina – 0% correct responding

• Diane – 0% correct responding

• Lucy – 0% to 11% correct responding
Probe Data
Gina & Diane – Probe Data
Nikki & Lucy – Probe Data
Discussion

• Train older adults to recall pictures of famous people via problem solving or tacts, echoics, and intraverbals.

• The Dixon protocol did not provide consequences for incorrect grouping of stimuli.
  – This affected MRT responding for Nikki.
  – Long learning history vs. reinforcement.

• Future research should replicate this study with older adults with dementia.
  – Family, friends, and staff.
Limitations

• Type of research design that is used.
  – Alternating treatments
  – Multiple baseline

• Type of stimuli that is used.
  – Novel
  – Family, friends, staff

• During MRT 2, there was confusion about what the participant should do.
  – Need more clear instructions.
Overall

• Older adults can learn to recall pictures of arbitrary stimuli.

• There is still a need for further investigation.

• Potential positive effects for older adults with dementia and their families.