Methodological Challenges in Isolating the Effects of Training Variables

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Why Performance Feedback (PF)?

• Relevant to all aspects of training
  – Acquisition, generalization, and maintenance

• Socially valid
  – Survey of 244 supervisors (Parsons, Reid, & Crow, 2003)

• Effective in comparison to:
  – Other components of behavioral skills training (Ward-Horner & Sturmey, 2012)
  – Instructions alone (Roscoe et al., 2008)
Functional Properties of PF

• Duncan & Bruwelheide (1985)
  – Motivating operation (MO)
  – Discriminative stimulus (SD)
  – Reinforcer
  – Punisher

• Balcazar et al. (1985) and Alvero et al. (2001)
  – Suggested experimental analysis
Populations & Settings for PF

- **University Hockey team** (Anderson, Crowell, Domen, & Howard, 1988)
- **Electric utility industry** (Petty, Singleton, & Connell, 1992)
- **Bank Tellers** (Crowell, Anderson, Abel, & Sergio, 1988)
- **Textile factory** (Welsh, Luthans, & Sommer, 1993)
- **Hotel banquet staff** (LaFleur & Hyten, 1995)
- **Nursing home staff** (Hawkins, Burgio, Lanford, & Engel, 1992)
- **School staff working with students with disabilities** (Parsons, Reid, & Green, 1996)
- **Teachers** (Scheeler & Lee, 2002)
Forms, Sources, Content, and Timing of PF

• Forms
  – Public or private
  – Written
  – Vocal (face-to-face or bug-in-the-ear)
  – Graphic
  – Video

• Sources
  – Supervisors/managers
  – Researchers
  – Self-generated
  – Customers

• Content
  – General versus specific
  – Corrective versus non-corrective
  – Praise for correct behavior
  – Self-identification
  – Answers to questions/problem solving
  – Comparisons to the behavior of self, a standard, or the group

• Timing
  – Immediate vs. delayed

Alvero et al. (2001) & Scheeler et al. (2004; 2006)
Is Timing a Moderator of the Effect of PF?

• Variations in PF timing
  – In-vivo (Scheeler et al., 2007; Rock et al., 2009)
  – Immediately after observation session and before the next session (Roscoe et al., 2006)
  – Same day (Codding et al., 2005)
  – Weekly (Myers et al., 2011; Mortenson & Witt, 1998)

• Timing as a moderator
  – Review (Scheeler et al., 2004): Timing of feedback was the only clear moderator of effect
  – Meta-analysis (Solomon et al., 2012): Timing of feedback was not a statistically significant moderator
Experimental Comparisons of PF Timing

• O’Reilly et al., 1992
  – Participants: 3 student teachers
  – DVs: Prompting and providing differential consequences
  – IVs: Immediate (in-vivo + after 1 hr.) vs. delayed (1-3 days after observation) PF
  – Results: Immediate PF more effective for 2 of 3 students

• Scheeler et al. (2006)
  – Participants: 5 preservice teachers
  – DVs: Prompting and providing differential consequences
  – IVs: Immediate (in-vivo) vs. delayed (after observation) PF
  – Results: Immediate PF more effective for all teachers
Confounds

• Setting: in-class vs. outside of class

• Time: Latency between
  – Feedback and next session
  – Session to session

• Student behaviors not held constant
  – Number of opportunities for feedback
  – Student interactions/reactions
  – Form of practice: with or without student present
One Potential Solution

• Trained human confederates (e.g., Roscoe et al., 2006; Ward-Horner & Sturmey, 2012)
  – Benefits
    • Scripted behavior: Opportunities held constant
    • Standardized responses across sessions/participants
  – Limitations
    • Time
    • Turn-over
    • Lack of precise control
Simulated Humans

• Have been used during training to promote acquisition of skills
  – Menstrual hygiene (Richman et al., 1986)
  – Self-catheterization (Neef et al., 1989)
  – Suctioning procedures for children with tracheostomies (Derrickson et al., 1991)
  – Self-administration of nasogastric tube insertion (Reimers et al., 1995)

• Recently utilized to identify the functional properties of caregiver behavior
  – Role of negative reinforcement in infant caregiving (Thompson et al., 2011)
Use of Simulators in Other Fields

- Aviation (Hays, 1992)
- Military (Scribner, 2007)
- Medicine (Cook, 2010)
The TeachLivE™ Lab
Concluding Remarks

- **Experimental analysis of training**
  - Identify functional mechanisms
  - Enhance effectiveness of training
- **Methodological challenges**
  - Need for better precision/control
- **Potential solutions**
  - Simulators
  - Human robot
References


