

**Fabrizio/Moors**  
CONSULTING


Establishing Frequency Aims

Michael A. Fabrizio, M.A., BCBA  
Fabrizio/Moors Consulting

**“Stand on my shoulders as I stood on Fred Skinner’s shoulders. You see more big things from up here and you see further.”**

in very loving memory of  
Ogden R. Lindsley

**Thank you, Og!**




**Fabrizio/Moors**  
CONSULTING

A bit of history

- Michael & Alison work at Morningside Academy
- Formed Fabrizio/Moors in 1998
- Started working with four children
- Began shaping higher frequencies of responding
- Couldn't get kids' performance to reach few relevant published frequency aims

**Fabrizio/Moors**  
CONSULTING

A bit of history

- Panic sets in

**Fabrizio/Moors**  
CONSULTING

A bit of history

- Panic sets in
- Measurement replaces panic
- Switch in focus from frequency attained to outcomes achieved

**Fabrizio/Moors** CONSULTING

How aims have been set

- Norming
- Super frequency
- Empirical validation

**Fabrizio/Moors** CONSULTING

How aims have been set

- Norming
  - Sample data collected from some comparison group of children
- Super frequency
- Empirical validation

**Fabrizio/Moors** CONSULTING

How aims have been set

- Norming
- Super frequency
  - Highest attained frequencies used as performance criteria
- Empirical validation

**Fabrizio/Moors** CONSULTING

How aims have been set

- Norming
- Super frequency
- Empirical validation
  - Aims directly tested
  - Least often used

**Fabrizio/Moors** CONSULTING

Outcomes

- REAPS (Haughton, 1980)
  - Retention
  - Endurance
  - Application
  - Performance Standards
- Combined endurance and stability
- Advocated for empirical derivation of aims
- Binder (1996) repeats this call for empirical derivation

**Fabrizio/Moors** CONSULTING

Outcomes

- RESA (Johnson & Layng, 1992)
  - Retention
  - Endurance
  - Stability
  - Application
- Separated endurance and stability
- Described functional independence of frequency and each outcome
- Offered no measurement procedures
- Offered no description of how they derived their aims

**Fabrizio/Moors** Consulting

Outcomes

- Skill
  - Retention
  - Endurance
  - Stability
  - Application
- Measurement procedures designed to extend beyond what was taught (Fabrizio & Moors, 2003)

**Fabrizio/Moors** Consulting

Retention

- Retention:
  - Maintenance of performance quality and frequency following periods without practice
- Retention check procedures:
  - Same materials
  - Same level of distraction
  - Last used timing length
  - Following one month without practice

**Fabrizio/Moors** Consulting

Endurance

- Endurance:
  - Maintenance of performance quality and frequency across long durations without fatiguing
- Endurance check procedures:
  - Same materials
  - Same level of distraction
  - Triple length of previous longest timing

**Fabrizio/Moors** Consulting

Stability

- Stability:
  - Maintenance of performance quality and frequency in the presence of highly distracting stimuli
- Stability check procedures:
  - Same materials
  - Very high level of distraction
  - Last used timing length

**Fabrizio/Moors** Consulting

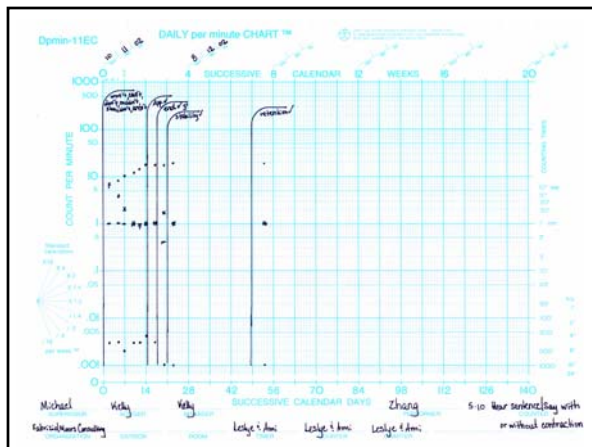
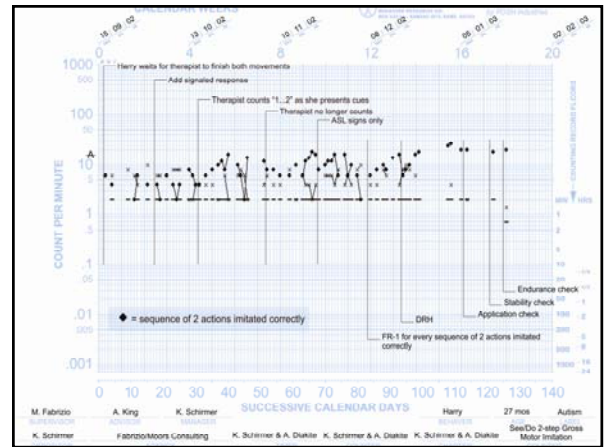
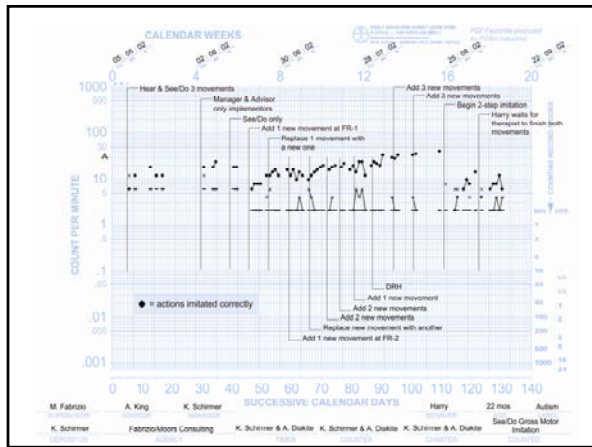
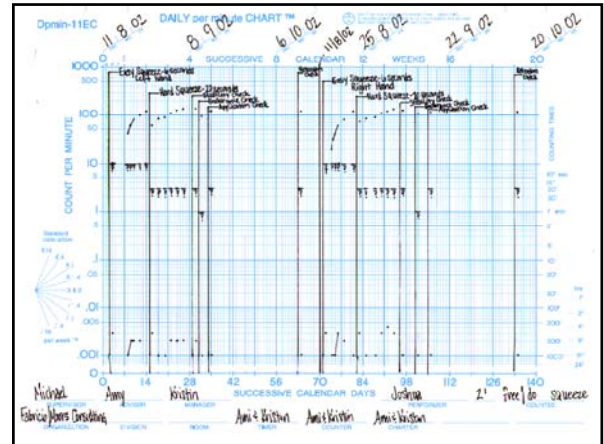
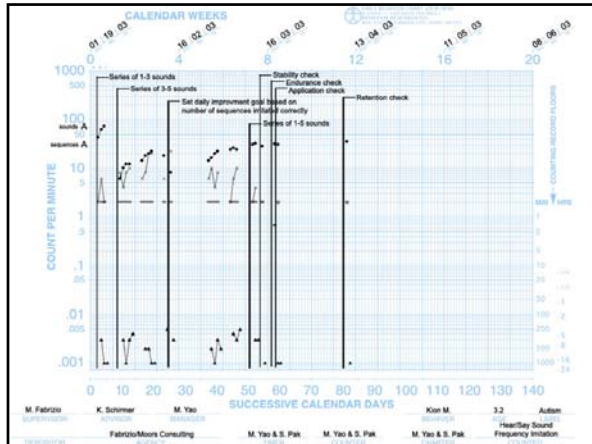
Application

- Application:
  - Maintenance of performance quality and frequency in response to previously untaught examples
- Application check procedures:
  - All new examples of materials
  - Same level of distraction
  - Last used timing length

**Fabrizio/Moors** Consulting

Participants

- Approximately 65 children
- More than 700 examples of charted performances
- Ages 18-months to 15-years
- Typical 3:1 sex ratio
- Asperger's Syndrome, PDD-NOS, Autism
- Vancouver BC, Puget Sound, Texas, and Portland area

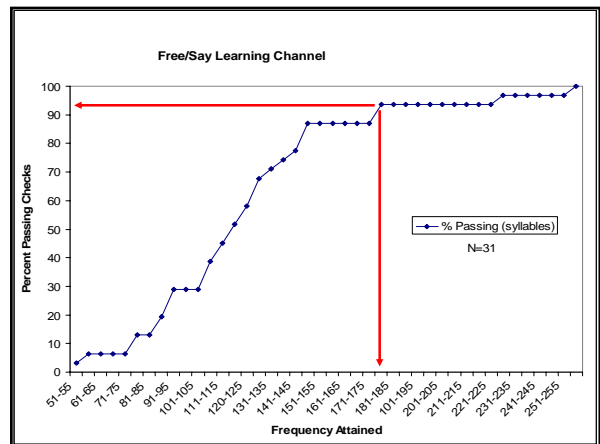
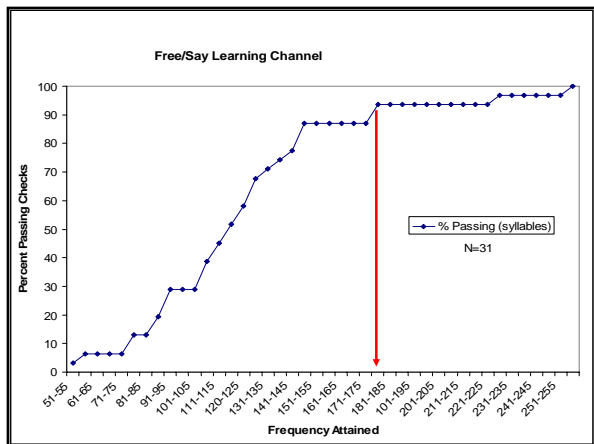
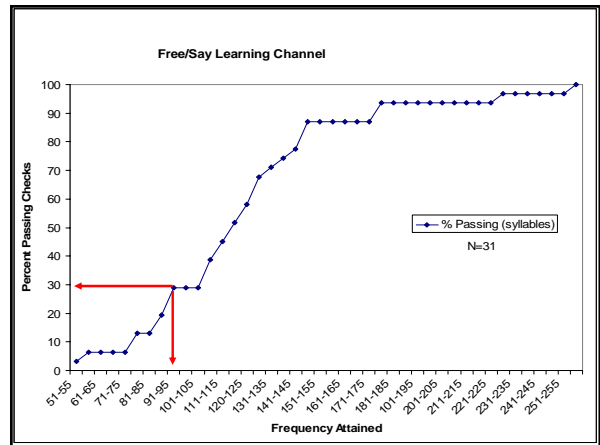
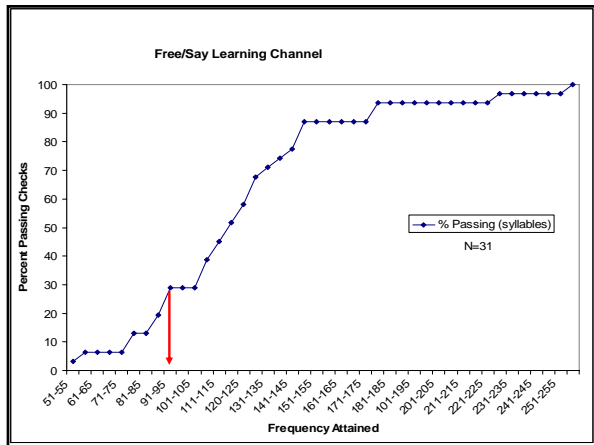
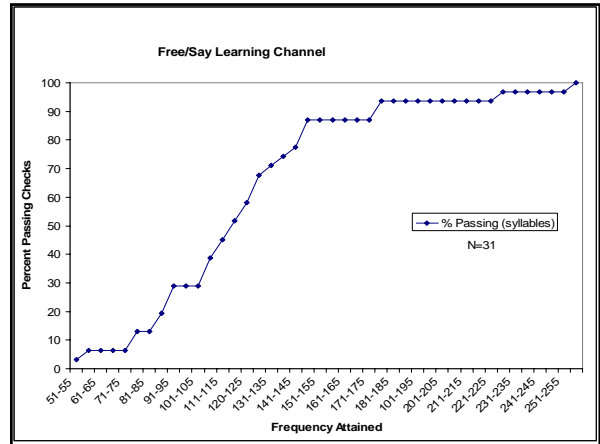
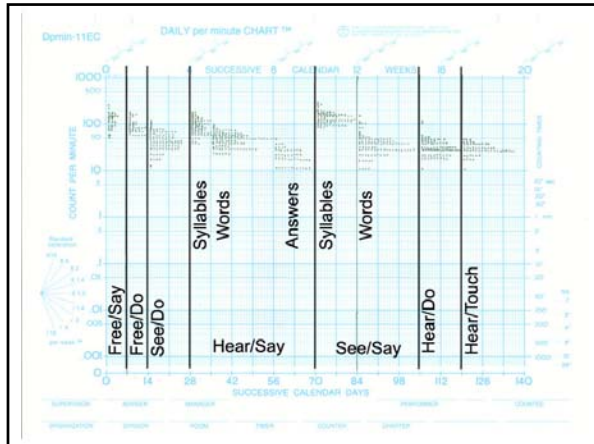


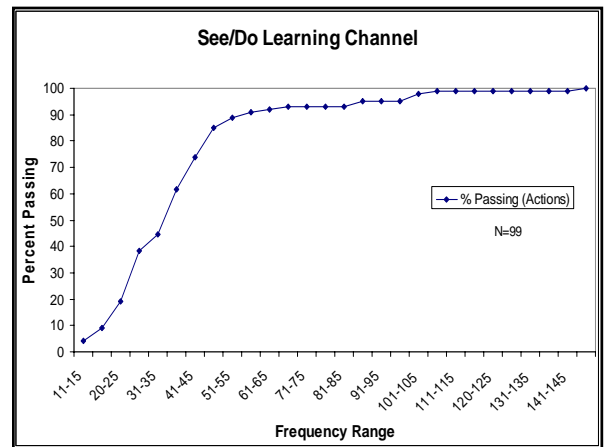
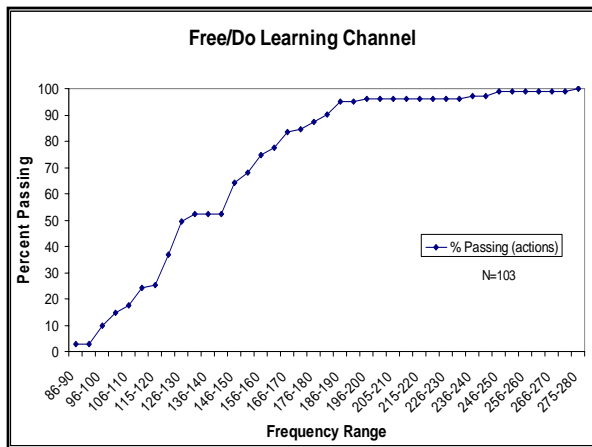
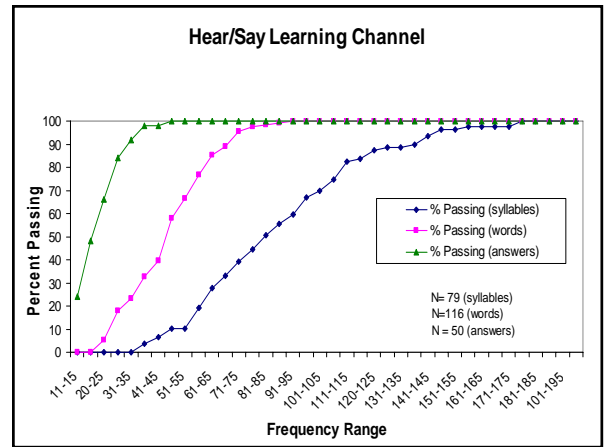
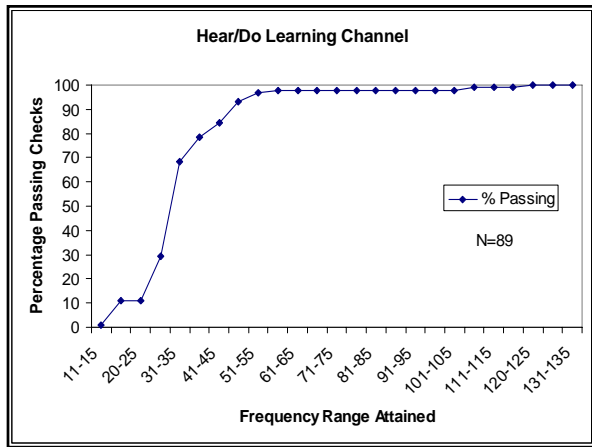
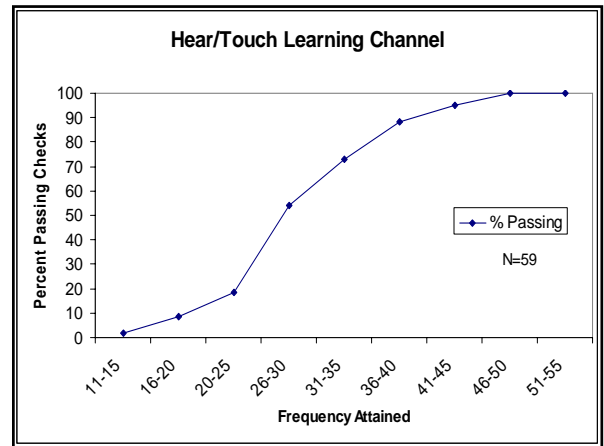
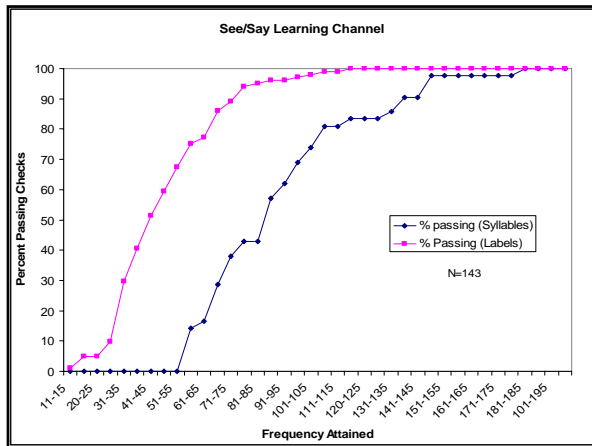
**Fabrizio/Moors CONSULTING**

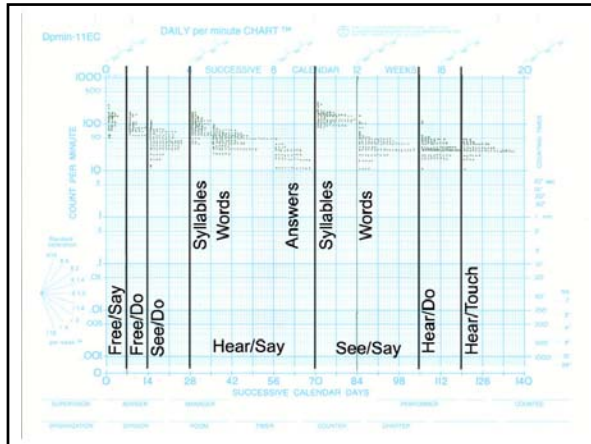
**Suggested Frequency Aim Ranges by Learning Channel**

Learning Channel	Suggested Frequency Aim Range	Example Skills
Hear/Do	35-50	Hear/Do directions
Hear/Say	40-60, 70-90 <sub>2</sub>	Hear/Say Sounds Hear/Say Sentences
Hear/Touch	35-40	Hear/Touch animals by name Hear/Touch colors
See/Do	35-50	See/Do gross motor imitation See/Do oral motor imitation
See/Say	55-70, 80-100 <sub>2</sub>	See/Say animals by name See/Say size comparisons
Free/Do	150-200	Free/Do grasp-reach-release Free/Do squeeze
Free/Say	180-200 <sub>2</sub>	Free/Say steps in a process Free/Say things you did in school

*(suggested frequency aim ranges when counting words as the movement cycle)  
(suggested frequency aim ranges when counting syllables as the movement cycle)*







**Fabrizio/Moors** CONSULTING

Some Limitations of the Data

- No control for children's histories
  - General control in skills targeted
    - Doer, Watcher, Listener, Speaker, Speaker-Own-Listener
  - No control for practice frequencies, # responses emitted, or amount of reinforcement
- Only focuses on one dimension of charted performance
  - Development of agility

**Fabrizio/Moors** CONSULTING

Next Steps

- Control for practice frequencies and number of responses emitted
- Start counting "uses"
- Start measuring stability under conditions of competitive stimulus control

References

Binder, C. (1996). Behavioral fluency: Evolution of a new paradigm. *The Behavior Analyst, 19*, 163-197.

Fabrizio, M. & Moors, A. (2003). Evaluating mastery: Measuring instructional outcomes for children with autism. *European Journal of Behavior Analysis, 4*(1), 23-36.

Fabrizio, M., Moors, A., Pahl, S., & King, A. (May 2002). Precisely evaluating learning outcomes in children with autism: Empirically validating instruction. Paper presented at the annual convention of the Association for Behavior Analysis, Toronto, Canada

Houghton, E.C. (1980). Practicing practices: Learning by activity. *Journal of Precision Teaching, 1*(3), 3-20.

Johnson, K.R. & Layng, T.V.J. (1992). Breaking the Structuralist barrier: Literacy and numeracy with fluency. *American Psychologist, 47*, 1475-1490.

Moors, A. & Fabrizio, M. (May 2001). Setting performance criteria as a function of task type: The role of learning channels in establishing frequency aims. Paper presented at the annual convention of the Association for Behavior Analysis, New Orleans, Louisiana

Moors, A., Fabrizio, M., Pahl, S., King, A., Ferris, K., & Schirmer, K. (May 2003). Empirically validating frequency aims for children with autism. Data-based poster presented at the annual convention of the Association for Behavior Analysis, San Francisco.

Moors, A., Fabrizio, M., Pahl, S., King, A., Ferris, K., Schirmer, K., Almon, H. Empirically validating frequency aims for children with autism. Data-based poster presented at the annual conference of the Association for Behavior Analysis, Boston, Massachusetts, May 2004

Moors, A., Fabrizio, M., Schirmer, K., King, A., & Pahl, S. (August 2004). Evaluating learning outcomes for children with autism and related disabilities. Paper presented at the second international conference of the Association for Behavior Analysis, Campinas, Brazil.