

# Employment-Related Social Behaviors of Transition-Age Youth with Autism

Leslie Ann Bross

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**Why is employment  
important for transition-age  
youth with ASD?**

# Benefits of Employment

- Financial income
- Time structure
- Social contact
- Collective purpose
- Identity or status
- Community integration
- Quality of life

Source. Butterworth et al., 2011; Jahoda 1997, 1981, 1982; Verdugo et al., 2006



# Disability and Employment

## ❖ Americans with Disabilities Act (ADA, 1990)

- Title I relates to employment
- Prohibits discrimination
- Reasonable accommodations

## ❖ Workforce Innovation and Opportunity Act (WIOA, 2014)

- Authorizes Vocational Rehabilitation services
- Increased access to employment, education, training, and support services



## Competitive Integrated Employment

- The individual is compensated at or above minimum wage
- Same level of benefits provided to other employees without disabilities in similar positions
  - Including job advancement opportunities
- The employment setting is typically found in the community

*Source.* Workforce Innovation and Opportunity Act  
34 C.F.R. §361.5(c)(9)(i-iii)(2018)



# Postsecondary Employment Outcomes for Individuals with ASD

- Young adults with ASD have lower employment rates compared to individuals with other disabilities (Newman et al., 2011; Roux et al., 2013)
- When employed, work is usually part-time and for minimum wages (Roux et al., 2013)
- Jobs are often mismatched to the individual's strengths, preferences, and interests

*Note.* ASD = autism spectrum disorder



# Potential Barriers to Competitive Integrated Employment for Individuals with ASD

## ❖ External barriers:

- Accessing Vocational Rehabilitation services (Cimera & Cowan, 2009)
- Employer lack of knowledge about ASD (López & Keenan, 2014)
- Misconceptions about ASD and employment
- Job obtainment process

## ❖ Internal barriers:

- Navigating social demands at work (Müller et al., 2003)
- Self-advocacy skills to disclose disability and obtain workplace accommodations (if desired)



## Employment-Related Social Skills and Customer Service Skills

- ❖ Potential employment-related social skills:
  - Asking for help
  - Initiating a conversation with a co-worker
  - Interacting with customers
- ❖ Customer service skills:
  - Responding to customer complaints
  - Making sales
  - Demonstrate effective nonverbal communication skills

*Source.* Agran et al., 2016; Lawhorn, 2018; Morningstar et al., 2017.





## Video Modeling (VM)

- ❖ VM is a well-established evidence-based practice for learners with ASD (Bellini & Akullian, 2007; Qi et al., 2018; Mason et al., 2012; Wong et al., 2015).
- ❖ In particular, VM has been used to teach social and communication skills (Qi et al., 2018).
- ❖ Less focus on VM in community employment settings.
  - Even less focus on employment-related social skills





# Method for Current Research Study

**The purpose of this study was to examine the efficacy of a VM intervention to enhance the customer service skills of young adults with ASD in community employment settings.**

# Research Questions

1

To what extent does a VM intervention increase the verbalization of job-specific customer service phrases for young adults with ASD in community employment settings?

2

To what extent does a VM intervention improve the quality of delivery of customer service phrases for young adults with ASD as measured on an Observer Impression Scale in the categories of tone, timing, body language, and appropriate statements?

3

To what extent do co-workers, job coaches, and/or supervisors implement a VM intervention with a fidelity for young adults with ASD as a means to generalize to natural intervention agents?



# Research Questions

4

Following VM intervention cessation, to what extent do young adults with ASD maintain verbalization of customer service phrases at two and four weeks?

5

What is the social validity of a VM intervention to increase the customer service skills of young adults with ASD as reported by young adults and their co-workers, job coaches, and/or supervisors?



## Participant Inclusion Criteria

- Age 18 or older
- ASD diagnosis confirmed via educational and/or medical report
- Used speech as primary method of communication
- Already disclosed or willing to disclose disability to employer
- Exhibit employment support needs related to customer service skills as confirmed during preliminary observations



## Setting Inclusion Criteria

- Employment setting was a setting typically found in the community
- Job tasks required direct customer service interactions a minimum of 8 times per hour
- Employer or supervisor provided consent and agreed to data collection sessions during regular work shifts





## Hank

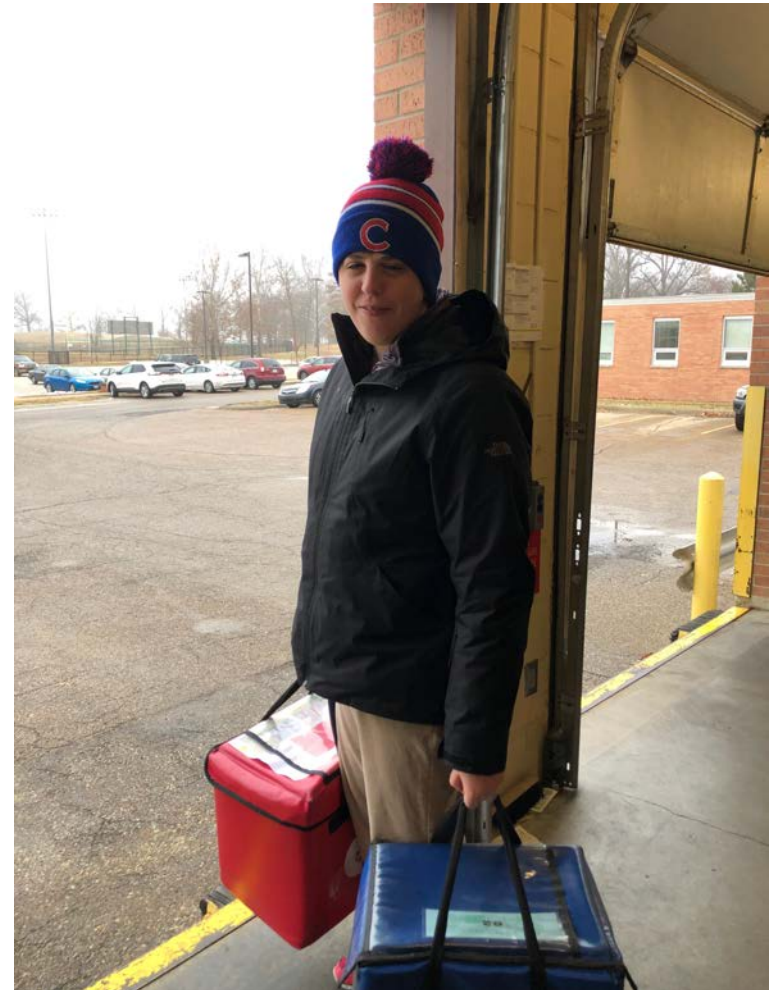
- 19-year-old male with ASD
- Secondary diagnoses of ADHD and mild cerebral palsy
- Competitively employed at an amusement park
- Job duty was collecting tickets
- Worked independently with no job coach
- Customers were amusement park visitors





## Stacey

- 22-year-old female with PDD-NOS
- Secondary diagnoses of ADHD and anxiety disorder
- Competitively employed at Meals on Wheels
- Job duty was handing meals to volunteer drivers
- Worked independently with no job coach
- Customers were volunteer drivers



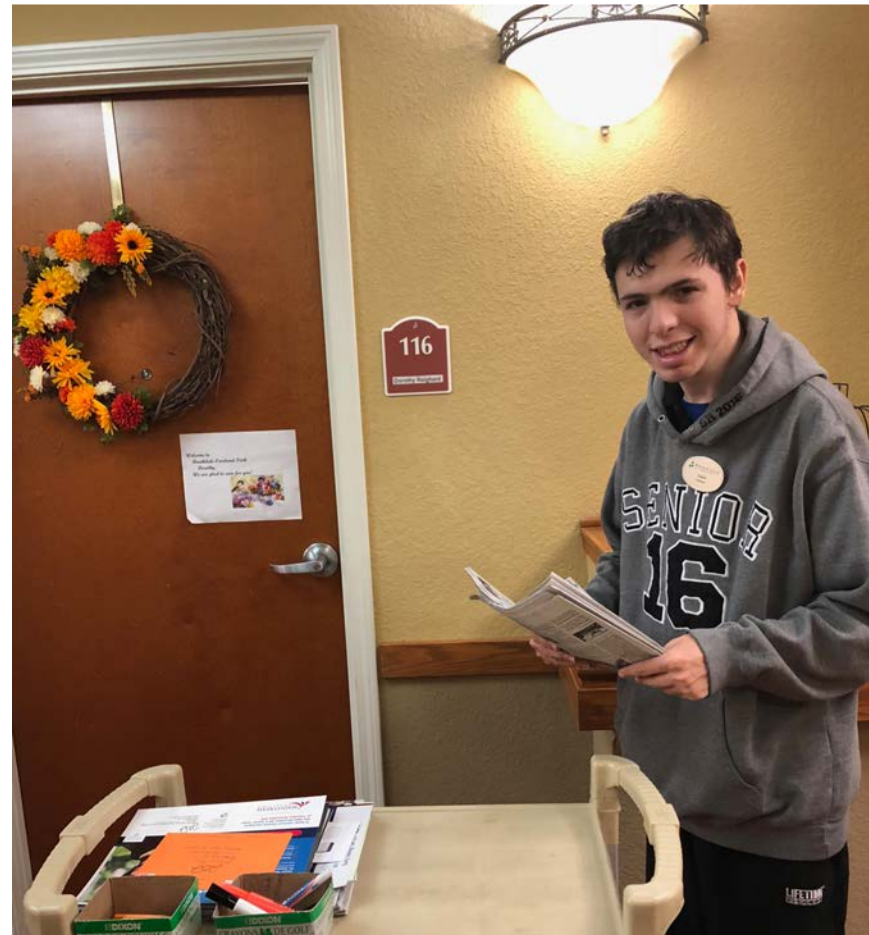
## Cole

- 26-year-old male with ASD
- Earned an Associate of Arts in General Studies
- Competitively employed at movie theatre
- Job duty was selling food/drinks and movie tickets
- Worked independently with no job coach
- Customers were movie patrons



## Aaron

- 19-year-old male with PDD-NOS and intellectual disability
- Participated in work-based learning experience at a nursing home
- Job duty was delivering mail and newspaper
- Job coach provided support
- Customers were nursing home residents





## Marshall

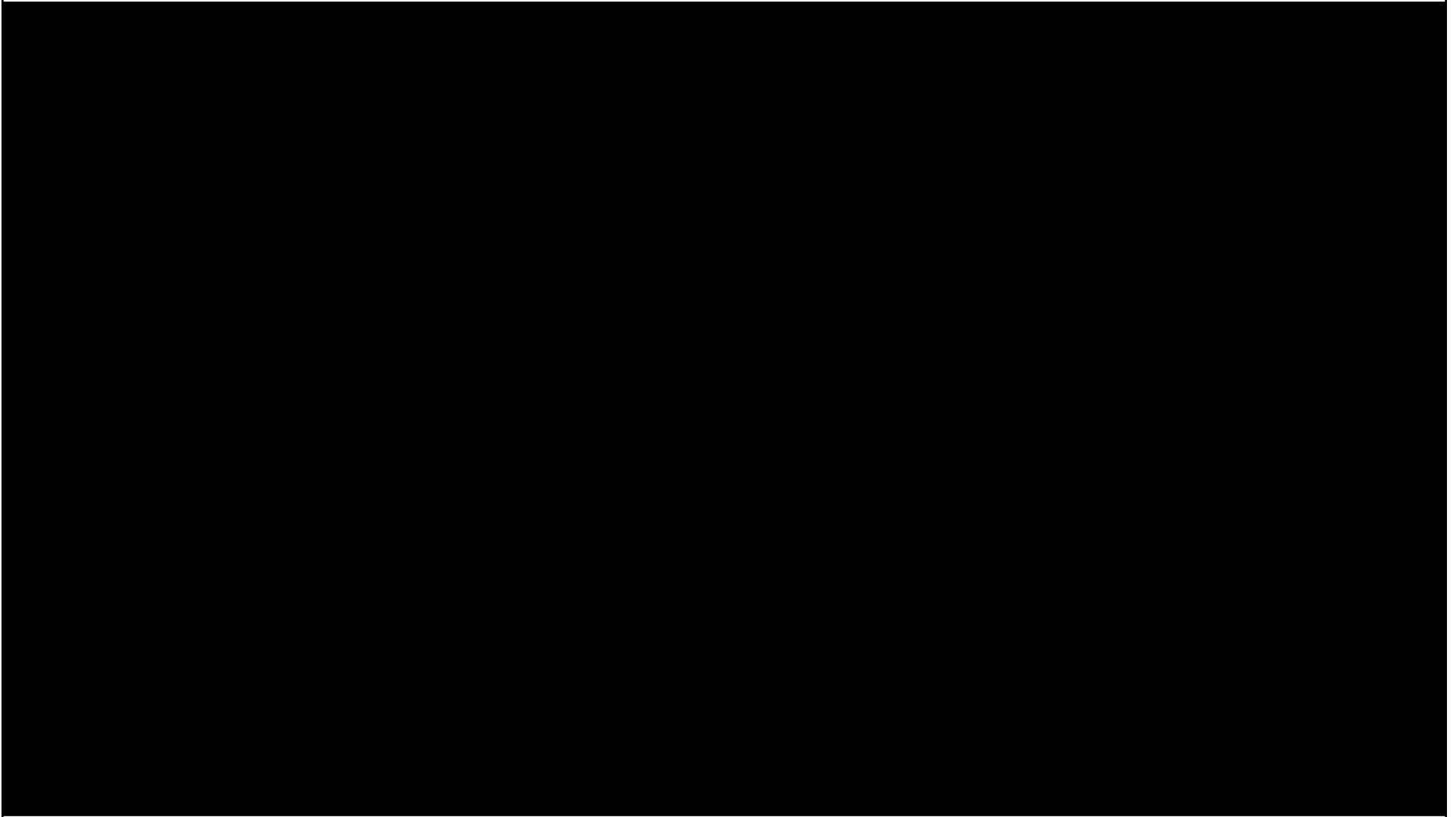
- 18-year-old male with ASD
- Participated in work-based learning experience at nursing home
- Job duty was delivering mail and newspaper
- Job coach provided support
- Customers were nursing home residents



## Generalization phase: Co-workers, job coaches, and supervisors as the intervention agents



# Sample Video



## Video Sessions and Behavioral Observations

- Participants watched videos in quiet, employee-only space
  - “What customer service phrases will you say today?”
- Behavioral observations occurred immediately after video session
  - 1 hour or 20 opportunities for participants to interact with customers, whichever came first.
  - Opportunities to interact were defined for each setting.
  - Data collectors listened for verbalization of the phrases and assessed quality of delivery of the phrases.



# Measure: Observer Impression Scale

## Observer Impression Scale

	<b>1</b> < less than 25%	<b>2</b> < less than 79%	<b>3</b> >greater than 80%	<b>4</b> 100%	<b>Customer opportunities</b> Mark the opportunity # that inappropriate impressions were observed
<b>Tone of Voice</b>					
<b>Timing</b>					
<b>Body Language</b>					
<b>Appropriate Statements</b>					

**Percent of correct opportunities:**

Tone of Voice: \_\_\_\_\_ Timing: \_\_\_\_\_ Body Language: \_\_\_\_\_ Appropriate Statements: \_\_\_\_\_





# Visual Analysis Process

- Formative visual analysis
  - Level
  - Trend
  - Variability/stability
  - Overlap
  - Immediacy of change
- Summative visual analysis
  - Three demonstrations of effect per participant = functional relation

*Source.* Barton et al., 2018; Gast & Spriggs, 2014; Kratochwill et al., 2010; Kratochwill et al., 2013



## Reliability of Target Behaviors

	Baseline	VM intervention condition	Generalization
Hank	100%	98% (range 97-98%)	100%
Stacey	98%	99% (range 95-100%)	100%
Cole	98%	97% (range 92-100%)	100%
Aaron	97%	99% (range 98-100%)	100%
Marshall	100%	99% (range 97-100%)	98%



# Reliability of Observer Impression Scale

	Baseline	VM intervention condition	Generalization
Hank	100%	96% (range 75-100%)	100%
Stacey	100%	90% (range 50-100%)	100%
Cole	100%	100%	100%
Aaron	100%	97% (range 92-100%)	75%
Marshall	100%	81% (range 25-100%)	100%



# Treatment Integrity

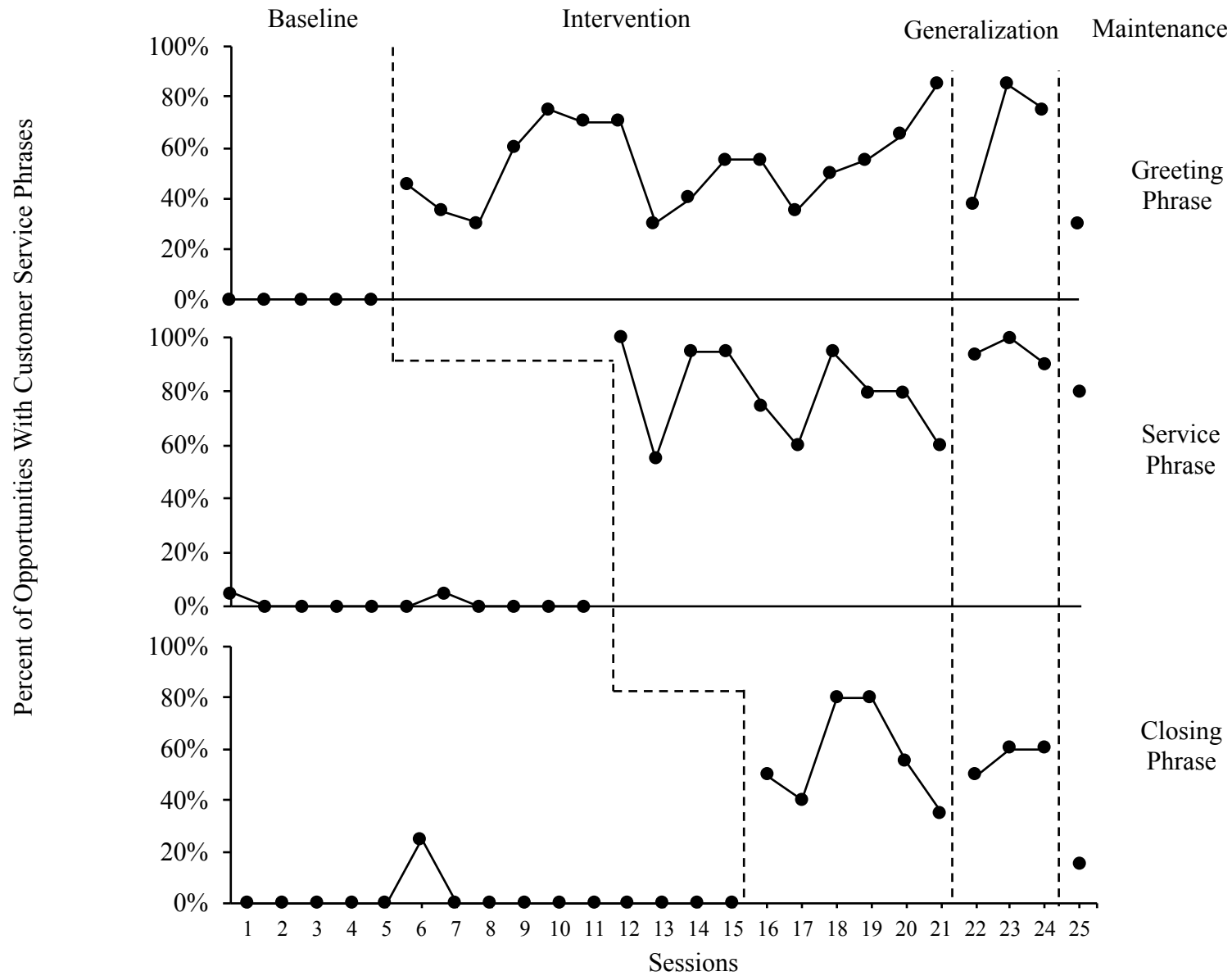
	VM intervention condition	Generalization
Hank	98% (range 86-100%)	100%
Stacey	98% (range 71-100%)	93% (80-100%)
Cole	96% (range 86-100%)	100%
Aaron	100%	100%
Marshall	100%	94% (83-100%)



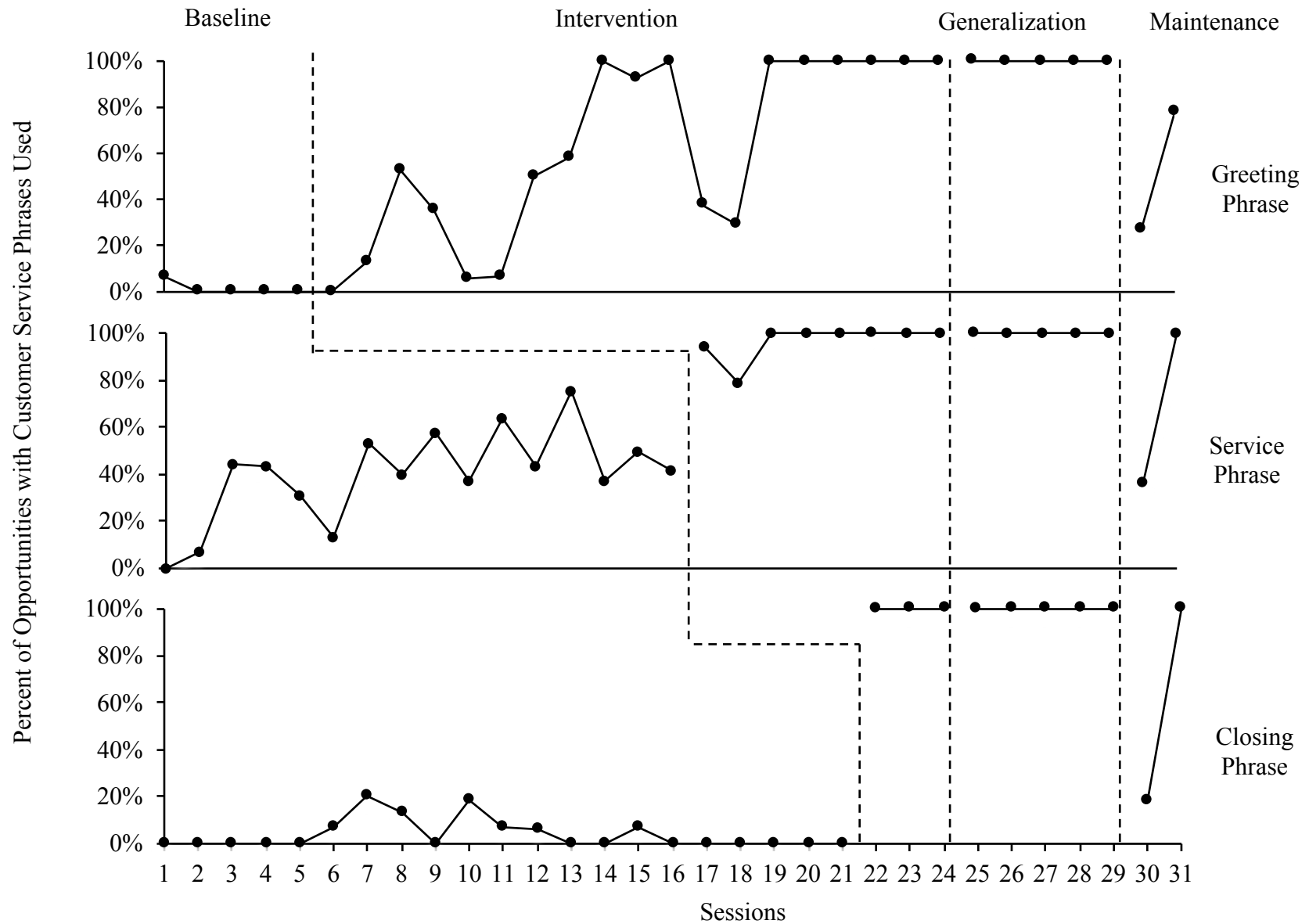


# Results

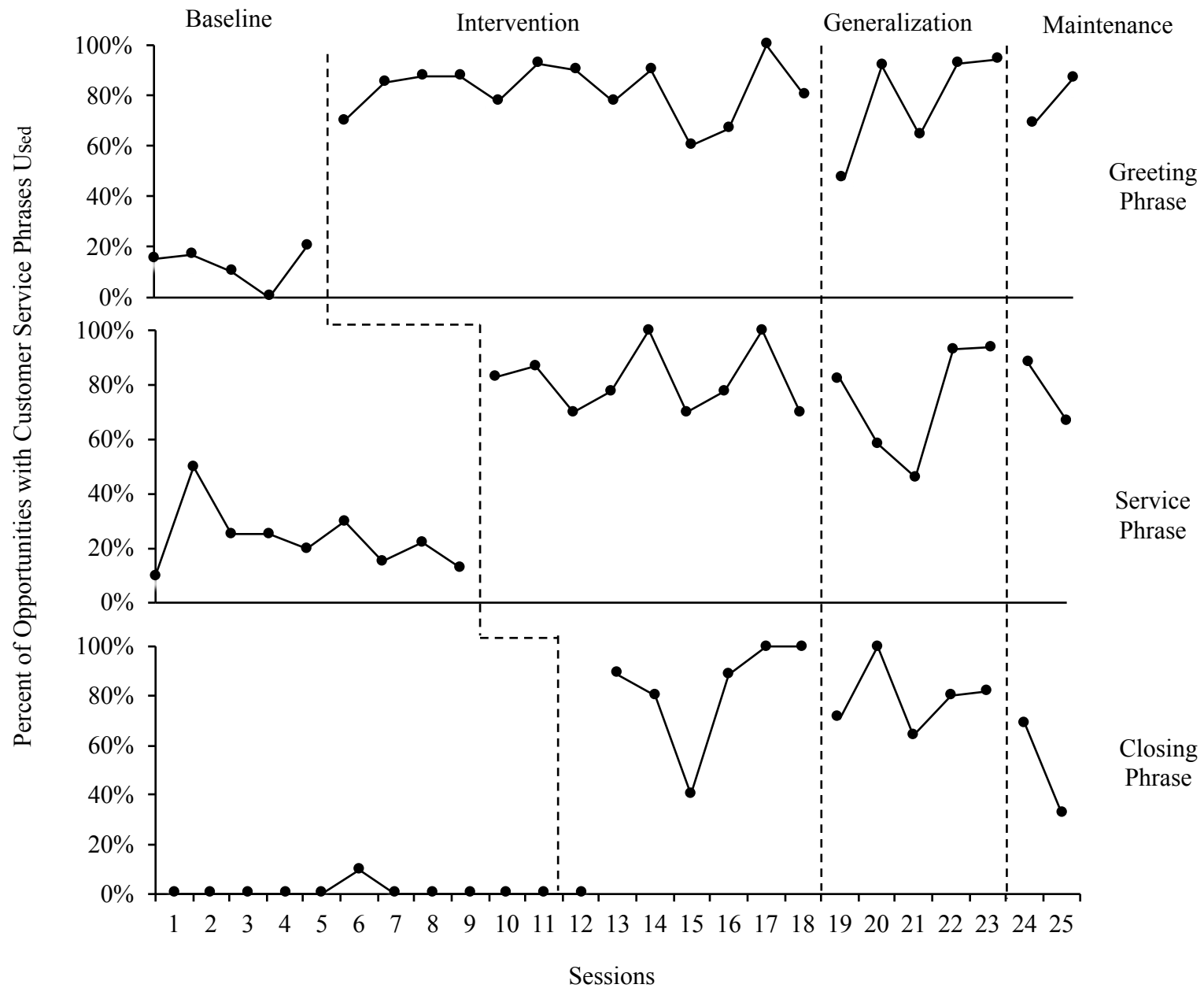
# Hank (Amusement Park)



# Stacey (Meals on Wheels)

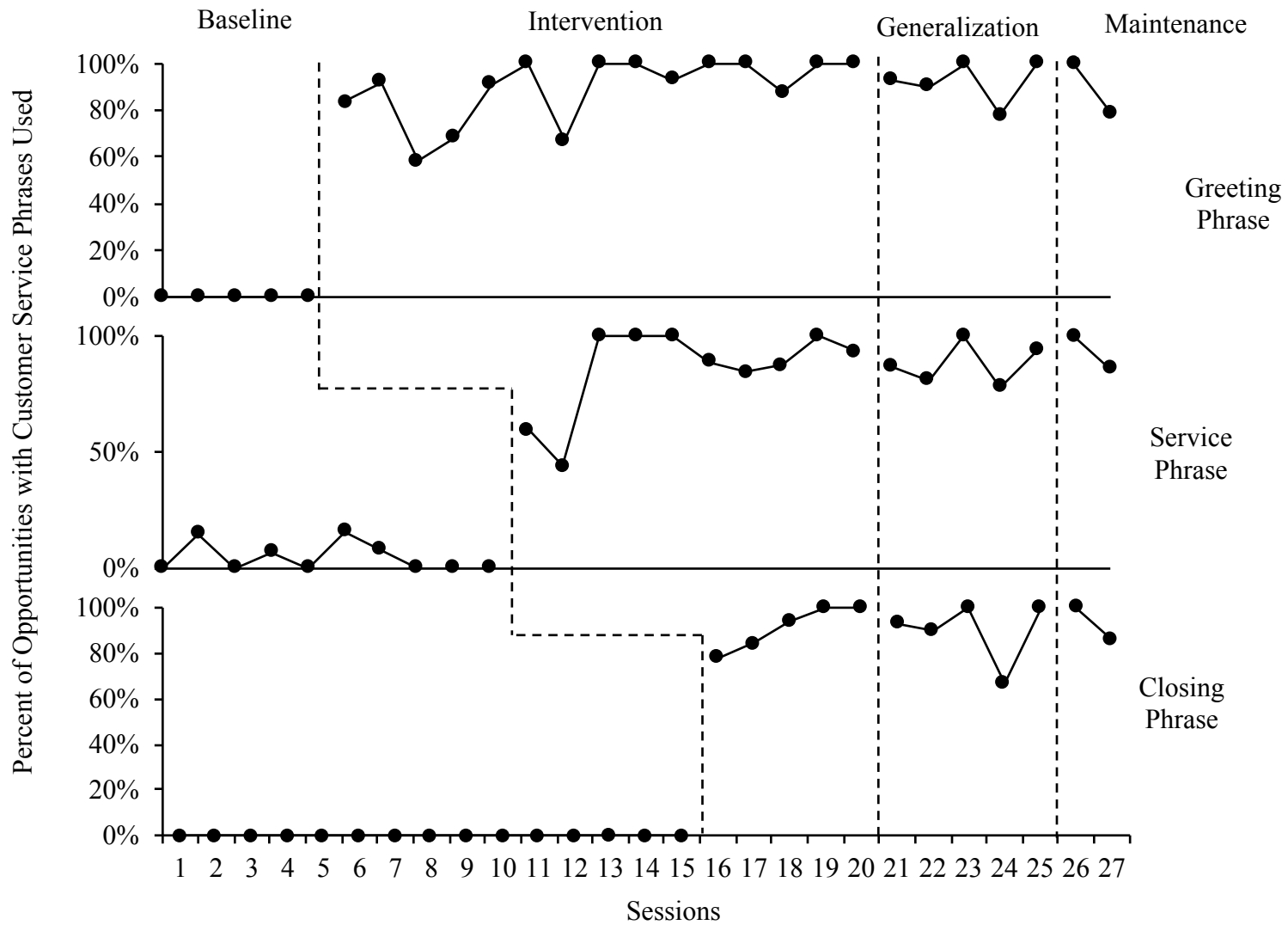


# Cole (Movie Theatre)

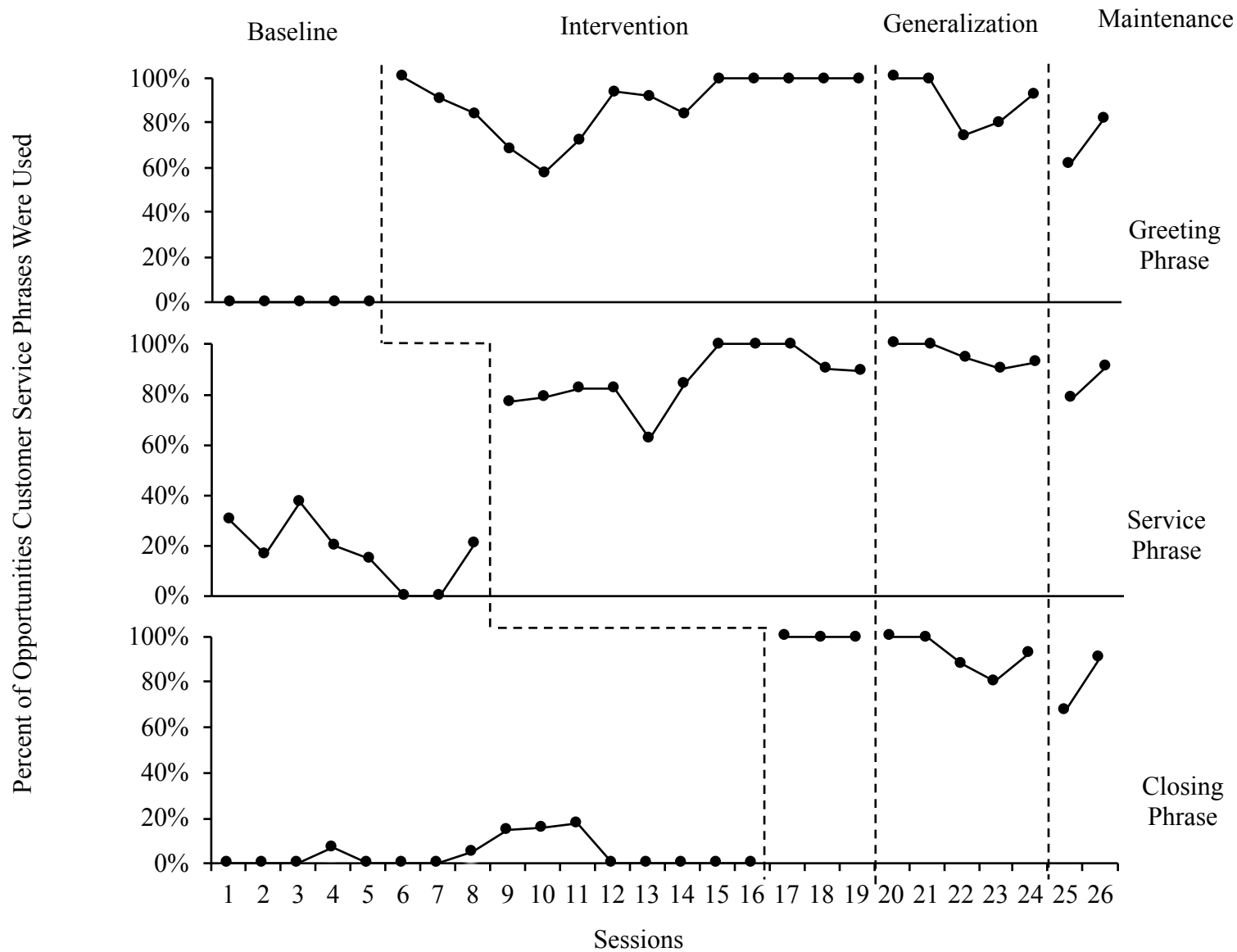




# Aaron (Nursing Home)



# Marshall (Nursing Home)



# Observer Impression Scale Results

## *Observer Impression Scale Results*

Participant and Condition	Tone Mean (Range)	Timing Mean (Range)	Body Language Mean (Range)	Appropriate Statements Mean (Range)	Overall Mean
<b>Hank</b>					
Baseline	1.4 (1.0-2.0)	1.6 (1.0-2.0)	4.0	1.4 (1.0-2.0)	2.1
Intervention	2.3 (1.0-3.0)	3.5 (3.0-4.0)	4.0	3.7 (2.0-4.0)	3.4
Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Stacey</b>					
Baseline	2.2 (2.0-3.0)	1.8 (1.0-2.0)	1.2 (1.0-2.0)	2.0 (2.0-3.0)	1.8
Intervention	3.0 (2.0-4.0)	2.9 (2.0-4.0)	2.4 (1.0-4.0)	3.6 (2.0-4.0)	3.0
Generalization	2.0 (1.0-3.0)	2.6 (2.0-3.0)	3.6 (3.0-4.0)	4.0 (4.0-4.0)	3.1
Maintenance	2.0	3.0 (2.0-4.0)	3.0 (2.0-4.0)	3.0 (2.0-4.0)	2.8
<b>Cole</b>					
Baseline	1.8 (1.0-2.0)	2.2 (2.0-3.0)	2.6 (2.0-4.0)	2.2 (2.0-3.0)	2.2
Intervention	3.2 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	3.8 (3.0-4.0)	3.6
Generalization	3.8 (3.0-4.0)	4.0	4.0	4.0	3.95
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Aaron</b>					
Baseline	3.4 (2.0-4.0)	3.4 (2.0-4.0)	3.8 (3.0-4.0)	3.4 (2.0-4.0)	3.5
Intervention	3.7 (2.0-4.0)	3.6 (2.0-4.0)	4.0	3.8 (2.0-4.0)	3.8
Generalization	4.0	3.8 (3.0-4.0)	4.0	4.0	3.9
Maintenance	4.0	3.5 (3.0-4.0)	4.0	4.0	4.0
<b>Marshall</b>					
Baseline	1.6 (1.0-2.0)	3.0 (3.0-3.0)	2.4 (1.0-4.0)	3.6 (3.0-4.0)	2.7
Intervention	2.4 (1.0-4.0)	3.4 (2.0-4.0)	3.2 (2.0-4.0)	3.5 (2.0-4.0)	3.1
Generalization	3.0 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	4.0	3.6
Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

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Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Stacey</b>					
Baseline	2.2 (2.0-3.0)	1.8 (1.0-2.0)	1.2 (1.0-2.0)	2.0 (2.0-3.0)	1.8
Intervention	3.0 (2.0-4.0)	2.9 (2.0-4.0)	2.4 (1.0-4.0)	3.6 (2.0-4.0)	3.0
Generalization	2.0 (1.0-3.0)	2.6 (2.0-3.0)	3.6 (3.0-4.0)	4.0 (4.0-4.0)	3.1
Maintenance	2.0	3.0 (2.0-4.0)	3.0 (2.0-4.0)	3.0 (2.0-4.0)	2.8
<b>Cole</b>					
Baseline	1.8 (1.0-2.0)	2.2 (2.0-3.0)	2.6 (2.0-4.0)	2.2 (2.0-3.0)	2.2
Intervention	3.2 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	3.8 (3.0-4.0)	3.6
Generalization	3.8 (3.0-4.0)	4.0	4.0	4.0	3.95
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Aaron</b>					
Baseline	3.4 (2.0-4.0)	3.4 (2.0-4.0)	3.8 (3.0-4.0)	3.4 (2.0-4.0)	3.5
Intervention	3.7 (2.0-4.0)	3.6 (2.0-4.0)	4.0	3.8 (2.0-4.0)	3.8
Generalization	4.0	3.8 (3.0-4.0)	4.0	4.0	3.9
Maintenance	4.0	3.5 (3.0-4.0)	4.0	4.0	4.0
<b>Marshall</b>					
Baseline	1.6 (1.0-2.0)	3.0 (3.0-3.0)	2.4 (1.0-4.0)	3.6 (3.0-4.0)	2.7
Intervention	2.4 (1.0-4.0)	3.4 (2.0-4.0)	3.2 (2.0-4.0)	3.5 (2.0-4.0)	3.1
Generalization	3.0 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	4.0	3.6
Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

# Observer Impression Scale Results

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Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Stacey</b>					
Baseline	2.2 (2.0-3.0)	1.8 (1.0-2.0)	1.2 (1.0-2.0)	2.0 (2.0-3.0)	1.8
Intervention	3.0 (2.0-4.0)	2.9 (2.0-4.0)	2.4 (1.0-4.0)	3.6 (2.0-4.0)	3.0
Generalization	2.0 (1.0-3.0)	2.6 (2.0-3.0)	3.6 (3.0-4.0)	4.0 (4.0-4.0)	3.1
Maintenance	2.0	3.0 (2.0-4.0)	3.0 (2.0-4.0)	3.0 (2.0-4.0)	2.8
<b>Cole</b>					
Baseline	1.8 (1.0-2.0)	2.2 (2.0-3.0)	2.6 (2.0-4.0)	2.2 (2.0-3.0)	2.2
Intervention	3.2 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	3.8 (3.0-4.0)	3.6
Generalization	3.8 (3.0-4.0)	4.0	4.0	4.0	3.95
Maintenance	4.0	4.0	4.0	4.0	4.0
<b>Aaron</b>					
Baseline	3.4 (2.0-4.0)	3.4 (2.0-4.0)	3.8 (3.0-4.0)	3.4 (2.0-4.0)	3.5
Intervention	3.7 (2.0-4.0)	3.6 (2.0-4.0)	4.0	3.8 (2.0-4.0)	3.8
Generalization	4.0	3.8 (3.0-4.0)	4.0	4.0	3.9
Maintenance	4.0	3.5 (3.0-4.0)	4.0	4.0	4.0
<b>Marshall</b>					
Baseline	1.6 (1.0-2.0)	3.0 (3.0-3.0)	2.4 (1.0-4.0)	3.6 (3.0-4.0)	2.7
Intervention	2.4 (1.0-4.0)	3.4 (2.0-4.0)	3.2 (2.0-4.0)	3.5 (2.0-4.0)	3.1
Generalization	3.0 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	4.0	3.6
Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

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Intervention	2.3 (1.0-3.0)	3.5 (3.0-4.0)	4.0	3.7 (2.0-4.0)	3.4
Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
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Baseline	2.2 (2.0-3.0)	1.8 (1.0-2.0)	1.2 (1.0-2.0)	2.0 (2.0-3.0)	1.8
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Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

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Generalization	3.3 (3.0-4.0)	4.0	4.0	4.0	3.8
Maintenance	4.0	4.0	4.0	4.0	4.0
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Baseline	1.6 (1.0-2.0)	3.0 (3.0-3.0)	2.4 (1.0-4.0)	3.6 (3.0-4.0)	2.7
Intervention	2.4 (1.0-4.0)	3.4 (2.0-4.0)	3.2 (2.0-4.0)	3.5 (2.0-4.0)	3.1
Generalization	3.0 (2.0-4.0)	3.6 (3.0-4.0)	3.8 (3.0-4.0)	4.0	3.6
Maintenance	2.5 (2.0-3.0)	3.5 (3.0-4.0)	4.0	4.0	3.5

## Young Adult Social Validity

Questionnaire Statements	Hank	Stacey	Cole	Aaron	Marshall	Statement Mean
The video modeling helped me do my job better.	3.0	4.0	4.0	4.0	1.0	3.4
The video modeling intervention was easy to use.	3.0	3.0	4.0	4.0	4.0	3.6
I liked watching the videos at work.	3.0	2.0	4.0	2.0	1.0	2.4
The videos helped me remember the customer service phrases to say.	4.0	3.0	4.0	4.0	1.0	3.2
I thought the videos were fun and engaging.	3.0	2.0	4.0	4.0	1.0	2.8
I feel supported at my place of employment.	3.0	3.0	4.0	4.0	1.0	3.0
I would like to keep watching the videos at work after the research study finishes.	3.0	1.0	1.0	3.0	1.0	1.8
I would like to watch videos about different topics.	3.0	1.0	1.0	2.0	1.0	1.6
<b>Average rating for each participant</b>	3.1	2.4	3.3	3.4	1.4	

*Note.* 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree





# Supervisor Social Validity

Questionnaire Statements	Hank's Supervisor	Stacey's Supervisor	Cole's Supervisor	Aaron and Marshall's Supervisor	Statement Mean
The video modeling intervention appeared to help the employee perform his/her job better.	4.0	4.0	3.0	4.0	3.8
The video modeling intervention was easy for the employee to use.	4.0	4.0	4.0	4.0	4.0
The employee appeared to like watching the videos at work.	3.0	2.0	3.0	4.0	3.0
The videos appeared to help the employee remember which customer service phrases to say.	3.0	4.0	4.0	4.0	3.8
The videos appeared to be fun and engaging for the employee.	3.0	4.0	4.0	4.0	3.8
I believe the employee receives adequate support at his/her place of employment.	4.0	4.0	3.0	4.0	3.8
I would like to continue using the videos with the employee at work after the research study finishes.	3.0	3.0	3.0	4.0	3.3
I think the employee could benefit from additional videos about different topics.	3.0	4.0	3.0	4.0	3.5
<b>Average rating for each participant</b>	3.4	3.6	3.4	4.0	

Note. 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree



## Co-Worker or Job Coach Social Validity

Questionnaire Statements	Hank's Co- worker	Stacey's Co- worker	Cole's Co- worker	Aaron's Job Coach	Marshall's Job Coach	Stame nt Mean
The video modeling intervention appeared to help the employee perform his/her job better.	4.0	4.0	4.0	4.0	4.0	3.8
The video modeling intervention was easy for me and the employee to use together.	4.0	3.0	4.0	4.0	4.0	3.8
I liked watching the videos at work with the employee.	4.0	4.0	3.0	4.0	3.0	3.6
The video appeared to help the employee remember what customer service phrases to say.	4.0	4.0	3.0	4.0	4.0	3.8
I thought the videos were fun and engaging.	4.0	4.0	3.0	4.0	4.0	3.8
I believe the employee receives adequate support at his/her place of employment.	3.0	4.0	4.0	4.0	4.0	3.8
I would like to keep watching the videos at work with the employee after the research study finishes.	4.0	3.0	4.0	3.0	3.0	3.4
I think the employee could benefit from additional videos about different topics.	4.0	4.0	3.0	3.0	3.0	3.4
<b>Average rating for each participant</b>	3.9	3.8	3.5	3.8	3.6	

*Note.* 1.0 = Strongly disagree; 2.0 = Disagree; 3.0 = Agree; 4.0 = Strongly agree





# Discussion

# Research Questions Answered

1

VM increased job-specific customer service phrases in community employment settings.

2

Quality of delivery of phrases appeared to improve contingent on VM.

3

VM generalized to natural intervention agents with feasible training.

4

Maintenance varied across and within participants.

5

Social validity was overall high. However, supervisors reported the highest satisfaction.



## Limitations

- Dual role of researcher as intervention agent and data collector.
  - Potential reactivity effect
  - Rapport developed throughout study
- Premature advancement to a subsequent behavior on two occasions:
  - Aaron: Greeting phrase criterion (3 of 5 > 80%)
  - Cole: Service phrase criterion (2 of 3 > 80%)
- Different criteria to advance conditions for Hank at the amusement park given seasonal employment.



## Implications for Research and Practice

- VM can be a training method or reasonable workplace accommodation.
- Co-workers and supervisors can use VM with high fidelity and obtain similar positive effects.
- Future researchers should examine VM effects on more complex employment-related social skills.
  - Co-worker conversation, problem solving, responding to customer complaints
- Future researchers should train employers to develop and apply VM for their employees with ASD.



## Conclusion

- Employment is critical to increased community integration and overall quality of life.
- VM was an effective intervention to support the customer service skills of young adults with ASD in community employment settings.
- Vocational Rehabilitation counselors, employment specialists, job coaches, employers and other relevant stakeholders can consider VM a viable method to support employees with ASD.



# Questions



**Questions  
Welcome**





**Thank you for attending this session!**

