

Skill Acquisition in Dyad and Group Environments

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Bio



- Associate Professor
 - University Nebraska Medical Center (UNMC)
 - Munroe-Meyer Institute (MMI), Integrated Center for Autism Spectrum Disorders (iCASD)
- Program Director, MMI BRIDGE Clinic
- Psychologist, Autism Diagnostic Clinic
- Training Coordinator, Integrated ABA Track
 - APA accredited pre-doctoral internship in Professional Psychology
- Postdoctoral Fellowship Coordinator, iCASD





Acknowledgements

- Project Collaborators



**Dr. Sarah
Frampton**
University of
Nebraska - Omaha



**Dr. Alice
Shillingsburg**
UNMC - MMI



MMI BRIDGE LAB

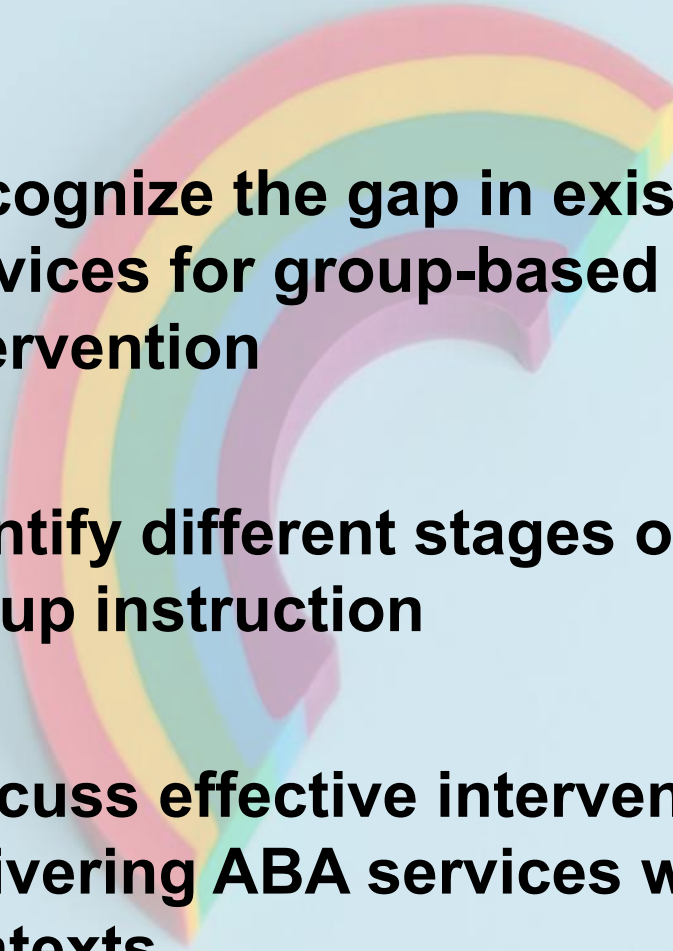
Disclosures

- No conflicts of interest of financial relationships to disclose
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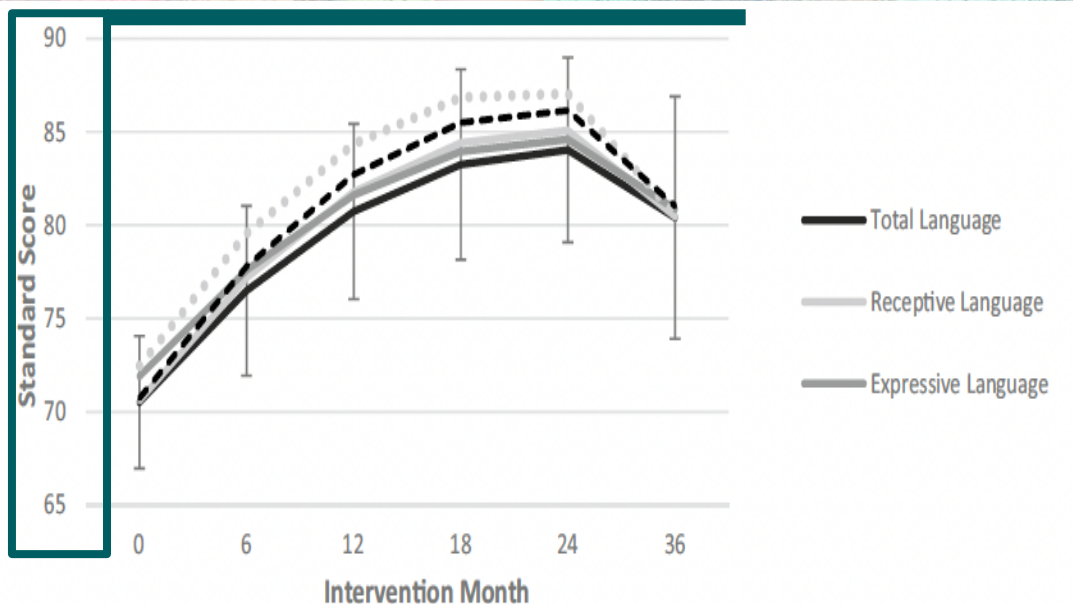
Learning Objectives

- 
- 1. Recognize the gap in existing literature and services for group-based models of ABA intervention**
 - 2. Identify different stages of promoting dyad and group instruction**
 - 3. Discuss effective intervention practices when delivering ABA services within dyad and group contexts**



Benefits of EIBI

- Early intensive behavioral intervention for improving outcomes in children with ASD has an extensive body of empirical support.



Support for EIBI

Frazier et al. (2021)

Dawson et al. (2010)

Granspeesheh et al. (2009)

Green et al. (2017)

Hardan et al. (2015)

Howard et al. (2005)

Howlin et al. (2009)

Kasari et al. (2008)

Mohammadazheri et al. (2014)

National Research Council (2001)

Peters-Scheffer et al. (2011)



Transitioning to Less Restrictive Settings

Autistic children often need continued support in generalizing these skills to less restrictive environments.

Clinical services dedicated to bridging the gap between intensive 1:1 services and a traditional classroom setting is an area of need.

The body of literature on delivery of ABA services in group contexts is limited.

- The MMI BRIDGE Program aims to fill the gap and contribute to the literature in this area.
- Currently draw from several related bodies of literature to inform our model of care.



Stages of Dyad and Group Instruction



Establishing Instructional
Motivation

Peer Pairing

Skill Acquisition with
Multiple Learners





Establishing Instructional Motivation

- Use of structured pairing procedures to establish conditioned reinforcers for social approach while systematically increasing instructional demands
- Instructional contexts tend to include a high level of demands for the learner
 - When pairing is skipped avoidant behaviors may increase
 - During empirical studies in which pairing was withdrawn, the effects of pairing diminished over time



Peer Pairing

- Once learners are willingly approaching therapists, cooperating with instruction, and initiating communication, we want to start to pair peers with reinforcement.

Proximity to
Peers



Deliver/Receive
SR+ from
Peers



Peer Mands



Conversation
with Peers



Proximity to Peers

Learners with ASD often engage in social avoidant behaviors or lack motivation to engage with peers

Even when learners have built strong rapport with an adult through 1:1 intervention, this often does not generalize to peer relations

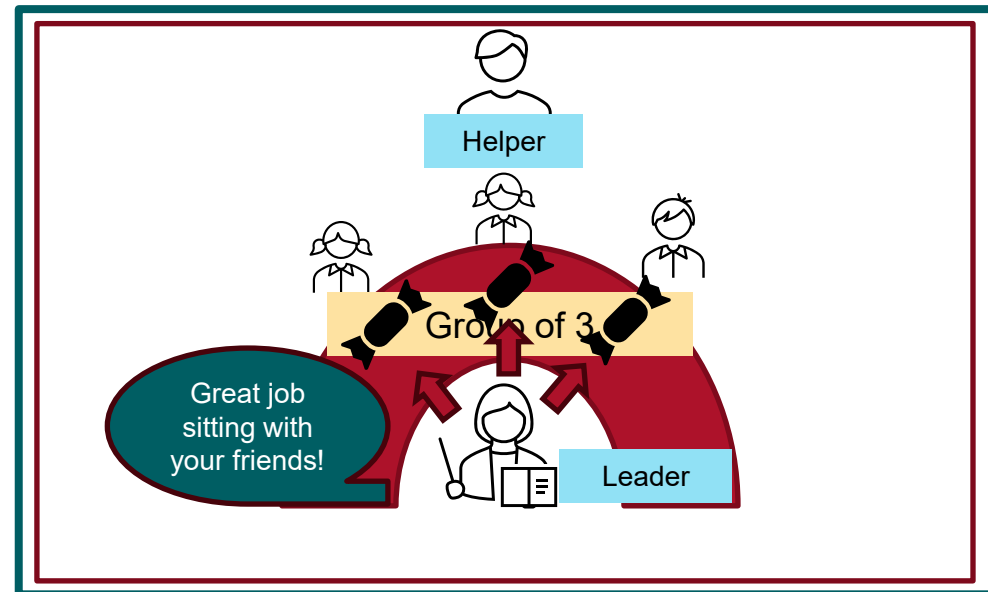
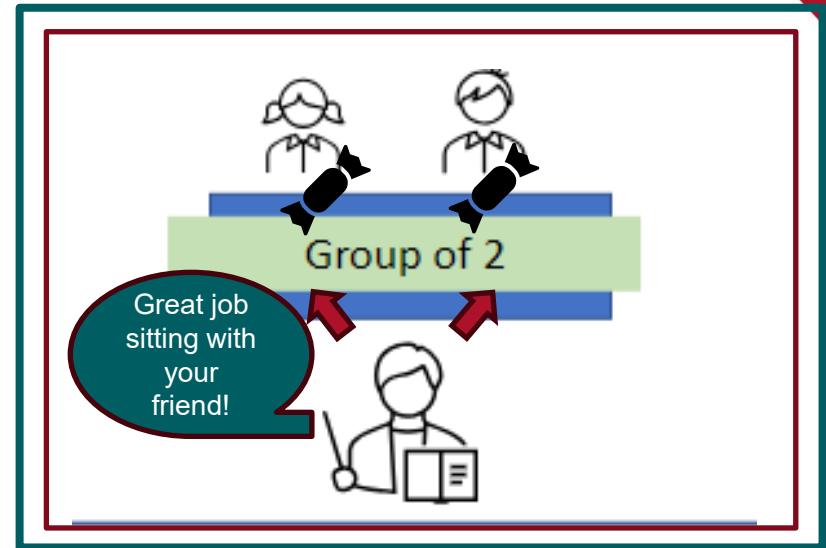
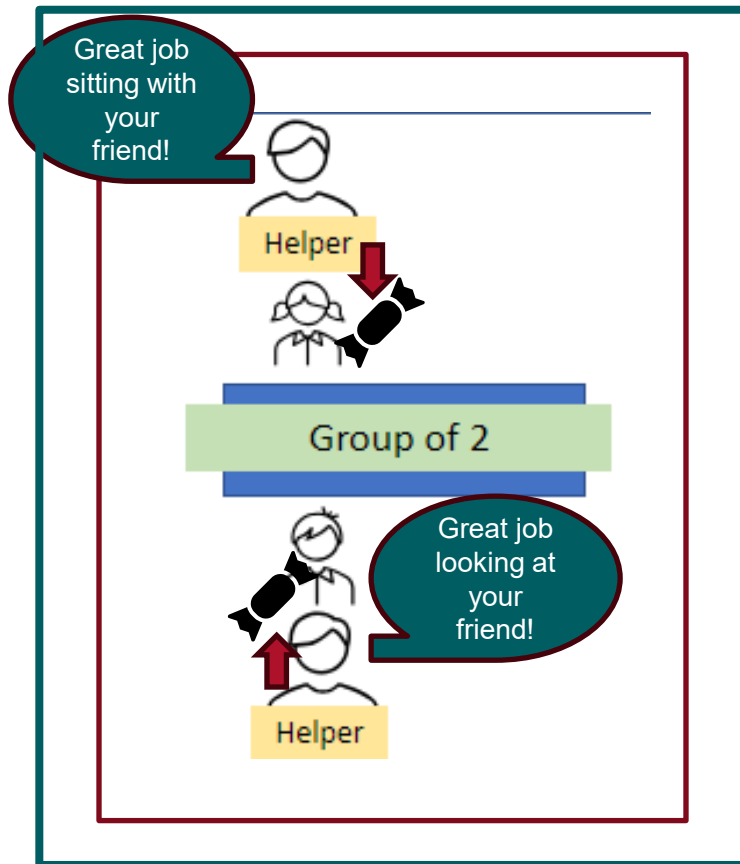
- Clinician may be the “giver of good things”
- Peers may be the “taker of good things”

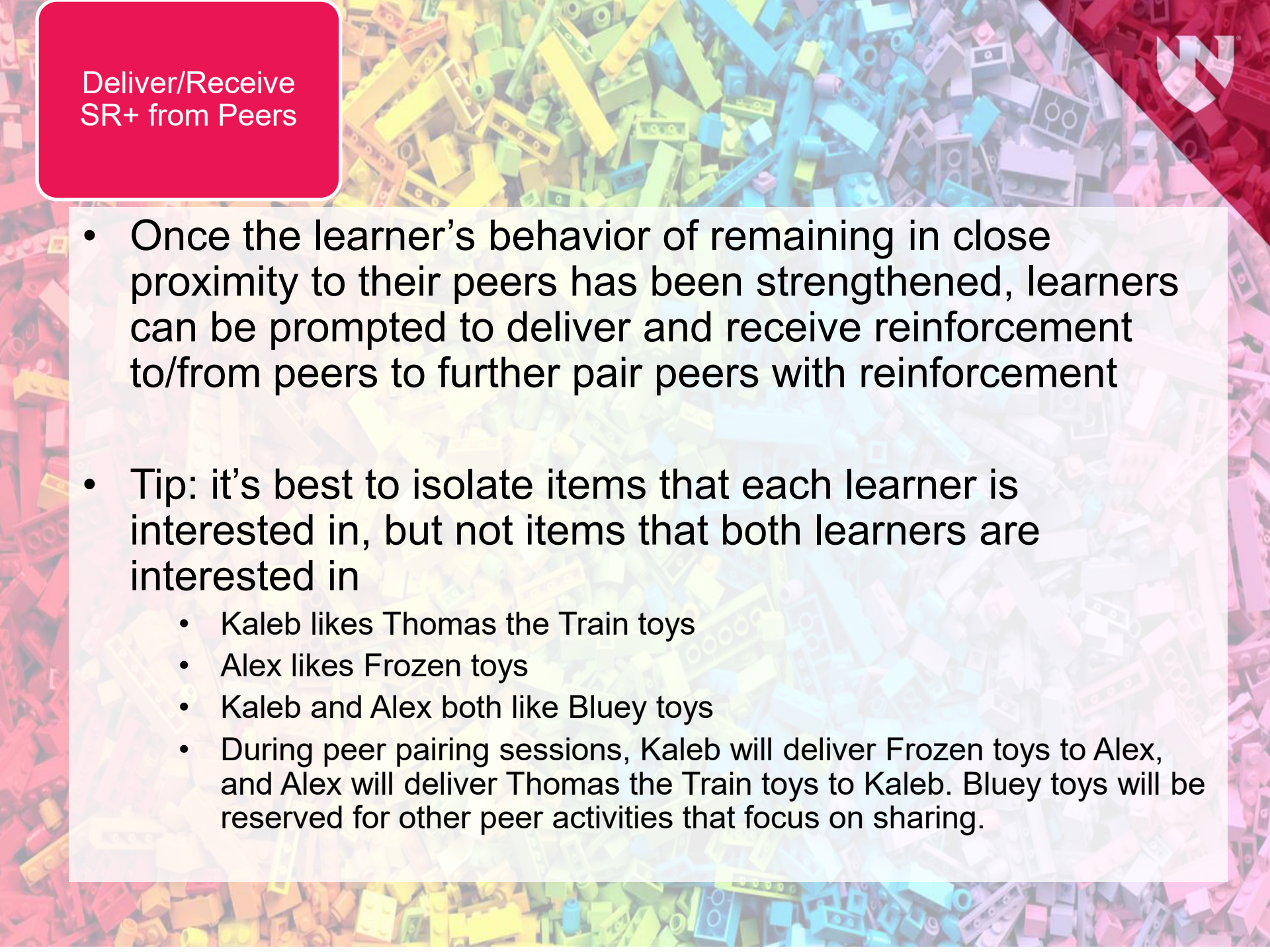
Targeted intervention is often needed to pair the presence of peers with reinforcement

If this step occurs too early (e.g., before the clinician has established themselves as a conditioned reinforcer) the clinician, the instructional space, and the presence of peers may evoke avoidant behaviors



Proximity to Peers



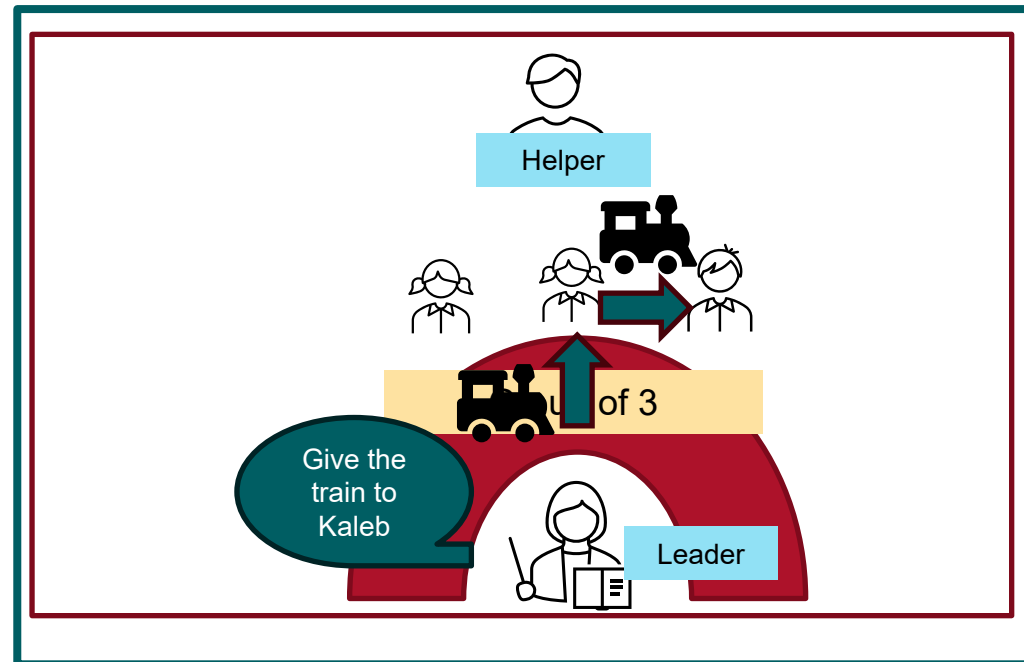
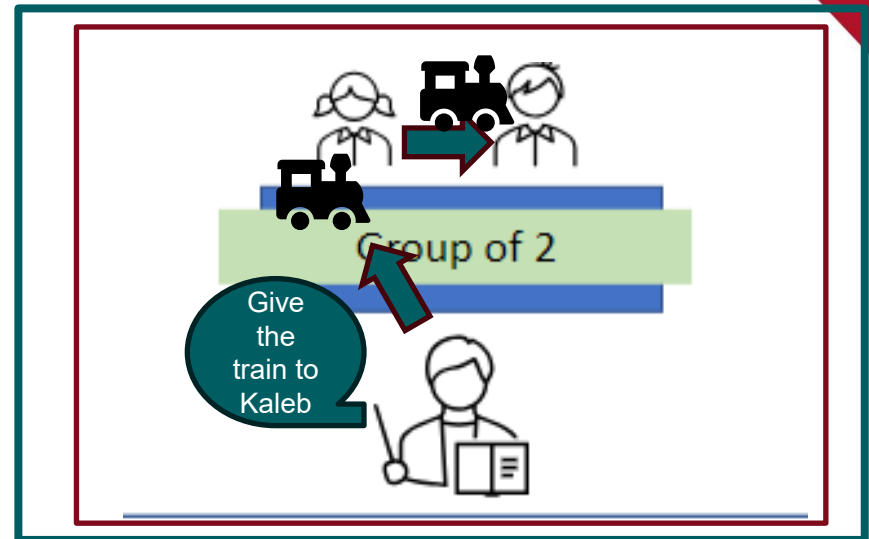
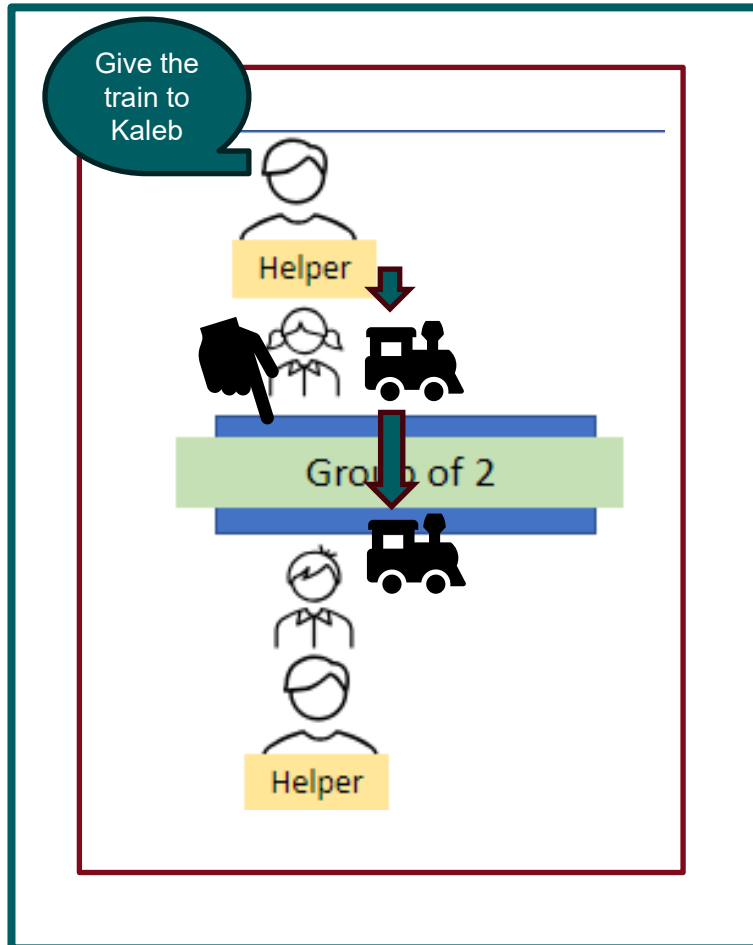


Deliver/Receive SR+ from Peers



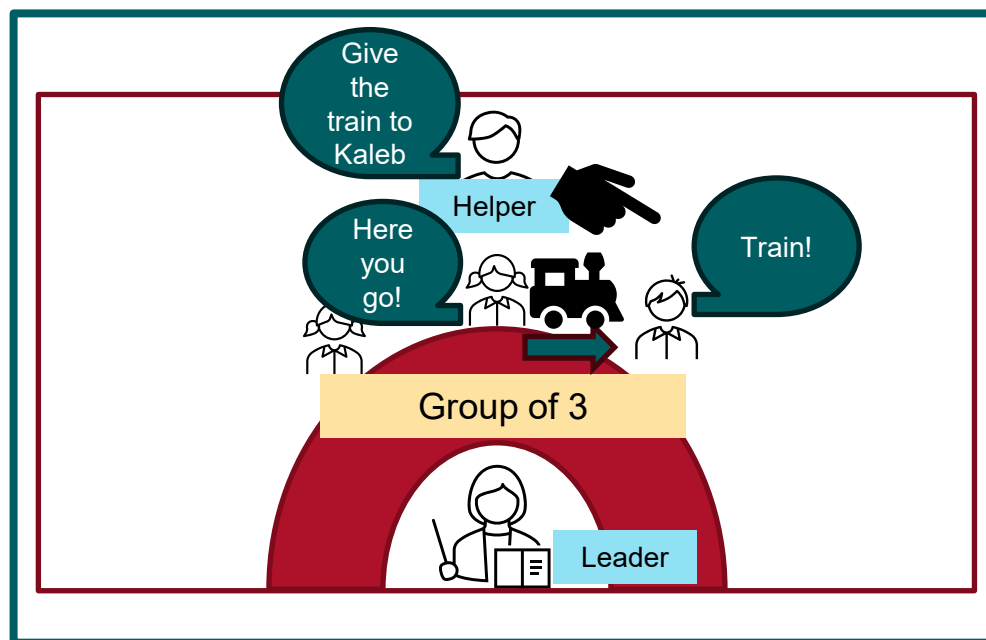
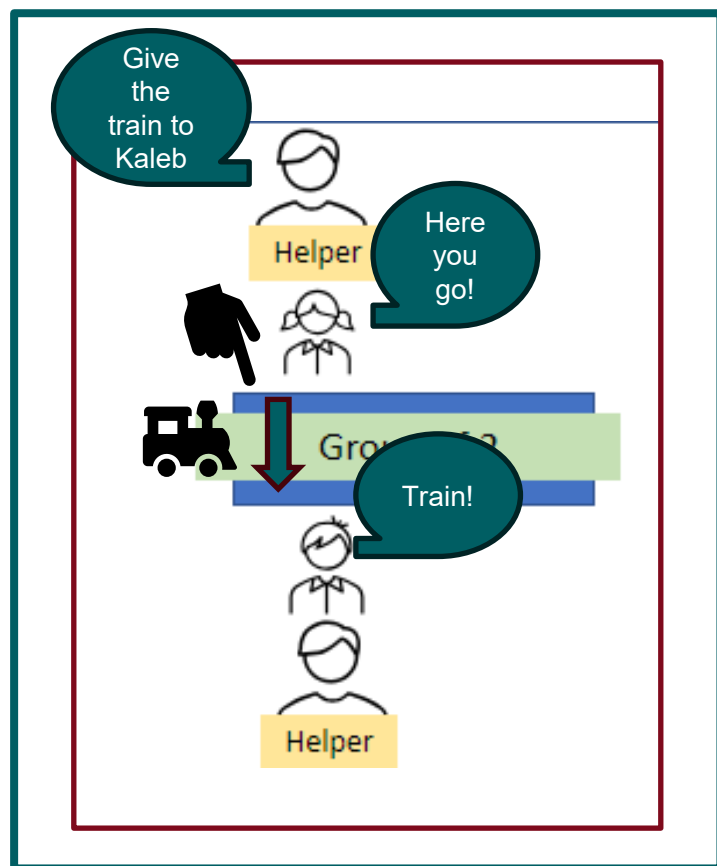
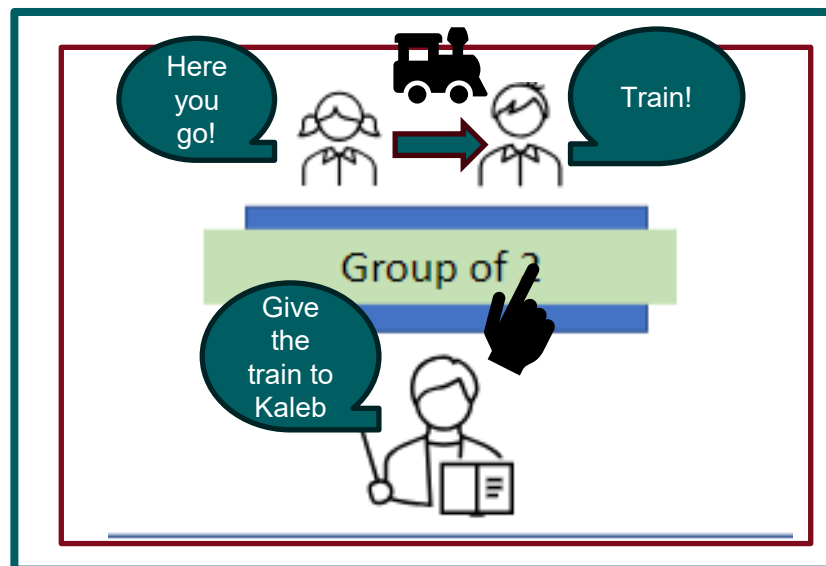
- Once the learner's behavior of remaining in close proximity to their peers has been strengthened, learners can be prompted to deliver and receive reinforcement to/from peers to further pair peers with reinforcement
- Tip: it's best to isolate items that each learner is interested in, but not items that both learners are interested in
 - Kaleb likes Thomas the Train toys
 - Alex likes Frozen toys
 - Kaleb and Alex both like Bluey toys
 - During peer pairing sessions, Kaleb will deliver Frozen toys to Alex, and Alex will deliver Thomas the Train toys to Kaleb. Bluey toys will be reserved for other peer activities that focus on sharing.

Deliver/Receive SR+ from Peers





Peer Mands





Conversation with Peers

- Once learners have acquired the ability to mand for items from peers, you can move on to teaching more advanced mand, intraverbal, and social skills
 - Mands for information (including mands for social information)
 - What's Sarah's dog's name?
 - How do you play the game?
 - Where are the craft supplies?
 - Who has the schedule?
 - Which playground are we going to today?
 - When can we go to the playground?

Gordon & Shillingsburg (2019)
Landa et al. (2020)
 - Initiation and responding to joint attention with peers
 - "Alex, check out my Ninja turtle..."
 - "Can I tell you about..."

Shillingsburg et al. (2022)
- Manding to peers and responding to peer mands set the occasion for reciprocal conversation



Effective Practices for Teaching in Dyads and Groups





Teaching Multiple Learners: Effective Practices

Effective ABA teaching procedures include clear instructions, prompts, prompt fading, and reinforcement

- In 1:1 contexts identifying the prompt level and how prompts will be faded is highly individualized

In group settings, we are trying to teach learners (who may have varying repertoires) to all respond to the group instructions

- In dyad and group environments, it is helpful to identify a “leader” and a “helper”
- The leader will be responsible for presenting the instruction and try to use generally effective strategies to try to get the correct response



Tips from the Classroom

Group Leader

- Gains attention from learners
- Presents brief, clear instruction with teaching stimuli
- Uses errorless teaching procedures when the group does not have perfect responding

Group Helper:

- Supports assigned learner in responding to the leader's instruction
- Makes sure to not distract from leader
- Make sure learner has opportunity to respond to leader's instruction
- Record data

Frampton (2021)





Group Teaching

The Leader will present the mastered instructions to “everyone”



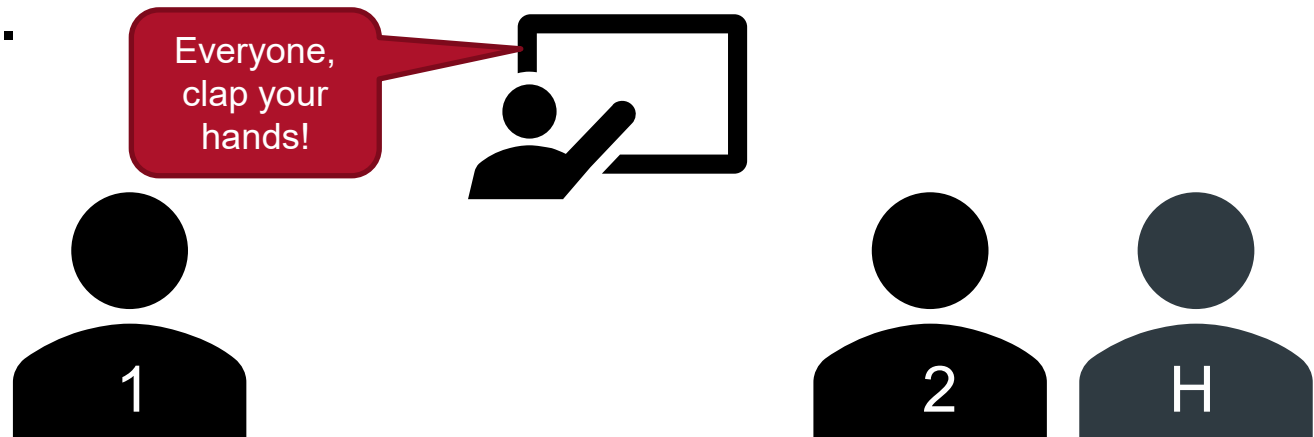
Group Teaching

If learner 1 responds correctly, but not learner 2, the Leader will praise learner 1 then repeat the instruction while looking and facing directly towards learner 2.



Group Teaching

If learner 2 still does not respond correctly when the Leader is oriented towards them, the Leader will present the instruction again and the Helper will prompt a correct response.



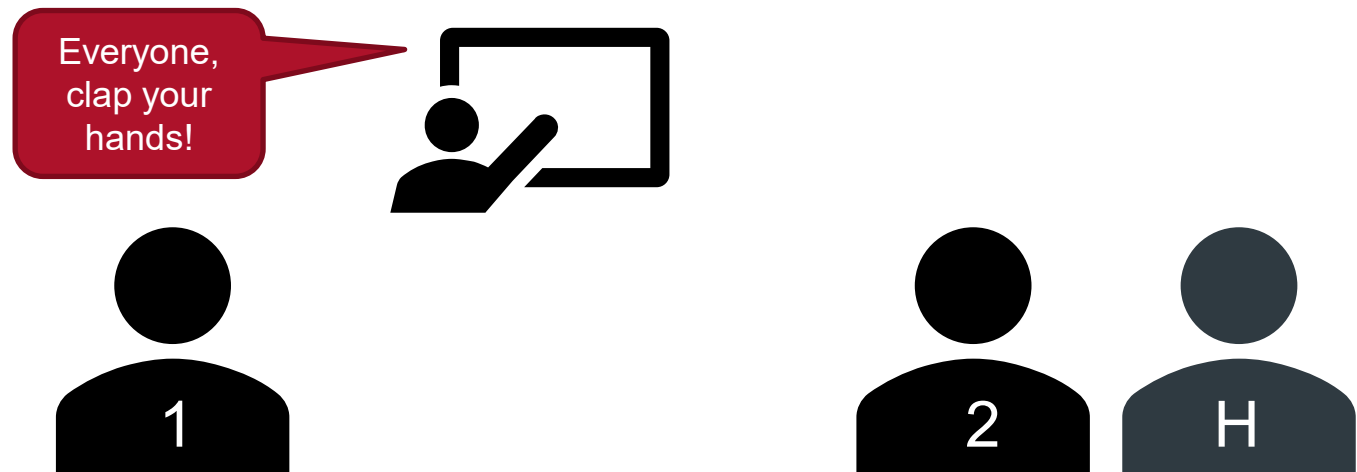
Group Teaching

Once learner 2 responds (with Helper or not), the leader will go back and repeat the group instruction from the prior position to the whole group.



Group Teaching

If learner 2 continues to err on the group instruction, a Helper can prompt the response so the group can continue forward.





Implementing Group Instruction



Group Teaching

Model



Present the material and demonstrate the correct response.



Group Teaching

Lead



Provide the instruction and a prompt to respond.

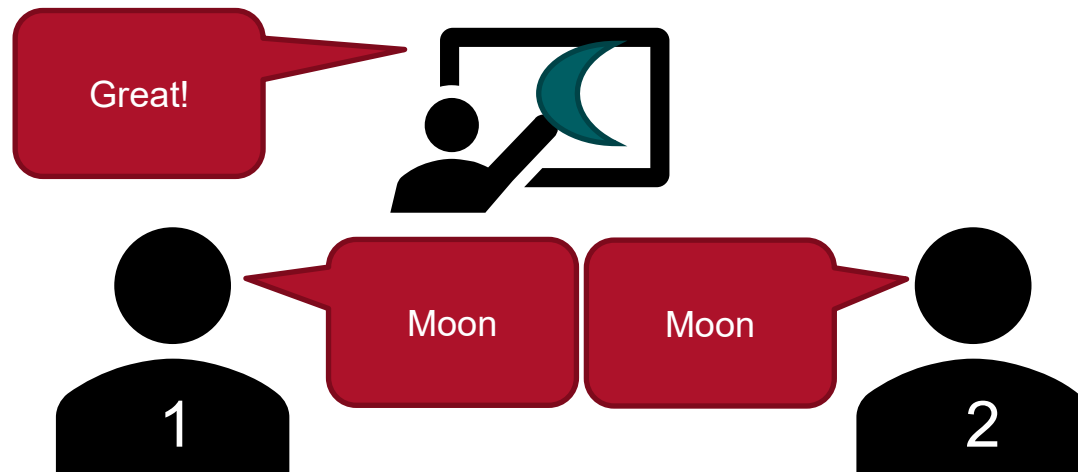


Group Teaching

Lead



If all learners respond, provide praise.



Group Teaching

Test



Conduct a transfer trial (i.e., test)- give the instruction without a prompt.

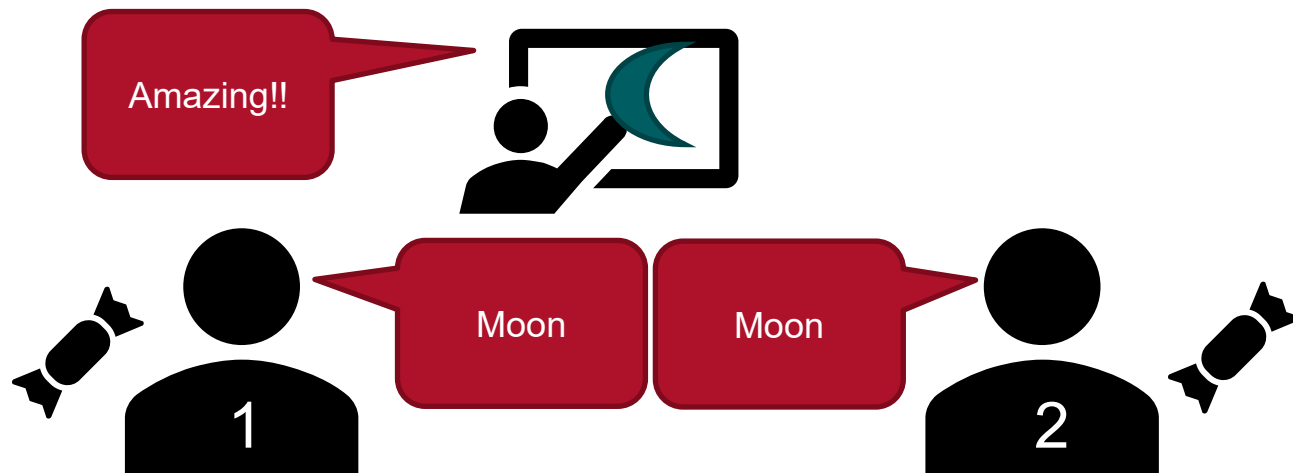


Group Teaching

Test



If all learners respond, provide praise and additional reinforcers (based on learners reinforcement schedules).

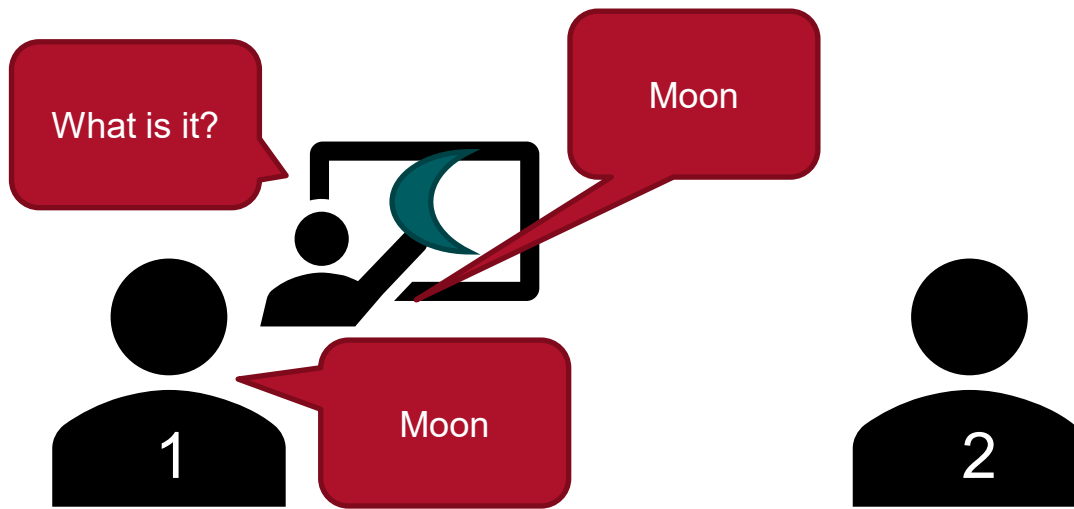


Group Teaching

Lead



If one learner does not respond correctly, the leader should lean in and re-present to that learner. Then give another response opportunity from the “group position.”





Creating Group Routines

Clinic Schedule

1:1 or Group Language Intervention	1:00 – 1:20 PM
Circle Time	1:20 – 1:40 PM
Craft	1:40 – 1:50 PM
Story and Snack Time	1:50 – 2:00 PM
Dramatic Play	2:00 – 2:20 PM
Language for Learning	2:20 – 2:40 PM
Group Game	2:40 – 3:00 PM
Dismissal	3:00 PM

Thematic Instruction in Childhood Education

- In early childhood and educational settings thematic instruction is common
 - Thematic instruction: designing learning activities around common themes and topics



- Despite the wide utilization of thematic instruction in childhood settings, the advantages and outcomes are largely unknown

Thematic Instruction in ABA

- In clinical ABA settings, programming tends to be so individualized that the content of each learner's intervention varies from one child to the next
- As a result, learners may have limited opportunity to share their recently acquired skills with their peers in naturalistic and social contexts

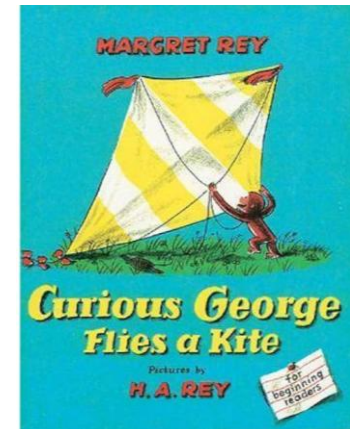


- In our study, we conceptualize thematic multiple tact training as being the systematic arrangement of developmentally appropriate content and activities to promote emergent verbal behavior across learners in a classroom setting

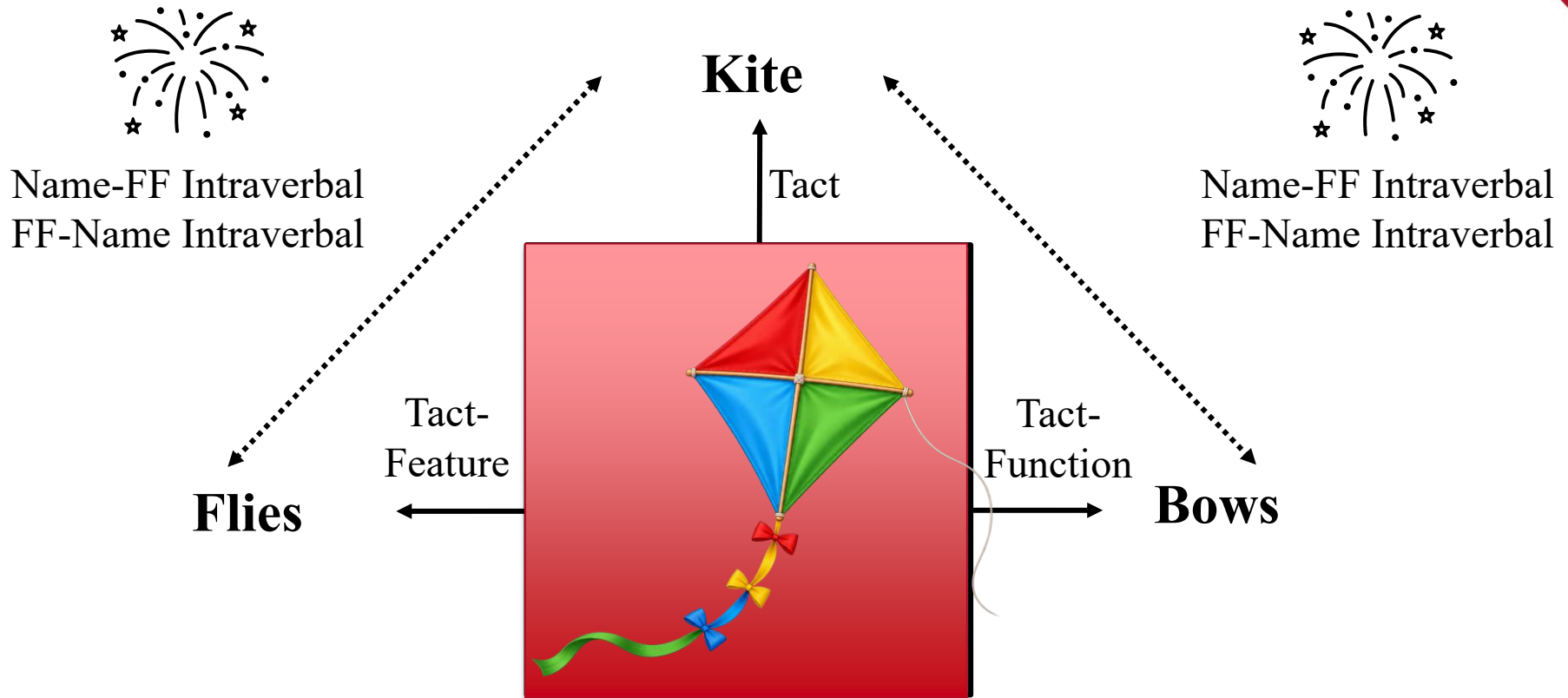


Utilizing Thematic Instruction

Summer		
Subunit 1	Subunit 2	Subunit 3
Summer Activities	Summer Food	Summer Clothing
Rollerblades	Popsicle	Sunglasses
Kite	Watermelon	Sandals
Fishing Rod	Hot Dog	Hat

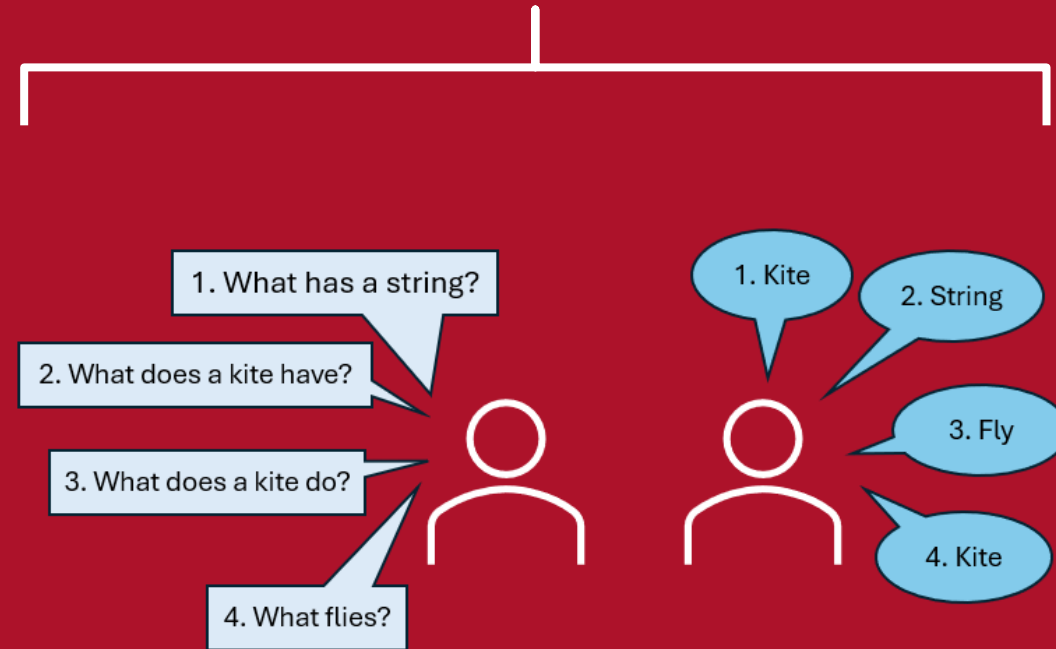
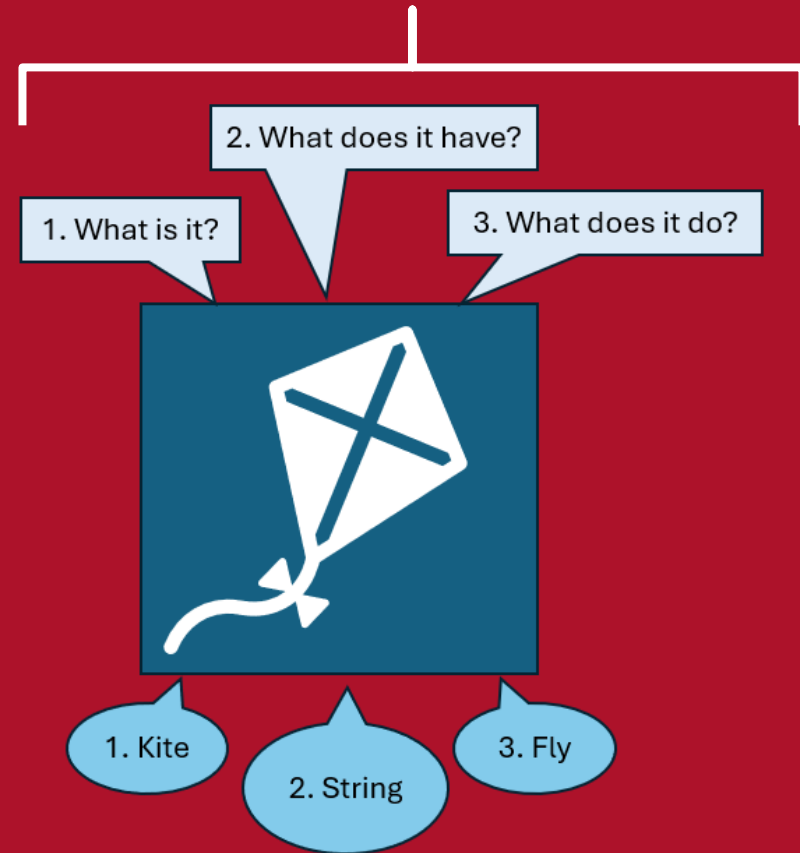


Target Class



Direct Teaching – Tacts (Expressive Labeling)

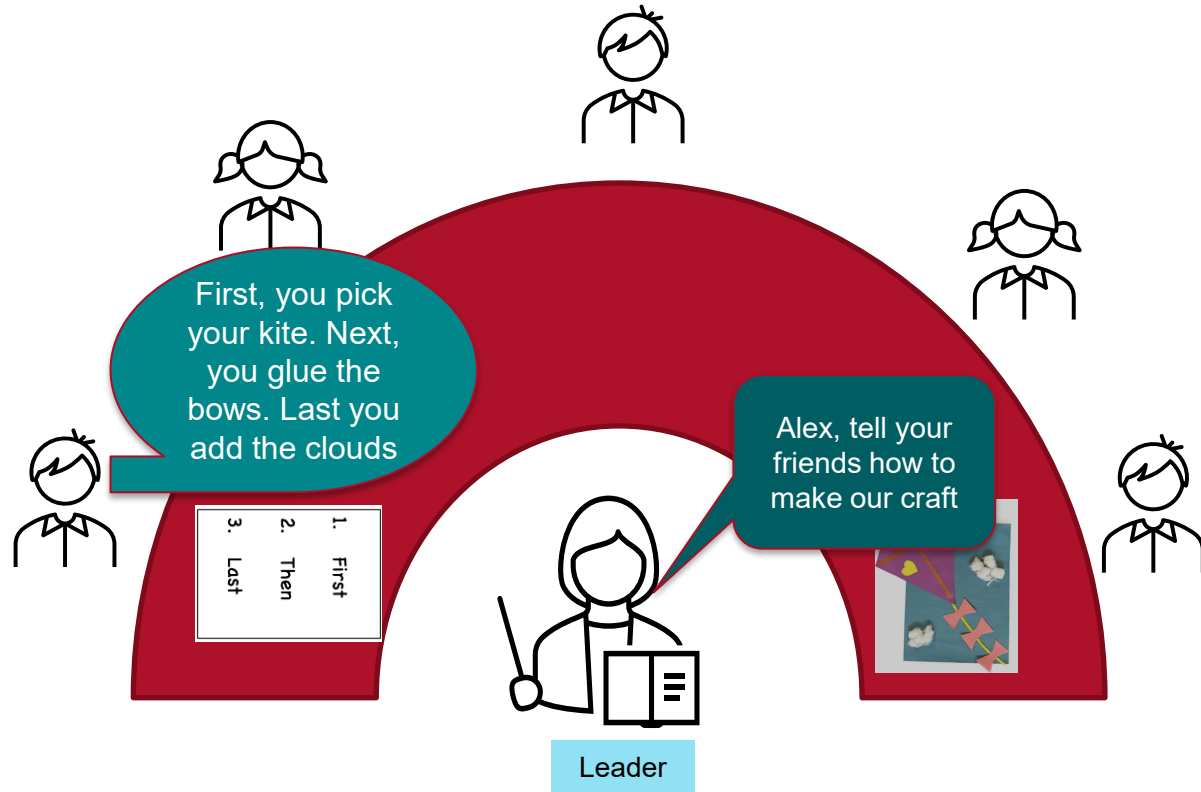
Untrained Emergence – Intraverbals (Wh- Question)



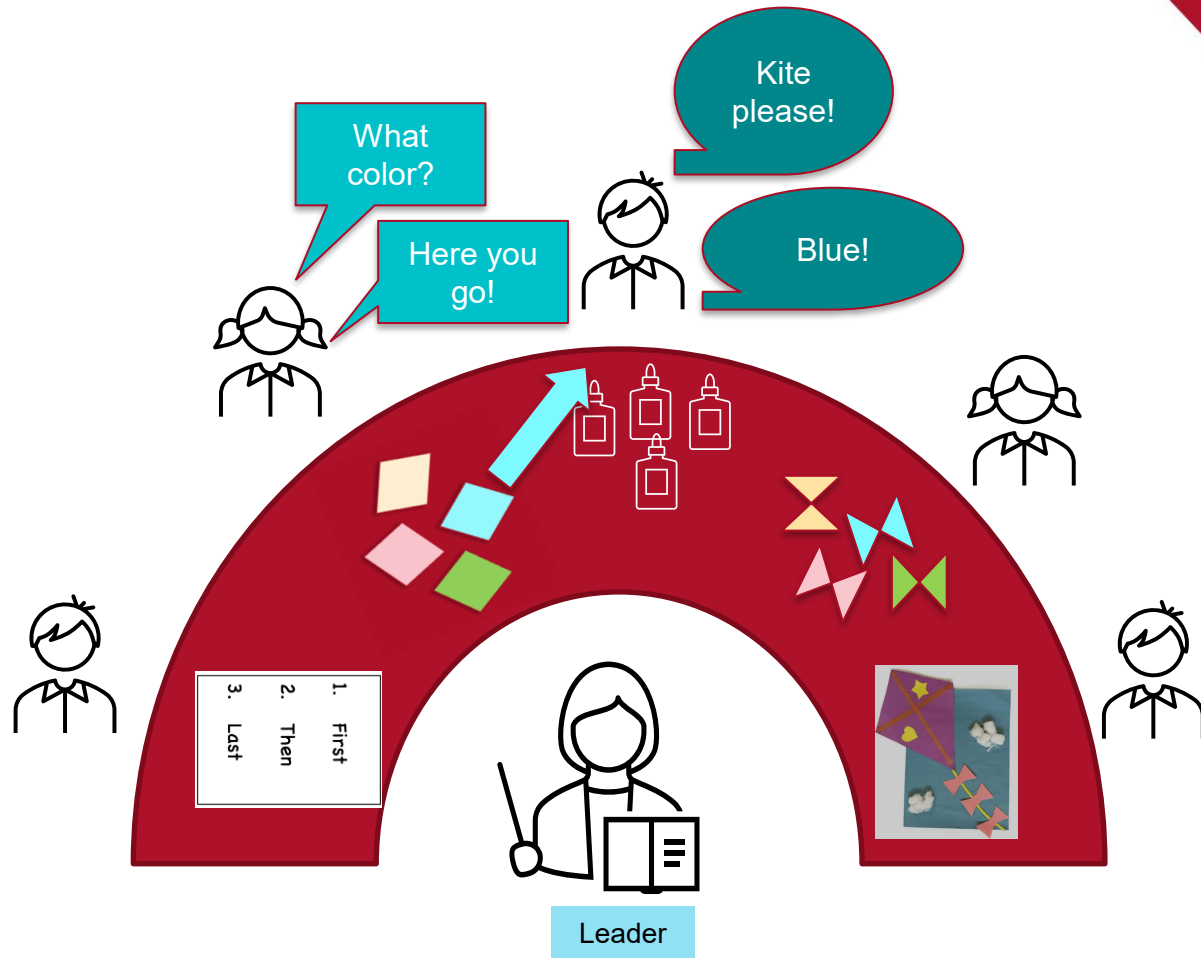
Not Just a Craft



Not Just a Craft



Not Just a Craft



Not Just a Craft





Study 1: Thematic Multiple Tact Training

(Connolly et al., 2026)



Study 1 Purpose

- Develop thematic units to be implemented across participants served within the same clinical setting
- Evaluate the effects of thematic instruction on emergent intraverbals
- Translate procedures established in research into a package for on-going service delivery

(Connolly et al., 2026)



Setting

- University-medical center, ABA clinic
- Clinical model
 - Dyad and group-based ABA therapy setting
 - Classroom size: up to 7 children
 - Children received ABA therapy across 1:1, dyad, and group contexts
 - Tx sessions occurred in a 2.44 m x 3.66 m session room

(Connolly et al., 2026)

Participants

Name	Age	Gender	Race/ Ethnicity	VB-MAPP Milestones Scores	Vineland Score
Alex 	4.9	M	Asian	Overall = 136 Tact = 14 Listener = 12 Intraverbal = 8	ABC = 86 Communication = 107
Lyle 	4.9	M	Asian	Overall = 152.5 Tact = 14.5 Listener = 15 Intraverbal = 8	ABC = 80 Communication = 93
Derrick 	5.6	M	African American	Overall = 155 Tact = 15 Listener = 15 Intraverbal = 8	ABC = 83 Communication = 86
Harper 	8.9	F	White, Hispanic/ Latino	Overall = 162 Tact = 15 Listener = 15 Intraverbal = 14	ABC = 71 Communication = 77

Experimental Design & Phase Progression



- Concurrent, multiple probe design across behaviors (i.e., thematic sub-units)



Experimental Design & Phase Progression

- Concurrent, multiple probe design across behaviors (i.e., thematic sub-units)

Thematic

Unit

Probes

Tacts

TFFCs

Name-FFC

IVs

FFC-Name

IVs

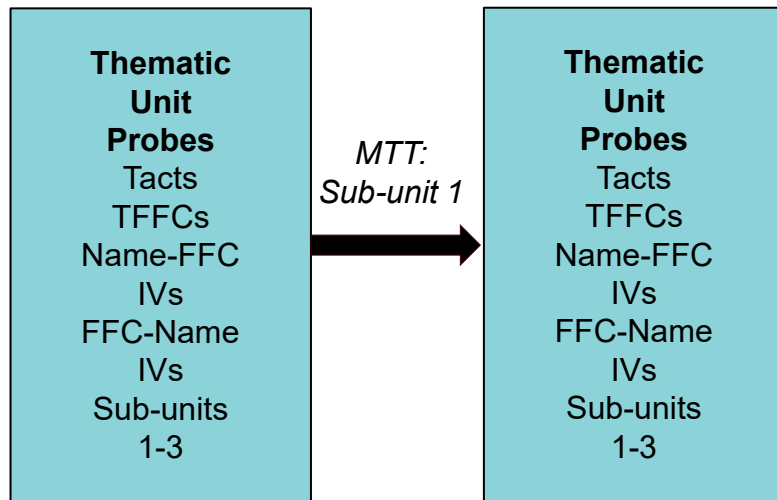
Sub-units

1-3

Experimental Design & Phase Progression



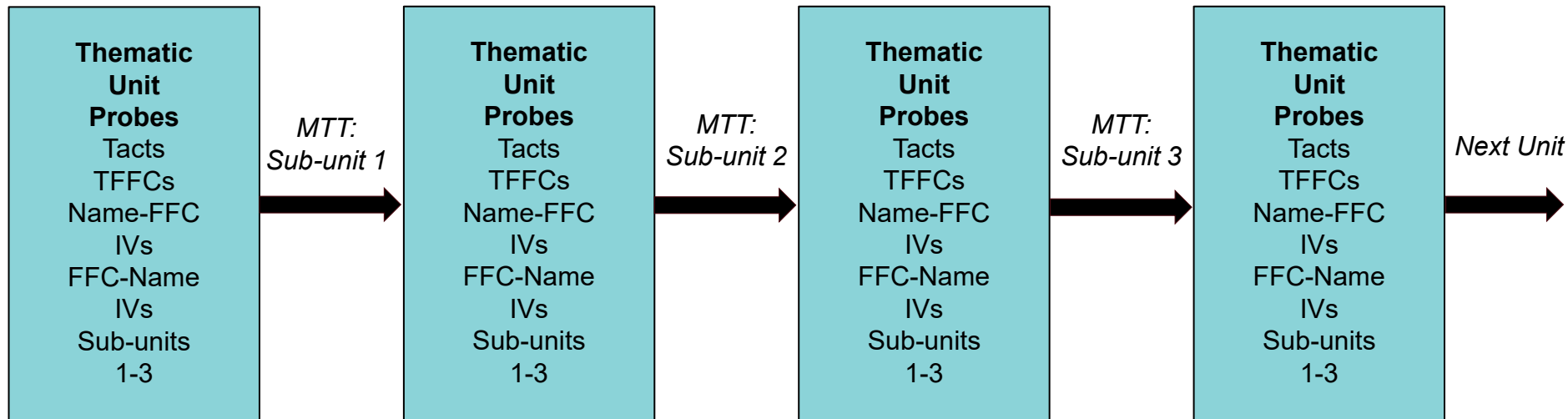
- Concurrent, multiple probe design across behaviors (i.e., thematic sub-units)



Experimental Design & Phase Progression



- Concurrent, multiple probe design across behaviors (i.e., thematic sub-units)





Thematic Unit Probes

- Unit probe were conducted across all subunits and operants
 - Tact item, tact (2) feature/functions, and FF-Name and Name-FF intraverbals across all stimulus classes were presented 3 times
Shillingsburg et al. (2018); Frampton & Shillingsburg (2020); Tullis et al. (2021)
- Unit probe contingencies
 - Differential reinforcement provided for correct responses at baseline to strengthen correct responding
 - Praise and tokens provided for correct responses
 - Neutral responses for incorrect responses



MTT Procedures

- 1:1 teaching block
- 20-minute maximum
 - Single probe (each tact/TFFC presented once, in varied order)
 - Items missed during probe: taught during remainder of the 20-min session
- Applied verbal behavior teaching procedures

Shillingsburg et al. (2022)

MTT Procedures

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Shillingsburg et al. (2022)



Controlling Prompt

MTT Procedures

- 1:1 teaching block
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- Applied verbal behavior teaching procedures

Shillingsburg et al. (2022)



Controlling Prompt



Transfer Trial

MTT Procedures

- 1:1 teaching block
- 20-minute maximum
 - Single probe (each tact/TFFC presented once, in varied order)
 - Items missed during probe: taught during remainder of the 20-min session
- Applied verbal behavior teaching procedures

Shillingsburg et al. (2022)



Controlling Prompt



Transfer Trial



Spaced Trial

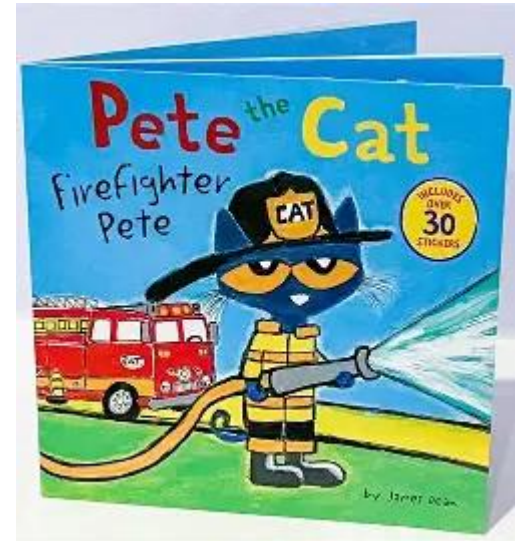




Thematic Group Activities

Clinic Schedule

1:1 MTT	1:00 – 1:20 PM
Story & Snack	1:20 – 1:30 PM
Firefighter Craft	1:30 – 1:40 PM
Circle Time	1:40 – 2:00 PM
Dramatic Play	2:00 – 2:20 PM
Language for Learning	2:20 – 2:40 PM
Firefighter Relay Race	2:40 – 3:00 PM
Dismissal	3:00 PM





Thematic Units

Theme: Community Helpers

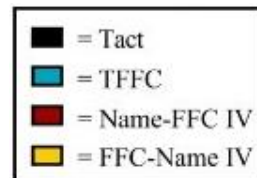
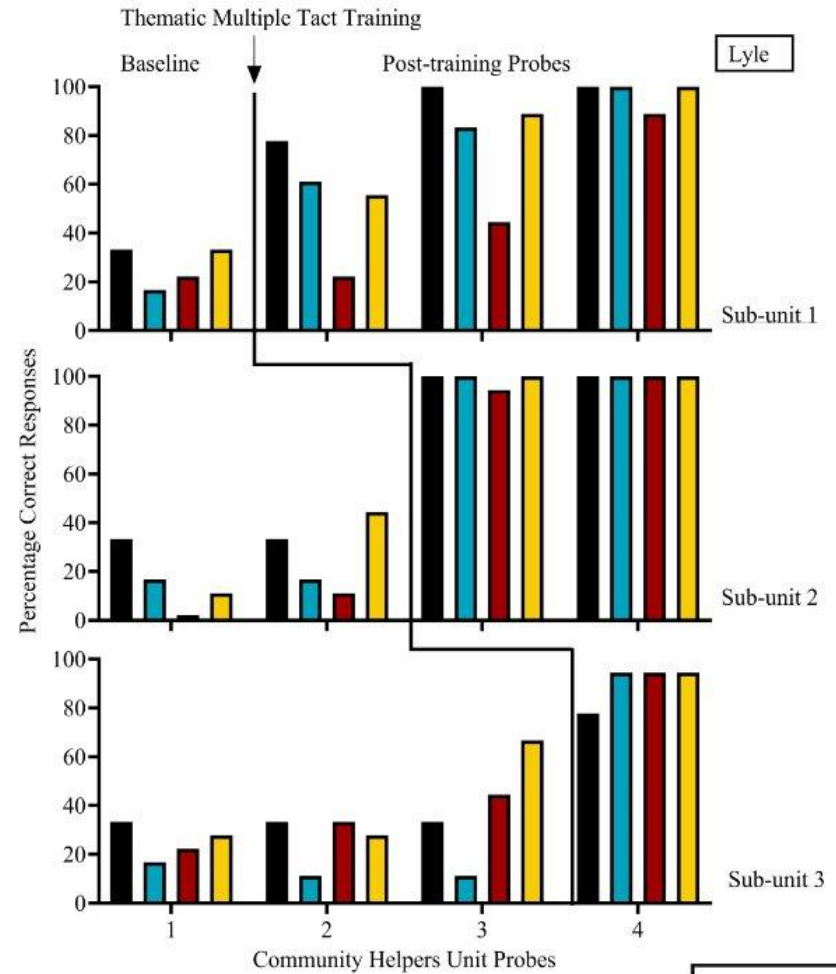
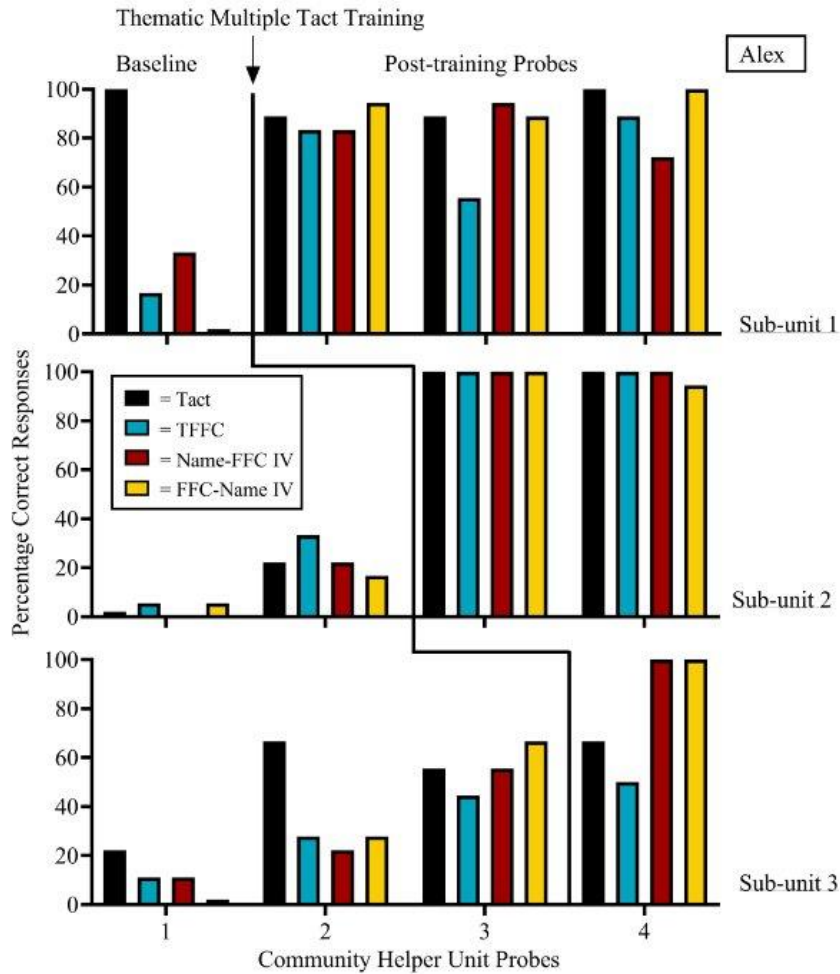
Healthcare Workers	School Workers	First Responders
Doctor Veterinarian Dentist	Teacher Crossing Guard Librarian	Firefighter Police Office Paramedic

Theme: Summer

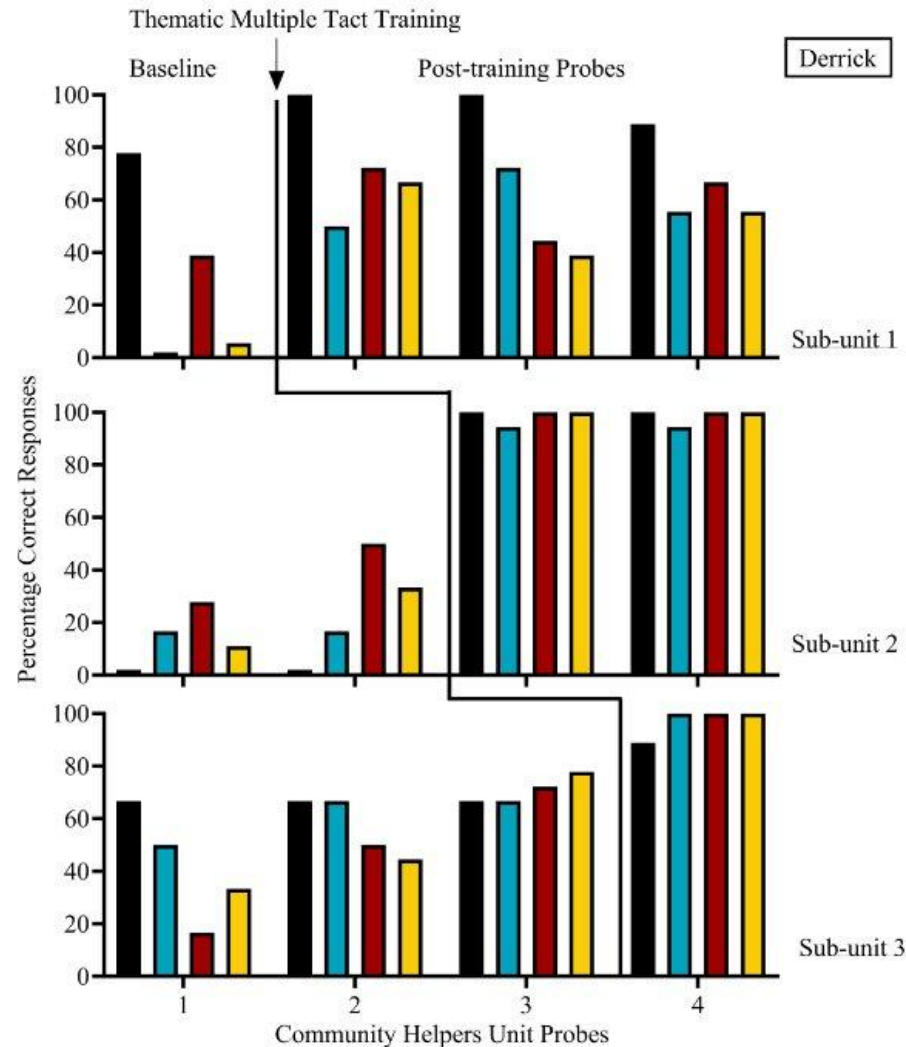
Activities	Foods	Clothing
Rollerblades Kite Fishing Rod	Watermelon Popsicles Hot dog	Sunglasses Sandal Hats



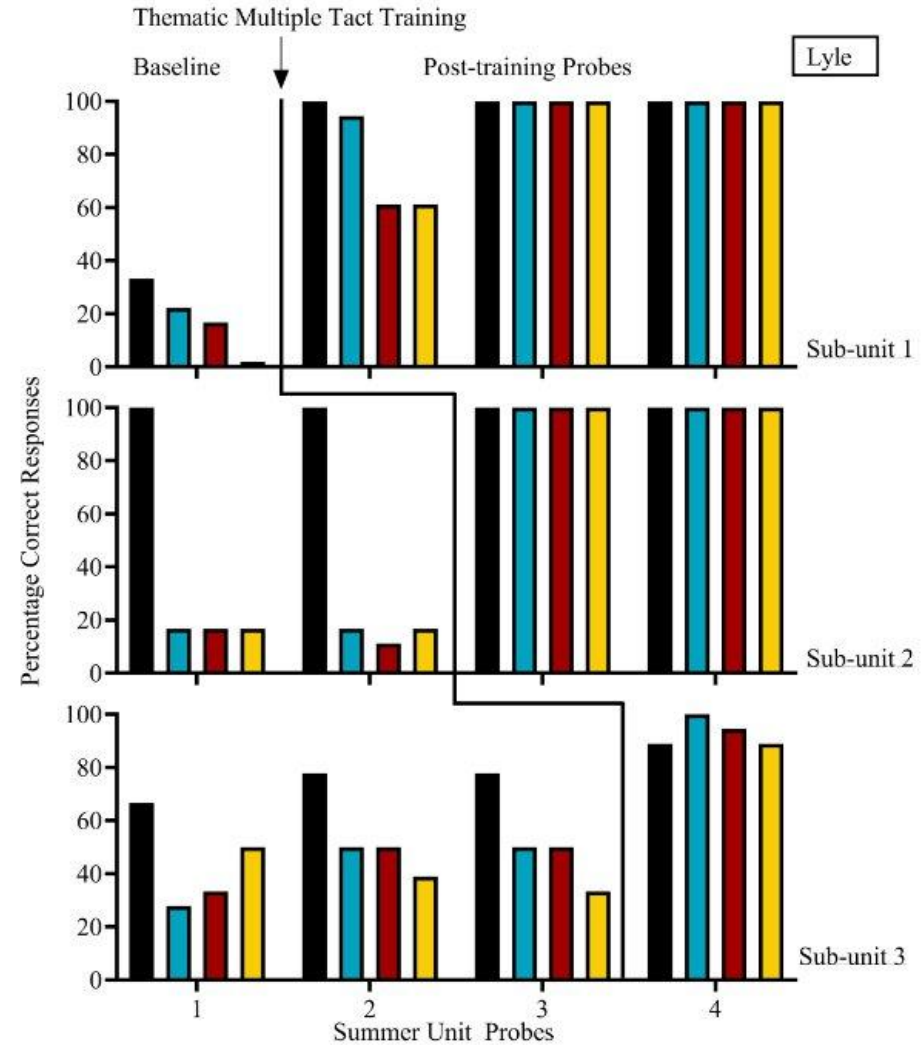
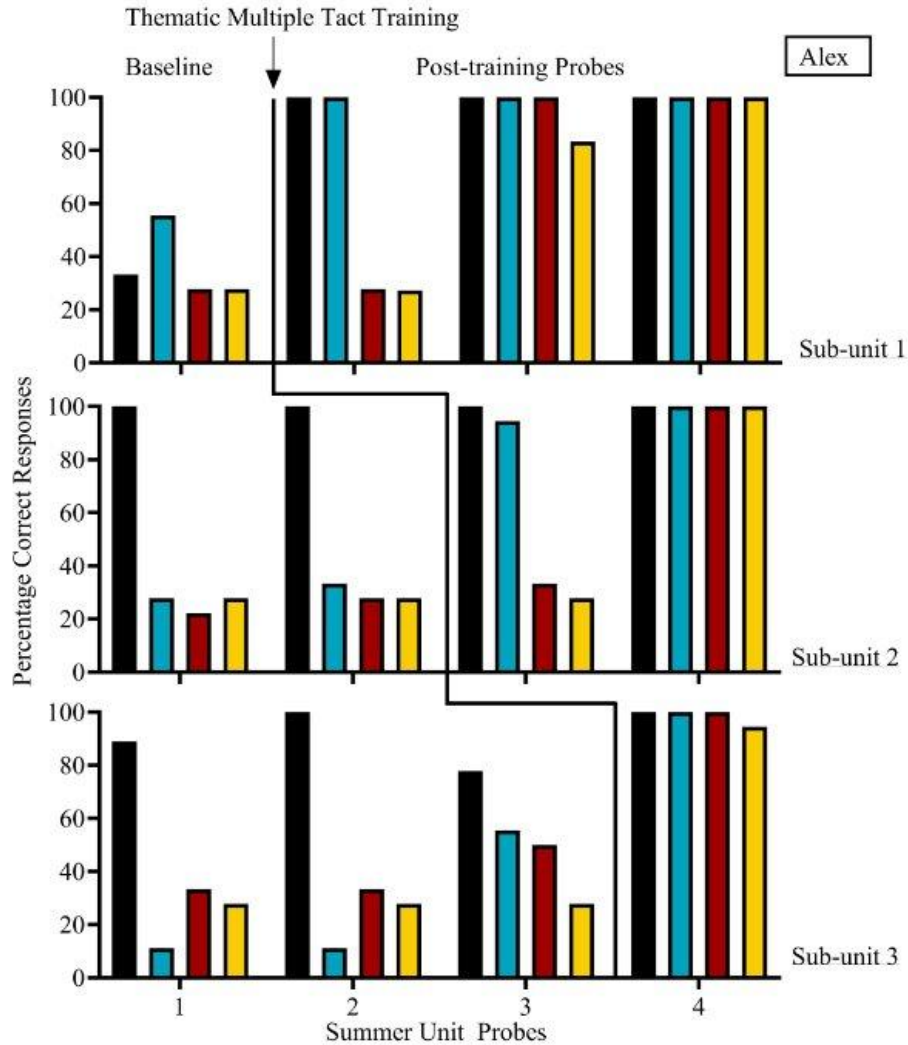
Results: Community Helpers



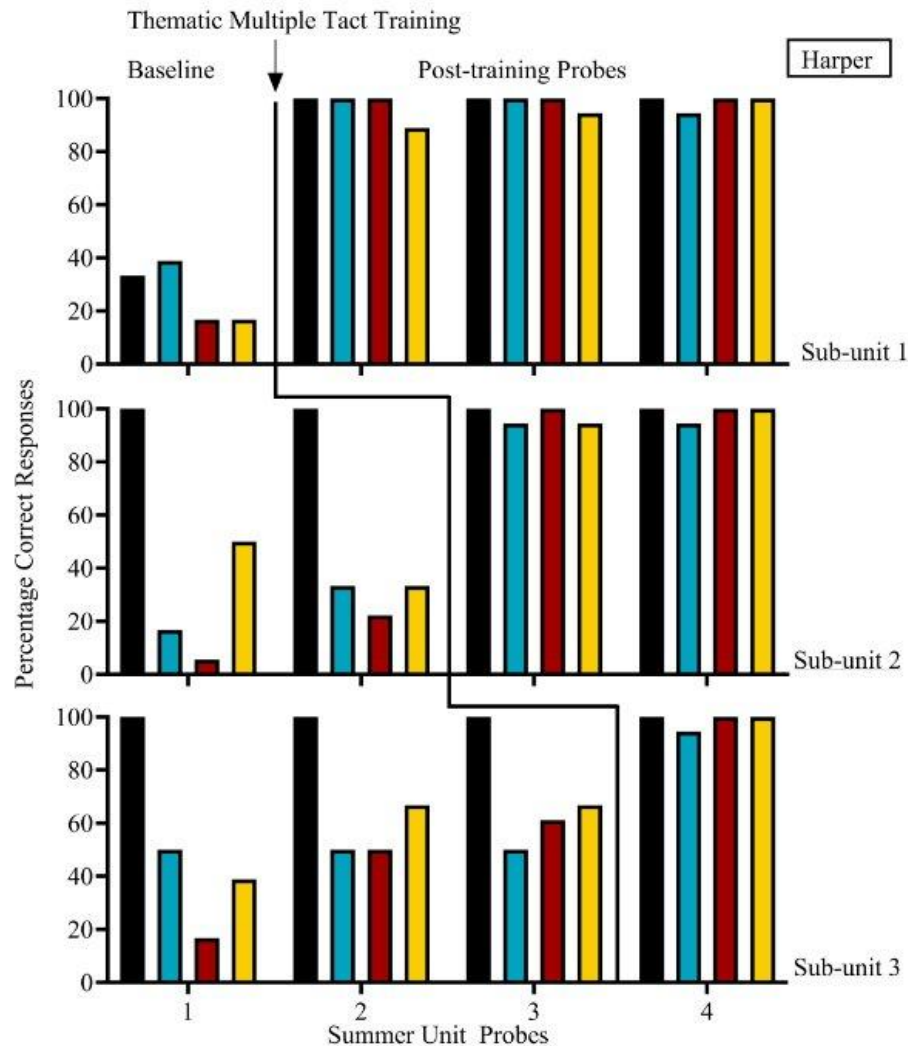
Results: Community Helpers



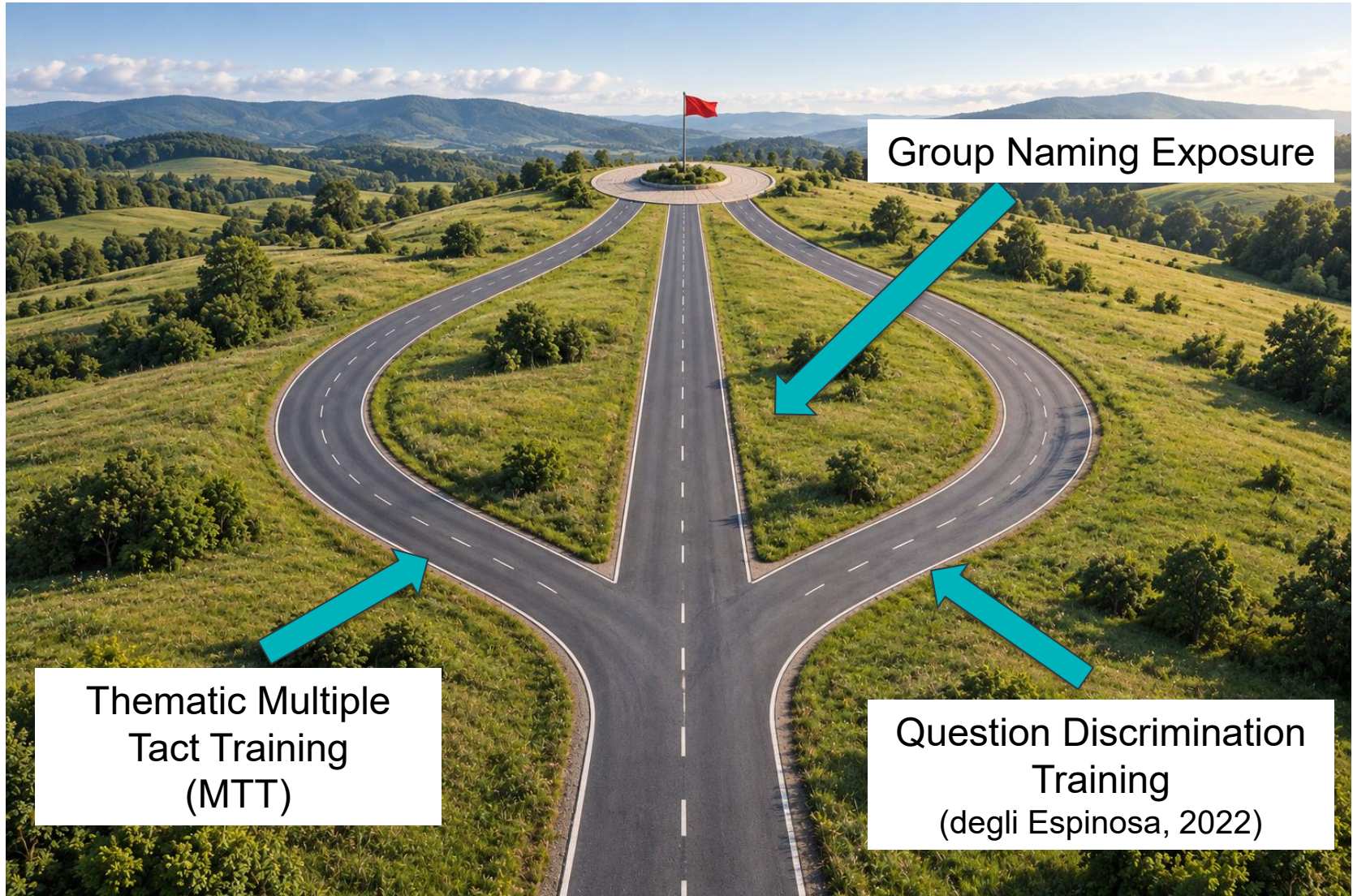
Results: Summer



Results: Summer



Differentiated Instruction





Study 2: Group Naming Exposure

(Frampton, in prep)

Study 2 Purpose

- Extend previous research on use of instructive feedback in triadic instructional groups to promote emergent responding (Tullis et al. 2021)
- Expand use of thematic curricula to dyad and group settings
- Translate procedures established in research into a package for on-going service delivery
 - Through less explicit instructional experiences
- Evaluate the effects of group thematic instruction on emergent intraverbals (Frampton, in prep)

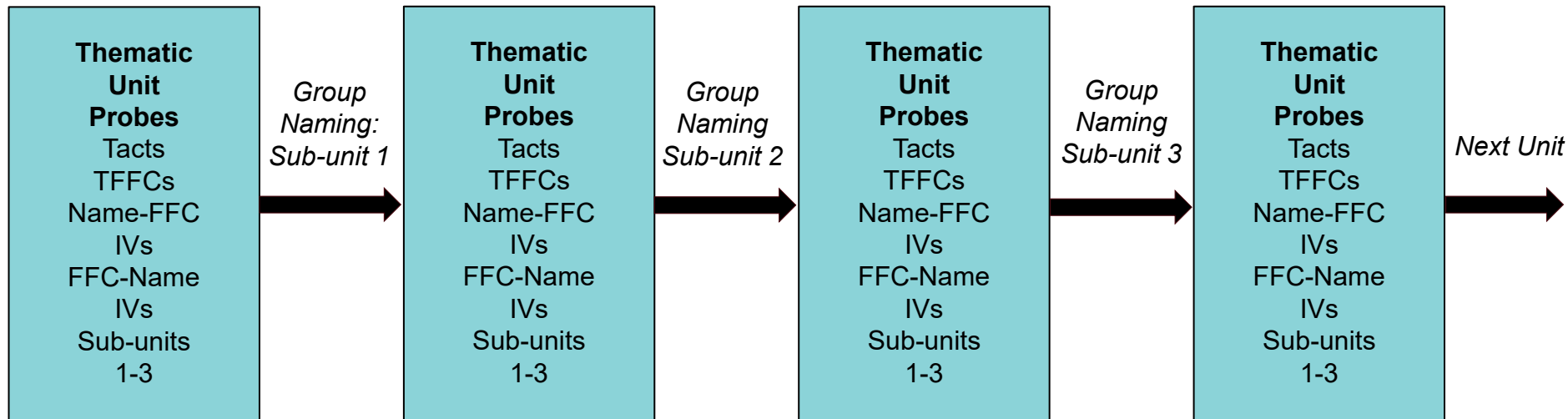
Participants

Name	Age	Gender	Race/ Ethnicity	VB-MAPP Milestones Scores	Vineland Score
Alex 	5.2	M	Asian	Overall = 170 Tact = 15 Intraverbal = 10 Social = 15	ABC = 89
Lyle 	5.2	M	Asian	Overall = 168.5 Tact = 15 Intraverbal = 10 Social = 14	ABC = 96
Luca 	6.7	M	White	Overall = 141.5 Tact = 15 Intraverbal = 5.5 Social = 12.5	ABC = 75

Experimental Design & Phase Progression



- Concurrent, multiple probe design across behaviors (i.e., thematic sub-units)





Group Naming Thematic Unit

Theme: Transportation		
Water Transportation	Air Transportation	Road Transportation
Sailboat	Helicopter	Train
Jet Ski	Airplane	Car
Submarine	Hot Air Ballon	Bicycle

Group Naming Procedures

- 20-minute session
 - Daily cold probes, followed by instruction
- Multimodal teaching stimuli



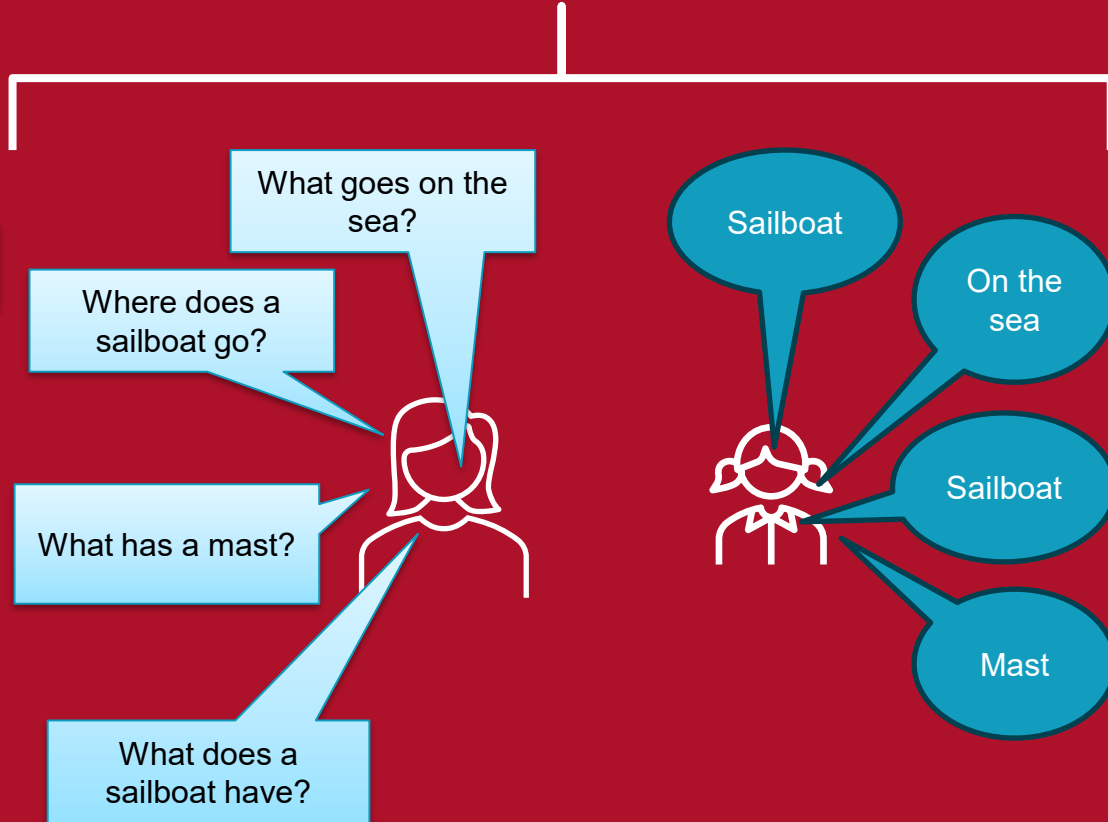
- Group behavioral supports
 - Token economy boards and preferred videos

Group Naming Exposure

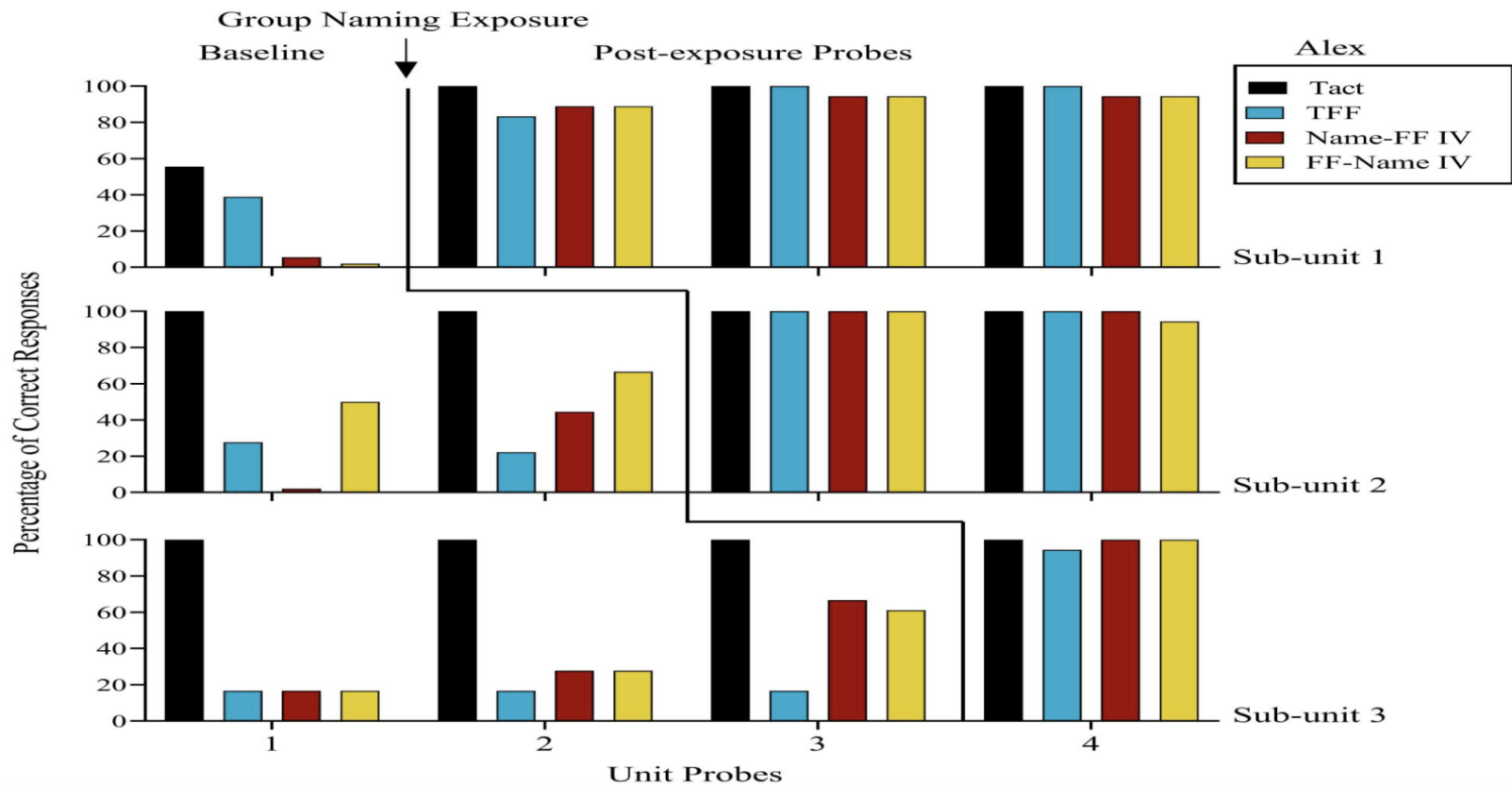
Direct Teaching - Tacts



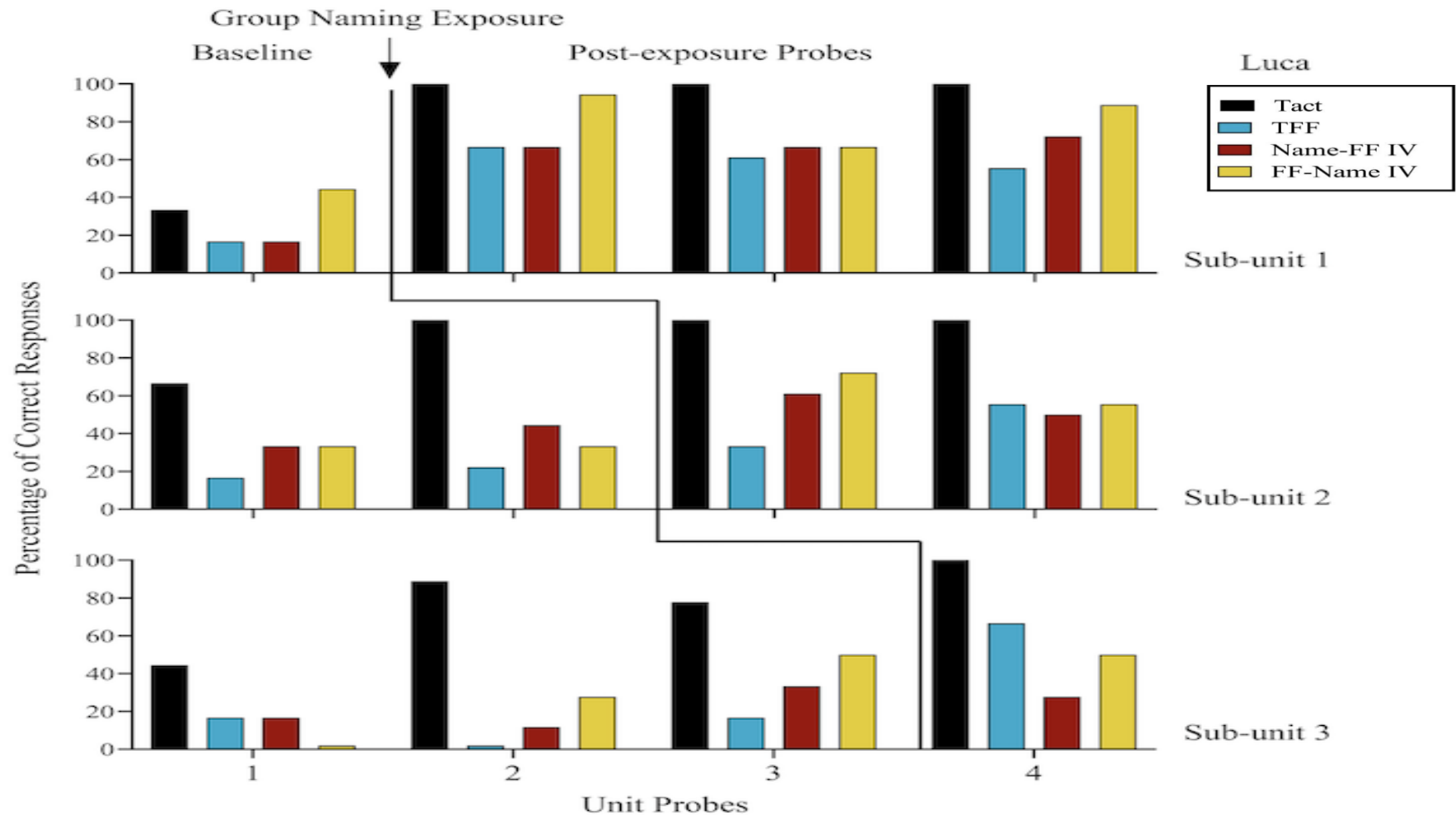
Untrained Emergence - Intraverbals



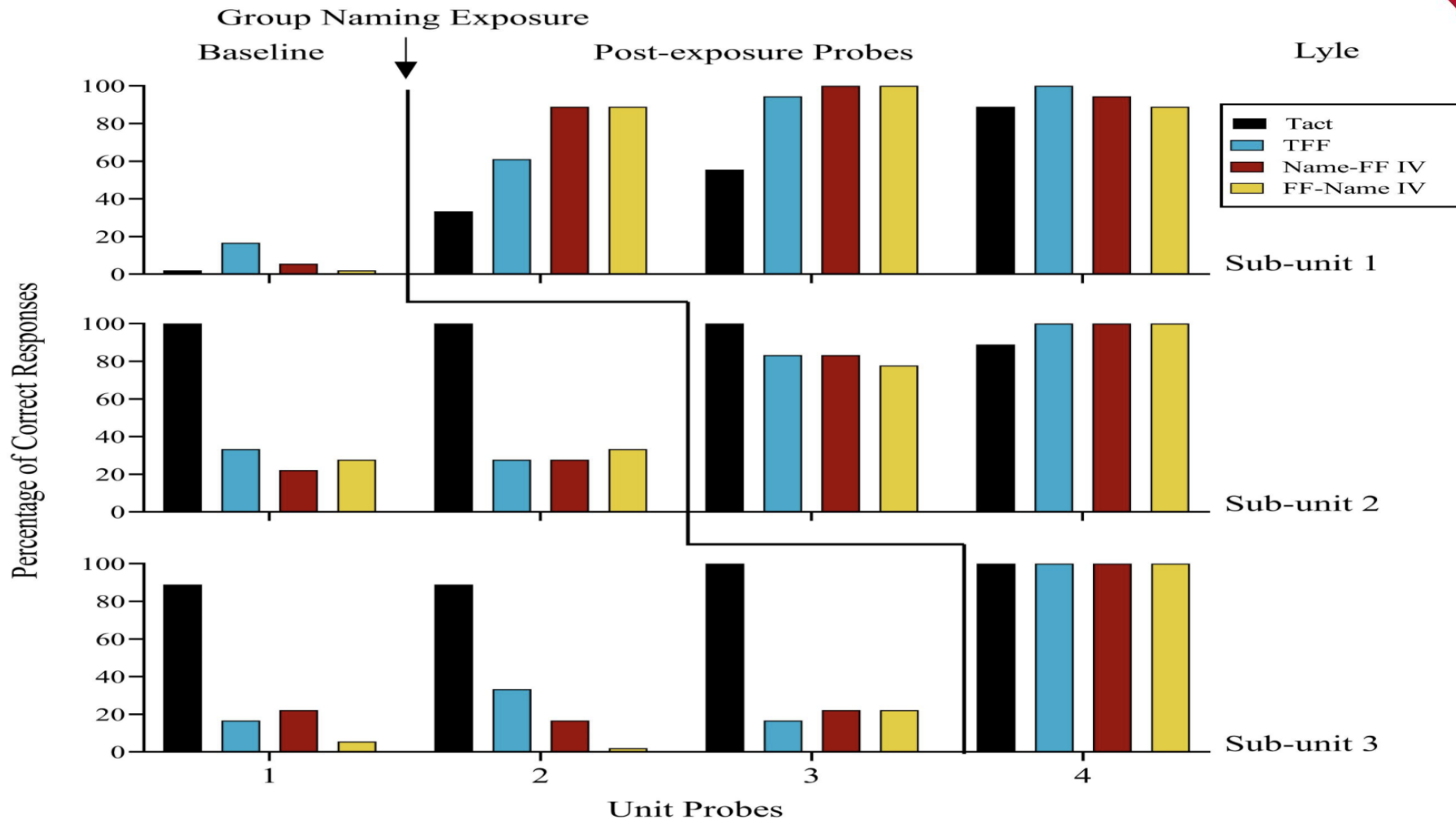
Results: Transportation



Results: Transportation



Results: Transportation



Discussion

- Demonstrated the effects of a low-intensity, thematic MTT and group naming intervention on untrained intraverbal responses in children with ASD
- Extends the well-established body of literature on tact instruction to promote emergent intraverbals through a packaged intervention **conducted within the scope of on-going service delivery**



Discussion

- Responds to call for behavior analytic practitioners to apply research in practice
 - Maintain critical components of intervention
 - Demonstrate functional relationship within practice sessions

(Valentino & Juanico, 2020)

- Emphasis on implementation
 - Balance experimental rigor with the practical realities of clinical service delivery.



Discussion

- Inclusion of familiar targets
- Incidental exposure to targets in other contexts
- Differential reinforcement during probe trials
 - Many studies involve conducting probes under nonreactive conditions (Horner & Baer, 1978)
 - Use of extinction may suppress correct responses, resulting in false negative outcomes
Sidman (2011)



Discussion

- Time-based criterion
 - Two week limit for each sub-unit
 - No participants met mastery criteria within the first subunit, yet increased levels of correct responding and rate of mastery was observed in subsequent subunits
 - With goal of establishing generative verbal cusps, rigid mastery criteria may be contraindicated

Conclusions

- Some limitations in the conceptual conclusions of the data
 - Yet consistent in demonstrating strong ecological validity (Fahmie et al., 2023)
- Applied research requires loosening of controls over all variables (Valentino & Juanico, 2020)
 - So that more can be learned regarding the feasibility of empirically supported interventions in the real-world

Limitations

- Study evaluated efficacy, but measures of effectiveness were limited
 - No long-term maintenance probes
 - No measures of generalization across stimuli or contexts
 - No measure of social validity

Future Directions

- Explore further differentiated models of instruction
 - Individualized or intensive interventions
 - Blocked trials (Ingvarsson et al., 2016)
 - Question discrimination (degli Espinosa, 2022; Connolly et al., in prep)
 - Less intrusive models of intervention
 - Instructive feedback (Frampton & Shillingsburg; 2020; Tullis et al., 2017)
 - Naming exposure in 1:1 context (Olaff & Holth, 2025)



Clinic Schedule

Thematic Instruction

Story & Snack

Theme Craft

Circle Time

Theme Dramatic Play

Language for Learning

Theme Game

Dismissal

Multiple
Tact
Training

Instructive
Feedback

1:1
Naming
Exposure

Group
Naming
Exposure

Closing Remarks

- The technology of generative learning procedures is robust
 - But if the procedures can only be deployed by expert researchers and under tightly controlled conditions will fail to meet the needs
- Collaborations between researchers and clinicians is needed to program for generative learning in clinical and educational contexts

Thank You!



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