

A Peer-Mediated Intervention for Middle School Students with Autism

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Learning Objectives

1. Name at least four of the critical ingredients for successful social skills instruction for students with ASD, according to Ke et al. (2018)
2. Define peer-mediated intervention (PMI) and describe how PMI can be used to increase social engagement and communicative acts for students with ASD.
3. Identify some of the potential advantages and disadvantages of a low-intensity approach to PMI as well as future directions for research.

What is Friendship?

- Reciprocity: giving and taking between two individuals, so that they both provide and receive social support (Bukowski et al., 2009)
- Preschoolers and early elementary age students: engagement in shared interests and activities (Newcomb & Bagwell, 1995)
- Middle and secondary school students: engagement in shared interests, plus trust and intimacy (Rubin et al., 2005)

Benefits of Friendship

- In general: better school adjustment and higher "happiness" ratings (Ladd et al., 1996); higher rates of school engagement and better academic performance/higher grades (Furrer et al., 2014; Vaquero & Kao, 2008)
- During major transitions from elementary to middle school and from middle school to high school -- higher social and academic success (Wentzel et al., 2004)
- Secondary students: higher overall life satisfaction and well-being (Oberle et al., 2011)

Friendship and Autism Spectrum Disorder (ASD)

- One of the defining characteristics of ASD is a persistent deficit in social communication and social interaction (American Psychiatric Association, 2013)
- This means that individuals with ASD are more likely to be socially isolated (Rotheram-Fuller et al., 2010), lack friends (Petrina et al., 2014), and experience loneliness (Mazurek, 2014)



What do we know about effective social interventions for children with ASD at school?



Types of Social Interventions

- ▶ Social stories™/social narratives
- ▶ Video modeling
- ▶ Social Thinking™
- ▶ Social skills groups
- ▶ Visual supports
- ▶ Pivotal Response Treatment
- ▶ Peer-mediated strategies

Reichow et al., 2010

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ORIGINAL PAPER

Social Skills Interventions for Individuals with Autism: Evaluation for Evidence-Based Practices within a Best Evidence Synthesis Framework

Brian Reichow · Fred R. Volkmar

“...interventions that train peers to deliver treatment has much support and should be considered a recommended practice for all individuals with autism” (p. 160)

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Abstract This paper presents a best evidence synthesis of interventions to increase social behavior for individuals with autism. Sixty-six studies published in peer-reviewed journals between 2001 and July 2008 with 513 participants were included. The results are presented by the age of the individual receiving intervention and by delivery agent of intervention. The findings suggest there is much empirical evidence supporting many different treatments for the

Social difficulties should differentiate children with autism spectrum disorders (ASD) from those with other developmental disorders (Kline et al. 2007) and are more heavily weighted than other areas in current (DSM-IV and ICD-10) diagnostic approaches (American Psychiatric Association 1994; World Health Organization 1994). Difficulties in the social arena typically remain an area of great vulnerability even for the most cognitively able individuals on the au-

National Standards Project Phase II, 2015

- ▶ Endorsed social narratives, video modeling, social skills groups, pivotal response treatment (PRT), and peer-mediated interventions (PMI)



Ke, Whalon, & Yun, 2018

Social Skill Interventions for Youth and Adults With Autism Spectrum Disorder: A Systematic Review

“...sturdy and rising trend of empirical research addressing social skill/knowledge, peer interaction, and participation in social activities.” (p. 32)

This article is intended to synthesize the broader literature investigating the effectiveness and salient features of interventions designed to enhance the social competence of youth and adults with autism spectrum disorder. Outcomes for adults with autism spectrum disorder remain poor with only minimal improvement shown for decades. Among 796 articles reviewed, 42 representative social skill intervention studies met the selection criteria and were coded descriptively for design elements and findings. The review synthesizes and classifies the major categories and issues associated with the key features of the intervention (e.g., the intervention method, group, tools

Ke et al.: Critical Ingredients

- ▶ Structured/manualized intervention
- ▶ Regular, frequent contact
- ▶ Natural environments
- ▶ “Respected learner agency”
 - ▶ Mutual interests, “self-chosen” activities; motivation is key
- ▶ Peer involvement
 - ▶ Important for generalization and maintenance (Steiner et al., 2011)
- ▶ Purposeful planning
 - ▶ Must be BOTH effective and efficient/easy to implement (Reichow et al., 2012)

Peer-Mediated Intervention (PMI)

- Typically-developing peers are taught to support a peer with a disability (academic, social interaction and/or behavioral goals)
- Training length and focus has been variable
- Strong evidence base, particularly in school settings (Reichow & Volkmar, 2010)

Benefits of using PMI as a Social Skills Intervention

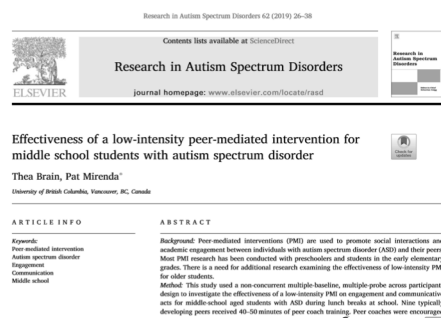
- ▶ Social skills are practiced with **real peers** in real settings, **regular and frequent** opportunities
- ▶ Can be incorporated into **natural settings** and routines such as the classroom or playground (e.g. Carter et al., 2016)
- ▶ Potential to promote **generalization** of skills across settings and peers (Watkins et al., 2015)
- ▶ High **social validity** (satisfaction with intervention and results) reported across students, teachers and parents (Watkins et al., 2015)
- ▶ Potential to **reduce demands** on school staff (Chan et al., 2009)

Limitations

Research base is promising, however, few studies have used PMI:

- ▶ With younger students (e.g., preschoolers)
- ▶ With older students with ASD (e.g., over age 10) during unstructured times (e.g., lunch breaks)
- ▶ With students with ASD other than "Aspergers"
- ▶ With students who have significant communication delays and/or use alternative or augmentative communication

Brain & Mirenda, 2019



Research Questions

1. Is there a **functional relation** between a low-intensity PMI and increased social behaviour of middle-school aged youth with ASD during break and lunch periods on the playground and in the cafeteria?
 - Engagement, communicative acts, mutual enjoyment
2. To what extent are changes in peer interaction **maintained** at 1-4 week follow-up?
3. How do peer coaches and school staff **rate the social validity** of the PMI intervention?

Recruitment Procedures

Three groups were recruited to participate in this study:

1. Classroom teachers
2. Students with autism spectrum disorder (ASD)
3. Peer coaches

Group 1/Stuart

- Grade 6 classroom teacher
- Two peer coaches, age 11 (boy, girl)
- Stuart, Chinese-Canadian student with ASD, age 12; English and some Cantonese
 - Modified academic program; 1:1 full-time E.A. support
 - Spoke in 1-4 word phrases with prompting, able to make a variety of requests and some comments
 - Limited conversational skills, particularly with peers
 - Minimal support needs with daily routines/self-help
 - Nonverbal IQ score of 100 (50th percentile) on Leiter-3
 - Break preferences: Lego, comic books and computers

Group 2/Thomas

- Grade 7 classroom teacher
- Four peer coaches, age 12, all boys
- Stuart, Chinese-Canadian student with ASD, age 12; English and some Cantonese
 - Modified academic program
 - 1:1 E.A. support required throughout day
 - Individualized life skills instruction and programming related to behaviour management outside of classroom
 - 1-4 word basic requests and limited conversational skills
 - Nonverbal IQ score of 49 (<1st percentile) on Leiter-3
 - Break preferences: swings

Group 3/Alexander

- Grade 8 classroom teacher
- Three peer coaches, age 13, all boys
- Alexander, Chinese-Canadian student with ASD, age 12; English and some Cantonese
 - Modified/adapted academic program
 - Moderate to significant level of 1:1 support required
 - 1-4 word basic requests, some comments about the immediate environment/events
 - Limited conversational skills, rarely initiated, scripting
 - Nonverbal IQ score of 100 (50th percentile)
 - Break preferences: many activities (e.g., basketball, soccer)

Setting and Materials

- **Peer Coach Training:** empty classrooms during lunch breaks (other students out of class during this time)
- **Baseline/Intervention/Follow-Up:** break areas (school yard, library, cafeteria)
- Wide range of materials/supplies/games were available to all students in the break-time areas (e.g., Lego, playground equipment, computers, sport equipment)

Measurement

- Partial interval recording, 10 minute observation period, 30 sec intervals
- Percent of intervals with peer engagement
 - Mutual participation in a shared activity
 - Parallel play was NOT engagement unless a communicative act also occurred during same interval
- Percent of intervals with a communicative act (CA)
 - Gestures, facial expressions, verbal utterances, vocalizations directed towards a peer
 - a) Initiations: not contingent on peer's immediately prior CA
 - b) Responses: contingent on peer's immediately prior CA

Measurement

- Indicator(s) of mutual enjoyment (yes/no for the 10 minute observation session)
 - Eye contact, smiling, laughing by both peer coach(es) and the student with ASD
- Social validity
 - Likert-type questionnaires administered at the end of the intervention phase and after follow-up
 - Classroom teachers completed at both time points; peer coaches completed after intervention only (due to end of school year)

Research Design

Non-concurrent, multiple baseline, multiple probe design across three groups of participants; participants randomly assigned baseline lengths (4, 6 or 8 days)

Five phases...

Baseline

- 10-min observation during break times at participant's school (duration of phase randomly assigned)
- No instructions provided to participant, peer coaches or classroom teachers
- Percentage of peer engagement, percentage of CAs, mutual enjoyment and peer coach implementation recorded

Peer Training

Two 20-25-minute training sessions during break

Peer coach training consisted of:

- 1) Identification of **mutual interests/preferences**
- 2) Behavioural Skills Training (BST) to teach three key strategies:
 1. DO
 2. HELP
 3. TALK

Mutual interests/preferences

This is a preference checklist to identify activities and locations that your student enjoys **during** break times at school. Please mark activities and locations listed below. If you do not know if your student likes an activity or location you can leave that item blank.

✓ - The student enjoys this activity/goes to this location during breaks
 ? - The student sometimes enjoys this activity/goes to this location during breaks
 X - The student does not like this activity/location during breaks

| | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locations <input type="checkbox"/> Gymnasium <input type="checkbox"/> Library <input type="checkbox"/> Atrium <input type="checkbox"/> Field <input type="checkbox"/> Playground <input type="checkbox"/> Computer lab <input type="checkbox"/> Classroom <input type="checkbox"/> Other: _____ <input type="checkbox"/> Scooter <input type="checkbox"/> Bike <input type="checkbox"/> Other: _____ | Sports/Playground Equipment <input type="checkbox"/> Swings <input type="checkbox"/> Climbing Structure <input type="checkbox"/> Slide <input type="checkbox"/> Basketball <input type="checkbox"/> Soccerball <input type="checkbox"/> Volleyball <input type="checkbox"/> Other ball: _____ <input type="checkbox"/> Basketball hoop <input type="checkbox"/> Scooter <input type="checkbox"/> Bike <input type="checkbox"/> Other: _____ | Toys/Games <input type="checkbox"/> Football <input type="checkbox"/> Lego <input type="checkbox"/> Jenga <input type="checkbox"/> Blocks <input type="checkbox"/> Art supplies <input type="checkbox"/> Keva <input type="checkbox"/> Card game: (list) _____ <input type="checkbox"/> Board game: (list) _____ <input type="checkbox"/> Computer game: (list) _____ <input type="checkbox"/> Puzzles <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____ |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Activities
☐ Drawing
☐ Climbing
☐ Running
☐ Chasing
☐ Walking
☐ Sitting
☐ Building
☐ Listening
☐ Watching
☐ Talking
☐ Drawing
☐ Other: _____
☐ Other: _____

Comments

Peer Coach Training: Session I

- ▶ 20-25 minutes
- ▶ Introductions
- ▶ Identify activities that everyone likes to do
 - ▶ Including classmate with ASD
- ▶ Introduce strategy #1: DO
 - ▶ Describe, written instructions
 - ▶ Model example
 - ▶ Role play
 - ▶ Feedback

Peer Coach Training: Session II

- ▶ 20-25 minutes
- ▶ Review Strategy #1: DO
- ▶ Introduce Strategy #2: HELP and #3: TALK
 - ▶ Describe, written instructions
 - ▶ Model example
 - ▶ Role play
 - ▶ Feedback

Strategy 1) DO!

This strategy is about **DOING** something that will be fun for everyone!

Join in: Say hello. Tell your classmate you are going to join in.

OR

Give choices: Say hello. Ask "do you want to ____ or ____?"

Strategy 2) HELP!

This strategy is about **HELPING** your classmate do activities with you.

- ▶ Tell your classmate how to do it.
- ▶ Show your classmate how to do it.
- ▶ Take turns.
- ▶ Give choices.

Strategy 3) TALK!

This strategy is about **TALKING** to your classmate.

Show your classmate that you like hanging out and talking with him/her:

- ▶ Smile, give high-5s and compliments (be positive and enthusiastic!)
- ▶ Talk about what you are doing
- ▶ Ask questions

Intervention

- Same conditions as baseline except that brief verbal feedback provided to peer coaches following observations (i.e., praise for strategies used/reminders to use strategies)
- The intervention phase was discontinued when a participant with ASD achieved
 - 70% or higher engagement and
 - either 70% or higher total communicative acts OR no increase in communicative acts across three consecutive probes

Follow-Up

- 1-4 weeks post-intervention
- No additional training or support during the follow-up interval
- Same procedures as baseline and intervention except that brief PRAISE only provided following observations

Results: Engagement

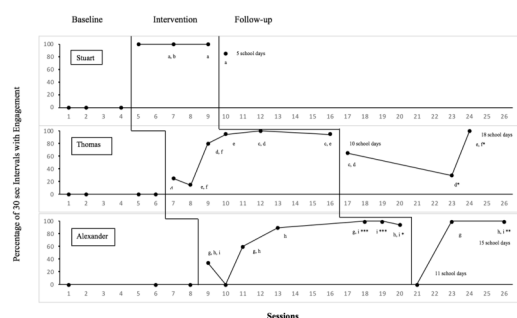


Figure 1. Percentage of 30 second intervals with engagement. Letters (-a, -b, etc.) indicate the peer coach(es) who were present in the observation; * indicates untrained peers who were also present

Results: Communicative Acts

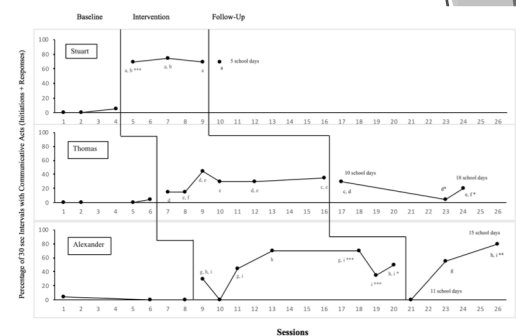


Figure 2. Percentage of 30 second intervals with communicative acts (initiations + responses). Letters (-a, -b, etc.) indicate the peer coach(es) who were present in the observation; * indicates untrained peers who were also present

Results: Mutual Enjoyment

| Indicator Behaviour | Mean % of sessions | | |
|-------------------------------------------------------------|--------------------|----------------|-------------------|
| | Group 1/ Stuart | Group 2/Thomas | Group 3/Alexander |
| Smiling | 50 | 100 | 100 |
| Eye contact | 75 | 90 | 100 |
| Laughing | 0 | 70 | 88 |
| % of sessions with 1 or more indicators of mutual enjoyment | 75 | 100 | 100 |

Results: Social Validity (Peer Coaches)

| Items | Mean |
|--------------------------------------------------------------------|------|
| 1. I am excited to be a peer coach. | 3.75 |
| 2. I feel confident about my ability to be a peer coach. | 3.5 |
| 3. I learned helpful strategies during the training sessions. | 4.0 |
| 4. Participating in this study had a bad impact on my social life. | 1.25 |
| 5. I had fun during the training. | 3.9 |
| 6. I would recommend being a peer coach to my friend. | 3.25 |
| 7. I would be a peer coach again in the future. | 3.5 |
| 8. I consider the classmate I coached to be a friend. | 3.5 |
| 9. I think other kids should learn how to be peer coaches. | 3.6 |
| 10. Overall, I enjoyed being in this project. | 3.8 |

1 = strongly disagree, 4 = strongly agree

Comments from Peer Coaches

Stuart

- ▶ "I had a lot of fun peer coaching Stuart because I feel like Stuart feels more welcome here because he knows he has friends there for him."
- ▶ "It was very fun to play with Stuart and learn the strategies."

Thomas

- ▶ "Peer coaching is beneficial for both sides of the coaching. I really like this program"
- ▶ "...peer coaching with Thomas has been fun and has brought me joy. Most importantly, it has brought me a new friend that I can interact with more."
- ▶ "I like coaching Thomas but the lack of response from him makes me feel that my acts are useless. I also dislike that I constantly do swings and push, making me feel more like a servant than a friend"

Alexander

- ▶ "Thank you for having/teaching me. I will make sure Alexander has an astonishing future"
- ▶ "It was evident that he had a lot of fun and I'm thankful that you taught me, (peer coach name) and (peer coach name) to communicate with him."
- ▶ "I really enjoyed being a peer coach, but I think there should be more peer coaches so it doesn't feel like a job or a chore"

Results: Social Validity (Teachers)

| Item | Mean |
|--------------------------------------------------------------------------------------------------|------|
| 1. I think that peer training is a good way to address the social needs of students with autism. | 4.0 |
| 2. I would like to see more peer training for students at RCS in the future. | 4.0 |
| 3. The student with autism has benefitted socially from participating in the study. | 3.8 |
| 4. The peer coaches benefitted socially from participating in the study. | 4.0 |
| 5. The student with autism has more friends as a result of the study. | 3.7 |
| 6. The study was disruptive to my classroom and/or students. | 1.2 |
| 7. I think other students would benefit from peer training. | 4.0 |
| 8. Peer coaches enjoyed participating in the study. | 4.0 |
| 9. The amount of time required to participate in this study was reasonable for all students. | 4.0 |
| 10. I would like to learn how to train students to be peer coaches. | 3.7 |

1 = strongly disagree, 4 = strongly agree

Comments from Teachers

- ▶ Stuart: no comment
- ▶ Thomas: "I was thrilled to participate in this study - the benefits far exceeded my expectations. The opportunity to learn about peer coaching will definitely build momentum in a positive way for all involved. Thank you."
- ▶ Alexander: "This was such a wonderful opportunity for both my peer coaches and my student with autism. All three coaches had an extremely positive experience...and the student with autism is now being invited to join friends at lunch and break and has been communicating more. The coaches have also helped to calm him down when stressed... I would love to see more training at our school in the future"

Lessons Learned: Advantages

- ▶ The results of this study showed that a **low-intensity** intervention can have significant effects
 - ▶ The intervention took a total of 1-hour for training and 30 sec-1 minute feedback sessions with peers intermittently
 - ▶ Schools may be more likely to adopt evidence-based interventions that are low-intensity
- ▶ Middle school students with **varying abilities** on the autism spectrum were responsive to this intervention
- ▶ **High social validity** from students and teachers

Evaluating a low-intensity PMI using Ke et al., key ingredients (2018)

- ▶ **Structured/manualized intervention**
- ▶ **Regular, frequent contact**
- ▶ **Natural environments**
- ▶ **“Respected learner agency”**
 - ▶ Mutual interests, “self-chosen” activities; motivation is key
- ▶ **Peer involvement**
 - ▶ Important for generalization and maintenance (Steiner et al., 2011)
- ▶ **Purposeful planning**
 - ▶ Must be BOTH effective and efficient/easy to implement (Reichow et al., 2012)

Lessons Learned: Limitations

- ▶ No direct intervention with students with ASD, did not see increase significant increase in initiations
- ▶ Participants were not included in the planning or training sessions and social validity measures were not collected for participants with ASD
- ▶ Long-term maintenance of effects is unknown
- ▶ Unknown if results could be replicated with school teams implementing the training

Future Directions

- Include individuals with ASD as research partners Include participants who represent the **wide spectrum of ASD**
- Teach participants with ASD to **initiate interactions**
- Support students with ASD who have limited interests to **expand their leisure repertoires**
- Investigate a **train-the-trainer(s)** application of this intervention package

Thank You!



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