Creating a Social Communication Module for Youth with Autism Spectrum Disorder

Erin Walton
Western Kentucky University, erin.walton026@topper.wku.edu

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CREATING A SOCIAL COMMUNICATION MODULE
FOR YOUTH WITH AUTISM SPECTRUM DISORDER

A Capstone Project Presented in Partial Fulfillment
of the Requirements for the Degree Bachelor of Science
with Mahurin Honors College Graduate Distinction
at Western Kentucky University

By
Erin Walton
May 2020

*****

CE/T Committee:
Janice Smith, Ph.D. CCC/SLP
Leisa Hutchison, M.S. CCC/SLP
Leah Thompson, M.A.
Abstract

Research (Hales, Carroll, Fryar, & Ogden, 2017) shows that those with autism spectrum disorder (ASD) often experience poorer physical health and fewer opportunities for social interactions than typically developing peers. As the prevalence of ASD increases, it is essential to consider effective interventions that target multiple skill areas for individuals seeking therapy. Youth ages 9 to 17 with ASD may experience physical health and social communication benefits from the implementation of a social communication curriculum module that could potentially be incorporated with Bingocize®, an online application that incorporates bingo with physical exercise, as well as educational content. Social communication educational units were implemented at the Kelly Autism Program for eight sessions. Units consist of a brief lesson, activities to practice skills, questions to reinforce concepts, and dance moves to address social education and physical activity levels.

The expected result of this project was to create a social communication module that could be employed for students with ASD. Progress of each individual’s social communication skills and physical activity were monitored to determine if the module was beneficial. The modules could potentially be adapted to be incorporated into Bingocize® to specialize content for future individuals with special needs. The goal of the project was to target and improve both social communication and physical activity levels using this module.

Keywords: autism spectrum disorder, social communication, physical activity
DEDICATION

I dedicate this capstone to my amazing parents, Eric and Debbie, and my wonderful friends, Rebecca and Brian, who have supported me throughout this process.
ACKNOWLEDGEMENTS

I would like to take a moment to thank several people. First, I want to express my deepest gratitude to Dr. Smith for all her guidance and support. I appreciate that her office door was always open. She always had answers to my endless questions. I want to thank Anna for her constant help. She helped me at each KAP session and allowed me to text her at any hour of the day. I want to thank Mrs. Hutchison and Mrs. Thompson for being part of my defense committee and for enduring many emails. Thank you to Mrs. Ritchie who allowed me to implement this at KAP. I want to thank WKU for allowing me to have the opportunity to receive a FUSE grant. I would like to thank the KAP workers for all their assistance and positivity. I would also like to thank all the KAP participants who made this project possible. The encouragement and guidance from everyone has been greatly appreciated.
VITA

EDUCATION

Western Kentucky University, Bowling Green, KY  May 2020
  B.S. in Communication Disorders – Mahurin Honors College

Barren County High School, Glasgow, KY  May 2017

PROFESSIONAL EXPERIENCE

Student Accessibility Resource Center, WKU  August 2019-
  Student Worker  Present

AWARDS & HONORS

Faculty-Undergraduate Student Engagement Grant, Spring 2020

PROFESSIONAL MEMBERSHIPS

National Student Speech Language Hearing Association (NSSLHA)
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SECTION 1

INTRODUCTION

Need for Effective Interventions for Individuals with ASD

As of 2018, the Centers for Disease Control and Prevention found the prevalence of children diagnosed with autism spectrum disorder to be 1 in 59 (CDC, 2018). The prevalence of autism spectrum disorder (ASD) continues to increase, making it vital for professionals working with those individuals to consider effective interventions that target multiple skill areas. According to criteria in the Diagnostic Manual of Mental Disorders-Fifth Edition (DSM-V), ASD is defined by deficits in social communication and interaction (DSM-V; American Psychological Association 2013). Another area of concern for individuals with ASD is decreased physical activity levels, which lead to a myriad of negative health effects (Phillips et al., 2014). These two areas of concern present the opportunity to target two intervention areas more efficiently within a single therapy session. It is vital to provide efficient services, as children with ASD have multiple areas of deficit and their families may have limited resources. Parents and caregivers of children with ASD have reported that they experience financial burden as well as a loss of time due to needs of the child (Vohra, Madhavan, Sambamoorthi, & St Peter, 2014). Parents of children with ASD must devote time to provide their children with access to intervention and healthcare services. Vohra et al. (2014) also found that caregivers reported difficulty accessing services, which was due in part to a lack of
availability of services. The factors lead to the need for effective intervention strategies that efficiently target multiple skill areas and are also easily accessible.

**Physical Activity in Individuals with ASD**

The prevalence of overweight or obese children and adolescents significantly increased from 1999 to 2016. According to data collected from the National Health and Nutrition Examination Surveys, approximately 18.5% of youth in the United States were considered obese as of 2016 (Hales, Carroll, Fryar, & Ogden, 2017). The prevalence of obesity increases when comparing age groups. Children ages 2 to 5 had a prevalence of obesity at 13.9%, youth ages 6-11 had a prevalence of 18.4%, and adolescents ages 12 to 19 had a prevalence of 20.6% (Hales, Carroll, Fryar, & Ogden, 2017). These prominent rates of obesity surpass the Healthy People 2020 goals, set by the Office of Disease Prevention and Health Promotion, of 14.5% among youth (Hales, Carroll, Fryar, & Ogden, 2017). The current trends indicate that the occurrence of obese individuals will continue to increase. This prevalence increases significantly when comparing adults with both adolescents and children (Garcia-Pastor, Salinero, Theirs, & Ruiz-Vicente, 2019), indicating that inactive lifestyles may become habitual with age.

Phillips et al. (2014) found that adolescents with developmental disabilities (DD) have a prevalence of obesity at 20.4%, while their typically developing counterparts had an obesity rate of 13.1%. Of children with DD, those with ASD had the highest prevalence of obesity with a rate of 31.8%. These statistically significant results indicate that individuals with ASD are particularly at risk for being overweight or obese and are therefore in need of effective interventions (Phillips et al., 2014). When comparing children with DD who are not obese to children with DD who are obese, those with both
a DD and obesity had “30-40% higher prevalence of respiratory allergy, eczema/skin allergy, and frequent severe headaches/migraines”, (Phillips et al., 2014, p.1968).

A lack of physical activity may contribute to the prominence of overweight individuals with ASD. Adolescents with ASD report a significantly lower amount of physical activity on both weekdays and weekends compared to typically developing peers (Stanish et al., 2017). Adolescents with ASD also spent less time engaging in moderate or vigorously intense physical activities. Stanish et al. (2017) found that neither the adolescents with ASD nor typically developing adolescents met the Physical Activity Guidelines for Americans’ recommendation of being physically active for 60 minutes per day, indicating the lack of overall exercise among this population. As children with ASD enter adolescence, the amount of moderate and vigorous physical activities in which they engage decreases (Macdonald, Esposito, & Ulrich, 2011).

Reduced physical activity levels in youth with ASD may be related to a decrease in participation of activities that involve physical exertion like sports teams or hiking clubs. Understanding barriers present in typical activities allows for implementation of the most effective intervention possible to account for potential limitations that cause individuals with ASD to abstain from participating. Individuals with ASD are less likely to participate in regular activities throughout the year than typically developing peers (Scharoun et al., 2017). Individuals with ASD may experience difficulty joining activities due to motor and social factors or parental concern. Motor factors may include eye-hand coordination and general motor skill development, which impacts activities like throwing or kicking a ball. Prevalence of obesity or being overweight also impacts individuals’ ability to participate in certain physical activities with typical peers. The inability to
participate in physical exercise activities magnifies the initial issue of being overweight or obese. Social and behavior deficits may also be a roadblock. Individuals with ASD may prefer solitary activities and may struggle to communicate with peers during interactions (Nichols, Bishop, Block, & McIntire, 2019).

A 2015 study found that lack of financial resources was reported as a chief reason for limited participation in activities that increased physical exercise. Other factors included time constraints, lack of motivation, and fear of injury (Memari et al., 2015). Further limiting participation, games often increase in complexity as children grow older, which could lead to fewer individuals with ASD being able to engage (Memari et al, 2013). Typical physical education classes may further isolate individuals with ASD due to factors such as overstimulating environments and a lack of visual supports. There is a need for tools that allow physical education and activities to be more adaptable for this population (Geslak, 2016).

Through implementation of a fun and social option to get active, individuals could potentially be motivated to continue this form of physical activity and alter their habits throughout their lifetime. It is known that there are many negative health risks associated with obesity and being overweight such as type 2 diabetes, cardiovascular disease, osteoarthritis, certain types of cancer, and other diseases and conditions (Hruby et al., 2016). Dietary and lifestyle factors play a significant role in maintaining a healthy weight. Reducing sedentary lifestyle habits, such as watching television, reduce a person’s risk of obesity (Hruby et al., 2016).

Social Communication in Individuals with ASD
Along with physical health, social relationships can significantly impact one’s quality of life, as friendship can influence well-being and personal performance of individuals (Amati, Meggiolaro, Rivellini, & Zaccarin, 2018). Children with impaired motor coordination are less skilled at recognizing emotions when considering facial cues. Difficulty understanding facial cues for emotion may negatively impact a child’s ability to appropriately respond in social situations (Cummins, Piek, & Dyck, 2005). Intervention focused on improving motor coordination could potentially raise awareness of facial cues. Working to improve motor coordination skills could possibly also benefit social communication skills. Exposure to typically developing children may have a significantly positive impact on children with ASD, as it may enhance social development and allow individuals with ASD to expand their social-emotional capabilities (Bauminger et al., 2008). This finding encourages the use of interventions that could be employed with a variety of populations.

While interacting with typically developing peers may be beneficial, there are also advantages to incorporating interventions that specifically allow individuals with ASD to interact with peers who share their diagnosis. When exploring the difficulties of social communication from the perspective of individuals with high functioning ASD, some commonalities emerge. Kelly, O’Malley, and Antonijevic (2018) found that individuals with ASD commonly considered conversation initiation and unfamiliar topics to be more difficult aspects of social communication. The interviewees reported they were aware that their special interests were not considered interesting to their peers. This awareness led to these individuals initiating and interacting more frequently with other individuals who have ASD. This occurrence may be due to the belief that their interests may overlap more
frequently and the likelihood of being judged may be reduced with individuals who share
their diagnosis.

**Relationship Between Social Communication and Physical Wellness**

Not only does a lack of physical activity negatively impact physical health, but it also impacts social relationships. Social relationships have been shown to be linked to overall happiness and well-being (Diener & Oishi, 2005). Baumeister and Leary (1995) argue that lacking a sense of belonging can lead to negative effects such as a decline in physical health, as well as happiness. There is evidence that increasing physical activity may also produce an increase in academic engagement (Nicholson, Kehle, Bray, & Heest, 2011). However, with regard to the long-lasting effects of physical activity intervention, Nicholson et al. found that the duration of effect could not be distinguished as some participants retained positive affects while others showed consistent or even decreased engagement levels after intervention ceased. In 2015, the effect of karate training on communication skills was assessed in children with ASD. Participants ranged from 5 to 16 years of age. The participants in the study had received no previous training in karate or other forms of martial arts. The communication subscale of the Gilliam Autism Rating Scale-Second Edition (GARS-2; Gilliam 2006) was used to assess the individuals before and after the karate intervention. This study found that incorporating a form of physical activity led to improved social communication in individuals with ASD. Furthermore, thirty days after intervention ceased, the participants in the exercise group continued to have significantly decreased communication deficits. (Bahrami, Movahedi, Marandi, & Sorensen, 2015).
A study in Taiwan found that among individuals with ASD, social initiation and interaction were positively correlated with physical activity (Pan, Tsai, & Hsieh, 2011). Physical exercise has been shown to lead to positive behavior changes (Sowa & Meulenbroek, 2012). In regard to motor performance and social skills, Sowa and Meulenbroek found that individual exercise programs may be more beneficial for children and adults with ASD than group intervention exercise programs. However, in the analysis, the studies categorized as “group intervention” did not define whether social interactions between participants and staff members took place, leading to the acknowledgement that staff and participant interactions may be an influential factor. Sorensen and Zarrett (2014) found that physical activity’s impact upon cognitive performance was limited in current research, but there is evidence that exercise may improve self-regulation, as well as executive function. Physical activity has been linked to a reduction in self-stimulatory behaviors, such as arm flapping or repetitive speech (Petrus et al., 2008). Olin et al. (2017) found that these repetitive behaviors were reduced, especially when the bouts of physical activity were shorter in duration and lower in intensity.

**Bingocize**

The prominence of obesity in individuals with ASD reveals the need for effective interventions that will not only improve the physical health of these individuals, but also improve their quality of life through improved social relationships. Bingocize® is an intervention that is easily available and is simple to participate in for a variety of populations.
Bingocize® incorporates technology with physical exercise. Bingocize® is an online health promotion program that incentivizes exercising and learning about health-related topics by incorporating rounds of bingo. Bingocize® incorporates both a physical activity component and a service style that allows individuals to interact in a social environment. This application is easily accessible, since it is based online and requires minimal tools and equipment for the exercises. Furthermore, the units used could be customized to only include exercises that do not require special equipment. Not only would this intervention target physical activity and social communication, but it would also provide an easily accessible service.

Screen time can contribute to an increase in sedentary behaviors. However, technology can be utilized to provide easily accessible intervention that is cost effective (Nichols, Bishop, Block, & McIntire, 2019). Interventions presented on technological devices can be conditioned reinforcers for youth with ASD. Technology-based interventions can provide an appealing presentation to promote a positive interactive session. Furthermore, computer-based intervention can be highly customizable to different groups or targets (Goldsmith & LeBlanc, 2004). Bingocize® incorporates video models for participants to complete exercises. Video modeling has been connected to improved social communication skills, maintenance of learned skills, and generalization across environments. However, there is evidence that video modeling may not provide the most effective method of instruction unless it is incorporated with another form of instruction (Delano, 2007). This indicates that the use of technology and video models combined with additional instruction may be an effective intervention technique.
Bingocize® was originally created to aid geriatric populations with maintaining functional independence that is often lost as mobility decreases. This online application combined bingo, exercise, and health education (Crandall & Steenbergen, 2015). Crandall and Steenbergen found that when Bingocize® was implemented twice per week for 45- to 60-minute sessions, older adults demonstrated improvement in functional performance. Similar results were produced in a 2017 study. Bingocize® was again employed with older adults, which led to improvement in functional performance, some aspects of physical health, and knowledge of health topics (Shake et al. 2017).

Bingocize® has been applied to other populations as well. The program was implemented to reduce stress levels among female college students and was found to effectively reduce levels of perceived stress (Crandall, Steward & Warf, 2016). Bingocize® has been applied to preschool children and compared to unstructured indoor recess time. The results did not find a statistically significant difference between the two conditions. Positive teacher reports stated that Bingocize® was enjoyable for students and was easily incorporated into the classroom (Dykes, Funk, & Crandall, 2017). Current research regarding Bingocize® has focused on its effectiveness when used with geriatric populations (Crandall & Steenbergen, 2015). While it has also been applied to college-aged students to study stress levels (Crandall, Steward & Warf, 2016), there is limited research regarding its effectiveness with youth, particularly populations with ASD. However, Bingocize® has been proven to be an overall effective intervention when applied with geriatric, college, and elementary school populations, indicating that it could also be a useful form of intervention for individuals with ASD.
The purpose of this project is to create a social communication module that can be employed for students with ASD. Throughout, progress of each individual’s social communication skills and physical activity will be monitored to determine if the module is beneficial and results in overall improvement. If results support the effectiveness of the module, it could potentially be adapted and incorporated into Bingocize® to specialize content for future individuals with ASD.
SECTION 2

METHOD

Participants

Twenty-two individuals participated in this project, including 21 males and 1 female. The participants were all students enrolled in the Kelly Autism Program (KAP) at the Clinical Education Complex at Western Kentucky University. The majority of students had a reported ASD diagnosis based on criteria from the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-V; American Psychological Association 2013). Other students were typically developing peer models. Students were divided into four age groups determined by KAP workers.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Table 1: Participants in groups*

Materials

Each session utilized PowerPoint for delivery of instruction, the online game *Kahoot!* for content recall, and a variety of YouTube videos demonstrating dance moves. Each session’s dance moves were selected from the video game Fortnite, a popular game
among elementary- and middle school-aged children. In each session, students each received a “Dance Party” game card, which had to be completed in order to earn a prize. The cards included tips and reminders for the week’s social communication topic.

Letscom Fitness Trackers were ordered for the purpose of monitoring participants’ heart rates and step count during Dance Party activities. The goal was to observe whether or not the participants’ heart rates lowered over the course of the program and to determine the amount of physical activity that resulted from Dance Party units. The fitness trackers were planned to be implemented the fifth week, following their arrival during the fourth week. Due to cancellation of the program for the remainder of the semester, the trackers were unable to be used.

**Procedures**

Social communication educational units were created to be implemented at the KAP. Each week was dedicated to a specific social communication topic and a fun theme to increase engagement. Units consisted of a brief lesson, activities to practice skills, questions to reinforce concepts, and dance moves to incorporate physical activity. Lessons were taught through PowerPoint and were styled to be similar to social narratives, which describe social expectations and unspoken rules for a variety of situations. Social narratives are recognized by The National Professional Development Center on Autism Spectrum Disorder as an evidence-based practice (“Evidence-based practices”, 2014). The narratives integrated a variety of visuals and short statements that explained appropriate behaviors and responses related to each topic. Each social communication lesson ended with the Kagan cooperative learning strategy “stand up,
hand up, pair up” (Clowes, 2011). This strategy was repeated during each session to help establish a routine for the session and encourage group work.

The target social communication skill changed each week. The table below was for the originally planned ten weeks.

<table>
<thead>
<tr>
<th>Week</th>
<th>Target</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joining a Group</td>
<td>OG “Original Gamer” Fortnite</td>
</tr>
<tr>
<td>2</td>
<td>Turn Taking</td>
<td>Get Groovy Disco</td>
</tr>
<tr>
<td>3</td>
<td>Topic Maintenance</td>
<td>Rock n’ Roll</td>
</tr>
<tr>
<td>4</td>
<td>Body Language</td>
<td>Epic Movies (Soundtracks)</td>
</tr>
<tr>
<td>5</td>
<td>Active Listening</td>
<td>Pop Party</td>
</tr>
<tr>
<td>6</td>
<td>Facial Expressions</td>
<td>Funky Fun</td>
</tr>
<tr>
<td>7</td>
<td>Personal Space and Touch</td>
<td>Techno Time</td>
</tr>
<tr>
<td>8</td>
<td>Reacting to Frustration</td>
<td>Country Hoedown</td>
</tr>
<tr>
<td>9</td>
<td>Ending Conversations</td>
<td>“Don’t Worry, Be Happy” (Reggae)</td>
</tr>
<tr>
<td>10</td>
<td>Review</td>
<td>“Best of Fortnite”</td>
</tr>
</tbody>
</table>

Table 2: Weekly targets and themes

Due to the spread of COVID-19, and subsequent closure of the Clinical Education Complex, eight sessions were implemented at the KAP. The sessions began February 10, 2020 and continued twice a week for four weeks. The units were implemented with four groups of participants. Each session lasted approximately 20 minutes. Individuals had opportunities to win small incentives for participating in the session. An online spinner was used to determine whether a question, activity, or dance move would take place. Dance moves were drawn from the video game Fortnite, which was a common interest among the individuals that participated in the sessions. All physical exercises were appropriate for the participants’ age range and physical abilities. The participants’ social communication skills were measured by administering the Social Communication subscale and Social Interaction subscale from the Gilliam Autism Rating Scale Third Edition (GARS-3). Social communication data was collected during each week using an
adapted version of the two GARS-3 scales to monitor growth of individual skills. Prior to
the start of intervention, KAP workers completed the Social Interaction and Social
Communication subscales for each individual.

Measures

The Social Interaction and Social Communication subscales of the Gilliam
Autism Rating Scale-Third Edition (GARS-3; Gilliam 2014) were used to assess changes
in severity of communication deficits. The GARS-3 is based on the Diagnostic and
Statistical Manual of Mental Disorders-Fifth Edition (DSM-V; American Psychological
Association 2013) standards for ASD. This instrument is typically used to identify
individuals with ASD. It is appropriate for ages 3 to 22 years, which included all
participants in this study. The GARS-3 includes a Social Interaction subscale which can
be used to evaluate an individual’s ability to appropriately respond and interact with
others. It also includes a Social Communication subscale which can be used to
specifically assess an individual’s communicative abilities. The Social Interaction
subscale consists of Items 14-27 on the questionnaire and evaluates the individual’s
ability to relate to people, events, and objects. This portion also asks the parent or
caregiver to indicate the behaviors by frequency of occurrence. The Social
Communication subscale consists of Items 28-36. These items describe verbal and
nonverbal behaviors and asks the parent or caregiver to indicate the behaviors by
frequency of occurrence.

The GARS-3 assesses changes in the participant’s social communication skills.
This assessment was completed once before intervention by workers at the KAP who
were familiar with each participant. The assessment was planned to be completed again
following the 10 weeks of intervention. However, due to elimination of face-to-face programs, this was not possible. An adapted form with five items targeting eye contact, asking for wants, conversation initiation, appropriate touch, and participation was used each week to assess progress.
SECTION 3

RESULTS

The Communication Data Collection sheet was completed each week during the second session by KAP workers. Workers were asked to rate each participant’s skill level as regressed, maintained, or improved. Each level of progression was then given a numerical value (regress = -1, maintain = 0, improve = +1). Higher proficiency levels indicate an increased skill level observed since the beginning of unit implementation.

Figure 1: Eye Contact

KAP workers were asked “Does the client use appropriate eye contact with the speaker when addressed directly?”. Group 1 maintained their skills with no fluctuation. Group 2 experienced an overall decrease in eye contact abilities. Group 3 experienced significant fluctuation. Group 4 experienced an overall increase in eye contact skills, however, following week two, their proficiency levels slowly decreased.
KAP workers were asked “Does the client ask for things he/she wants?”. Group 1 maintained their skills with no fluctuation. Group 2 maintained their abilities until week four where proficiency decreased. Group 3 increased in their skills until week four when they experienced a significant decrease. Group 4 experienced an overall increase in their proficiency for asking for wants.
KAP workers were asked “Does the client initiate conversation with peers or adults?” Group 1 experienced a slight improvement on week two, but this improvement was not reflected during the following weeks as their proficiency declined. Group 2 experienced slight improvement during week three, and then returned to proficiency levels similar to week one. Group 3 experienced an overall decrease in proficiency for conversation initiation. Group 4 experienced fluctuations.

Figure 4: Physical Contact

KAP workers were asked “Does the client allow physical contact from others (pats, fist bumps, high fives, hugs, etc.)?”. Group 1 overall maintained their proficiency. During week two their skill level decreased. Group 2 experienced a gradual increase of proficiency levels. Group 3 overall maintained their skills with a slight increase during week three. Group 4 experienced an overall increase in their proficiency levels.
KAP workers were asked “Does the client participate with others in group situations?”. Group 1 overall maintained their skills but experienced a decrease during week four. Group 2 experienced fluctuations over the four weeks. Group 3 slightly increased their proficiency levels, but significantly decreased during week four. Group 4 experienced an overall improvement with a significant decline during week three.
Overall, Group 1 experienced very little change and maintained their proficiency levels over the course of the four weeks. Group 2 saw slight improvement during weeks two and three, but overall maintained their abilities. Group 3 experienced significant improvement, but during week four their proficiency levels drastically declined. Group 4 fluctuated throughout the four-week span but ended with a slight overall improvement.
The purpose of this project was to create a module that incorporated social communication instruction with physical exercise in a fun and effective way. The goal was for participants’ physical activity levels to increase, as well as their proficiency at a variety of targeted social skills. The data for the targeted communication skills were significantly varied, which could be influenced by a variety of factors. Participants were not placed in groups at random but were divided for the program into elementary and middle school age groups. Absences that occurred may have also influenced the data collected. During the final week, two students were absent from Group 2 and three students were absent from Group 3. Group 3 had been showing consistent improvement over the course of the project and the absence of the majority of the members may have led to the sudden decrease in proficiency levels. The groups were predominately male, so data cannot be reliably compared to females.

Each group had specific KAP workers assigned to their unit for the entirety of the students’ time at the program. This meant that each group was consistently rated by the same individual over the course of the four weeks. However, the four groups were rated by different assigned individuals, leading to significant variation in overall results. It was necessary for KAP workers to complete the forms since the workers were familiar with the social communication skills of the children prior to intervention. If a similar project were to be implemented, it would be beneficial to include a written document with
detailed explanations of how the participants should be rated to reduce the variation. This written document could provide specific behaviors to observe and include clarification regarding how to determine improvement. Appendix B provides a potential training document to prepare workers for data collection.

This project was implemented at the KAP for four weeks consisting of a total of eight sessions. Originally, the project was to be implemented for the entirety of the program spanning 10 weeks (20 sessions). This significant decrease in time to observe growth and improvement greatly impacted the data. Proficiency levels varied considerably, and data was frequently scattered. In order to determine trends, more data would need to be collected.

**Future Projects**

In order to determine the effectiveness of a module like this, more time would be needed to see if trends remained varied or if a pattern emerged. Future projects would also benefit from a reduction in variability caused by factors like various KAP workers completing the communication data forms for each group. This could be improved by either providing written instructions to supply specific considerations when completing the form or having a single individual rate all participants in each group. It would also be beneficial to randomly assign participants to their groups. The data collected also could only apply to males as there was only one female participant.

Without physical activity data to compare, it is impossible to determine whether the implementation of the dance moves effectively increased heart rate or step count for this particular project. In the future, it would be helpful to implement physical activity
trackers from the beginning of implementation and continue monitoring heart rate and step count throughout the entire program.

Impact of Coronavirus Pandemic

The Coronavirus, also known as COVID-19, is a highly contagious respiratory illness that was given pandemic status by the World Health Organization on March 11, 2020 (Chappell, 2020). Due to this global health crisis, many countries enforced travel restrictions, quarantines, postponements and cancellations of events. On March 11, 2020, Western Kentucky University (WKU) announced the decision to close campus and postpone, cancel, or virtualize all events until April 6, 2020. On March 17, 2020 WKU relayed the decision to continue distance protocols until the end of the spring semester. Due to the cancellation of all campus activities, excluding online interactions, the KAP at the Clinical Education Complex (CEC) at WKU was also closed for the remainder of the semester to limit participant and worker exposure to the virus. Four weeks of Dance Party were implemented at KAP prior to cancellation of the semester instead of the planned ten weeks of intervention. This unexpected disruption led to a significant decrease in the amount of data that was collected. Physical activity trackers were going to be implemented on the fifth week of sessions for the remainder of the program. This timeline led to a complete lack of physical activity data for this project and a greatly reduced the amount of data for the social communication aspect. The GARS-3 data following the twenty sessions could not be collected. Furthermore, it was not possible to retrieve the original GARS-3 data sheets due to implementation of quarantine and the closure of the CEC.

Conclusion
This module intended to provide social skills educational information and opportunity to engage in physical exercise in a group setting. Overall, Groups 1 and 2 maintained their skills without significant improvement or regression. Group 3 ultimately experienced a decline in proficiency when compared to the first week. Group 4 experienced overall slight improvement. The expected timeline for intervention was unable to be completed due to the global pandemic leading to this intervention’s abrupt end and inability to reach its full potential with the participants. Considering the current data available, this intervention was not able to produce significant improvement in the participants’ social communication abilities which is not unexpected considering the short length of implementation. However, the majority of participants engaged in the activities, attended to information, and reported to enjoy the sessions. Individuals who work at the KAP commented that participants were excited to return to the sessions.
BIBLIOGRAPHY


Appendix A

Group #: ______
Student Initials: ______

Communication Data Collection Form

Circle the response that best fits the student.

<table>
<thead>
<tr>
<th>Question</th>
<th>Increase</th>
<th>Decrease</th>
<th>Maintain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the client use appropriate eye contact with the speaker when addressed directly?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Does the client ask for things he/she wants?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Does the client initiate conversation with peers or adults?</td>
<td></td>
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<tr>
<td>4. Does the client allow physical contact from others (pats, fist bumps, high fives, hugs, etc)</td>
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<tr>
<td>5. Does the client participate with others in group situations?</td>
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Adapted from the Gilliam Autism Rating Scale Third Edition (GARS-3)
Appendix B

Data Collection Training Sheet

The data form asks you to determine if the participant has increased, decreased, or maintained skills in 5 areas: eye contact, asking for wants, conversation initiation, physical contact, and participation.

- **Eye contact:** Does the participant: (1) look in the general direction of the conversation partner’s face, (2) follow verbal or gestural cues to look at a common object or place

- **Asking for wants:** Does the participant: (1) communicate wants verbally to peers/staff, (2) use gestures to indicate wants to peers/staff

- **Conversation initiation:** Does the participant: (1) move closer to individuals when he/she wants to speak, (2) greet others upon arrival, (3) communicate he/she would like to join a group activity or conversation

- **Physical contact:** Does the participant: (1) maintain an appropriate distance from others during conversation, (2) use physical contact like fist bumps and hugs at appropriate times, (3) use appropriate forms of physical contact with differing communication partners like peers and teachers

- **Participation:** Does the participant: (1) engage in conversation with peers/staff, (2) respond when directly asked questions, (3) actively attend to group activities

Each individual should only be compared to himself/herself, not other participants.

Skill development is based on growth from the beginning of intervention and not from the previous week.

Adapted from the Gilliam Autism Rating Scale Third Edition (GARS-3)
Appendix C

Week 1

PowerPoint Lesson on Joining a Group

Joining a Group

How do I join a group?
- When I see a group, I can decide if I want to join.
- I can try to wait for a pause or change in activities to talk to people in the group.
• I can try to show that I’m interested in the topic they are discussing by nodding my head or looking at who is talking.

• I will try to wait for my turn to speak. When it’s my turn, I can ask other people questions to show them that I’m listening and interested.

• When others are speaking, I’ll listen to what they’re saying.

• People will appreciate how I behave and will want me to be part of their group in the future.

**Time for an activity!**

• Form your own squad:
  • Stand up!

  • Hand up! Put one hand way up in the air.

  • Pair up! High five two other people. You guys just formed a squad!
Kahoot! Questions

You see some people talking about a game you like. You walk over to the group. Now what do you do?

- Start talking about a different game you like better
- Wait for someone to pause before speaking (Correct)
- Interrupt to say what you think about the game
- Stand quietly and look at the ceiling

How can I show that I am listening to others?

- I can nod my head
- I can ask questions about what the other person is talking about
- I can look at the person who is speaking
- All of the above (Correct)

If I see people who are whispering I should…

- Try to overhear what they are saying
- Walk over and start talking about something I’m interested in
- Let them continue their private conversation (Correct)
- Angrily tell them to stop whispering

Asking my group members questions will…

- Make them feel like their thoughts are important
- Show that I have been listening to the conversation
- Help me better understand what we are talking about
- All of the above (Correct)

When I want to join a group, I can…

- Ask for permission to join (Correct)
- Interrupt the conversation
- Begin talking about what I’m interested in
- Ignore some of the group members

If someone wants to join a group that I am in…

- I can incorporate them in our conversation
-Ask them questions to make them feel included
-Smile at that person
-All of the above (Correct)

T/F I can choose if I want to join a group.
T/F When I am in a group, I should wait until it’s my turn to speak.
T/F When I’m in a group, I should try to talk about things that interest everyone in the group.

Back of Game Card:

#1. Look: Watch the group to see if you want to join.

#2. Listen: Listen to the group to find common interests.

#3. Ask or Comment: When there is a quiet pause, ask a question or make a comment about what the group is talking about
Week 2

PowerPoint Lesson on Turn Taking

- Sometimes you are a listener.
- Sometimes you are a speaker.
- Conversations go back and forth.

- After you say a few sentences give your friend a chance to talk. Talking should be balanced.

- Remember to ask others about themselves.

- Try to discuss common interests that both people can talk about.

Create a squad!

- Form your own groups:
  - Stand up!

- Hand up!
  Put one hand way up in the air.

- Pair up!
  High five two other people. You guys just formed a squad!
**Kahoot! Questions**

I can make sure my friend has a chance to talk by…

- Pausing
- Asking questions
- Watching to see if my friend starts to open their mouth to speak
- All of the above (Correct)

Taking turns is important because I have the opportunity to…

- Talk about things I’m interested in
- Learn things about my friend
- Dominate the conversation
- Red and blue (Correct)

It may be hard to stop talking about my interest, but I should try to remember…

- My friend wants to talk too
- My interest may not be as exciting to my friend
- Conversations should be balanced
- All of the above (Correct)

When I speak, I should choose topics that:

- Are random
- Interest only me
- Interest everyone (Correct)
- None of the above

T/F It’s okay for me to talk for a long time without giving my friend a chance to respond.  
**T/F** If I stay on a topic too long people might get bored and want to talk about something else.

**Back of Game Card:**

1. **Balance:** Take turns listening and speaking.
2. **Pause:** Give your friends a chance to talk. Pay attention to see if they are opening their mouth or gesturing with their hands. They might want to speak.
3. **Consider:** Try to talk about things that interest both you and your friend.
How do I change the topic?

- **First:** Wait until the other person has finished their thought.

- You could use a connection to the topic you want to discuss
• Transition by saying something like “I know this is off topic, but…”

• Ask the other person a question about the topic you’re interested in.

• Sometimes we have to talk about things we aren’t interested in.

• We have to be willing to let other people change the topic when we are talking. Be flexible!

Create a squad!

• Form your own groups:
  • Stand up!

• Hand up!
  Put one hand way up in the air.

• Pair up!
  High five two other people. You guys just formed a squad!
**Kahoot! Questions**

My friend is talking about sports, but I want to talk about video games. I can introduce my topic by…

- Talking about sports first then asking about video games **(Correct)**
- Walk away since I’m not interested in sports
- Immediately start talking about video games
- Stare at the ceiling until my friend talks about something else

Sometimes I have to talk about things I’m not interested in because…

- I care about my friend’s interests and feelings
- I can learn new information
- I want to treat people how I want to be treated
- All of the above **(Correct)**

I can change the topic by…

- Using a connection to the topic I want to discuss
- Directly saying “I know this is off topic but…”
- Ask a question about the topic I’m interested in
- All of the above **(Correct)**

T/F I can try to make a connection between the current topic and what I want to talk about.

T/F I should ignore someone when they are trying to change the topic I’m interested in.

T/F I should wait to transition to a new topic until my friend has stopped talking.

**Back of Game Card:**

#1. **Wait:** Wait for your friend to finish speaking.

#2. **Connect:** Try to relate the topic you’re interested in to the one currently being discussed.

#3. **Be flexible:** Be willing to let other people change the topic.
Week 4
PowerPoint Lesson on Topic Maintenance

Body Language

When talking to someone...
- Stand up straight.
- Turn your body toward the other person.
When talking to someone...

- Try to look at the other person’s face.

- To show you’re listening you can smile and nod.

Gestures

- When shaking someone’s hand, use a firm grip and shake for 2-3 seconds. Try it!

- Pointing can be used to show something. Point at objects but not people.

Gestures

- If someone holds a hand out like this they may want you to stop or back away.

- Holding a finger up like this can mean “wait”, “I have something to say” or “one”.

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How can I tell someone wants to end a conversation?

- The other person might glance at their watch.

- The other person might fidget or point toward an exit.

Create a squad!

- Form your own groups:
  - Stand up!

- Hand up!
  Put one hand way up in the air.

- Pair up!
  High five two other people. You guys just formed a squad!
Kahoot! Questions

If I hunch over and have poor posture people will think…

- I am listening to what they say
- I am bored and uninterested (Correct)
- People will think I am confident
- People will think I’m in a good mood

What is not an example of welcoming body language?

- Waving
- Eye contact
- Crossed arms (Correct)
- Standing up straight

What is an example of friendly body language?

- Slumped shoulders
- Facing away from the person
- Angry facial expressions
- Smiling (Correct)

How long should I shake someone’s hand?

- As long as I want
- 10-15 seconds
- Until the other person asks me to stop
- 2-3 seconds (Correct)

T/F I am always communicating with my body language.

Back of Game Card:

#1. Posture: Stand up straight.
#2. Gestures: Use polite hand gestures. Don’t point at people.
#3. Be aware: Other people use body language to communicate with you.
**Week 5**

**PowerPoint Lesson on Active Listening**

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**L.E.A.R.N. to Listen**

- **Look at the other person and make eye contact.**

- **Engage through body language like leaning forward and nodding.**

---

**L.E.A.R.N. to Listen**

- **Ask questions to gain a better understanding**

- **Reflect on their thoughts. Say something that supports what the other person said.**

---
L.E.A.R.N. to Listen

- Note what you talked about so you can bring it up in the future.

How to show empathy...

- Try to think of a time when you were in a similar situation and how it felt

  - Acknowledge what the other person says.

Create a squad!

- Form your own groups:
  - Stand up!

  - Hand up!
  Put one hand way up in the air.

  - Pair up!
  High five two other people. You guys just formed a squad!
Kahoot! Questions

Listening allows me to…

- Learn information
- Understand other people
- Improve my relationship with other people
- All of the above (Correct)

To help myself listen I can

- Ask questions unrelated to the topic
- Try to feel what the speaker is feeling (Correct)
- Think about what I’m going to eat for lunch
- None of the above

What is empathy?

- Telling other people about yourself
- A lack of interest or concern
- The ability to understand and share someone’s feelings (Correct)
- All of the above

T/F People remember about 25 to 50 percent of what they hear.

Back of Game Card:

#1. L.E.A.R.N.: Look, Engage, Ask, Reflect, and Note!

#2. Repeat: Try repeating what the other person is saying in your mind to stay focused.

#3. Show empathy: Try to feel what the speaker is feeling.
Week 6

PowerPoint Lesson on Facial Expressions

Facial Expressions

Why are facial expressions important?
• They help you understand how other people feel.

• They help you show others how you feel.

What is his expression?
Surprise!

- Eyebrows are raised
- Eyes wide open
- Mouth open
- Chin dropped

What is his expression?

Anger

- Eyebrows pulled down and together
- Eyes narrowed
- Lips tightened
What is her expression?

Disgust

- Eyebrows pulled down and together
- Raised upper lip
- Wrinkled nose
- Mouth slightly open

What is his expression?

https://www.largeimages.com/
Bored

- Eyes looking away
- Relaxed face

What is her expression?

- Eyes wide open
- Eyebrows are raised
- Touching face or hair
- Mouth slightly open

Confused

Create a squad!

- Form your own groups:
  - Stand up!

  - Hand up!
    Put one hand way up in the air.

  - Pair up!
    High five two other people. You guys just formed a squad!
**Kahoot! Questions**

What is his expression? Anger

- Sadness
- Anger *(Correct)*
- Happiness
- Surprise

What is his expression?

- Happiness
- Surprise
- Sadness *(Correct)*
- Confusion

What is her expression? Surprise

- Disgust
- Sadness
- Anger
- Surprise *(Correct)*
What is his expression? Disgust

-Disgust (Correct)
-Happiness
-Sadness
-Anger

Back of Game Card:

#1. **Pay attention:** Look at your friend’s face to see how they feel.
#2. **Importance:** Facial expressions help us communicate with other people!
#3. **Be aware:** Remember that your facial expressions send signals to the people you’re talking to.
Week 7

PowerPoint Lesson on Personal Space

How close should I stand to people?

• Getting too close to people can make them uncomfortable. Closeness usually depends on your relationship with the person.

• If you are in a crowded space like an elevator, create as much space as possible.
How close should I stand to people?

- **CLOSER THAN ARM'S LENGTH**
  - Loved ones, significant others, etc.

- **ARM'S LENGTH**
  - Classmates, coworkers, friends, people you just met, etc.

- **DOUBLE ARM'S LENGTH**
  - People you pass in public but have never met (grocery store, mall, etc.)

Guidelines for Touch

- Like personal space, touch often depends on your relationship with the other person.

- It is always okay to tell someone you don’t want to be touched.

Guidelines for Touch

- When you touch someone you are sending a message.

- High-fives and fist bumps show that you are happy or telling someone "good job".
Guidelines for Touch

• Patting someone on the back or shoulder can express concern or sympathy.

• Make sure your hands are clean before you shake someone’s hand or give them a high five.

Create a squad!

• Form your own groups:
  • Stand up!
  • Hand up!
    Put one hand way up in the air.
  • Pair up!
    High five two other people. You guys just formed a squad!
Kahoot! Questions

I should approach someone from…
- Behind
- The front or side (Correct)
- I shouldn’t approach at all
- None of the above

If I am happy I might…
- Tug my friend’s arm hard
- Give my friend a fist bump (Correct)
- Push my friend
- All of the above

T/F It is always okay to tell someone I don’t want to be touched.

T/F If I stand really close to someone, I might make that person feel uncomfortable.

Back of Game Card:

#1. Pause: When in doubt, keep your hands to yourself.

#2. Consider: Closeness and touch are often determined by your relationship with the person.

#3. Tell: Always let someone know if you don’t want to be touched.
Week 8

PowerPoint Lesson on Reacting to Frustration

Reacting to Frustration

What is frustration?

• It’s completely normal to feel frustrated.

• We can get frustrated with ourselves or other people.
You might feel frustration when...

• You feel like you can’t reach your goal.

• You feel like you don’t have choices.

When you feel frustrated...

• **Stop.** Take a moment and think about the situation.

• **Think.** Consider the feelings of everyone involved.

When you feel frustrated...

• **Choose.** You are in control of how you react.

---

When you feel frustrated...

- Take deep breaths until you feel calm.

- Notice where your body feels tense and focus on relaxing.

Create a squad!

- Form your own groups:
  - Stand up!
  - Hand up!
    Put one hand way up in the air.
  - Pair up!
    High five two other people. You guys just formed a squad!

Kahoot! Questions

To relax I might try to…

- Loosen my shoulders
- Scrunch my nose
- Unclench my fists
- A and C (Correct)

How many deep breaths should I take when I feel frustrated?

- 5
- 10
- As many as I need (Correct)
- Deep breaths do not help

Frustration can be caused by…

- Feeling unsuccessful
- Things that make it difficult to reach my goals
- Other people misunderstanding me
- All of the above (Correct)

T/F Frustration can be good because it can motivate me to find a solution to my situation.

Back of Game Card:

#1. Stop, Think, Choose: You are in control of your actions.

#2. Breathe: Take slow deep breaths until you feel calm.

#3. Relax: Stay optimistic. This situation will end.
Week 9
PowerPoint Lesson on Ending Conversation

Ending Conversations

Why do conversations end?
• You could have plans that might cause you to be in a hurry.

• You may finish talking about all the things you wanted to discuss.

Ending conversations with words
• End with a positive comment like “I’m glad we were able to hang out today”.

• Make plans for the future by saying things like “We should do this again!”
Ending conversations with words

- Wait for a natural pause in the conversation to say goodbye.

- Politely explain that you have to leave by saying things like “I better head out or I’ll be late. It was good to see you!”

Ending conversations with body language

- You can turn your body slightly away.

- You can gesture toward the exit.

Create a squad!

Form your own groups:
Stand up!

Hand up!
Put one hand way up in the air.

Pair up!
High five two other people. You guys just formed a squad!
Kahoot! Questions

How can I end a conversation with body language?

- I can walk away without saying anything
- I can stare at the floor until the other person stops talking
- I can gesture toward the exit (Correct)
- None of the above

What could I say to end a conversation?

- “I’m glad we had a chance to talk”
- “Do you want to hang out sometime next week?”
- “I have to head to class so I’ll talk to you later”

- All of the above (Correct)

What are some reason conversation end?

- People have plans so they have to leave
- You may finish talking about the topic
- Conversation can last forever

- A and C (Correct)

T/F The only way to end a conversation is with body language.

Back of Game Card:

#1. Decide: It’s okay to be ready to finish a conversation.

#2. Show: Let your friend know you want the conversation to end with words and body language.

#3. Think: Be kind as you end the conversation.
Week 10 Session 1

PowerPoint Review Part One

Review!

Week 1: Joining a Group

Joining a Group
- You have the power to decide if you want to join a group.
- It’s important to show people that you’re listening to them by nodding and asking questions.
Week 2: Taking Turns

Taking Turns
- Sometimes you’re a speaker. Sometimes you are a listener.

- Conversations should be balanced. Choose topics that both people can talk about.

Week 3: Staying on Topic
Staying on Topic

- Be flexible! Sometimes you have to talk about things you aren’t interested in.

- You can transition to new topics using connections, questions, and pauses.

---

Week 4: Body Language

Body Language

- Body language can show you how people feel. You can show that you’re confident by standing up straight and turning toward people.

- Hand gestures can have many meanings, like “stop” or “wait”, so pay attention.
Week 5: Active Listening

Staying on Topic
- Ask questions and comment on what other people have said to show you’re listening.
- Show empathy. Try to think of a time when you were in a similar situation.

Create a squad!
- Form your own groups:
  - Stand up!
- Hand up!  
  Put one hand way up in the air.
- Pair up!  
  High five two other people. You guys just formed a squad!

Kahoot! Questions

How can I show that I am listening to others?

- I can nod my head
- I can ask questions about what the other person is talking about
- I can look at the person who is speaking
- All of the above **(Correct)**

My friend is talking about sports, but I want to talk about video games. I can introduce my topic by…

- Talking about sports first then asking about video games **(Correct)**
- Walk away since I’m not interested in sports
- Immediately start talking about video games
- Stare at the ceiling until my friend talks about something else

If I hunch over and have poor posture people will think…

- I am listening to what they say
- I am bored and uninterested **(Correct)**
- People will think I am confident
- People will think I’m in a good mood

To help myself listen I can

- Ask questions unrelated to the topic
- Try to feel what the speaker is feeling **(Correct)**
- Think about what I’m going to eat for lunch
- None of the above

**Back of Game Card:**

#1. **Choose:** When you talk to people you have the power to control the conversation.

#2. **Listen:** Use questions and body language to listen.

#3. **Balance:** Take turns and make sure your friend also gets to talk.
Week 10 Session 2

PowerPoint Review Part Two

Review!

Week 6: Facial Expressions
**Facial Expressions**

- They show you how other people feel. You can use facial expressions to show people how you feel too.

- Looking at people’s eyebrows, eyes, and mouths help you decide what kind of expression they have.

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**Week 7: Personal Space**

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**Personal Space**

- Physical closeness depends on your relationship with the other person.

- You can always tell someone you don’t want to be touched.
Week 8: Reacting to Frustration

Reacting to Frustration

• Feeling frustrated is normal and can be caused by internal or external factors.

• You are in control of how you respond. Relax your body and take deep breaths.

Week 9: Ending Conversations
Ending Conversations

- You can use words and body language to let your friend know you’re ready to end the conversation.

- End with positive comments and friendly body language.

Create a Squad!

- Form your own groups:
  - Stand up!

- Hand up!
  Put one hand way up in the air.

- Pair up!
  High five two other people. You guys just formed a squad!
**Kahoot! Questions**

I should approach someone from…

- Behind
- The front or side *(Correct)*
- I shouldn’t approach at all
- None of the above

What could I say to end a conversation?

- “I’m glad we had a chance to talk”
- “Do you want to hang out sometime next week?”
- “I have to head to class so I’ll talk to you later”

- All of the above *(Correct)*

To relax I might try to…

- Loosen my shoulders
- Scrunch my nose
- Unclench my fists

- A and C *(Correct)*

T/F I am always communicating with my body language.

**Back of Game Card:**

#1. Way to go! You have learned so much about interacting with others.

#2. You’re awesome! Remember what you have learned and use it with your friends and family.

#3. Thank you! You have done an excellent job this semester!