

**BEST FRIEND FOREVER: A PEER-MEDIATED INTERVENTION FOR YOUNG
CHILDREN WITH AUTISM SPECTRUM DISORDER**

By

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A CAPSTONE PROJECT SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS IN EDUCATIONAL STUDIES – SPECIAL EDUCATION
in the
SCHOOL OF GRADUATE STUDIES

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TRINITY WESTERN UNIVERSITY

April 2022

Abstract

PMI, also known as peer-mediated intervention (PMI), is an evidence-based intervention that involves typical developing (TD) peers' guidance of, and assistance to, students with autism spectrum disorder (ASD) to improve on social skills. This design-based research (DBR) sought to create a PMI based on previous research that could be easily implemented and effectively in inclusive classroom settings to improve desired social skills of students with ASD. Survey questions with detailed implementing instruction were sent out to experienced educators working in inclusive schools to gather feedback and suggestions on their thoughts regarding its efficacy and easiness for implementation in their current work environment. Their responses were carefully analyzed and categorized into four common themes which addressed improvements and the need for additional support to run the intervention. These themes are "being kind and compassionate" as an additional TD peer characteristic, implementing a debrief session, potential implementation challenges, and various levels of support needed. The feedback was incorporated into the second iteration of the PMI.

Keywords: Peer-mediated intervention, autism, inclusive education, design-based research

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Acknowledgement

This Capstone Project has been a remarkable and unforgettable part of my journey at Trinity Western University. I would like to express my deepest appreciation for everyone for their unwavering support and belief in me along the way. First and foremost, I am deeply grateful for my supervisor, Dr. Yu-Ling Lee, for bringing the weight of his considerable experience and knowledge to support me at each and every stage with insightful feedback and suggestions. Thank you for providing me with directions when I felt lost on my tracks. I would also like to offer my sincere gratitude to Dr. Lara Ragpot for supporting me throughout this graduate program and providing me insights as the second reader.

I am extending my gratefulness to my parents for their unconditional love, tremendous understanding, and encouragement. Finally, to my wife, Yanan, I am grateful for you. Your push and support kept me going forward as I tend to procrastinate when things are difficult. Thank you for all the heart-felt conversations that inspired and drove me forward.

**Best Friend Forever: A Peer-Mediated Intervention for Young Children with Autism
Spectrum Disorder**

Chapter 1

Social Emotional learning has always been an important aspect of school life. Learning how to make friends and maintaining a long-term relationship can be a challenge even for typically developing (TD) students. For students with autism spectrum disorder (ASD), one of the core deficits is the lack of social skills (American Psychiatric Association, 2013). Therefore, it can be even more difficult for students with ASD to initiate and maintain a good relationship with other peers. Past research has focused on students with high functioning ASD in an inclusive education setting; the results indicated the lack of the relevant skills, and the opportunity to find peers, are the two main obstacles that prevent them from forming positive relations with other peers in school (Locke et al., 2010). Because of their struggles with social skills, forming positive relationships with peers could even be worse for students with lower function ASD. Research conducted by Zhang & Wheeler (2011) have also indicated that students with ASD who's on the lower end of the spectrum in general show less appropriate social skills. Without the proper social skills and opportunities to establish friendship, students with ASD could lead to fewer friends.

Study conducted on social network of students with ASD, suggests that students with ASD are often on the margin of classroom social networks (Kasari et al., 2011). "Loneliness is a complex emotion that is heavily dependent on peer influence" (Bauminger & Kasari, 2000, p.447). Therefore, it is vital for educators to support students with ASD with their social skills and set up opportunities for them to develop potential friendships in inclusive settings. One specific evidence-based intervention designs to target this issue is called Peer-mediated

intervention (PMI) (Gunning et al., 2018). As the name suggests, instead of having adults or professionals to teach social skills, TD peers will take on roles within the intervention including providing models of appropriate behaviour, initiating interactions, and prompting and reinforcing target behaviours. This research aims to design, based on previous research, a peer-mediated intervention that target improving the social skills of younger children with ASD in inclusive school settings. Another goal is to improve and revise the said intervention so that educators in the school setting can effortlessly implement it into their teaching.

Definition of terms

Autism spectrum disorder—ASD refers to a wide range of conditions, hence the word “spectrum”, categorised mainly by the lack of an individual’s social skills or the interest in socializing, recurring and rigid behaviour, as well as limited ability in language and communication. The fifth edition of the Diagnostic and Statistical Manual of Mental disorders (DSM-5) stated the diagnosis criteria of ASD clearly listed, “Persistent deficits in social communication and social interaction across multiple contexts, ..., Restricted, repetitive patterns of Behaviour, interests, or activities, ..., [above] symptoms must be presented in the early developmental period, ..., and cause clinically significant impairment in social, occupational, or other important areas of current functioning” (American Psychological Association [APA], 2013).

Social skills— Social skills are the skills people use in everyday communication. It can be through words (verbally) or with gestures (non-verbally). There are many aspects to consider when discussing social skills; however, the current research focuses exclusively on verbal

exchanges, i.e., basic expressive and receptive language skills, which are required for interaction with other peers (Locke et al., 2010).

Inclusion— “Inclusive classrooms are educational settings where students [regardless of their diversities] feel they belong, where they feel safe to express themselves, accepted for who they are and where they are from, and challenged to learn in new ways about themselves, others, and the complex world in which they live “(Lundy, 2020, p.36). Inclusive education has been widely implemented in Canada (Mackenzie & Kwong, 2016); thus, having students with ASD in inclusive classrooms are common in public schools and preschools. In this content, teachers can train and involve TD peers in the class in the PMI.

Peer-Mediated Intervention -- PMI is to have typically developing peers, i.e., the classmates, taking the leader role to support students with ASD and improve their social skills. As the name suggests, typical developing peers in the class will take on roles within the intervention including providing models of appropriate behaviour, initiating interactions, and prompting and reinforcing prosocial behaviours (Gunning et. al. 2018). The effectiveness of the PMI has been researched extensively over the last decades, especially on increasing frequencies of initiations, longer interaction periods, as well as increasing reciprocal conversations during observed social interactions (Watkins et al., 2018; Katz & Girolametto, 2013).

Design-Based Research –Design-based research (DBR) is a type of research that requires researchers to develop a resolution (intervention) to resolve an existing problem. “This type of research has its focus on real-world problems, with the overall goal of improving learning, rather

than proving that one pedagogical approach is more effective than another” (van der Merwe, 2019, p.2). To be more specific, in the field of education, DBR focus on developing, improving, and evolving an intervention rather than simply testing to discover the better solution to an existing educational issue. In this context, DBR was implemented to analyze current literature on interventions to help improve social skills for children with ASD. DBR also involves procedures to run and refine the said solution according to the result.

My personal experience

My experience in this area started with my first job as a behaviour therapist. I started working with young children (aged from two to six) diagnosed with autism spectrum disorder. This is an early intensive behavioural intervention setting (EIBI), which means these children with ASD will have behavioural therapy for twenty to twenty-five hours a week. In this setting, approximately twelve children will be taught and trained with programs developed under the principle of applied behavioural analysis (ABA). The skills we taught include basic communication, language, social skills, basic motor functions, behavioural management, etc. At the time, I thought I was making a difference in these children’s lives, especially after seeing the dramatic progress that most clients made over a short period of time. I thought that they were more than ready for kindergarten. However, I had a chance to tag along with one of the advanced (higher function) clients on one of his preschool days. He managed to behave well during the center time, reading time, circle time (making crafts), and snack time. This is no surprise to me as we have practiced for many times in the therapy room on what behaviour is appropriate and what is not. As someone who interacts with this child on a daily basis, I expected no problem during the free play period as well. To my surprise, he was left out alone almost immediately by

his other peers. I still remembered that he tried to join one or two groups of children but was either told to go away or simply ignored. I also tried to intervene by enticing a new toy with him and another group of children. However, this attempt also failed as soon as I faded myself out of the play team. Not knowing how to appropriately obtain attention from his peers, my student spent the rest of the time exploring ways to act out and disrupt the class. That was the time I realized, what we did within the segregated environment may not always work, especially in fostering social skills with their typical peers.

In the EIBI program, the social skills programs consist of parallel play, turn-taking, and cooperative play. Parallel play program focuses on building a steady increase in tolerance of other children playing in the vicinity and duration. Students with ASD are required to play within a certain distance of another child for a certain amount of time. Turn-taking program is exactly as what the name suggests, taking turns on a task or game with another peer for a certain number of rounds without jumping the queue or disruptive behaviour. Lastly, cooperative play is to have students with ASD to play cooperatively on a toy, on a task, or in a game. This program is usually taught in natural and incidental settings; and was encouraged by staff in the program. As good as these programs seem, one of the major issues is the lack of experience from interaction with actual typical developing peers.

I recently started a new job as an educational assistant in the inclusive classroom, where students with diverse needs are supported in the mainstream classroom with their TD peers. I had the opportunities to travel to different schools and work with various students with various needs, mostly ASD. I thought studying in an inclusive environment would provide these students with more opportunities to interact with their TD peers and even be part of the close friend circle. However, I noticed that most students I have worked with in the past school year were not part of

any friendship groups. Some students tried very hard to interact with other peers in the class but were either ignored by them or not treated with respect. Therefore, this capstone project offered me a chance to research and create an intervention to support students with ASD to acquire necessary social skills to be able to create long-lasting and reciprocal friendship. In addition, since the majority of my work experience is with younger children, I focused this current research in an inclusive school setting. This setting is popular in British Columbia. Additionally, this setting has easier access to TD peers compared to segregated EIBI center settings, to implement peer-mediated intervention (PMI).

Statement of the Problem

Previous research has been conducted extensively on the effectiveness of various types of design (Watkins et al., 2018), age groups (Katz & Girolametto, 2013), and the severity of ASD (O'Donoghue et al., 2021). However, most studies aimed to explore the efficacy of their PMI design by incorporating measures to ensure the internal and external validity. For example, Katz & Girolametto (2013) conducted a single-subject design PMI on three preschool children with ASD. The authors included another research assistant to help record data to ensure inter-rater reliability, which means the consistency of the implementation of a rating system (Katz & Girolametto, 2013). This is a necessary step to make sure the data is accurately collected. On the other hand, this also adds an additional person to the research; and therefore, complexing the implementation of the PMI.

The aim of my current research is to design a PMI based on previous research and provide it to teachers and the supporting staff in an inclusive school setting for feedback on how

likely they would incorporate it into their teaching and what are their thoughts on the simplicity and effectiveness of the design. I would reflect the feedback accordingly on the designed PMI.

Research Question

The purpose of this study is to design a peer-mediated intervention that helps improve social skills for young children with ASD in an inclusive school setting. In addition, the sub-aim of the research is to improve and polish the intervention so that educators in inclusive education settings can effortlessly implement it into their teaching so that this intervention can benefit more children with ASD.

The research question is: How PMI can help improve the social skills of children with ASD? Additionally, how can feedback from experts and special educators help improve the designed intervention?

To answer this question, a PMI package was developed based on previous successful interventions. With the goal to develop an intervention package to be equally effective and can be easily implemented by special educators in the inclusive classrooms, the intervention package was presented to my colleagues with various roles responsibilities in an inclusive elementary school along with a questionnaire attached. It is noteworthy that the original design of this research was to implement this PMI with actual students with ASD. However, due to the limitation of researcher's profession as well as the COVID-19 pandemic, this research procedure was altered to gather feedback and suggestions from experienced educators in inclusive settings. The feedback and suggestions are used in this study to polish and revise the original design to the second and better iteration.

Overview of the Study

Starting from the next chapter, this research project included a thorough literature review (Chapter 2) regarding all concerning aspects of PMI, i.e., ASD, social skills, inclusive education, and previous PMI related studies. Then, chapter 3 will lay out the detailed procedure utilized in this research with all the necessary information so that the research can be replicated seamlessly to reassure reliability. In chapter 4, the responses received from the research packages are carefully analyzed and meticulously categorized into four themes, which are comprehensively discussed the later chapter. Based on received feedback, chapter 5 involves the final product of the PMI package that was revised and polished.

Last but not least, this research has been reviewed and approved by The Trinity Western University Human Research Ethics Board (TWU HREB), which concludes that the proposed research meets appropriate standards of ethics as outlined by the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*. Consents were acquired from all participants as well as from school administrators prior to the research with their rights thoroughly explained. More information regarding research ethics can be found in Chapter 3.

Chapter 2 Literature Review

This research focused on several key terms, such as autism spectrum disorder (ASD) and social skills, inclusive education, as well as peer-mediated intervention (PMI). These areas are the founding blocks for this research; therefore, literature in these respected areas were carefully examined and articulated in this chapter. Moreover, since this research utilized design-based research (DBR) methodology, a special emphasis on the procedures of previous successful PMI was specified in order to be considered for current study.

Autism spectrum disorder

Autism spectrum disorder (ASD) is a common developmental disorder in the Canadian school system. According to the latest report published by the National Autism Surveillance System (NASS) from the Public Health Agency of Canada (PHAC), “ASD is a neurodevelopmental disorder that includes impairments in language, communication skills, and social interactions combined with restricted and repetitive behaviours, interests, or activities” (PHAC, 2018, p.2). This report also disclosed that in Canada, “males were identified with ASD four times more frequently at 1 in 42 than females at 1 in 165..., [with] a combined prevalence of 1 in 66 children and youth 5–17 years of age were diagnosed with ASD in 2015” (PHAC, 2018, P.8). Indeed, ASD is a live-long condition that can affect individuals’ lives from multiple levels. People with ASD may have trouble communicating their needs (Eckdahl, 2018). Some exhibit inappropriate and odd behaviour in certain situations, such as hand flapping or rocking (Eckdahl, 2018). Others may have difficulty finding and maintaining reciprocal friendship (Bauminger & Kasari, 2000), and some may need assistants throughout their life span. The word “spectrum” indicates a wide range of symptoms exhibited by the people with ASD (Jaarsma &

Welin, 2012). To be more specific, it “[means] that the nature and severity of characteristics differ widely across individuals with the disorder”(Boyd et al., 2010, p. 77). Those symptoms vary from non-verbal in language capability with low cognitive ability (low function) to almost no difference from their typically developing peers (high function). The next sub-section will provide brief knowledge on ASD regarding its diagnosis, symptoms, common treatments and set focus on the struggles with social encounters people with ASD faces on a regular basis.

Signs and Symptoms of Autism

As aforementioned, children with ASD will likely exhibit various symptoms depending on their function levels. One of the diagnostic criteria is restricted and repetitive behaviours, interests, or activities (American Psychological Association [APA], 2013). The restricted interests or activities are common with people who are on the spectrum. Restricted and repetitive behaviours can be viewed as odd and specific behaviours that are displayed in many situations (Eckdahl, 2018), such as stepping on a particular tile, or walking in a loop for hours without taking a break. It is also not unusual to exhibit behaviours such as hand flapping, spinning, and rocking body, etc. Moreover, “Those with ASD frequently resist changes that disrupt their routines and rituals, and get upset when even small changes require them to adapt their familiar behavior” (Eckdahl, 2018, p.11). For example, change of personnel or abruptly adding a new activity into the regular daily routine can result in frustrations, which could lead to tantrums or emotional meltdowns.

Furthermore, “People with ASD often display [restricted and repetitive behaviours] because of very intense interests in a narrow range of concepts and objects” (Eckdahl, 2018, p.12). In my professional experience, I have worked with children with autism who only likes to

play with toy cars, eat food with certain texture, watch their favourite YouTube shows on repeat within a precise ten-second time frame, and only play with specific cartoon characters (Paw Patrol, Pokémon, or SpongeBob, etc.). Furthermore, getting picked up, tickled, and spinning around can be very powerful reinforcements for them. It is also common to see students with ASD rocking, flapping their hands to gain sensory stimulus (Leach & Duffy, 2009). With all the examples provided, however, each individual with ASD is unique in terms of their function level, exhibited behaviours, as well as their interests.

In addition, language and communication capability also vary from one individual with ASD to another (Stockall & Dennis, 2014). Some students with ASD may talk as well as their typical peers, some could have delayed language development, and some might even have trouble making a sound. Delayed language capability is more often to be associated with ASD. According to Avlund et al. (2021), “one third of children with delayed ASD were assigned a diagnosis of specific language disorder (31%) at initial assessment, with a higher frequency of language disorder diagnoses in delayed ASD compared with early ASD” (p. 3850). Indeed, for those with delayed language development, applied behavioural analysis (ABA) programs (Leaf et al., 2016) delivered by board certified behavioural analyst (BCBA) and speech language pathologist (SLP) can be beneficial to their language development. To be more specific, discrete trial teaching (DTT) is extensively used with ABA principle (Steege et al., 2007). DTT is heavily based on repetition. The four components, “(a) presentation of a discriminative stimulus (SD), (b) occurrence or approximation of the targeted response, (c) delivery of a reinforcing consequence, and (d) a specified intertrial interval” (Steege et al., 2007, p. 94). More specifically, to teach a skill using DTT, the adult will present a question. Depending on the response from the individual with ASD, either a prompt or a reinforcement will be provided. The

same process will be repeated extensively until the intended skill was acquired by the individual with ASD. In my experience working with children with ASD, language programs based on DTT that assist building up sentence repertoire can be helpful and effective. Such language programs teach the students with ASD to use a specific word to answer a common question. The adult will ask this question (Stimulus) and wait for the individual to answer with one word (targeted response). If they answered correctly, a reinforcement (consequence) will be delivered. Once the individual makes no mistake with this question (specific interval), the program will move on to two-word answers, and then more. Through this process, the student with ASD can improve their language skills through building up their sentence repertoire.

Furthermore, for the non-verbal students with autism, alternative methods of communication, such as picture exchange communication system (PECS), is one of the most frequently used and modestly effective communication methods for individuals with minimal language capability (Howlin et al., 2007; Watkins et al., 2019). Individuals with ASD are taught to select and form a sentence using pictures labelled with words and everyday items, which helps them communicate their needs. Moreover, besides their difficulties with spoken language, components of nonverbal communication can also be an obstacle for individuals with ASD (Matson et al., 2007). For example, they may have trouble recognizing others' tone of voice, fail to take turns in a conversation, and avoid eye contact when talking to others, which leads to the lack of the ability to recognize facial expressions, body gestures, and other social cues. In my experience, I cannot help but notice that when interacting with their typical peers, individuals with ASD tend to be ignored or not taken seriously during the interaction as they like to dominate the conversation and fixate on the same subject.

Nevertheless, despite all the challenges and difficulties individuals with ASD may encounter, autism can also be viewed as strength in certain areas. The obsession with repetitive movements, such as spinning fans may be an indication that they are “systemisers—individuals..., who love to engage with systems such as machines, computer programming, mathematical equations, drawings, or language” (Armstrong, 2012, p. 73). To be more specific, these individuals are more likely to hold a successful career in areas and fields that are built on a specific system, such as computer programming and machine engineering. Additionally, study has shown that individuals with autism pay more attention to details (Armstrong, 2012). This indicates that “individuals with autism experience what has been termed ‘weak central coherence’— [as] they fail to grasp the whole of a situation and perceive mainly the constituent parts” (Armstrong, 2012, p.72). As an educator working with students with ASD, there will be times that frustration mounts; however, it is also vital to keep an open mind on their strengths and capability. Fostering their strengths could have a great influence on their life.

Social skills

Research shows that children with ASD are more likely to feel lonely, have fewer reciprocal friends, and be isolated by society (Bauminger & Kasari, 2000). This might lead to serious mental illnesses and poor quality of life. “Unlike most TD children, children with autism may have limited experiences with peers and may also be less able to understand the meaning of friendship” (Locke et al., 2010, p. 75). Indeed, my experience working with students with ASD has also observed a generally lower quality friendship between individuals with ASD and typically developing (TD) peers. Therefore, it is necessary to help them develop necessary social skills and provide them with opportunities to establish high quality and reciprocal friendships.

This section will focus on the reasons why students with autism often struggle with social interactions.

First of all, children with autism tend to have trouble with relationships. As they prefer to play by themselves, individuals with ASD lack the ability to properly play with typical peers (Anderson et al., 2004; Eckdahl, 2018). Cooperative play and turn taking activities have been an issue among many children with ASD. They tend to spend more time with themselves rather than with other people (Barton et al., 2011; Movahedazarhouli, 2018). In my experience as a behavioural interventionist, teaching social interaction with children with autism usually starts with parallel play, which means playing by the side of their peers. The ability to tolerate other peers, cooperative play or turn taking will then be taught to them. In addition, it was also mentioned previously that children with ASD can develop an obsession with routine and rituals. However, play with peers can mean the break of routine to children with ASD. Study has suggested that “due to a desire for routine and predictability, a new play sequence may represent change thereby causing anxiety to the children with autism” (Harper et al., 2008, p.815). To be more specific, typical children can have a wide range of ways to play, while children with autism tend to stick with just the few. As TD peers get tired of playing with the same routine, they would change their way of play; thus, creating anxiety and stress to children with autism.

Furthermore, “children with ASD rarely [play] cooperatively with other children...[as] They often fail to respond to social advances by other children, and are unaware that they are the subject of teasing” (Eckdahl, 2018, p.9). This can be witnessed in many inclusive settings. For example, in my opinion, many students with autism, I worked with, will think their peers are their friends as they like to talk to their peers with the same subjects of their interests repeatedly, such as fancy sports car brand names or public transits in Metro Vancouver. Their peers will get

tired of the same subjects over time. Eventually, they stop taking them seriously, or worse start teasing them on it (Rowley et al., 2012). It creates an illusion of friendship to children with ASD, which will disappoint them in the end. Research also revealed that “both girls and boys with ASD have higher rates of social exclusion in middle childhood than younger children with ASD or their TD same-aged peers” (Kent et al., 2021, p. 1823).

A study conducted by Stone et al. (1990) found that, compared to TD peers, children with ASD exhibit less proper play with toys and less play with toys in general. For example, they could prefer to line up the toy cars one by one rather than push them back and forth or pretend to race them. Indeed, Eckdahl (2018) designated “seeks sensory stimulation” and “prefers to play alone” as some of the early signs of ASD (p.6). Furthermore, Zhang & Wheeler (2011) have also indicated that students with ASD who’s on the lower end of the spectrum in general show less appropriate play and less proper social skills. Indeed, high function children with autism are more likely to properly play with toys than lower functioned individuals in my knowledge. In my previous experience working with younger children with autism, I noticed that children with lower functioning autism tend to enjoy more sensory movement. Jumping up and down while looking at light, flipping around upside down on the floor, or running back and forth while flapping hands were some of the favourite sensory movements from my previous students with autism. My observation indicates that they would prefer these movements more than the toys or other activities, as the sensory movements provide more stimuli than less enticing toys and activities. This also includes the interactions with their typical peers, which to them is less appealing and thus interfere with social skills acquisition. Vice versa, studies conducted on play intervention has discovered that improving play skills can be beneficial to improve social skills for students with ASD. Kent et al. (2021) identified that an intervention consisting of video and

peer assistance can effectively advance participants' play skills which, in turn, improve social skills among individuals with ASD and their TD peers. It is noteworthy that a strategy to help reduce sensory play would be for educators to develop a fun and enticing activity for the student with autism or include some sensory play into their play routines.

In summary, this sub-section explained many reasons that would potentially impact the social skills acquisition for children with ASD. Therefore, teaching them age-proper social skills they have missed is a priority.

Inclusive education

Inclusive classrooms are a major part of this research because this PMI research is intended and designed specifically to be implemented in this setting. One of the main reasons is the opportunity provided by inclusive education where students with ASD and their TD peers spend their days together. In addition, "both general and special education teachers have reported that they play a key role in fostering the social development of their students with and without disabilities" (Pavri & Monda-Amaya, 2001, p. 393). Therefore, inclusive education settings provide many opportunities and support for potential friendship development. This sub-section will provide a brief information on inclusive education, especially in British Columbia.

Inclusive education has been implemented for decades now. It promotes equity among all students. In terms of what equity means in the education, Lundy (2020) wrote in her book, "Equity includes recognition that students have different needs, experiences, and social identities and that a "one-size-fit-all" approach to address students' needs, experiences, and social identities does not create an environment where all students are afforded the opportunity to succeed" (p.10). Diversity in education means to teach students from various racial, ethnical, and

cultural backgrounds, such as students from the LGBTQ group, students whose first language is not English or French, students with various religious backgrounds, and those families that celebrate different cultural identities, etc. It also applies to students with diverse and exceptional needs, such as students with mental disorders, developmental disorders, as well as physical disabilities. Additionally, Price et al. (2001) states the three vital factors of inclusion education, "Educating all children with disabilities in regular classrooms in the neighborhood school", "Providing age-appropriate academic classes and extracurricular activities", and "Providing essential services in the regular classroom without 'pulling out' students" (p.2). Truly, inclusive education means to be able to support, for all students with or without special needs, in their inclusive classroom so that they can flourish and be successful in this environment without being singled out.

As a special educator who just started working towards supporting inclusive education, my vision in full inclusion resonates with the words below,

"Inclusive classrooms are places where students [regardless of their diversities] feel they belong, where they feel safe to express themselves, accepted for who they are and where they are from, and challenged to learn in new ways about themselves, others, and the complex world in which they live. Students need to enter our classrooms confident that people (both their teachers and their peers) will support, accept, and encourage them" (Lundy, 2020, p.36).

In my opinion, feeling secure and being part of the class, serve as the very foundation of a successful learning experience for all students. This seems easy to achieve and can be taken for granted; however, without it, learning of any kind can be an impossible task. For example, I worked with a student who struggles to establish and maintain proper friendship. He had

managed to turn his entire class against him. In this hostile environment, he could not focus on any subject unless his trusted classroom teacher was with him in the room. This example proves that only when safety and belongingness are achieved, students with various backgrounds and diversities can start learning and thriving. In this case, as educators promoting an inclusive environment, it is our responsibility to help students with various backgrounds to feel safe and achieve their academic and social goals.

According to BC special education policy, “the teacher responsible for a student with special needs is responsible for designing, supervising and assessing the educational program for that student” (British Columbia Ministry of Education [BCME], 2016). The BCME also added that “Where the student requires specialized instruction, this is best done in consultation with resource personnel available, with the parents and with the student” (BCME, 2016). To be more specific, teachers or special educators in British Columbia, are required by the ministry of education to help include and support students with diverse needs to be successful in the school environment. To achieve this goal, teachers are expected to create Individual Education Plans (IEP) and work with educational specialists regarding the diversities of the exceptional students. PMI is an intervention that can be included in the student’s IEP and be implemented with the assistance from various teaching/supporting staff within the inclusive education setting. It can be a valuable tool in improving social skills with students with special needs with the help from their TD peers.

Peer-Mediated Intervention

PMI, also known as peer-mediated instruction and intervention (PMII), is an intervention that involves TD peers and lets them guide and help students with ASD to improve on social

skills in a natural teaching and playing environment (Sperry et al., 2010). It is also "...a systematic, evidence-based method for addressing the social-communication needs of children with ASD" (Zagona & Mastergeorge, 2018). As the name suggests, instead of having teachers or therapists to lead the children with ASD through the intervention, their TD peers would take adults' roles and coach them along the way. The adults would take the facilitators and supervisors' role to ensure successful carrying out the intervention. The next section will provide a comprehensive literature review on what previous literatures have revealed regarding PMI.

Research on the quintessence of PMI

This sub-section will mainly discuss the key steps that are vital to a successful PMI. Two journal articles are emphasized i.e., Zhang & Wheeler (2011) and Sperry et al. (2010). These two articles provided the founding blocks of PMI; and greatly influenced the current research. Many stages mentioned in their research were incorporated into the current research.

Zhang & Wheeler (2011) state six stages in PMI: peer modeling, peer initiation training, peer tutoring, peer networking, peer monitoring, as well as group-oriented contingencies. On the other hand, Sperry et al. (2010) propose an alternate framework towards the intervention - a five-step model including "selecting peers", "training and supporting peers", "implementing a structured teaching session", "implementing in classroom and school settings", and "extending initiations across the day" (pp.257-260). The two examples of research share many differences as well as similarities, however, both are invaluable to the current research. The discussion regarding the PMI procedures follows a chronological order.

First of all, choosing the right candidate for the intervention is a vital step. Teachers or special educators need to choose suitable and appropriate students from the same classroom as

the “helper” in carrying out the intervention. Sperry et al. (2010) provided the criteria for this process. The peers who participate in the PMI should:

Exhibit good social skills, language, and age-appropriate play skills, be well-liked by [other] peers, have a positive social interaction history with the focal child, be generally compliant with adult directives, attend to an interesting task or activity for 10 min, be willing to participate, and attend school on a regular basis. (Sperry et al., 2010, p.257)

Indeed, every characteristic mentioned is vital to the success of the intervention. For instance, TD peers with a good compliance to adults’ directions, can greatly contribute to the success of the next step, which is peer training. Moreover, having a positive social experience with students with ASD indicates a pre-existing rapport (Katz & Girolametto, 2013; Mason et al., 2013), which promotes smoother interactions for later. Last but not least, Harper et al. (2008) suggested adding an additional TD peer to the traditional one on one pair to ensure a better result. “The inclusion of multiple peers as opposed to a single trained peer [...] creates buy-in and also divides the responsibility of integration across many individuals” (Harper et al., 2008, p. 823). They also added this format provides more motivation for TD peers as they may enjoy working in a group setting to help their classmate with ASD (Harper et al., 2008).

Once the peer has been selected, some may not be familiar with the student with ASD. Therefore, it is necessary to establish a connection between them. “Peer modeling includes peer-proximity and peer-pairing, which rely on the inclusion of a socially competent peer to demonstrate appropriate behaviour for a child with ASD to imitate” (Zhang & Wheeler, 2011, p.64). More specifically, pairing, in this context, refers to initiating social interaction and creating rapport with children with ASD. In my experience, having children with ASD tolerate other people being in their space and playing in their close vicinity is the first step. By

establishing a good connection between the groups, children with ASD may be more willing to reach out and learn from their TD peers. Various research has also indicated the modeling by peers to be an primary tool in PMI (Boudreau et al., 2019; Mathews et al., 2018; Rayner, 2011).

Furthermore, peer initiation training and tutoring refer to the preparation process where educators train the socially competent peers what are the appropriate behaviours and responses when interacting with students with ASD. It is a necessary step to ensure TD peers to gain the knowledge on appropriate social skills themselves first. Zhang & Wheeler (2011) suggested that the training involves “how to evoke and maintain desired social behaviours from a child with ASD by establishing eye contact, suggesting play activities, initiating conversation, offering, or asking for help, describing ongoing social interactions, expanding the content of the target child’s speech, or demonstrating affection (Zhang & Wheeler, 2011). This step is also indicated in Sperry et al. (2010), a specialized training session was conducted on these helpers to inform them on their duties and responsibilities. Certainly, with different age groups, the training subjects and methods vary. As this research focuses primarily on younger age groups, this chapter will mainly be surrounding the procedures for younger students. With younger participants, the wording and contents may need modification to tailor for the age group. In addition, Sperry et al. (2010) suggested focusing on exhibited behaviours by children with ASD that are obvious rather than diving into the common characteristics of ASD. More specifically, instead of naming various traits that most children with ASD display, the training session could focus on certain behaviours that have been witnessed by the peers. For example, the teacher could use “when we are talking to each other; we usually look in each other’s eyes to show that we are paying attention. But children with ASD may rather look on the ground. It is not that they are not listening. They just prefer that way”.

After the explanation on ASD, the training and support for the selected younger peers should focus on: “Organizing play (making suggestions for play activity, role, or other play for peers); sharing (offering, giving, or accepting a play material to and from focal child); providing assistance (helping focal child to complete a task, get on play equipment, or respond to requests for assistance); and providing affection and praise through hugging, putting arms around, patting, holding hands, high fives” (Sperry et al., 2010, p.258).

In other words, these steps mainly facilitate and encourage interactions between the TD peers and children with ASD; and the reinforcing behaviours, such as hugging and “hi-fiving”, provide more motivation for the students for more potential social interactions in the future. The next step is to identify the major goal and train the TD peers on the strategies to help achieve this goal. Physical demonstrations and role-plays are some of the great tools to help these young helpers gain a handy practice of the strategies (Sperry et al., 2010). This is supported by Leach & Duffy (2009) that role-play and physical participation are effective tool to improve attention in class. In addition, “adults [can] provide more explicit reinforcement and feedback (e.g., ‘I liked the way you handed me the block to put on the tower you were building’) so that children are motivated to continue participation” (Sperry et al., 2010, p.258).

Next, peer networking refers to the intervention process where trained peers provide prompts and reinforcement for students with ASD as well as teaching pro-social behaviours during intervention and other regular interactions (Zhang & Wheeler, 2011). In addition, peer monitoring indicates that socially competent peers, paired with student with ASD, will assume the leading role and the responsibility during regular interaction to manage behaviours of their peer with ASD (Zhang & Wheeler, 2011). Sperry et al. (2010), on the other hand, provided more details regarding this process. With all the information taught to the peers, there is still a need to

enact and practice the learnt skills with adult guidance and prompts (Sperry et al., 2010). This step of the process usually takes about a few sessions before letting the group go on their own. Afterwards, these students will carry out the intervention without interruption by adults. Teachers and researchers start data collection process to determine if the intervention is effective. Lastly, Sperry et al. (2010) mentioned several key points that will contribute to the success of PMI, namely, “Having a consistent time and place for these activities will help children with ASD transition to the activity more smoothly and will increase the likelihood that social interactions will occur” (p. 259). Indeed, for children with ASD, predictability and routine are important in helping and motivating them in participating in such activities. Finally, creating a welcoming space with fun toys and activities, as well as having a dependable staff on site in case of non-interactive moments can be vital to the success of the intervention as well (Sperry et al., 2010).

Last but not least, group-oriented contingencies indicate PMI can be conducted in most natural environments, not just in the dedicated periods of times (Zhang & Wheeler, 2011). This could extend the intervention to many different occasions in and out of the school, thus completely removing the adult influences and possibly creating real and reciprocal friendship among the students.

Research on the efficacy of PMI

Numerous studies and research have been conducted to prove the efficacy of PMI in improving social skills with children with ASD. First of all, Harper et al. (2008) utilized the unstructured recess time at school as their main focus to conduct PMI with Pivotal Response Training (PRT). “PRT, which is based in applied behavioural analysis (ABA) and incorporates

motivational procedures to improve responding, has been used to significantly increase language use and promote positive exchange between the target children with autism and peers” (Harper et al., 2008, p.819). This indicates that fostering motivation is a key component of this procedure. Children with ASD are more likely to be motivated in using language to ask for desired things and activities. In this study, the two students with ASD were paired in two to one ratio, which means every student with ASD gets two TD peers (Harper et al., 2008). TD peers were trained over five days on strategies such as “gaining attention, varying activities, narrating play, reinforcing attempts, and turn-taking”; additionally, “visual card and cue cards” were used to help the training process (Harper et al., 2008, p.819). The objectives for the study were tailored according to the needs and function level of each participant, trials to obtain attention and initiations respectively. As a result, both students witnessed an improvement in their intended social skills. Additionally, it is noteworthy that “the results also pointed towards the beginning of a sustainable outcome”(Harper et al., 2008, p. 823). This indicates that the peer groups continued to interact even after the intervention period; the social skill improvements continued as well. Indeed, improving social skills such as initiation and responses, as well as the ability to manage turn taking are some of the common goals of the PMI. However, providing the opportunity for quality social interactions can be equally important. After all, the goal for the intervention is to help children with ASD to have the ability and opportunity to form long-lasting relationships.

In addition, based on this study, Brock et al. (2018) further researched the use of PRT in PMI. Their study concentrated on the same the five training strategies, “(a) get your buddy to look at you; (b) ask your buddy to play something with you; (c) show and talk about how to play; (d) compliment your buddy; and (e) if you can’t play at the same time, take turns” (p. 2225). The study increased in the sample size from two participants with ASD in Harper et al. (2008) to

eleven children. Every student with ASD were paired with either two or three TD peers. Their results also indicated substantial improvement in pro-social behaviour in students with ASD.

Moreover, structured play is also a very effective method to help students with ASD to learn appropriate social skills in the inclusive preschool and elementary school settings.

Structured play refers to play with previous planning and facilitation (Watkins et al., 2019). It indicates that adults take the leading role in the play to direct, lead students, and facilitate the entire process throughout. Morrier and Ziegler (2018, p. 2535) integrated a structured play program named “the buddy game”, into the unstructured recess time in preschool settings with younger children. The purpose of Morrier and Ziegler’s research was to explore the recess period to improve children’s social skills by pairing children with ASD with their typical peers. The curriculum, “the buddy game” (Morrier & Ziegler, 2018, p. 2535), consists of popular children’s music and dance moves to stimulate peer interactions. Their results indicated a general increase in social interactions between children with ASD and their TD peers with positive generalizations. To be more specific, the result of the study suggested that compared to before the intervention, children with ASD initiate and respond more often to their typical peers; and this result was able to be maintained over time and with other peers. In addition to Harper et al. (2008), Morrier and Ziegler (2018) extended the age limit that preschool-aged children with ASD can also be benefited from interventions involving pairing students with ASD and typical peers.

Another study done by Koegel et al. (2012), explored similar parameters, i.e., structured play and PMI, as the research by Harper et al. (2008). In this research, recess time in an inclusive school setting was again focused as it presents a great opportunity for both TD children and children with ASD to interact naturally with each other. Additionally, this research utilized the

more common dyads that pairs one TD peer with one child with ASD. It is noteworthy that the researchers in this study, involved adult professionals to help facilitate the procedures, as part of the “facilitated social play with [and without] initiation training” (Koegel et al., 2012, p.6). Nevertheless, this research measured the spontaneous initiations from the participants with ASD as the key indication whether the procedures are effective. The results revealed that “targeting initiations during a socialization intervention at recess can lead to gains in peer social engagement, unprompted peer-directed initiations, and positive effects that are maintained in the absence of an interventionist” (Koegel et al., 2012, p.14). The authors took a different path, not through training TD peers, but using adults’ facilitation in structured play sessions to promote the interaction and thus generalize into their regular play without too much adult involvement (Koegel et al., 2012). Interestingly, part of the results also suggested that the adult involvement in the structured play could be further minimized in this study, simply by training the young participants with adequate training in how to initiate the play (Koegel et al., 2012). This means that adults may only need to teach children with ASD to initiate the interactions and let their TD peers take over the rest.

Additionally, Mason et al. (2013) implemented a PMI in an inclusive school aiming to increase social interactions between students with ASD and their TD classmates during the recess period. It is noteworthy that the selected TD peers had a previous connection with the students with ASD through other channels, which provided them advantages with pre-existing rapport. Moreover, this intervention also utilized a two TD peer to one child with ASD ratio to better motivate the TD peers during the intervention. This study utilized regular playground activities for better generalization; it also minimized adult support during play, with only occasional prompts with cue cards when interaction stops for more than 30 seconds (Mason et

al., 2013). The results of this intervention suggested great improvement and frequency for social interactions between the students even after the PMI.

Furthermore, Watkins et al. (2018) conducted research using a treatment bundle based on children's common interests to help promote their social skills. In this study, they paired four children with ASD of different function levels with typical peers based on their shared interests in toys and activities. The information on preferred toys and activities was gathered through interviews conducted with classroom teachers, parents, and supporting staff. The suitable typical peers were selected based on the common interests. The authors implemented a structured play intervention program with toys of children's interest to motivate peer interactions while involving minimum adult support. During the study, the initiations as well as responses from students with ASD were carefully observed and measured using a baseline-intervention-baseline-intervention (A-B-A-B) model. The results indicated a significant increase in both initiations as well as responses from students with ASD, with a successful generalization to other peers.

Likewise, a PMI study conducted with younger children with ASD is by Katz and Girolametto (2013). Although this study was not performed over recess in an inclusive school, it was done in an inclusive environment during a specific play-time period. The training method for the young peers is worth noting. On top of the regular structured sessions used for training, the researchers utilized a story book called *Franklin's New Friend* by Bourgeois (1997), and a communication board with simple, straightforward key phrases such as, "Let's play" or "it's my/your turn", as well as using dolls for interactive role play to help explain and strengthen the knowledge (Katz & Girolametto, 2013, p.136). In this research, three children with ASD each paired with two TD peers for the intervention. After careful training, TD peers and children with ASD participated in several play sessions with minimal adult intervention. The results suggested

positive social skills gains, especially prolonged collaborations between the pairs with a generalization beyond the regular play sessions.

Last but not least, Martinez et al. (2019) recapped the PMI studies in the past ten years on young children with ASD found out that the using of preferred reinforcements (i.e., toys and activities) play a vital role in increasing the frequencies of initiation from children with ASD to their TD peers. “Embedding preferred stimuli may increase the likelihood of children with ASD initiating to their peers and increase the likelihood of children with ASD responding to peers’ initiations; this in turn will increase their overall social competence skills” (Martinez et al., 2019, p.10). This finding is consistent with Watkin et al. (2018), in which the structured play bundle was developed based on the common interests of the participants.

Based on previous research, PMI can be an effective method to improve the social skills for young children with ASD. The current study focuses on replicating some of the features that were successfully incorporated in the previous studies and developing a PMI that is suitable and easily implemented in the current inclusive settings with younger students (children less than eight years old). However, due to the accessibility to students, the current study aims to gather feedback from educators and specialists such as inclusive teachers, educational assistants, or other special educators with experiences working with students with ASD to help improve the intervention.

Chapter Summary

This chapter dived in previous academic literatures regarding the key concepts, elements, and procedures that relate to the current research. Research keywords such as, ASD, PMI, social skills, structured play, as well as inclusive education are carefully explained and discussed. As

the current research utilized many elements from the previous successful PMI studies, the use of elements such as, two TD peers to one child with ASD ratio and training procedures towards younger participants are justified and rationalised so the reasons for adopting them are clear. The next chapter explains the methods utilized in the current study as well as the development of the research package.

Chapter 3 Methods

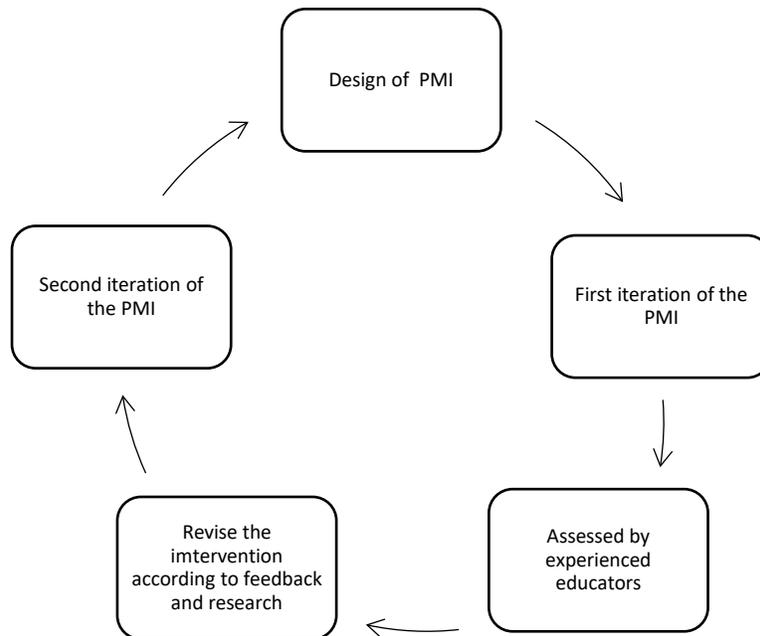
To test the efficacy of an intervention, the most straightforward method is to implement this intervention on students with ASD in an inclusive environment. However, due to the nature of my profession and position in school, organising a complete intervention on young children with ASD and their typical peers is challenging. In addition, in light of COVID-19 pandemic, direct intervention research was not feasible due to various restrictions placed in each school aiming to limit interactions (both staff and students) outside of the same classroom clusters. Hence, instead of running the intervention with young, school aged children, a detailed intervention package was provided to experienced educators with an attached survey on their suggestions and feedback regarding the efficacy as well as whether it can be effortlessly implemented in the inclusive educational environment. These feedbacks are, in turn, used on revising and improving the first edition of the intervention. A complete intervention package was developed with consent form, detailed intervention procedures, survey questions for feedback, and a debriefing letter. This package was distributed to all participants either on paper or through emails. To prevent alteration on the documents and ensure professionalism, the electronic version of the package consists of screenshot scan of the PMI procedures instead of typed words, with an editable section for entering feedback and suggestions.

Discussion following in this methods section starts with an introduction on DBR as the research method, specifically on the differences between DBR and traditional experimental design with an explanation why DBR was chosen in the current research. Then, research methodology and participants are described. Subsequently, a sub-section will be designated to include all the steps involved in this intervention, as well as stages entailed to execute the survey. The complete package of the PMI and survey questions is included in this chapter for future references. Last but

not least, as DBR, a flow chart is included to explain the overall stages of the entire procedure, as shown in **Figure 1**.

Figure 1. Procedure of the current research

Procedure of the current research



There are five boxes indicated in the figure below. The Design of PMI (first box) demonstrates continuous status of the PMI design, starting with the first iteration (second box), which was developed based on previous successful research to the second iteration (fifth box), which was revised and polished after the current study. The third box describes the research procedure of the current study, which is presenting the first iteration of the PMI package to the experienced educators and gather their feedback and suggestions. The fourth box recognizes the analysis procedure of the current study. To be more specific, the responses from the experienced

educators are carefully categorized and analysed into various themes. These themes are then incorporated into the second iteration of the PMI.

Design-Based research

This research adopted a model of design-based research instead of utilizing the traditional experimental approach in determining if this particular PMI would be beneficial in inclusive classroom settings. DBR is a method that is commonly used to discourse challenges around learning, such as:

- “The need to address theoretical questions about the nature of learning in context.
- The need for approaches to the study of learning phenomena in the real world rather than the laboratory.
- The need to go beyond narrow measures of learning.
- The need to derive research findings from formative evaluation” (Collins et al., 2004, p.16)

The purpose of this research is to design a peer-mediated intervention that helps improve social skills for young children with ASD in an inclusive school setting. In addition, “While both qualitative and quantitative methods may be used, it is worth noting that design researchers do not emphasise isolated variables” (van der Merwe, 2019). Indeed, the current research features qualitative research methods, i.e., survey questions, to discover potential implementers’ feedback on an intervention that is intended to be implemented in their classroom. Additionally, instead of implementing the PMI in a controlled setting, this PMI aims to be applied in general inclusive classrooms. Thus, the variables involved in inclusive classroom settings are being considered and incorporated in this intervention. This sub-section will emphasize mainly on the differences

between DBR and the traditional experimental method, and how DBR is a more beneficial method to be used in this research.

First and foremost, “Design-based research has its focus on real-world problems, with the overall goal of improving learning, rather than proving that one pedagogical approach is more effective than another” (van der Merwe, 2019, p.2). Indeed, DBR in general, emphasizes refining rather than verifying. Past studies have mostly been trying to prove whether a specific approach of PMI can significantly improve social skills for children with ASD. Only a handful of studies included enough details for other researchers to replicate their design in different settings. Martinez et al. (2019), after reviewing a series of PMI research, suggested that future research should include “adequately reporting all relevant features of the study, especially participating characteristics... with sufficient detail to support replication” (p.10). Hence, experimental design on PMI focuses more on verifying that intervention, especially their design, does improve the social skills acquisition rather than aiming to polish and refine their design with the findings. Nevertheless, with DBR, the goal is to emphasize the design itself; through trial and error, DBR can determine which features are needed to be incorporated in the intervention that will eventually maximize the efficacy of the specific intervention.

Another difference between DBR and traditional experimental design is their objective. In the experimental design, researchers develop one or more hypotheses and test them in an experiment. Frequently, a controlled group is added, by maintaining all other variables but the experimental design, which validates that the experimental effect is only caused by the intervention. On the other hand, DBR does not control the setting, but incorporates them into its design. “In design experiments, there is no attempt to hold variables constant, but instead the goal is to identify all the variables, or characteristics of the situation, that affect any dependent variables of interest”

(Collins et al., 2004, p.20). More specifically, all the variables become part of the design and are included in the DBR as part of the testing environment. Throughout the design-test-analysis-revising, these variables are considered and included, instead of being eliminated, to be incorporated in the intervention - as mentioned in Scott et al. (2020),

“By framing the [design-based] research approach as an iterative endeavor of progressive refinement rather than a test of a particular intervention when all other variables are controlled, design-based researchers recognize that: 1) classrooms, and classroom experiences, are unique at any given time, making it difficult to truly “control” the environment in which an intervention occurs or establish a “control group” that differs only in the features of an intervention; and 2) many aspects of a classroom experience may influence the effectiveness of an intervention, often in unanticipated ways, which should be included in the research team’s analysis of an intervention’s success” (p.3)

Therefore, incorporating elements that are normally being controlled in experimental design, throughout the design-based research’s design-test-feedback-revise cycle is one of the major differences between the two types of the research.

Furthermore, another crucial difference between experimental research and DBR is regarding the timing that the intervention/procedure can be altered. In experimental research, once the intervention is developed, it cannot be changed throughout the entire research. Alteration can be suggested only for future continuous research. Contradictorily, DBR is more flexible in terms of changing intervention procedures as research progresses. Modification is an ongoing theme for DBR as it takes more than one step to polish an intervention. “This flexibility allows the research team to modify instructional tools or strategies that prove inadequate for collecting the evidence necessary to evaluate the underlying theory and ensures a tight connection between interventions

and a specific learning problem” (Scott et al., 2020, p. 3). Indeed, DBR focuses more on the refinement for a particular intervention so that it is ready to be implemented when the research process is finished.

Last but not least, only researchers are allowed to make adjustments in the experimental design; however, this is not the case in DBR. In experimental research, the researchers are tasked in developing the hypothesis, implementing the design in a controlled environment to test the hypothesis, collecting data from the experiment, analysing the data in order to prove the hypothesis, etc. Nonetheless, “In design experiments, there is an effort to involve different participants in the design, in order to bring their different expertise into producing and analyzing the design” (Collins et al., 2004, p.21). Certainly, in this particular research, participants are included to contribute their knowledge in the special education field to refine the PMI. All the participants in this study could potentially be utilizing and implementing this very PMI in their inclusive classroom. The participants’ pool includes learning resource teachers, who develop individual educational plan (IEP) for students with ASD, special program teachers with expertise in developing and carrying out special program that involves peer group, classroom teachers who have abundant experience working with students with ASD in inclusive environment, as well as educational assistants who works exclusively with students with special needs; all of these may potentially be the operator for the PMI. Therefore, gathering feedback from them could undeniably benefit the design. After all, the intervention will be effective and beneficial to students with ASD only if the educators are willing to incorporated it into their everyday teaching.

Participants

This research used convenience sampling. “Convenience sampling means subjects are selected because of their convenient accessibility and proximity to the researcher” (McGregor, 2018, p.268). All participants were selected because they possessed either work or study relationship to the researcher. A total of nine educator participants were recruited to participate in this research. All participants are knowledgeable school educators working in an inclusive education environment; they consist of classroom teachers, resource/learning support teachers, special program teachers, and experienced educational assistants. Many of them have had experiences initiating and maintaining friendship group interventions, which are somewhere similar to PMI in implementation. Therefore, their extensive experiences working with students with various special needs, including but not limited to ASD, were valuable to this research.

Methodology

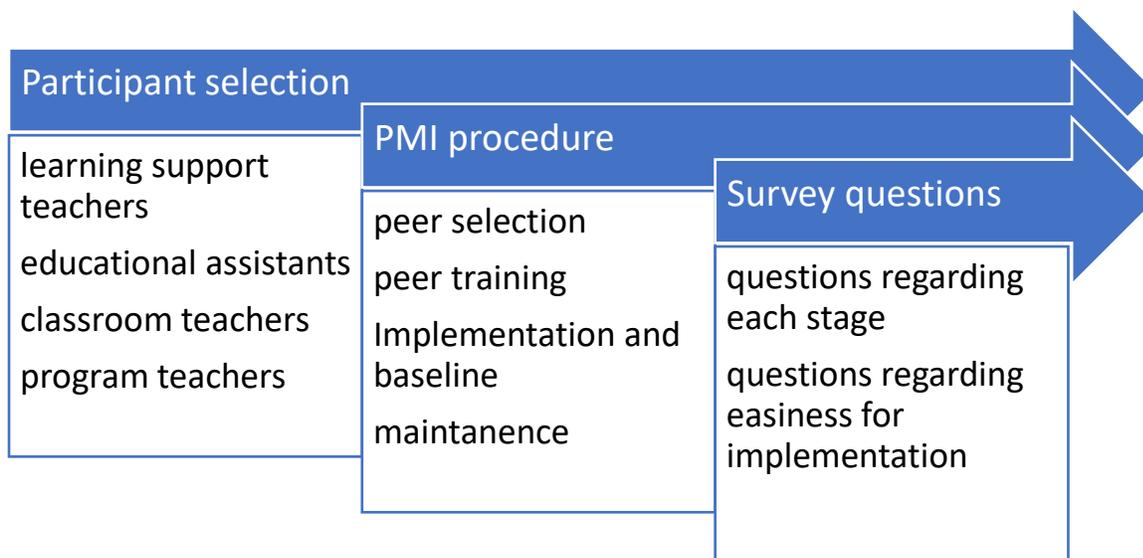
This research uses DBR, which involves a process of design-test-analysis-revising stages to polish and refine the PMI (Collins et al., 2004). However, due to the nature of my profession and as the COVID-19 pandemic, running this intervention with school aged children appeared to be a challenge. More specifically, each class in my elementary school was divided into multiple clusters. Only individuals within each cluster could interact with each other to minimize contacts, thus limiting COVID-19 transmitting within school. As an educational assistant, my access to students from different cluster is limited. Therefore, the designed PMI were presented to a number of experienced current educators in inclusive settings, and their feedback was gathered with a survey. This research holds a constructivism belief, using a qualitative methodology, as it collected data

as words from experienced educators and reflected their thoughts and suggestions in the design. In the next chapter, these answers were categorized and analyzed

Procedure

Figure 2

Detailed procedure conducted to acquire information for this research



Here is a flow chart outlines each stage for this research. Starting with participant selection, teaching staff on various roles were selected to ensure a wide range of knowledge and expertise are covered in their responses. Secondly, each step in the PMI package were included in the phase 1 section with enough details for potential replication. It is noteworthy that all the procedures described below utilized the present or future tense. Thus, all the steps are clear as they are ready to be implemented by an educator. Lastly, the survey questions included at the end

of the PMI package were targeted each intervention stage regarding its efficacy and easiness for implementation.

Phase 1: PMI procedure

The development of the PMI is entirely based on previous research in order to ensure validity. The intervention followed the one implemented by Sperry et al., (2010) as the main format and structure as it provided a clear model and rigorous standard for successful PMI procedures (Gunning et al., 2018; Zagona & Mastergeorge, 2018). Based on other relevant literature, additional details and characteristics were also incorporated. For example, the PMI procedures incorporated characteristics such as to select TD peers with shared interests (Martinez et al., 2019) as well as details including role play as part of the peer training procedure (Katz & Girolametto, 2013). In addition, from my experience working at an elementary school, I understand how much obligation and responsibility teachers and educational assistants have in their day-to-day operation. Thus, the other objective for the design was how the intervention could be implemented without putting in much effort and complication. It also needed to be operated and maintained with minimal staffing. Thus, increasing educators' willingness to implement the program in their classroom. The intervention targeted younger students and is divided into four sections: peer selection, peer training, implementation, and maintenance. This is a linear process starting with peer selection. As qualified TD peers were selected, training sessions were conducted before entering the implementation stage. Implantation stage was accompanied with adult guidance at first until the group became self-sufficient. Then, the maintenance stage was then start with very minimal adult involvement (overseeing and data collection). The next section will provide a detailed instruction on each section. In addition, each section was written in present tense as they are also used in the

intervention package to provide instruction for potential implementor to conduct the intervention as well as for future research reference, as per Martinez et al. (2019) suggested.

Peer selection:

This is the process to find and select the suitable TD peers to participate in the PMI. It is recommended that a selection of two to three typical developing peers per one student with ASD as opposed to the one-on-one ratio. The two to one ratio helps spread obligations and create more motivations for both participants with and without ASD (Harper et al., 2008; Katz & Girolametto, 2013). The following are the characteristics for selecting TD peers:

- “exhibit good social skills, language, and age-appropriate play skills,
- be well-liked by peers,
- have a positive social interaction history with the focal child,
- be generally compliant with adult directives,
- attend to an interesting task or activity for 10 min,
- be willing to participate
- attend school on a regular basis” (Sperry et al., 2010, p.257)
- share some similar interests in toys or activities with the participants with ASD, this can be achieved through conducting or accessing preference assessment (Martinez et al., 2019)
- preferably having a previous existed relationship with the student with ASD (Katz & Girolametto, 2013)

Peer training:

This process helps prepare the selected typical peers so that they are ready to eventually run the intervention on their own. The training content will include the behavioural aspects of students

with ASD as well as some less complicated strategies that typical peers can easily practice, such as eye swiping for eye contact, or the use of positive reinforcement words during play, etc. There could be many ways to conduct the peer training, depending on students' age and comprehension capability.

As this research targets younger students (4-9 years old), the training should first be about the simplified background information on ASD, which includes details regarding the similarities and differences of students with ASD and typical developing peers (Sperry et al., 2010). For example, "Michael is great with his math, but he needs our help to learn how to play with others", "Kevin likes to play with train sets, but he needs our help to learn how to share and ask for them", "Laura always wanted to join a game of Snakes and Ladders, but she needs help to learn how to take turns". The conversation can also focus on the noticeable differences between children with ASD and their typical peers in behaviour, i.e., the lack of eye contact during conversation, or the inability to take turns during play. After the discussion, a social story book, *Franklin's New Friend* by Bourgeois (1997), can be read to the participants and follow up with discussions and questions along the read aloud to ensure understanding. There are several behaviours that need to be taught to typical developing peers, role play with puppets or action figures can be beneficial to ensure full understanding (Katz & Girolametto, 2013).

- "Organizing play (making suggestions for play activity, role, or other play for peers)
- Sharing (offering, giving, or accepting a play material to and from focal child)
- Providing assistance (helping focal child to complete a task, get on play equipment, or respond to requests for assistance)

- Providing affection and praise through hugging, putting arms around, patting, holding hands, high fives” (Odom et al., 1993; Strain & Odom, 1986, as cited in Sperry et al., 2010, p.258).

If the participant with ASD has limited language skills, the simple use of visual aids and/or PECs can be taught to their peers to encourage communication.

Implementation and baseline:

Once the training is completed, the student group consists of the child with autism and typical peers would undergo a few test-runs with adult supervision before fully self-sufficient. During this process, baseline data can be taken on the frequency of initiations and responses when interacting with a typical peer within a specific amount of time, i.e., 10-15 minutes play time. This data is to determine if the intervention is effective or if modification is needed.

To start the implementation process, have the classroom or an alternate room set up with mutually interested toys and activities, such as turn-taking board games and sharing toys. Adults (teachers or educational assistants) can loosely follow the group and provide prompts and directions only when:

- “Observe children to identify noninteraction. When there has been no interaction between the child with ASD and peers for 30s,
- Provide a prompt to the peers or the focal child to begin an interaction or respond to an initiation” (Sperry et al., 2010, p.259).

The goal for this process is to diminish the adult involvement and let the group be self-sufficient. Therefore, the adult can adjust the involvement based on the interaction, i.e., reduce the frequencies of prompts when observing frequent interactions among the group.

Maintenance:

After the implementation stage, the group should be self-sufficient, as the adult involvement can be successfully diminished. Therefore, a maintenance stage is implemented when the group conducts the intervention on a regular basis (3-5 times a week) for 6-8 weeks (Watkins et al., 2018). In the meantime, data should be collected on the same subjects (the frequency of initiations and responses) as per the baseline, once per week to monitor the progress. The maintenance procedures should be identical to the set up in the implementation step.

Phase 2: design survey questions for feedbacks

The survey questions are listed here for reference.

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?
2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?
3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?
4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?
6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?
7. What do you think of these procedures? Are there any other steps or strategies you would like to add?
8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?
9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? Why or why not?
10. All in all, do you have any suggestions/feedback to help improve this intervention?

The purpose for the survey is to reach out to the experts of the special education field; and discover their thoughts on this intervention procedure. The questions were designed to seek out feedback and suggestions regarding two specific areas: efficacy and effortless implementation. For each intervention section, there is at least one question concerning their feedback and another

regarding whether the procedure can be easily achieved in the classroom. For example, for the peer training procedure, the question “After reading the second part (Peer training), do you think this step can be easily implemented in your class?” and “Do you think that the training procedures will be effective to prepare these students to be part of the intervention?” are included to accumulate data regarding effortless implementation and feedback on efficacy respectively.

As previously mentioned, the implementation and maintenance stages also involve a data collection process. In most of the research that aiming to discover if their PMI design is effective in improving students’ social skills, an interobserver agreement section was included to ensure the validity of the result (Harper et al., 2008; Morrier & Ziegler, 2018; Watkins et al., 2018). By doing so, two separate researchers will collect data independently; the final result is calculated between the two sets of the data. However, since this intervention is based on previous effective PMI research, the collected data is used towards tracking effectiveness and making adjustments. Therefore, the data collection procedure is simplified to be conducted by one adult and to simply count the frequency of targeted behaviour. Question eight is dedicated to the data collection process, specifically to collect feedback regarding participants’ easement and suggestion, “In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?”.

The last two questions collectively gather information on participants’ overall feedback and effortless implementation. “After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?” and “All in all, do you have any suggestions/feedbacks to help improve this

intervention?”. Through these two questions, the survey aims to collect a general reaction towards the intervention package.

Ethical consideration

The Trinity Western University Human Research Ethics Board (TWU HREB) has reviewed and approved (Appendix B) the research proposal and concludes that the proposed research meets appropriate standards of ethics as outlined by the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*. Since the research was only to be conducted on educators, permission from the school district/board was not required. However, the principal of my school was consulted prior to research, as most of the participants are from this school. With his permission, I, then, started to contact school staff for research.

The research package was provided to all participants along with an information letter and a consent form. It notifies all participants with their rights to give full consent, not to participate or to withdraw anytime. Moreover, no harm or maleficence will be conducted throughout the study. The participants were also advised that their responses are only used to revise and polish the intervention for potential use within an inclusive classroom in the future.

Finally, to ensure confidentiality, all participants were given a pseudonym to protect their identities. Additionally, all the physical survey packages and responses were kept in a locked cabinet, whereas the electronic packages were saved on a laptop with passcode protection.

Chapter 4 Results and findings

The last chapter described the thoughts and processes that contributed to the PMI intervention package. As these packages are distributed to various educators, their responses regarding the intervention package were collected and transcribed into the results of this research. In this chapter, the responses from the participants were cautiously examined and analyzed. Upon examining the responses, several common themes emerged from data analysis, i.e., “being kind and compassionate” as for additional peer selection characteristic, additional debrief session, challenge in implementation, as well as multi-level support required. In this chapter, each theme is illustrated and supported with evidence from the responses.

Contextual background of the participants

These are the nine educators who participated in this research. They were given pseudonyms to protect their confidentiality. Here is a rundown of their pseudonyms with a brief introduction of their roles in the school system.

- Stanley is a program teacher who works with students with trauma and mental health issues in an elementary school.
- Beth is an experienced elementary school educational assistant.
- Sam is a learning support teacher in an elementary school.
- Dwight works as a resource teacher in an elementary school.
- James is a support worker in a high school.
- Tammy is a district learning support teacher for an elementary school program.
- Chloe works as a head teacher for an elementary school; she is also a grade four classroom teacher.

- Jan is a skilled educational assistant working in an elementary school.
- Lia works as a classroom teacher for grade three and four students.

Being Kind and Compassionate

To reiterate, the peer selection process is a crucial stage for the peer-mediated intervention (PMI). Having the right characteristics can even determine if the intervention can succeed. As mentioned in the previous chapter, there is a long list of characteristics that prior research considered to be imperative to the success of the intervention. However, after presenting this research to experienced educators, a common characteristic emerged from their responses. Being compassionate is a common trait that four out of nine participants raised. In the survey, under the second question “Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?”, these answers shared this characteristic. Tammy wrote in her response, “Enjoy helping others; are compassionate”. James shared similar thoughts that “kind and caring, and also compassionate”. In addition, Dwight expressed the idea that “I feel the [TD] peers would have to be intrinsically motivated to develop relationships, as some younger students may still prefer parallel play and/or may need/require just as much support with turn taking and developing positive relationships”. Indeed, neurotypical children, especially younger children, are still developing their own social skills, asking them to train/mediate play interaction with other children can be challenging by itself, let alone training other children with special needs. Therefore, the intrinsic motivation such as empathy and compassion would definitely be required as a core characteristic in the peer selection process. Since without it, they may not have enough motivation to keep this

intervention going. At last, Stanley stated in this answer that, “empathetic, patient, work well with others” are the traits he is looking for to be a successful mediator.

Granted, some of the responses may not contain the same exact word “compassionate”, but their responses all pointed out that TD peers need to be kind-hearted enough that helping other fellow classmates is important to them. Being compassionate appears to be a primary concern among the research participants. In my interactions with these participants, I have noticed that these participants are also compassionate themselves. First of all, their job responsibilities require a great number of one-on-one times directly with neurodiverse students on a daily basis. This also indicates that working through challenging behaviours with these special needs students is a big part of their job responsibilities. Witnessing all the tantrums and meltdowns, being compassionate is vital to keep helping and guiding these students. Therefore, it is not difficult to infer that compassion is a trait that they hold and agree upon that selected TD peers should possess. Moreover, from my experience, compassion is important and necessary when interacting with children with ASD, even more so for TD children. Because when challenging behaviours happen more frequently with students with ASD, it can be overwhelming and frustrating for everyone involved. Beth in her response to the question regarding additional procedure suggestion, mentioned that “[additional steps, such as a debrief session is needed] to keep peers positive, especially if a meltdown happens. Peers usually feel responsible”. In this case, being compassionate is another key factor that keeps these TD peers being positive and not dropping out after witnessing challenging behaviours. Previous research also agreed on this, “the students with ASD experienced more compassionate understanding from their peers and enjoyed a greater number of benevolent reactions from their peers even when their behaviour was outside acceptable parameters” (Sperry et al., 2010, p.258).

To sum up, “being kind and compassionate” is an additional characteristic that in educator participants’ opinion, should be included in the criteria when choosing TD peers.

Debrief session

Many educators pointed out that after the intervention session, there may be a need for a check-in with the TD peers, on their thoughts regarding how things went, if there are any questions needed to be answered, or if possible, support is needed from the adult. More importantly, in the event of disruptive behaviour caused by students with ASD, TD peers may need consolation or encouragement. Five out of the nine educator participants either mentioned or recommended follow-up support session towards TD peers. Dwight, in his response to question ten on his overall feedback, wrote that “some students may become frustrated and want to discontinue their participation in the program...this may become frustrating for the neurotypical students initiating ‘fair’ play, how will they be supported throughout this intervention?” This is a reasonable question even with successful peer selection. Frustration or exhaustion may occur without proper support and encouragement from trusted adults. In addition, James suggested for the peer training process that “follow-up sessions/training would probably be beneficial to the peers”. On top of this, Stanley gave further details on his thoughts regarding what should be included in the follow-up sessions, “student leaders/ [selected TD peers] could reflect on their learning: what went well, what were the challenges”. Finally, as previously mentioned, Beth proposed the same procedure as Stanley, “a debrief after sessions with adults, where [TD] peers to discuss what went well, what didn’t, discuss strategies”. She also added a need “to keep [TD] peers feeling positive, especially if a meltdown happens. Peers will usually feel responsible”. Indeed, debriefing is an important step even for adult educators. In

my experience, working with students with disruptive behaviours can be frustrating and mentally draining, especially after an extremely challenging behaviour that involves physical or verbal violence. There is always a need for the staff in the program to regroup and discuss what went wrong, what did well, and, more importantly, a check-in with other staff members to ensure they are emotionally supported. In this case, these steps are crucial for students in following ways.

Indeed, the two parts of the conversation i.e., discuss the situation and emotional support, should be included as an essential part of this intervention. Firstly, the discussion around the session is a great learning opportunity. By talking to each other with experienced adult guidance, the participants in this intervention can learn from their own experience. For example, the adult facilitator could inform the students on good prompt timing or quick catch on inappropriate behaviour etc. Being acknowledged for their performance can have a positive impact on their confidence, which leads to better engagements for future sessions. Moreover, having a talk about what went wrong and how to improve, would also be a great learning experience for TD peers to improve on their skills. The debrief session can provide an opportunity for students to ask questions, receive guidance, and practice different strategies. For example, if the student with ASD does not respond well to name calling, this discussion time can be used towards teaching an alternative prompting method, such as physical prompting. Secondly, when an unexpected situation happens, TD peers may feel down or frustrated. It is important to touch base with the participating peers and ensure they feel positive so that they would keep participating. It is a great learning opportunity to improve their resilience and strengthen their social-emotional learning. In past research, a similar session was conducted after a training session “to discuss how specific aspects of each activity could be improved and to acknowledge correct implementation of strategies, as appropriate” (Jull & Mirenda, 2011, p.21).

In conclusion, as the participants suggested, a debrief session may be needed to ensure learning and support for participating students. Therefore, some adjustments towards intervention timing are proposed to incorporate these suggestions.

Challenge in implementation

Even with all the procedures carefully described, the potential implementation could still be a challenge to some educators, because not everyone is trained equally, and everyone's experience varies. To be more specific, in the PMI package, some instructions regarding the collection of data for the baseline, implementation stage, and maintenance stage were provided in order to track whether this PMI is effective in improving targeted social skills or if some modifications are necessary to promote its efficacy.

One of the survey questions was dedicated to determining if the educators were comfortable with the data collection process, i.e., "In implementation and maintenance stages, there are steps for adults to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?". Several educator participants raised a good suggestion, to include a sample data collection sheet. Five out of nine educators indicated they may need some guidance on data collection. Sam wrote in her response, "further clarification would be wise, especially for EAs and some teachers". As a learning support teacher, she is concerned for other less experienced teaching or supporting staff in this process. Chloe also suggested that she is comfortable with the data collection process. However, she added that "[it] would be helpful to see how the data gets collected, i.e., form". Tammy supported this idea with her answer, "I think a template for data collection should be included if isn't already". Lastly, Lia and Beth both agreed on adding a form of template for data collection,

“a provided checklist would be useful for teacher to collect data” and “I would need clarification around what exactly I am recording, and would like to have collection sheets, premade and simplistic”.

The above results revealed that data collection seems to be a concern for many educators. As opposed to my initial idea on data collection, which in my experience, should be simple and straightforward, a tally system. As I reflected on this issue, I realized that data collection is a process that requires experience. Since the intervention itself included a short instruction on how to collect data and what data is needed to be gathered, a data form should be adequate to provide additional information needed to complete this process.

Besides the general data regarding the participants name (names of the TD peers), age, grade, and dates, here is the essential information needed for this form. First of all, the name of targeted behaviours should be included. For example, depending on the needs of the student, the desired teaching behaviour can be initiation, responses, or language exchange. It is noteworthy that Stanley wrote in his survey that “I like the idea of choosing one or two desired behaviours, then adding new target behaviours as necessary”. Therefore, this section should be left blank for the person who implements this PMI to decide. Secondly, the data form should have a column for tally recording and an additional column at the end for a total. Thirdly, baseline data should be isolated by itself so that comparison of prob and baseline data can be obvious. After all, the main purpose for data collection is to compare the prob data with baseline, so that additional decisions can be made based on the comparison as well as the analysis of the data difference.

To conclude, as the research participants suggested, a data collection chart should be included as part of the intervention package to provide further clarification on data gathering process and assisting implementation for educators.

Further support needed

One of the main purposes of designing this PMI research is simplicity of implementation. So that teachers and supporting staff can, and willing to, implement it into their teaching as the need arises. However, the results of the survey revealed a common finding regarding further support needed to implement this intervention in the inclusive classroom. More importantly, the support may be needed from multiple hierarchies i.e., school administrator level and facilitator level to help manage the intervention.

Five out of nine research participants raised their concerns regarding the issue. First and foremost, James wrote in his survey, “I feel comfortable and have no problem taking data; however, I might not have the time, as we are short staffed most of the time at our school, and I will be occupied most of the time”. I can relate to James’ perspective. Similar to James, I am an educational assistant that is well-trained and would absolutely be willing to run this intervention in an inclusive classroom. However, without teachers and school administrators on board, implementing a PMI is nearly impossible. Because as educational assistants, we are assigned to support specific students with pre-approved plans. Whereas conducting an entire novel intervention would require support as well as permission from school administrator level. For example, if this very intervention is to be conducted in a specific school, the consents of the participating students’ parents/guardians are needed. This step requires the school administrator to sign off and approve. Moreover, this PMI may have to be included in a student’s Individual educational plan (IEP), which indicates the involvement and approval of school resource or learning support teachers who are responsible for supporting students with special needs.

On the other hand, on a facilitator level, the two classroom teachers also raised an issue. Chloe indicated that she is “very willing” to apply this intervention in her classroom; however, she also stated, “I would prefer someone take the lead if it were to be run in the classroom”. In the similar sense, Lia stated that she would feel “much easier if a second adult is part of the classroom”. She also added that “I would be willing to try if I had an EA to support. Depending on class composition, it may prove difficult to do for one adult”. Finally, Sam, to the question around easiness for implementation step, answered that “I’d just be concerned if EAs are pulled away from their [student] to help many others. we’d have to see how it went”. Indeed, additional support regarding timing and staffing are issues that need to be solved before carrying out the intervention. Besides challenges to EAs as aforementioned, classroom teachers may also find it difficult to implement this intervention in their regular teaching without proper support. Having to manage other students in the class, the classroom teachers already have many responsibilities attached to their position both inside and outside the classroom. In addition, classroom teachers tend to have a tight schedule during school hours. Unless they are giving up their break time or having other teachers on call to cover their class while running the intervention, it can be challenging for them to willingly include this intervention into their teaching routine.

In summary, two levels of support are needed in order to implement this intervention in an inclusive classroom, administrator level as well as facilitator level.

Chapter Summary

This chapter reported on the feedback and suggestions from the educator participants of this research. Several common themes were found regarding a number of issues for the procedures. Nevertheless, there are still some valid suggestions/feedback on its own, which may

not make the cut; but they also raised some great arguments and provided fresh perspectives into this research. For example, Beth suggested adding the ability to handle meltdowns as part of the peer training process. Specifically, training TD children to know the signs and potential triggers for challenging behaviours of student with ASD, perhaps even how to de-escalate before the situation passes the point of no return. This would be a great asset to enhance the PMI. However, considering the age range for the participants, this may be too much for younger students to handle. All in all, four themes were abstracted and categorized from the surveys, being kind and compassionate, post intervention debrief session, challenge in implementation, as well as multi-level support required, respectively. These themes will be further discussed in the next chapter, Discussion and Conclusion.

Chapter 5 Discussion and Conclusion

The previous chapters described the background, research process and initial findings of an inquiry of peer-mediated intervention (PMI). The first iteration of the PMI along with survey questions were sent out to experienced educators in order to gather their feedback and suggestions regarding the intervention. Their responses were collected and carefully analyzed. The results of this research from the previous chapter revealed four themes with insights into improving and better implementing this PMI. These themes are being kind and compassionate, debrief session, implementation challenges, and various levels of support needed. This chapter dives deeper into each theme. Moreover, consistent with design-based research (DBR) procedure, these themes are then incorporated into the second iteration of the PMI.

Table 1

Adjustments to the first iteration of PMI with consideration of the survey results

Raised Common Themes	Changes in the second iteration of PMI
Being kind and compassionate	Included in the peer selection standard
Debrief session	Added as a part of implantation and maintenance stage
Implementation challenges	Adding a data collection template, as seen in figure 3.
Various level of support needed for classroom implementation	Asking the Resource/LSS teacher to lead the PMI in the inclusive classrooms.

As illustrated in **Table 1**, each theme is able to be incorporated into the new iteration of the PMI. In addition, a new iteration of the intervention, which consists of all the changes, is provided in this chapter. Lastly, potential limitations are also mentioned as well as future research directions.

Discussion regarding Peer selection standards

First and foremost, as discussed in the first theme, being kind and compassionate is important for peer-selection process. It was pointed out by many educator participants. Indeed, being kind and compassionate also resonate with the philosophy behind inclusive education practice. As pointed out in earlier chapter,

Inclusive classrooms are places where students [regardless of their diversities] feel they belong, where they feel safe to express themselves, accepted for who they are and where they are from, and challenged to learn in new ways about themselves, others, and the complex world in which they live. (Lundy,2020, p.36)

Certainly, this PMI can be seen as an attempt in promoting inclusive education as well as equality for students with ASD. This is also in line with various research regarding PMI as an effective tool to promote inclusion among students with various special needs (Gunning et al., 2018; Leach & Duffy, 2009; Sutton et al., 2019). Because by providing opportunities for socializing and skill learning, students with ASD are truly included in the school community with their friends. Educators, in the inclusive classrooms, are responsible for teaching and promoting kindness and compassion so that children with special needs are always being included instead of being left out by their TD peers.

Furthermore, being kind and compassionate is a key factor for the success of this intervention because it motivates TD peers to stay when challenging behaviour occurs. To be more specific, handling or witnessing disruptive behaviours can be terrifying and frustrating for even well-trained adults, not to mention young children. Even teachers with necessary training could result to utilize “reactive and punitive strategies” when dealing with these behaviours in

class, as they find them disruptive and frustrating (Ducharme & Shecter, 2011, p.257). In my experience interacting with students frequently exhibiting challenging behaviours, I noticed that most students tend to keep their distance due to fear after witnessing these behaviours unfold in the classroom. However, a few students do stay as they are often kind and compassionate in helping other students with special needs. These students are willing and open to interact with students with special needs and eventually form some beautiful friendships. In this case, the characteristics of being kind and compassionate helps them look past the surface behaviours and meet the real person behind. It is clear that being kind and compassionate is necessary to be added to the peer selection standards.

Adding Debriefing sessions

The previous chapter addressed the importance of including a debriefing session. More specifically, holding such sessions immediately after each implementation as well as maintenance sessions is crucial. This provides TD peers with opportunities to ask questions, receive feedback on their performance, as well as conducting emotional support as they need. Upon examining previous research, some potential uses and challenges of the debriefing session are worth addressing.

Primarily, this debriefing session can also be used to provide positive reinforcement. The PMI provides an opportunity for students with ASD and their TD peers to improve social skills. The use of positive reinforcement can improve targeted prosocial behaviours and eliminate undesired behaviours at the same time. “Reinforcing appropriate behaviours contributes to both the increase of [desired] behaviours and the decrease of inappropriate behaviours” (Kizilkaya & Sari, 2021, p. 111). Indeed, positive reinforcement teaches students the right and appropriate

behaviours by acknowledging them through providing reinforcements, either verbal or physical. Frequently, positive social praise is commonly utilized, such as “great job on using your words!”, “you did awesome reminding him when he started to play on his own!”, or “it is wonderful that you kept waiting for his eye contact!” Dwight, an educator participant, indicated that external motivations could also be helpful to encourage and motivate TD peers. To be more specific, some small tangible snacks/items can be provided as prizes for stimulating exhibited prosocial behaviours. This is also considered positive reinforcement, which is used to effectively promote desired behaviours among children with ASD (Leach & Duffy, 2009; Vincent et al., 2018). For example, small snacks (with parental knowledge), small toys, or stickers can be given to the intervention participants paired with social praises. This can, at the same time, boost participants’ confidence and ensure the recurrence of those reinforced behaviours.

It is noteworthy that few study regarding PMI has mentioned the need for debriefing session. Whereas many experienced educators have suggested to incorporate this step into the intervention package. Indeed, many studies advocated on choosing toys and activities based on children’s interests (Morrier & Ziegler, 2018; Sutton et al., 2019; Watkins et al., 2015, 2019). In my opinion, children with ASD generally present fewer challenging behaviour around preferred items. It is, however, still a possibility. Therefore, having plans in place can be beneficial.

One of the potential challenges for implementing a debriefing session is timing and scheduling. As the TD peers are already pulled out during their recess for the PMI, this extra debrief session could take up some additional time that belongs to their class. This is also suggested by several educator participants. For example, in a suggestion on TD peer characteristics, Sam wrote, “perhaps they need to [be] academically capable as they might miss learning time and therefore have a need to ‘catch up’”. It is a valid point as participating in an

intervention is by itself a responsibility and missing school time can add an extra layer of responsibility to these students. Lia also suggested that “[extra time added for] preloading for ASD student if doing something like a board game. Work with [kids with ASD and TD peers] on phrases or questions for conversations with peers.” Depending on different school districts, my potential solution is to move the PMI session to lunch hour, when there are thirty minutes to spare. The extra time can be allocated differently and more efficiently. For example, A potential schedule for the PMI is shown in **Table 2**.

Table 2

Potential schedule for PMI at inclusive setting (Lunch time schedule, 30 minutes)

Procedure	Approximate Duration	Covered content
Pre-session	5 minutes	<ul style="list-style-type: none"> • Preloading on instructions and new information • Answering last minutes question, • Learning new board game rule, • Introducing new activity rule
Implementation Session	15 minutes	Trained TD peers to play with student with ASD, while teaching desired pro-social skills
Post Session Debrief	10 minutes	<ul style="list-style-type: none"> • Performance review <ul style="list-style-type: none"> ○ What did well ○ What went wrong ○ What can be improved • Emotional learning <ul style="list-style-type: none"> ○ Consolation ○ Repair relationship • Incentives <ul style="list-style-type: none"> ○ Food, toys, or sticker for reinforcing desired behaviours

A five-minute pre-session can be added, in which the adult facilitator can preload the participants on their expectations, answer some last-minute questions, or teach new board game

instructions. Then, after the regular fifteen-minute intervention time, the extra ten minutes can be devoted to the debrief session as suggested by research participants. When arrange the time in this matter, there would be less potential loss of class time and interference of other classroom or school responsibilities for the intervention participants.

An additional debriefing session can be valuable time to the intervention participants with many potential benefits, as discussed above. Therefore, it will be added to the second iteration of the PMI.

Solving Challenges in implementation

The last chapter illustrated some concerns from educator participants regarding the implementation process, especially data collection. Many participants expressed the need for a data collection template, or a data form for those who are less experienced with this process. Therefore, a data collection template is designed to collect necessary information as well as the targeted data to determine the efficacy of this intervention. To reiterate, the necessary information consists of participants' name, grade, intervention location, toys and activities involved, as well as the essential dates. This information is vital to ensure the consistency of the intervention. More specifically, it ensures all the necessary communication is conveyed when different staff are involved to implement the PMI. Additionally, baseline data and prob data sections are differentiated so that difference in the frequency of targeted behaviour can be easily identified. Hence, a clear determination of the efficacy can be provided. This data template can be found in Appendix C.

Potential solution for Support

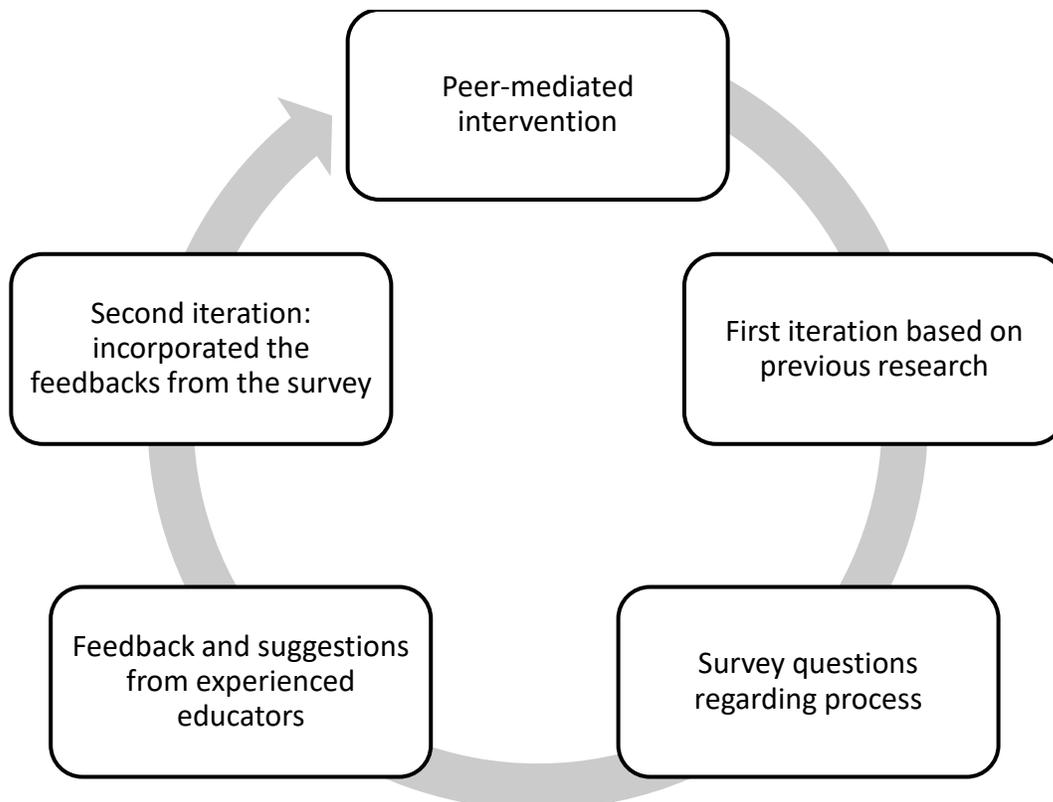
The feedback from the survey indicated further support needed from different levels such as the school administrator level and facilitator level. Support from school administrator level is needed for adding PMI into the curriculum, individual education plan (IEP), assigning staff for support, as well as obtaining consents from parents as needed. Whereas on facilitator level, general support is needed for extra experienced staffing and managing schedule/timing for classroom teachers.

Dwight proposed a great solution in his answer. In the survey, he specified, “if I were to implement this intervention, I would likely to be the teacher implementing the intervention in the school. it would likely to be easy implement as a result of teachers being motivated to help these students develop these fundamental skills”. To recap, Dwight is a resource teacher, who is in charge of developing students’ IEPs and either implementing specialized programs interventions or assigning and supervising EAs to implement them. This comment is valuable on two different levels. Firstly, having a designated staff in a school to implement this program can ensure consistency and reliability of the intervention. Resource, special program, or learning support teachers tend to have extensive experiences in implementing various intervention and programs with students with special needs. As Stanley, a program teacher, and Casey, a head teacher, indicated in their feedback, they have had experiences running similar interventions with their students with special needs. This intervention procedure may not be very different from those programs. Therefore, assigning one experienced staff to implement or support the implementation of this intervention can guarantee consistency. On the other hand, resource, special program, or learning support teachers have more flexible schedules, which would make it easier for them to plan the logistics behind the program. For example, Sam wrote in her answer

that, “I am in almost every classroom as LSS (Learning Support Staff) & am happy to help”. Hence, she would have the adequate knowledge, resources, and schedule to support the implementation of this intervention. Indeed, this method is also supported by Sperry et al. (2010) that “during the play sessions, one staff member in the classroom should be consistently responsible for running and supervising play (p.259). This potential solution can also provide satisfactory support for both levels, having the school resource or learning support teacher designated to run this intervention can efficiently solve this issue.

Figure 3

The processes of improving PMI using a design-based research methodology



To summarize, multiple themes regarding various emerging issues and suggestions were taken into consideration. The feedback is incorporated into the second iteration of this PMI, which is shown in the next section. The whole process of the design-based research (DBR) is shown in **Figure 3**.

Peer-mediated intervention, second edition

My current research discovered four common themes to be incorporated in the second iteration of the PMI. This section demonstrates the full second edition of the intervention procedure. Changes are made accordingly to reflect the results of the current research. First of all, “Being kind and compassionate” was added in the peer-selection criteria. Moreover, a post session debrief was added to the implementation and maintenance procedures to support and reflect on participating students. A potential schedule, with pre and post debriefing sessions, was included as part of the intervention package to shed more light on implementation in inclusive settings. Additionally, a data collection template was designed as part of the package to provide guidelines for educators and ensure consistency. Last but not least, a potential solution provided for multi-level support required for this intervention to be utilized in the inclusive school settings, to be incorporated into the students’ IEP and managed by the school resource teacher. This change is also reflected in the preface of the intervention package. The next sub-section has the details of the second iteration of the PMI. The aforementioned schedule and data collection template can be found in **Table 2** and **Appendix C**, respectively.

Peer-Mediated intervention Package

PMI, also known as peer-mediated instruction and intervention (PMII), is an evidence-based intervention that involves typical developing (TD) peers who guide and help students with ASD to improve social skills in a natural teaching and playing environment (Sperry et al., 2010). As the name suggests, typical developing peers in the class will take on the leading role within the intervention, which include providing models of appropriate behaviour, initiating interactions, and prompting and reinforcing prosocial behaviours (Gunning et. al. 2018). The adults, on the other hand, take the facilitators and supervisors' role to ensure the success of carrying out the intervention. This intervention can be beneficial as much to children with ASD, as to their TD peers, because they can also learn to be inclusive and kind. As research shown, this intervention may be better suited to be conducted or incorporated into students' individual educational plan (IEP) by the school resource/Learning support teacher to ensure its consistency and efficiency, as they have more flexible schedule and experienced in conducting and supporting various programs.

The impetus for this research derived from my observation that students with ASD often struggle with developing meaningful friendships with their peers sometimes in the inclusive education settings, where there are countless opportunities for friendships. Therefore, after reading the literature, I adopted a PMI that is easily implemented and potentially effective in improving the social skills of students with ASD.

Peer selection

This is the process to find and select the suitable TD peers to participate in the PMI. Here are some characteristics that could benefit the intervention. It is also recommended to select two to

three typical developing peers per one student with ASD as opposed to the one-on-one ratio. The two to one ratio helps spread obligations and create more motivations for both participants with and without ASD (Harper et al., 2008; Katz & Girolametto, 2013).

- exhibit good social skills, language, and age-appropriate play skills,
- be well-liked by peers,
- have a positive social interaction history with the focal child,
- be generally compliant with adult directives,
- attend to an interesting task or activity for 10 min,
- be willing to participate
- attend school on a regular basis (Sperry et al., 2008, p.257)
- share some similar interests in toys or activities with the participants with ASD, this can be achieved through conducting or accessing preference assessment (Martinez et al., 2019)
- preferably having a previous existed relationship with the student with ASD (Katz & Girolametto, 2013)
- being kind and compassionate about helping others

Peer training:

This process helps prepare the selected typical peers so that they are ready to eventually run the intervention on their own. The training content will include the behavioural aspects of students with ASD as well as some less complicated strategies that typical peers can easily practice, such as eye swiping for eye contact, or the use of positive reinforcement words during

play, etc. There could be many ways to conduct the peer training, depending on students' age and comprehension capability.

As this research targets younger students (4-9 years old), the training should first be about the simplified background information on ASD, which includes details regarding the similarities and differences of students with ASD and typical developing peers (Sperry et al., 2010). For example, "Michael is great with his math, but he needs our help to learn how to play with others", "Kevin likes to play with train sets, but he needs our help to learn how to share and ask for them.", "Laura always wanted to join a game of Snakes and Ladders, but she needs help to learn how to take turns", etc..... The conversation can also focus on the noticeable differences between children with ASD and their typical peers in behaviours, i.e., the lack of eye contact during conversation, inability to take turns during play, etc.... After the discussion, a social story book *Franklin's New Friend* by Bourgeois (1997) can be read to the participants and follow up with discussions and questions along the read aloud to ensure understanding (Katz & Girolametto, 2013). There are several behaviours that need to be taught to typical developing peers, role play with puppets or action figures can be beneficial to ensure full understanding (Katz & Girolametto, 2013).

- "Organizing play (making suggestions for play activity, role, or other play for peers)
- Sharing (offering, giving, or accepting a play material to and from focal child)
- Providing assistance (helping focal child to complete a task, get on play equipment, or respond to requests for assistance)
- Providing affection and praise through hugging, putting arms around, patting, holding hands, high fives" (Sperry et al., 2010, p.258).

If the participant with ASD who has limited language skills, the simple use of visual aids and/or PECs can be taught to their peers to encourage communication.

Implementation and baseline:

Once the training is completed, the student group consists of children with autism and typical peers would undergo a few test-runs with adult supervision before fully self-sufficient. During this process, baseline data can be taken on the frequency of initiations and responses when interacting with a typical peer within a specific amount of time, i.e., 10-15 minutes play time. This data is to determine if the intervention is effective or if modification is needed. A template for data collection is included in this package for use and reference.

The intervention and maintenance session should take place during lunch hour that there is 30 minutes. A pre-session (5 minutes) can be included. During this time, the facilitator can preload participating students with any necessary information and last-minute practice on useful skills, etc. Alternatively, this time can also be used to teach instructions on new boardgames or rules for new activities.

To start the implementation process, have the classroom or an alternate room set up with mutually interested toys and activities, such as turn-taking board games and sharing toys. Adults (teachers or educational assistants) can loosely follow the group and provide prompts and directions only when:

- “Observe children to identify noninteraction. When there has been no interaction between the child with ASD and peers for 30s,
- Provide a prompt to the peers or the focal child to begin an interaction or respond to an initiation” (Sperry et al., 2010, p.259).

The goal for this process is to fade out the adult involvement and let the group be self-sufficient. Therefore, the adult can adjust the involvement based on the interaction, i.e., reduce the frequencies of prompts when observing frequent interactions among the group.

After each session, a debrief session with TD peers should be conducted which takes roughly 10 minutes. The debriefing session should cover content on what went well, what needed more improvements, as well as potential emotional learning/support. Positive reinforcement, using social praise and tangibles, can be practiced maximizing social skill learning.

Maintenance:

After the implementation stage, the group should be self-sufficient, as the adult involvement can be successfully faded out. Therefore, a maintenance stage is implemented where the group conducts the intervention on a regular basis (3-5 times a week) for 6-8 weeks (Watkins et al., 2019). In the meantime, probe data should be collected on the same subjects (the frequency of initiations and responses) as per the baseline, once per week to monitor the progress. The maintenance procedures should be identical to the set up in the implementation step.

Potential limitations and future directions

Several limitations were detected and identified over the course of the research. Respective future directions are provided accordingly. First of all, this PMI could have been implemented with actual students with autism spectrum disorder (ASD). However, due to the limitation of researcher's profession as well as the COVID-19 pandemic, this research procedure

was altered to gather feedback and suggestions from experienced educators in inclusive settings. If the research was conducted with actual young students with ASD and TD peers, more information and suggestions regarding specific procedures may be discovered. Regardless, this research did reveal many practical and insightful feedback that helps improve the intervention. Therefore, future research can continue from the second iteration of the PMI and apply it with one or multiple groups of students with ASD and their TD peers. More improvements may be uncovered through the actual implementation process and in turn, benefit the next iteration of this PMI. In addition, combined with a new set of the survey questions to interview participating students and educators, the second intervention package could review more beneficial information for the third iteration.

Secondly, more participants from various school districts could potentially reveal other beneficial feedback and suggestions to adaptation of the design of the PMI. The current research used convenience sampling, which included many of the researcher's colleagues and classmates. On the bright side, the educator participants were carefully chosen so that different roles in the inclusive education system were represented. Roles such as resource teachers, specialized program teachers, inclusive classroom teachers, as well as educational assistants have been covered to gather comprehensive feedback and suggestions. Nevertheless, only a few educators were included for each role: three classroom teachers, three educational assistants, one special program teacher, and two resource/LSS teachers. Future research could potentially include more educators from each role. With their added experiences, this may reveal more insight and feedback to benefit this intervention.

Conclusion

This DBR study utilized designs from previous research to produce a detailed Peer-mediated intervention design for young students in inclusive education setting, which was reviewed by experienced educator participants for their feedback and suggestions regarding its efficacy and effortless implementation. The results gained from their responses were carefully analyzed and categorized. Four themes were revealed and were incorporated into the second iteration of the PMI. All the effort for the current research aims to create a PMI that will be more likely to be actually implemented and help students with ASD in their social interaction with peers in inclusive classroom settings.

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Appendix A Survey Transcript

Survey Questions:

Pseudonym: Stanley

Role at school: District Alternate Program Teacher what grade do you teach: 1-7

11. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes, certain students came to mind that would be a strong peer mediator as well as some students who could benefit from this intervention

12. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Empathetic, patient, works well with others or can be a leader and or a follower

13. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Depending on the specific needs of the child, I would anticipate some students would do well (natural leaders) while others may need more adult direction/supervision.

14. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

When role playing, etc., it may be helpful to show examples and non-examples of appropriate/supportive behaviours.

15. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

Film students, show videos demonstrating behaviours. Student who are competent and have experience can make learning videos for others.

16. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Yes, I like the idea of choosing one or two desired behaviours, then adding new target behaviours as necessary.

17. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Student leaders could reflect on their learning, what went well, what were challenges. Strategies could be identified in student's IEP and positive behaviour support plans.

18. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

Yes, I feel like much of the data can be from informal observations/comments. If permission is given, videos could be done to illustrate progress, etc.

19. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

This is a simple learning and leadership opportunity for all students. Once it gets going, I see other students who may want to try being a peer mediator.

20. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Possibly a progression from a partner activity to small groups of 3 – 4 students. Students who are strong peer mediators can act as student mentors to train others, etc.

Survey Questions:

Pseudonym: Beth

Role at school: EA what grade do you teach: support grades 5, 6 and 7

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

The students should be responsible to cover any classwork missed due to training/ PMI sessions and understand the duration (3 – 5 times/week for 6 to 8 weeks)

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Yes

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

It depends on the level of ASD. Each child with ASD is unique and the peers should be taught how to properly handle/react to behaviours so as not to positively reinforce negative behaviour (i.e., Peers laugh if target child swears)

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

How to handle a “Meltdown”, know each child with ASD’s triggers and how to de-escalate before a meltdown, and to understand behaviour happens and it is no one’s fault.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Yes

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

A debrief after sessions with adult: peers to discuss what went well, what didn't, discuss strategies, to keep peers feeling positive, especially if a meltdown happens, peers will usually feel responsive.

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

I would be comfortable collecting data. I would need clarification around what exactly I am recording and would like to have collection sheets, premade and simplistic.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

Likely and willing. True inclusion only works when its organic. Tolerance and acceptance can be taught, kids like leadership roles. Every child deserves friends, and it is way more fun to interact with peers.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Enlist the help of older peers for the target ages. For example, grade 5 to 7 to help with the younger ones, especially if the ASD is profound.

Looking forward to hearing more about this program and hopefully getting to implement it!

Survey Questions:

Pseudonym: Sam

Role at school: LSS teacher what grade do you teach:

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

I can usually think of students who could be of support. I feel they would need to be classmates, so I'd need to know placement/age/grade etc.

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Perhaps they need to be academically capable as they might miss teaching time and therefore have a need to "catch-up"

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

I don't have a "class" but am considered "non-enrolling"

I am in almost every classroom as LSS so am happy to help.

I'd want to be careful with the message used with kids so we are not pointing out specific deficits.

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

Yes, just take care with languages (e.g., Kind words always)

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

We are going to use Everyday Special Online. These scenarios might also help.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

*I'd just be concerned if EAs are pulled away from their people to help many others.
We'd have to see how it went.*

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

Further clarification would be wise, especially for EAs and some teachers.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

I'd be comfortable but would need classroom teacher to feel the same way.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Great work Will.

Survey Questions:

Pseudonym: Tammy

Role at school: District Learning support teacher Elementary alt. Ed what grade do
you teach: Grade 1 to 7 consultation

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

No

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Enjoy helping others; are compassionate

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Unfortunately, I don't have a class to implement this in, or any current students I could use it with.

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

Yes

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

No

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

See #3

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Looks good and like everything has been considered for implementation.

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

I think a template for data collection should be included if isn't already.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

I would need support to set up the program initially, if that was provided then I would implement it.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Survey Questions:

Pseudonym: Chole

Role at school: Head Teacher what grade do you teach: 4

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Able to articulate wants and needs

Able to self-regulate

Confidence to initiate

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Yes

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

Yes

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

Roleplay an intervention with or without students with ASD so all students can see how it might look

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Yes

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Practice possible interactions (language) to give students an idea of what they could say.

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

Yes

Would be helpful to see how the data gets collected – form?

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

Very willing. I would prefer someone take the lead if it were to be run in the classroom.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?
I'm interested to see how it plays out. I'm currently using something similar with a student not diagnosed with ASD but who struggles socially!

Thanks, Will.

Survey Questions:

Pseudonym: Jan

Role at school: EA what grade do you teach: K – 7, currently kindergarten 80%, Grade
2 – 3 20%

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

No, very well thought out.

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Yes

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

Yes

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

No. Children love playing games in small groups.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Yes. Finding time might be challenging, however having soft start at beginning of day works well.

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

No

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

Yes. Best Friend forever can easily be implemented into IEP (social skills) with data being recorded.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

Definitely will try as board games/social play are routinely used in classroom to encourage inclusion. Playing games are fun an enjoyable when all students understand and play games properly.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

No. Great plan.

Survey Questions:

Pseudonym: Lia

Role at school: Enrolling teacher what grade do you teach: 3/4

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Take into account other responsibilities the TD peers is involved with, to not expect a few to do many helping activities (e.g., hot lunch, lunch supervision, library helper, etc.)

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

If some steps (story) could be done with whole class, it would be easier. Help from an EA would be useful too.

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

The discussion/dialogue with TD peers I think is useful. Allowing them to ask questions.

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

Maybe before/after drawing by TD peers, someone alone/someone with friends.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Much easier if a second adult is part of the classroom.

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Preloading for ASD student if doing something like a board game.

Work with them (with ASD) on phrases or questions for conversation with peers.

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

A provided checklist would be useful for teacher to collect data.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

I would be willing to try if I had an EA to support. Depending on class composition, it may prove difficult to do for one adult.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Perhaps a short list of board games that are easily accessible and appropriate.

Survey Questions:

Pseudonym: James

Role at school: Support Worker what grade do you teach: LAC program (8-12)

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Possibly, all of my students have ministry designations as I work in a special education program, but there are a few students who may be able to participate.

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

Kind and caring, and also compassionate.

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

Not suitable for my class, as we currently do not have an extra area within the classroom for a separate lesson, maybe a pull-out session would be better for my class but depends on who would be providing the training.

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

In my view, I do not think any short training sessions would suffice. I think the peers would have to learn on the spot and adopt and modify as they go along.

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

Would PMII work on teenagers? Also, follow-up sessions/training would probably be beneficial to the peers.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

Probably not in my classroom, my classroom is small, and there is no extra space for any other activities. My classroom is set up for academic purposes. And also, we do not have the extra men power to supervise such intervention at the moment, also I work in a high school special program.

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Also, prepare the peers for any setbacks, there might be days when the individual is not willing to work with the peers, or unresponsive to them.

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

I feel comfortable and have no problem taking data, however, I might not have the time, as we are short staffed most of the time at our school, and I will be occupied most of the time.

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

I work in a special program, where all the students have ministry designations, but we do have peer helpers (grade 12 students) that come in and help, and we often get them to run some games with the students. Also any extra intervention will have to go through the school and has to be part of the students' IEPs.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

No, I think it is a good intervention, but I wonder if it can be applied to high school, and would it work in a special program like ours,

Survey Questions:

Pseudonym: Dwight

Role at school: *Resource Teacher* What grade do you teach: *K-6*

1. After reading the first part (Peer selection), can you think of at least one or two of your students to be a good fit to participate in this intervention?

Yes

2. Do you have any suggestion on some other characteristics for the participating peers that you think might contribute to this intervention?

I feel the peers would have to be intrinsically motivated to develop relationships as some younger students may still prefer parallel play and/or may need/require just as much support with turn taking and developing positive relationships.

3. After reading the second part (Peer training), do you think this step can be easily implemented in your class?

If I were to implement this intervention, I would likely be the teacher implementing the intervention in the school. It would likely be easy to implement as a result of teachers being motivated to help these students develop these foundational skills. On the other hand, I wonder if this would be “one more thing” that pulls the student with ASD out of the classroom making them look different and possibly reinforcing stigma around the students ASD and inherent differences.

4. Do you think that the training procedures will be effective to prepare these students to be part of the intervention?

If enough time and care is taken I believe the training procedures could/would be effective.

5. Is there any other training methods or contents, or any suggestion you can think of that might contribute to the peer training process?

Peers may benefit from practicing with neurotypical students who may benefit from this kind of intervention prior to working with students with ASD as working with the latter mentioned may prove more challenging than participants are expecting. Practicing positive interventions real time would help develop strategies prior to the real intervention.

6. For the implementation and maintenance steps, do you think this can be easily implemented in your classroom?

I feel it could be implemented but question the motivation of some teachers. Some may be eager to accept this intervention for a reprieve from the student with ASD if they find the student to be challenging.

7. What do you think of these procedures? Is there any other steps or strategies you would like to add?

Could this intervention be implemented class wide or with buddy classes to ensure that participants in this intervention are not singled out or made to look "different"?

8. In implementation and maintenance stages, there are steps for adult to take baseline and probe data, are you comfortable to perform these steps? Or do you think further clarification should be included?

I would feel comfortable performing these steps. On the other hand, additional specific suggestions, and recommendations to ensure consistency of the intervention over time would help. Would there be a Facebook group or chat where questions/problems could be presented to a larger group for suggestions and/or recommendations (ensuring the anonymity of students).

9. After reading the intervention procedures, how likely do you think you can and willing to run this intervention if/when there is a student with autism in your class? why or why not?

The only challenge I see is the spectrum of ASD and neurotypical students. Finding the “right” students and enough time to ensure the possibility of success could be challenging.

10. All in all, do you have any suggestions/feedbacks to help improve this intervention?

Some students may become frustrated and want to discontinue their participation in the program. Are there external motivators that can help motivate individuals to participate from the beginning to the end of the intervention? This may become frustrating for the neurotypical students initiating “fair” play, how will they be supported throughout this intervention?

Appendix B Ethics Approval



TRINITY
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Human Research Ethics Board
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HREB Certificate of Approval

To: Junyang Kang

From: Landa Terblanche, HREB Co-Chair

Re: Best Friend Forever: A Peer-mediated Intervention for Preschoolers with Autism Spectrum Disorder

HREB File No.: 21G15

Effective: 2022 JAN 13 Expiry: 2023 JAN 13

Approval Period: One year
 Three years

Approval Type: New
 Continuation
 Amendment

Certification: Landa Terblanche
Digitally signed by Landa Terblanche
Date: 2022.01.13 11:03:05 -0800

The Trinity Western University Human Research Ethics Board (TWU HREB) has reviewed and approved the research proposal and concludes that the proposed research meets appropriate standards of ethics as outlined by the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*.

This approval is subject to the following conditions:

1. Approval is granted for the research and purposes described in the application only.
2. Any modification to the research or research materials must be submitted to the HREB for approval before implementation.
3. Any deviations to the research or adverse events must be submitted to the HREB as soon as possible.
4. This approval is valid for the indicated approval period and a Request for Continuing Approval must be submitted and approved by the above expiry date.
5. A Final Project Report form must be submitted to the HREB when the research is complete or terminated.
6. Trinity Western University may request to review research documentation from this project to demonstrate compliance with this approved protocol and with the TWU Policy concerning Research Ethics with Human Participants.

Funded Research

Send a copy of this Certificate, with the HREB File Number in the subject line, to the Research Grants Officer at Sue.Funk@twu.ca

