An Intervention to Increase Responsive Parental Behaviors and Child Behaviours for Children with Autism: Statistical Interpretive Discourse Analysis

by

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Statement of Originality

I, KAM, Wai Yin Evita, hereby declare that I am the sole author of the thesis and the material presented in this thesis is my original work except those indicated in the acknowledgement. I further declare that I have followed the University's policies and regulations on Academic Honesty, Copyright and Plagiarism in writing the thesis and no material in this thesis has been submitted for a degree in this or other universities.

Abstract

Compared to typically developing children, children with Autism Spectrum Disorder (ASD) show more behavioural problems and communication interaction deficits, so improving parent-child interactions might reduce these problems. This study investigates the effectiveness of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program on dyad interactions between a child with Autism Spectrum Disorder and his or her parent, via content analysis and statistical discourse analyses of their videos. We invited 21 parents and their children diagnosed with ASD or at risk of it (ages 3 to 6 years) to participate in the pre-and-post comparison study of the Parent-Child Interaction Intervention for Autism Spectrum Disorder program. It consisted of 10 weekly sessions (i.e., 8 two-hour sessions of parent training workshop, and 2 one-hour sessions of direct training practice with their child)

Many parent interventions were not designed for children with Autism Spectrum Disorder. Building on insights from Parent-Child Interaction Therapy (Schuhmann et al., 1998), Happy Parenting Program (Leung et al., 2016), and Positive Discipline (Nelsen, 2006), the present Parent-Child Interaction Intervention for Autism Spectrum Disorder targets children with Autism Spectrum Disorder aged from 3 to 6. It sought to: 1) Improve parent-child interaction by training parents to improve their relationships with their child during play time; 2) Manage children's behaviour by training parents to promote positive behaviour and address inappropriate behaviour by giving praise and appropriate reinforcement; 3) Improve children's social and communication skills by training parents to use appropriate prompts and questioning skills; 4) Reduce the stress of parents by training them to use relaxation techniques (for example, breathing).

There was pre-and-post videotaped observation between the Parent-Child Interaction Intervention for Autism Spectrum Disorder program. After the parent intervention, a total of 11758 turns of talk/ behaviour was measured in the sample size of 21 pairs of parents-child. The following occurred more often than before: parent positive touch (+13%), child positive touch (+11%), parent laughter (+15%), child laughter (+24%), parent play (+6%), and child play, (+3%). Also, after the

Parent-Child Interaction Intervention for Autism Spectrum Disorder, the following occurred less often than before: child failure to respond (-6%), child negative behaviours (-7%), and child negative talk (-40%). After a child issued a demand or a question, the parent was more likely to agree (respectively, +31% or +13%). After a parent asked a question, the child was less likely to agree (-14%). Parents asked more questions (15%) than children did (4%). Furthermore, parents' stress fell from the pre-test to the post-test (-14%).

The Parent-Child Interaction Intervention for Autism Spectrum Disorder program for parents improved these parents' and their children's positive behaviors and interactions (for example, laughter, play, positive touch) while reducing their negative behaviors (fail to respond, negative behaviour, negative talk), suggesting its potential effectiveness for other such parents and children. Furthermore, parents enhanced their interactions with their children via: (i) rhetorical questions, (ii) talking to themselves when the child does not respond, (iii) follow up questions and (iv) repeating their children’s words. These results suggest that these strategies might be effective for other parents and other intervention programs.

Keywords: Autism Spectrum Disorder, Parent-Child Interaction, Parent Intervention, Statistical Interpretive Discourse Analysis

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List of Abbreviations

AAC	Augmentative and Alternative Communication
ABA	Applied Behaviour Analysis
APA	American Psychiatric Association
ASD	Autism Spectrum Disorder
CCTV	Closed-circuit television
CCPT	Child-Centered Play Therapy
CDC	Center for Diseases Control and Prevention
CLP	Child-Led Play
CSENIE	Centre for Special Educational Needs and Inclusive Education
CU	Clean-up
DPICS-III	Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition)
DSM-5	Diagnostic and Statistical Manual of Mental Disorders (Fifth edition)
EdUHK	The Education University of Hong Kong
EIBI	Early Intensive Behavioural Intervention
HMTW	Hanen MORE THAN WORDS
HPP	Happy Parenting Program
IDA	Interpretive Discourse Analysis
IYPT	The Incredible Years Parenting
NGOs	Non-governmental organizations
PCII-A	Parent-Child Interaction Intervention for Autism Spectrum Disorder
PCIT	Parent-Child Interaction Therapy
PECS	Picture Exchange Communication System

PLP	Parent-Led Play
PD	Positive Discipline
SDA	Statistical Discourse Analysis
SIDA	Statistical Interpretive Discourse Analysis
SEN	Special Educational Needs
SuSEN	Supporting Unit for Special Educational Needs
Triple P	The Stepping Stones Triple P
TEACCH	Treatment and Education of Autistic and related Communications Handicapped Children

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Chapter 1: Introduction

Characteristics of Autism Spectrum Disorder

The term "autism" is from the Greek word 'autos'; it refers to "self, same, spontaneous; directed from within" (Kanner, 1943) and the term "spectrum" refers to the broad range of symptoms, skills, and different levels of severity in functioning that appear in individuals with Autism Spectrum Disorder (ASD). Children with Autism Spectrum Disorder experience a lifelong neuro-developmental disorder characterized by a wide range of symptoms such as (i) persistent deficits in social communication, (ii) poor social interaction, and (iii) restricted, repetitive patterns of inappropriate behaviour, interests, or activities (American Psychiatric Association [APA], 2013; Attwood, 2006; Zager et al., 2004).

Social communication

Social communication is defined as "the process by which an individual (the communicator) transmits stimuli (usually verbal symbols) to modify the behaviour of other individual's (communicatees)." This concept is based on 4 factors, "(1) the communicator who transmits the communication; (2) the stimuli transmitted by the communicator; (3) the individuals who respond to the communication; and (4) the responses made to the communication by the communicatee" (Hovland, 1948). Yet, children with Autism Spectrum Disorder have difficulties interpreting both verbal and non-verbal language, and they have trouble expressing or understanding other perspectives, social cues, facial expressions, such as gestures or tone of voice (American Psychiatric Association, 2013). For example, children with Autism Spectrum Disorder may keep introducing themselves by saying, "My name is Sally" when talking with family and friends. They may say, "The weather is nice" in a funeral when everyone looks sad. Previous studies demonstrated that children with Autism Spectrum

Disorder showed abnormalities in the use of non-verbal expressive and receptive communication compared to children with typical development. For example, they used fewer gestures and showed poor joint attention (such as, pointing or reaching for objects) (Guthrie et al., 2013; Richler et al., 2006; Sacrey et al., 2015). Moreover, as children with Autism Spectrum Disorder have difficulties interpreting information, they may take things literally, not understand abstract concepts and show weaker conceptual reasoning (Williams et al., 2014). They also tend to repeat what others say to them. For example, they repeat words, phrases, or intonation; this is called *echolalia* (Ellawadia et al., 2015; Ellis Weismer et al., 2010; Kim et al., 2014).

Social interaction

Social interaction is "a dynamic, changing sequence of social actions between individuals (or groups) who modify their actions and reactions due to the actions by their interaction partner(s)" (Heatherton & Walcott, 2009). Children with Autism Spectrum Disorder have problems recognizing, understanding or exchanging ideas with others in different contexts (American Psychiatric Association, 2013). For example, they may keep counting 1 to 10 or singing the same song when the social context is not related to numbers or music. Previous studies suggested that children with Autism Spectrum Disorder struggled in initiating and responding to peers and adults in social interactions (for example, sharing objects or activities) and with regard to other's feelings (Boyd et al., 2008; Hart & Whalon, 2008; Klin et al., 2007). Also, it takes a longer time for children with Autism Spectrum Disorder to process information from another person or to answer a question (Minshew et al., 1997; Minshew & Goldstein, 2001; Williams et al., 2005).

Restricted, repetitive patterns of inappropriate behaviour, interests, or activities

Children with Autism Spectrum Disorder have less flexibility in changing activities of their daily routine (Attwood, 2006); for example, when they cannot walk on the same street

to school, they may throw a tantrum. They may also engage in self-stimulation behaviour or aggressive behaviour (Zager et al., 2004). For example, they may be interested in a specific YouTube video, so they may keep watching it repeatedly. Some of them engage in head-banging. Previous studies also suggested that children with Autism Spectrum Disorder are 3 times more likely than typical children to experience behavioural problems (Mazurek et al., 2013; Shawler & Sullivan, 2017)

Challenge of Autism Spectrum Disorder

Approximately 65-75% of children with Autism Spectrum Disorder show moderate to severe language development delay (in both verbal and non-verbal social communication and social interaction) (Anderson et al., 2007; Tager-Flusberg & Coronna, 2007). They also have difficulties initiating joint attention with others using both gestures and eye gaze. Previous studies demonstrated that children with Autism Spectrum Disorder produced significantly fewer deictic gestures both when making comments and when making requests, compared to children with typical development (Paparella et al., 2011; Shillingsburg & Juban, 2018). Also, the core features of Autism Spectrum Disorder, such as repetition of activity or speaking in the same topic without any purpose (stereotypy) can drive disruptive behaviours, noncompliance, oppositional behaviour, or aggression (Baker & Feinfield, 2003; McTiernan et al., 2011).

All these deficits impede the establishment of good relationships with others and lead to other negative outcomes (for example, poor academic results, social isolation, peer rejection) (Bellini, 2006; Bellini et al., 2007; Tantam, 2000). Moreover, Autism Spectrum Disorder's prevalence rate has significantly increased from 1.1% in 2008 to 1.9% in 2016. In particular, boys are at greater risk compared to girls (4 times more common among boys than girls, Center for Diseases Control and Prevention [CDC], 2020, September 25; Maenner et al., 2020), thus, it is important to find ways to support children with Autism Spectrum Disorder.

Challenge of Parents with Autism Spectrum Disorder

Parents of children with Autism Spectrum Disorder face several areas of frustration. They are frustrated to find out that their children differed from children with typical development. For example, early signs of Autism Spectrum Disorder deficits include failure to respond to their name (Nadig et al., 2007), delay in the first-word production (Howlin, 2003), weak joint attention (Guthrie et al., 2013), repetitive and restrictive behaviour signs at around the age of 2 (such as line up cars or other toys or arranging them in a particular pattern) (Watt et al., 2008 & Wetherby et al., 2004). With all these challenges, their parents find it hard to interact with and care for children with Autism Spectrum Disorder, compared to caring for children with typical development (Altiere & Von Kluge, 2009; Ludlow et al., 2012).

Parents of children with Autism Spectrum Disorder often report high levels of parenting stress as they have more communication, understanding and interpretation problems than other parents have with their children with typical development (Johnston et al. 2003; Whittingham et al., 2009). Past literature indicated that parents felt especially helplessness as about the greater cost and demands of caring duties (Mitchell & Sloper, 2002), lack of social support to communicate with their child (Goin-Kochel & Myers, 2005), difficulties in handling their child's behaviour (Bishop et al., 2007; Herring et al., 2006; Tomanik et al., 2004). All these negative factors can affect the interactions between parent and child (Aldred et al., 2004) and the child's development (Kasari et al., 2000), while causing greater stress for parents (Whittingham et al., 2009). Thus, this study tested whether the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program was effective by using *Statistical Interpretive Discourse Analysis* (SIDA) (Chiu et al., 2020).

Aim of the study

After identifying the challenge of Autism Spectrum Disorder and the challenge of Parents with Autism Spectrum Disorder, it would be essential to identify ways to support both parents and their children. The coming paragraph is going to discuss the aim of the study and how it differs from previous studies.

Hence, improving parent-child interactions might reduce these problems. This study aimed to investigate the effectiveness of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) on dyad interactions between a child with Autism Spectrum Disorder and his or her parent via *content analysis* (Krippendorff, 2012) and *Statistical Interpretive Discourse Analysis* (Chiu et al., 2020) of their videos. Specific, this study examined (a) how preceding actions by the parent or child affected the likelihood of the next action by the parent or child, and (b) how these likelihoods changed after the intervention. More details will be discussed in Chapter 4, Research Design and Methodology.

To address the needs of both the children with Autism Spectrum Disorder and their parents, this study tests the effectiveness of the PCII-A program at improving interactions within 21 dyads. The PCII-A program aimed to (i) improve parent-child interaction by training parents to build up their relationships with their child during playtime by using child-centered therapy techniques; (ii) improve child's social and communication skills by training parents to use appropriate prompts and questioning skills; (iii) manage child behaviours by training parents to handle inappropriate behaviours and promote positive behaviours via praise and appropriate reinforcement; (iv) reduce the stress of parents by training (i), (ii) and (iii) and the use of relaxation techniques (for example, breathing).

Chapter 2: Literature Review

Bronfenbrenner's Ecological Systems Theory (1979)

According to Bronfenbrenner's Ecological Systems theory (1979), individuals function within an environment. They are constantly influenced by the surrounding stimuli within the system, which can be classified according to their influence on the individual in different spheres. The microsystem is the closest layer to the individual and consists mainly of influences within the family system. Moving outward, there is also the school system (microsystem) and the community system (mesosystem). Compared to teachers or therapists in the school or community systems, parents in the family system interact closely with their child at home every day, and hence have much more impact on their child's development (see Figure 1).

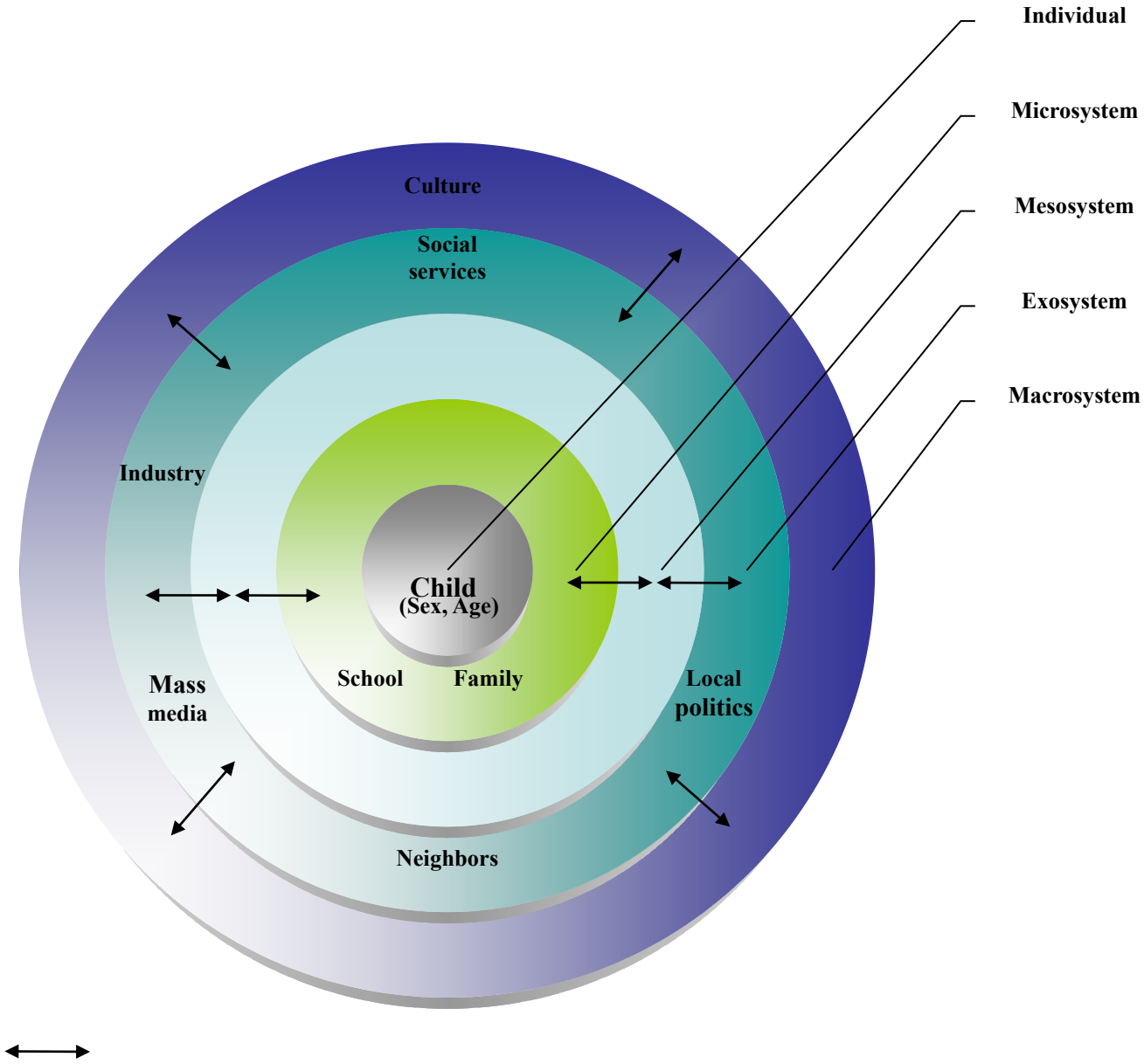


Figure 1. Bronfenbrenner's Ecological Systems.

Definition of Parent-Child Interaction

Parent-child interaction is the main social learning context since infancy, with diverse social-cognitive and socio-emotional processes (for example, "emotion regulation and recognition, referencing, gaze following, gesturing, and communication"; Larocci & Gardiner, 2015). Parent-child interactions influence a child's personality, academic achievements, behaviour and empathy later in life (Schuhmann et al., 1998). However, many children with Autism Spectrum Disorder show limited communication and interaction with others (American Psychiatric Association, 2013; Attwood, 2006; Zager et al., 2004). Physically, they show lower oxytocin production (a type of peptide hormone related to role-playing in social bonding) than children with typical development (Feldman et al., 2014). This may imply that children with Autism Spectrum Disorder are innately fragile in this area, which could delay many aspects of early development (Quirmbach et al., 2008). Hence, parents of children with Autism Spectrum Disorder often have difficulty communicating and interacting with their children (Altiere & Von Kluge, 2009; Ludlow et al., 2012). As a result, there is a need to identify ways to reduce these problems and improve parent-child interactions.

Transactional model: Child and parent behaviours

In a transactional model (see Figure 2; Sameroff, 1975; Sameroff & Chandler, 1975), parent behaviour (such as the level of parental warmth, parental control) greatly influence child behaviour (such as child temperament) and vice versa. Both parent behaviour and child behaviour largely determine the nature of the parent-child interaction relationship. Positive parent-child interactions have affectionate, helpful, or compliant behaviours, whereas negative parent-child interactions have hostile, demanding, or aggressive behaviours (Weis & Lovejoy, 2002).

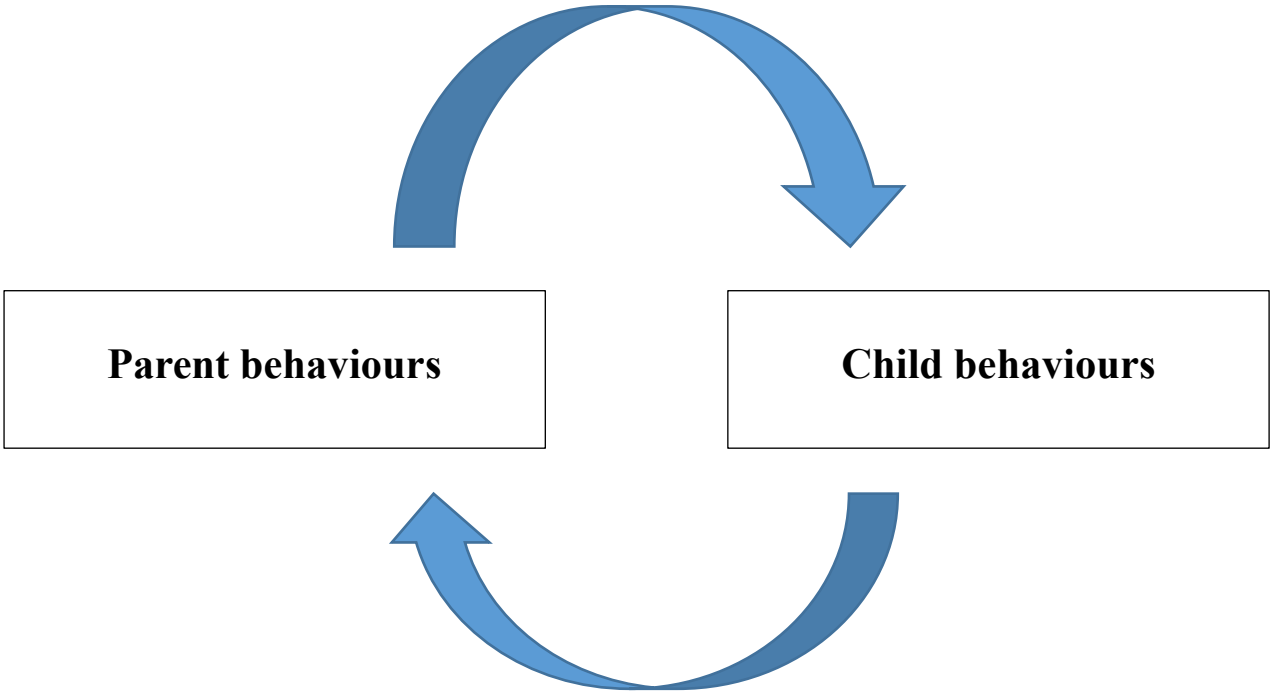


Figure 2. Transactional model: Child and parent behaviours

When a parent was more responsive and sensitive to communicative initiation by a child with Autism Spectrum Disorder, the child initiated more frequent and improved language use and showed less severity in emotional and behavioural symptoms (Aldred et al., 2004; Conti-Ramsden, 1990; Green et al., 2000; Howlin, 1997; Nassan El-Ghoroury & Romanczyk, 1999). As these children had better social communication and social interaction with their parents, they had less incentive to attract attention via misbehaviour and showed fewer behaviour symptoms (Aldred et al., 2004). Thus, the interaction between caregivers and their children play an important role in the development of social communication, emotions, and behaviours. To enhance the interaction between parent and child, one single method may not be adequate to address all the challenges (Schuhmann et al., 1998; Nelsen, 2006; McIntyre, 2008; Whittingham et al., 2009). Hence, the present Parent-Child Interaction Intervention for Autism Spectrum Disorder supports parents by using multiple methods: i) Child-Centered Play Therapy (CCPT) techniques, ii) social-communication and language techniques and iii) behaviour management techniques to manage their children with Autism Spectrum Disorder.

Foster positive parent-child interaction

To address the challenges of Autism Spectrum Disorder for parents and children discussed in Chapter 1, it is important to identify ways to promote positive parent-child interaction. In the coming paragraphs, I am going to discuss i) Child-Centered Play Therapy, ii) Social communication and language technique, and iii) Behaviour management.

Child-Centered Play Therapy. To improve parent-child interaction and eliminate children's inappropriate behaviours, the use of Child-Centered Play Therapy (CCPT) can help children with Autism Spectrum Disorder to improve their social communication, manage their emotions, and control their behaviours (Balch & Ray, 2015; Salter et al., 2016). Child-Centered Play Therapy is a comprehensive and relational counseling approach, developed based on the developmental construction of person-centered therapy by Axline (1947).

Landreth (2002) suggested that play is every child's natural medium of communication. Then, play therapy is the bonding between a child and a therapist who offers selected play materials and facilitates the development of a safe relationship for the child to fully express and explore self (such as feelings, thoughts, experiences, and behaviours) and thereby facilitate optimal growth and development. In Child-Centered Play Therapy, children are given the opportunity to engage in self-directed play, they are given control to make choices of what kind of toys they wish to pick, and the therapist respects their choices and follows (Ray, 2011). This allows children to gain control over their world through play, eventually improve their self-regulatory skills, and form secure attachments (*neuroception of safety*) with others (Landreth, 2012; Porges, 2011; Ray, 2011).

Child-Centered Play Therapy focuses on four domains, i) structuring, ii) empathic listening, iii) imaginary play and iv) limit setting (c). Child-Centered Play Therapy structures the environment in a play therapy room with different kind of play materials (for example, dollhouse, kitchen set, zoo animals, transportation toys, block and building materials etc.). Child-Centered Play Therapy also structures the time for children, so that they understand that they are free to select any play materials within each period.

For empathic listening, a therapist uses *tracking, restating content, reflecting feeling* to describe children's behaviour and become aware of their emotions. As a child learns that the therapist understands and accepts him/her, they can form a positive relationship. *Facilitating decision making* and *returning responsibility* can help children experience a sense of control and take responsibility during Child-Centered Play Therapy. For example, a child may ask, "What can I do in here?" A common response is to reply to the child with a concrete answer such as "You can play the animal toys or car toys, which reinforces the initiation and control of the therapist. Instead, a therapist may say, "In here, it's up to you." This response would allow children to increase their control and learn to take responsibility from the decision that

they make, which in turn facilitates their subsequent decision making (Landreth, 2002; Ray, 2011).

For imaginary play, a child may invite the therapist to play in a scenario that is set by the child. For example, a child is consistently acting out a scenario of a pregnancy woman going into an ambulance that goes to the hospital. In response, a therapist may try to address this scenario by *tracking* the child's behaviour, for example, when the child picks up the ambulance, the therapist may say, "You are picking that up". The therapist may also *restate content*, for example, the child puts a woman figure into the ambulance and says in a hurried voice "she is going to the hospital." In response, the therapist can say, "she is going to the hospital, and she is in a hurry". Also, the therapist may use *reflect feeling* by asking the child "how do you feel?". This scenario may be based on the child's experience with a pregnancy woman. By having a child engage in imaginary play, the therapist can use different techniques (such as *tracking, restating content, reflecting feeling*) to understand the child's feelings and experiences. Having the child initiate a scenario, tell it and elaborate it can also enhance the child's self-awareness and self-concept (Ray, 2004).

By creating and reinforcing limits in a setting (a *limited setting*), the therapist prevents the child from performing inappropriate or harmful behaviour (for example, hitting the therapist). Yet, children are still given a choice of tools (for example, choosing a sword or a hammer) and a choice in expressing the way they want to play (for example, using the sword or hammer to stab at a cushion instead of the therapist) in Child-Centered Play Therapy. This limited setting allows children to gain a sense of control, to take responsibility, and to learn to develop appropriate behaviours (Ginott, 1965).

Child-Centered Play Therapy has been successfully used for diagnoses (Jensen et al., 2017; Pester et al., 2019), treating internalizing problem (for example, reduce anxiety) (Gholamalizadeh et al.,2018) and externalizing problem (for example, reduce aggression)

(Swan & Ray, 2014; Wilson & Ray, 2018). However, few studies examine the use of Child-Centered Play Therapy for children with Autism Spectrum Disorder (Balch & Ray, 2015; Salter et al., 2016). Parents of children with Autism Spectrum Disorder demonstrated difficulty in communicating and interacting with their children (Altiere & Von Kluge, 2009; Ludlow et al., 2012), so parents need to understand their children and need to build a positive relationship with them. Thus, the present Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to foster positive parent-child interaction through teaching parents to apply the Child-Centered Play Therapy technique on their children with Autism Spectrum Disorder.

Social communication and language technique. Children with Autism Spectrum Disorder struggle with social communication and social interaction, which in turn affects their language development; moreover, their limited language development hinders their social communication and social interaction (Anderson et al., 2007; American Psychiatric Association, 2013; Tager-Flusberg & Coronna, 2007). The use of the parent training program, the Hanen MORE THAN WORDS (HMTW) program (Girolametto et al., 2007; McConachie et al., 2005) was found to be effective on Parents and their children with Autism Spectrum Disorder; in particular, children gained positive behaviours such as improvement in vocabulary, communication, and social skills; and parents also gained positive behaviours such as improvement in facilitative communication strategies (Carter et al., 2011; Sokmum et al., 2017). In Hanen MORE THAN WORDS program, there is a "3 A" approach, they are "Allow, Adapt and Add". The first A is for "Allow", "allowing children to take the initiative" (for example, when the child is playing, the parent can observe, wait, and listen to their child instead of guiding their child to play). The second A is for "Adapt", "adapting to spend quality time together with their children" (for example, when the child is playing, a parent can imitate the child's action, such as pushing the car or describing what the child is doing,

such as “the car is moving so fast” or “You push the car”); the third A is for “Add”, “adding words and communication elements to help the children acquire the language” (for example, when the child is playing, a parent can continue to imitate and describe what the child is doing, and also with an expansion such as adding more language opportunity in terms of labelling the object or describing the actions) (Girolametto et al., 2007; McConachie et al., 2005). Thus, together with the Child-Centered Play Therapy technique, the present Parent-Child Interaction Intervention for Autism Spectrum Disorder also adapted the Hanen MORE THAN WORDS program's “3 A” approach to improve the interaction between parents and children and to improve children’s communication and language.

Behaviour management. Apart from the need to improve the parent-child interaction relationship and children’s communication and language, the need to identifying ways to handle children with Autism Spectrum Disorder’s behaviour problems is essential, as this would also greatly affect parent-child interactions (Bishop et al., 2007; Herring et al., 2006; Tomanik et al., 2004). The present Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to support parents of children with Autism Spectrum Disorder to promote positive behaviours, prevent inappropriate behaviours, and deal with inappropriate behaviours.

Since the Early Intensive Behavioural Intervention (EIBI) by Lovass (1987), the use of Applied Behaviour Analysis (ABA) has been widely used for children with Autism Spectrum Disorder to handle their behaviour issues (Bailey & Burch, 2010; Carr et al., 2005; Sallows & Graupner, 2005; Tarbox et al., 2007). Supportive parents need to identify their children’s behavior, for example through the use of the functional behaviour assessment (for example, the use of “ABC chart”, first invented by Bijou, Peterson and Ault (1968), “A” refers to the antecedent, the action or event that causes the behaviour to happen (for example, parent says “Tidy up your toys”). “B” refers to the behaviour, the explanation of the behaviour itself,

such as what happened, what was said, for how long or how intense the behaviour is (for example, child keeps playing the toys for more than 10 minutes). “C” refers to the consequence, what happened after the behaviour (for example, child avoids tidying up and gains more time to play). By keep tracking of their children’s behaviours, parents can identify some patterns (for example, the frequency of avoiding tidying up when the child was told to tidy up by his father) and to set up rules to deal with inappropriate behaviours (for example, having tantrum to avoid tidying up) (O’Nions, et al., 2018).

In addition, the use of discrete trial training (Lovass, 1987), praise (Agazzi et al. 2013; Armstrong & Kimonis, 2013), prompting (Stahmer et al., 2003), reinforcement contingency (Walker et al., 1973), reward chart (Bagatell, 2016), social story (Gray, 1994), proactive strategies (Geiger et al., 2010; Loman & Sanford, 2014), and reactive strategies (LaVigna & Willis, 2002) were found to be helpful for dealing with inappropriate behaviours). Thus, the present Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to focus on supporting parents with the use of i) Child-Centered Play Therapy techniques, ii) social-communication and language techniques and iii) behaviour management techniques to manage their children with Autism Spectrum Disorder.

The need of Parent-Child Interaction Intervention for Autism Spectrum Disorder

With increasing awareness of the importance of parental influences in current years, interventions now include not only the traditional, trainer-directed, child-centered intervention; but also the ecological, trainer-parent, parent-child system approach to intervention (Ingersoll & Wainer, 2013; Lane et al., 2016; Meadan et al., 2016). A family-centered approach, the Triadic Service Delivery model supports both the child and the parent (Barton & Fettig, 2013; Lieberman-Betz, 2015) (see Figure 3). It is an indirect intervention model in which the trainer supports the development of the child by working primarily with a parent rather than directly with the child alone (Salisbury & Cushing, 2013). Expert advice and training can help parents and their children communicate effectively and reciprocally (Leigh, 1987).

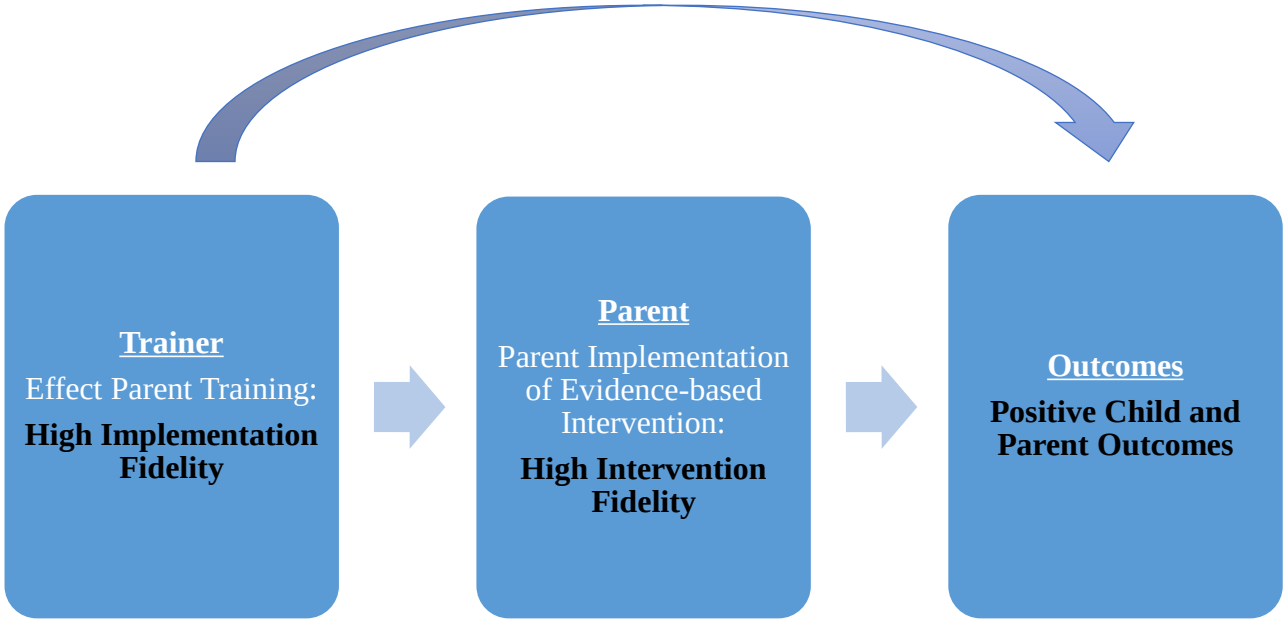


Figure 3. Triadic model of early intervention (modified from Barton & Fettig, 2013; Lieberman-Betz, 2015).

Contemporary parent intervention programs have been growing rapidly (Cardon, 2012; Jull & Mirenda, 2011; Randolph et al., 2011). When rearing a child with Autism Spectrum Disorder, parents confront daily struggles (Kogan et al., 2008; Symon, 2005; Tonge et al., 2006). Many studies claimed to be effective in improving children with Autism Spectrum Disorder, in terms of play skills, social communication skills, and language skills, while reducing their disruptive behaviours (Chaaban et al., 2009; Dunlap et al., 2006; Hester et al., 1996; Ingvarsson, 2011; McConachie & Diggle, 2007; Oosterling et al., 2010; Patterson & Mirenda, 2012). Such interventions benefit not only the children but also the parents (for example, less stress, less depression, better communication and greater understanding of Autism Spectrum Disorder; Gammon & Rose, 1991; Whittingham et al., 2009). However, many of the studies did not directly focus on measuring the actual parent-child interactions. They used parents' interviews or questionnaires at the end of the intervention to evaluate social validity (for example, child improvement, child satisfaction of the intervention experience, or parent perceptions of the utility of the intervention procedures) (Estes et al., 2014; Leung et al., 2017), instead of measuring actual parent-child interactions.

Other studies of parent-child interaction interventions focused on single case study designs, and largely measured only a child's behavior, not parent-child interaction (Vernon et al., 2012; Radley et al., 2014; Meadan et al., 2016). Furthermore, trained clinicians implemented most parent interventions in specialized centers or in schools, leaving caregivers without support at home (Lesack et al., 2014). Thus, there is a continuing need for parents as change agents in managing their own children with Autism Spectrum Disorder (Breiner & Beck, 1984; Koegel, et al., 1982; Lovaas et al., 1973).

Research Questions

Children with Autism Spectrum Disorder continue to experience a lifelong neuro-developmental disorder with persistent deficits (American Psychiatric Association, 2013; Attwood, 2006; Zager et al., 2004); this affects how their parents communicate and interact with them (Altiere & Von Kluge, 2009; Ludlow et al., 2012). It is vital to identify ways to reduce these problems and improve parent-child interactions. Compared to the previous studies (Estes et al., 2014; Gammon & Rose, 1991; Leung et al., 2017; Meadan et al., 2016; Radley et al., 2014; Vernon et al., 2012; Whittingham et al., 2009) on Parent Intervention for Autism Spectrum Disorder, this study aimed to measure actual parent-child interactions. To address this research gap, this study aimed to investigate the effectiveness of the Parent-Child Interaction Intervention for Autism Spectrum Disorder program on dyad interactions between a child with Autism Spectrum Disorder and his or her parent via both *content analyses* and *Statistical Interpretive Discourse Analysis* of their videos (Chiu et al., 2020). Specifically, this study tests whether pre-intervention interactions (with possibly more negative parent-child interactions and fewer positive parent-child interactions) differ from post-intervention interactions (with possibly more positive parent-child interactions and fewer negative parent-child interactions).

The Parent-Child Interaction Intervention for Autism Spectrum Disorder for parents of children with Autism Spectrum Disorder has three goals: (i) improve parent-child interaction by training parents to build up positive relationships with their child during playtime, (ii) manage their child's behaviour by training parents to handle inappropriate behaviour and promote positive behaviour, via praise and reinforcement, and, (iii) improve their child's social communication skills by training parents to use appropriate prompts and questioning skills. The Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to improve the parent-child interaction. More details of the intervention will be discussed in

Chapter 3, The Description of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program.

The hypotheses for this study were:

Hypothesis 1: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will show more positive behaviours (for example, *positive touch, laughter, play*).

Hypothesis 2: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children will show more positive behaviours (vs. neutral or negative behaviours) (for example, *positive touch, laughter, play*).

Hypothesis 3: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children will show fewer negative behaviours (vs. neutral or positive behaviors) (for example, *failing to respond, negative behaviours, negative talk*).

Hypothesis 4: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will report less stress.

Chapter 3: The Description of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program

The Parent-Child Interaction Intervention for Autism Spectrum Disorder

Many parent interventions were not designed for children with Autism Spectrum Disorder (for example, Parent-Child Interaction Therapy [PCIT], Schuhmann et al., 1998; Positive Discipline [PD], Nelsen, 2006; The Incredible Years Parenting [IYPT], McIntyre, 2008; The Stepping Stones Triple P, Whittingham et al., 2009; Happy Parenting Program [HPP], Leung et al., 2016). Taking references from Parent-Child Interaction Therapy, Happy Parenting Program, and Positive Discipline, the present Parent-Child Interaction Intervention for Autism Spectrum Disorder targets children with Autism Spectrum Disorder aged from 3 to 6. This is a critical period for child development: when most parents find out that their children have Autism Spectrum Disorder via a diagnosis by a paediatric doctor or clinical psychologist in Hong Kong at the Child Assessment Centre. To maximize effectiveness, the goal of the Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to match with the hypotheses. See Table 1 for the research questions and goal of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program.

Table 1

Hypotheses and Goal of the Parent-Child Interaction Intervention for Autism Spectrum Disorder

Hypotheses	**Goal of the Parent-Child Interaction Intervention for Autism Spectrum Disorder program**
Hypothesis 1: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will show more positive behaviour (for example, positive touch, laughter, play).	(i) Improve parent-child interaction by training parents to build up their relationships with their child during play time by using child-centered therapy technique
Hypothesis 2: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children will show more positive behaviours (vs. neutral or negative behaviours) (for example, positive touch, laughter, play).	(ii) Improve child's social and communication skills by training parents to use appropriate prompts and questioning skills
Hypothesis 3: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children will show fewer negative behaviours (vs. neutral or positive behaviors) (for example, failing to respond, negative behaviours, negative talk).	(iii) Manage child's behavior by training parents to handle inappropriate behavior and promote positive behaviors via praise and appropriate reinforcement
Hypothesis 4: After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will report less stress.	(iv) By improving (i), (ii) and (iii) and train parents to use relaxation techniques (for example, breathing)

The Parent-Child Interaction Intervention for Autism Spectrum Disorder Sessions

The Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program was created based on insights from Parent-Child Interaction Therapy [PCIT] (Schuhmann et al., 1998), Positive Discipline [PD] (Nelsen, 2006) and Happy Parenting Program [HPP] (with 8 sessions) (Leung et al., 2016). The PCII-A program consisted of 10 weekly sessions (i.e., 8 two-hour sessions of parent training workshop, and 2 one-hour sessions of direct training practice with their child). Unlikely previous programs, the PCII-A program's provided 2 one-hour additional sessions of direct training practice with their child allows the author to understand each of the family member's needs to cater to their individual differences. Parents were expected to practice what they have learned with their child at home and improve over time. Therefore, the actual intervention time was much longer than 18 hours. Indeed, anecdotal evidence suggests that parents spent over 36 hours practicing at home for an effective intervention time of over 50 hours.

The Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program targeted more than one area. A specific topic was targeted based on the Goals of Parent-Child Interaction Intervention for Autism Spectrum Disorder for each parenting training sessions, such as (i) improve parent-child interaction, (ii) behaviour management (i.e., applied behaviour analysis, promote positive behaviours, prevent inappropriate behaviour, and, manage inappropriate behaviour and emotions), (iii) improve social communication and language skills, and, iv) improve reading skills and handling homework problems (see Table 2). The program was decided based on Hong Kong setting (e.g., unique activities such as 7 Level of pig) and it provided additional parenting practice strategies (such as the use of prompt cards and tips, poster making).

Besides, it was important to identify the needs of the parents (e.g., the bonding between their child, the difficulties in handling their child) and of the children with Autism Spectrum

Disorder (e.g., the social and communication issue; see Table 1 research questions) to develop the present PCII-A program (see Table 2 outline of the PCII-A program). The specific order of PCII-A facilitates parents' development of a good relationship between parent and child to help prevent/reduce child's mis-behaviours. By promoting positive child behaviours, parents help child engage in them. After understanding the reasons behind of the child's behaviour, parents are more open to learning strategies to handle child's behaviours. To be more specific, a clear outline of the Parent-Child Interaction Intervention for Autism Spectrum Disorder (PCII-A) program is shown in Table 2.

Table 2

The Parent-Child Interaction Intervention for Autism Spectrum Disorder Sessions: Outline

Session(s)	Topic(s)
1	Introduction of the Parent-Child Interaction Intervention for Autism Spectrum Disorder
2	Improve parent-child interaction
3	Behaviour management (I): i) Applied behaviour analysis ii) Promote positive behaviours
4	Behaviour management (II): Prevent inappropriate behaviour
5	Direct practice with Parent-Child (I)
6	Behaviour management (III): i) Handling inappropriate behaviour and ii) Emotions
7	Improve social communication and language skills
8	Direct practice with Parent-Child (II)
9	Improve reading skills and handling homework problems
10	Evaluate and Feedback (certificate of attendance)

Description of Parent-Child Interaction Intervention for Autism Spectrum Disorder

The description of Parent-Child Interaction Intervention for Autism Spectrum Disorder is outlined in Table 3. Each session was held in one of the classrooms at the Tseung Kwan O Study Centre at The Education University of Hong Kong (Figure 4). In every session, parents were welcomed by the author, and the author helped the parents feel comfortable in the classroom setting. Parents' attendance was taken in each session to record the number of parents attending each session. After the first session, the author revisited the key points from the previous session to get parents understand the content. Every session included several different activities (see Table 4 and Table 5). In between the 8 parent training workshops, there were 2 one-hour direct training practice sessions. These 2 direct training practice sessions focused on how parents interacted with and managed their children during play by applying what they have learned in the parent training sessions. It was carried out in one of the play therapy rooms under the Supporting Unit for Special Educational Needs at the Tseung Kwan O Study Centre at The Education University of Hong Kong (Figure 5 and Figure 6). Each direct training practice session was divided into 3 parts, Child-Led Play (CLP) (15 minutes), Parent-Led Play (PLP) (15 minutes) and Clean-up (CU) (5 minutes), followed by a debriefing session (10 minutes) based on The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (Eyberg et al., 2004) with each individual parent (all mothers) and her child.

Figure 4. Tseung Kwan O Study Centre at The Education University of Hong Kong: Classroom

Figure 5. Tseung Kwan O Study Centre at The Education University of Hong Kong: Play therapy room, Part 1

Figure 6. Tseung Kwan O Study Centre at The Education University of Hong Kong: Play therapy room, Part 2

Similar to Positive Discipline [PD] (Nelsen, 2006) and Happy Parenting Program [HPP] (with 8 sessions) (Leung et al., 2016) as they both also involved some Child-Centered Play Therapy technique or counselling elements, the Parent-Child Interaction Intervention for Autism Spectrum Disorder program did not need to have basic play therapy skills or counselling skills.

The Parent-Child Interaction Intervention for Autism Spectrum Disorder program was not purely focused on using i) child-centered therapy technique to improve parent-child interaction, it also aimed to ii) improve child's social and communication skills by training parents such as based on "3 A" (Allow, Adapt and Add) approach from the Hanen MORE THAN WORDS program as it was found to be useful for parents and their children with Autism Spectrum Disorder (Girolametto et al., 2007; McConachie et al., 2005), in particular, children gained positive behaviours in improving vocabulary, communication, and social skills; and parents also gained positive behaviours in improving facilitative communication strategies (Carter et al., 2011; Sokmum et al., 2017). The Parent-Child Interaction Intervention for Autism Spectrum Disorder program also aimed to iii) manage child's behavior by training parents to handle inappropriate behavior and promote positive behaviors via praise and appropriate reinforcement (see Table 1 and Table 2).

First session of PCII-program. In the first session, "Introduction of the Parent-Child Interaction Intervention for Autism Spectrum Disorder" (see Table 3 and Table 4), parents were welcomed by the author once they arrived the classroom. After all the parents settled down, the author introduced herself and the flow of the first session. First, at the beginning of each session, author introduced the concept of relaxation techniques (for example, breathing) and played relaxation music to promote anti-stress as most of the parents were coming in a rush. Then, she reminded them to practice at home with their child.

Next, all the parents were invited to join an ice-breaking game, "I am my child"

[Positive Discipline] (Nelsen, 2006) to build up the relationships among parents. In this game, parents were told to become their child and speak out, such as “my name is …”, “I am a boy/ girl”, “I am … years old”, “I like … and I fear …” This activity helped parents appreciate how much they understand their children and serves as a warmup activity for the parents to get to know one another’s children. Then, the author used a PowerPoint to introduce the class rules (for example, being on-time, staying positive, appreciate, encourage, respect, support each other and without judgement). The author also identified the objective of PCII-program, i) early intervention and ii) early diagnosis.

In the second activity, parents were asked to write about their expectations of the course such as what to achieve and what to learn from the course (for example, a ball would be passed around while the music is on and when the music stops, that parent has to share what is his/her expectation about the course and what he/she is hoping to change).

Then, all the parents took a short break (around 10 to 15 minutes) in every session. This break serves as a good opportunity for the parents to mingle around, get to know each other informally and form a support group among themselves. During this break, the author answered the parents' questions. After the break, parents were asked to share their child’s strengths, skills and challenges. Then, the author started to use the PowerPoint to introduce the concept of Autism Spectrum Disorder (for example, the cause of Autism Spectrum Disorder, Diagnostic and Statistical Manual of Mental Disorders (Fifth edition) (DSM-5) of Autism Spectrum Disorder) (American Psychiatric Association, 2013) and the topic of “How does my child learn?” (For example, visual learner, auditory learner or kinesthetic learner), focusing on how parents support their children with Autism Spectrum Disorder.

The author focused on how children with Autism Spectrum Disorder were often labeled as visual learners than an auditory learner. Children with Autism Spectrum Disorder tended to perform better on tasks requiring visual processing (for example, matching, puzzle assembly)

than tasks requiring language skills (Quill, 1997). Also, picture-based communication systems such as picture-based Augmentative and Alternative Communication (AAC) systems or Picture Exchange Communication System (PECS) are effective and recognizable communication modes to support the learning by children with Autism Spectrum Disorder (Rao & Gagie, 2006; Stahmer et al., 2005; Trembath et al., 2015), besides, the author also suggested an example on how to structure the environment, such as the use of Treatment and Education of Autistic and related Communications Handicapped Children (TEACCH) (Mesibov, 1994; Mesibov & Sear, 1998; Mesibov et al., 2006) to support children with Autism Spectrum Disorder to visualize and understand their situation (more details will be discussed in session 6). Parents were asked to discuss among themselves which types of learners they were when they were young and which types of learners their children are. The author also emphasized the uniqueness of Autism Spectrum Disorder; some children with Autism Spectrum Disorder may rely on more visual support than others (Trembath et al., 2015), and it is necessary to identify which type of learner they are in order to find the most appropriate strategies for their own children.

Lastly, the author also discussed the resource support allocation in Hong Kong for parents to get a whole picture on how to support their children with Autism Spectrum Disorder. At the end of each session, there was a question-and-answer session, at which the author provided some tips and some prompt cards (see Table 6) for parents to take home as a friendly reminder. Parents were also welcomed to stay behind to discuss their specific concerns about their own child.

Second session of PCII-program. In the second session, "Improve parent-child interaction" (see Table 3 and Table 5), parents were welcomed by the author for their return to the second session. After they took the attendance and settled down, the author started to revisit the use of the relaxation technique by playing relaxation music and to aid parents'

regular breathing. This activity reminds the parents to find comfortable positions for sitting.

Then, author revisited the topic from the last session. Afterwards, parents were invited to join in an ice-breaking game, “Rock, Paper, Scissor, Shoot”, parents were told to play this game among themselves, and they have to find out who is the winner. By playing this game, parents learned to identify ways to communicate between their peers (for example, set out rules in order to identify who is the winner, involving negotiation and eye contact), some of the parents were in pairs and some were in groups of 4. This common game would help parents to build relationships with one another and highlights the importance of parent-child interaction through play without toys.

Then, the author used a PowerPoint to introduce the concepts of parent-child relationship and parent-child interaction and their importance (Larocci & Gardiner, 2015; Schuhmann et al., 1998). The author empathized that the parent-child interaction is the main social learning context since infancy, with diverse social-cognitive and socio-emotional processes (for example, “emotion regulation and recognition, referencing, gaze following, gesturing, and communication”; Larocci & Gardiner, 2015). Also, parent-child interactions influence a child’s personality, academic achievements, behaviours and empathy later in life (Schuhmann et al., 1998). Yet, children with Autism Spectrum Disorder show limited communication and interaction with others (American Psychiatric Association, 2013; Attwood, 2006; Zager et al., 2004). The author also pointed out that the parent behaviours (for example, the level of parental warmth, parental control) greatly influence child behaviours (for example, child temperament) and vice versa (Baumrind, 1991; Sanson & Rothbart, 1995), thus, both parent behaviour and child behaviour largely determine the nature of the parent-child interaction relationship. For example, positive parent-child interactions have affectionate, helpful, or compliant behaviours, whereas negative parent-child interactions have hostile, demanding, or aggressive behaviours (Weis & Lovejoy, 2002).

Next, the author discussed how to improve parent-child interactions and eliminate the inappropriate behaviours of children with Autism Spectrum Disorder, the use of child-centered play therapy can help children with Autism Spectrum Disorder to improve their social communication, manage their emotions, and control their behaviours (Balch & Ray, 2015; Salter et al., 2016). Next, the author introduced the four domains of Child-Centered Play Therapy for the parents to learn (Ray, 2011): i) *structuring*, ii) *empathic listening*, iii) *imaginary play* and iv) *limit setting*.

First, the author introduced the use of *structuring*, for example, Child-Centered Play Therapy structures the environment in a play therapy room with different kinds of play materials (such as the dollhouse, kitchen set, zoo animals, transportation toys, block and building materials etc.). The author suggested that parents can set up a play corner at home. Besides, Child-Centered Play Therapy also structures the time for children, so that they understand that they are free to select any play materials within each time period. The author reminded the parents to set up a timer (or any kind of tool that could address the time such as a funnel or a visual timer from the Ipad app) for their children to understand how long their children can play in that play corner.

Second, the author introduced the use of *empathic listening*; parents learned to use *tracking, restating content, reflecting feeling* to describe children's behaviours, and become aware of their emotions. When a child learns that his/ her parent understands and accepts him/her, the parent can form a positive relationship and facilitate decision making to help children experience a sense of control and take responsibility during Child-Centered Play Therapy. For example, a child may ask, "What can I do in here?" Instead of replying to the child with a concrete answer such as "You can play the animal toys or car toys", which can reinforce the lead and control by the parent, parents could learn to say, "In here, it's up to you" to facilitate decision making. This would allow children to gain control and learn to take

responsibility from the decision that they make (Landreth, 2002; Ray, 2011).

Third, the author introduced the use of *imaginary play*, parents learned to join with their child to play or get invited by their child. The author introduced an example of a child constantly acting a scenario of going to a wedding. Parent may try to address this scenario by *tracking* the child's behaviour, for example, when the child gets the toy figure of bride and groom, parents may say, "You are picking that up". Parents may also use *restating content*, for example, when the child moves the bride and groom next to the cake and says in an excited voice "they are cutting the wedding cake", parents may say, "they are cutting the wedding cake, and they are getting married". Parents may also use *reflecting feeling* by asking the child "how do you feel?". In this case, the child may imagine the experience of a wedding situation such as imagining his uncle is getting married. Thus, by having imaginary play, it allows parents to use different techniques (for example, *tracking, restating content, reflecting feeling*) to understand the child's feelings and experiences. This can enhance the child's self-concept and self-awareness (Ray, 2004) as well as the parent-child interactions.

Fourth, the author introduced the use of *limit setting,* parents learned that their child is limited from performing inappropriate or harmful behaviour (for example, hitting himself/ herself or the parent). Yet, children are still given a choice by either setting a limit in the choice of tools (for example, knife or brick) or expressing the way they want to play (for example, throwing the brick at the floor rather than throwing it at the parent) in Child-Centered Play Therapy. This would allow children to gain a sense of control, to take responsibility, and to learn to develop appropriate behaviours (Ginott, 1965).

Afterward, author introduced different emotion pictures and words for parents to increase their competence in emotional language (for example, happy, excited, peace, sad, angry, nervous, worries). This activity can support parents to *reflect the feeling* of their child during Child-Centered Play Therapy. Besides, many of the parents may not understand the

developmental stage of play, and their children may have developmental delay; both of these can affect how they interact with their children interact. Thus, the author introduced different types of interactions (for example, *unoccupied play, solitary play, spectator behaviour, parallel play, associate play, cooperative play*) (Parten, 1932) for parents to have a clear picture of their children's developmental stage of play.

Stages of Play Development. According to Parten (1932), *unoccupied play* happens from birth to 3 months. A newborn at this stage mainly makes a lot of body movements (for example, their hands, legs, feet) and discovers how parts of their body move.

Solitary play happens from birth to 2 years old. A baby at this stage tends to play alone, such babies do not show any interest in playing with others. For example, a baby may push a car or ball alone.

Spectator behavior starts at around 2 years old. Toddlers at this stage begin to observe other children playing, however, they do not show any signs of wanting to play with them. For example, toddlers may watch other kids building blocks without joining to play.

Parallel play also starts at around 2 years old onward. Toddlers at this stage play alongside or close to others, however, they do not interact with each other. For example, two of the toddlers were both playing with toy cars in the same area but they did not talk with each other.

Associate play happens from 3 to 4 years old. Young children start to interact with others during play, but still in a limited way. For example, children might be playing on the same piece of train track game, but some may be focused on building the track or some may be focused on the train. Such children have no specific goals or rules during play.

Cooperative play happens from 4 years old onward. Such children play together with increasing interaction and show interest in both the activity and one other. For example, children might be assigned different roles by a leader to achieve a goal such as building four

platforms for the trains or with rules such as all the passengers have to line up at the platforms before getting on the train.

By discussing all the stages of play development, parents could have a better understanding of the stages through which their children have been through or the stage at which their children are. The author also reminded the parents that children with Autism Spectrum Disorder may show a delay of play development, and thus the actual age of their children and the age range of play development could be different (such as the child's play development lags behind the child's actual age).

The author also discussed different types of play (for example, *functional play, constructive play, symbolic play,* and *games with rules*) (Piaget, 1962; Smilansky, 1968) for parents to understand more of their children's play development and how play affect their child's social and communication development (Bjorklund & Green, 1992; Frost et al., 2005). According to Piaget (1962) and Smilansky (1968), *functional play/ practice play* is related to the exploration of materials or toys. For example, it could be a plastic bottle or a teddy bear, it includes simple or repetitive movements such as shaking a bottle with water in it or pressing a button on a cause-and-effect toy which makes a sound.

By contrast, *constructive play* is about children manipulating objects in order to create something. For example, children can use blocks to build a tower. *Symbolic play* is about children do an action or use an object to represent something. For example, a child can use a banana to pretend that she is holding a phone and starts making a phone call.

Games with rules are similar to *cooperative play*, as Parten (1932) noted. A game requires rules and is more structured play. For example, children can use playing cards to play rummy, which has specific rules that they must follow.

After introducing the stages of play development and different types of play, parents were asked a few questions by the author to think. For example, the author asked about the parents' children's stages of play development; how do your children play? What are they interested in playing (as this could be a way to identify the stage of play development) and how would you as a parent support your child in play. This activity could provide an opportunity for parents to understand their children's needs, to consider their children's stages of play development and to improve their children's play skills.

Then, a short break was given to the parents. After the break, group practice activities were introduced. Parents were invited to practice in pairs, to practice i) how they improve the interaction with their child via chatting and ii) how they improve the interaction with their child via playing. To practice chatting, a piece of paper and a pen would be given to each parent. Within each parent pair, one of the parents would be taking a role as a child and start to draw something on the paper (for example, drawing a house), and the other parent would be taking a role as a parent to practice describing (for example, "you are drawing a house"). After five minutes, parents switched roles. Then the author asked the parents, how many parents started to give instructions (for example, "Draw a child next to the house"), or commenting (for example, "you should not draw a lot of windows"). The author asked these questions because many of the parents would be easily fall back into their habit of giving too

many instructions and commenting, instead of trying to build up a positive interaction.

To practice playing, parents were asked to bring their child's favourite toys from home in the previous session, or they could borrow some toys from the Supporting Unit for Special Educational Needs. Parents were to continue to work in pairs. One of the parents pretended to play (like their child) and the other parent were told to practice describing what the parent was playing. In this case, the author reminded parents to focus on describing (for example, "you are cutting a carrot"), recognizing emotions (for example, "you look so excited to play with the cooking toys), praising (for example, "I like the way you push the car nicely"), following (for example, parents could imitate the same action of pushing the car), listening (for example, parent could listen to what the child is saying instead of giving instructions or judging) and parents could repeat what the child just said to show active participation or agreeing the child. After five minutes, parents switched roles.

At the end of the activities, parents were asked to share how they felt about being the parent or the child. This activity helps parents think about how to improve their relationships with their children and consider a plan for doing so. It is important for parents to understand the practices of both chatting and playing to develop more positive interaction.

At the end of the session, there was a question-and-answer session. Then, the author provided some tips and some prompt cards (see Table 6) for parents to take home and practice with their children. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Third session of PCII-program. The third session was "Behaviour management (I): i) Applied behaviour analysis and ii) Promote positive behaviours" (see Table 3). Again, parents were welcomed by the author, settled in the class, revisited the use of the relaxation technique and revisited the topic from last session. Then, the author used a PowerPoint to introduce the concept of Applied Behaviour Analysis, since the Early Intensive Behavioural

Intervention (Lovass, 1987), the use of Applied Behaviour Analysis has been widely used for children with Autism Spectrum Disorder to handle their behaviour issues (Bailey & Burch, 2010; Carr et al., 2005; Sallows & Graupner, 2005; Tarbox et al., 2007). The author introduced the use of functional behaviour assessment, the "ABC chart" (Bijou et al., 1968), "A" refers to the antecedent, the action or event that causes the behaviour to happen (for example, a parent says "Tidy up your toys"). "B" refers to the behaviour, the explanation of the behaviour itself, such as what happened, what was said, for how long or how intense the behaviour is (for example, a child keeps playing the toys for more than 10 minutes). "C" refers to the consequence, what happened after the behaviour (for example, a child avoids tidying up and gains more time to play). By keep tracking of their children's behaviours, parents can identify some patterns (for example, the frequency of avoiding tidying up when the child was told to tidy up by his father) and to set up rules to deal with inappropriate behaviours (for example, having a tantrum to avoid tidying up) (O'Nions, et al., 2018). Then, parents were given different scenarios (for example, a child is unable to say 'Good morning' to neighbor, or a child is unable to respond to her father's or her mother's instructions, or a parent is unable to praise her child). By discussing these scenarios, parents were paired up to discuss the relationship between a parent and a child. Specifically, the author asked them to think of possible reasons why the parent or the child would be acting or reacting in this way, and to brainstorm and develop possible solutions to resolve or prevent these situations through the use of the ABC chart.

Afterwards, the author introduced the concept of promoting positive behaviours to avoid inappropriate behaviours by children with Autism Spectrum Disorder, in particular, the use of praising techniques to encourage children to perform positive behaviours. Praising helps children increase their confidence, strengthen their positive behaviours and reduce their inappropriate behaviours (Agazzi et al. 2013; Armstrong & Kimonis 2013). For example, a

mom is praising her child for sitting nicely (positive behaviour), instead of leaving the chair (inappropriate behaviour) during mealtime. Parents were given some praising phrases, and they have to determine which of the phrases were more effective for their child and why. Example praising phrases included (1) “May, you are doing well!”, (2) “May, you sit still and do your homework today, didn’t walk around like yesterday, you have to do the same for tomorrow”, (3) “(Smiling) May, you have been sitting nicely while doing your homework just now, well done!”, (4) “(Before bed time) May, you were sitting nicely this morning, well done!”. In this case, (1) is not specific regarding which area the child has done well, so children with Autism Spectrum Disorder may not understand the connection between what he/ she has done and the praise; (2) is too confusing for many children with Autism Spectrum Disorder to understand as it talked about events yesterday, today, and tomorrow; (3) is the most appropriate one, as it shows a clear facial expression (for example, smiling), praised directly about the situation (for example, sitting nicely while doing homework) and is focused on the present (for example, just now). This praise would allow children with Autism Spectrum Disorder to understand the connection between this appropriate behaviour and being praised, and thus such behaviour would be likely to be repeated. (4) has a delay (for example, before bed time). For children with Autism Spectrum Disorder, it would be essential for them to understand the connection between the appropriate behaviour that they have just done and being reinforced immediately in order to repeat it in the future. A visual prompt card on how to praise would be given to the parents to practice these actions at home.

A short break would be given to the parents. After the break, parents were invited to have direct practice. They were paired up and discussed how to praise their child in different situations in daily settings such as doing homework, having a meal, and so on. At the end of the activity, parents were asked to share how they felt about praising their children. This was essential to ensure the parents have a plan to promote the child’s positive behaviours at home

and re-direct their focus, instead of relying on punishment. At the end, there was a question and answer session, and the author provided some tips and some prompt cards (see Table 6) for parents to take home. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Fourth session of PCII-program. In the fourth session, "Behaviour management (II): Prevent inappropriate behaviour" (see Table 3). Again, parents were welcomed by the author, settled in the class, revisited the use of the relaxation technique, and revisited the topic from last session. Then, the author used the PowerPoint to continue with the topic of behaviour management and introduced the concept of using a proactive plan (Geiger et al., 2010; Loman & Sanford, 2014) and a reactive plan (LaVigna & Willis, 2002) to prevent inappropriate behaviour from children with Autism Spectrum Disorder. Again, the author used relevant videos and real case studies to demonstrate the use of proactive plan and reaction plan. A proactive plan is carried out before the child acts up with inappropriate behaviours. For example, a parent can plan how to promote positive behaviours to eliminate inappropriate behaviours such as using a continuous method like reward chart and positive reinforcements to promote compliance behaviour in children with Autism Spectrum Disorder (Bagatell, 2016). For example, when a child has difficulty sitting still and finishing his meal, the use of a reward chart to encourage a child to achieve this goal may be useful. In order to make it achievable, we have to identify his reinforcement, the length of his sitting time, his meal preference and the amount of food for each meal. All these details can guide parents to have a thorough understanding to plan and support their children at home.

For a reactive plan, it would be carried out by responding to the event when the child appears with inappropriate behaviour (LaVigna & Willis, 2002). When the child shows non-compliance behaviours, the positive reinforcement would not be given. For example, when the child cannot sit still and complete his meal, a token will not be put on the reward chart,

and the child's reinforcement will not be given. This process aims to help the child understand the connection between appropriate behaviour (for example, sitting well and finisihing his meal) and positive reinforcement. Parents were told by the author to think about the current system that they have been using for their children or think about what behaviours they hope their children will have. Then, a short break was given to the parents.

After the break, author introduced other techniques that could prevent inappropriate behaviour such as the use of Treatment and Education of Autistic and related Communications Handicapped Children (TEACCH) (Mesibov, 1994; Mesibov & Sear, 1998; Mesibov et al., 2006) by setting the i) *physical structure*, ii) *daily schedule*, iii) *work (activity) system* and iv) *visual structure within activities* for children with Autism Spectrum Disorder.

The author first introduced the *Physical structure.* The physical structure is the environment (such as classroom or home) arranged to make sense to the children (for example, a home is arranged into a calm down area, a working area, a playing area, a dining area, a bathing area, a sleeping area, a relaxation area, a cooking area and a parents' area, based on the children's needs. The author explained how this would allow children with Autism Spectrum Disorder to have a clear idea on what they should be doing in each area (for example, the working area is for reading books). When a child shows inappropriate behaviour (for example, yelling during dinner), she would be able to go to the calm down area or they would be guided by the caregiver to redirect them to the calm down area to manage their behaviour.

Then, the author talked about the *Daily schedule.* It is the visual timetable showing children the time and the activities that they are supposed to do. The daily schedule allows children with Autism Spectrum Disorder to have a better understanding on what is happening on a daily basis. Then, the *work (activity) system* is the set of tools to show children what they

need to do, for how long and what comes next. For example, three boxes are being set for the child to complete and each box has color coded. The layout of different boxes would allow children with Autism Spectrum Disorder to have a clear idea on what they have to do. Lastly, the author introduced the *visual structure within activities* to show children how to undertake and complete activities through the use of visual organization, visual instruction, and visual clarity.

As many of the parents find it hard to handle their children with Autism Spectrum Disorder (Altiere & Von Kluge, 2009; Ludlow et al., 2012), the author mentioned the need to give clear instructions for their children. The failure of providing clear and direct instructions for their children to follow hinders their children's ability to comply. For example, the Happy Parenting Program (Leung et al., 2016) suggested that the inconsistency of instructions provided by the mother and the father can confuse the child. Or the instructions could be far too difficult for the children to follow. Or, a parent is unable to provide sufficient positive feedback for the children to learn the connection between the instruction and the children's appropriate behaviour. The Happy Parenting Program (Leung et al., 2016) provides techniques for parents to give clear and direct instructions to their children.

The author revised these instructions based on the needs of these children with Autism Spectrum Disorder. First, when you have to give an instruction, walk closer to your child. Second, move down to your child's eye level (the author added), call the child's name and tap on the child's shoulder. Based on the specific child's comfort level, the parent decides to make eye contact with the child or not (the author revised, this would depend on the child as some children with Autism Spectrum Disorder may not feel comfortable with eye contact). Third, give a short, clear and direct instruction (for example, it is time to shower now) and give 10 seconds for the child to respond (as some children with Autism Spectrum Disorder may take longer time to process an instruction). Fourth, if the child responded to the

instruction properly, then the parent should immediately provide positive feedback (for example, praise) to the child for the child to understand his/her respond was appropriate and present. Then, the child would be likely to repeat the same behaviour. If the child did not respond to the instruction, then parent should give the instruction no more than 2 times if it is a requested instruction (for example, get me a cup). If the parent is stopping an inappropriate behaviour instruction (for example, stop climbing the cupboard), the parent should only give the instruction once. If the child still does not comply with the instruction, a parent should give a consequence for the child to follow in order for the child to understand and comply to the instruction next time (more details of consequences are taught in the next session).

After the introduction of learning how to give clear and direct instructions, parents were invited to select some clear and direct instructions in different scenarios, for example, while their children are watching TV or playing with their toys, what would the parents say to their children when it is time for their children to do homework? or when it is time for dinner? At the end of the activity, parents were asked to share their decisions in promoting positive behaviours. This was crucial to ensure the parents have a plan to improve the child's behaviours. At the end, there was a question-and-answer session, author provided some tips and some prompt cards (see Table 6) for parents to take home. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Fifth session of PCII-program: Direct Practice with Parent-child (I). After the first 4 sessions of parent training workshops, each individual parent (all mothers) and her child were invited to participate the first session of 1 hour one-on-one direct training practice (see Table 7). At the beginning of the session, each pair of parent-child were welcomed by the author in the play therapy room (see Figure 5 and Figure 6). They were told by the author via the use of the visual schedule that the practice session was divided into three situations based on the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition)

(DPICS-III measure) (Eyberg et al., 2004), Child-Led Play (15 minutes), Parent-Led Play (15 minutes) and Clean-up (5 minutes), followed by a debriefing session (10 minutes). With the use of the visual schedule, this allowed the children with Autism Spectrum Disorder to understand the procedure to reduce their anxiety level and this would also reduce the chance of having inappropriate behaviour by their children. Before starting the three situations, author also introduced the emotional cards (prompt card) (see Table 6) for each pair of parent-child to express their feelings (for example, happy or sad to be in the play therapy room), this allowed each of the parents to practice what they learned in the parent training session and aimed to apply in the first one-on-one direct practice with their children.

A timer was set for the first 15 minutes of Child-Led Play situation to ensure that the children were aware of the time. In the Child-Led Play situation, each child was allowed to play anything in the play therapy room, and their parents aimed to follow without giving any instructions or commenting. If parents were not confident or forgot how to apply the play techniques (for example, describing, praising or reflecting feelings) to their children, the author would support the parent (for example, when the child is playing with the motor car and the parent stayed quiet, the author would guide the parent to say, “the motor car is going so fast” and pointed to a particular key point such as describing on the prompt card to remind the parent. A prompt card (see Table 6) would always be placed near each of the parents, it was a good reminder for parents so they know what they could say and do while playing with their children.

The author was constantly taking notes (see Table 8) and sat near each parent-child pair to remind what the parent could say to the child and also kept track of the time. In the last 5 minutes of Child-Led Play, the author reminded each parent-child pair that only 5 minutes of Child-Led Play remained, and that the next part, Parent-Led Play, would be coming up after the timer rings. When the timer was ringing, author reminded each pair of parent-child of the

time for Parent-Led Play. Again, a timer would be set for the 15 minutes of Parent-Led Play. In Parent-Led Play, the roles switched. The parent would be allowed to play with anything in the room and child would follow. Last, in Clean-up situation, parent would be leading the child to tidy up the toys that they were playing.

Both Parent-Led Play and Clean-up situations are good opportunities for parent to practice the use of clear instructions to engage their child's compliance behaviours. At the end, there was a debriefing session (around 10 minutes) to discuss with the parents on i) what they did well in the session, ii) what they could improve and iii) discuss any relevant issues.

Sixth session of PCII-program. In the sixth session, "Behaviour management (III): Handling inappropriate behaviour and emotions" (see Table 3). Again, parents were welcomed by the author, settled in the class, revisited the use of the relaxation technique, and revisited the topic from last session as well as the first one-on-one direct practice session. Then, parents were paired up to play the activity, "Whole body listening" (Truesdale, 1990), it is a programme used to promote positive behaviour by teaching children to listen to their whole body by integrating all of the body senses such as eyes, ears, mouth, nose, hands, feet and connecting the child's self-control from their brain and body. Children are usually given a "Whole body listening" poster, a visual prompt to remind them which part of their body is not listening and complying (for example, when the child is not listening, they would be reminded to point to their ears and find the ears on the poster). In this activity, parents were told to draw out the "Whole body listening" poster after listening to the instructions by the author or other parents (for example, to draw out the eyes, mouth, ears, head, hands, feet, heart, brain) (see Figure 7). This activity is useful for helping parents support their children with Autism Spectrum Disorder focus on the appropriate part of their body.

Figure 7. Whole body listening (Truesdale, 1990)

After the “Whole body listening” activity, the author used the PowerPoint to continue with the topic of behaviour management and introduced different ways to handle inappropriate behaviours for children with Autism Spectrum Disorder. This PowerPoint is based on the Happy Parenting Program (Leung et al., 2016) and Positive Discipline (Nelsen, 2006).

Understand the problem When children with Autism Spectrum Disorder throw tantrums, some parents tend to focus on giving a negative consequence such as punishing their children instead of understand the reasons behind why their children are acting that way. It could be that the child was sick, hungry, or not receiving enough positive attention, like praise, so thus the child may have a tantrum. It is essential for parents to understand the reason behind why their child acts up with inappropriate behaviours (for example, where the child acts like that, or who is he/she with when he/ she acts like that, or how long the child acts like that, or what makes the child stops acting like that) (Bijou et al., 1968; O’Nions, et al., 2018).

Use of ignore When some children with Autism Spectrum Disorder give a silly facial expression, some parents tend to respond by saying to the child, “Stop making that silly face!” Instead of stopping, such children often continue to do so in order to attract attention from the parents, even negative attention. It would be helpful for parents to learn to ignore the child’s inappropriate behaviour (such as making silly face). Once, a child stops doing it, the parent should promote the use of positive attention (such as praising the child for acting appropriately) (Happy Parenting Program: Leung et al., 2016).

Natural consequence and take responsibility Many children with Autism Spectrum Disorder often have inappropriate behaviours. For example, when a child is drinking a glass of apple juice, he or she might not hold on to the glass carefully, so the glass of apple juice drops on to the floor, spilling the apple juice. Some parents might simply give another glass

of juice to the child, and the child might drop the glass again and spill the apple juice again. It would be helpful for the parents to learn to give natural consequences to their children and help them take responsibility (Happy Parenting Program: Leung et al., 2016). For example, after a child drops a glass of juice drops on the floor, the child does not get another glass of juice immediately. Instead, the parent has the child clean up the floor. In this way, the child learns that he or she must take the responsibility to look after his or her glass. If the child is too young and not willing to help, parent could try to do it together with the child.

Pause for pleasure Also, children with Autism Spectrum Disorder often ignore their parents' requests, for example, when a child was watching a video, the parent said "It's time for a shower," but the child did not comply. Some parents repeat the same instruction by saying "It's time for a shower (more loudly)". As we discussed earlier how to give direct and clear instructions for children to follow (in the fourth session), an instruction should be given no more than 2 times. Many parents tend to repeat instructions too many times, which decreases the effectiveness of the instruction (for example, the child may ignore all requests). In this case, it would be useful for parents to learn to pause the activity that gives the child pleasure. Instead of making a request over and over again, a parent could stop the child from watching the video (for example, "It is time for a shower, so pause the video"). This command and subsequent action would allow the child to build a connection between the requested instruction and the consequence to ensure that the child would follow (Happy Parenting Program: Leung et al., 2016).

Use of replacement We talked about *understanding the problem,* why children with Autism Spectrum Disorder may act inappropriately. Specifically, parents can identify the time, location, persons, and frequencies of each inappropriate behaviour. For example, a child always throws a tantrum during a dinner with his parents at a restaurant. In this case, parents can diagnose the problem (for example, tantrum) by identifying whether the child gets bored

after sitting for so long at the dining table; if that's the case, it would be useful for parents to use a replacement. A parent can let the child have a walk from time to time, such as every 20 minutes (depending on each child's needs). A parent can also prepare a child's preferred toy bag (for example, his or her favourite drawing book, dolls, or car toys). When a child is bored, the child can take out a toy and play with it. These activities can help sustain the sitting duration (Happy Parenting Program: Leung et al., 2016). The author emphasized to parents the importance of praising their children when they have been sitting nicely and giving the child the toy bag at the beginning, *before* the child starts having a tantrum (for example, right after the meal). (When a child is having a tantrum, giving the child the toy bag teaches the child to associate the tantrum with the toy bag, thereby encouraging tantrums.)

Use of house rules Children with Autism Spectrum Disorder tend to have a lot of inappropriate behaviours such as *testing* behaviours (for example, trying to test the limit of their parents). Thus, another useful technique is setting up some house rules for children to understand parent's limits and to promote positive behaviours. It is important to keep the house rules clear, precise, and appropriate to the child's ability (Leung et al., 2016). Examples include washing hands after you get home, tidying up after playing, and keeping an indoor voice. The author also suggested some tips such as limiting the house rules to 5 rules (20 house rules is too many for young children). Also, avoid the use of "No or don't" when setting up the house rules—we target clearer positive behaviours instead of less easily understood, avoidance of inappropriate behaviour (for example, Don't shout). Furthermore, try to keep the house rules in an area that everyone can see, such as a notice board at home or on the front door. Moreover, make sure everyone in the family follows these rules to help children understand these positive behaviour and to serve as role models for the children.

Treat siblings equally In a family with multiple children, sometimes they fight with one another. In a family with a child with Autism Spectrum Disorder (or other Special

Educational Needs (SEN)), many parents are tempted to take care of the child with Autism Spectrum Disorder first, and prioritize that child over other siblings. Then, the child with Autism Spectrum Disorder may take advantage of their priority (for example, when a sibling is playing with a toy truck, the child with Autism Spectrum Disorder took that truck away; some parents let the child with Autism Spectrum Disorder to take the toy truck and ask the sibling to pick another). After this experience, the child with Autism Spectrum Disorder learned that he/she could take anything from the sibling. Also, the sibling learned that he/she has to give in all the time. In the long run, this will not be a healthy family relationship. Parents should learn to treat siblings (or any family members) fairly (often equally) to maintain good family bonds (for example, the child with Autism Spectrum Disorder learns how to share a toy with others or wait for his/her turn to play).

To remind the parents, the author asked them to think carefully before introducing new techniques, try to add one new technique at a time instead of adding many of them at one time. When the parents first try these new techniques at home, it is common for their children to reject these techniques and act up (sometimes with even more inappropriate behaviours). Such children are trying to establish a new relationship with their parents and try to understand how to react to parent instructions (vice versa). Parents were told to be consistent and keep trying. If they come across any issue, they could discuss it with the author. Then, parents were given different scenarios to discuss the child's behaviours and decide how to handle the inappropriate behaviours using the techniques they have learned in this session or from previous sessions. Then, a short break was given to parents.

After the break, author revisited the topic of emotion from the second session. This time the author introduced different ways to express and cope with emotions by using PowerPoint, she first introduced the use of different visual emotional cards (for example, happy, excited, sad, angry, nervous etc.) (see Table 5 and Table 6) as it would be the foundation for the

children to understand different kind of emotions. In Chinese culture, it is not common to see family members share their feelings every day. By allowing their children with Autism Spectrum Disorder to express themselves (for example, by selecting a particular emotion from the visual cards), parents can support their children to express themselves, such as explaining why they feel upset (for example, his brother broke his car). By doing so, parents can reduce triggers for such children to act out inappropriately (for example, hit his brother). Besides, it is important to introduce other ways to keep such children calm. Parent can use different games to learn breathing techniques (for example, blow the bubbles, blow the paper ball from the table) (Happy Parenting Program: Leung et al., 2016). This would allow parents to support their children with Autism Spectrum Disorder to regulate their emotion to prevent inappropriate behaviour (for example, to address the child's emotion by saying "I know you are upset because your car is broken. Let see how we can fix it").

Parents were invited to discuss among themselves about which activity that they would try at home with their children. This was crucial to ensure that the parents have a plan to manage their children's emotions. At the end, there was a question-and-answer session, author also provided some tips and some prompt cards (see Table 6) for parents to take home. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Seventh session of PCII-program. In the seventh session, "Improve social communication and language skills" (see Table 3), parents were welcomed by the author, settled in the class, revisited the use of the relaxation technique and revisited the topic from last session. Then, the author introduced a warmup game, "7-Levels of pig (7 級豬)". Parents were invited to sit in a circle with a group of 3 or 4 people. To start, they were given 4 playing cards each, and they have to collect a set of play cards (for example, a total of four Aces) based on their selection by swapping cards with other group members at the same time (for example, a parent with 4 cards of Ace, Ace, 3, 4, decides to keep the two Aces and swaps

the 3 and 4 to others). Once a parent gets four cards of the same value (for example, four Ace), that parent has to cover her nose immediately (without speaking out loud). Others who see her also cover their nose. The last one to cover her nose would be the loser and would be given the name “Level 1 Pig.” Then, a new round of the game starts. They keep playing until someone loses seven times to become a “Level 7 pig” (see Figure 8). The author gave 10 minutes for the parents to experience the game and to introduce the concept of communication skills. This game requires a lot of non-verbal communication techniques, such as observing others if they have taken a card out, or if they have collected all the right playing cards to win, or if they covered their nose. They have to be very attentive (for example, keep track of both their own cards and other’s cards). All these techniques help parents to be aware of communication (verbal and non-verbal) and how they could guide their child to improve their social and communication skills.

Figure 8. Warmup game: 7-Levels of pig (7 級豬)

Then, the author used the PowerPoint to introduce different ways to improve social communication and language skills such as the use of the "3 A" approach from the Hanen MORE THAN WORDS program as it was found to be useful for parents and their children with Autism Spectrum Disorder (Girolametto et al., 2007; McConachie et al., 2005), in particular, children gained positive behaviours in improving vocabulary, communication, and social skills; and parents also gained positive behaviours in improving facilitative communication strategies (Carter et al., 2011; Sokmum et al., 2017). The author emphasized the use of the "3 A" approach from the Hanen MORE THAN WORDS program: "Allow, Adapt and Add". The first A is for "Allow", "allowing children to take the initiative" (for example, when the child is playing, parent can observe, wait, and listen to their child, instead of guiding their child to play). The second A is for "Adapt", "adapting to spend quality time together with their children" (for example, when the child is playing, parent could imitate the child's action such as pushing the car or describe what the child is doing such as "the car is moving so fast" or "You push the car"). The third A is for "Add", "adding words and communication elements to help the children acquire the language" (for example, when the child is playing, parents could continue to imitate and describe what the child is doing, and also with an expansion such as adding more language opportunity in terms of labelling the object or describing the actions) (Girolametto et al., 2007; McConachie et al., 2005). The author also reminded the parents to avoid asking too many questions (such as "what are you doing?", "what colour is the car?", "how many cars in total?") as this would affect the quality time between the parent and the child. The author suggested the 3A approach to echo the Child-Centered Play Therapy technique. This is another reminder of how to improve the parent-child interaction.

The author also briefly introduced other meaningful ways to support communication. First, using a puppet to communicate as some of the children with Autism Spectrum Disorder

may have difficulties looking into other people's eyes (weak eye contact) (American Psychiatric Association, 2013). Second, the use of role play might be helpful. Some children with Autism Spectrum Disorder may find it hard to communicate with others (for example, instead of asking a peer for a toy, a child with Autism Spectrum Disorder may grab it directly from a peer. This would be a good opportunity to do a role play and demonstrate how to ask for a toy from their peer). Third, parents can set up playdates. As many of the children with Autism Spectrum Disorder may not have peers, the author encourage the parents in the intervention group to set up some playdates with one another or with their friends. The parents can start the playdate with some structure, such as structured games and a structured snack time, to help their children to develop more social and communication opportunities. Fourth, parents can set up a communication goal, which is a good reminder for the parents to think about their children's areas of social and communication that can be improved. Then, a short break was given to the parents.

After the break, parents were invited to practice how they play with their child again (like in the second session). Parents were paired up. One of the parents pretended to play (like their child) and the other parent practiced how to describe what the parent is playing (without judging and commenting), recognizing emotions, waiting, praising, following, listening, and repeating what the child just said (without giving any instruction). Parents were told to switch roles after 5 minutes. At the end of the activity, parents were asked to share what they have improved since the first session and what else need to be addressed. This was essential to help parents be more aware of their play skills. At the end, there was a question-and-answer session. The author also provided some tips and some prompt cards (see Table 6) for parents to take home. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Eighth session of PCII-program: Direct Practice with Parent-child (II). Similar to *Fifth session of PCII-program: Direct Practice with Parent-child (I)* (See Fifth session).

Ninth session of PCII-program. In the ninth session, “Improve reading skills and handling homework problems” (see Table 3). Parents were welcomed by the author, settled into the class, revisited the use of the relaxation technique, and revisited the topic from the last session. Then, the author used the PowerPoint to introduce reasons why children with Autism Spectrum Disorder find it hard to read. Many children with Autism Spectrum Disorder are overly sensitive to some sensory stimuli from the outside world. By contrast, other children with Autism Spectrum Disorder totally ignored the stimuli. They also experienced difficulties in integrating new experiences and old memories. This may be due to cognitive processing defects (Frith & Snowling, 1983; Mottron & Belleville, 1993; Nation et al., 2006; Newman et al., 2007; Randi et al., 2010).

To address such deficits for children with Autism Spectrum Disorder, the author introduced ways to improve their reading skills. First, identify child’s interest to attract their motivation in learning and establish a stronger linkage (for example, if the child’s favorite animal is a duck, a parent can borrow books related to ducks from a library. Second, start reading activities with nonverbal communication (for example, instead of making the child talk, it would be useful to start with something easy such as asking the child to point to the cat in the book). Then, ask for verbal expression (for example, when the child can identify the cat, then we can ask the child to say the name of the animal, "what animal is that?). Third, use “WH” questions. For example, by asking the child “WH” questions (such as Who, What, When, Where, Why, How), the parent can support the child to build a structure of reading and develop comprehension skills. Many children with Autism Spectrum Disorder have difficulties in this area. Fourth, ask questions about information in the book (for example, parents could ask questions from the book such as “which animal won the running race?”).

Parents can also ask questions that connect the book to the child's experience (for example, parents could ask "in reality, which animal would win the running race and why?") (Pearson & Johnson, 1978; Raphael, 1986). Fifth, encourage the child to read by using praise and acknowledging improvement and achievement (for example, praise the child when he/ she is reading out loud) (Agazzi et al., 2013; Armstrong & Kimonis, 2013).

Then, the author also introduced a story to model appropriate social interaction by describing a situation with relevant social cues, other's perspectives, and a suggested appropriate response about different people's perspectives (*social story*) for children with Autism Spectrum Disorder to improve their social and communication (Gray, 1994). The author first introduced the concept of theory of mind, which explains why children with Autism Spectrum Disorder are less likely to observe and feel from the perspective of others (American Psychiatric Association, 2013), then the author introduced the use of a social story by Gray (1994) to support children with Autism Spectrum Disorder to understand others' beliefs and feelings in different social situations. For example, different topics of social story was introduced such as how to say hello/ thank you/ excuse me, seek for help, sharing, social distance, and appropriate topic. A parent can use pictures in a social story in order for the child to understand the story. The author also introduced some local social story books and apps for the parents as references. Then, a short break was given to the parents.

After the break, the author introduced ways to handle homework such as the use of a visual prompt to support children with Autism Spectrum Disorder to do homework. Past studies showed that such children tended to perform better on tasks with the use of visual processing (for example, matching, puzzle assembly) than language related tasks (Quill, 1997). For example, the use of a visual schedule, acts like a picture checklist to guide the child to finish homework independently. For example, a list of picture cards that are related to the day's homework can be used. The first picture card could be about completing Math

homework. A second picture card is about completing English homework. A third picture card could be completing Chinese homework. Once the child completes the first one, he/ she can remove the picture card from the checklist and continue to complete the rest of the homework.

Visual prompts can also be used for behavior. Behaviour management cards, for example, are picture cards related to good sitting, eyes looking at a speaker, focusing on homework (samples were given to parents during the session) (see Figure 9). The author suggested that by giving different visual prompts, parents could reduce the use of verbal prompts and promote children's independent work.

Figure 9. Behaviour management cards

Then, the author introduced ii) the concept of breaking down the structure of Chinese words as some of the children with Autism Spectrum Disorder find it hard to write and memorize Chinese characters; this might be caused by cognitive processing defects (Frith & Snowling, 1983; Mottron & Belleville, 1993; Nation et al., 2006; Newman et al., 2007; Randi et al., 2010). Thus, the author introduced the concept of breaking down the Chinese character, from a single character (獨體字) for example, 山、口、人、木、水、女、手 to a combined character (合體字) for example, 志 (Up and down part), 你 (left and right part), 做 (left, middle and right part), 國 (fully-enclosed) etc. By introducing this method to parents, parents can have more ideas about how to support their children in writing Chinese characters. The author also reminded the parents that they could use different materials such as playdough, rice, shaving cream, or sand to stimulate their children to write Chinese characters—instead of just using pencil and paper for practice writing.

Then, the author also introduced the use of markers or highlighters to circle the important parts of the homework as some of the children with Autism Spectrum Disorder may not know where to focus when they are given a paragraph to read, followed by questions to answer. A parent can guide a child with Autism Spectrum Disorder to circle key parts of a paragraph (e.g., first sentence is often a topic sentence) with a marker/ highlighter. This activity supports such children to focus on the important ideas when they have to answer questions after the reading.

Lastly, the author introduced the use of a mind map to visualize what they are aiming to write as some of the children with Autism Spectrum Disorder are not good at composition. They may not be good at imagining or creativity. Thus, it is important to implant the concept of a mind map to allow children with Autism Spectrum Disorder to plan their writing. A mind map is a diagram that allows children to write out information visually, for example, if the child is given a central topic like “School”, the word *school* would be written in the center of

the paper and mark the first paragraph. Then branches are added to related ideas from the reading, for example, “classroom”, “basketball court”, “cafeteria”, which would be written in the second or third paragraphs. This approach can support children with Autism Spectrum Disorder to have more ideas on how to plan for their writing.

The author introduced different strategies to support parents to guide their children with Autism Spectrum Disorder to do their homework. Specifically, the author asked the parents to have break (for example, give a 5-minute break after the child has completed one homework). The author also highlighted reinforcement (for example, when the child has completed all the homework, he/she would be reinforced to play their favourite games). Also, parents can praise their children from time to time (for example, praise their effort of trying to complete the homework) in order to sustain their children’s attention to complete the homework. Parents were welcomed to share their own experiences to others to exchange ideas on supporting their children in dealing with reading and doing homework. At the end, there was a question-and-answer session. The author also provided some tips and some prompt cards (see Table 6) for parents to take home. Parents were also welcomed to stay behind to discuss specific concerns about their children.

Tenth session of PCII-program. In the tenth session, “Evaluate and Feedback (certificate of attendance)” (see Table 3). Parents were welcomed by the author and settled in class. As this was the last session, author invited parents to learn how to set and carry out possible goals for their children and how they should review and evaluate the plan by using the ‘plan, do, reflect, review’ cycle (Kolb, 1984). First, *plan* entails setting up possible goals or areas for the parent or the child to improve (for example, build up the relationship with the child or manage the child’s behaviour) in order to promote positive behaviours and prevent inappropriate behaviours.

Second, *do.* After a parent sets up the goal (for example, build up the relationship with

my child via play), he or she must think carefully about how to achieve this goal (for example, how often would I be able to play with my child? Also, are there any barriers that would stop me from achieving this goal? Then the parent implements this plan of action.

Third, *reflect* occurs after a parent carries out this goal (for example, A parent played with her child five times. Is there any improvement in this relationship? Is there anything that to change or adjust such as giving more time for the child to express in play. Perhaps, praise the child more when he/she played nicely?

Lastly, *review* occurs after a parent has continued this goal for a long time (for example, played with my child for 2 months). Then, a parent determines whether the goal was achieved or not. If yes, (for example, I have established a good relationship with my child through play), then a parent can move on to the next goal (for example, I am hoping to build up the relationship with my child via chatting). The author aimed to promote this concept of 'plan, do, reflect, review' cycle (Kolb, 1984) in order for the parents to have a systematic plan in taking care of their children.

Then, the author used the PowerPoint and prepared a video that included photos and video clips of the parents' participation in the entire Parent-Child Interaction Intervention. This video summarizes the parenting techniques for children with Autism Spectrum Disorder. Afterwards, parents were invited to sit in a big circle for a group semi-structured interview. They were told that the group interview would be recorded for data collection. Then, they were asked to answer two questions. First, how have they or their children changed after taking the Parent-Child Interaction Intervention for Autism Spectrum Disorder training? Second, what kind of goals are they hoping to achieve in the future? They were welcomed to share anything related to the intervention.

Afterwards, all parents who attended over 80% of the lessons received attendance certificates. Then, we took a group photo (Figure 10). Again, they were welcomed to stay

behind at the end of the session to share and discuss specific concerns about their children. A detailed description of the Parent-Child Interaction Intervention for Autism Spectrum Disorder can be found in Table 3.

Figure 10. The Parent-Child Interaction Intervention for Autism Spectrum Disorder program: Group photo

Table 3

The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Description

S	Topic	Objectives	Core Content (Activities)	Materials
1	Introduction of the Parent-Child Interaction Intervention for Autism Spectrum Disorder	a) Introduce some relaxation techniques to parents	Activity 1: Direct practice with parents, breathing technique (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card
		b) Build up relationship between parents	b) Playing ice-breaking game: Activity 2: "I am my child" (for example, My name is …, I am a boy/ girl, I am … old, I like …, I fear ...) Using PowerPoint to introduce the concept of mindfulness (reduce stress level)	
		c) Introduce the course structure to parents	c) Using PowerPoint to introduce the course outline, objective and expectations to parents (for example, total number of sessions, topics, what to achieve for them or their child) Activity 3: Write out expectations (for example, Parents would be asked to write about their expectations of the course such as what to achieve and learn from the course.	

			A ball would be passed around while the music is on. When the music stops, that parent has to share what is his/her expectation about the course and what he/she is hoping to change)	
		d) Introduce the concept of Autism Spectrum Disorder	d) Using PowerPoint and activity to introduce the concept of Autism Spectrum Disorder <u>Activity 4: "Get to know my child"</u> (For example, Parents would be asked to share to each other about their child's strength/ skill/ challenges) <u>Activity 5: "How does my child learn?"</u> (For example, Parents would be asked to think about how their child learns, which type of learner such as visual learner, auditory learner or kinesthetic learner)	

S	Topic	Objectives	Core Content (Activities)	Materials
2	Improve parent-child interaction	a) Re-visit: Use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1: Direct practice with parents, breathing technique</u> (For example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card - Toys (from Supporting Unit for Special Educational Needs and Parents) - Paper and pen
		b) Build up relationship between parents and introduce the importance of parent-child interaction through play	b) Playing ice-breaking game: <u>Activity 2: "Rock, Paper, Scissor shoot"</u> (For example, Parents would be asked to play "Rock, Paper, Scissor shoot" among themselves)	
		c) Introduce Child-Centered Play Therapy technique	c) Using PowerPoint, discussion and demonstrate play skills to introduce the concept of child centered play therapy to build up positive parent-child interaction	

			1) Importance of parent-child interaction 2) How to build up parent-child interaction 3) Importance of chatting with your child 4) Importance of play skills	
		d) Allow parents to practice the new technique: 1) Talking 2) Playing	<u>Activity 3: How to talk with your child?</u> (for example, a piece of paper and a pen is given to each parent, parents would be paired up, one of the parents would be drawing anything they like, and the other parent would then practice how to describe what the parent is drawing (without judging and commenting), waiting and listening the child (without giving any instruction). Parents would be exchanged their role.) <u>Activity 4: How to play with your child?</u> (for example, before the session, parents would be asked to bring their child's favourite toys from home, or they can borrow from Supporting Unit for Special Educational Needs. Parents would be paired up, one of the parents would be pretended to play (like their child) and the other parent would then practice how to describe what the parent is playing (without judging and commenting), recognizing emotions, waiting,	

			praising, following listening and repeat what the child just said (without giving any instruction). Parents would be exchanged their role.)	
S	**Topic**	**Objectives**	**Core Content (Activities)**	**Materials**
3	Behaviour management (I): i) Behaviour analysis ii) Promote positive behaviours	a) Re-visit: use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1: Direct practice with parents, breathing technique</u> (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card - Video
		b) Introduce the concept of behaviour analysis	b) Using PowerPoint and discussion to introduce the concept of behaviour analysis <u>Activity 2: Giving different scenarios for parents to discuss</u> (for example, parents would be given different pictures about the relationship between parent and child. Parents would be asked to: i) Think of the reason why the parent or the child would be acting/ reacting in this way ii) Think of possible solutions)	

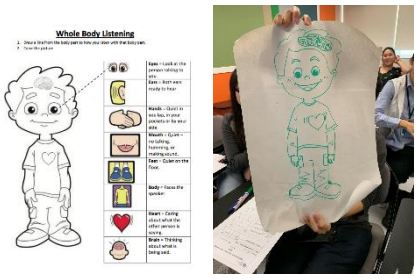
		c) Introduce the concept of promoting positive behaviours	c) Using PowerPoint, discussion, related video, and direct practice to introduce the concept of promoting positive behaviours; the use of i) praising technique and ii) positive reinforcement <u>Activity 3: Discuss and evaluate some praising phrases</u> (for example, parents would be given some praising phrases and they have to comment which of the phrases is more appropriate to apply to children) <u>Activity 4: Discussion on how to praise your children</u> (for example, parents would be asked to discuss how to praise your children in different situations such as having meal, doing homework, shopping at the mall Video: https://www.youtube.com/watch?v=nMzEi4sqO20	

S	Topic	Objectives	Core Content (Activities)	Materials
4	Behaviour management (II): Prevent inappropriate behaviour	a) Re-visit: use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) Activity 1: Direct practice with parents, breathing technique (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card - Video
		b) Introduce the concept of using proactive plan and reactive plan	b) Using PowerPoint, related video, and discussion to demonstrate the use of proactive plan and reactive plan Activity 2: Use of real cases for parents to discuss (for example, Parents would be given 2 real cases to discuss on the child's behaviours and how to decide and use the proactive plan and reactive plan and the use of token system) Video: https://www.youtube.com/watch?v=_W-xICvTyHE	

		c) Introduce the concept of preventing inappropriate behaviour	c) Using PowerPoint, discussion, and direct practice to introduce the concept of preventing inappropriate behaviour: i) The use of Treatment and Education of Autistic and related Communications Handicapped Children (TEACCH) (adjust environment) ii) Set up clear schedule for work iii) Set up clear and short house rules iii) Give clear and direct instruction <u>Activity 3: Discuss and decide clear and direct instruction in different situation</u> (for example, Parents would be asked to decide some clear and direct instruction such as doing homework, child is going to hit his brother, having meal) <u>Tips for clear and direct instruction</u> i) Walk closer to the child ii) Call the child's name iii) With eye contact iv) Say the instruction v) Wait for the response of the child vi) Provide feedback	

S	Topic	Objectives	Core Content (Activities)	Materials
5	Direct practice with Parent-Child (I)	a) Able to introduce the structure of direct practice	a) Using visual schedule to introduce the structure of the direct practice, <u>i) Child-Led Play (15 minutes)</u> (e.g, Child would get to choose what to play, and the parent would play along with them) <u>ii) Parent-Led Play (15 minutes)</u> (for example, Parent would choose what to play, and the child would be expected to follow the parent's rules) <u>iii) Tidy up (5 minutes)</u> (for example, parent told the child to tidy up all the toys and put them into the toy box) <u>iv) Discuss with parents (10 minutes)</u> (e.g, providing opportunity for parents to share any feedback and ask any questions)	- Visual schedule - Direct practice record sheet
		b) Discuss with parent and clarify any issues	b) Use of direct practice to discuss and strengthen on the area that they are unclear, for example,	

			i) <u>The use of child centered play therapy technique in Child-Led Play</u> (for example, All parents would be given the prompt card to remind them what they could be said such as describing what the child is playing (without judging and commenting), recognizing child's emotion, waiting, praising, following, listening and repeat what the child just said (without giving any instruction). ii) <u>The use of clear and direct instruction in Parent-Led Play and Tidy up time</u> (for example, All parents would be given the prompt card to remind them what they could be said such as walk closer to the child, call the child's name, with eye contact, say the instruction and wait for the response of the child, provide feedback.)	
		c) Allow parents to share feedback and questions	c) Giving opportunity (last 10 minutes of the sessions) for parents to share any feedback and ask any questions	

S	Topic	Objectives	Core Content (Activities)	Materials
6	Behaviour management (III): Handling inappropriate behaviour and emotions	a) Re-visit: use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1: Direct practice with parents, breathing technique</u> (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card - Drawing paper and color pencil
		b) Introduce different ways to handle inappropriate behaviours	<u>Activity 2: Drawing game, "Whole body listening"</u> (for example, Parents would be paired up and they told to draw out the whole body by listening to the trainer such as to draw out the eyes, mouth, ears, head, hands, feet)  b) Using PowerPoint, game, and discussion to introduce different ways to handle inappropriate behaviours: i) Understand the problem	

			ii) Use of ignore iii) Natural consequence iv) Pause for pleasure v) Take responsibility vi) Treat equally between siblings vii) Use of house rules viii) Use of family meeting ix) Use of replacement <u>Activity 3: Giving different scenarios for the parents to discuss</u> (for example, Parents would be given different scenarios to discuss on the child's behaviours and they have to decide on how to handle the inappropriate behaviours)	
		c) Introduce different ways to express and cope with emotions	c) Using PowerPoint, prompt card and direct practice to introduce different ways to express and cope with emotions: i) Use of different visual emotional cards (for example, happy, excited, sad, angry, nervous etc.) ii) Use of different games to learn breathing technique (for example, blow the bubbles, blow the paper ball from the table, storytelling)	

S	Topic	Objectives	Core Content (Activities)	Materials
7	Improve social communication and language skills	a) Re-visit: use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1: Direct practice with parents, breathing technique</u> (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Prompt card - Play cards - Toys (from Supporting Unit for Special Educational Needs)
		b) Introduce ways to improve social communication and language skills	<u>Activity 2: Game, "7 Level of Pig"</u> (for example, Parents would be invited to sit in a group of 3 to 4. They would be given 4 play cards each and they have to find all the identical play cards such as A,A,A,A or 2,2,2,2. Once a parent completed the total of the 4 cards, that parent has to cover her nose immediately and others have to follow closely. The latest one covers the nose would be the loser and given a name as "Level 1 Pig".) 	

			b) Using PowerPoint, game, and discussion to introduce concept of social communication skills and different ways to improve social communication and language skills i) Use of puppet ii) Use of different prompts (for example, physical, verbal, visual and gestures iii) Role play iv) Set up playdates v) Set up clear social communication goal <u>Activity 3(Revisit): Child centered play therapy technique and the use of different toys</u> (for example, Parents would be paired up, one of the parents would be pretended to play (like their child) and the other parent would then practice how to describe what the parent is playing (without judging and commenting), recognizing emotions, waiting, praising, following listening and repeat what the child just said (without giving any instruction). Parents would be exchanged their role.)	

S	Topic	Objectives	Core Content (Activities)	Materials
8	Direct practice with Parent-Child (I)	a) Able to introduce the structure of direct practice	a) Using visual schedule to introduce the structure of the direct practice, <u>i) Child-Led Play (15 minutes)</u> (e.g, Child would get to choose what to play, and the parent would play along with them) <u>ii) Parent-Led Play (15 minutes)</u> (for example, Parent would choose what to play, and the child would be expected to follow the parent's rules) <u>iii) Tidy up (5 minutes)</u> (for example, parent told the child to tidy up all the toys and put them into the toy box) <u>iv) Discuss with parents (10 minutes)</u> (e.g, providing opportunity for parents to share any feedback and ask any questions)	- Visual schedule - Direct practice record sheet
		b) Discuss with parent and clarify	b) Use of direct practice to discuss and strengthen on the area that they are unclear, for example,	

		any issues	i) <u>The use of child centered play therapy technique in Child-Led Play</u> (for example, All parents would be given the prompt card to remind them what they could be said such as describing what the child is playing (without judging and commenting), recognizing child's emotion, waiting, praising, following, listening and repeat what the child just said (without giving any instruction). ii) <u>The use of clear and direct instruction in Parent-Led Play and Tidy up time</u> (for example, All parents would be given the prompt card to remind them what they could be said such as walk closer to the child, call the child's name, with eye contact, say the instruction and wait for the response of the child, provide feedback.)	
		c) Allow parents to share feedback and questions	c) Giving opportunity (last 10 minutes of the sessions) for parents to share any feedback and ask any questions	

S	Topic	Objectives	Core Content (Activities)	Materials
9	Improve reading skills and handling homework problems	a) Re-visit: use some relaxation technique for parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1: Direct practice with parents, breathing technique</u> (for example, relaxation music would be on, parents would be asked to follow and manage their breathing)	- PowerPoint - Storybooks (from Parents and instructor) - Social story samples - Video
		b) Introduce ways to improve reading skills	b) Using PowerPoint, discussion and direct practice to introduce reasons why children with Autism Spectrum Disorder finds it hard to read and how this affects social communication and what ways to improve reading skills i) Identify child's interest ii) Divide reading to nonverbal (for example, point to the cat) and verbal expression (for example, what color is the cat?) iii) Use of "WH" questions (for example, Who, What, When, Where, Why, How) iv) Questions that are based on the information from the book (for example, which animal won	

			the running race?) or questions that need to be merged from the book and from the child's experience (for example, in reality, which animal would win the running race and why?) v) Encourage the child in reading, use of praise and acknowledging improvement and achievement (for example, praise the child is reading out loud or the child is sitting nicely) vi) Give clear and direct instruction	
		c) Introduce the concept and the use of social story	c) Using PowerPoint, discussion and social story samples to introduce the concept and the use of social story i) Introduce the concept of theory mind ii) Introduce topics of social story (e.g, how to say hello/ thank you/ excuse me, seek for help, sharing, social distance, appropriate topic) iii) Use of visual in social story iv) Steps to create a social story	
		d) Introduce ways to handle homework	d) Using PowerPoint, discussion, and related video to introduce ways to handle homework (for example, visual prompt: use of visual card (break down the structure of the words), colour marker/ highlighter, mind map, different apps)	

S	Topic	Objectives	Core Content (Activities)	Materials
10	Evaluate and Feedback (certificate of attendance)	a) Set for goals, carry out and evaluate b) Review all the parenting techniques with parents	a) Use of PowerPoint to suggest a plan for parents to learn on how to set and carry out the goals and evaluate the plan b) Use of PowerPoint and class video to go over all the parenting techniques in Parent-Child Interaction Intervention for Autism Spectrum Disorder	- PowerPoint - Video - Prompt card - Recorder - Certificate
		c) Ask parents to do a group sharing	c) Group sharing (Record) Parents would be asked to share what they or their child have changed after taking the course and what kind of goals they are hoping to achieve	
		d) Deliver the certificates of attendance to parents	c) Deliver certificates to parents and group photo 	

Note. S = session;

Adapted from the Parent-Child Interaction Therapy (Schuhmann et al., 1998); Positive Discipline (Nelsen, 2006); Happy Parenting Program (Leung et al., 2016)

Table 4

The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Session plan example I

Session 1 **Topic: <u>Introduction of the Parent-Child Interaction Intervention for Autism Spectrum Disorder</u>**			
Time (Total: 120 minutes**)**	**Objective**	**Activity**	**Materials**
15 minutes	a) Able to introduce some relaxation technique to parents	a) Using PowerPoint to introduce the concept of mindfulness (reduce stress level) <u>Activity 1</u>: Direct practice with parents, breathing technique → Parents would be invited to form a big circle and seated on either chair or floor → Parents would be asked to sit in a relax position → Relaxation music would be on, parents would be asked to follow and manage their breathing	- PowerPoint - Prompt card - Relaxation music

15 minutes	b) Able to build up relationship between parents	b) Playing ice-breaking game: Activity 2: "I am my child" Parents would be asked to become his/ her child and say the following: - i) My name is …, ii) I am a boy/ girl, iii) I am … old, iv) I like …, I fear ...	
45 minutes	c) Able to introduce the course structure to parents	c) Using PowerPoint to introduce the course outline, objective, and expectations to parents (for example, total number of sessions, topics, what to achieve for them or their child) Activity 3: Write out expectations → Parents would be asked to write about their expectations of the course such as what to achieve and learn from the course. → A ball would be passed around while the music is on. When the music stops, that parent has to share what is his/her expectation about the course and what he/she is hoping to change)	

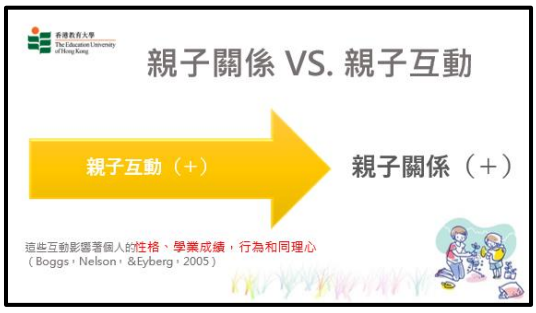
15 minutes	Trainer mingles with parents	Break (informal chatting)	
20 minutes	d) Able to introduce the concept of Autism Spectrum Disorder	d) Using PowerPoint and activity to introduce the concept of Autism Spectrum Disorder <u>Activity 4</u>: "Get to know my child" → Parents would be grouped to 3 or 4. Parents would be asked to write about what's my child's strength/ skill/ challenges → Each group would be asked to present their ideas and discussion would be involved <u>Activity 5</u>: "How does my child learn?" (for example, visual learner/ auditory learner/ kinesthetic learner) → Trainer would introduce different type of learning style → Parents would be grouped to 3 or 4. Parents would be asked to write about "how does my child learn?"	

		→ Each group would be asked to present their ideas and discussion would be involved → At the end, re-cap by using PowerPoint to discuss Autism Spectrum Disorder's strength and weakness and how children with Autism Spectrum Disorder learn	
10 minutes	e) Able to answer questions from parents	Q & A	

Table 5

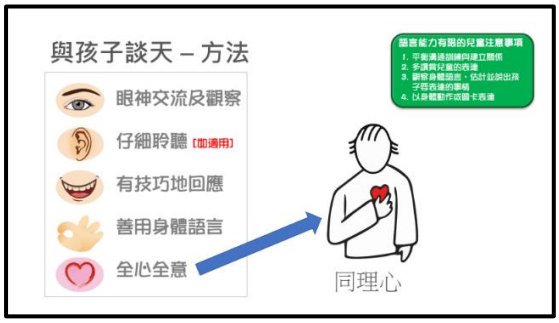
The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Session plan example II

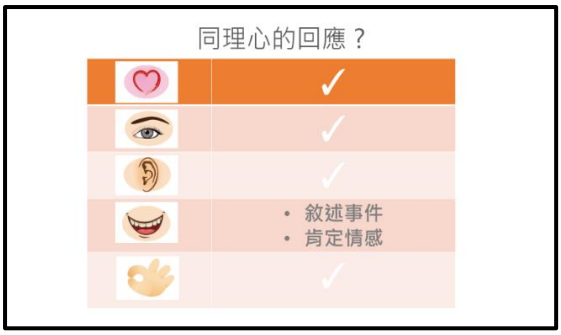
Session 2 **Topic: <u>Improve parent-child interaction</u>**			
Time **(Total: 120 minutes)**	**Objective**	**Activity**	**Materials**
15 minutes	a) Re-visit: able to use some relaxation technique to parents	a) Playing relaxation music in class (reduce stress level) <u>Activity 1</u>: Direct practice with parents: breathing technique → Parents would be invited to form a big circle and seated on either chair or floor → Parents would be asked to sit in a relax position → Relaxation music would be on, parents would be asked to follow and manage their breathing	-PowerPoint -Prompt card -Relaxation music -Toys (from Supporting Unit for Special Educational Needs and Parents) -Paper and pen

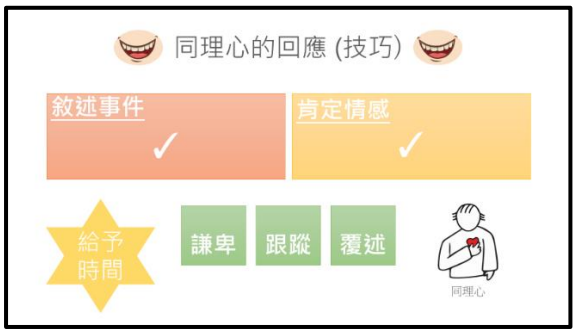
	b) Able to build up relationship between parents and introduce the importance of parent-child interaction through play	b) Playing ice-breaking game: <u>Activity 2</u>: "Rock, Paper, Scissor shoot" → Parents would be asked to play "Rock, Paper, Scissor shoot" among themselves (To allow parents to reflect: how do we build a relationship)	
40 minutes	c) Able to introduce Child-Centered Play therapy technique	c) Using PowerPoint, discussion and demonstrate play skills to introduce the concept of child centered play therapy to build up positive parent-child interaction: - 1) Importance of parent-child interaction  	

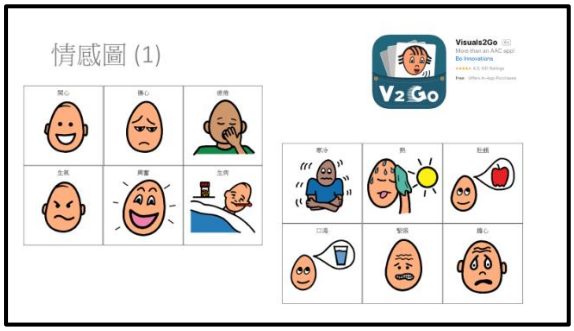
2) How to build up parent-child interaction

3) Importance of chatting with your child

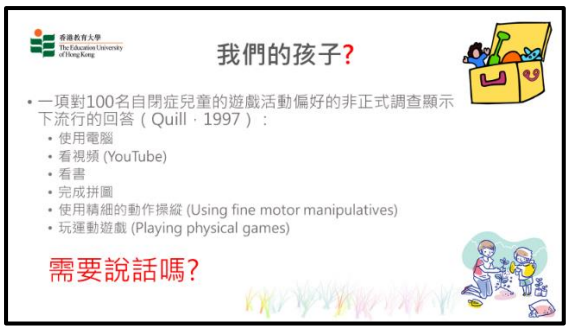


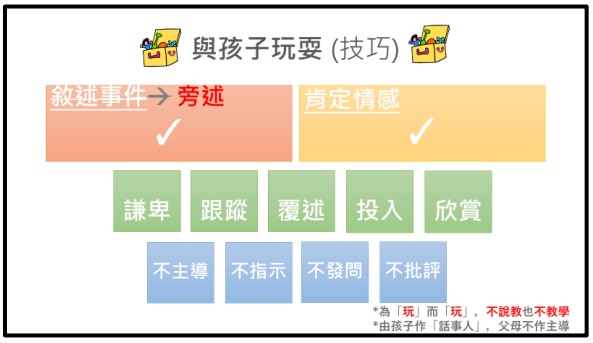


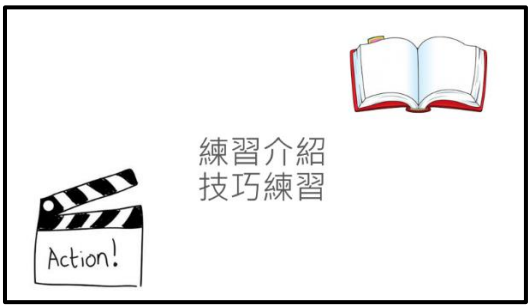


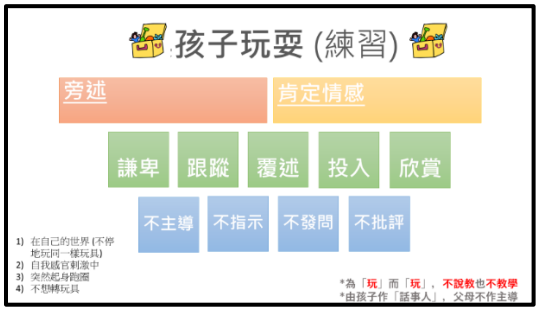


4) Importance of play skills



		  	
15 minutes	Trainer mingles with parents	Break (informal chatting)	

40 minutes	d) Able to allow parents to practice the new technique: 1) Talking 2) Playing	Role Play Practice  <u>Activity 3: How to talk with your child?</u> A piece of paper and a pen is given to each parent, parents would be paired up, one of the parents would be drawing anything they like, and the other parent would then practice how to describe what the parent is drawing (without judging and commenting), waiting and listening the child (without giving any instruction). Parents would be exchanged their role. <u>Activity 4: How to play with your child?</u> Before the session, parents would be asked to bring their child's favourite toys from home, or they can borrow from Supporting Unit for Special Educational Needs. Parents would be	

		paired up, one of the parents would be pretended to play (like their child) and the other parent would then practice how to describe what the parent is playing (without judging and commenting), recognizing emotions, waiting, praising, following listening and repeat what the child just said (without giving any instruction). Parents would be exchanged their role.) They would be asked to practice the new technique by using the cue cards.   	

		à Few groups of parents would be asked to demonstrate in front of the class → Sharing: parents would be asked to share and reflect on what they could or could not do in the practice	
10 minutes	e) Able to answer questions from parents	Q & A	

Table 6

The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Prompt cards for parents

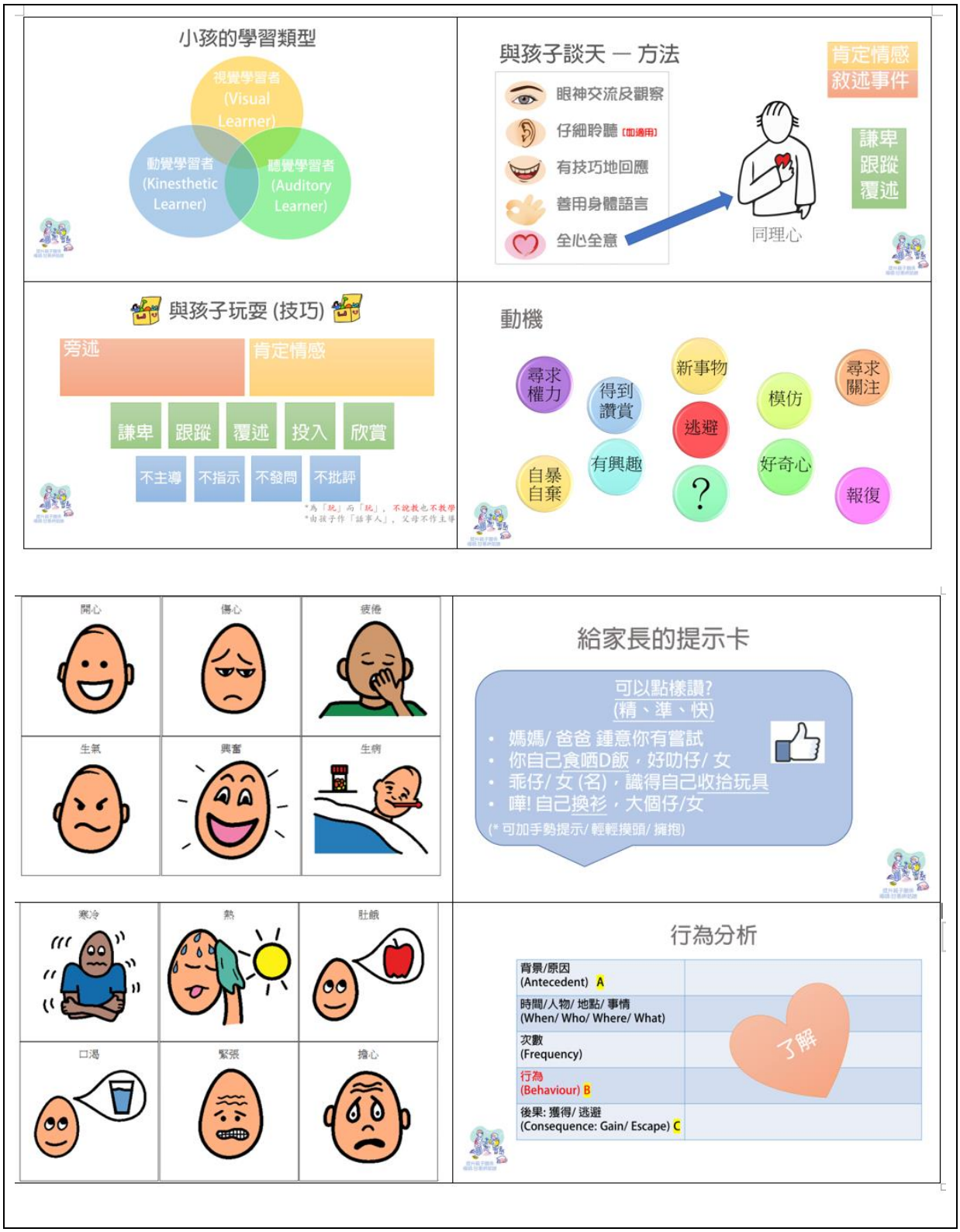


Table 7

The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Photos of direct practice

Table 8

The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Direct training practice record sheet

香港教育大學 The Education University of Hong Kong

Department of Special Education & Counselling 特殊教育與輔導學系

Direct training practice		
	Time	**Content**
Briefing	**5 minutes**	**Settle: Toilet** **Part 1: Child-Led Play, Parent-Led Play, Clean-up(35 minutes)** **Part 2: Discuss with parent (10 minutes or more)** **(Total: 60 minutes)**
Child-Led Play (CLP)	**15 minutes**	
Parent-Led Play (PLP)	**15 minutes**	
Clean-up (CU)	**5 minutes**	

Chapter 4: Research Design and Methodology

Research Design

Pre-and-post comparison study on a convenience sample was used in this study. Children with Autism Spectrum Disorder (age from 3 to 6) or at risk of it, and their parents were invited to participate in the study. In this study, the independent variable was the Parent-Child Interaction Intervention for Autism Spectrum Disorder, and the dependent variables were: (a) attributes of the parent-child interactions and (b) parental stress.

Due to the social unrest in Hong Kong followed by the COVID-19 pandemic, I could only run face-to-face recruitment seminars at 2 local non-governmental organization. It would be preferable to have a control group, but it was hard to recruit participants who had Autism Spectrum Disorder but did not receive any supportive intervention in Hong Kong.

Besides, the COVID-19 pandemic hastened the completion of the whole study in 7 months without any follow up (for example, 3 months later).

Also, previous studies showed that children with Autism Spectrum Disorder's interactions with parents or others typically do not improve naturally, for example, such parents in the control groups of past studies showed no significant improvement in later assessments compared to earlier assessments (e.g., Siller et al., 2014; Zhao & Chen, 2018). The lack of improvement among such parents and children without intervention reduces the value of a control group (though still preferable).

Methodology

Recruitment process Invitation letters were sent to potential local non-governmental organizations (NGO) in Hong Kong. Two NGOs accepted the invitation and welcomed their parents of children with Autism Spectrum Disorder to join the recruitment seminars in June 2019. During the seminar, the author explained the Parent-Child Interaction Intervention for

Autism Spectrum Disorder, the targeted group and inclusion criteria (parent of children with Autism Spectrum Disorder or at risk of it, age from 3 to 6 years old), the intervention outline, number of sessions, and the venue of the training sessions.

At the end of the recruitment seminar, an invitation letter and a consent form were given to parents about joining the Parent-Child Interaction Intervention for Autism Spectrum Disorder (see Table 9, Table 10, Table 11 and Table 12) at the Supporting Unit for Special Educational Needs (SuSEN) from the Centre for Special Educational Needs and Inclusive Education (CSENIE) in The Education University of Hong Kong (EdUHK).

Participants A total of 41 pairs of parent-child were recruited. Due to inappropriate child age, family issue, or no Autism Spectrum Disorder symptoms, 20 parent-child pairs were excluded. Based on psychological or pediatric assessment reports, 21 pairs of parent-child with Autism Spectrum Disorder or at risk of it participated. Parents' ages ranged from 32 to 48 years old (all females). Among these 21 mothers, (a) 18 were married and 3 were single mothers, (b) 11 graduated from university, and 10 graduated from high school or below, (c) 9 were working mothers and 12 were housewives. Children's ages ranged from 3 to 6 years old (17 boys and 4 girls).

In the Hong Kong system, the Child Assessment Centre (CAC) (under the Health Department of Hong Kong) provides a one-page general developmental assessment report by the paediatric doctor or clinical psychologist to indicate the child's ability (e.g., the cognitive development, language development, motor development, social development, behavioural and attention). In the study, we only asked the parents to provide either a CAC developmental report or a diagnosed medical report as the cost of having an IQ test may not be affordable for local families.

Parents participated in the pre-and-post comparison study with their child in the Parent-Child Interaction Intervention for Autism Spectrum Disorder in August to September 2019

for Pre-Test and January 2020 for Post-Test. The author examined each turn of talk/behaviour of each child and of each parent and classified them as types of positive behaviors or types of negative behaviors.

Institutional Review Board's or Ethics Committee's approval After the submission of the current thesis proposal, an ethical review application was also submitted to the Human Research Ethics Committee from The Education University of Hong Kong. The ethical approval was granted for the period from 1 August 2018 to 31 August 2020.

Table 9

Parent Invitation Letter (Chinese)

香港教育大學
The Education University of Hong Kong

Department of Special Education & Counselling
特殊教育與輔導學系

家長參與研究邀請信

研究計劃：如何協助自閉症的子女在家中提升親子關係?

致 親愛的家長：

誠邀　閣下及　貴子女參加上述研究計劃。本研究由講座教授趙明明博士負責監督，並由香港教育大學特殊教育與輔導學系之研究院博士生甘惠妍女士負責執行。

本研究的目的是為了了解父母如何與自閉症的兒童的親子互動，特別是與兒童在玩耍的時候。同時，我們希望能找出相關的技巧來提升父母與兒童的互動。將有 20-40 對親子(三至六歲)被邀請加入研究。本研究會使用觀察和面談的方式來收集相關的數據。所有親子會被邀請參與預測和後測的觀察或面談，時間不會超過兩小時。預測和後測的觀察將會錄影並會把面談錄音(如獲參與者批准)。所有觀察記錄僅作日後數據分析用途。

在預測和後測的期間，實驗組的家長將給予十節的家長課程。這些家長將參加 8 次小組課程，每次小組課程約 2 小時，而個別親子互動諮詢會進行 2 次，每次約 1 小時。其他家長將會被安排特殊教育支援組的其他服務或下一輪的服務。

本研究中，不會有任何潛在的風險。閣下及　貴子女的參與純屬自願性質。閣下及　貴子女享有充分的權利在任何時候決定退出這項研究,更不會因此引致任何不良後果。

凡有關　貴子女的資料將會保密，一切資料的編碼只有研究人員得悉。所有涉及個人身份及資料會以編碼方式儲存作數據，確保參加者的私隱受到保障，研究數據將儲存於首席研究員辦工室三年，之後徹底銷毀。

是次研究並不為閣下提供個人利益，但所搜集數據將對研究學習動機的問題提供寶貴的資料。研究結果亦有可能被發佈於博士學位論文、期刊論文或教學演示中。

如　閣下或　貴子女對這項研究的操守有任何意見,可隨時與香港教育大學人類實驗對象操守委員會聯絡(電郵: hrec@eduhk.hk ; 地址:香港教育大學研究與發展事務處)。如　閣下想獲得更多有關這項研究的資料，請與首席研究員甘惠妍女士聯絡，電話(852) 6227-3266 或聯絡她的導師講座教授趙明明博士，電話(852) 2948 8602。

多謝閣下的支持及參與，敬希早日賜覆

首席研究執行員

甘惠妍女士

香港教育大學特殊教育與輔導學系之研究院博士生

電話：6227 3266　　電郵：s1102205@s.eduhk.hk

二零一九年六月二十日

Table 10

Parent Invitation Letter (English)

香港教育大學
The Education University of Hong Kong

Department of Special Education & Counselling 特殊教育與輔導學系

Invitation Letter for Parent Participation in Research

Research project: How to help children with Autism Spectrum Disorder to improve parent-child relationship at home?

Dear Parents：

You are invited to participate with your child in a project supervised by Prof. Chiu Ming Ming and conducted by KAM WAI YIN, EVITA, who is doctorate student of the Department of Special Education and Counselling (SEC) in The Education University of Hong Kong.

This study is aiming to understand how parents interact with their child with autism spectrum disorder during play time setting as well as investigate strategies for parents to interact with their child effectively. It will be essential to conduct a study in the use of both observation and interview to collect relevant and in-depth data. It will take no longer than two hours for either observation or interview in pre-and-post study. 10 sessions of parent-child interaction intervention will be conducted. There will not be any risk or potential threat in the current study.

You and your child's participation in the project is voluntary. You have every right to withdraw from the study at any time without negative consequences. All information related to you and your child will remain confidential, and will be identifiable by codes known only to the researcher.

If you would like to obtain more information about this study, please contact Kam Wai Yin, Evita at telephone number (852) 6227 3266 or their supervisor Prof. Chiu Ming Ming at telephone number (852) 2948 8602.

If you or your child have/ has any concerns about the conduct of this research study, please do not hesitate to contact the Human Research Ethics Committee by email at hrec@eduhk.hk or by mail to Research and Development Office, The Education University of Hong Kong.

Thank you for your interest in participating in this study

Kam Wai Yin, Evita

Principal Investigator

Doctorate student of the Department of Special Education and Counselling (SEC) in

The Education University of Hong Kong

Tel：6227 3266 Email：s1102205@s.eduhk.hk

20th June, 2019

Table 11

Parent Consent Form (Chinese)

香港教育大學
The Education University of Hong Kong

Department of Special Education & Counselling 特殊教育與輔導學系

如何協助自閉症的子女在家中提升親子關係?

家長同意書回條

請於 2019/08/01 或之前填妥此回條並請交回特殊教育支援組或電郵

(s1102205@s.eduhk.hk) 謝謝!

致 ： 甘惠妍女士 - 香港教育大學特殊教育與輔導學系之研究院博士生

學生姓名：_____ 班級：_____

性別：男 / 女 學生年齡：_____

本人明白上述的研究程序，並就本計劃回覆下列項目，及簽署作實。 本人是自願參上述的研究項目，研究開始後，本人有權拒絕或退出參與，並不需要面對任何後果。

(請在以下適用空格內畫＜ü＞號)

☐ 本人 **同意/ 不同意** (刪去不適用項) 參加是次研究計劃。

☐ 本人 **同意/ 不同意** (刪去不適用項) 敝子女參加是次研究計劃。

家長簽署：_____

家長姓名：_____

日期：_____

聯絡電話：_____

電郵：_____

Table 12

Parent Consent Form (English)

香港教育大學
The Education University of Hong Kong

Department of Special Education & Counselling 特殊教育與輔導學系

Research project: How to help children with Autism Spectrum Disorder to improve parent-child relationship at home?

Parent Consent Form Reply Slip

Please fill in this reply slip on or before 2019/08/01 and return it to the Supporting Unit for Special Educational Needs or email (s1102205@s.eduhk.hk). Thank you!

To: Kam Wai Yin, Evita

Doctorate student of the Department of Special Education and Counselling (SEC) in The Education University of Hong Kong

Student Name：_____ Class：_____

Gender：Male / Female Student Age：_____

I understand the above research procedure, and I reply to the following items on this plan and sign for confirmation. I am voluntarily participating in the above-mentioned research projects. After the research starts, I have the right to refuse or withdraw from participating, and I do not need to face any consequences.

(Please draw ＜✓＞in the applicable space below)

☐ **I agree / disagree (delete inapplicable items) to participate in this research project.**

☐ **I agree / disagree (delete inapplicable items) My children participate in this research project.**

Parent Signature：_____

Parent Name：_____

Date：_____

Contact Number：_____

Email：_____

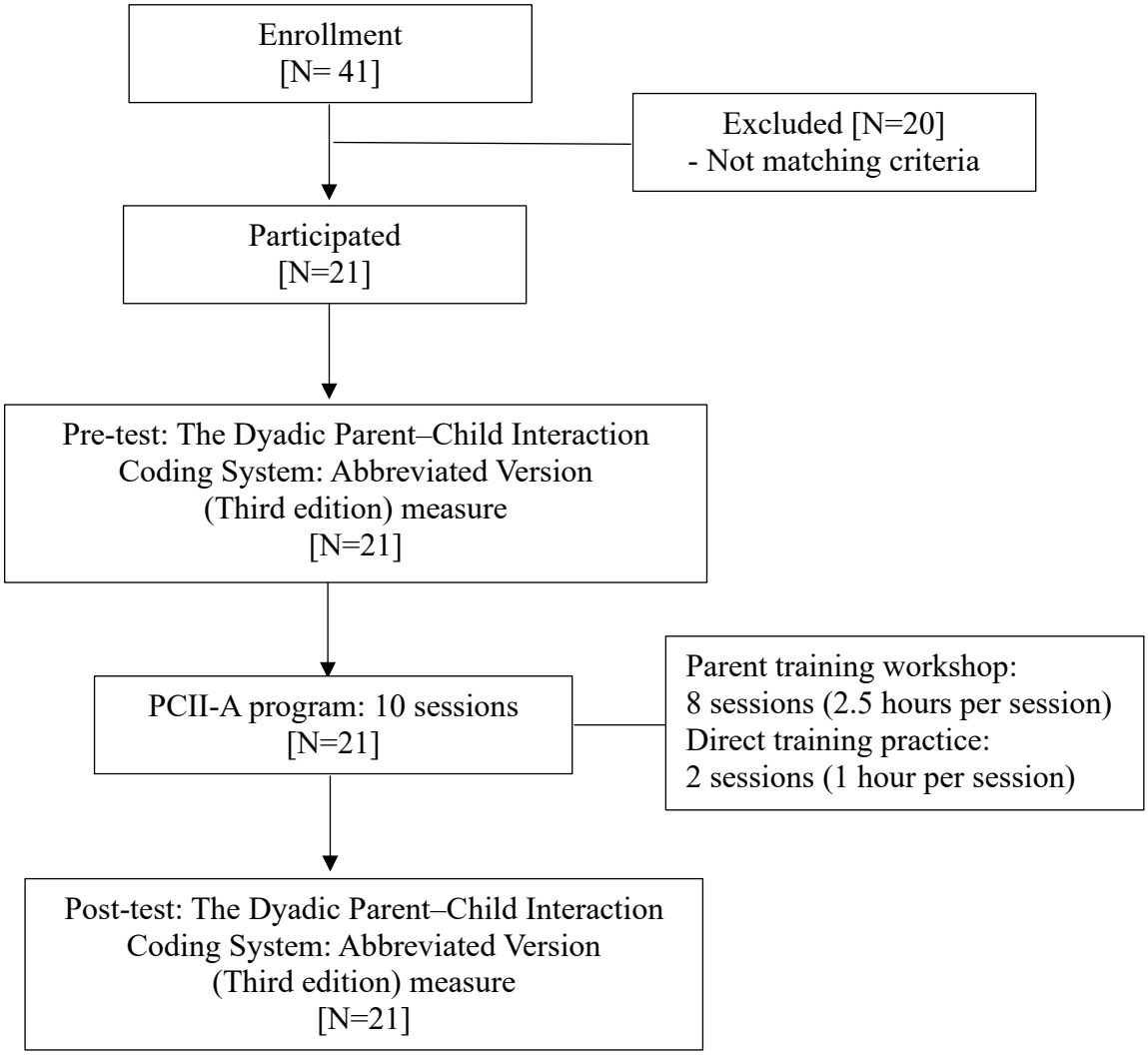


Figure 11. Flowchart of the research procedures

For the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents were invited to complete 10 consecutive weeks of intervention sessions (8 two-hour sessions of parent training workshop and 2 one-hour sessions of direct training practice with their child) during October 2019 to December 2019. In the pre-and-post comparison study, each parent-child pair were assessed with the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (Eyberg et al., 2004). See Figure 11 for the research procedures.

Assessment measure

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure is a behavioural observation system which was designed to measure the quality of parent-child social interactions (Eyberg et al., 2004). It allows to record important parent and child behaviours as one part of the psychological evaluation of measuring childhood disorders and/or parenting skills and its system permits selection of categories that address the specific purpose in this study. Such coding system were used on to measure baseline or pre-treatment behaviours (Eyberg et al., 2004).

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure has three standardized activities: (i) Child Led Play, (ii) Parent Led Play, and (iii) Clean-up (Eyberg et al., 2004) (See Table 13). The three activities require a total of 25 minutes: 10 minutes of Child-Led Play, 10 minutes of Parent-Led Play and 5 minutes of Clean-up. As parents of children with Autism Spectrum Disorder find it hard to interact with their child, we expected to observe the following, i) how parents interact with their child in Child-Led Play, Parent-Led Play and Clean-up (for example, with more positive or negative behaviours, agree or disagree with their child) and ii) how children interact with their parents in Child-Led Play, Parent-Led Play and Clean-up (for example, with more positive or

negative behaviours, agree or disagree with their parent). Specific parent and child behaviours will be discussed in more detail below.

In the Child-Led Play situation, “the parent is instructed to allow the child to choose any activity and to play along with the child.” Hence, the child got to choose what to play in the observation room and the parent played along with them. In the Parent-Led Play situation, “the parent is instructed to select any activity and to get the child to play along with the parent according to the parent's rules”, which means the parent chose how to play, and the child was expected to follow the parent’s rules. In the Clean-up situation, “the parent is instructed to tell the child to clean up all the toys in the room without assistance”, which means the parent told the child to tidy up all the toys and put them into the toy box.

Table 13

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: (i) Child Led Play, (ii) Parent Led Play, and (iii) Clean-up (Eyberg et al., 2004)

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) Standard Situations	**Content**
(i) Child-Led Play	In the first situation, "the parent is instructed to allow the child to choose any activity and to play along with the child."
(ii) Parent-Led Play	In the second situation, "the parent is instructed to select any activity and to get the child to play along with the parent according to the parent's rules."
(iii) Clean-up	In the third situation, "the parent is instructed to tell the child to clean up all the toys in the room without assistance."

The three activities were carried at the observation room in Supporting Unit for Special Educational Needs from Centre for Special Educational Needs and Inclusive Education at The Education University of Hong Kong (Figure 12 and Figure 13). Observer can see the activities from outside via the closed-circuit television (CCTV) camera system (Figure 14). As the parent and their child were already in an artificial setting and they may act differently, thus, we tried to create an environment for them only, instead of having the observer joining in the room. A total of 21 pairs of parent-child with Autism Spectrum Disorder or at risk of it were invited to participate in the pre-and-post comparison study of the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (Eyberg et al., 2004) and they were all videotaped for further analysis.

Figure 12. Tseung Kwan O Study Centre at The Education University of Hong Kong, Supporting Unit for Special Educational Needs: Observation Room, Photo 1

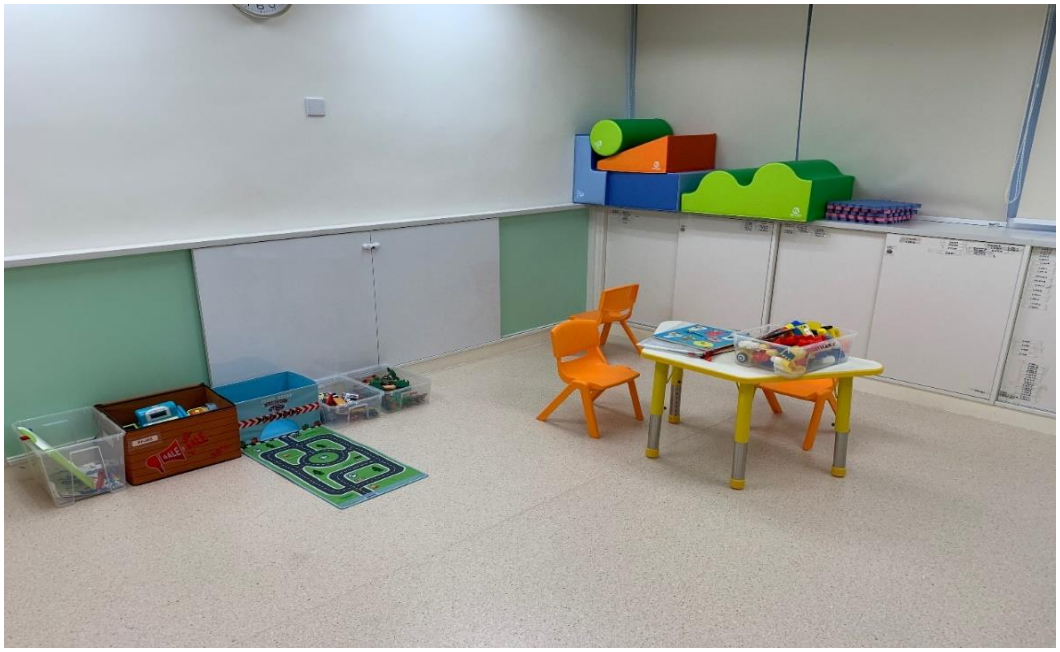


Figure 13. Tseung Kwan O Study Centre at The Education University of Hong Kong, Supporting Unit for Special Educational Needs: Observation Room, Photo 2

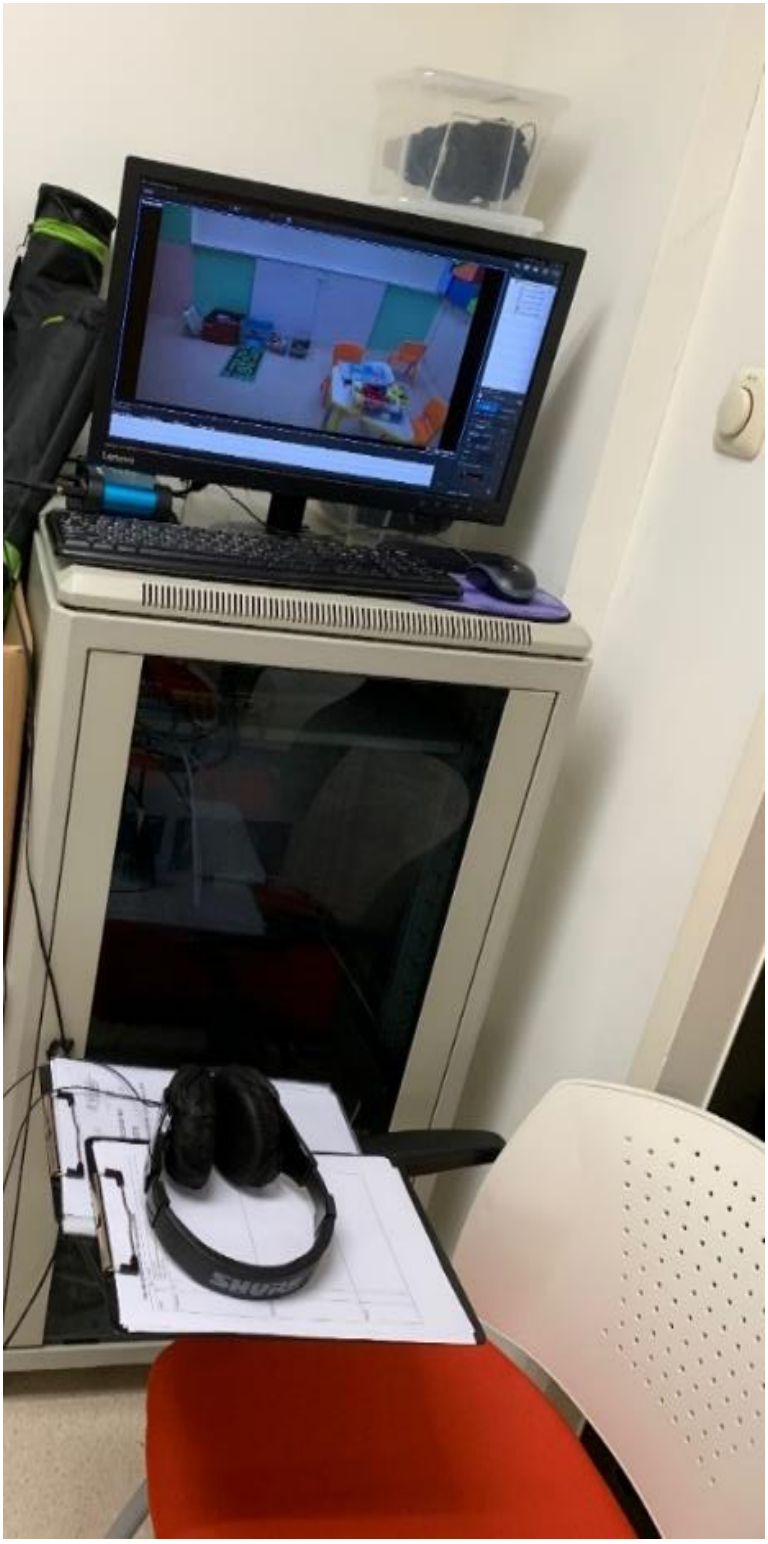


Figure 14. Tseung Kwan O Study Centre at The Education University of Hong Kong, Supporting Unit for Special Educational Needs: Observer, CCTV camera system

In this study, a list of toys, such as Magna-Doodle, supermarket game, transportation game, animal game, two wooden puzzles (bathroom and classroom setting), building blocks (see Table 14) were selected based on the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: examples of appropriate and inappropriate toys (see Table 15), "Appropriate toys are ones that encourage creativity and constructive play, such as building blocks, drawing materials, and toy animals. Inappropriate toys are ones that lead to noisy or aggressive behavior, are messy or difficult to clean up, elicit stereotyped responses, discourage conversation, or lead the parent or child to pretend they are a character in the play other than themselves" (Eyberg, et al., 2004).

The main purpose of using the above toys was to observe how parent and child would interact with each other based on these toys. During Child Led Play, the selected toys were used to develop the bonding between parent and child. During Parent Led Play, the selected toys were used to give opportunity for child to comply and follow parents' instructions.

A total of 7 toys were selected based on the examples of appropriate toys, for example, a supermarket game was selected as it is a common game across generations, and both parents and children can easily identify the roles of being a customer or a salesperson. Furthermore, the supermarket game captures a common, daily experience (for example, going to the supermarket with parents). Similarly, the transportation game is related to daily experience. Either parent or child could act like the driver or passenger. They can also pick which transport to use on the road and how to build the city.

For the animal game, more imagination from parent and child were needed. The parent and child may have to plan what kind of imaginative play they are going to enact, such as building a forest with animals. Or, they could go to the zoo in the vehicle from the transportation game. Or, they could add to the building blocks game (such as how they build something together). Or, they could mix this game with other toys. We expected to observe

how each parent or child give instructions or respond to each other during Child-Led Play, Parent-Led Play and Clean-up.

Apart from the active games that we selected, we also selected the Magna-Doodle and two wooden puzzles (bathroom and classroom setting). We aimed to see how they interact with each other and how they could create a game or activity in these toys. Both floor toys and table toys were placed in the observation room. Magna-Doodle, supermarket game, transportation game and animal game were placed on the floor, as children usually play with these toys on the floor. The two wooden puzzles and the building blocks were placed on the table. Parent and child were welcome to play with all the toys and they could decide to play them on the floor or on the table. All the toys were laid out in the same way for each parent-child pair in both pre-and-post comparison study to maintain consistency (see Figure 12 and Figure 13).

Table 14

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Selected toys (Eyberg et al., 2004)

Selected toys	
Magna-Doodle	Supermarket game
	
Transportation game	Animal game
	
Wooden puzzles	Wooden puzzles
	
Building blocks	
	

Table 15

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Examples of appropriate and inappropriate toys (Eyberg et al., 2004)

Appropriate Toys	**Inappropriate Toys**
Building blocks	Bats or balls
Legos or Duplos	Scissors
Wooden puzzles	Hammer
Magnetic letters and numbers	Toy Guns or Swords
Constructo-Straws	Superhero Figures
Tinker Toys	Story books
Chalkboard and chalk	Puppets
Magna-Doodle	Toy Telephones
Toy tea set or food	Play Dough
Toy buildings with toy people, animals, vehicles, etc.	Paints or markers
Mr. or Mrs. Potato Head	Bubbles
Lincoln Logs	Board games or card games
Coloring books	Video Games
Crayons (sometimes)	Crayons (sometimes)

Procedure. First, the author would greet each parent-child pair on their arrival at the Supporting Unit for Special Educational Needs from Centre for Special Educational Needs and Inclusive Education at The Education University of Hong Kong. The author would then discuss with the parent about the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure procedure based on the instruction (see Table 16) (Eyberg, et al., 2004). A cue card was prepared based on the instruction (see Table 17) for parents to follow about what they could say to their child in these three situations (see Table 13). When the parent and the child were ready, they were invited to the observation room (see Figure 12 and Figure 13) for the 25 minutes of the three activities. Each parent was told they could stop at any point of the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure procedure if they were not comfortable. The author was constantly taking notes (see Table 18) about the interaction between the parent-child to be ready if they had any problem. After the parent-child pair completed the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure, the author would then discuss with the parent how to improve the interaction, the upcoming Parent-Child Interaction Intervention for Autism Spectrum Disorder, or anything related to the study.

Table 16

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Instruction (Eyberg et al., 2004)

DPICS Standard Situations	Instruction
(i) Child Led Play	"In this situation tell _____ that he/she may play with whatever he/she chooses. Let him/her choose any activity he/she wishes. You just follow his/her lead and play along with him/her." After the 5-minute warm-up period, the parent is told: "You're doing a nice job of letting _____ lead the play. Please continue to let him/her lead."
(ii) Parent Led Play	"That was fine. Please do not clean up the toys at this time. Now we'll switch to the second situation. Tell _____ that it is your turn to choose the game. You may choose any activity. Keep him/her playing with you according to your rules." After the 5-minute Parent-Led Play warm-up period, the parent is told: "You're doing a nice job of leading the play. Please continue to get _____ to play along with you according to your rules."
(iii) Clean-up	"That was fine. Now please tell _____ that it is time to leave the playroom and the toys must be put away. Make sure you have him/her put the toys away by him/herself. Have him/her put all the toys in their containers and all the containers in the toy box."

Table 17

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Cue card for parents (Eyberg et al., 2004)

Table 18

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Pre-Test/ Post-Test record sheet (Eyberg et al., 2004)

香港教育大學 The Education University of Hong Kong

Department of Special Education & Counselling 特殊教育與輔導學系

Pre-Test/ Post-Test Observation (Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure)		
	Time	**Content**
Briefing	**5 mins**	**Settle: Toilet** **Part 1: Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (25 mins)** **Part 2: Discuss with parent**
Child led play	**10 mins**	
Parent led play	**10 mins**	
Tidy up	**5 mins**	

Parent Stress index. For measuring parent stress, **Parenting Stress Index/ Short Form** (PSI-SF) (Abidin, 1995) has three subscales:(a) *Parental Distress* (12 items; α = .87; for example, Feel that I cannot handle things); (b) *Parent-Child Dysfunctional Interaction* (12 items; α = .80; for example, Child does not like me or want to be close); (c) *Difficult Child* (12 items; α = .85; for example, Child is moody and easily upset) and the reliability of the 36 items was α = .91 (Abidin, 1995) (see Table 19). All items were on a Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). This study used the Chinese validated version of PSI-SF by Lam (1999), the reliability of the 36 items was α = .89 (see Table 20). Parents were told to complete the PSI-SF by Lam (1999) before and after the Parent-Child Interaction Intervention for Autism Spectrum Disorder.

Table 19

Parent Stress index (English) (Abidin, 1990)

	Parent Stress index (English) (Abidin, 1990)
1.	Feel that I cannot handle things
2.	Gave up my life for children's needs
3.	Feel trapped by parenting responsibilities
4.	Unable to do new and different things
5.	Never able to do things that I like to do
6.	Unhappy with last purchase of clothing for myself
7.	Quite a few things bother me
8.	Having a child caused problems with spouse
9.	Feel alone and without friends
10.	Expect not to enjoy myself at parties
11.	Not as interested in people as I used to be
12.	Don't enjoy things as I used to
13.	Child rarely does things for me
14.	Chid does not like me or want to be close
15.	Child smiles at me less than expected
16.	My efforts for child aren't appreciated
17.	Child doesn't giggle or laugh much when playing
18.	Child doesn't learn as quickly as other children
19.	Child doesn't smile as much as other children
20.	Child isn't able to do as much as expected
21.	Takes a long time for child to get used to new things

22. Parent's rating of competence
23. Expected to have closer feelings for my child
24. Child does things that bother me to be mean
25. Child cries or fusses more often than other children
26. Child wakes in bad mood
27. Child is moody and easily upset
28. Child does things that bother me a great deal
29. Child reacts strongly
30. Child gets upset easily
31. Child's sleeping or eating schedule hard to establish
32. Getting child to do something is hard
33. Parent report a number of bothersome things child does
34. Child does some things that bother me
35. Child is more of a problem than expected
36. Child makes demands on me

Table 20

Parent Stress index (Chinese) (Lam, 1999)

	Parent Stress index (Chinese) (Lam, 1999)
1.	我常常覺得無法把事情處理的很好 (Feel that I cannot handle things)
2.	為了滿足這個孩子的需求，我犧牲許多自己的生活那是我沒有想到的 (Gave up my life for children's needs)
3.	自從有了孩子以後，我覺得自已被為人父母責任綁定了 (Feel trapped by parenting responsibilities)
4.	自從有了孩子以後，我不能再嘗試新鮮的不同的事 (Unable to do new and different things)
5.	自從有了這個孩子後，我幾乎不能做我喜歡的事 (Never able to do things that I like to do)
6.	我為自己買衣服後，會感到後悔或不快樂 (Unhappy with last purchase of clothing for myself)
7.	我的生活中有太多令我煩惱的事情 (Quite a few things bother me)
8.	我沒有想到這個孩子出生使我們夫妻之間出現如此多的問題 (Having a child caused problems with spouse)
9.	我感到孤獨，沒有朋友 (Feel alone and without friends)
10.	我參加聚會時，通常不會玩的很愉快 (Expect not to enjoy myself at parties)

11. 我現在已經不像從前那樣喜歡與人交往了

(Not as interested in people as I used to be)

12. 我不像過去那樣欣賞事物， 享受生活樂趣樂趣了

(Don’t enjoy things as I used to)

13. 我這個孩子很少做出讓我很高興的事

(Child rarely does things for me)

14. 大部分時間我覺得這個孩子不喜歡我，而且不親近我

(Chid does not like me or want to be close)

15. 我這個孩子對我微笑的次數比我期望的少很多

(Child smiles at me less than expected)

16. 當我為這個孩子付出心力時，我覺得我的努力白費心思

(My efforts for child aren’t appreciated)

17. 玩耍時候，我這個孩子很少笑得很開心

(Child doesn’t giggle or laugh much when playing)

18. 我這個孩子的學習速度似乎比一般的小孩慢

(Child doesn’t learn as quickly as other children)

19. 我這個孩子不像其他小孩一樣喜歡笑

(Child doesn’t smile as much as other children)

20. 我這個孩子能做的事情沒有我想像中的多

(Child isn’t able to do as much as expected)

21. 我這個孩子通常要花很長時間才能適應新事物

(Takes a long time for child to get used to new things)

22. 我因為不能和這個孩子培養更親密的、更溫暖的感覺而煩惱

(Expected to have closer feelings for my child)

23. 有時候我這個孩子會故意做一些令我很生氣的事情

(Child does things that bother me to be mean)

24. 我這個孩子比其他小孩子還要愛哭、愛鬧

(Child cries or fusses more often than other children)

25. 我這個孩子睡醒時，情緒通常不好

(Child wakes in bad mood)

26. 我覺得這個孩子很情緒化，而且常常不高興

(Child is moody and easily upset)

27. 我這個孩子會做一些令我困擾的事情

(Child does things that bother me a great deal)

28. 我這孩子對於他不喜歡的事情會有強烈反應

(Child reacts strongly)

29. 我這個孩子很容易為小事就不高興

(Child gets upset easily)

30. 我這個孩子睡覺或者吃東西時間不固定，養成固定的作息時間比我預期困難多了

(Child's sleeping or eating schedule hard to establish)

31. 我這個孩子的有些行為的確令我很煩惱

(Child does some things that bother me)

32. 我這個孩子的問題比我預料中的還要多

(Child is more of a problem than expected)

33. 我這個小孩子對父母的要求比一般的小孩子多

(My child has more demands on his parents than ordinary children)

34. 我覺得我是一位 …

(I think I am a …)

非常不稱職的父母 (1)
(Very incompetent parents)

有一點不稱職的父母 (2)
(A little bit incompetent parents)

和一般父母一樣的父母 (3)
(Same as ordinary parents)

比一般父母好些的父母 (4)
(Parents who are better than ordinary parents)

非常稱職的父母 (5)
(Very competent parents)

35. 要我這個孩子去做一些事情或停止某些事 …

Want my child to do something or stop doing something …

比我預料中困難很多 (1)
(Much more difficult than I expected)

比我預料中困難一些 (2)
(A little bit more difficult than I expected)

和我預料中一樣 (3)
(Same as what I expected)

比我預料中還要容易些 (4)
(It's easier than I expected)

比我預料中容易很多 (5)
(Much easier than I expected)

36. 請仔細回想並且計算一下，您這個孩子有多少行為令你感到煩惱 (如體弱、偏食、打架等)

Please think about it carefully and calculate how many behaviours of your child is bothering you (such as body is being weak, partial eclipse, fighting, etc.)

1-3 件 (1)	4-5 件 (2)	6-7 件 (3)
(1-3 behaviours)	(4-5 behaviours)	(6-7 behaviours)
8-9 件 (4)	10 件以上 (5)	
(8-9 behaviours)	(Above 10 behaviours)	

Parent practice strategies. Throughout all the sessions, specific parent practice strategies were used to train the parents based on the previous literature (Barton and Fettig, 2013). Other parent practice strategies were added to train parents: 1) live modelling (Meadan et al., 2016), 2) embed the training strategies in daily routines (Minjarez et al., 2011), 3) practice new skills in parent-training sessions (Fava et al., 2011), 4) performance-based feedback in their implementation (Keen et al., 2010), and 5) self-reflection (Duda et al., 2008). Other instruction strategies include: 6) group discussion between parents, 7) related videos, 8) poster making, 9) prompt cards and tips, 10) relaxation technique: breathing, and, 11) direct practice (see Table 21).

Table 21

Parent practice strategies

	Parent Practice Strategies	Description
1	Live modelling (Meadan et al., 2016)	Demonstrating intervention practices
2	Embed the training strategies in daily routines (Minjarez et al., 2011)	Teaching parents to embed the intervention practices into home daily routines
3	Practice of new skills in parent-training sessions (Fava et al., 2011)	Providing opportunities for parent practice of new intervention skills during training sessions
4	Performance-based feedback in their implementation (Keen et al.,2010)	Providing parents specific/ corrective feedback regarding their implementation
5	Self-reflection (Duda et al., 2008)	Supporting parents in self-reflection of their implementation of the intervention
6	Group discussion between parents (additional)	Providing different intervention practice for parents to discuss among peers
7	Related videos (additional)	Demonstrating intervention practices or allow parents to reflect on their parenting by watching videos
8	Poster making (additional)	a/ Building up relationship between parents b/ Self-reflecting or practicing intervention strategies
9	Prompt cards and tips	Prompt cards and tips were given at the end of each

	(additional)	sessions. This would remind the parents to practice intervention strategies at home
10	Relaxation technique: breathing (additional)	Reducing stress level by introducing the relaxation technique for example, breathing
11	Direct practice (additional)	Practicing parent interaction and managing their child in play

The Parent-Child Interaction Intervention for Autism Spectrum Disorder was conducted by the principal investigator with over 10 years of experience teaching children with Special Educational Needs and with over 5 years of experience training parents. The required training materials are also attached: (i) The Parent-Child Interaction Intervention for Autism Spectrum Disorder program: Description (Table 3), (ii) The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Session plan example I & II (Table 4 and Table 5), (iii) The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Prompt cards for parents (Table 6), (iv) The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Photos of direct practice (Table 7), and (v) The Parent-Child Interaction Intervention for Autism Spectrum Disorder: Direct training practice record sheet (Table 8).

Chapter 5: Data Analysis and Results

In this study, we used *Statistical Interpretive Discourse Analysis* (SIDA) (Chiu et al., 2020) to understand parent-child interactions. *Statistical Interpretive Discourse Analysis* integrates both qualitative (*Interpretive Discourse Analysis*, IDA) and quantitative (*Statistical Discourse Analysis*, SDA) (Chiu & Lehmann-Willenbrock, 2016) methods so that the results of one analysis also informs the next analysis (Figure 15). More details will be explained in the coming paragraphs for each step of analysis.

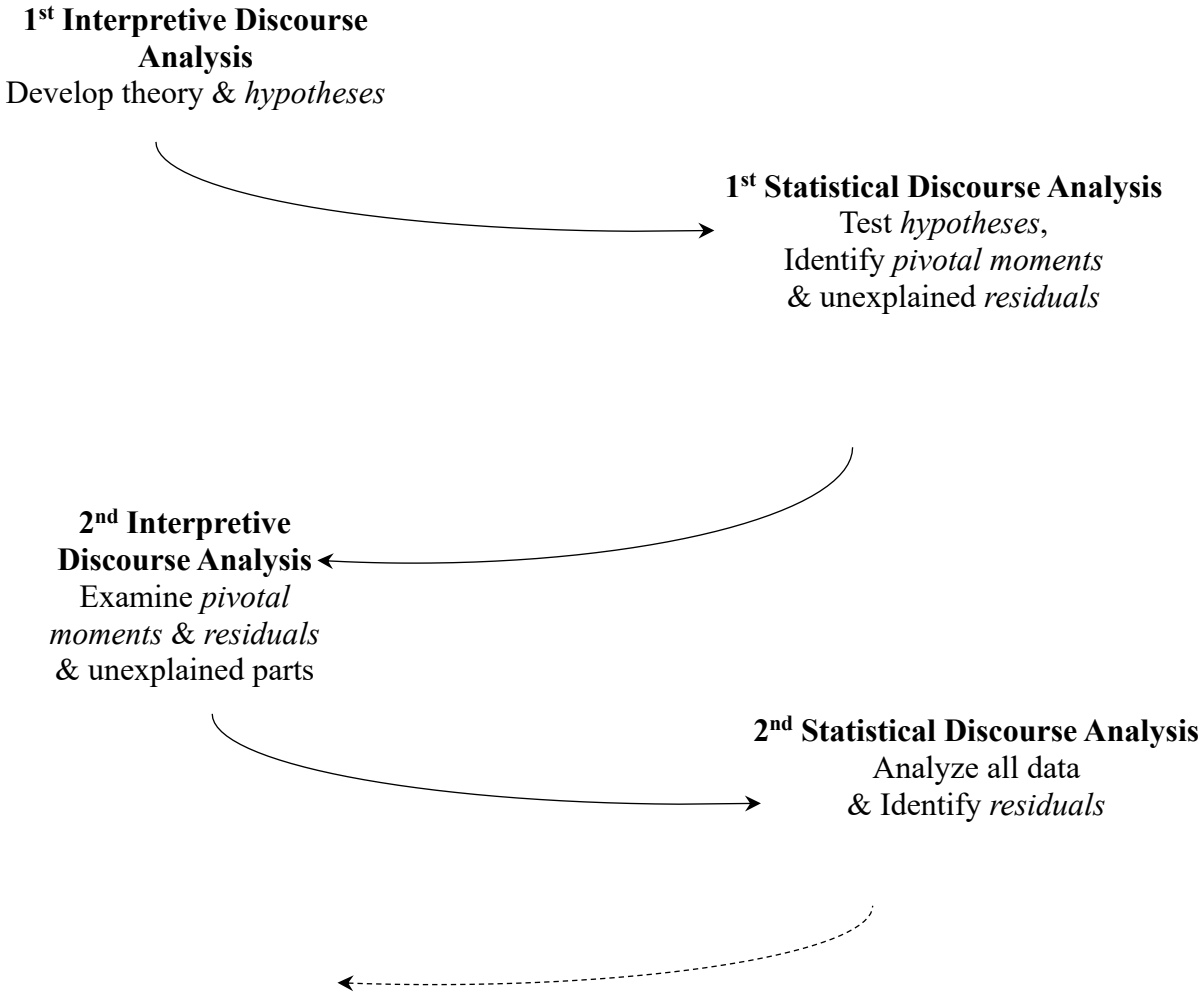


Figure 15. *Statistical Interpretive Discourse Analysis* consists of interpretive discourse analyses and statistical discourse analyses that can start or end with either analysis (Chiu et al., 2020)

From Qualitative Interpretive Discourse Analysis Ideas to a Quantitative Statistical Discourse Analysis Database

During data collection, 21 pairs of pre-and-post parent-child interactions were videotaped. The author and 3 other research assistants transcribed the videotapes.

Transcription A total of four independent observers (one principal investigator and three research assistants) were trained to record all the parent-child interactions in the three situations (see Table 22). The three trained research assistants were undergraduate students experienced in observation study and they were blind to experimental conditions.

The three research assistants were trained to record all the parent-child interactions in the three situations and summarize the conversations between parent and child, along with their behaviours. They were given around 4 hours of training by the author. The content of training was related to a) how to open the pre-and-post observation video recording from the Media File Player software, b) what to summarize in the pre-and-post observation excel (for example, time (such as start time, end time, child led play time, parent led play time, clean up time), informants (such as child, parent, observer), summarize the conversation, talk/ behaviour between parent and the child). They were told to record the first 15 minutes as a trial for the author to check on the consistency before they could start working on all the pre-and-post observation video recordings.

After each of the research assistants completed the transcription, the author would read through and check for the second time in order to ensure consistency. A decision tree was also developed to code for the talk/behaviours; it helped enhance inter-rater reliability. Discrepancies between the author and the research assistants were resolved through consensus.

1st Interpretive Discourse Analysis. (Qualitative) Based on the literature review, the author developed hypotheses. The author was interested in the effectiveness of the

Parent-Child Interaction Intervention for Autism Spectrum Disorder to improve the parent-child interaction, and how the parent and the child affect each other's actions. In the first Interpretive Discourse Analysis, the author read through all the videotape transcripts to understand which sequences of parent-child talk/behaviour raised the likelihood of desirable child behaviours or parent behaviours (for example, *positive touch*) (Figure 15).

1st Statistical Discourse Analysis. (Quantitative) Then, to create a database suitable for *Statistical Discourse Analysis*, we had to identify suitable units of analysis (for example, utterance, turn etc.) and categorize the qualitative video transcript data (Boyatzis, 1998). We chose a turn of talk/ behaviour as the unit of analysis; a turn of talk/ behaviour is a sequence of one person's words or actions that are bracketed by those of others (Chiu et al., 2020) (Figure 15). By analyzing each pair of parent-child interactions, with the existing categories (for example, *positive touch, negative talk*) from the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (Eyberg, et al., 2004), additional categories (for example, *laughter, play, fail to respond, negative behaviours*) were added to assess the effectiveness of the Parent-Child Interaction Intervention for Autism Spectrum Disorder.

To test all the hypotheses, the author ran some regressions,

Hypothesis 1: after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will show more positive behaviours (for example, *Positive touch, Laughter, Play*).

Hypothesis 2: after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents will show more positive behaviours (for example, *Positive touch, Laughter, Play*).

Hypothesis 3: after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children will show fewer negative behaviours (for example, *Fail to respond, Negative behaviours, Negative talk*).

Hypothesis 4: after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parent will report less stress.

2nd Interpretive Discourse Analysis. (Qualitative) In the second Interpretive Discourse Analysis, the author examined pivotal moment, residual and unexplained parts (Figure 15), for example, the author was interested to identify parent and child's likelihood in *agree*.

2nd Statistical Discourse Analysis. (Quantitative) To follow up with the 2nd *Interpretive Discourse Analysis. (Qualitative)*, new possible categories were identified (for example, *agree, child command, child question, parent question*). To test the likelihood of agree, the author ran regressions based on the new categories.

One or more cycles of *Interpretive Discourse Analysis* + *Statistical Discourse Analysis* comprise *Statistical Interpretive Discourse Analysis* (Figure 15). In this study, we had the 1st *Interpretive Discourse Analysis* → *1st Statistical Discourse Analysis* → *2nd Interpretive Discourse Analysis* → *2nd Statistical Discourse Analysis.*

Table 22

The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure: Example of recording the parent-child interactions

Row	Time	Observations (Talk/ Act)	Informant Child (C) Parent (P) Observer (O)
1	10:56:50	釣唔到呀 (Can't hook it up)	C
		我地唔好玩呢個呀, 好冇呀?	
2		(Let's stop playing with this one, okay?)	P
3	10:57:12	(Child talks to himself quietly and put the car back to the box)	C
4		咁頭先你話比賽，而家唔比賽啦?	
		(You said we will compete and now we don't?)	P
5		咁比一架 (Let's compete one (car))	C
6		攞呢架比賽 (Take this one (car) to compete)	C
7		(Mom waits for her child to reply)	P
8	10:57:28	咁你用的士比賽 (Then you use taxi for car racing)	C
9		3, 2, 1, Go, 斬左你！	
		(3, 2, 1, Go, cut you off!) (in a super-fast tone)	
		(Child pushes his car in the tunnel, child shows excitement)	C
10		(Mom pushes her car in the tunnel)	P

Analytic issues and statistics strategies

According to Chiu and Lehmann-Willenbrock (2016), the use of Statistical Discourse Analysis allows us to handle difficulties in data, outcomes and explanatory variables. In terms of data, Statistical Discourse Analysis can reduce coding complexity and increase inter-rater reliability (see Table 23).

Table 23

Addressing each analytic difficulty with statistical discourse analysis

Analytic difficulty	**Statistical Discourse Analysis strategy**
Data Set	
• Minimum sample size	• Use small unit of analysis to raise sample size
• Complex categories/codes (A, B…Q)	• Multi-dimensional coding (Chiu & Lehmann-Willenbrock, 2016)
• Inter-rater reliability	• Krippendorff's (2012) α
Outcome variables	
• Similar adjacent talk (t_3 ~ t_4)	• Q-statistics (Ljung & Box, 1979)
• Discrete variable (yes/no)	• Logit / Probit and odds ratios (Kennedy, 2008)
Explanatory variables	
• Sequences of turns of talk / notes (X_{t-2} or $X_{t-1} \rightarrow Y_0$)	· Vector Auto-Regression (VAR, Kennedy, 2008)
• Indirect, multi-level mediation effects (X $\rightarrow$**M**$\rightarrow$Y)	• Multilevel *M-test* (MacKinnon at al., 2004)

Note. Adapted from Chiu and Lehmann-Willenbrock (2016)

Minimum sample size, Power analysis. Statistical power differs across levels. For $\alpha = .05$ and a small effect size of 0.2, statistical power for 380 turns of talk is .97 (Konstantopoulos, 2008). Due to the low statistical power of this small sample of 21 parents and 21 children, the likelihood that a non-significant person-level result is a false negative is high, but we retain our usual confidence in our significant results.

Sufficient statistical power. The utility of a statistical analysis would depend upon the quality of the data such as sufficient sample size, missing data, and parallel conversations. Sufficient *statistical power* would require a large sample size, yet, using a smaller unit of analysis (turns rather than groups) would increase the sample size and decrease the required data collection, time and costs (see Konstantopoulos, 2008) (Table 23). In this study, we selected and examined all pre-and-post comparison study 21 pairs of parent-child interactions from the use of Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure (Eyberg, et al., 2004) (see Table 13), (i) Child-Led Play : selected the second part of 5 minutes, to identify the common use of behaviours from parents and children; (ii) Parent-Led Play: selected the first part of 5 minutes, to observe the transition from Child-Led Play to Parent-Led Play and to identify the common use of behaviours from parents and children; and (iii) Clean-up: selected the first 5 minutes (or less), to identify the time and the behaviours of parents and children. In this study, the sample size is 11,758 turns from 21 groups. The statistical power for 11,758 turns is greater than .99 for an effect size of 0.1 at $\alpha = .05$.

Table 24

Description of specific categories

	Categories	Positive or Negative behaviour	Description
1	Laughter (added by author)	+	The action or sound of laughing
2	Play (added by author)	+	The activity engaged in for enjoyment and recreation by the child/ parent
3	Positive touch (Eyberg, et al., 2004)	+	Either neutral and positive touching of the child with any part of the parent's body or with an object, such as put arm around the child, hug child who hugs parent back, or pat child's arm several times in quick succession
4	Failing to respond (added by author)	-	No answer to question occurs when the child/ parent does not attempt to provide the information requested in the question
5	Negative behaviour (added by author)	-	A negative action carried by the child/ parent such as having a tantrum, pushing parent, hitting parent, grabbing parent's things without asking
6	Negative talk (Eyberg, et al., 2004)	-	Verbal expression of the child or the child's attributes, activities, products or choices. It includes playful, sarcastic, and impolite speech

Complex categories. With larger numbers and greater complexity of codes or categories, (a) the training time for coders is higher, (b) the overall coding time is higher, (c) the number of coding conflicts is higher, (d) the intra-coder reliability is lower, (e) the inter-coder reliability is lower, (e) the degrees of freedom are lower, and (f) the accuracy is lower (Chiu & Lehmann-Willenbrock, 2016) (Table 23). Hence, for each dimension, our coding uses *decision trees* to create mutually exclusive and exhaustive categories. These decision trees clarify coding decisions which enhances *inter-rater reliability* (Figure 16). By streamlining coding decisions with simple questions, these decision trees reduce effort. Lastly, regularly asking answering the same questions saves time (Chiu & Lehmann-Willenbrock, 2016). Three categories were used to code Positive behaviours (*Laughter, Play, Positive touch*), and three categories were used to code Negative behaviours (*Failing to respond, Negative behaviour, Negative talk*). The videos were used to identify instances of each category (See Table 24).

A decision tree was created to help coders place each datum in the appropriate category. A decision tree uses yes/no questions to identify easier, distinct categories before using finer, complex criteria for difficult categorizations (Chiu et al., 2020). Decision trees clarify coding to enhance *inter-rater reliability*. We first identified the turns by asking "does this person respond?" (See Figure 16), for example, when the parent or child did not respond to the other person as → No, we would code as *failing to respond*.

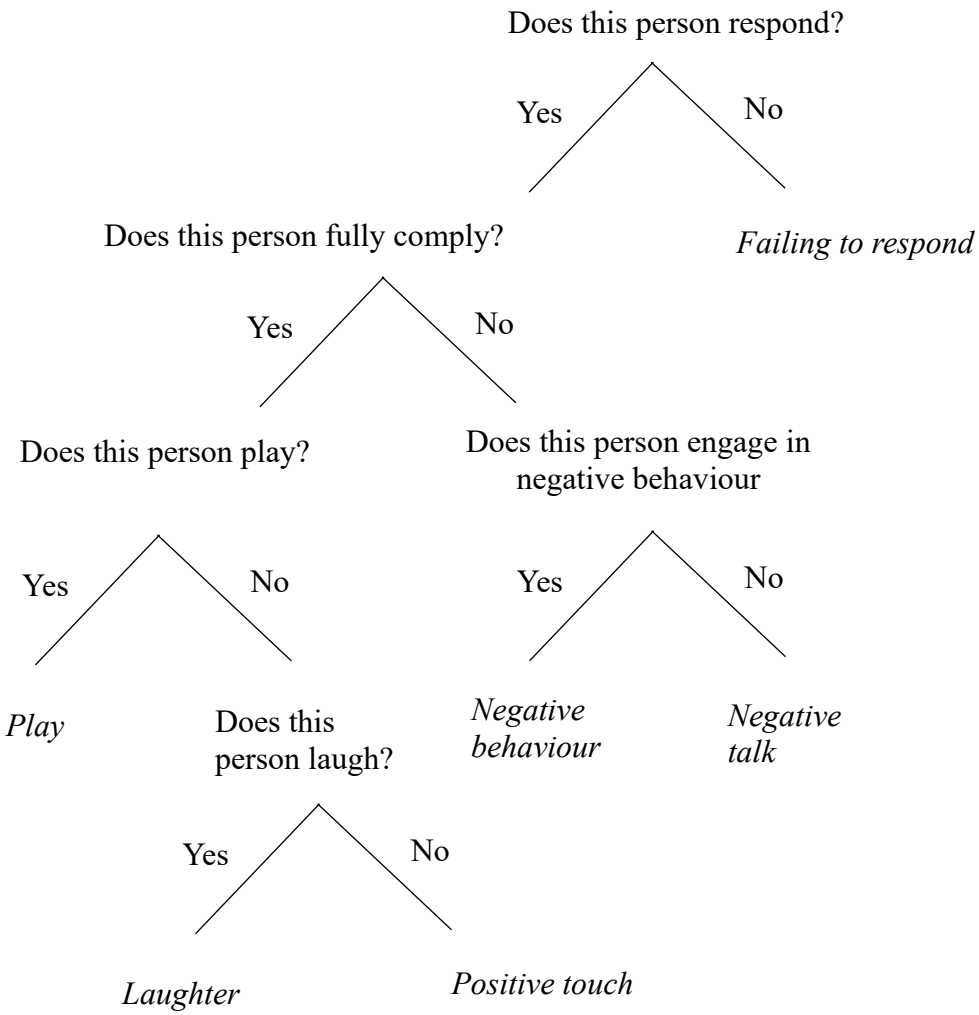


Figure 16. Decision tree for coding *Failing to respond, Play, Laughter, Positive touch, Negative behavior, Negative talk*

Inter-rater reliability. Good decision trees facilitate accurate coding and high inter-rater reliability (Table 23). As inadequate agreement among coders increases measurement error and *false negatives*, we measure *inter-rater reliability* with *Krippendorff's* (2012) α. Krippendorff's (2012) α is applicable to incomplete data, any sample size, any measurement level, any number of coders or categories, and scale values. Ranging from -1 to 1, an α exceeding .67 shows satisfactory agreement (Krippendorff, 2012). The high inter-rater reliabilities of these data (.95 to .99; see Table 25) yield smaller measurement errors and greater accuracy in the analyses' results (Chiu & Khoo, 2005). There was 95% agreement between the four independent observers.

Table 25

Inter-Rater Reliability of Each Coding Dimension

Coding dimension	Agreement %	Krippendorf's α
Evaluation of previous action	97	.95
Knowledge content	98	.98
Correct idea	99	.99

Outcomes issues

Differences across time and discrete outcomes are outcome issues (Table 23).

Similar adjacent talk. Ignoring similarities among adjacent turns of talk (serial correlation of residuals) can underestimate the standard errors (Kennedy, 2008). Q-statistics test all groups for serial correlation in adjacent turns (Ljung & Box, 1979). If serial correlation of the outcome (for example, play) is significant, adding the lagged outcome variable in the previous turn (play [–1]) as an explanatory variable often removes the serial correlation (Chiu & Lehmann-Willenbrock, 2016).

Discrete variable. For discrete outcomes (for example, new idea vs. no new idea), ordinary least squares regressions can bias the standard errors, so a *Logit regression* is used (Kennedy, 2008). To aid understanding of these results, the *odds ratio* of the regression coefficient is reported, which is the percentage increase or decrease in the likelihood of the outcome (Kennedy, 2008). Uncommon actions (< 25%) can bias logit regression results, so this bias is estimated and removed (King & Zeng, 2001). Multiple outcomes can have correlated residuals that underestimate standard errors, which a *multivariate outcome multilevel analysis* address (Goldstein, 2011).

Explanatory variables issues. Sequences and indirect effects are explanatory variable issues. As an earlier turn of talk might affect the current turn of talk, earlier sequences of turns are modeled with a *vector auto-regression* (Kennedy, 2008). Separate, single-level tests of indirect mediation effects on nested data can bias results, so sequences are tested for simultaneous, multi-level, mediation effects with a *multilevel M-test* (MacKinnon et al., 2004).

In short, to identify how the Parent-Child Interaction Intervention for Autism Spectrum Disorder affects parent-child interactions in the turns of talk/ behaviour, *Statistical Interpretive Discourse Analysis* (SIDA) is used (Chiu et al., 2020).

Results

Table 26

Summary statistics of parent-child interaction variables (N = 11758 turns of talk/ behaviour)

Variable	No. of Turns	Mean	Min.	Max.	Description
Laughter	238	2%	0	1	Talk/ Behaviour: Laughter, appears in the video
Play	5563	47%	0	1	Talk/ Behaviour: Play, appears in the video
Positive touch	445	4%	0	1	Talk/ Behaviour: Touch, appears in the video
Failing to respond	401	3%	0	1	Talk/ Behaviour: Failing to respond, appears in the video
Negative behaviour	558	5%	0	1	Talk/ Behaviour: Negative behaviour, appears in the video
Negative talk	36	0.3%	0	1	Talk/ Behaviour: Negative talk, appears in the video

Note. Percentages indicate odds ratios

Table 26 reported the summary statistics of parent-child interaction variables. The sample size from 21 groups is 11,758 turns.

Table 27

Regression model of intervention effect on parents' behaviours

Explanatory variable	Laughter	Play	Positive touch
Post-intervention	0.624 **	0.254 ***	0.512 ***
	(.207) +15%	(.048) +6%	(.127) +13%
Explained variance (R^2)	0.010	0.005	0.009

Note. Each regression model included a constant term.
**$p < .01$, ***$p < .001$
Percentages indicate odds ratios

Regression model of intervention effect on parents' behaviours. After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents' behaviors differed significantly (see Table 27). Parents were 15% more likely to show *laughter* after the intervention than before it (15% is computed from the odds ratio of [0.624]). They were 6% more likely to *Play* (6% is computed from the odds ratio of [0.254]) and 13% more likely to show *positive touch* (13% is computed from the odds ratio of [0.512]) after the intervention than before it.

Table 28

Regression model of intervention effect on children behaviours

Explanatory variable	Laughter	Play	Positive touch	Failing to respond	Negative behavior	Negative talk
Post	1.037 ***	0.133 **	0.456 **	-0.240 *	-0.284 **	-2.208 ***
	(.196) +24%	(.044) +3%	(.159) +11%	(.105) -6%	(.090) -7%	(.608) -40%
Explained variance (R^2)	0.026	0.001	0.006	0.002	0.003	0.059

Note. Each regression model included a constant term.
**$p < .01$, ***$p < .001$
Percentages indicate odds ratios

Regression model of intervention effect on children behaviours. After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, these children's behaviors differed significantly (see Table 28). These children were 24% more likely to show *laughter* after the intervention than before it (24% is computed from the odds ratio of [1.037]). They were 3% more likely to *Play* (3% is computed from the odds ratio of [0.133]) and 11% more likely to show *positive touch* after the intervention than before it (11% is computed from the odds ratio of [0.456]).

Also, these children were 6% less likely to show *failing to respond* after the intervention than before it (-6% is computed from the odds ratio of [-0.240]). They were 7% less likely to show *negative behaviours* (-7% is computed from the odds ratio of [-0.284]) and 40% less likely to show *negative talk* (-40% is computed from the odds ratio of [-2.208]) after the intervention than before it.

Table 29

Summary of statistical discourse analyses of Agree (N is computed from the 11758 turns of talk/ behaviour)

Explanatory variable	Agree	
Child Command (-1)	1.468 ***	
	(0.069)	+31%
Child Question (-1)	0.550 ***	
	(0.078)	+13%
Parent Question (-1)	-0.579 ***	
	(0.160)	-14%
Explained variance (R^2)	0.076	

Note. Each regression model included a constant term.
**$p < .01$, ***$p < .001$
Percentages indicate odds ratios

Summary of multivariate outcome. Table 29 reported the Summary of Statistical Discourse Analysis of Agree. After a child issues a command, the next speaker (typically the mother) was 31% more likely to agree than otherwise (31% is computed from the odds ratio of [1.468]). For example, the child made a demand, "I want to go with mom and find the 'turning' tree" and the parent (mother) agreed, "I can find it together with you, even after when we get home…" (see Table 30).

Table 30

After a child demands, the parent agrees

Row	Talk/Act	Person	Demand	Agree
295	我想同媽媽搵下有冇轉轉樹 I want to go with mom and find the 'turning' tree (Keeps touching the tree)	C	1	
296	嗱我可以同你搵，甚至乎之後我地返屋企一齊… I can find it together with you, even after when we get home…	P		1

Table 31

After a child questions, the parent agrees

Row	Talk/Act	Person	Question	Agree
71	咁大個 ？ Such a big one? (Toy car)	C	1	
72	係呀，點解開唔到門嘅? Yes, how come cannot open the door (mom looks at her car)	P	1	1

Also, after a child issues a question, the mother is 13% more likely to agree (13% is computed from the odds ratio of [0.550]) (see Table 29). For example, the child asked a question, “such a big one? (about the toy car)” and the parent (mother) agreed, “Yes, how come cannot open the door” (see Table 31).

Table 32

After a parent gives rhetorical question, the child agrees

Row	Talk/Act	Person	Question	Agree
307	咁你都未收拾 D 嘢, 點玩另外嗰 D? You have not tidied up, how can we play other (toys)?	P	1	
308	收拾 收拾 收拾 Tidy up Tidy up Tidy up	C		1

On the other side, after a parent asks a question, the next speaker (typically the child) was 14% less likely to agree than otherwise (-14% is computed from the odds ratio of [-0.579]) (see Table 29). For example, the parent asked a question, “You have not tidied up, how can we play other (toys)?” and the child agreed, “Tidy up, tidy up, tidy up” (see Table 32).

Table 33

After a parent talk to herself, the child agrees

Row	Talk/Act	Person	Question	Agree
4	你估佢睇唔睇到你? Do you think she (the observer) can see you (from the CCTV)?	P	1	
5	收拾 收拾 收拾 Tidy up Tidy up Tidy up	C		1

Table 34

After a child questions, the parent follows

Row	Talk/Act	Person	Question	Agree
154	我撞埋依架? Can I also push this one? (toy car)	C	1	
155	好丫,俾你撞埋呢架啦 Sure, I let you push this one as well	P		1

After examining the above multivariate outcomes, in-depth analyses of the conversations and actions between the parent and their child followed. For the children, they tended to ask a question when they wanted the parents to confirm or let them do things that they preferred, for example, a child said “such a big one? (about the toy car) and the parent (the mother) would agree with the child by saying “Yes, how come cannot open the door?” The parent asked a follow up question to model asking questions and to continue the interaction (see Table 31). Also, a child asked “Can I also push this one? (the toy car) and the mother agreed, “Sure, I let you push this one as well”. The parent repeated and used the child’s words to aid child understanding (see Table 34). Overall, the children asked fewer questions (4%) compared to the parents (15%).

Table 35

After a parent gives rhetorical question, the child agrees

Row	Talk/Act	Person	Question	Agree
263	全部, 重唔重? All, is it heavy?	P	1	
264	(小孩繼續幫忙收拾) (Child keeps helping to tidy up)	C		1
265	需要強壯嘅軒軒幫手, 係咪呀? Needs strong Hin Hin to help, is it?	P	1	
266	(小孩繼續幫忙收拾，同時發出聲音) (Child keeps helping to tidy up and making sounds)	C		1
267	係呀, 你做得好好, 要食好多嘢, 係咪呀? 軒軒都食好多嘢? Yes, you are doing a great job, it needs to eat that much food, is it? Hin Hin eats a lot of food too?	P	1	
268	會高 D Will be taller	C		1
269	會高 D, 食多 D, 會高 D Will be taller, eat more, will be taller	P		1

The parents (mothers) asked rhetorical questions or talked to themselves, as their child often ignoring their questions, for example, 1) a parent said, “You have not tidied up, how can we play with the other (toys)?” (see Table 32), or 2) a mother said, “Do you think she (the observer) can see you (from the CCTV)?” (see Table 33) or 3) a mother said, “All, is it heavy?” or 4) “needs strong Hin Hin to help, is it?” (see Table 35). For these parent questions, their children did not reply.

Furthermore, after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, the parents reported 14% less stress than before (-14% or 0.41 standard deviations: from M_{pre} = 3.13 to M_{post} = 2.82). After attending the intervention, some parents reported, “I am able to manage my emotions, less impatience and stressed” and “Relationship between the child has improved, I feel less frustrated and learned more parenting skills”.

Parent feedback

Parents gave a lot of encouraging feedback. One parent said, “I am very happy to join this course, Ms. Kam's course, my child also loves Ms. Kam's session, he will keep mentioning Ms. Kam. When I say, "Ms. Kam says...", then he would be well behaved. The biggest changes were after I found out my child has Autism Spectrum Disorder, I was very upset, and the other (typical) moms would not understand how we feel, they may not understand our child's emotion or rigidity. Yet, after attending this class, I realised we are roughly the same, we have methods to sort out the problems. It is good that we get to exchange experiences. Also, my child and I have a better relationship now. He will now initiate, and ask me to play with him, whereas before, he would only ask dad to play with him. Also, I praised him more than before, getting to know how to praise him. After joining this course, I know the direction and what I have to do to improve myself. My goal is to set up some rules and not always lead my child. Thank you!”.

Another parent said, “Attending Ms. Kam course is very different. Before, all the courses are more about the theory, this one is more flexible, more about the parents joining in like role play, then we will get to know in more details about how our children learn and look in this perspective more. When my child was diagnosed as Autism Spectrum Disorder from 2.5 years old, we focused a lot on training, we did not focus much in parent-child relationship, we thought we know what is parent-child relationship like, thinking what is best for him and he does not need to walk the wrong path. We used a lot of food, toys to train him up and we did not play with him. I feel I am very perfunctory (敷衍) to him. After attending the class, I want to improve the parent-child relationship (crying). I feel like I am more like a teacher than a parent, never thought about what he really thinks or wants. I didn't chat with him much or what he is thinking, I only tell him what to do directly and the parent-child relationship is not strong. After joining the class, I have gradually changed and I start to think what he is thinking, slow down my pace, not in a rush, and let him speak more (crying) and now he loves sharing with me. I never thought about that as his language is a bit behind, his organization is a bit behind, it is very hard for my child to be like other classmates to share things to their parents. I think I have changed; I have never thought about this big improvement, he is able to express his ideas or thinking and now he would share with me every night about what he has done or what he wants, what he wants for Christmas, he wants to pick his own. I never thought he would be able to do this, and I only thought his language is really bad bad bad, his organization is also bad bad bad and very hard for him to share (feeling)”.

Then, another parent said, “At the beginning, I said I could only join Pre and Post-Test but at the end I attend all the classes, except for a half session that I could not join as I have a doctor appointment. I think this group is heart-to-heart (交心), as there are a lot of tension toward my child, I learned to be more relaxed. I am hoping to keep learning to understand my

child. Don't close up yourself, open up yourself so you can gain more."

Another parent also said, "Very happy to join this course. Compared to many other courses, this one is very different, other courses may be 3 to 4 lessons with 100-200 people, if you want to ask question, you cannot ask in depth, not even taking your child to the session for any parenting skills training, there will be no one to teach and play your child based your child's needs in any other public courses, apart from Ms Kam. Very happy to join this course. Changes would be about not over praising my child; I always praise my child too much. My daughter is always spoiled by me, I gave the best things to my daughter, even though I know she has Autism Spectrum Disorder, I would still want to give the best to her, and I always praised her and never scolded at her and so she has been always leading me to do things and so her emotion is quite extreme. After attending Ms Kam's class, I learned to find a balance, I still need to praise her, but I also need to guide her and now my child learned she does not have the control all the time and she still needs to listen to mom or listen to Ms. Kam. I also learned to sort out my child's emotion and her tantrum, my child is smart and this is more about her behaviours and her emotions. I learned to stay calm, so she will stay calm too and then I guide her to do the stuff that she needs to be doing. I have learned a lot, thank you so much Ms Kam!".

At the end of the group interview, the author asked everyone to stand up and give a hug to each other.

Chapter 6: Discussion and Conclusions

In this study, we determined the effectiveness of the Parent-Child Interaction Intervention for Autism Spectrum Disorder on dyad interactions between a child with Autism Spectrum Disorder and his or her parent via content and statistical discourse analyses of their videos. The Parent-Child Interaction Intervention for Autism Spectrum Disorder is based on the needs of children with Autism Spectrum Disorder and on previous parenting programs (Parent-Child Interaction Therapy (Schuhmann et al., 1998); Positive Discipline (Nelsen, 2006); Happy Parenting Program (Leung et al., 2016)) to improve parent-child's (i) social interaction, (ii) social communication and language skills, and (iii) behaviour management skills. The Parent-Child Interaction Intervention for Autism Spectrum Disorder aimed to strengthen positive behaviours (for example, *laughter, play and positive touch*) and reduce negative behaviours (for example, *failing to respond, negative behavior, negative talk*). The findings of this study show the promising use of the Parent-Child Interaction Intervention for Autism Spectrum Disorder. Four hypotheses were supported in this present study.

Key Findings

Parent results. We hypothesized that after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents would show more positive behaviours. Parents showed more *laughter* (+15%), *play* (+6%) or *positive touch* (+13%) after the intervention.

Children results. We hypothesized that after the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children would show more positive behaviours and fewer negative behaviours. Children showed more *laughter* (+24%), *play* (+3%) and *positive touch* (+11%) after the intervention. Children also showed less *failing to respond* (-6%), *negative behavior* (-7%) and *negative talk* (-40%) after the intervention.

Other significant results. We investigated multilevel logit analyses of Agree. After a child issues a demand (+31%) or a question (+13%), the parent was more likely to agree. After a parent issued a question (-14%), the child was less likely to agree. Besides, children asked fewer questions (4%) compared to the parents (15%). Furthermore, parents reduced their stress (14%).

During the Parent-Child Interaction Intervention for Autism Spectrum Disorder, we taught parents how to communicate with their child via play by adapting Child-Centered Play Therapy techniques and chatting techniques by adapting Happy Parenting Program (Leung et al., 2016; Ray, 2011). In particular, the techniques were (i) eye contact and being observant, (ii) listening carefully, (iii) reply without judgment, (iv) use of positive touch, (v) whole-heartedly and with empathy (see Table 3 and Table 5), this provided an opportunity for parents to learn how to build up the positive relationship with their child and promote more positive behaviours. The results suggest that Parent-Child Interaction Intervention for Autism Spectrum Disorder can benefit children with Autism Spectrum Disorder and their parents in the following 3 aspects.

Positive behaviours. Firstly, laughter is one of the fundamental phenomena of social relationships among humans (Reddy et al., 2002). It is one of the clearest signs showing that a person enjoys being with another person. Both parents (+15%) and children (+24%) demonstrated higher in *laughter* after the Parent-Child Interaction Intervention for Autism Spectrum Disorder. This result suggests that the relationship between parent and child has improved. For example, during the intervention, we emphasized the need for the parent to smile when playing or chatting with the child (see Table 3 and Table 5). Also, parents could practice these techniques during practice sessions. Prompt cards and direct feedback were given by the trainer to remind them (see Table 6 and Table 7).

Secondly, play is one of the means by which a parent and a child build up their relationship (Singer et al., 2006). Yet, due to the deficits of Autism Spectrum Disorder (see Chapter 1, Challenge and Characteristic of Autism Spectrum Disorder), many parents found it hard to interact with their child with Autism Spectrum Disorder (Altiere & Von Kluge, 2009; Ludlow et al., 2012). Again, both parents (+6%) and children (+3%) demonstrated more *play* after the intervention. This may suggest that their play skills have improved. During the intervention, we emphasized the importance of play (for example, the use of describing and express child's emotions) (see Table 3 and Table 5) and again they could practice directly with their child. These were opportunities for the parents to learn and improve their play skills.

Thirdly, positive touch is one of the primary ways of communication (Aznar & Tenenbaum, 2016), and it is physical contact (for example, hug, high five) to show a positive interaction between the two people (Eyberg, et al., 2004). Due to the difficulties of Autism Spectrum Disorder, Positive touch was hard to carry out. After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, both parents (+13%) and children (+11%) improved their *positive touch*.

Negative behaviours. Firstly, failing to respond is a common indicator of children with Autism Spectrum Disorder: they tend to experience difficulties in social communication (Zager et al., 2004). Secondly, negative behaviour and negative talk are also common indicators of children with Autism Spectrum Disorder: they may show aggressive behaviours (for example, pushing, tantruming) (American Psychiatric Association, 2013; Attwood, 2006). During the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents were taught how to manage their child by training them to handle inappropriate behaviors and promote positive behaviors via praise and appropriate reinforcement (Table 3). This may suggest that parents learned how to deal with their child and demonstrated ways to

communicate with their child and developed better relationships with them to reduce negative behaviours: *failing to respond* (-6%), *negative behavior* (-7%) and *negative talk* (-40%).

Other significant results. In these parent-child interactions, we examined how each parent and child took the initiative and responded to each other and how they could continue to interact with each other in the play situation. To be precise, we investigated statistical discourse analyses of agreeing, how they agree with each other in play. According to the Cambridge Dictionary, "agree" (n.d.) refers as having the same opinion as someone else, in this case would be referring to the parent or the child. It was one of the key problems that children with Autism Spectrum Disorder had great difficulties in compliance (O'Nions et al., 2018), in which, they have trouble in agreeing with their parents. After a parent asks a question (-14%), the child was less likely to agree. Yet, we found that parents would try to continue the conversation by (i) using rhetorical questions (for example, "You have not tidy up, how can we play other (toys)?" (see Table 13)) and (ii) talking to themselves when the child is not responding (for example, "Do you think she (the observer) can see you (from the CCTV)?" (see Table 33)).

On the other side, after child issues a demand (+31%) or a question (+13%), the parent was likely to agree. Besides, parents would continue the conversation by (i) asking follow up questions (for example, "Yes, how come cannot open the door?" (see Table 31)), and (ii) repeating their child's words (for example, Child said "Can I also push this one? (toy car)." A mother said "Sure, I let you push this one as well" (see Table 34)). Besides, parents (15%) asked more questions compared to their children (4%). Previous studies suggested questioning techniques for adults to aid children's understanding (such as critical thinking skills and higher order thinking skills (Shaunessy, 2000)), and increase social communication and interaction between parent and child. These findings inform future interventions and research on conversations between parents and their children with Autism Spectrum Disorder.

Stress result. In addition, parents of children with Autism Spectrum Disorder often report high levels of parenting stress when communicating with their child or dealing with their child's behaviours (Bishop et al., 2007; Goin-Kochel & Myers, 2005; Pisula & Kossakowska, 2010; Whittingham et al., 2009). After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, the parents reduced their stress (-14%); this result suggested the benefits of supporting both children with Autism Spectrum Disorder and their parents in building up parent-child social interactions and relationships, social communication, and management of child behaviours. This study also demonstrated a clear shift from the traditional trainer-directed child-centered intervention to the ecological trainer-parent and parent-child system approach to intervention (Ingersoll & Wainer, 2013; Lane et al., 2016; Meadan et al., 2016). This study showed how the Parent-Child Interaction Intervention for Autism Spectrum Disorder helps not only the child but also the parent. This is a family-centered approach, the Triadic Service Delivery model (Barton & Fettig, 2013; Salisbury & Cushing, 2013).

Unlike other previous studies targeting children with Autism Spectrum Disorder alone (Vernon et al., 2012; Radley et al., 2014; Meadan et al., 2016) or measuring the improvement through just the use of interviews or questionnaires (Estes et al., 2014; Leung et al., 2017), this study's key findings tell us the importance of having to measure the actual interaction to have a clear picture of what actually improved.

Theory implications

Based on Bronfenbrenner's Ecological Systems theory (1979), individuals are constantly influenced by the surrounding stimuli within the system. The closest layer to the individual is the microsystem (for example, family system and school system) then the mesosystem (for example, community system) (see Figure 1). In the literature review, we discussed how parents influence their children (in this case, children with Autism Spectrum Disorder) within the family microsystem. Meanwhile, this community-level (mesosytem) intervention brings parents together from different families to improve their relations with their children to improve their own specific family microsystems, thereby showing an importance relation between the mesosystem and many microsystems. The result of the study demonstrated that both parents and children showed more positive behaviours and children showed less positive behaviours, it suggested the importance of having such intervention (community-level, mesosystem) to support many of the families (microsystems)

Besides, as discussed in the literature review about the Transactional model (Sameroff, 1975; Sameroff & Chandler, 1975) that parent behaviour (such as the level of parental warmth, parental control) greatly influence child behaviour (such as child temperament) and vice versa. Both parent behaviour and child behaviour largely determine the nature of the parent-child interaction relationship. Again. the result of the study demonstrated that both parents and children showed more positive behaviours and children showed less positive behaviours, it suggested how parent behaviour influence child behaviour and vice versa.

Specifically, this intervention helps these parents understand and appreciate the importance of learning to play with their children at their early stage of life and providing suitable emotional, cognitive, and social support (*scaffolding*, Rosenshine & Meister, 1992; Wood et al., 1976). Children with Autism Spectrum Disorder experience a life-long neuro-developmental disorder. In particular, they struggle with (i) social communication, (ii) social

interaction, and (iii) with restricted, repetitive patterns of inappropriate behaviour, interests, or activities (American Psychiatric Association, 2013; Attwood, 2006; Zager et al., 2004). Hence, it is critical for future studies to show how children with Autism Spectrum Disorder interact with their parents, and vice versa (Altiere & Von Kluge, 2009; Guthrie et al., 2013; Ludlow et al., 2012; Sacrey et al., 2015). This study clearly showed how the pre-intervention interactions included many negative parent-child interactions and few positive parent-child interactions. By contrast, the post-intervention interactions showed many more positive parent-child interaction and far fewer negative parent-child interaction. These statistically significant results show that this Parent-Child Interaction Intervention for Autism Spectrum Disorder can enhance the participants' parent-child relationships.

Moreover, we specifically showed that parents enhanced their interactions with their children via the use of (i) rhetorical questions, (ii) talking to themselves when the child does not respond, (iii) follow up questions and (iv) repeating their children's words. In a future study, more specific interactions can be tested to identify more strategies that might be effective for other parents, other family members, other professionals, or other possible intervention programs.

Practical implications

In this study, we particularly aimed to support the following three groups: (i) parents of children with Autism Spectrum Disorder, (ii) children with Autism Spectrum Disorder and (iii) trainers.

By joining the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents improved their relationships with their children with Autism Spectrum Disorder (for example, by increasing positive behaviours such as play skills) and improved the management of their own children. Instead of relying on professionals to support them in the long run, parents can become their own child's lifetime case manager to support their child

across different stages of development. The Parent-Child Interaction Intervention for Autism Spectrum Disorder should be promoted to more parents of children with Autism Spectrum Disorder or other parents who have struggled to establish a relationship with their children. Besides, parents can also transfer what they have learnt from the Parent-Child Interaction Intervention for Autism Spectrum Disorder to support other parents in need, which can save them time and money. Also, the Parent-Child Interaction Intervention for Autism Spectrum Disorder can be applied to parents of children with Autism Spectrum Disorder in other regions beyond Hong Kong such as China, Taiwan, or Singapore. As diagnoses of Autism Spectrum Disorder among children are increasing, the demand for such parent intervention will likewise increase.

For children with Autism Spectrum Disorder, this program shows how their parents' interactions with them can help them reduce their negative behaviours (for example, *Failing to respond*) and increase positive behaviours (for example, *Positive touch*). After the parents attended the Parent-Child Interaction Intervention for Autism Spectrum Disorder, children's improved behaviours might also generalize to other settings (not limited to only one setting, such as home). Also, other age groups of children with Autism Spectrum Disorder and their parents might benefit from this program. Future studies can test this possibility. Besides, Autism Spectrum Disorder's prevalence rate has significantly increased from 1.1% in 2008 to 1.9% in 2016; in particular, boys are at greater risk compared to girls (4 times more common among boys than girls (Center for Diseases Control and Prevention [CDC], 2020, September 25; Maenner et al., 2020). Thus, future studies can include boys with/ without Autism Spectrum Disorder.

Lastly, trainers are training not only children with Autism Spectrum Disorder but also their parents. The results of this intervention study of this program can help the trainer better understand the parent, the child, and their family dynamics. A better understanding of the

child's needs, the family interactions, and their home context can inform the trainer to provide more immediate, appropriate support, adapt it to the child's and family's needs, and enhance the parent's and child's learning.

Methodological implications

In many of the previous studies, they did not directly focus on measuring the actual parent-child interactions. Instead, they used parents' interviews or questionnaires to measure child improvement, child satisfaction with the intervention experience, or parent perceptions of the utility of the intervention procedures) (Estes et al., 2014; Leung et al., 2017). In this study, the author used parents' interviews and questionnaires to measure both the effectiveness of the intervention and the parents' stress levels. She collected both qualitative and quantitative data, and used *Statistical Interpretive Discourse Analysis* (SIDA) (Chiu et al., 2020) to understand parent-child interactions. In the qualitative data, three standardized situations were used with the Dyadic Parent–Child Interaction Coding System (Abbreviated Version, Third edition, Eyberg et al., 2004) to observe the interactions between the parent and their child. Then, *interpretive discourse analysis* (IDA) (Chiu et al., 2020) was used to identify communication patterns within parent-child dyads. For the quantitative data, the generality of the communication patterns across these parents' interactions with their children were tested with *statistical discourse analysis* (SDA) (Chiu & Lehmann-Willenbrock, 2016). The results reflect the importance of evidence-based practices and training up the parents to improve their interactions with their children.

In summary, the major findings in this study showed how the use of the Parent-Child Interaction Intervention for Autism Spectrum Disorder for parents enhanced both parents' and their children's positive behaviours and interactions (for example *laughter, play, positive touch*) while reducing their negative behaviours (*fail to respond, negative behaviour, negative*

talk), suggesting its potential effectiveness for other such parents and children. Furthermore, parents enhanced their interactions with their children via (i) rhetorical questions, (ii) talking to themselves when the child does not respond, (iii) follow up questions and (iv) repeating their children's words. These results suggest that these strategies might be effective for other parents and other intervention programs. Such future studies should be considered.

Conclusions

In conclusion, these results support four hypotheses. After the Parent-Child Interaction Intervention for Autism Spectrum Disorder, there was i) a significant increase in parent positive behaviours (for example, *Positive touch, Laughter,* and *Play*), ii) a significant increase in child positive behaviours (for example, *Positive touch, Laughter* and *Play*), iii) a significant decrease in child negative behaviours (for example, *Failing to respond, Negative behaviours, and Negative talk*) and iv) a significant decrease in parents' stress level.

This study improved parent-child interactions via the use of the Parent-Child Interaction Intervention for Autism Spectrum Disorder, showing that parents can promote positive behaviours and address inappropriate behavioural and communication interaction deficits of their children with Autism Spectrum Disorder. This study examined not only children's outcomes (Fava et al., 2011; Stadnick et al., 2015; Strauss *et al*., 2012) but also parents' outcomes. All the specific parent behaviours and child behaviours (for example*, Laughter, Play, Positive touch, Failing to respond, Negative behaviour, and Negative talk*) were identified through the use of *Statistical Interpretive Discourse Analysis* (Chiu et al., 2020). In further content analysis, we showed that parents enhanced their interactions with their children via the use of (i) rhetorical questions, (ii) talking to themselves when the child does not respond, (iii) follow up questions, and (iv) repeating their children's words.

Limitation and future study

Artificial setting. Firstly, we carried out the pre-and-post comparison study (The Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure, Child-Led Play, Parent-Led Play and Clean-up (Eyberg et al., 2004)) and the direct training practice session (Appendix M) in an artificial setting. Children with Autism Spectrum Disorder and their parents were invited to interact in a laboratory setting. Their behaviours might differ in a natural setting like their home or other environments. Future studies can

design and test interventions that apply these strategies and desirable behaviours to different settings (such as video taking at home in future studies).

Experimenter bias. Secondly, there is only one intervention implementer (the author) in this study. By trying to reduce the experimenter bias of this study and maintain the quality of the Parent-Child Interaction Intervention for Autism Spectrum Disorder, parents completed the weekly lesson evaluation, final evaluation and were invited to a semi-structured interview at pre-and-post comparison study. Also, the implementer carried the Parent-Child Interaction Intervention for Autism Spectrum Disorder was based on the Parent-Child Interaction Intervention for Autism Spectrum Disorder outline which includes the topic, objectives and core content (for example, activities) (see Table 3, Table 4 and Table 5). In the future, more than one implementer can be invited to test the quality of the program.

Sampling and sample size. Thirdly, a pre-and-post comparison study on a convenience sample was used in this study with a total of 21 parent-child pairs, in which the children had Autism Spectrum Disorder or were at risk of having it. It would be preferable to have a control group, but it was hard to recruit participants who have Autism Spectrum Disorder but not receiving any supportive intervention as a control group in Hong Kong.

Future studies can have a waiting list control group with participants with similar inclusive criteria. Also, future studies can include a follow up period to measure whether parent-child interactions maintained their increased positive behaviours and reduced negative behaviours (for example, 3 months later). We can also revise the Parent-Child Interaction Intervention for Autism Spectrum Disorder to train other parents of children with different special education needs.

External impacts. Fourthly, some other external impacts were found in this study that might affect the result of the observation measures of parent-child interaction. Only one observer (the principal investigator) recorded all the pre-and-post comparison study (the Dyadic Parent–Child Interaction Coding System: Abbreviated Version (Third edition) measure, Child-Led Play, Parent-Led Play and Clean-up (Eyberg et al., 2004)). We tried to reduce such bias by recruiting 3 research assistants (a total of 4 independent observers). They were trained to record all the parent-child interactions in the three situations (see Appendix K), and they were blind to experimental conditions. Yet, some parent-child interactions may still be missing. For example, these research assistants may focus on the parent's response at a particular moment and ignore the child's behaviour. We introduced a decision tree to help coders place each datum in the appropriate category, to enhance their inter-rater reliability.

Fifthly, due to the social unrest in Hong Kong followed by the COVID-19 pandemic, the whole study had to be completed in 7 months without any follow up. It would be meaningful and beneficial for future studies to include a follow up period in order to measure whether the actual parent-child interactions have maintained their increase in positive behaviour and reduction in negative behaviour (for example, 3 months later). Thirdly, this study used convenience sampling and only 21 parent-child pairs. Also, all parents were female. It would be useful if future studies could recruit from more non-governmental organizations (e.g., via Zoom) to include more participants with both genders for a more representative sample.

In summary, the key findings in the study suggest that the use of the Parent-Child Interaction Intervention for Autism Spectrum Disorder effectively improves both parents and children positive behaviours (for example, *positive touch, laughter,* and *play*) and reduce children with Autism Spectrum Disorder negative behaviours (for example, *failing to respond, negative behaviours, and negative talk*). All the specific parent behaviours and child behaviours were identified by the use of *Statistical Interpretive Discourse Analysis* (Chiu et

al., 2020). Lastly, a significant decrease in parents' stress level was also found.

(Total: 37456 words)

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