The Impact of a Parent-Implemented Naturalistic Social Communication Intervention for Pre-schoolers on the Autism Spectrum: A Training plus Coaching Approach.

A thesis presented in fulfilment of the requirements for the degree of

Masters of Speech and Language Therapy

Massey University

Albany, New Zealand.

Estelle Pretorius

2018

Preface and Acknowledgements

This project has been shaped and influenced by the incredible experiences I have gained from journeying with families with children with disabilities. I gratefully acknowledge and honour the three families whom I have journeyed with during this project and I value their willingness and dedication to their children. I am in awe.

To the management and staff at McKenzie Centre I am grateful for allowing me to launch this study while working full time.

I acknowledge the tremendous support and giftedness of my supervisors, Dr Sally Clendon and Dr Tara McLaughlin. Your dedication to research and the field of early intervention is astounding and I am extremely fortunate to have been able to glean from your expertise and passion.

Ursula Rapley, your generosity of time and support inspired me; thank you for your attention to detail and for being a cheerleader for this project.

To my family: I am grateful for your confidence in me, and for your thoughtful prayers as I navigated through the past two years.

To my friends who were extremely understanding and generous in your encouragement, praise and prayers: your friendship is important to me.

Most of all, I cannot fathom embarking on such a journey without the deep conviction that, “the Lord is my strength and my song, and He has become my salvation” (Isaiah 12).

Thank you.

Table of Contents

List of Tables

List of Figures

Abstract

Family-centred approaches are recommended as best practice in the field of early intervention. Interventions that offer training and coaching to parents of pre-schoolers on the autism spectrum are becoming increasingly common, and a growing body of research is examining their impact on child outcomes and parent behaviour. The present study investigates the effects of a training plus coaching intervention in a small sample population to gain preliminary insight into its efficacy. The research sought to answer the following research questions: (1) What impact does a training plus coaching intervention have on parents' use of naturalistic interactive strategies, with pre-schoolers on the autism spectrum? (2) What is the effect of parent-implemented naturalistic instruction on the acquisition of early social communication skills in pre-schoolers on the autism spectrum? and (3) What are the parents' experiences and perceptions of the intervention?

Three parent-child dyads participated in the study. Child-participants presented with a clinical diagnosis of autism spectrum disorder (ASD) and were waiting for services from an early intervention centre. The training plus coaching intervention consisted of four workshops and eight in-home coaching visits. Workshops included purpose-developed training material; parents were provided with education on interaction promoting strategies and implementing complete learning trials (CLTs) informed by literature on Embedded Instruction and Naturalistic Instruction. In-home coaching visits followed a coaching protocol using video feedback informed by several coaching models in the early intervention literature. Through in-home coaching, the parents gained experience in implementing embedded learning opportunities and CLTs, and using interaction promoting strategies. In-situ supports were given during these visits when requested by the parent (e.g., to model strategies or the implementation of CLT components, or to join in the interaction to support the parent in the implementation of these strategies).

A single group pre-test/post-test design was adopted for this study. Data was collected though purpose-developed observational coding systems for both parent and child behaviour, parent-completed rating scales and informal verbal feedback from parents. The findings demonstrated that a brief training plus coaching intervention was effective in increasing parents' use of naturalistic strategies and interaction promoting strategies. Through explicit training and supportive coaching, parents not only gained skill and experience, but also confidence, capacity and empowerment. Findings from this study also showed that parent-implemented naturalistic instruction has the potential to facilitate social communication development in pre-schoolers on the autism spectrum and promotes sustained parent-child interactions. Parent-completed rating scales and parent narratives provided evidence that the training plus coaching intervention was effective and appropriate in improving parent, child and family outcomes.

Chapter One: Introduction

Autism Spectrum Disorder (ASD) affects more than 40,000 New Zealanders (Statistics New Zealand, 2014). In New Zealand, service delivery for families of children on the autism spectrum is informed by the New Zealand Autism Spectrum Disorder (ASD) Guideline which was first published in 2008 (Ministry of Health, 2008) and updated in 2016 (Ministries of Health and Education, 2016). Key recommendations in the Guideline are that young children on the autism spectrum should have access to intervention services as early as possible. There is consensus in the literature that quality early intervention services for children can produce positive parent, child and family outcomes. In the last 10 years, family-centred practice has become a key underlying principle in the field of early intervention, recognising that intervention should occur in the child's natural environment and empower parents to become equal partners. Naturalistic instruction is a widely used and recommended practice in the field of early intervention and has been shown to be effective in improving child outcomes (Bishop et al., 2015; Rakap & Balikci, 2017; Snyder et al., 2015). For these reasons, it was selected as a focus for this study.

The impact of a training plus coaching intervention was explored with parents of children on the autism spectrum. The intervention consisted of four training workshops featuring naturalistic interactive strategies and systematic instruction. In addition, parents received eight in-home coaching visits where they gained experience in planning for, and implementing embedded learning opportunities, complete learning trials, and interaction promoting strategies in naturally occurring play routines. This study employed a single group pre-test/post-test design and gathered observational data from purpose-developed coding systems, data from parent-completed rating scales and informal verbal feedback.

This chapter begins by introducing key concepts that will be referred to throughout this thesis. The chapter continues with a description of the rationale and context of the study and outlines the underpinning research questions. Finally, the chapter ends with an outline of the structure of the thesis.

Introducing Key Concepts

Several terms and concepts are used frequently throughout this study. This section provides an overview and introduction to these key concepts, beginning with a description of the diagnostic criteria for autism spectrum disorder and the development of social communication skills in young children on the autism spectrum. Following this, a description of evidence-based approaches in early intervention including naturalistic instruction; embedded instruction; and the use of complete learning trials and embedded learning opportunities will be provided. Finally, this section concludes with a definition of family-centred and capacity-building practices as they relate to the field of early intervention.

Autism spectrum disorder. Autism spectrum disorder (ASD) is a pervasive developmental disorder with a lifelong impact on multiple functional domains. At its core, ASD refers to difficulties in social communication, reciprocity and communication intent, and is associated with delayed or unusual language development. According to the DSM 5 (American Psychiatric Association, 2013), ASD is a neurodevelopmental disorder or condition that is characterised by difficulties in social communication behaviour, language, joint attention, pragmatics, and adaptive behaviour functioning. The diagnostic criteria for ASD in the DSM 5 broadly categories development in two domains. Firstly, it lists difficulties in social communication and social interaction, for example, the ability to reciprocate social-emotional responses, engage in nonverbal communication, and develop and maintain relationships. Secondly, the DSM 5 describes restricted, repetitive patterns of behaviour, interests and activities, which include a strong need for sameness and abnormal

intensity and focus on interests; stereotyped or repetitive speech and motor movements; and differences in response to sensory input. Although ASD features are characteristic of all people on the autism spectrum, it is a very diverse condition, affecting individuals differently in terms of intensity, disability and intellectual functioning.

Use of the term autism spectrum disorder. Internationally recognised for its scope and quality, the New Zealand ASD Guideline was first published in 2008 as a framework to improve services for people on the autism spectrum and their families, based on robust and reliable evidence-based information. The Guideline is the world's first living guideline covering recommendations from early intervention and diagnosis, to community living for adults. Since its first publication, regular updates to sections of the Guideline have been researched and published by the New Zealand Living Guideline Group (LGG). The New Zealand LGG is a small advisory panel of experts who inform revision and development of new recommendations, through publications of supplementary papers. The second edition of the Guideline was released in 2016, incorporating the panel's updated recommendations.

Recently the New Zealand LGG has advocated a shift from person-first language to identity-first language to describe a person on the autism spectrum (Broadstock, 2018). The term ASD is widely used internationally and appears in the first edition of the New Zealand ASD Guideline (Ministry of Health, 2008) reflecting the move towards autism being recognised as a spectrum condition. More recently, there has been an increased preference amongst the autism community for the use of identity-first language to recognise themselves as being autistic, aspies of autists. Essentially this means that autism is a central part of a person's identity rather than being recognised as a person "with autism" or a person who presents with a "disorder". ASD is sometimes referred to as an autism spectrum difference, and the use of Autism Spectrum Condition (ASC) is gaining favour in the UK. For clarity and consistency, the term ASD will be used in this thesis when referring to the diagnostic criteria

and the prevalence of ASD. Elsewhere, however, the term ‘young children on the autism spectrum’ or ‘pre-schoolers on the autism spectrum' will be used in respect to these recommendations.

Prevalence of autism spectrum disorder. In recent years, prevalence rates of ASD have experienced a steady increase. In the United States, about 1 in 68 children are identified with ASD according to estimates from the Centres for Disease Control and Prevention (CDC). These findings are based on data from the Autism and Developmental Disabilities Monitoring (ADDM) Network in the United States covering the year 2008. In agreement with these findings, Baird et al. (2006) reported a prevalence of childhood autism of 38.9 per 10,000 children in South Thames in the UK. In New Zealand, ASD is thought to affect more than 40,000 New Zealanders (Statistics New Zealand, 2014).

Social communication development in the early years. The development of early social communication skills is significant as it provides essential foundations for the later development of communicative gestures and verbal language (Keen et al., 2016; Wetherby et al., 1988). The pre-linguistic stage refers to the period between birth and 18 months of age when a child begins to develop intentional communication in symbolic forms, representing a range of communicative functions (Zager et al., 2017). Communicative functions are divided into three broad categories. Firstly, infants and toddlers learn to communicate to regulate the behaviour of others (e.g., asking for an object or action, requesting assistance, and declining or protesting). They soon learn to communicate for social means (e.g., sustaining or initiating a social game or routine, seeking or providing comfort, teasing, and showing off) as the caregiver-child connection develops. Another significant development in the early years is the child’s increasing ability to coordinate communication modes, for example, gestures, vocalisations and eye gaze. This can impact on social engagement with caregivers (Keen et al., 2016; Wetherby et al., 1988) as it signals the development of connectedness and sharing

of social attention and interests (e.g., directing others' attention, or acknowledging them by looking at them). This developmental stage is marked as significant, as it provides the foundation for expressive language skills such as the use of verbal language, signs or symbols.

Social communication needs of young children on the autism spectrum. While typically developing infants and toddlers follow a predictable path of communication and social interaction, the developmental trajectory of children on the autism spectrum deviates from the typical pattern, and is often delayed (Keen et al., 2016), and some children fail to develop the skills necessary to move beyond this pre-linguistic stage. Children on the autism spectrum may lack reciprocal communicative eye gaze or orientation towards others that are seen in typically developing infants when they are establishing relationships with caregivers (Mundy et al., 1995; Tarbox et al., 2014). Many children on the autism spectrum have difficulties sharing their interests and emotions through reciprocal eye gaze as well as though coordinated communicative functions such as verbal language, gestures, symbols and signs.

Naturalistic instruction. Naturalistic instructional approaches are used to provide intentional and systematic instruction to children in the context of natural routines and daily activities. Naturalistic instruction serves to support and increase a child's learning and participation (Sandall et al., 2000; Snyder et al., 2015; Wolery & Hemmeter, 2011). When implementing naturalistic instruction practices, adults follow the child's lead and create embedded learning opportunities to establish social, communication and learning skills. Naturalistic instruction approaches value children's choices and preferences and typically involve embedding learning during motivating activities and events that occur naturally.

Embedded instruction. Embedded instruction is associated with naturalistic instructional approaches in the wider early intervention literature. Embedded instruction is an

evidence-based, multi-component approach for planning, implementing, and evaluating instruction for preschool children with disabilities. It involves intentional and systematic instruction of individualised learning targets, often aligned with goals or objectives specified in children's individualised educational plans (IEPs). Embedded instruction typically occurs in natural and regular activities, routines, and transitions (Snyder et al., 2013; Snyder et al., 2015; Snyder et al., 2018). Snyder and colleagues describe four broad features inherent to the embedded instructional approach. Firstly, it involves consideration of the skills that would be necessary for a child to participate in social routines and activities ("what to teach"). Secondly, there is an emphasis on the importance of creating learning opportunities that are embedded within the context of naturally occurring routines and activities ("when to teach"). Thirdly, adults offer intentional and systematic teaching opportunities that are based on the child's focus of attention/interest or child-initiated ("how to teach"). Finally, embedded instruction considers the extent to which intervention agents are implementing instruction as intended, and considers child progress, to determine if instructional changes are needed ("how to evaluate").

Embedded learning opportunities. Naturalistic instructional approaches are used to embed learning opportunities in naturally occurring activities, to promote child engagement and learning. Embedded learning opportunities (ELOs) are intentional, planned and individualised learning opportunities that are set in motion by either a naturally occurring antecedent or a planned antecedent. ELOs occur within and across motivating activities, routines and transitions based on developmentally appropriate learning needs and outcomes (Rule et al., 1998; Snyder et al., 2013; Snyder et al., 2015).

Complete learning trials. A unique feature of embedded instruction is the use of complete learning trials (CLTs) in the "how to teach" component. Snyder and colleagues (2018) emphasise that ELOs should consist of CLTs in order to maximise child learning

(Albers & Greer, 1991; VanDerHeyden et al., 2005). CLTs reflect the reciprocal relationship between child and adult behaviour. In embedded instruction contexts, children's responses are prompted and shaped by capitalising on child-initiated interactions (VanDerHeyden et al., 2005). CLTs are three-fold in the sense that adults plan for and set up opportunities through the use of antecedents (A), behavioural child responses (B) and adult-delivered or naturally occurring consequences (C) (Snyder et al., 2013). Firstly, an antecedent (A) is described as an action or arrangement by an adult, to indicate to a child that a target behaviour should occur (e.g., the adult provides a prompt or activity of high interest to the child). Secondly, a behavioural learning target (B) can be described as a functional skill or expected child response, and should be measurable (e.g., the child hands a toy to an adult to ask for assistance). Finally, a consequence (C) immediately follows the child's behaviour or response and is arranged by the adult, to influence the likelihood that the target behaviour will occur again (e.g., a statement of praise or the child gains the help they requested). Additional help (AH) involves any level of support strategies offered by an adult, to increase the likelihood of target behaviour occurring. Descriptors and examples of the various components of CLTs are included in Appendix A.

Early intervention. The term early intervention broadly describes a system of coordinated services to promote the development of infants, toddlers and young children with disabilities and children who are at risk of disability, and to offer support to families. Early intervention integrates health, social and education interventions and acknowledges the importance of inclusion of children with disabilities within mainstream settings (Ministry of Education, 2007). Early intervention services are delivered within the context of the family and rely on an understanding of family ecology and collaborative consultation (McWillliams, 2010).

Family-centred and family capacity building practices. A capacity-building approach actively promotes parents' or caregivers' skills, abilities and confidence to provide children with development-enhancing learning opportunities within their natural environments (Dunst & Dempsey, 2007; Swanson et al., 2011). Family-centred practice draws from the experiences, skills and resources of the family unit to improve outcomes, not only for the child with a disability, but also for the supporting family. When working with families, practitioners enter a caring and responsive relationship with the family to support their ability to provide learning opportunities for their children in their natural environment. Family members' involvement and decision-making are encouraged and developed, and families are viewed as equal members of the team of professionals supporting the child. Family-centred practice encourages positive family outcomes by developing capabilities, facilitates meaningful participation in all aspects of life, and improves family quality of life (i.e., overall life satisfaction, family relationships, child functioning and access to information and services) (McWilliam, 2010; Turnbull et al., 2007; Zuna et al., 2007).

Context and Rationale of This Study

Historically, early intervention for young children with disabilities in New Zealand, was informed by a practitioner-mediated model of service delivery with a strong emphasis on specialists and their assessment and knowledge of the child. In the last 10 years, the Ministry of Education has shifted to a more family-centred model with a growing acceptance that early intervention should occur within the context in which the family operates; hence the interest in family guided routines-based intervention (Ministry of Education, 2007). The need for children to receive intervention services in the context of their natural environments is valued in the literature, as it supports the generalisability of learning (Dunst, 2006; McWilliams, 2010). In response to this, advances have been made to develop parent skill and capacity through investments in generic parenting packages such as the Incredible Years program

(Webster-Stratton et al., 2005), and autism spectrum-specific parent education programs such as the Hanen More than Words program (Weitzman, 2013), the National Autistic Society EarlyBird program (Shields, 2001) and the ASD Plus program (IHC, 2014).

With an increased focus on learning within natural environments, consultation and professional development support are also provided within early childhood education settings, recognising the importance of generalisability of skills across activities and settings. Early intervention specialists assist families in identifying potential learning opportunities for children within their family life, their local community and in the child's early childhood centre. Although family-centred practice is widely accepted, many services (private organisations and providers) continue to be child-focused and professionally-driven. For young children on the autism spectrum, there continues to be a strong push from private organisations, and providers towards therapist-mediated behavioural interventions (ABA-type programmes) and families buy into these services as a strongly recommended evidence-based practice. For these children, interventions often target context- or activity-specific skills which may not be easily generalised from one environment to another.

Professionals in the field of early intervention recognise the important contribution that family capacity-building has in encouraging positive parent, family and child outcomes. Professionals are working towards developing their own skills in using evidence-based coaching models to engage parents as partners in decisions about priorities and intervention strategies. There is also a need for quality training and in-home coaching that offer parents practical skills and experience in the use of naturalistic strategies and that can be embedded in activities that occur every day, thereby building parents' capacity to offer on-going learning experiences for their child (Mataiti et al., 2016; McWilliam, 2015). However, there is still work to be done to bridge the gap between recommended practice and actual practice.

Within the current study, the values of family-centred practice, naturalistic instruction, and systematic teaching were addressed through a training plus coaching intervention.

The Research Aims

The study aimed to investigate the effects of a training plus coaching intervention in a small sample population to gain preliminary insight into its efficacy. The research sought to answer the following research questions:

1. What impact does a training plus coaching intervention have on parents' use of naturalistic interactive strategies with pre-schoolers on the autism spectrum?
2. What is the effect of parent-implemented naturalistic instruction on the acquisition of early social communication skills in pre-schoolers on the autism spectrum?
3. What are parents' experiences and perceptions of the intervention?

Overview of the Thesis

Chapter One has presented the context and rationale for the present study and introduced key concepts frequently used. The chapter concludes with the research aims and research questions.

Chapter Two outlines and discusses the literature central to the main themes in this study including social communication interventions for pre-schoolers on the autism spectrum; the value of child play and child interest; embedded instruction and the use of CLTs; parent-implemented interventions; family-centred intervention; and the history of interventions that involve training and coaching.

Chapter Three outlines the methodological approach employed in this study including the recruitment process, participant characteristics, an explanation of the training plus coaching intervention, the data collection measures, the data analysis approach and the ethical considerations.

Chapter Four presents the study's findings. These are presented as they relate to the research questions, beginning with (1) parent observational data as well as parent perspectives on changes in their interactive behaviours, followed by (2) child observation data as well as parent perspectives on changes in their child's social communication skills, and finally, (3) parent perspectives on receiving training and coaching in the use of naturalistic interactive strategies.

Chapter Five provides a discussion of the main themes developed from the results and relates these to the relevant research reviewed in Chapter Two. Similarities and differences are discussed as well as the value of the findings to the current literature on early intervention for pre-schoolers on the autism spectrum and their families.

Chapter Six contains a description of the study's limitations and outlines the clinical implications. This chapter ends with a discussion of the recommendations for future research and a conclusion.

Chapter Two: Literature Review

This literature review will begin by discussing the key characteristics of quality intervention programmes that address social communication needs. Following this will be an overview of the literature on intervention that occurs in naturalistic settings including child-centred interventions and the importance of play. Next, literature on the use of naturalistic instructional practices will be discussed. Family-centred practices involving training and coaching parents in the implementation of naturalistic instructional practices will be described, as well as training and coaching interventions implemented both internationally and in the New Zealand early intervention context. Finally, the gaps emerging from this literature review will be outlined and linked to the current study.

Addressing Social Communication Needs

Language skills are fundamental to human behaviour as they contribute to the development of social interaction, connection and relatedness to others (Persicke et al., 2014). Given that young children on the autism spectrum commonly display delayed or disordered development of functional communication skills, a significant amount of time must be dedicated to developing their language and social communication skills to ensure the best learning outcomes. Early intervention provides the opportunities and experiences needed to promote children's acquisition of these critical early social communication skills. The New Zealand Autism Spectrum Disorder (ASD) Guideline (2016) considers the social communication skills of children on the autism spectrum, to be a high priority learning area. It recommends that any intervention targeting social communication behaviours in these children should:

1. Take place in a natural setting, using natural routines and naturally occurring consequences. These settings provide the best opportunities for generalisation and maintenance of new skills;

2. Implement developmentally appropriate activities across a variety of settings, to encourage successful outcomes. These activities should reflect the child's interest and be responsive to their culture. The New Zealand ASD Guideline suggest that, although 15-20 hours per week should be dedicated to goal-directed activities, the quality of the intervention is at least as important as its duration or frequency;
3. Encourage the development of functional skills and promote active participation in independent living. These skills are best taught in a highly supportive environment which is culturally responsive and facilitates family collaboration; and,
4. Involve careful evaluation and monitoring of the child's early intervention program, on an ongoing basis.

Over the past three centuries, several approaches have been advocated when choosing intervention approaches for young children with developmental delays. Mahoney et al. (2004) describe interventions as being either didactic, naturalistic or developmental in their approach to service provision. Firstly, didactic approaches are characterised by a high degree of structure and activities that rely less on child-initiated learning and more on extensive adult direction, reinforcement and encouragement to perform actions (Burger, 2015). In contrast, the developmental approach promotes children's social-emotional well-being, encouraging self-selected, child-initiated play, and places greater emphasis on adults providing responsive and interactive transactional supports (Copple and Bredekamp, 2009). Finally, the naturalistic instruction approach is a fusion of elements of the developmental model and instructional procedures derived from learning theory (Schreibman et al., 2015; Rule et al., 1998; Wolery & Hemmeter et al., 2011). This approach emphasises child-initiated play and offers frequent opportunities for children to learn through participation in naturally occurring activities of high interest, through modelling, shaping, and reinforcement from an adult. The efficacy of these approaches for supporting children's learning and development has been the focus of

recent studies (Bishop et al., 2015; Snyder et al., 2013; Snyder et al., 2018). Findings suggest that each approach can be effective for supporting children's learning though results have varied significantly across studies in terms of the effectiveness for whom and under what conditions (Mahoney et al., 2004).

Intervention in Naturalistic Settings

The development of an early intervention plan should allow for many opportunities across settings and activities, to facilitate learning experiences for young children. The following section explores features and core principles underlying a naturalistic intervention such as (1) learning opportunities offered in naturally occurring activities, (2) the importance of building on a child's interest, (3) the importance of child play, and (4) the contribution of familiar interaction partners.

Interventions in naturally occurring activities and routines. Everyday activities are natural learning environments in which contextually meaningful learning can occur. Experts in the field of early intervention recommend that intervention, addressing functional and meaningful skills, should be embedded in targeted learning opportunities in everyday activities in the child's natural environment (McWilliams, 2015; Salisbury et al., 2018; Snyder et al., 2015). The priorities of early intervention should include functional spontaneous communication and social instruction delivered throughout the day as children with disabilities learn essential skills as a result of their participation in naturally occurring routines and activities (Sandall et al., 2000). Providing intervention (a) in natural settings and (b) in everyday activities and routines, creates opportunities to support development and generalisation of functional skills, thereby enhancing children's daily participation at home and in the community (Koegel et al., 2001; National Research Council, 2001; New Zealand ASD Guideline, 2016; Wetherby & Woods, 2006).

Building on child interests. The relationship between a child's interest, or focus of attention, and early language development has been of interest in the literature over the last 10 years. Several authors concur (Dunst et al., 2013; Lowry et al., 2017; Raab & Dunst, 2005) that a child's object of interest can be a meaningful starting point for interaction and play, and can provide opportunities for learning and building meaningful relationships. Results from a study by Dunst et al. (2012) showed that interest-based interventions for children on the autism spectrum had positive effects on their emotional affect, social responses, joint attention, and language outcomes. When child-initiated and preferred activities become the primary focus in intervention, children's motivation and participation increases. Girolametto and colleagues (2007) report that by following children's interests, children are motivated to interact for longer. Embedding developmental interventions using activities based on the child's interest and motivation, can increase the frequency of learning opportunities, and impact positively on the child's learning outcomes and social-communicative competence more specifically (Boyd et al., 2010; Dunst et al., 2017).

The importance of play. Play is considered the primary activity of children in the early years and can provide significant benefits to children's early social development (Warreyn et al., 2014; Wolery & Hemmeter, 2011; Wolfberg, 2015). Children learn a variety of skills including creativity and flexibility and problem-solving through play. When children explore and manipulate objects as part of their play, their knowledge of the world increases, and they can develop important social communication and language skills. Rogers (2010) describes the power of play in developing the social competence of a pre-schooler on the autism spectrum; and agrees that, through play, one can capitalise on learning opportunities while the child builds relationships and connection with others.

The importance of familiar interaction partners. The early intervention literature suggests that everyday experiences, events and child-initiated play can be valuable sources of

learning alongside primary caregivers or significant adult role models. Raab and Dunst (2005) suggest that children have more opportunities to develop critical skills and competencies in social communication and language when they engage in interactions with a familiar adult; these might include parents, family members, teachers or other adults. Kaiser et al. (1992) highlighted several essential reasons for parent involvement. Firstly, parents are consistent in the child's natural environment. Secondly, they can promote generalisation of new skills throughout the day in a variety of activities. Finally, everyday interactions with a dedicated adult are viewed as being valuable in facilitating children's language development.

Parents are often referred to as children's first language teachers (Alpert & Kaiser, 1992; McConachie & Diggle, 2007). McConachie & Diggle (2007) explain that parents as familiar and significant communication partners, are reliable and consistent, and they can adjust supports and offer social-emotional responsiveness and motivation to support early interactions. When parents are provided with strategies to promote learning in naturally occurring activities, greater opportunities arise for expanding children's vocabularies and increasing joint attention (Wetherby & Woods, 2006). Parents, therefore, play an essential part of any early intervention program for children on the autism spectrum.

Naturalistic Instruction

Several terms have surfaced in the literature, to describe naturalistic instruction approaches including milieu-teaching and enhanced milieu teaching (Hancock et al., 2016; Kaiser et al., 2000), naturalistic teaching (Cowan & Allen, 2007), and embedded instruction (Snyder et al., 2015). Each of these approaches involves instructional procedures, embedded in naturalistic settings, with varying degrees of specificity about the way the instruction is provided. Rule and colleagues (1998) use the terms "instruction" and "intervention" interchangeably and describe naturalistic instruction teaching procedures as transactional. They list the following key features of naturalistic approaches:

1. Naturalistic instruction refers to an instructional context such as everyday events and everyday activities that occur in a variety of settings (e.g., homes, communities, and educational environments).
2. Interactions between the child and the adult follow the child's lead or capitalise on the child's interest.
3. The consequences of the child's behaviour in interactions with the adult are usually inherent outcomes of the interaction.
4. Naturalistic interventions address functional learning targets in every day occurring activities.

These four features are what typically differentiates naturalistic instruction from more direct instructional approaches such as behavioural intervention and Applied Behaviour Analysis. Naturalistic instructional approaches can be applied in natural or least restrictive environments to promote inclusion, in contrast to more structured intervention provided in clinical settings, and facilitated by lead professionals (Rule et al., 1998; Wolery & Hemmeter, 2011). Naturalistic approaches, while no less structured in their design, encourage a relaxed, situational application that helps children make their connections.

Embedded instruction was chosen as a focus for the present study because it is a widely used and recommended practice in early intervention with theoretical, practical, and empirical support (Division for Early Childhood, 2014). Embedded Instruction and the use of complete learning trials (CLTs) capitalise on child-initiated interactions and support adult communication partners to create and plan opportunities to maximise child learning (Albers & Greer, 1991; Snyder et al., 2013; VanderHeyden et al., 2005). Research examining the use of CLTs have, to date, focused on adult implementation fidelity with teachers as primary facilitators, teaching functional skills within the context of naturally occurring routines and activities at early childhood settings. Embedded instruction, the use of CLTs (Snyder et al.,

2013), and interaction promoting strategies are widely used and recommended practice in the field of early intervention, and have shown to be effective in improving child outcomes (Bishop et al., 2015; Rakap and Balikci, 2017).

Implementing complete learning trials in naturalistic settings. Embedded instruction and the use of CLTs have been the focus of recent research to promote children's participation, engagement, and learning in naturalistic settings (Bishop et al., 2015; Rakap and Balikci, 2017; Snyder et al., 2018). Most of these studies report extensively on the fidelity of the adult implementing the components of CLTs, as well as the context in which the trials occurred. These studies also report on child outcomes, including functional life skills, participation in routines, and the use of verbal language for requesting or naming activities. Below is a summary of these studies.

Bishop et al. (2015) described early childhood teachers' use of CLTs in an early childhood setting. Video self-monitoring with graduated training and feedback was used to monitor the accuracy of teachers' implementation of CLTs. This study showed that a combination of training, video self-modelling, and explicit feedback was effective in increasing teachers' competence in the use of CLTs. It also highlighted the need for ongoing external supports, for example, reminders or incentives to maintain skills in self-monitoring, related to the use of CLTs.

Rakap and Balikci (2017) investigated the use of researcher-implemented intentional and embedded instructional practices to teach functional self-care and requesting skills to a child on the autism spectrum in a university pre-school setting. Results showed positive outcomes for the child in three targeted behaviours (removing a coat, using a spoon to eat, using a picture to request) and this child maintained the skills independently during a follow-up session. This study highlighted the need for replication with a larger group of participants,

and the need for embedded instruction to be implemented by familiar adults and in naturally occurring settings. The authors also recommended continued research targeting skills that can be generalised to a range of settings and across a variety of routines and activities.

In a more extensive study (Snyder et al., 2018), two variants of the Tools for Teachers professional development intervention were provided to pre-school teachers and involved three conditions: (a) workshops and on-site coaching, (b) workshops and video self-coaching, and (c) business as usual professional development. This study examined the effects coaching had on children's development and learning outcomes. Results showed that pre-school teachers who received coaching onsite implemented CLTs with accuracy and that the children they interacted with demonstrated more frequent occurrences of learning targets. In contrast, fewer learning target behaviours were observed when children engaged in interactions with teachers who were not trained and coached in the use of embedded instruction practices.

Embedded instruction, with a focus on using CLTs, has shown to be effective in teaching specific target behaviours in naturally occurring activities within early childhood centres. While the results of these studies are promising, there is a need to further develop research in this area. Firstly, findings from these studies cannot be easily generalised due to the diverse skills and developmental needs of the children; therefore, there is a need for further examinations of the impact of embedded instruction with the use of CLTs on children with a range of needs (e.g., preschool children on the autism spectrum). Secondly, embedded instruction is a recommended approach for families; however, there is a need for its implementation within the context of children's homes. Finally, research supports a focus on providing embedded learning opportunities using CLTs across a wider variety of activities within home settings with parents and caregivers, and with a range of functional communication skill outcomes for young children on the autism spectrum.

Working with Families

Family-centred supports and services for infants and toddlers with disabilities and their families are essential when planning early intervention services. The following section discusses family-centred practice and the benefits of parent-implemented interventions.

Family-centred practice. Historically, professionals have promoted the active participation of parents in setting goals and implementing strategies; however, in recent years, there has been a shift towards parents becoming facilitators of the intervention and extending the reach of intervention outcomes into their family and community settings (Friedman et al., 2012). A key term that has emerged in early intervention, family-centred practice, describes a model of partnership for engagement with families. Many research articles and papers have been published over the last 15 years, exploring the value of collaboration with families (Dunst & Dempsey., 2007; Fitzgerald, 2004; Keen, 2007; Rouse, 2012), which has influenced and shaped the development of family-centred practice across the globe and locally, here in New Zealand. The inclusion of family-centred practice in the New Zealand ASD Guideline (2016) and the Australian Early Years Learning Framework (EYLF) (Department of Education Employment and Workplace Development, 2009) demonstrates its importance, locally. It is now widely recognized that interventions implemented in naturalistic settings with parents as teachers or main interaction partners can lead to successful outcomes for families (Landry et al., 2012; McConachie & Diggle, 2007; McWilliam, 2015; Stephan & Manning, 2017).

Family-centred practice is collaborative and relational, and it is essential that professionals and families know how to engage with each other to achieve the best outcomes for children. A family-centred approach encourages parents not only to be involved in early intervention, but also empowered to make meaningful decisions related to the goals for their children and themselves. Dunst and Trivette (2009) describe a capacity building family-

centred approach as active family participation in making informed choices and acting on these choices with encouragement and support. Capacity building early intervention promotes parents' skills, abilities and confidence to provide development-enhancing learning opportunities in naturally occurring activities and routines. A family-centred approach, therefore: (1) requires interaction with families in a supportive way, (2) offers families opportunity to develop skills in making meaningful decisions about their child's intervention, (3) creates opportunity for meeting families' needs beyond the development of the child, and (4) gives parents the skills to implement intervention in their natural family context (Dunst et al., 2007; McConachie & Diggle, 2007; McWilliams, 2016; Swanson et al., 2011). In summary, family-centred practices are strengths-based, individualised, respectful of families' choices and responsive to their culture and values.

Benefits of parent-implemented intervention. Greater emphasis is now placed on building parent/carer capacity to promote children's development within the context of their daily routines and in naturalistic settings (Dunst et al., 2013; Friedman et al., 2012; McWilliams, 1992). In support of this, Moore et al. (2014) identified that one of the three major tasks for early intervention professionals supporting families, is to ensure that parents of a child with a disability have the skills and competencies needed to provide their child with experiences and opportunities that promote acquisition of skills and that empower their child to participate meaningfully in everyday activities. Therefore, parent-implemented intervention aims to support parents to use individualized intervention practices with their child, to facilitate functional skills and increase their child's participation and social interactions in their natural context.

Several intervention studies have shown the benefits of parents as facilitators of communication interventions. Dunst et al. (2000) reported an increase in maternal knowledge of the autism spectrum, enhanced maternal communication styles, and reduced maternal

depression, following parent-implemented intervention training. Roberts and Kaiser (2011) conducted a meta-analysis of parent-implemented communication interventions and concluded that parents who were trained in the use of interaction-facilitative strategies, experienced associated benefits ranging from an increase in parent responsiveness to improved language facilitative techniques. There is also evidence that increased parental skills allow for continual opportunities for children to learn skills across a range of situations. Mancil and Pearl (2008) conducted a systematic review of parent-implemented interventions with young children on the autism spectrum and concluded that there is enough evidence that parent-implemented intervention can be useful in increasing social communicative skills in children. In agreement with this, Campbell et al. (2004) and Kingsley and Mailloux (2013) reported that parent training leads to improved child communicative behaviour and increased parent-child interaction. However, for these benefits to be sustained long-term, emphasis should be on the nature and quality of the training and support that parents are offered.

Coaching in Early Intervention

Supporting parents and caregivers to facilitate their children's learning can be a complex task as it requires a collaborative approach. The following section discusses the value of supportive coaching interventions and continues by describing features of an effective training and coaching intervention. Following this is a discussion on the impact of coaching and continues with a description of parent perspectives on the process of coaching found in the literature. This section ends with a discussion on training and coaching interventions implemented in New Zealand.

Coaching as a supportive intervention. The definition of coaching adopted in this study is: "an adult learning strategy in which the coach promotes the learner's (coachee's) ability to reflect on his or her actions to determine the effectiveness of an action or practice and develop a plan for refinement and use of the action in immediate and future situations"

(Rush & Shelden, 2011, p. 8). Coaching occurs in family settings, promotes parent-directed goals and adult learning and builds family capacity to implement intervention strategies within their lived environment (Dunst et al., 2006; Graham et al., 2010; Rush & Shelden, 2011). The practice of coaching parents frequently appears in policy statements, and national guidelines (e.g., New Zealand ASD Guideline, 2016) include coaching as having significant value in generalising intervention in everyday settings. Coaching is becoming increasingly common in supporting parents in implementing communication support strategies and is an evidence-based intervention that is family-centred and promotes adult learning.

Key features of an effective coaching process. With increased understanding regarding the importance and significance of the use of coaching in early intervention, there is a growing need for clear procedures for coaching parents in the use of embedded interactive strategies. Many researchers have investigated the concept of coaching with parents and sought to find key components of the coaching process that are the most beneficial to families' needs.

A growing body of research describes coaching components and its significance in planning intervention with children with disabilities. For example, Stephan and Manning (2017) describe the Hanen Parent Coaching model as a four-step parenting coaching model involving preparation, demonstration, explanation and providing opportunities for practice, feedback and discussion. Taken together, the literature describes several characteristics of coaching practices including: (1) joint planning, (2) observations of actions that needs to be implemented, (3) spontaneous and planned events allowing the caregiver to practice strategies, (4) reflection and analysis of the use of these strategies and the need to adapt or change, and (5) feedback from the coach to expand the caregiver's level of understanding and practice (Rush et al., 2003; Rush & Shelden, 2011). Friedman et al. (2012) proposed operational definitions that describe effective coaching behaviours, and these include

conversation and information sharing, observations, direct teaching, and demonstration and modelling of strategies to be implemented. Coaching strategies with high levels of parent participation and self-reflection should, therefore, take priority in early intervention, given its potential to facilitate parents' capacity to identify and implement the intervention in their lived environment (Browns & Woods, 2016).

Impact of coaching. Coaching parents in naturally occurring family settings promotes parent capacity. Many researchers have conducted studies that support the benefits of parent coaching. Dunst et al. (2006) report on the impact of coaching on the parents' sense of empowerment in gaining skills to support their child's learning needs. These authors define empowerment of parents as the act of providing support and strengthening of capacity by increasing access to knowledge and practical skills to facilitate intervention in everyday activities. They continue to say that, when families strengthen existing capabilities and learn new skills, they are better able to access and use resources and support for their family.

Further examples from the literature provide evidence that coaching parents supports the positive development of skills for the child and positive outcomes for the family. Results from a parent-implemented intervention study involving parents of children on the autism spectrum showed that in addition to parents feeling more confident, their child significantly increased their participation in everyday life routines (Dunn et al., 2012). In agreement with these results, Kemp and Turnbull (2014) reported an increase in child participation as well as developmental gains in a variety of domains following an intervention in which parents were coached to implement interventions with their children. It is not surprising that there has been a strong pull towards coaching practices that enable child participation and encourage parent-initiated solution finding (Graham et al., 2009; Mataiti et al., 2016).

Parent experiences of the coaching process. Given that naturalistic and parent-implemented interventions are becoming increasingly more represented in the early intervention community, it is necessary to investigate, not only the efficacy of an intervention, but also parents' experiences of an intervention, as this reflects the functionality and appropriateness of the intervention in the family context. Several studies report on parent perceptions of an intervention. For example, Salisbury et al. (2018) presented a systematic review on caregiver and providers' experiences in the coaching process through the Embedded Practices and Intervention with Caregivers (EPIC) program which has two components: caregiver coaching and a five-question (5Q) process for supporting embedded practices. Caregivers rated EPIC as a positive experience which was useful for their family, and the parents agreed that coaching in the home environment was useful and valuable. Parents found it particularly helpful being observed by providers and then coached in the use of the strategies. This evaluation process can add relevant information when assessing changes in parent capacity and skill development and can assist in planning the ongoing intervention.

In response to the growing need for on-going support and feedback for parents to actively engage in early intervention and maintain skills learned during coaching sessions, Vismara et al. (2012) presented results from a study aimed at delivering the Early Start Denver Model (ESDM), an evidence-based approach for stimulating developmental growth in young children on the autism spectrum. For this study, strategies were modelled using DVD instruction, and parents submitted videos for feedback through video conferencing. Although parents reported great satisfaction and relevance in the use of technology, they indicated a need for more personalised feedback to ensure carry-over. Meaden et al. (2016) trialled an Internet-based coaching model aimed at coaching parents in implementing milieu-based intervention strategies at home to increase social communication skills of their pre-

schoolers. The outcome from this intervention trial mirrored the results from Vismara and colleagues and highlighted the need for on-going guided feedback to ensure that parents continue to use the strategies with their children in everyday settings. Parent-focused language interventions such as the Hanen More than Words program (Weitzman, 2013) use in-vivo and reflective video feedback to provide opportunities for parents to reflect on their skills, knowledge and experiences and to promote self-discovery and to increase mastery of skills. Video feedback in the broader context of in-home coaching can be highly effective in supporting parents' integration of new and existing skills and promote their ability to self-evaluate, reflect and adjust their interactive behaviour (Weitzman, 2013).

Training and coaching parents in the New Zealand context. Training and coaching parents in the implementation of naturalistic teaching strategies have been a focus of intervention providers in New Zealand in the last decade. Programmes implemented in the early intervention context include the Early Start Denver Model (ESDM; Dawson et al., 2010; Rogers & Dawson et al., 2010; Rogers et al., 2018); the ASD Plus: Education for families (IHC, 2014); the National Autistic Society EarlyBird program (Shields, 2001), the Hanen Program (Weitzman, 2013); Floor Time (Greenspan & Wieder, 2006); and Routines Based Intervention (McWilliam, 1992). Despite their widespread use internationally, only three of these have been researched for their effectiveness and validity in teaching and coaching parents in New Zealand.

The EarlyBird program, developed by Jane Shields, is a parent education program for parents of young children on the autism spectrum. It offers families information about their child's experiences of the world and provides strategies in facilitating interactions and social communication. The Ministries of Health and Education in partnership with Autism New Zealand piloted the EarlyBird program. Anderson et al. (2006) presented a full report which aimed to develop the Autism Parenting Questionnaire (ASQ) to use in ongoing evaluations of

the EarlyBird program, and to evaluate the efficacy of the EarlyBird Program implemented in New Zealand. The authors reported significant and maintained gains in APQ scores across all domains including knowledge, communication, behaviour, and parent stress. Although the first report of the implementation of the EarlyBird Program in New Zealand reported on the benefits of the training program, it also highlighted that the program has not been adapted to suit the needs of a diverse New Zealand culture. The report summarised positive outcomes for parents including decreased parental stress and improved family functioning. The program did not provide direct provision of services to the child, and the child outcomes varied depending on the parents' implementation and maintenance of strategies long-term.

Researchers from the Victoria University in Wellington New Zealand offered the Early Start Denver Model (ESDM) to five families and evaluated the social validity of the intervention through a questionnaire and a semi-structured interview, which four of the five families completed (Ogilvie & McCrudden, 2017). The ESDM is a naturalistic behavioural intervention for children on the autism spectrum. Families who participated in this study rated their experiences positively and observed changes in their children's behaviour at home; however, the intervention was low in intensity, and the study involved only four participants. Further work is also required to adapt this program to the needs of the New Zealand population and to develop valid measures for assessing language outcomes for children.

The ASD Plus programme (IHC, 2014) provides parent education and practical strategies to support their children's early language and social-emotional development. IDEA services developed the ASD Plus parent education program with input from the Jump Start parent empowerment program (Southwest Autism Research and Resource Centre, USA). In March 2010 data was collected from a small sample of parent and findings across all data sources (i.e., qualitative interviews and self-completed parent surveys), suggested that parents were satisfied with the delivery and that the program offered positive short-term outcomes for

the parents, children and their wider family units. While ASD Plus offers autism-specific parent education and support strategies which is empowering for families, it does not offer a coaching component with in-situ supports for parents to gain mastery of use of learnt strategies.

Emergent Gaps Following this Literature Review

In reviewing the literature on child-centred intervention in young children on the autism spectrum, the use of naturalistic instruction embedded in naturally occurring settings, and family-centred practice, the following gaps have emerged. These gaps point to a need for future research in these domains. This study aims to fill some of these gaps, with an emphasis on parents of children on the autism spectrum as primary facilitators or implementers of naturalistic instruction practices, and the use of embedded instruction with CLTs.

Studies reporting on the implementation of Embedded Instruction and the use of CLTs have shown that the approach is useful in teaching specific behaviours in naturally occurring activities. Also, adults engaged in this approach have generally reported that they benefited from the process of coaching through specific instruction, practice or self-monitoring (Bishop et al., 2015; Rakap & Balikci, 2017). However, it is evident that ongoing coaching, support, and reminders are necessary for the accurate implementation of CLTs.

Research examining the use of Embedded Instruction and CLTs, have, to date, focused on adult implementation fidelity and child learning targets within daily activities and routines in early childhood settings, with teachers as primary facilitators. Further research is needed to determine if the same approach is useful in the home setting, with primary caregivers as facilitators in early intervention. When naturalistic strategies are introduced in naturally occurring activities or routines, opportunities increase to promote generalisation of social communication skills, which is of relevance when planning early intervention services

for young children on the autism spectrum. Currently, there are few examples in the literature of training plus coaching interventions that specifically targeted parents using naturalistic strategies to promote communication in young children on the autism spectrum (Carter et al.,2011; Keen et al., 2010; Lane et al., 2016). More research is required to encourage the use of naturalistic strategies implemented by primary caregivers of children who are on the autism spectrum, over the long term, across a broad range of settings and activities, and embedded in a variety of learning opportunities.

In reviewing the literature, data has emerged on parents' experiences in being coached in the use of parent-implemented interventions as well as reflective and descriptive feedback regarding what works well for them and whether their family goals are included (Friedman et al., 2012; McConachie & Diggle, 2007; McWilliams, 2015). More research would be helpful in determining whether parents view the process of being coached, as useful and whether it supports their motivation to maintain the use of these strategies in the long haul, for maximum effect on child outcomes.

Finally, in the body of research reviewed, it is evident that there is a limited resource base of studies representing the benefits of parent-implemented interventions in a culturally diverse New Zealand context. There is a need for quality training and coaching interventions which are adapted to families with children on the autism spectrum. In response to the recommendations of the New Zealand ASD Guideline (2016), there is strong pull towards quality early intervention services that are both culturally responsive and contextually relevant. It is therefore necessary that research is done on the impact of interventions that aim to develop children's skills within their natural environment with their usual carers.

The purpose of this study is threefold. Firstly, it will investigate the impact of a training plus coaching intervention on parents' use of naturalistic interactive strategies with

their pre-schooler who is on the autism spectrum. Secondly, it will investigate the effect of parent-implemented naturalistic instruction on the acquisition of early social communication skills of pre-schoolers on the autism spectrum. Finally, it will explore parents' experiences and perspectives of the intervention.

Chapter Three: Methodology

This chapter provides a detailed description of the methodological approach employed in this study. First, the research questions are presented, followed by a description of the research design. Next, the recruitment process and the characteristics of the participants are discussed. The chapter continues with an explanation of all aspects of the training and coaching intervention. Following this, the data collection measures and the data analysis approaches are outlined. The chapter concludes with a summary of the ethical considerations that are relevant to this study.

The Research Aims and Questions

The study aimed to investigate the effects of a training plus coaching intervention in a small sample population to gain preliminary insight into its efficacy. The research sought to answer the following research questions:

1. What impact does a training plus coaching intervention have on parents' use of naturalistic interactive strategies, with pre-schoolers on the autism spectrum?
2. What is the effect of parent-implemented naturalistic instruction on the acquisition of early social communication skills in pre-schoolers on the autism spectrum?
3. What are parents' experiences and perceptions of the intervention?

The Research Design

The study utilised a single group non-randomised pre-test post-test research design. The design was non-randomised because, before the study, potential participants were enrolled and on a waiting list to receive intervention from an early intervention centre. Participants were then screened for their eligibility in the study according to five criteria (see participant recruitment below). The pre-test post-test design is typically used to investigate the impact or effect of a treatment or intervention, by describing differences in scores

between pre- and post-test measures (Abbott & Bordens, 2011; Marsden & Torgerson, 2012). The design is ‘pre-experimental' due to the absence of an assigned control or comparison group. True experimental designs utilise a control group to strengthen the internal validity of a study and to rule out rival explanations for causal relationships (Punch & Oancea, 2014).

Potential threats to the validity of this study (i.e., testing and instrumentation effects) were minimised where possible. To reduce these threats, all pre and post video recordings of parents were completed at the families' homes. Also, all pre and post video recordings of children were collected at the early intervention centre to ensure consistency of context. Furthermore, all pre-test and post-test video recordings used to gather observational data were completed in a naturalistic play-based setting, under two conditions of play (described later in this chapter). Purpose developed coding systems were used throughout, to code: (1) parent behaviour, and (2) child social communication behaviour from video data collected at pre and post-intervention. The researcher employed a research assistant to code 39% of child observation video data, and 33% of parent observation video data to check inter-observer agreement (IOA). Pre-intervention and post-intervention measures were completed three months apart, thereby helping to control for the potential threat of the testing effect (change that may be attributed to the impact of repeated measures). Risk of maturation for child outcomes is possible; however, this effect would not influence any potential changes in parent behaviour which was the primary focus of the study.

Participant Recruitment

This study involved three parent-child dyads. These dyads included pre-schoolers on the autism spectrum, and their parents or primary caregivers. Inclusion in this study was based on the family’s enrolment at an early intervention centre. This study prioritised parents who had already identified improvement in their child's social communication skills as a family goal, requiring intervention. To participate in this study, a child had to: (a) present with a clinical

diagnosis of ASD or social communication difficulties recognised formally by either the District Health Board, child development centre or a private paediatrician, (b) have normal hearing and vision, (c) have English as the language medium at home, (d) be between 2 and 5 years of age, and (e) present with minimal functional verbal and social communicative behaviours, as per parent report. To recruit participants, the Centre Director at the early intervention centre approached families directly, if they met the selection criteria, to introduce the purpose and details of the study, and to provide them with the parent Information Sheet (see Appendix B). Parent-child dyads targeted for this study were attending Tuesday afternoon play sessions at the early intervention centre and were awaiting early intervention from an assigned key worker. Families who indicated an interest and willingness to participate in the study were asked to sign the Parent Consent Form (see Appendix C), and the researcher then contacted the family. Participation or non-participation in the study had no impact on families' access to regular services at the early intervention centre.

The Participants

The sample of parent-child dyads that participated in the study was culturally diverse. Participant information is summarised in Table 3-1 below, and background information regarding child social communication skills and parent goals at the start of the study is described below.

Table 3-1

Participant Information

	Dyad One	***Dyad Two***	***Dyad Three***
Child's age pre-test	Four years, four months	Three years, Two months	Four years, Eight months
Child's age post-test	Four years, seven months	Three years, Five months	Three years, Eleven months
Child's gender	Male	Male	Male
Parent's gender	Female	Male	Female
Child's cultural identity	Filipino	NZ European	NZ Maori/ NZ European
The cultural identity of participating parent	Filipino	NZ European	NZ European
The cultural identity of the second parent	Filipino	NZ European	NZ Maori

Background information for dyad 1. Child 1 received a diagnosis of autism spectrum disorder (ASD) in August 2017 following parents' concern with his lack of speech and social interaction. His social communication skills at the start of the study involved mostly crying, pulling or hand leading to get his basic needs met. He also used single words and jargon which was mainly self-directed. He occasionally responded to adults talking to him and relied on routines to be highly predictable. Parent 1 reported that the child was mostly engaged "in his own world" and it was difficult to engage him in any interaction, given his strong interest in toy cars and active exploration. He was a "very busy child" with short attention to play activities, and frequently moved away when others joined in his play, often protecting his toy cars by pushing the adult or child away. Child 1 had a firmly established daily routine which was essential for him to, as any small change caused significant upset for the child. Child 1 is enrolled at Daycare four days per week. The family had one visit to McKenzie Centre (initial enrolment visit) when the study was introduced to them. Parent 1 also reported that the stress and anxiety related to receiving a formal diagnosis affected their household, so they were very keen to support their child's communication

development. Parent 1 reported that her goals for the child were to increase his interest in her joining in his play, as well as using single words to communicate his needs and share his interest with her. She reported that she tended to do things for the child and wanted to learn ways to teach him the necessary skills. Also, her goal was to join in his play with the right amount of language instead of asking too many questions.

Background information for dyad 2. Child 2 and his father visited McKenzie Centre in January 2018 shortly after a formal diagnosis of ASD was made at the child development centre. Parent 2 reported his initial concerns were that the child often screamed when he could not get what he wanted and used only a handful of words which were very hard to understand. The main concern at the time of the introduction to the present study was that the child had unsuccessful relations with children at his Daycare, often hitting them and being quite aggressive in noisy environments. His attention to activities was fleeting, and this made it difficult to engage him in meaningful interactions. The child attends Daycare four days a week. Parent 2 reported that a goal for the child was to see him use single words and 2-3-word phrases to tell him what he wanted and being able to give and take turns with others. This parent reported feeling confident in his ability to explain things to the child but wanted to learn how to use the right amount of language while playing with his son and knowing when and how to enter and extend his play and use of language.

Background information for dyad 3. Child 3 was referred to the child development centre by his early childhood centre, who were concerned regarding limited verbal language and his lack of interest in social interaction; he received a diagnosis of ASD two months before the start of the study. Parent 3 had phone contact with the Centre Director at McKenzie Centre regarding early intervention services in January 2018, who then provided her with information regarding the present study. Parent 1 reported that her son had a great imagination and can keep himself entertained. She stated that the child communicated

towards her only to get his basic needs met, with the occasional single word and lots of jargon. Although he could count well, and mainly echoed (imitated) phrases he heard on TV, he had minimal spontaneous language and wasn't able to string words together while playing alongside others. He responded to daily routines when it was predictable and when he was guided through each step. Parent 3 reported that Child 3 often made lots of noise and engaged in banging when he did not understand what was happening next. Parent 3's learning priorities for her son were to use more intelligible speech and send more functional messages directed towards others. Her goal was to learn strategies to join in her child's play as it was a challenge for her to get her child to include her in his play. Furthermore, she wanted to learn how to create opportunities for interaction and conversation with him.

The Setting

The McKenzie Centre is a not-for-profit early intervention centre. It provides specialist early childhood intervention for pre-school children who have special needs, and their families, throughout the greater Hamilton area, and operates as a licensed early childhood centre. Referrals are accepted directly from families/whanau, or agencies (e.g., Child Development Centre, Ministry of Education, general practitioners, paediatricians, Plunket, or early childhood centres). McKenzie Centre provides early intervention to children with intellectual, physical, communication and sensory disabilities, as well as those with delays although no specific disability has been identified. Once a referral is processed, the family attends a pre-enrolment visit and begins attending a playgroup on a Tuesday afternoon, until the family is assigned a key worker and regular early intervention begins. McKenzie Centre uses a family-centred, transdisciplinary approach to intervention. Families have input from early intervention teachers, a speech language therapist, an occupational therapist, a psychologist, and a social worker. While the key worker may conduct home visits and early childhood centre visits, most of the support for children and families is centre-

based. For the present study, the McKenzie Centre was used as the location for the four training workshops as well the pre-test and post-test child observations.

In addition to activities conducted at the Centre, families' homes were used for the coaching intervention and to collect pre-test and post-test parent observation data. Details of each family's home environment will not be described due to protecting their privacy, however, general characteristics of the home environment across participants were that home visits occurred in the living room area, with a designated space for toys of high interest, e.g., toy cars, balloons, puzzles, blocks, and books. Some of the interactions took place in the garden area using outdoor equipment, e.g., ride-on bikes, trampolines and ball play.

The Interventionist

The researcher was the interventionist in the study (i.e., she presented the workshops, provided 1:1 coaching visits with the participants in their home setting, and completed the pre- and post-assessments and interviews with the participants). The researcher obtained a Bachelor in Speech Language Therapy degree at the University of Pretoria, South Africa, and has more than 20 years of experience in the field of early childhood intervention. The researcher has been employed at McKenzie Centre for the last 10 years, where she has gained specialist knowledge and experience in supporting families with pre-schoolers on the autism spectrum, as well as extensive parent training and coaching experience in the use of interaction promoting strategies.

The subjective position of the researcher, an employee of McKenzie Centre, potentially influenced the way the data was analysed and interpreted. However, in agreement with Abbott and Borden (2011) and Dane (1990), the researcher's experience and interest in young children on the autism spectrum and their families, as well the experiences gained from working with many families, were of great benefit when carrying out the components of

this research, and particularly in the interpretation of the results from this study. Furthermore, IOA procedures for data analysis and regular reflective discussion with supervisors helped verify the credibility of the data (discussed later in this chapter).

The Training Plus Coaching Intervention

The training plus coaching intervention involved the systematic introduction of interaction promoting strategies and the implementation of embedded instruction practices. This was completed in the context of training workshops, followed by the application and implementation of these strategies in video coaching sessions in the home setting. A brief description of these components will follow (see Appendix D for an overview of the content and structure of the workshops, as well as accompanying implementation guides and materials).

Workshops. Four group training sessions lasting two hours each were facilitated by the researcher, at the McKenzie Centre. The content of each training workshop consisted of three core components: (1) an explanation and description of the strategies to be implemented, (2) observation of the use of the strategies in pre-recorded video examples; followed by (3) group discussions, brainstorming and individualised planning. Purpose-developed PowerPoint slide shows and handouts were used as training material. Pre-recorded video examples and example interaction plans demonstrated how to use the strategies in naturally occurring interactions with toys and objects. The workshops also included an overview of how to select appropriate and functional social communication targets.

The Embedded Instruction Parent Interaction Plan (EIPIP) was the primary planning form provided to parents. The EIPIP (see Appendix E) is based on the Embedded Instruction Instructional Plan (Snyder et al., 2013) with the addition of a section for parent interaction promoting strategies. The EIPIP was developed for use in this project, with permission from

Patricia Snyder. The training workshops provided parents with education on interaction promoting strategies and explicit training in planning and implementing Embedded Instruction Complete Learning Trials (CLTs). CLTs (Snyder et al., 2015, Snyder et al., 2018) involve three primary components: a planned or naturally occurring antecedent (A) that creates an opportunity for the child to demonstrate a social communicative behaviour (B) and is then followed by descriptive feedback, or a naturally occurring consequence (C). Variations of CLTs include additional help and feedback when needed. The EIPIP was used to support parents throughout the intervention, to develop personalised interaction plans, which they would implement with their child at home, within naturally occurring interactions, (i.e. activities that were either initiated by the child or initiated by the parent incorporating the child's favourite toy or object).

Coaching home visits. Eight coaching visits were facilitated by the researcher at the families' homes, to provide on-going support to parents in implementing their parent developed interaction plans. Coaching home visits occurred weekly for four weeks and then paused for one week during the school term break, before continuing for another four weeks; they lasted up to 90 minutes. The coaching approach utilised in this research has its origins in a combination of coaching models in the early intervention literature (Brown & Woods, 2016; Friedman et al., 2012; Kemp & Turnbull, 2014; Rush & Shelden, 2011; Snyder et al., 2015; Stephan & Manning, 2017). Coaching home visits followed a Coaching Protocol (see Appendix F) using video feedback, and consisted of the following components:

1. *Conversation and information sharing (CIS)* – At the start of the coaching session, the interventionist and the parent discussed the parent's opportunities for practice of the EIPIP since the last visit and any changes in child social communication behaviour.

2. *Guided feedback and practice (GFP)* - The interventionist coached the parent from the side but provided specific recommendations in the context of an existing interaction between the parent and the child.
3. *Parent practice with video (PPV*) – The parent interacted with the child while the interventionist videoed the interaction.
4. *Problem solving and reflection (PSR)* – The parent and the interventionist reviewed the video of the parent's interaction with their child. They jointly described and discussed the videoed interaction and focussed on both the parent's use of the components of the EIPIP and the child's social communication behaviour.
5. *Facilitated parent planning (FPP)* – At the end of the coaching visit, the parent developed a plan of action following the video discussion, with guidance and recommendation from the interventionist.
6. *Demonstration and modelling (DEM)* – The interventionist narrated her actions while modelling a strategy with the child while the parent watched; it also offered the parent an opportunity to identify the child's response and social communication behaviour. Demonstration and modelling only occurred if the adult required more support and examples of the implementation of the EIPIP.

At the start of the home visits, parents were asked to describe their interactions with their child throughout the week and to clarify what the target behaviour was that they were eliciting from their child. Parents were then videoed while they engaged their child in this activity. These interactions were recorded on video and replayed to the parent, for joint discussion. The discussion was based around the parent's use of interaction promoting strategies and their implementation of the components of a CLT. In-situ supports were given during these home visits when requested by the parent, (e.g., to model strategies or implementation of CLT components, or to join in on the interaction to support the parent in

the implementation of strategies). Written records of what occurred at the home visit was a shared responsibility of the parent and the researcher. The parent used their EIPIP to record feedback from the videos and to write strategies to focus on during the following week. A copy was made of the parents' written feedback and made available to the researcher, who then filed it with the research project records. In addition to the feedback discussion, the researcher also held a log (summary) of each contact with the family which was also stored with research project records.

Data Collection

Pre and post intervention data was collected from both parents and children and included observational data coded using purpose-developed systems, parent-completed rating scales, and informal verbal feedback. Table 3-2 below provides a flowchart of the steps that were completed to collect:

1. Observational data on parent behaviour (as the primary variable) and child social communication skills (as a secondary variable);
2. Parent completed rating scales on parent-child interaction skills, child social communication skills, and on parent perspectives of the intervention.
3. Informal verbal feedback collected from parents at the post-intervention assessment at McKenzie Centre.

Table 3-2

Data Collection and Intervention Flowchart

Step 1	**Pre-intervention child assessments at the early intervention centre**		
	Up to 20 minutes of video footage of the child interacting with the researcher (play-based interaction)	Parent completed the CSCS-Parent Ratings (pre).	Informal discussion of parents' goals for the child during the intervention
Step 2	Pre-intervention parent assessments in the home setting		
	Up to 20 minutes of video footage of the child interacting with the parent	Parent completed the PCI-Parent Ratings (pre)	Informal discussion of parents' focus for themselves during the intervention
Step 3	The training plus coaching intervention		
	4 x 120 minutes training workshops	8 x 90 minutes coaching home visits	
Step 4	Post-intervention parent assessments in the home setting		
	Up to 20 minutes of video footage of the child interacting with the parent	Parent completed the PCI-Parent Ratings (post)	
Step 5	Post-intervention child assessments at the early intervention centre		
	Up to 20 minutes of video footage of the child interacting with the researcher (play based interaction)	Parent completed the CSCS-Parent Ratings (post)	Parent completed the intervention rating scale and provided verbal reports

Note.
[a] CSCS-Parent Rating refers to the Child Social Communication Skills – Parent Rating Scale.
[b] PCI-Parent Rating refers to the Parent-Child Interaction – Parent Rating Scale.

Below is a detailed description of the types of data collected at pre-and post-intervention stages of this study.

Observational data. Observation has a long tradition in the social sciences and has been used extensively in educational research (Punch & Oancea, 2014). Pre-developed observational systems can be beneficial in quantifying observable behaviours. Behavioural categories need to be clearly defined and specific, using well-described operational definitions (Creswell, 2012; Kazdin, 2001). To ensure the consistency and accuracy of

scoring, a proportion of the video data was also coded by a second observer who was trained in the project-developed coding systems.

Parent behaviours. The primary effect that was under investigation was the parents' implementation of embedded instruction CLTs and the use of interaction promoting strategies, in the home setting. The purpose of the parent-child interaction assessment was to describe the parents' use of naturalistic interactive strategies to promote interaction with their children. Video data were collected in the home setting of parent-child interactions under the following conditions: (1) during toy and object play (e.g., block construction, toy cars, role play, art, books, puzzles), and (2) during people games (e.g., chase, tickles, singing, jumping on the trampoline) or people toys (e.g., toys that are hard to operate toys, balloons, and bubbles). Up to 20 minutes of video footage was recorded. The process was repeated at the post-intervention stage.

Parent-child interactions were coded using the Parents' Use of Embedded Learning Opportunities for Promoting Social Interaction Coding Schedule (PELO-PSI). The PELO-PSI was purpose-developed to code for the accurate implementation and frequency of occurrence of the components of CLTs (see Appendix G).

Behavioural definitions for components of CLT's. Descriptors of interaction promoting strategies and examples and definitions of parent-implemented components were provided in the PELO-PSI manual. The PELO-PSI was informed by the Embedded Instruction Observation System for Teachers (EIOS-T; Bishop et al., 2011). To illustrate how the components of CLTs were coded, examples of coded interactions collected during this study are listed in Table 3-3.

Table 3-3

Examples of Coded Interactions Explaining the Use of CLTs and ELOs

CLT without target behaviour	***Target behaviour: "Child uses 2-3 words to tell the parent what he wants her to draw"; Context: Drawing.***	
	Parent suggests, "let's draw, tell me what to draw".	Parent-delivered antecedent
	The child looks at the parent and asks "hugh?"	Behaviour, but not target behaviour
	Parent prompts, "what shall I draw?"	Additional Help
	Child says, "ice".	Behaviour, but not target behaviour
	Parent says, "ice" and draws him a picture.	Consequence
CLT with the target behaviour	**Target behaviour: Child will say 'go' and throw the ball back to parent; Context: Soccer.**	
	Parent returns the soccer ball to the child and waits with an open-armed gesture.	Parent-delivered antecedent
	Child says, "go" and throws the ball back.	Target behaviour
	Parent says, "aah!" and catches the ball.	Consequence
Incomplete trial without target behaviour	**Target behaviour: Child will respond to parent's comments or questions, using 2-3-word phrases, e.g., 'get help' or 'call the ambulance'; Context: Toy car race.**	
	Parent comments, "you already parked your helicopter!" and points to the helicopter.	Parent-delivered antecedent
	Child says, "helicopter" and continues to play by himself.	Behaviour
CLT with the target behaviour	**Target behaviour: Child leads with 2-3-word comments, i.e., saying what happens next; Context: Balloon play.**	
	The balloon deflates.	Environmentally arranged antecedent
	Child points to the balloon and says, "we need a big one!"	Target behaviour
	Parent imitates the child, saying "we need a big one, okay?" and prepares to blow it up.	Consequence
Incomplete trial without target behaviour	**Target behaviour: Child imitates 2-3-word phrases modelled by the parent; Context: Toy cars.**	
	Parent comments, "watch out for the aeroplane!"	Parent-delivered antecedent
	The child responds by looking and saying, "oh".	Behaviour
CLT with the target behaviour	**Target behaviour: Child names the next number, e.g. 'this is three' or 'I found two"; Context: Puzzles.**	
	The parent has the puzzles set up on the table but does not direct the activity yet.	Environmentally arranged antecedent
	Child comments spontaneously, "this is one!"	Target behaviour
	Parent responds with, "Good boy!"	Consequence

Once coded, parent observation data identified the total number of embedded learning opportunities and CLTs, as well as the component parts of each trial. Because data were

coded from video and video length differed for each recorded observation, data were transformed into rate data such that scores represented the number of opportunities or occurrences of behaviour codes per minute of parent-child interaction.

Child social communication behaviours. The purpose of the child observations was to describe children's overall social communication skills. Child observations occurred at the early intervention centre, a naturalistic, play-based environment, with access to the child's favourite play activities and interests. During the observation period, the researcher interacted with the child used a responsive protocol to elicit social communicative behaviours from the child in two different play conditions; these were the same play conditions used for the parent-child interactions. These interactions were recorded on video (up to 20 minutes in total). This process was repeated at the post-intervention stage.

Child social communicative behaviours were coded using a purpose-developed system referred to as the Child Social Communication Behaviour Coding Schedule (CSCS-CS) (see Appendix H). Interactions were coded for the occurrence of potentially communicative behaviour and potentially communicative functions. This coding schedule was informed by the Early Social Communication Scales (ESCS) by Steiner (2013) and the Assessment, Evaluation, and Programming System for Infants and Toddlers, by Bricker and Pretti-Frontczak (1996).

Once coded, child observation data identified the number of potentially communicative functions that occurred, as well as the number of communicative behaviours that occurred. Data were coded from videos, and video length differed for each recorded observation; therefore, data were transformed into rate data such that scores represented the number of occurrences of behaviour codes per minute of adult-child interaction.

Inter-observer agreement for observational measures. Kazdin (2011) notes that naturally occurring behaviours can be complicated and fast-paced and therefore steps need to be taken to ensure that data are recorded and coded as accurately as possible. For this reason, the researcher trained a second coder to establish IOA. The second coder had over 10 years experience as an early intervention teacher. Systematic training procedures took place, involving one hour of training for each of the purpose developed coding systems and one-hour joint practice coding, which were done to ensure agreement across coders. Training included a presentation of the coding manuals and discussion. Following the training, coding took place in separate locations, on different days. Once completed, the second coder returned the coded sheets to the primary coder for calculation. An 80%+ agreement for each measure was used as the standard to be considered as reliable.

The second observer coded 39% of child social communication skills video data and 33% of parent behaviour video data. Videos were selected from a cross-section of children, video conditions (people play and toy play) and time points (pre- and post-intervention). Videos were screened by the primary researcher to identify instances of child potentially communicative behaviours, child potentially communicative functions, parent-implemented CLTs and components of CLTs. Each event was coded for the relevant behaviours using the respective coding manuals. IOA was calculated for the occurrence of each behaviour code using the following calculation for child data: the occurrence agreement divided by the occurrence and the non-occurrence agreement plus disagreements, with the result multiplied by 100% for each potentially communicative behaviour and each potentially communicative function. The mean IOA on child social communication behaviour data was 89.32%. The following calculation was used for Part A of the parent data: the occurrence agreement divided by occurrence agreement plus disagreements, with the result multiplied by 100% for each CLT event. The mean IOA on parent behaviour video data was 87.91%. Part B of the

parent observational data, i.e., parent-implemented components, were coded only by the primary observer.

Parent completed rating scales. In the literature, Likert type scales are widely known, and useful for measuring attitudes or beliefs. They involve a series of gradations that describe a statement (Martens et al., 1985). Three parent-completed rating scales were used in the present study.

Parent completed rating on parent behaviour. The Parent-Child Interaction Parent Rating (PCI-Parent Rating) scale explored parents' perception of their skill level in the use of naturalistic interaction strategies. The PCI-Parent Rating scale is included in Appendix I. Parents were asked to complete a 6-point rating scale comprised of 20 statements, by checking the place on the scale that best reflected their rating of the skill described. These statements were rated from "not good at all" (value of 1) to "exceptional" (value of 6). Statements included interaction promoting strategies (e.g., positioning and being face to face with the child) and naturalistic instruction practices (e.g., making play predictable and selecting the right level of help for their child). This rating scale was completed at the pre- and post-assessments in the home setting. At the pre-intervention assessment, parents were also asked to select five strategies they wanted to target for themselves during the intervention.

Parent completed rating on child social communication skills. The Child Social Communication Skills Parent Rating (CSCS-Parent Rating) scale explored parents' rating of their child's range of communication functions, communication modes, and their social interaction and engagement skills. The CSCS Parent Rating scale is included in Appendix J. Parents were asked to complete a 6-point rating scale comprised of 27 statements, by checking the place on the scale that best reflected their rating of the skill described. These

statements were rated for frequency of occurrence, i.e. from "never" (value of 1) to "all the time" (value of 6). The rating scale comprised of three sections including communication functions (e.g., protesting, requesting or greetings), communication modes (e.g., use of gesture, pointing or words), and finally social interaction (e.g., allowing a play partner or allowing changes in play). This rating scale was completed at the pre- and post-assessments at the early intervention centre. At the pre-intervention assessment, parents were also asked to select five strategies they wanted to target for their child during the intervention.

Parent completed intervention rating scale. The Intervention Rating Scale used in this study (see Appendix K) was informed by the following two social validity measurement tools:

1. *The Intervention Rating Profile-15 (Martens et al., 1985):* These researchers found the use of a 9-point Likert-type response scale to be very useful in providing information about parent beliefs, their understanding and acceptance, and their impressions on the usefulness of this intervention.
2. *The Canadian Occupational Performance Measure, COPM, by Carswell et al. (2004)*: These researchers adopted the key indicators of satisfaction and performance, as they found they provided valuable information about parents' feelings and experiences throughout the coaching process.

The intervention rating scale for this study explored parents' (1) perception and rating of the naturalistic instruction intervention, and (2) their experience of receiving training and being coached. Parents were asked to complete a 6-point rating scale comprising of 20 statements, by checking the place on the scale that best reflected their feelings, attitudes, and beliefs about each statement. These statements were rated from "strongly disagree" (value of 1) to "strongly agree" (value of 6).

Informal verbal feedback. During the final assessment at the early intervention centre, parents were invited to share their perspectives through a prompts sheet with open-ended questions relating to; (1) their use of embedded instruction, (2) the training and coaching intervention, (3) changes they noticed in their skills, and (4) changes they observed in their children's communication skills. The purpose of the prompting questions was to collect narratives to support parents' perception ratings and to explore the main themes resulting from their verbal feedback. The Prompt Sheet is included in Appendix L.

Data Analysis

Given the exploratory nature of this research, descriptive statistics (i.e., means and standard deviations) were used to describe changes or patterns in the target behaviours of interest in this study from pre- and post data (Abbott & Bordens, 2011; Kazdin 2011). Data summary sheets were used to organise and record data collected from questionnaires and coded data from observations. Responses from the rating scales and data summary sheets for observational data were transferred to a spreadsheet and checked for accuracy. Once data was collected from both pre-intervention and post-intervention measures, the data were analysed with excel and summarised in tables and graphs.

A general inductive approach was used to analyse the qualitative data from parent narratives, as it helped to identify patterns and themes from parents' unique responses (Thomas, 2006). Parents' verbal responses were recorded on paper and then uploaded to a word document where the researcher read through each response to establish a sense of the data as a whole. Following this, the parent narratives were organised into main categories in order to generate main themes and summarised in a table. These themes captured core messages reported by parents, related to their experiences of the training plus coaching intervention. Pertinent quotes from the participants illustrated the themes that emerged throughout this process.

Ethical Considerations

The researcher sought approval from the Massey University Human Ethics Committee, with key considerations of informed consent, privacy, and confidentiality, the risk of harm, conflict of interest, and the Treaty of Waitangi. A copy of the Human Ethics Committee approval letter is available in Appendix M.

Informed consent. Children in this study were a vulnerable population as they were under 16 years, had disabilities, and were unable to give consent. To minimise this risk, parents were provided with a comprehensive Information Sheet, so they could determine whether participating was in their own and their child's best interests. Parents were asked to give consent for themselves and their child to participate and for them both to be videoed.

Privacy and confidentiality. Participants were de-identified on transcripts, written records, and presentation of findings to ensure confidentiality. All information gathered, was stored securely. Consent forms and the code documents were stored separately. While parents and children could be identified from likeness on video, all videos were stored securely on pass-word protected laptops and used in accordance with McKenzie Center policy for video.

Risk of harm. There was no potential risk of harm to the participants except possible inconvenience to the family and fatigue of the child. This was acknowledged and minimised through embedding the intervention within naturalistic routines.

Conflict of interest. The children in the study attended an early intervention centre where the researcher is employed as a speech language therapist; this was potentially a power imbalance as the families may have felt pressured to participate. To minimise this risk, the researcher ensured that the family knew that participation or nonparticipation would not impact on their child's intervention or co-existing services from the early intervention centre. The Centre Director was the first point of contact for recruitment, and participating parents

were provided with the Centre Director's contact details to discuss the project if they had concerns. This was stated clearly in the Information Sheet.

Treaty of Waitangi. The researcher has read the Te Ara Tika Guidelines for Maori Research Ethics (Hudson et al., 2010) and engaged in appropriate consultation with a cultural advisor at McKenzie Centre, before the start of the study. The cultural advisor reviewed the recruitment process, intervention phase procedures, the content of the intervention, the documentation, and the data collection processes, to ensure that they were culturally sensitive and appropriate for the target audience.

Summary

This chapter has outlined the methodology used in this study and has described the methods and approaches used to collect and analyse data to answer the research questions. This study employed a single group non-randomised pre-test post-test research design to investigate the impact of a parent-implemented, naturalistic instruction approach to promote early social communication skills in pre-schoolers on the autism spectrum. Observational data were collected on child and parent behaviours. Data was also obtained from parent perception rating scales, an intervention rating scale, and informal verbal feedback. Ethical considerations were also discussed.

Chapter Four: Results

The purpose of this study was to explore the impact of a training plus coaching intervention to support parents' use of naturalistic interactive strategies with their pre-schoolers on the autism spectrum. This chapter presents the study findings in response to the three research questions outlined in the Methodology chapter. A range of primary and secondary data, collected from purposed developed coding systems, parent-completed rating scales and interview responses, are presented. Results are presented as a mean across three participating parent-child dyads, and where appropriate, individual responses are mentioned.

Parent Behaviours: Use of Naturalistic Interactive Strategies

Observational data. The primary purpose of the Parent Embedded Learning Opportunities for Promoting Social Interaction (PELO-PSI) scale was to count the number of embedded learning opportunities (ELOs) that parents used during their play interactions with their child to elicit social communication target behaviours (TB). The system examined parents' use of interaction promoting strategies as well as the extent to which complete learning trials (CLTs) occurred. Parent behaviours were calculated as a rate per minute score.

ELOs and CLTs. Changes in the rate of ELOs and CLTs pre and post intervention are shown in Figure 4-1. The figure illustrates an increase in the occurrence of CLTs post intervention as well as an increase in the occurrence of child TB. Similarly, there was an increase in parents' use of CLTs where child TB also occurred. In contrast, there was a decrease in parents' use of ELOs. As a reminder, target behaviours focused on increasing children's social-communication skills in the context of ongoing play activities.

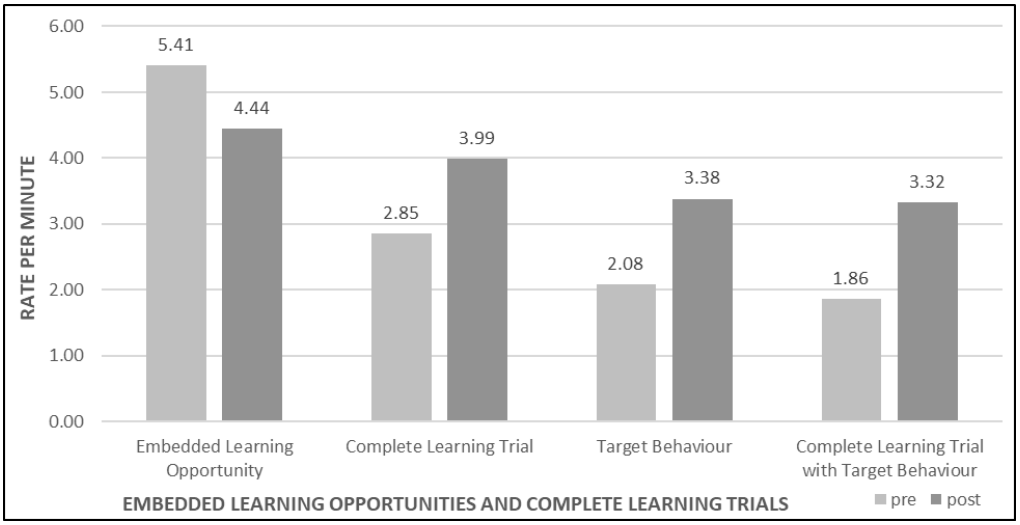


Figure 4-1. Parents' use of Embedded Learning Opportunities (ELOs) and Complete Learning Trials (CLTs).

To further explore these results, individual parent-implemented components are discussed in detail below (as presented in Figures 4-2 to 4-6). Coding procedures allowed for parents to pair different types of antecedents, additional help prompts, or consequences together at the various points in the learning trial.

Antecedents. Antecedents referred to cues or prompts for the child to join in ELOs. Antecedents were described and coded as either parent delivered, parent response or environmentally arranged. Figure 4-2 compares parents' rates of use of these antecedents at pre and post intervention. The most commonly used antecedents at both pre and post intervention were parent delivered antecedents. The least commonly used were parent response antecedents.

Data showed that environmentally arranged antecedents were the only antecedents that increased from pre to post intervention. In contrast, there was a decrease in parents' use of parent-delivered antecedents. Parent-delivered antecedents showed the most change over time.

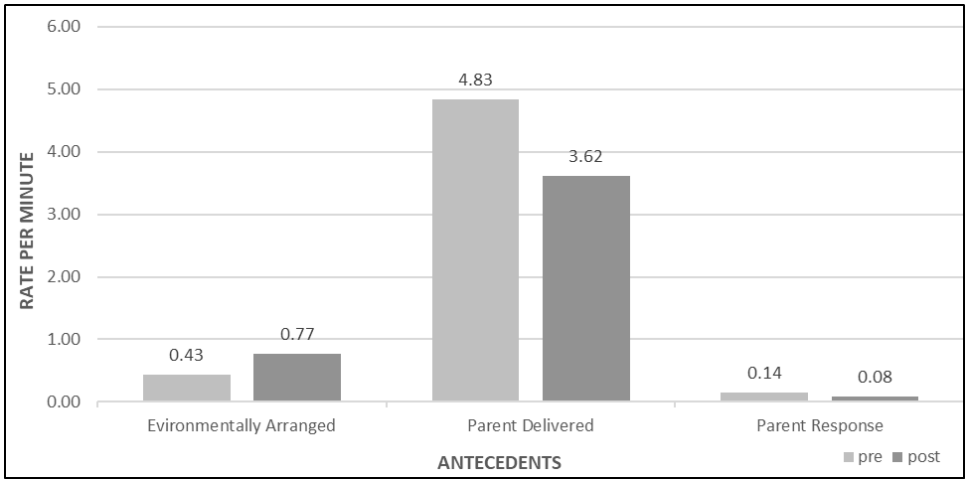


Figure 4-2. Parents' use of Antecedents as a component of Complete Learning Trials (CLTs). Abbreviations are as follows: Environmental Antecedents (EA), Parent Delivered Antecedents (PD) and Parent Response Antecedents (PR).

Figure 4-3 provides a breakdown of the types of antecedents that parents used and how they compared from pre- to post intervention. Overall, parents' use of prompts featured the strongest, followed by their use of comments, at both time points. In comparison, parents rarely used the strategy of creating opportunities for their child to communicate; this was not observed once at pre-intervention.

Data showed that there was a marked change (more than doubled) in parents' use of pausing from pre- to post intervention. In contrast, there was a downward trend in parents' use of comments, questions, prompts, activity suggestions as well as strategies termed as "other" (i.e., any antecedent not listed in the coding manual) respectively. There was a marked downward shift in parents' use of activity suggestions.

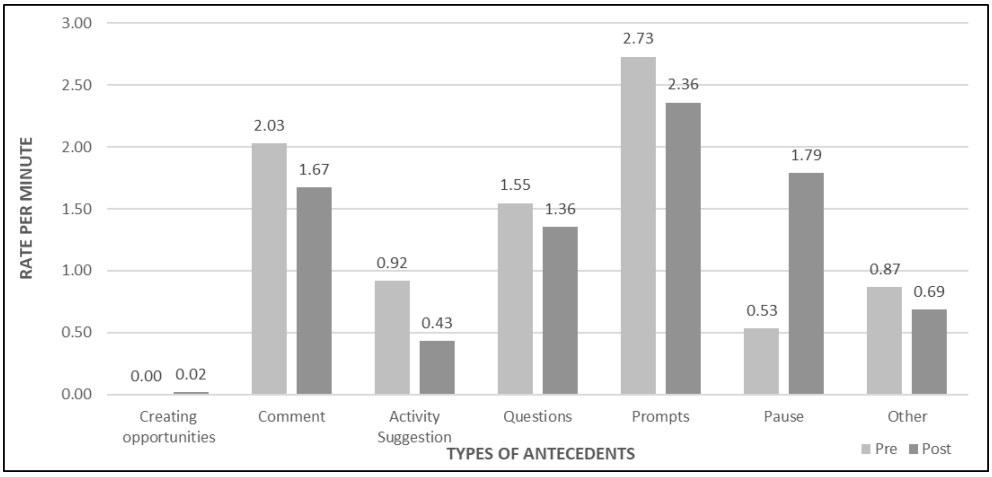


Figure 4-3. Parents' use of various types of Antecedents.

Providing additional help. Additional help referred to the use of verbal, visual or gestural prompts, questions, and repetition of antecedents. Figure 4-4 depicts the nature and frequency of parents' use of additional help. Overall, prompting questions were used most often, whereas verbal prompts occurred least often at both pre- and post-intervention.

Data showed an increase in parents' use of prompting questions, visual/gestural prompts, verbal prompts, and TB models, respectively, from pre to post intervention. The biggest shift was in parents' use of TB models (used more than eight times as often at post intervention). Also showing a marked increase was parents' use of prompting questions. In contrast, there was a marginal difference in parents' use of verbal prompts and visual/gestural prompts. There was also a decrease in parents' use of the strategy of repeating the antecedent.

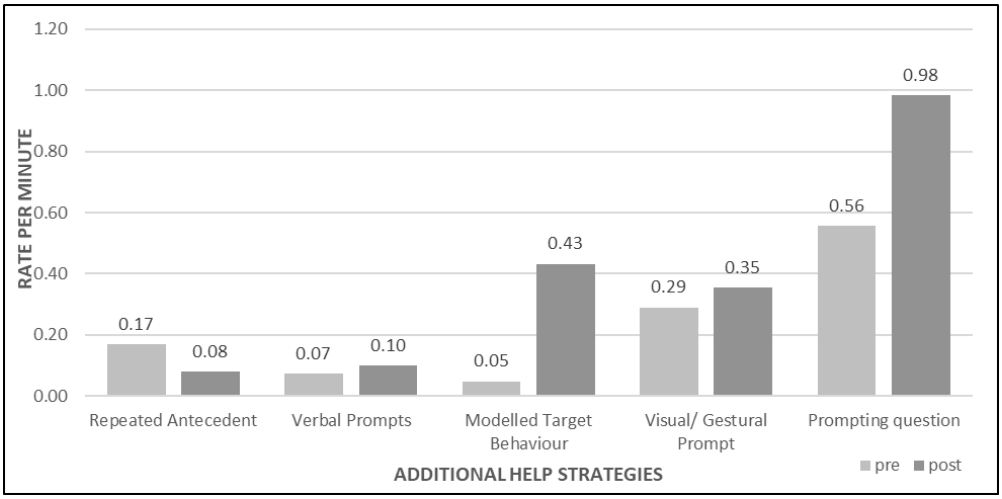


Figure 4-4. Parents' use of Additional Help as a component of Complete Learning Trials.

Providing consequences and feedback. Consequences referred to the parents' responses after the child produced the TB, and feedback referred to the parents' responses when the child did not produce the TB. Figure 4-5 compares parents' use of a range of strategies to provide consequences or feedback at pre and post intervention. Overall, parents used naturally occurring consequences and the item termed "other" (i.e., spontaneous comments made by the parent, or any strategy that was not described in the manual) most frequently at both pre and post intervention. This may be related to the fact that these occur in the context of back and forth social interactions. In contrast, parents did not use gestural praise, and very rarely used descriptive praise at both time points.

Results showed that parents' use of imitation increased the most (used more than three times as often) post intervention, followed by parents' use of descriptive feedback and naturally occurring consequences. Parents' use of verbal acknowledgement increased moderately. There was a slight decrease in parents' use of strategies termed "other".

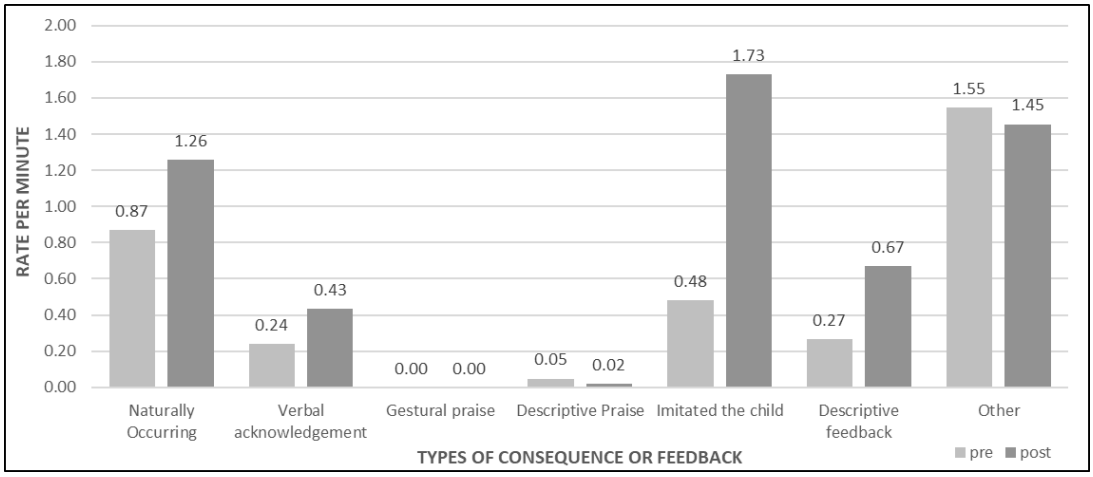


Figure 4-5. Parents' use of Consequence or Feedback as Components of Complete Learning Trials.

Use of interaction promoting strategies. Interaction promoting strategies included positioning, the use of descriptive language, parents' responsiveness to the child's interest and communication attempts, and their use of pausing to promote engagement. Figure 4-6 presents a breakdown of parents' use of a range of interaction promoting strategies as a mean across all participants. Overall, the data showed a strong representation of all strategies used by parents both pre and post intervention.

Results showed that the most improved strategy was that of balancing comments with questions, which doubled in the rate of occurrence post intervention. Other strategies that showed marked improvement were parents' responsiveness to child communication, their use of pausing, and their ability to match the child's skill level, respectively. Strategies that also increased favourably were parents' use of enthusiasm as well as extending children's communication attempts. Parents did not demonstrate any change in their responsiveness to the child's interest, nor in their ability to play face to face; however, these strategies were used frequently before the intervention. The only strategy that showed a decline were parents being active play partners; the results showed that parents' active play decreased slightly.

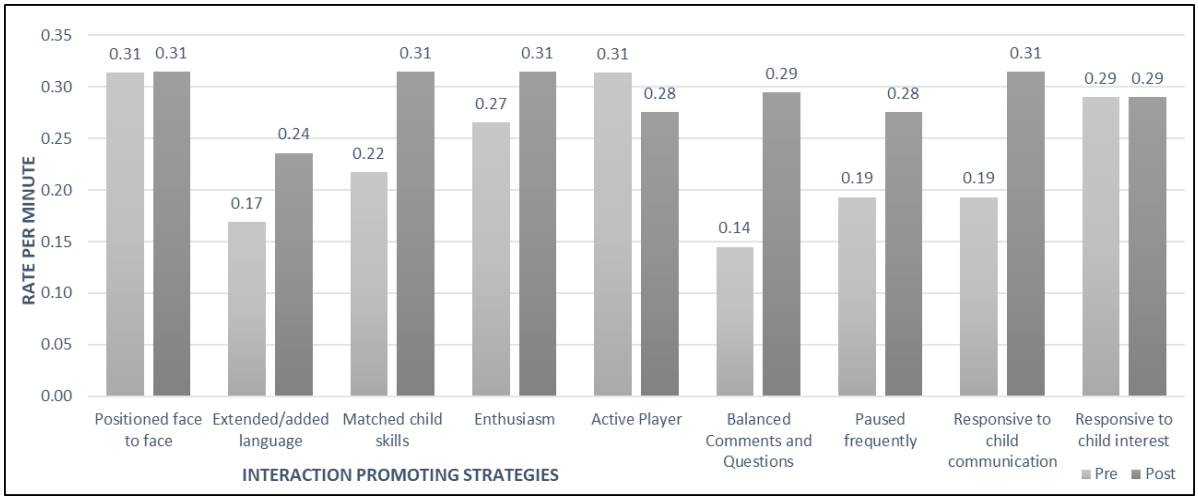


Figure 4:6. Parents' use of interaction promoting strategies at pre and post intervention.

Parent completed rating scales. The primary purpose of the Parent-Child Interaction Rating Scale (PCI-RS) was to assess parents' perceptions of their use of interaction promoting strategies and naturalistic instruction practices pre and post intervention. Parents responses are reported in Table 4-1, as a mean across all parents.

Parents reported an increase in their use of interaction promoting strategies across all items in the rating scale. Skills that parents rated as having improved the most were: adjusting the way they talked to their child, offering and naming options/choices, and making comments to describe children's play ideas. Parents also rated their ability to wait for an opportunity for their child to communicate as a strategy they frequently used. Other items that were rating as having improved favourably were their ability to enter children's play, copy their actions, position themselves face to face, and offer help when needed. Parents also indicated that their ability to create predictable play sequences while in interactions with their child improved over time and that they were more skilled in encouraging their child to lead the play with their ideas and interests. The two items that had the least improvement were parents' use of gestural praise, as well as their response to their children's communication attempts.

Table 4-1

Parent Ratings for Interaction Promoting Strategies and Embedded Learning Opportunities

Parent-Child Interaction Rating	**Mean across dyads (standard deviation)**	
	Pre	**Post**
I adjust the way I talk, to help my child understand that I am saying.	3.00 (1.00)	5.67 (0.58)
I join in with my child's solitary play by including his/her interests and ideas.	3.00 (1.00)	5.33 (1.15)
I offer my child choices or options, by showing and labelling his/her options.	3.00 (1.00)	5.33 (0.58)
I join in with my child's play by commenting on or describing what I see him/her doing.	3.00 (1.73)	5.00 (1.00)
I join in with my child's play by turning it into a game which has predictable language and a sequence of actions.	3.00 (0.00)	5.00 (1.00)
I know how to select the correct level of help my child needs.	3.00 (1.00)	5.00 (1.00)
I encourage my child to take the lead about what and how we play with toys/objects or actions.	4.00 (0.00)	5.67 (0.58)
I stop what I am doing to pay attention to what my child likes to do with a toy.	3.33 (1.15)	5.00 (1.00)
I join in with my child's play by copying his/her sounds and words.	4.00 (0.00)	5.33 (1.15)
I adjust the way I talk to match my child's skills level.	3.33 (1.15)	5.00 (1.00)
I wait for my child to communicate something toward me.	3.33 (1.15)	4.67 (1.53)
I create opportunities for my child to communicate his/her need towards me.	3.67 (0.58)	5.00 (1.00)
I tell my child what to do by offering suggestions, where needed.	3.67 (0.58)	5.00 (1.00)
I let my child know what to do by showing him/her when needed.	3.67 (1,53)	5.00 (1.00)
I join in with my child's play by copying his/her actions.	3.67 (0.58)	5.33 (1.15)
I adjust my physical level to get face to face with my child.	4.33 (1.15)	5.33 (0.58)
I pause to listen to the sounds my child is making or to observe the actions he/she is using while playing.	4.33 (0.58)	5.33 (1.15)
When my child communicates a need toward me or communicates towards me, I respond immediately.	4.33 (0.58)	5.00 (1.00)
I encourage my child's efforts by using and gestures.	4.33 (0.58)	5.00 (1.00)
I give my child help to communicate when needed.	4.33 (0.58)	5.00 (1.00)
**Note. Parents rated their skills on a scale from 1 (poor) to 6 (exceptional). Items are organised from the greatest to least change in ratings between pre and post intervention.*		

Parents were also asked to select and rate up to five strategies that they would like to improve on during the study; this was done before the start of the intervention. Many of these

became the focus of coaching during the intervention. Figure 4-7 illustrates how each parent rated their performance in these target behaviours pre and post intervention. Overall parents indicated that they improved in their use of all target strategies. The intervention strategies that the parents perceived as having changed the most were labelling and offering choices and commenting (Parent 1), adjusting language for understanding (Parent 2), and waiting (Parent 3).

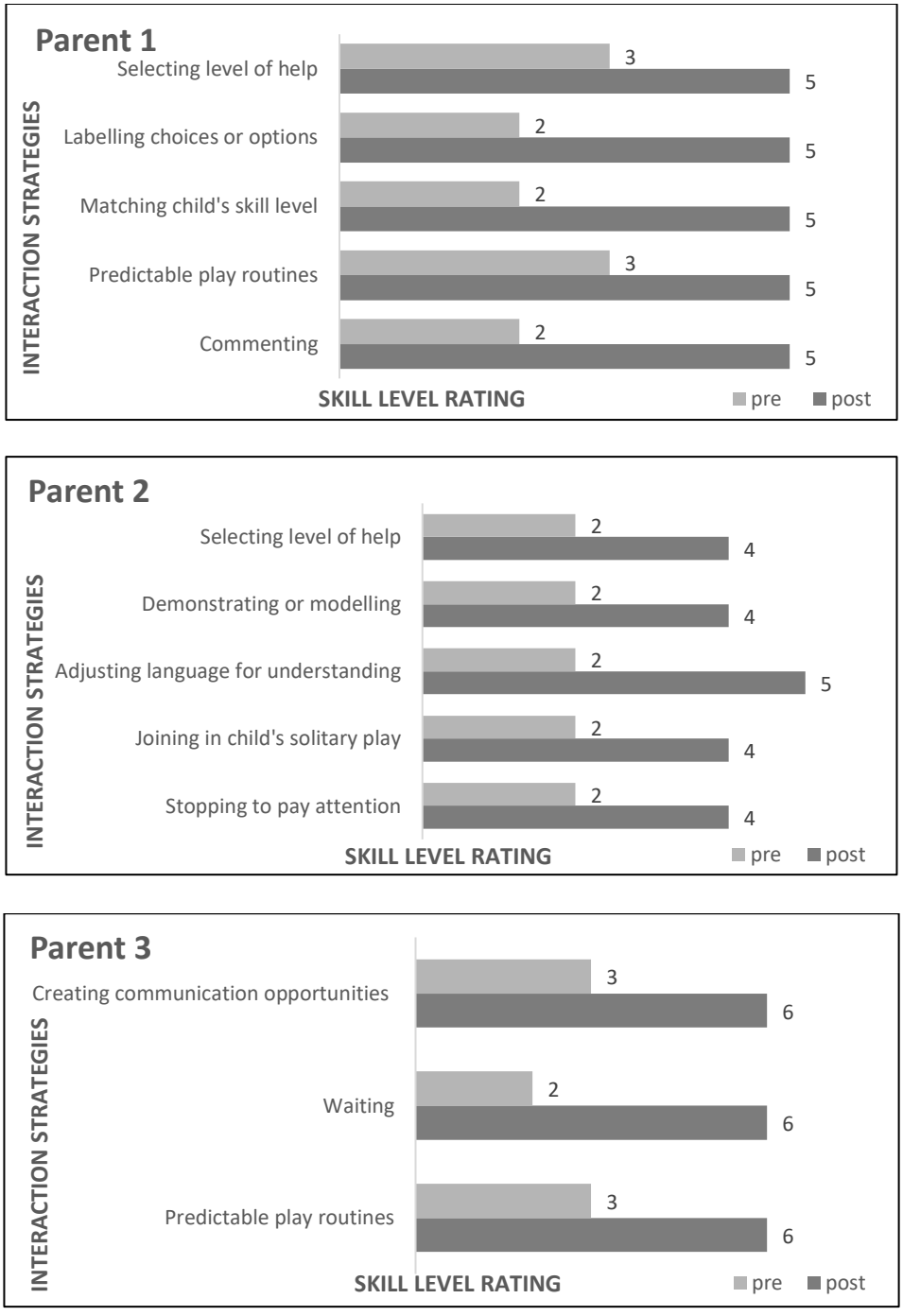


Figure 4-7. Individual parent ratings in pre-selected target behaviours, where a score of 1 = Poor, and a score of 6 = Exceptional.

Informal verbal feedback. Parents gave informal feedback about their perception of the change in their use of interaction promoting strategies and naturalistic instruction practices, at the post intervention assessment at their home. Their feedback revealed the following key themes: the benefits of tuning in to their children's interests, making play

routines more predictable, and using meaningful language in their interactions. Below are examples of parents' feedback related to these key themes.

Tuning in to children's interests. Parents' informal feedback included comments about being better at "tuning in to what he is trying to do", or "doing it his way". One parent commented about the effectiveness of the strategy of, "doing what he is interested in, rather than to start something that he doesn't really want to do". Parents acknowledged that their children remained interested in playing for longer when they did something the child wanted to do. One parent specifically reported how positioning and active engagement with their child had changed the way they played with their child:

> *Knowing ways to speak to him, getting down and playing with him instead of trying to talk to him from a distance; actually sitting down and playing with him. I never really used to do that - sit down and play with him that much, because I always thought he is happy on his own; just sort of left him to it.*

Encouraging predictable play routines. Parents' feedback was very positive around the use of structured play routines and learning to plan for meaningful interactions with their children. One parent commented, "if you plan it, you do it, it gets you to make time to play and doing a variety of things". Another parent commented about learning to "start something and the benefits of closing it off and giving praise at the end definitely helps". Parents reported on their use of CLTs as being beneficial for them particularly around knowing how to use prompts and pauses to encourage their child to engage in the target behaviour. For example, one parent commented:

> *I am talking about the ABC [complete learning trial], like when I am making a comment, and he repeats what I am saying, and then I affirm what he says, and then*

we go over it, and when he doesn't, I have that in the back of my mind that okay, we have to exit now because obviously he is not responding, so we will try it again later.

Using meaningful language in interactions. Overall, parents commented that they had improved their skills in promoting language while interacting with their child. Parents felt that "using more specific language", "knowing how to speak to him" and "learning the skills to describe things" encouraged conversation with their child. One parent reflected on this, by stating, "before, I didn't know exactly how to interact with him and how to encourage conversation; so, when I learned the techniques it became normal to me to do it, and that's when I saw a lot of improvement". Two of the parents reported on learning to balance questions and comments to encourage their child to use spontaneous language but also using comments to affirm the child's communication attempts. One parent reflected on this, commenting that, "asking questions was very common for me, but as soon as I was practising making comments, we were able to encourage him to talk not just to interact with actions".

Child Behaviour: Early Social Communication Skills

Observational data. The primary purpose of the Child Social Communication Skills Rating Scale (CSCS-RS) was to record the children's use of potentially communicative functions and behaviours while they were interacting with the researcher at the early intervention centre. Results are presented as a mean across the three children. Child social communication behaviours were calculated at a rate per minute.

Potentially communicative behaviours. The occurrence of potentially communicative behaviours at pre and post intervention is presented in Figure 4-8. Overall, children's use of vocal and verbal communication was the most frequently used communicative behaviour at both pre and post intervention, in contrast to the occurrence of gaze shifts and the use of gestures and symbols.

Results showed that there was an increase in children's use of potentially communicative behaviours following the intervention. This included an increase in children's use of vocal and verbal communication and a marginal increase in the use of gaze shift. This contrasted with the slight decrease in symbol and gesture use.

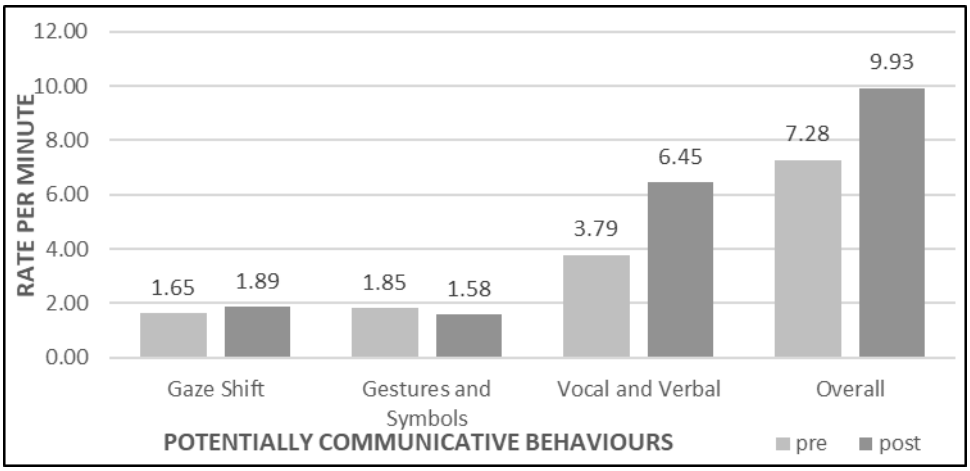


Figure 4-8. Children's use of potentially communicative behaviours.

Potentially communicative functions. Examples of potentially communicative functions include behaviour regulation (e.g., requesting help), social interaction (e.g., response to adult cue/prompt) and sharing information (e.g., labelling or naming items). Children's use of potentially communicative functions is presented in Figure 4-9. Results demonstrated that children used communication for social interaction, more than any other communicative function, both pre-and post-intervention. Results also showed a bigger distribution in more advanced communication functions at both pre and post intervention (i.e., using communication for social interaction and to share information with others, as opposed to using communication mainly to regulate behaviour).

Results showed that overall, children's use of potentially communicative functions increased in rate following the intervention. Children's use of communication to share information with others improved the most (i.e., was used twice as often), followed by a

small increase in their use of communication to engage in social interaction. In contrast, children's use of communication to regulate behaviour (e.g., to meet their basic needs) reduced.

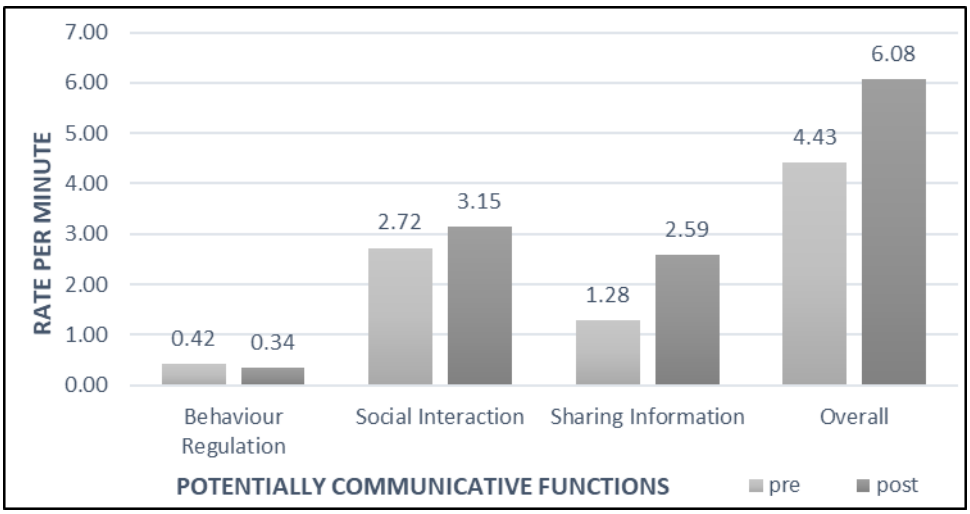
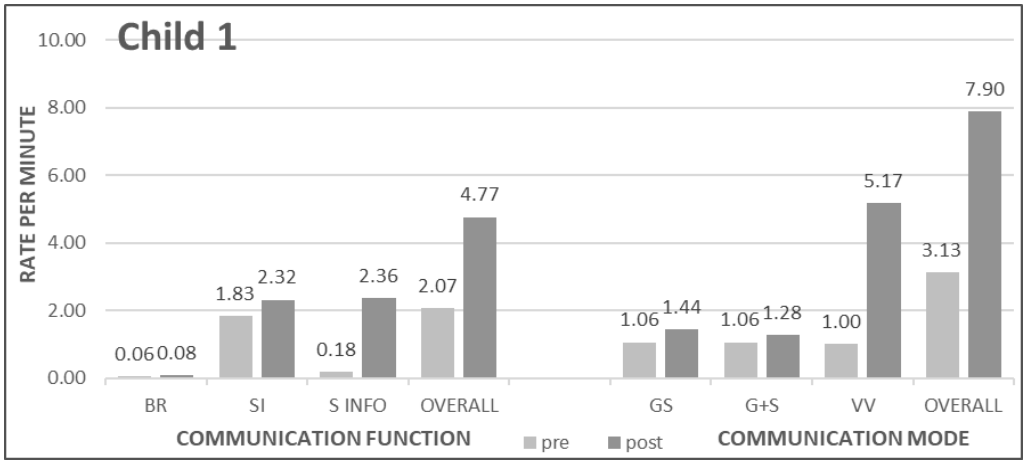
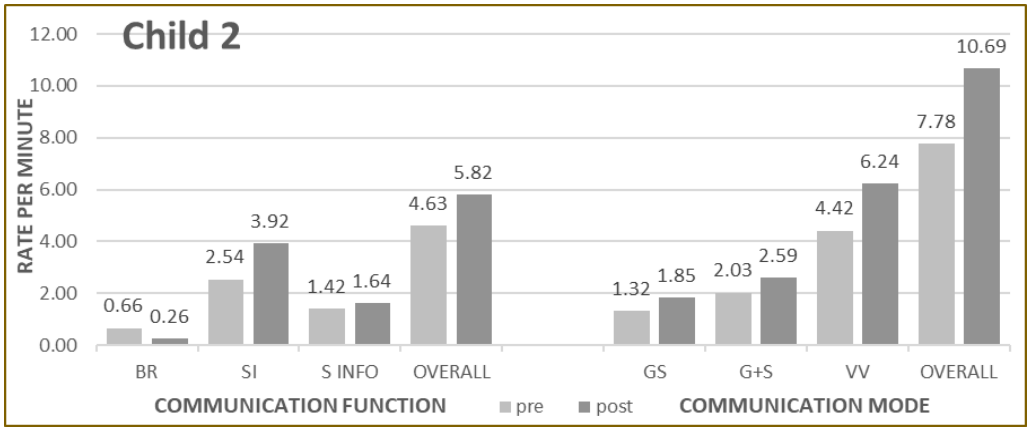


Figure 4-9. Children's use of potentially communicative functions.

To further explore these results, the children's individual social communication skills at pre and post intervention are presented in Figure 4-10. All of the children demonstrated a larger distribution of skill in more advanced forms of social communication and their overall results reflected marked increases from pre to post intervention. Child 1 presented with the most increase in potentially communicative behaviours particularly reflected in the increased use of vocal/verbal language. Child 1 also showed a marked increase in the use of language for sharing information. Child 2 presented with slightly different results. Child 2 demonstrated a steady increase in all potentially communicative behaviours and a marked improvement in the use of communication for social interaction. Finally, results for Child 3 indicated a decrease in the use of gestures and symbols; and an increase in the use of vocal/verbal communication. Child 3 also presented with an increase in the use of communication for sharing information with others.





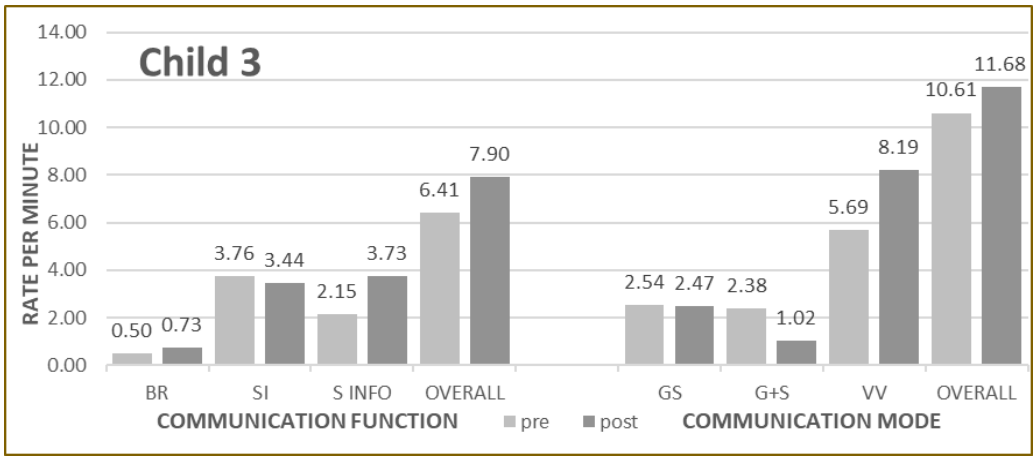


Figure 4-10. Summary of individual child social communication skills pre and post intervention. Abbreviations are as follows; Behaviour Regulation (BR), Social Interaction (SI), Sharing Information (S INFO), Gaze shift (GS), Gesture and Symbols (G+S), Vocal and Verbal (VV).

Parent perception rating scales. To assess parent perception of the impact of the intervention on their child's social communication skills, parents were asked to rate a set of statements related to their child's use of communication functions, communication modes, social interaction and engagement. Tables 4-2, 4-3, and 4-4 compare parents' mean responses, pre and post intervention. Parents' responses in each of the three subsections are listed from most changed, to least changed.

Table 4-2 provides parents' ratings of a range of communication functions used by their child pre and post intervention. Overall parents reported seeing the biggest increase in children's use of communication for social means (e.g., to initiate interaction and continue games). Parents also rated children's use of communication for behaviour regulation (e.g., meeting their basic needs or asking for help) as having improved favourably. Parents rated children's use of protesting and refusal, as having decreased post intervention, and was indicated by parents as a favourable change.

Table 4-2

Questionnaire Responses of Parents' Observations of their Child's Communication Functions

Communication Functions	**Mean Across Children (Standard Deviation)**	
	Pre	**Post**
My child lets me know he wants a game to start.	4.00 (1.00)	5.33 (1.15)
My child lets me know he wants a game to continue.	4.00 (1.00)	5.33 (1.15)
My child lets me know he or she needs help.	4.33 (0.58)	5.33 (0.58)
My child lets me know he wants something.	5.00 (0.00)	5.67 (0.58)
My child draws my attention to something or someone.	5.00 (1.00)	5.67 (0.58)
My child makes a choice when I offer him or her options.	5.00 (1.00)	5.67 (0.58)
My child greets or says/shows goodbye.	4.00 (2.65)	4.67 (1.15)
My child comes to seek my attention for comfort.	5.33 (0.58)	5.33 (0.58)
My child protests or refuses toys, games and activities.	3.00 (1.73)	2.33 (0.58)
**Note. Parents used a rating from 1=Never to 6 = All the time.*		

Table 4-3 presents the parents' rating of children's use of a range of communication modes. These included: using communication to regulate behaviour (e.g., tantrums or pushing); using non-verbal communication such as symbols and gestures; using vocalisations; and using spoken language. While children's use of single words reportedly decreased, their use of phrases and non-verbal communication increased. In contrast, parents reported a decrease in children's use of hitting, crying or pushing behaviours. Interestingly, parents reported that their children were using symbols and signs less often while they increased their use of phrases and sentences.

Table 4-3

Questionnaire Responses of Parents' Observations of their Child's Communicative Modes

Communication Mode	**Mean Across Children (Standard Deviation)**	
	Pre	**Post**
My child uses phrases or sentences.	3.33 (2.89)	5.33 (0.58)
My child exchanges a picture.	2.00 (1.00)	3.33 (1.53)
My child brings me toys or objects.	5.00 (0.00)	5.67 (0.58)
My child points to pictures or photos.	3.67 (1.15)	4.33 (2.08)
My child uses vocalisations or sounds.	4.33 (0.58)	4.33 (2.08)
My child uses symbolic gestures or signs.	4.00 (0.00)	3.67 (1.53)
My child uses single words.	5.33 (0.58)	4.33 (2.08)
My child uses jargon or babble.	5.33 (0.58)	3.67 (0.58)
My child cries, screams, hits or has a tantrum.	4.83 (0.29)	2.67 (1.15)
My child uses simple gestures or signs.	5.00 (0.00)	1.00 (1.00)
**Note. Parents used a rating from 1=Never to 6 = All the time.*		

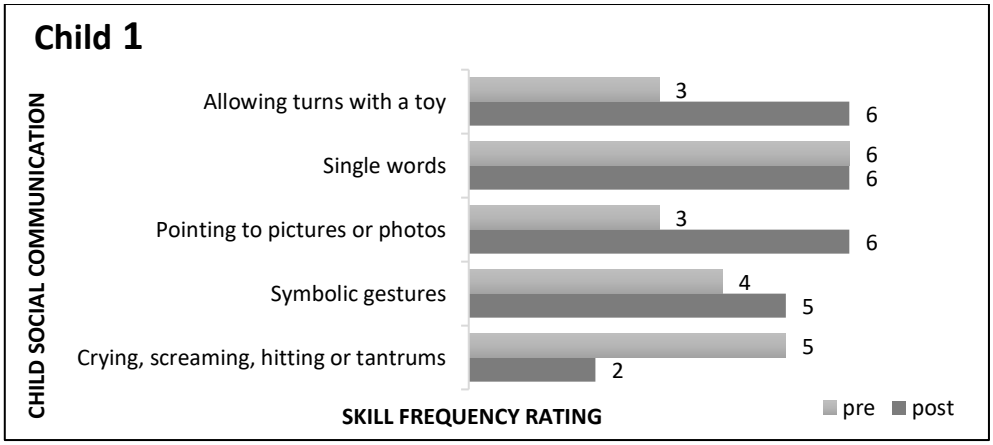
Table 4-4 provides parents' rating of their child's interest in social interaction and inclusion of others as play partners. Overall ratings were very positive; parents also reported that there was a marked increase in children's tolerance to changes or additions in their play, as well as their ability to pay attention to, and imitate new ideas modelled to them. Parents also rated children's interest in including them in their play and imitating their ideas as having improved.

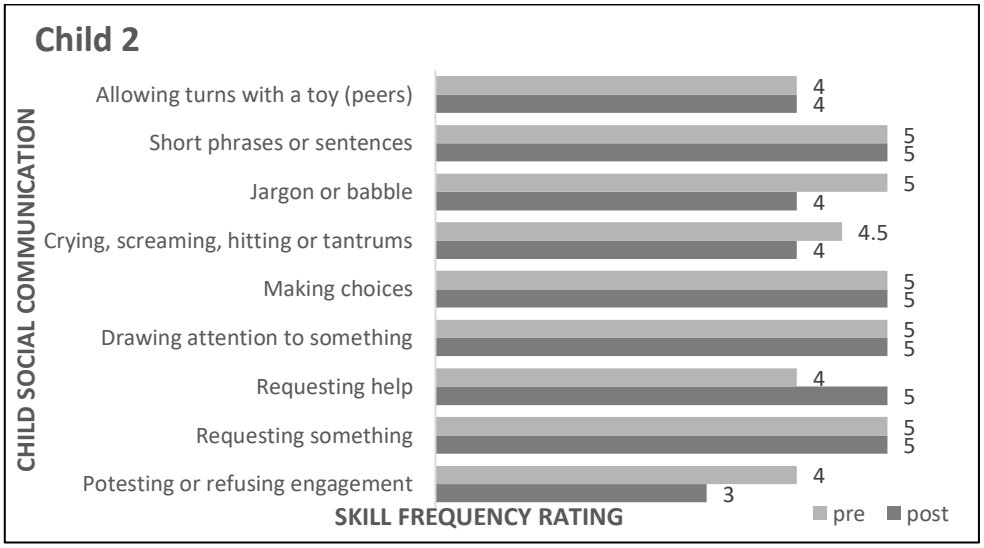
Table 4-4

Questionnaire Responses from Parents' Observations of their Child's Social Interaction and Engagement

Social Interaction and Engagement	**Mean Across Children (Standard Deviation)**	
	Pre	**Post**
My child allows me to make changes or add to his play.	3.33 (0.58)	4.67 (0.58)
My child pays attention to me when I talk to him.	4.00 (0.00)	5.33 (0.58)
My child imitates my sounds and words.	4.00 (2.00)	5.33 (0.58)
My child allows me to take a turn with the toy he is playing with.	3.67 (0.58)	4.67 (0.58)
My child allows me to join in his play.	4.67 (1.53)	5.67 (0.58)
My child shares his enjoyment by looking towards me.	4.33 (1.53)	5.33 (1.15)
My child imitates my actions.	4.33 (0.58)	5.33 (1.15)
My child likes to play near or beside me.	4.67 (0.58)	5.33 (0.58)
**Note. Parents used a rating from 1= Never to 6 = All the time.*		

At the pre-intervention assessment, parents were asked to select social communication skills that they wanted to target for their child during this study. Figure 4-11 compares parents' rating of their child's competency in these targeted skills pre and post intervention. Overall, results show that parents perceived positive changes in their children's communication skills. Examples of marked increases in selected TBs were: the use of words and phrases (Child 3) the ability to tolerate changes or allow turns (Child 1 and 3), the use of pointing to communicate interest (Child 1) and the use of symbolic gestures (Child 2). All parents indicated that they wanted their children to reduce the amount of jargon they used, as well as hitting/crying behaviours, which decreased across all children.





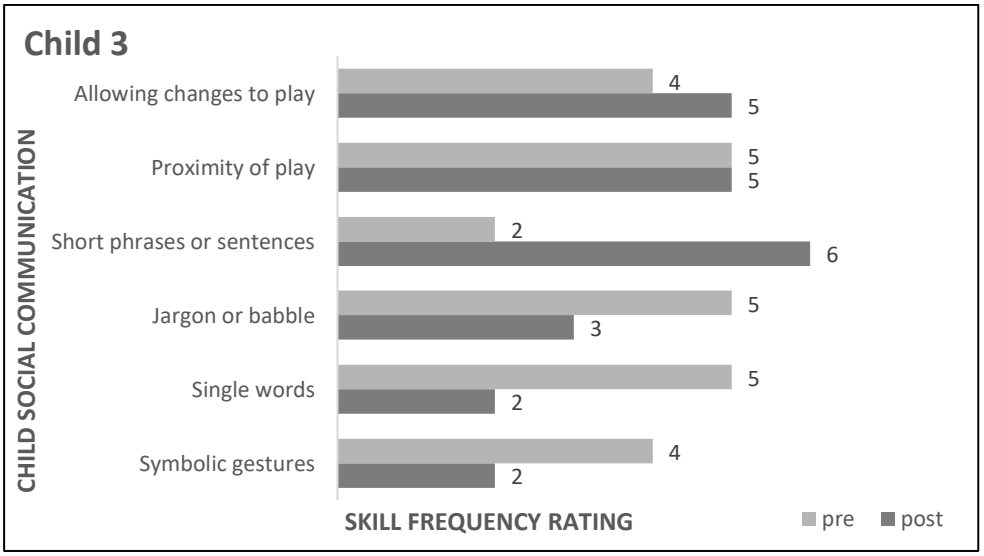


Figure 4-11. Individual parent ratings of pre-selected child social communication skills.

Scores represent 1 = Never, and 6 = All the time

Informal verbal feedback. During post intervention home visits, parents were asked to provide informal feedback about their perception of change in their child's social communication skills following the training plus coaching intervention. These comments complimented the results gained from the rating scales and revealed three key themes: the use of language, understanding of language and situations, and behaviour regulation and engagement with others.

Use of language. Overall, parents reported seeing significant changes in the way their children used language to communicate for social means (e.g., "greeting others", "using words to tell us what he wants") and saying the words "no mine" instead of hitting or grabbing. One parent reported seeing changes in their child's ability to verbalise choices and use words and phrases in back and forth interactions.

Understanding language and situations. Parents reported seeing an increase in their children's comprehension skills (i.e., they noticed children being, "more patient", and "responding to instructions"). Parents reported favourable changes in their children's ability to understand language related to everyday routines as well as explanations of situations that had previously caused upset and distress. Parents' feedback also included comments that their child was happier and calmer because they now understood what was expected of them.

Behaviour regulation and engagement with others. Parents' feedback included an increase in positive behaviour and emotional regulation. For example, one parent commented, "there are fewer meltdowns because he is able to say 'no' or 'stop' when he doesn't like it". Another parent explained that a positive outcome from the intervention was that, "his ability to make decisions is better" along with a decrease in physical aggression. Overall parents reported positive changes in their children's communication affecting their interaction, play and enjoyment of each other.

Social Validity: Parents' Experiences and Perceptions of the Intervention

Parent perception rating scales. Parents were asked to complete the Intervention Rating Scale to provide a rating of their participation in the naturalistic instruction intervention and their experience of training and coaching. Table 4-5 presents parents' satisfaction ratings for all aspects on the intervention; results are presented as the mean across all parents.

Results indicated a very high level of satisfaction with the training plus coaching intervention as well as the use of naturalistic instruction. Average satisfaction ratings exceeded 5, indicating agreement or strong agreement with all statements presented on the rating scale. All parents reported that they would not hesitate in recommending this intervention to other families. The item that was given the highest rating was parents' support of this intervention as being effective in meeting their child's social communication needs. Another statement that was rated very highly was that coaching was beneficial to them and that it equipped them in using naturalistic instruction practices and strategies to promote interaction with their child.

Table 4-5

Parent Responses from the Intervention Rating Scale

Naturalistic Instruction	**Mean across dyads (Standard Deviation)**
This intervention was effective in supporting my child's early social communication skills.	6.00 (0.00)
This intervention has taught me to follow my child's interest in play.	5.67 (0.58)
This intervention has given me the necessary skills to improve my child's social communication skills.	5.67 (0.58)
This intervention has helped me engage in more meaningful interaction with my child.	5.67 (0.58)
This intervention has enabled me to set appropriate social communication goals.	5.67 (0.58)
This intervention is an acceptable intervention for increasing my child's social communication skills.	5.67 (0.58)
I will recommend this intervention to other parents.	5.67 (0.58)
This intervention is appropriate for a range of children.	5.67 (0.58)
I am willing to use this intervention at home.	5.67 (0.58)
This intervention has resulted in negative side effects for my child.	5.67 (0.58)
This intervention was a good fit for our family and our cultural values.	5.67 (0.58)
Training plus Coaching Intervention	
Overall, being coached was beneficial to me.	6.00 (0.00)
The training workshops have equipped me to use strategies that promote interactions with my child.	5.67 (0.58)
The training workshops have equipped me with the skills to use naturalistic instruction.	5.67 (0.58)
Coaching has helped me implement these strategies more consistently.	5.67 (0.58)
I am satisfied with the experience of being coached.	5.67 (0.58)
Coaching has increased my knowledge of interaction promoting strategies.	5.67 (0.58)
Coaching has increased my knowledge of naturalistic instruction.	5.67 (0-58)
The training plus coaching intervention is suitable for parents.	5.67 (0.58)
The training plus coaching intervention was a good fit for our family and our cultural values.	5.67 (0.58)
**Note. Parents used a rating from 1=Strongly disagree, to 6 = Strongly agree.*	

Informal verbal feedback. During the post intervention visits to the early intervention centre, parents were asked to provide informal verbal feedback. Overall the

feedback from the parents was overwhelmingly positive, confirming their ratings in the Intervention Scale. The feedback revealed the following key themes: parent competency and skill, supportive intervention, space to plan and reflect, and positive family outcomes. Examples of parent feedback related to these themes are described below.

Parent competency and skill. Parents described the intervention as, “amazing” and “incredible” and, “it definitely helped me”. Overall feedback was that the intervention encouraged them to join in their child’s play and plan interactions that encouraged opportunities for social communication. One parent reiterated that, “the naturalistic instruction intervention and training/coaching combined, has been beneficial” and that they, “have achieved significant improvement in a short time as a result”. Another parent reported that creating ELOs and using CLTs offered opportunities for interaction and gave them skills in using more language with their child. One parent talked about learning to use a variety of words to describe their child's play and offering him choices, and this has improved the child’s “ability to make better decisions”.

Parents reported a marked improvement in their play skills with their child at home and learning new ways of engaging their child in play. One parent reported an increase in the number of things they play together for example, "I have played a number of things over the last few weeks with him and tried different books and puzzles". Parents also found that, following the child's interest (i.e., joining in with what the child is already doing) had been very beneficial and this had given them opportunities to "keep trying and going with what he (the child) is trying to do, to get more out of him" and "trying to expand on what he is doing". One parent reported on taking a more active interest in the child's play, saying:

Actually sitting down and playing with him. I never really used to do that, sit down and play with him that much, because I always thought he is happy on his own; just sort of left him to it.

Space to plan and reflect. Parents described how the training workshops provided them with a "space to think and talk about their interaction plans" and provided them with the skills necessary to implement ELOs and CLTs with their children at home. Parents reported that this was instrumental in helping them develop an understanding and familiarity with how they can plan interactions with their child at home. The training workshops provided opportunities and experience for parents to process and plan their interactions with their child and received very positive feedback overall from parents. One parent stated,

Tuesday nights were great for actually thinking about what I do away from him as well, which was good and thinking about what I can do, thinking about what we were discussing and then how it relates to my child.

One parent described, "learning all the strategies has been incredible. I have really loved it, [learning] start something and to keep it going, and the benefits of closing it off and giving praise at the end definitely helps".

Supportive intervention. Parents repeatedly spoke about the value of being coached in their home setting, following the four training workshops, as they were practical and assisted in bringing theory to practice. Furthermore, they reported that the use of video feedback was very effective in further developing their skills in self-reflection and provided them with opportunities to evaluate their use of naturalistic instruction practices and interaction promoting strategies. The use of video feedback was described as "an effective strategy to evaluate what I did well and what to work on". All three parents viewed the combination of demonstration, practice and reflective feedback during home visits as highly effective in

supporting their child's social communication needs. One parent reported that video feedback has helped her learn to use a variety of antecedents to encourage her child into interaction:

> *When I am playing with him, sometimes I don't remember what I've said or what I am doing. But having the videos and looking back on them and actually seeing, I was asking a lot of questions - closed kind of questions, either yes or no answers. It has been good to see it, knowing that's what I do and that's not really helping him.*

Positive family outcomes. Overall parents reported on positive outcomes in terms of their children's social communication skills, their quality of life and their family relationships. One parent reported on significant changes in their family relationships, mentioning, "we are going out as a family now, and we enjoy weekends together". Another parent mentioned that a positive family outcome was to take their child to the pools and thought that the child would not enjoy being there, but "it was all good… he enjoyed it". Furthermore, one parent reported on comments from the child's early childhood centre, that "it has been like a switch for him… overnight he is talking, and we have seen a massive difference in his talking".

One parent reported on the impact of the intervention as improving communication and harmony with their partner, because of "a shared understanding about what to do next". Parents reported that stress and chaos in the home had been addressed because of improved communication amongst family members with the child, and the child being able to communicate their intentions better. Some comments included being "less frustrated", "things are a lot easier now", "I am a lot calmer now in terms of trying to understand him", "it made life heaps easier with just everything". Two of the parents provided feedback on the changes they had noticed in the way behaviour was managed at home now that that they were able to communicate expectations clearer, and the children also demonstrated improved

understanding of expectations. The parents stated, “we are able to bargain things with him now”, and that “there are days when we there are challenging moments, but they are rare”.

Summary

Data from this study was collected from a range of sources including: (1) a purpose developed coding system to record parents’ behaviour, (2) parent completed rating scales of their use of interaction promoting strategies and naturalistic instruction practices, (3) a purpose developed coding system to record children’s use of social communication, (4) parent completed rating scales of their children’s social communication skills, and (5) an intervention rating scale with informal verbal feedback from parents. The findings revealed an increase in parents’ use of interaction promoting strategies and naturalistic instruction practices, as well as an increase in children’s use of target social communication behaviours during play interactions in their home setting and with the researcher at the early intervention centre following the intervention. Parents described the training plus coaching intervention as being effective in integrating their learning and supporting them to put it into action at home. Parent ratings indicated overall positive experiences of the training plus coaching intervention as well as the use of naturalistic instruction in promoting interaction. Parents' reported that the intervention has impacted, not only on their ability to plan interactions with their child, but also had positive changes in children’s social communication skills. Themes that transpired in parents' feedback on the impact of the intervention was an increase in parent skill and capacity, opportunities for reflection and evaluation, and positive family outcomes. These findings will be discussed in detail in the following chapter.

Chapter Five: Discussion

This study was guided by three research questions related to parent behaviour, child social communication behaviour and social validity. The discussion below describes how the findings from this study contribute to the field of early intervention for pre-school children on the autism spectrum. The first area of the discussion focuses on how the training plus coaching intervention was a viable tool for changing parent behaviour. This includes examining the overarching impact of the intervention and the features which appeared to be instrumental in changing parent behaviour. The discussion then explores how parents' implementation of naturalistic interactive strategies impacted the social communication skills of pre-schoolers on the autism spectrum. The final area explores how the training plus coaching intervention endorsed family-centred practice and supported parent capacity-building. A discussion on the social validity of the intervention then follows. The discussion concludes with a summary.

Training and Coaching as a Viable Option for Changing Parent Behaviour

Training and coaching parents is one method to improve parent skill, confidence and competence in providing development-enhancing learning opportunities for their children. In this study, findings from observational data and parent-completed rating scales confirmed that parents gained skill and experience in the use of naturalistic interactive strategies, through the training plus coaching intervention, and developed confidence in intervening to support their children's social communication needs. These findings support outcomes from prior research that highlights coaching as effective in developing parent skill and capacity (Dunn et al., 2012; Kemp & Turnbull, 2014; Rush et al., 2003). The following sections explore in-depth how the training plus coaching intervention (1) impacted on parents' use of embedded learning opportunities (ELOs), complete learning trials (CLTs) and naturalistic interactive strategies, (2) increased parents' knowledge and skill building, (3) provided

parents with opportunities to plan and reflect, and (4) used video as a complementary tool for parent feedback.

Parents' use of ELOs, CLTs and naturalistic interactive strategies. Observational data and narratives from parents indicated that the training plus coaching intervention resulted in parents using CLTs more frequently, while there were slight decreases in ELOs. This finding suggests that parents became more intentional in their interactions, by being more strategic in the antecedents they provided including providing more pauses after offering initial antecedents and ensuring natural consequences or feedback followed child responses. Taken together, this type of engagement meant that parent-child interactions lasted longer. This result links well with studies that have shown that embedding CLTs in on-going activities can be effective in providing engaging learning experiences (Bishop et al., 2015; Snyder et al., 2018; VanderHeyden et al., 2005). The studies cited, however, involved pre-school teachers and early childhood centres, compared to the current study implementing CLTs with parents in their homes. Together, though, results show that training plus coaching can be useful in supporting adults to become more intentional in ways that contribute to the use of CLTs in child play, and support learning and increased opportunities for meaningful interactions with children.

Despite overall increases in parent intentionality and implementation of CLTs, observational data from the current study showed variability in the use of ELOs and CLTs depending on the context or the activity. For example, in an activity for shared book reading, where the text is repetitive and predictable, the rate of use of ELOs and CLTs increased as book reading offered many opportunities for implementing successful CLTs. Contrary to this, in an activity where parents joined their child in free play with toy cars on a track, the opportunities for ELOs were more spaced, and likely influenced the number of successful CLTs within that activity. The variability of implementation is consistent with the notion of

different types of contextual fit, natural, logical, and intentional, between the targeted skill and activity, described by Snyder, McLaughlin, and Bishop (2018), and the impact this has on the number of opportunities to embed learning opportunities. Regardless of the differences in opportunity by activity type, a promising outcome from the present study is that parents can be trained and coached in their natural environment, using a variety of contexts to support their child's learning.

Observational data with regards to the individual CLT components demonstrated that the training plus coaching intervention was successful in supporting parents to learn a variety of naturalistic interactive strategies in a relatively short time. As parents became more intentional and reflective about their interactions with their children, positive changes appeared in their individual use of antecedents, additional help, consequences and feedback. Data from parent-completed rating scales and verbal feedback indicated that parents felt more capable in supporting their children's use of target behaviour, and they also increased the variety of each of the respective CLT components. These findings are mirrored in previously researched parent-mediated intervention such as Enhanced Milieu Teaching (Hancock et al., 2016; Kaiser et al., 2000; Kaiser & Roberts, 2013), and the Hanen More than Words program (Carter et al., 2011; Girolametto et al., 2007; Weitzman, 2013). All of these studies reported positive gains in parents' implementation of target behaviours, following training and coaching (i.e., language-enhancing strategies). These models emphasise structure and predictability in everyday routines as well as linguistic and non-linguistic responses used by parents. Though these models do not use the language of CLTs, they also emphasise what the parent does to set the stage for communication (antecedent-based) and what the parent does in response to what the child does (consequence-based).

A promising finding from this study, from both observational data and parents' ratings on their use of naturalistic interactive strategies, was a qualitative shift in the way

parents created learning opportunities and how they responded to their children. Narratives from parents also confirmed that they were more confident and intentional in their use of descriptive language when responding to their child's communication efforts, for example, verbally imitating their children, balancing their questions with comments, using language that describes the children's actions and interpreting their children's verbal attempts. Observational data showed that parents became more language-focused in their interactions, with an emphasis on being responsive to their child, thereby resulting in more sustained interactions. These findings link well to the literature that suggests parent-responsiveness to child-led play, in the context of naturally occurring activities, produces positive child outcomes (Landry et al., 2012; Roberts & Kaiser, 2011; Sandall et al., 2000). Similar to the present study, data from observations and parent feedback, suggested that parent-child interactions were more meaningful because parents made qualitative changes to the way they responded to their children during interactions. The present study lends support for the use of training plus coaching interventions that impact on the frequency of parents' use of naturalistic interactive strategies as well as the quality of their interactions.

Opportunity for knowledge and skill building. Coaching interventions in the literature emphasise and promote a high level of parent participation and reflection (Brown & Woods, 2016; Friedman et al., 2012; Rush & Shelden, 2011). Data from parent-completed rating scales as well as narratives from parents, post-study, suggest that a brief period of intensive parent training followed by at-home coaching could be an effective method in building parent capacity to support their child's social communication. This is important in the context of family-centred practice as literature shows that parents can learn to plan for development-enhancing interactions with their child in the context of their home, through embedded instruction and interaction promoting strategies (Dunn et al., 2012; Dunst et al., 2000; Graham et al., 2009; Salisbury et al., 2018). In agreement with these findings, parents

in the present study endorsed the training and coaching intervention, as well as naturalistic instruction, as very helpful in building their skill and knowledge regarding strategies that encourage interaction as well as using naturalistic instruction practices. Although parents viewed the process of planning for CLTs challenging at the start, their confidence increased when given specific training, video examples and in-home practice, and parents reported through verbal feedback, that the process became more natural. Equally, parents strongly endorsed parent education when paired with regular opportunities to practice learnt skills, in the context of their home, (i.e., being beneficial in bringing theory to practice). These findings are consistent with the existing literature that recognises the importance of giving parents the skills to implement an intervention in the context of their own homes (Fitzgerald., 2014; Graham et al., 2009, 2010; Keen et al., 2010; Rouse et al., 2012).

Training plus coaching provide space to plan and reflect. The coaching approach used in this research was informed by several coaching models in the early intervention literature (Brown & Woods; 2016; Friedman et al., 2012; Kemp & Turnbull, 2014; Rush & Shelden, 2011; Snyder et al., 2015; Stephan & Manning, 2017). In the present study, parents verbally reported that the key to building their knowledge and skill in using naturalistic instruction was that the intervention gave them the opportunity to reflect on their actions, plan interactions with the interventionist's support, and receive specific feedback during home coaching. Coaching elements such as action planning, reflection and feedback have been associated with positive changes in adult behaviours in the literature (Dunst et al., 2015; Mataiti et al., 2016; McLaughlin & Clarke, 2018; Snyder et al., 2012).

In addition to the structural features of the coaching, the way parents were coached at home, was viewed as supportive, informative and useful in building knowledge and experience (from informal verbal feedback as well as parent-completed rating scales). Results from parent-completed intervention rating scales and parent narratives also endorsed the

training plus coaching intervention as effective in enabling parents to set appropriate goals and providing them with the necessary skills to improve their children's social communication skills. Although the new content of the workshops created initial anxiety for parents, the overall feedback was positive in that parents valued the fact that they had opportunities to learn alongside other parents, creating a context for shared discussion, problem-solving and liaison. Shared discussion and problem-solving are essential values of family-centred practice as they develop parents' ability to create more enabling environments for themselves and their child, and to facilitate improved participation of children and parents within their natural environments (Friedman et al., 2012; Graham et al., 2010; Rush et al., 2003). Positive parent outcomes and parent experiences have also been associated with evidence-based coaching models (Salisbury et al., 2018). In the EPIC model, parents were also supported in their use of embedded practices using the Five Questions Approach (5Q) which encouraged reflection, planning and problem-solving. Even though the content of the coaching interventions differed slightly, both demonstrate the impact of systematic interactions and strategic planning for parent-child interactions (e.g., once they had the plan, they were able to think of the components more and be more strategic).

Video as a complimentary feedback tool. Parents from the current study offered positive feedback about the use of video during the coaching component of the intervention, stating it offered them another opportunity to reflect on what was said and done during their planned activity. Watching their interactions on video, gave them an opportunity to problem-solve their use of naturalistic interactive strategies and discuss what they thought was not helpful. Reflective problem-solving was an essential component of the coaching model, as it allowed for robust discussion and facilitative parent planning. Video feedback has been used with success by speech-language therapists in parent-implemented language interventions such as the Hanen More than Words program (Girolametto et al., 2007; Weitzman, 2013).

For the present study, video feedback was only one tool that was used to facilitate discussions and reflection during the coaching component of this intervention; the interventionist also provided in-situ suggestions and recommendations. Rush et al. (2003) explains that discussions based on video feedback provide a context of knowledge, skill and experience sharing, with the purpose of promoting mastery of skills as well as self-discovery. These ideas were echoed in the feedback from parents in the current study.

Naturalistic Instruction Addresses Child Social Communication

Parent ratings and narratives endorsed naturalistic instruction as an effective intervention for supporting their children's social communication skills. Parents reported seeing immediate changes in the way their children communicated with them as a result of the intervention. These findings are consistent with previous research which has found that parent training leads to improved child communicative behaviour and increased parent-child interactions (Raab & Dunst, 2005; Roberts & Kaiser, 2011). The following sections initially explore the impact of the intervention on children's use of target social communication behaviour in the context of CLTs and its effect on sustained parent-child interactions. It continues with a discussion on opportunities for transfer of learning or generalisation of skills.

Support for parents' implementation of naturalistic interactive strategies.

Observational data, parent narratives and parent-completed rating scales demonstrated that child social communicative behaviour can be taught systematically, using parents as primary facilitators, when given specific training and in-home coaching. Visual inspection (observational data) of parents' use of ELOs and CLTs as well as evidence of an increase in children's use of targeted social communication skills, provided important information regarding the parent-child dyadic relationship. This study revealed parallel increases in parents' use of naturalistic strategies and changes in children's use of social communication

behaviour, in the context of naturally occurring activities. The results provide preliminary evidence that pre-schoolers on the autism spectrum can benefit from targeted engagement with their parents, within naturally occurring activities using a naturalistic social communication intervention.

Several studies have measured parent interactive behaviour or social responsiveness following a training or coaching (or both) intervention; however, only a few of these studies have measured the main effects of parent-implemented treatment on child outcomes (Carter et al., 2011; Rogers et al., 2012) with results varying from no statistical differences to improved social engagement. However, there is evidence in the literature that child social engagement with primary caregivers increases when intervention is embedded in naturally occurring activities and routines (McWilliams, 2010; Snyder et al., 2013; Snyder et al., 2015). Although child social communication measures in the present study came from informal feedback, parent ratings and purpose-developed coding systems; the study demonstrated that systematic, explicit instruction, embedded in naturally occurring, and child-motivated activities, can impact on children's social communication behaviour.

Target social communication behaviour in the context of CLTs. Parents' use of ELOs during play capitalises on natural opportunities to promote social communication skills and engagement, which are key recommendations in the New Zealand Autism Spectrum Disorder (ASD) Guideline (2016). Observational data from the present study demonstrated that parents' effective use of naturalistic interactive strategies (i.e., ELOs, CLTs and interaction promoting strategies) can produce consistent outcomes because of the natural context in which it occurs, and the fact that the learning opportunities are endless. Observational data also showed that the use of CLTs and interaction promoting strategies increased child target behaviour across all participants. These findings suggest that increasing the structure and predictability of interactions increases the likelihood of target behaviour

occurring. Recent literature provides examples of the link between the use of embedded instruction practices used by early childhood teachers (Bishop et al., 2015; Snyder et al., 2018), and trained interventionists (Rakap & Balikci, 2017; VanDerHeyden et al., 2005), on the achievement of child target behaviour. In all of these studies, adults received specific training and coaching, with a strong emphasis on implementation fidelity and generalisation across activities and routines, therefore varying the nature of target behaviours. For the present study, where the focus was on child-initiated and child-preferred activities, target behaviour was generally specific to the activity. However, observational data and parent-completed rating scales suggested that children achieved their social communication goals (set by the parent at the pre-intervention stage) in a range of settings and activities at home, not only within the planned activities. Thus, target behaviour can be achieved in a generalised context when parents are consistent in embedding CLTs in other activities.

Naturalistic strategies enable sustained interactions. Observational data from the current study demonstrated that parents' use of interaction promoting strategies such as pausing, and increased use of commenting, prompting and language modelling, was effective in encouraging children to participate verbally in interactions and to stay in interactions for longer. Parents also reported verbally, that their children showed enjoyment of the interaction because they (parents) sustained interaction around the child's interests, for example, an interaction around balloon play (child-preferred) could be repeated for several turns due to predictable use of language and frequent use of CLTs. Existing literature widely recognises that naturalistic interactive strategies, implemented by parents or caregivers, can produce observed improvements in social communication skills and engagement (Dunst et al., 2013; McConachie & Diggle, 2007). However, these studies report on children's language skills within a designed assessment or observational coding tool and do not show the impact of the intervention on children's ability to sustain interactions or play for more turns. The benefit of

the present study, although not designed to measure sustained parent-child interactions, is that it involved naturally occurring activities which were child-preferred, suggesting that there was motivation for children to stay and play for longer. The literature certainly supports the notion that, when intervention is based on children's interests, their motivation to stay in interactions increases (Lowry et al., 2017; Raab & Dunst, 2005). The present study supports this by suggesting, that when parents make their play more predictable, pause more often to offer the child an opportunity to engage in the target behaviour and provide additional help in a variety of ways, the interaction around that activity naturally increases.

Data from parent verbal feedback had a strong emphasis on the impact of verbal responsiveness (use of commenting, verbal feedback, explanations and prompting questions) on children's understanding and use of spoken language at home. A possible reason for this result may be the experience of the SLT as the primary facilitator of the intervention and the inclusion of communication and interaction promoting strategies in the workshops. Parents reported that when they made changes in the way they talked to their children, it had a positive impact on the children's ability to manage expectations and follow routines that typically contained a significant amount of spoken language (e.g., following directions in daily routines). Similarly, findings from a systematic review of parent-implemented naturalistic language interventions reported that, when parents implemented language promoting strategies, positive changes were identified in their children's language skills (Rakap & Rakap, 2014). The research reviewed 15 parent-implemented studies published between 1992 and 2010 and involved six different naturalistic language approaches to language intervention. Although these studies vary in content, format, duration and target population, they all report positive changes in the way that children engaged with, and sustained interaction and play with their parents.

Opportunities for transfer of learning. Selecting target behaviour in the context of naturally occurring activities has implications for generalisation of skills to other naturally occurring routines and activities. The New Zealand ASD Guideline (2016) recommends encouraging successful child outcomes in goal-directed activities, which are implemented across a variety of settings. For the present study, coaching home visits involved parents initiating the context of the activities using their knowledge of their children's interest in activities, as well as selecting target social communication skills relevant to these activities. During coaching home visits, child target social communication skills were always discussed in the context of a specific activity. Feedback from parent narratives showed that, even though parents initially selected target behaviour intended to be generalised across activities, they reported that it was easier to think about these goals in specific activities. They could then plan later how to generalise the skills across activities, settings and communication partners. Language-based parent-implemented interventions such as Hanen More than Words (Weitzman, 2013) also promote language across contexts and activities. Although the Hanen program uses different terminology, it promotes planning target behaviour in specific activities with the intention of creating opportunities to use those target skills across other activities, in other settings, and with a range of communication partners.

Coaching interventions that promote naturalistic instruction practices, also target functional skills that can be generalised across other contexts and to a variety of naturally occurring activities (Bishop et al., 2015; Salisbury et al., 2018). Although the present study did not plan for systematic assessment of generalisation of activity-specific goals across activities and people, parent feedback suggested that this occurred spontaneously. For example, one parent reported that their child was able to produce the same target behaviour of requesting food, during interactions with the second parent who did not participate in the workshops. Two parents reported implementing CLTs in activities not explicitly targeted in

the study. They reported that the personalised support through in-home coaching provided them with the necessary skills to apply and generalise their learning across settings and activities. These results are promising as teaching one parent, may lead to generalisation across caregivers, improving the likelihood of sustained and generalised child outcomes.

Parent Capacity Building and Parent Empowerment

Designing effective group parent training sessions is a complex process, and it is essential that parents experience success while being able to relate their learning to their home environment and parents with similar experiences (Campbell et al., 2004). This study provided evidence that not only can parents learn to use naturalistic strategies in naturally occurring contexts at home, but in doing so, they become collaborators and decision-makers in the intervention process. This section provides a discussion on how the training plus coaching intervention endorsed family-centred practice and increased parent autonomy, ownership and collaborative relationships, which are essential principles in early intervention practice in New Zealand. This section ends with a discussion on parent perspectives of the social validity of this intervention.

Endorsement of family-centred practice and increased autonomy and ownership. The last 10 years have seen a strengthening of family-centred approaches as an essential principle in early intervention, and this is indeed echoed in the New Zealand early intervention context (Mataiti et al., 2016; Ministry of Education, 2007). This study contributes to the literature on family-centred intervention in New Zealand. It provides support for the impact of family-centred interventions on parents' abilities to make meaningful decisions related to goal setting for their child. Narratives collected at post-intervention revealed that parents were actively engaged in the planning process and were using reflective thinking and independent problem solving even without the coach present. Capacity building early intervention promotes parents' skills, abilities and confidence and this

is consistent with the principles and practices of early intervention in New Zealand (Mataiti et al., 2016; Ministry of Education, 2007). Service providers, both public and private, advocate strongly for parents' sense of ownership and autonomy in the provision of learning opportunities for their children, thereby empowering them and setting them up for successful and sustained outcomes.

Parents' feedback on the benefits of the training plus coaching intervention on their ability to implement naturalistic interactive strategies in their home environment aligns with adult learning principles of increased independence, confidence, competence and ownership (Friedman et al., 2012; McWilliams, 2016; Rush & Shelden, 2011; Wetherby et al., 2014). Parent-completed rating scales showed high ratings on the usefulness of the intervention in strengthening parents' abilities to intervene in their children's social communication development, suggesting that they felt empowered and confident in being able to provide meaningful learning experiences on a day to day basis. This result aligns strongly with the notion that capacity building intervention models extend parent confidence and competence and influence their self-efficacy beliefs about control over important life events (Dunst, 2009). It was not the intention of this study to specifically measure parent capacity and confidence, and work needs to be done to consider how this can be measured in future research on this topic. However, this study makes a promising contribution towards advocating for family-centred practice.

Perspectives on social validity. Social validation is essential in early intervention because it may be parents' first exposure to intervention for their child. Hence, it is important that parents feel the intervention approach is (1) responsive to the values, culture and preference of the family, (2) acceptable and effective in terms of content and format, and (3) effective in producing positive outcomes for the child, the parents and the family as a unit. Furthermore, social validity measures should inform us whether the intervention was

successful in improving family quality of life (New Zealand ASD Guideline, 2016; Turnbull et al., 2007; Zuna et al., 2009). Findings from parent-completed rating scales and parent narratives provided valuable information about how parents felt the intervention did what it intended to do, and how it aligned with their family and cultural values. Parents indicated a high level of satisfaction with the intervention in that it was successful in meeting their child's social communication needs, and it left them feeling equipped and empowered to continue supporting their children. Also, parents reported that these changes had social significance for their family in that there were positive shifts in family communication, management of stress and frustration, and family relationships. Improvements in the parent and child behaviour, therefore, was perceived to have a direct impact on quality of life.

Summary

This chapter outlined and described findings of the study involving a training plus coaching intervention that supported parents to implement naturalistic interactive strategies in their interactions with their young children on the autism spectrum. The intervention yielded positive parent outcomes regarding strengthening parents' skills and confidence in using systematic instruction and engaging their children in meaningful interactions. The intervention also generated an increase in children's use of targeted social communication behaviour. Furthermore, the intervention positively impacted on family quality of life by demonstrating parents' overall satisfaction, improvements in family relationships and meaningful participation in all aspects of family life, which aligns strongly with recommended family-centred practice of parent capacity building and empowerment.

Chapter Six: Conclusion

This chapter begins by synthesising the key findings concerning the study objectives. The clinical implications of the findings for practitioners in the field of early intervention and those supporting families with pre-schoolers on the autism spectrum are then discussed. The chapter continues by outlining the limitations of this study while reflecting on the design and methods used. Potential research and future directions are described. The chapter concludes with a summary.

Aims and Outcomes

This study investigated a training plus coaching intervention in a small sample population to gain preliminary insight into its efficacy and was guided by three research questions. One of the objectives of the study was to answer the question, “what impact does a training plus coaching intervention have on parents’ use of naturalistic interactive strategies with pre-schoolers on the autism spectrum?” Findings from observational data and parent-completed rating scales confirmed that parents gained mastery in the use of naturalistic interactive strategies, through the training plus coaching intervention. Through systematic instruction, parents developed skill and experience in creating development-enhancing learning opportunities in which their children learnt targeted social communication skills. The training plus coaching intervention facilitated change in parents’ interactive behaviour and created opportunities for knowledge and skill building.

Another objective of this study was to investigate the effect of a parent-implemented naturalistic social communication intervention on the acquisition of early social communication skills in pre-schoolers on the autism spectrum. The findings showed positive changes in children's use of language for social communication. The children increased their use of targeted social communication behaviours within the context of embedded learning opportunities (ELOs) and complete learning trials (CLTs). The findings highlighted the

benefits of intervention embedded within naturally occurring activities as well as child-preferred play routines.

Finally, this research recorded parents' experiences and perspectives of the intervention thereby investigating the social validity of the intervention within the New Zealand context. The parents reported through rating scales and informal verbal feedback that the intervention produced positive changes in their confidence and competence in the use of systematic instruction and positive outcomes in their children's social communication skills. Subsequently, these changes affected other areas of their family life, for example, their use of language for social interaction, management of behaviour, and participation in everyday routines and community events. Findings from this study showed that, by equipping parents with skills and experience in the use of naturalistic strategies within ELOs, they gained confidence and competence to transfer their learning to other activities and settings, thereby improving their quality of life. These changes had social significance for the families as it reduced stress, improved emotional well-being and increased participation in family activities.

Implications for Clinical Use

Given that the New Zealand Autism Spectrum Disorder (ASD) Guideline (2016) endorses interventions that are integrated into daily contexts as they encourage generalisation of skills, the processes used in this study are a suitable option for all families with children on the autism spectrum. The intervention package offered in this study is highly relevant in the New Zealand early intervention context as it offers a unique blend of values and practices.

Firstly, the intervention aligns strongly with a family-centred routine-based intervention (McWilliam, 2010) as it offers parents naturalistic strategies which follow the child's lead and include child-preferred and interest-based play activities. The advantage of

using naturally occurring activities and on-going routines for early intervention is that the support is contextually relevant and culturally responsive, unlike government-purchased training packages that have often not been customised for the New Zealand context.

Secondly, the training plus coaching intervention offers parents the opportunity to gain confidence and competence to provide development-enhancing learning opportunities. Given that the New Zealand ASD Guideline (2016) strongly recommends that early intervention stimulate family engagement, growth and advocacy, this intervention offers potential in investing in parent competence, skill and empowerment.

Thirdly, the training plus coaching intervention provides specific training and in-home coaching in the use of ELOs and CLTs. The systematic nature of embedded instruction provides a language and structure that can be used both at home and in early childhood centres with other caregivers. This is similar to the systematic instruction typically offered through therapist-based ABA models. However, in this case, the intervention is embedded within naturalistic routines, thereby creating a multitude of opportunities for skill generalisation across contexts and settings.

Finally, the fact that the parent-implemented intervention was delivered in the child's home environment makes intervention relevant in a ‘real world' setting; also making early intervention services cost-effective and accessible to families who would otherwise not be able to afford or access intensive ongoing behavioural interventions.

Limitations

Several limitations should be considered when interpreting the results. One is the small sample size of this study (i.e., only three parent-child dyads participated). This limits the ability to generalise results to a general or larger population of parent-child dyads whose characteristics are different. This is particularly important to acknowledge when carrying out

research with children on the autism spectrum; a population known to have wide variability in skills. A larger sample may represent a broader range of children on the autism spectrum in terms of social communication skills, play and engagement. Similarly, a larger sample of parents (across culture, age, ethnicity, gender) would have greater potential in establishing generalised results for intervention in this field.

This study implemented a pre-test post-test design. Although reasonable steps were taken to control for internal and external validity, the design is non-experimental and more descriptive. This study provides promising findings in support of the effectiveness of a parent-implemented naturalistic social communication intervention by offering training plus coaching to parents. However, these findings also support the need to conduct further research such as a randomised controlled study in which group outcomes can be compared, and stronger claims regarding the efficacy of the intervention can be made.

Another limitation of the present study was a lack of data on how parents maintained their use of learnt strategies over time. Recording data on parent and child behaviour three months post-intervention would have added valuable information regarding the sustainability of this intervention for families. Further to this, child target behaviour was observed in the context of a natural play setting using a purpose-developed coding system (in lieu of evidence-based communication assessments). This approach may provide limited information about actual child outcomes since it captures a snapshot of one context at one point in time.

In respect to the training plus coaching intervention, the interventionist, a highly experienced SLT in the implementation of parent education and intervention for young children on the autism spectrum, was responsible for all of the training plus coaching intervention components. Parents rated the intervention positively having acquired strong working relationships with the SLT over time, which may have contributed to the favourable

ratings. The use of the intervention offered by less experienced facilitators is unlikely to result in the same outcomes.

Along these lines are limitations related to the implementation of the training plus coaching intervention. The interventionist recorded details on the context of the play routines and parents' implementation of systematic instruction, but did not record the procedural fidelity with which the training workshops and coaching sessions were carried out. This is an area that could be addressed in future research.

Recommendations for Future Research

Providing regular, systematic and planned learning opportunities for young children on the autism spectrum in naturalistic settings, aligns with recommendations from the New Zealand ASD Guideline (2016) and is promoted nationally as best practice for young children on the autism spectrum. The findings from the study support the literature on the use of embedded instruction with the focus on parents' implementation in the home setting. There is potential for further work in exploring the use of ELOs and CLTs with a wider client group and children of varying ages. Also, there is potential to train and coach adults in the use (and generalisation) of ELOs and CLTs for teaching functional language around the child's participation in activities of self-care, and in the context of naturally occurring activities across the child's day.

Further to this, the present study implemented the intervention in the context of the families' homes, with one parent/carer. Offering training plus coaching to more than one parent and offering a similar intervention program to other caregivers (e.g., grandparents, home carers) will add valuable contributions to the potential effectiveness of this intervention to support children's learning.

In order to provide strong evidence of the feasibility of the current intervention, there is potential for future research that compares parent-implemented interventions such as the current study, with therapist or clinic-based interventions lead by professionals. Future research could also offer training plus coaching to parents and early childhood teachers, to support the generalisation of skills across contexts for a child on the autism spectrum. This may provide an important platform for collaborative practice.

Training plus coaching interventions can be hugely beneficial and cost-effective as they can produce positive family and child outcomes in a relatively short time. Also, group training is highly effective in providing a supportive learning environment for families who are in the early stages of diagnosis for their child. There is a need for continued research both in New Zealand and abroad, to explore the use of training plus coaching interventions that implement naturalistic instruction practices with a broader representation of children on the autism spectrum, particularly with families who do not typically access early intervention services or families who live in rural communities where early intervention services are limited and infrequent.

Future research could provide more robust instruments for assessment of child social communication. Robust social communication assessment protocols that are specific to children on the autism spectrum are very limited. One recommendation is the development of a social communication assessment instrument which is suitable for use by all adults whom the child has contact with during their day. Such an instrument may be useful in assisting parents in selecting appropriate target behaviour, as this requires training and practice. An evidence-based assessment instrument for social communication skills in young children on the autism spectrum will be beneficial when training and coaching parents and educators to support the child's learning in any context. This also provides rich opportunities for collaboration, partnership, and parent-capacity building practices.

Final Thoughts

Positive parent and child behaviour outcomes can be achieved with training plus coaching interventions that implement systematic naturalistic instruction. This study's findings reinforce the importance of empowering parents to participate in intervention planning and to actively engage and extend their children's learning, by offering their children regular opportunities to learn skills within naturally occurring routines. Thus, the study underpins the values of family-centred practice as recommended by the New Zealand ASD Guideline (2016). Parents participating in this study clearly articulated that the training plus coaching intervention added value and improved quality of life for their family by offering them strategies that were effective in changing the way they communicated and their confidence in being able to offer a broader range of learning experiences for their child. The intervention also had social significance as families reported a decrease in family stress, improved emotional well-being and increased participation in family activities.

Parent-implemented intervention has an important place within family-centred practice. This study contributes to the larger body of literature that promotes the use of naturalistic instruction practices in naturally occurring activities and routines and its value in supporting parents as partners to facilitate their child's learning. This study emphasises the benefits of early intervention practitioners engaging in effective family-centred practice by building their capacity to support parents with self-reflection and participation.

References

Albers, A. E., & Greer, R. D. (1991). Is the three-term contingency trial a predictor of effective instruction? *Journal of Behavioral Education, 1*(3), 337-354.

Alpert, C. L., & Kaiser, A. P. (1992). Training parents as milieu language teachers. *Journal of Early Intervention, 16(*1), 31–52.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Anderson, A., Birkin, C., Seymour, F., & Moore, D. (2006). Earlybird evaluation. Wellington, New Zealand: The Ministry of Education.

Australian Government Department of Education, Employment and Workplace Relations. (2009). *Belonging, being and becoming: The early years learning framework for Australia*. Retrieved from https://docs.education.gov.au/system/files/doc/other/belonging_being_and_becoming_the_early_years_learning_framework_for_australia._v5_docx.pdf

Autism and Developmental Disabilities Monitoring Network Surveillance Year 2008 Principal Investigators. (2012). Prevalence of autism spectrum disorders—autism and developmental disabilities monitoring network, 14 sites, United States, 2008. *Morbidity and Mortality Weekly Report: Surveillance Summaries, 61*(3), 1-19.

Baird, G., Simonoff, E., Pickles, A., Chandler, S., Loucas, T., Meldrum, D., & Charman, T. (2006). Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: The Special Needs and Autism Project (SNAP). *The Lancet, 368*(9531), 210-215.

Bishop, C. D., Snyder, P. A., & Crow, R. E. (2015). Impact of video self-monitoring with graduated training on implementation of embedded instructional learning trials. *Topics in Early Childhood Special Education, 35*(3), 170-182.

Bishop, C. C., Snyder, P., Crow, R., Mullen, M., & Embedded Instruction for Early Learning Project. (2011). EIOS-T: Embedded instruction for early learning observation system—Teacher version [Manual and training videos]. Unpublished instrument. College of Education, University of Florida, Gainesville.

Abbott, B. B., & Bordens, K. S. (2011). *Research design and methods: A process approach*. New York, NY: McGraw-Hill.

Boyd, B. A., Odom, S. L., Humphreys, B. P., & Sam, A. M. (2010). Infants and toddlers with autism spectrum disorder: Early identification and early intervention. *Journal of Early Intervention, 32*(2), 75-98.

Bricker, D., & Pretti-Frontczak, K. (1996). *AEPS Measurement for Three to Six Years. Assessment, Evaluation, and Programming System for Infants and Children, Volume 3*. Baltimore, MD: Brookes.

Broadstock, M. (2018). New Zealand Autism Spectrum Disorder Guideline supplementary paper on the impact of ethnicity on recognition, diagnosis, education, treatment and support for people on the autism spectrum. Christchurch, New Zealand: INSIGHT Research.

Brown, J. A., & Woods, J. J. (2015). Effects of a triadic parent-implemented home-based communication intervention for toddlers. *Journal of Early intervention, 37*(1), 44-68.

Brown, J. A., & Woods, J. J. (2016). Parent-implemented communication intervention: Sequential analysis of triadic relationships. *Topics in Early Childhood Special Education, 36*(2), 115-124.

Burger, K. (2015). Effective early childhood care and education: Successful approaches and didactic strategies for fostering child development. *European Early Childhood Education Research Journal, 23*(5), 743-760.

Campbell, D., Palm, G., & Palm, G. F. (2004). *Group parent education: Promoting parent learning and support.* Thousand Oaks, CA: Sage Publications, Inc.

Carswell, A., McColl, M. A., Baptiste, S., Law, M., Polatajko, H., & Pollock, N. (2004). The Canadian Occupational Performance Measure: A research and clinical literature review. *Canadian Journal of Occupational Therapy, 71*(4), 210-222.

Carter, M., Roberts, J., Williams, K., Evans, D., Parmenter, T., Silove, N., ... & Warren, A. (2011). Interventions used with an Australian sample of preschool children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*(3), 1033-1041.

Copple, C., & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8.* Washington, DC: National Association for the Education of Young Children.

Cowan, R. J., & Allen, K. D. (2007). Using naturalistic procedures to enhance learning in individuals with autism: A focus on generalized teaching within the school setting. *Psychology in the Schools, 44*(7), 701-715.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed). Boston, MA: Pearson Education, Inc.

Dane, F. C. (1990). *Research methods* (Vol. 120). Pacific Grove, CA: Brooks/Cole Publishing Company.

Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., ... & Varley, J. (2010). Randomized, controlled trial of an intervention for toddlers with autism: The Early Start Denver Model. *Pediatrics, 125*(1), e17-e23.

Dunn, W., Cox, J., Foster, L., Mische-Lawson, L., & Tanquary, J. (2012). Impact of a contextual intervention on child participation and parent competence among children with autism spectrum disorders: A pretest–posttest repeated-measures design. *American Journal of Occupational Therapy, 66*(5), 520-528.

Dunst, C. J. (2000). Revisiting "rethinking early intervention". *Topics in Early Childhood Special Education, 20(*2), 95-104.

Dunst, C. J. (2007). Early intervention for infants and toddlers with developmental disabilities. In S. L. Odom, R. H. Horner, M. E. Snell, & J. Blacher (Eds.), *Handbook of Developmental Disabilities* (pp. 161-180). New York: Guildford Press.

Dunst, C. J., Bruder, M. B., & Hamby, D. W. (2015). Metasynthesis of in-service professional development research: Features associated with positive educator and student outcomes. *Educational Research and Reviews, 10*(12), 1731-1744.

Dunst, C. J., Bruder, M. B., Trivette, C. M., & Hamby, D. W. (2006). Everyday activity settings, natural learning environments, and early intervention practices. *Journal of Policy and Practice in Intellectual Disabilities, 3*(1), 3-10.

Dunst, C. J., & Dempsey, I. (2007). Family–professional partnerships and parenting competence, confidence, and enjoyment. *International Journal of Disability, Development and Education, 54(*3), 305-318.

Dunst, C. J., Hamby, D. W., & Brookfield, J. (2007). Modeling the effects of early childhood intervention variables on parent and family well-being. *Journal of Applied Quantitative Methods, 2*(3), 268-288.

Dunst, C. J., Hamby, D., Trivette, C. M., Raab, M., & Bruder, M. B. (2000). Everyday family and community life and children's naturally occurring learning opportunities. *Journal of Early Intervention, 23*(3), 151-164.

Dunst, C. J., & Trivette, C. M. (2009). Capacity-building family-systems intervention practices. *Journal of Family Social Work, 12*(2), 119-143.

Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2007). Meta-analysis of family-centered helpgiving practices research. *Mental Retardation and Developmental Disabilities Research Reviews, 13*(4), 370-378.

Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2012). Effect of interest-based interventions on the social-communicative behavior of young children with autism spectrum disorders. *Center for Early Literacy Learning, 5*(6), 1-10.

Dunst, C. J., Valentine, A., Raab, M., & Hamby, D. W. (2013). Everyday activities as sources of language learning opportunities for infants, toddlers, and preschoolers. *Everyday Child Language Learning Reports, 6*, 1-10.

Fitzgerald, D. (2004). *Parent partnerships in the early years.* London, United Kingdom: Continuum.

Friedman, M., Woods, J., & Salisbury, C. (2012). Caregiver coaching strategies for early intervention providers: Moving toward operational definitions. *Infants & Young Children, 25*(1), 62-82.

Girolametto, L., Sussman, F., & Weitzman, E. (2007). Using case study methods to investigate the effects of interactive intervention for children with autism spectrum disorders. *Journal of Communication Disorders, 40*(6), 470-492.

Goin-Kochel, R. P., Mackintosh, V. H., & Myers, B. J. (2009). Parental reports on the efficacy of treatments and therapies for their children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 3*(2), 528-537.

Graham, F., Rodger, S., & Ziviani, J. (2009). Coaching parents to enable children's participation: An approach for working with parents and their children. *Australian Occupational Therapy Journal, 56*(1), 16-23.

Graham, F., Rodger, S., & Ziviani, J. (2010). Enabling occupational performance of children through coaching parents: Three case reports. *Physical & Occupational Therapy in Pediatrics, 30*(1), 4-15.

Greenspan, S. I., & Wieder, S. (2006). *Engaging autism: Using the floortime approach to help children relate, communicate, and think.* Philadelphia, PA: Da Capo Lifelong Books.

Hancock T.B., Ledbetter-Cho K., Howell A., & Lang R. (2016). Enhanced milieu teaching. In: R. Lang, T. Hancock, & N. Singh (Eds.), *Early intervention for young children with autism spectrum disorder: Evidence-based practices in behavioral health* (pp. 177-218). Cham, Switzerland: Springer Nature.

Hudson, M., Milne, M., Reynolds, P., Russell, K., & Smith, B. (2010). Te Ara Tika: Guidelines for Māori research ethics: A framework for researchers and ethics committee members. Auckland, New Zealand: Health Research Council of New Zealand.

IHC. (2014). *ASD Plus: Education for families*. Retrieved from http://www.ihc.org.nz/our-services/specialistservices/autism-programmes/asd-plus-education-for-families/

Kaiser, A. P., Hancock, T. B., & Nietfeld, J. P. (2000). The effects of parent-implemented enhanced milieu teaching on the social communication of children who have autism. *Early Education and Development, 11*(4), 423-446.

Kaiser, A. P., & Roberts, M. Y. (2013). Parent-implemented enhanced milieu teaching with preschool children who have intellectual disabilities. *Journal of Speech, Language, and Hearing Research, 56*(1), 295-309.

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings*. New York, NY: Oxford University Press.

Keen, D. (2007). Parents, families, and partnerships: Issues and considerations. *International Journal of Disability, Development and Education, 54*(3), 339-349.

Keen, D., Couzens, D., Muspratt, S., & Rodger, S. (2010). The effects of a parent-focused intervention for children with a recent diagnosis of autism spectrum disorder on

parenting stress and competence. *Research in Autism Spectrum Disorders, 4*(2), 229-241.

Keen, D., Meadan, H., Brady, N. C., & Halle, J. W. (Eds.). (2016). *Prelinguistic and minimally verbal communicators on the autism spectrum*. Gateway East, Singapore: Springer Nature.

Kemp, P., & Turnbull, A. P. (2014). Coaching with parents in early intervention: An interdisciplinary research synthesis. *Infants & Young Children, 27*(4), 305-324.

Kingsley, K., & Mailloux, Z. (2013). Evidence for the effectiveness of different service delivery models in early intervention services. *American Journal of Occupational Therapy, 67(*4), 431-436.

Koegel, L. K., Koegel, R. L., Frea, W. D., & Fredeen, R. M. (2001). Identifying early intervention targets for children with autism in inclusive school settings. *Behavior Modification, 25*(5), 745-761.

Landry, S. H., Smith, K. E., Swank, P. R., Zucker, T., Crawford, A. D., & Solari, E. F. (2012). The effects of a responsive parenting intervention on parent–child interactions during shared book reading. *Developmental Psychology, 48*(4), 969.

Lane, J. D., Lieberman-Betz, R., & Gast, D. L. (2016). An analysis of naturalistic interventions for increasing spontaneous expressive language in children with autism spectrum disorder. *The Journal of Special Education, 50*(1), 49-61.

Lowry, L. (2017). *What makes your child "tick"? Using children's interest to build communication skills*. Retrieved from http://www.hanen.org/Helpful-Info/Articles.aspx

Mahoney, G., Wheeden, C. A., & Perales, F. (2004). Relationship of preschool special education outcomes to instructional practices and parent–child interaction. *Research in Developmental Disabilities, 25*(6), 539-558.

Mancil, G. R., & Pearl, C. E. (2008). *Restricted interests as motivators: Improving academic engagement and outcomes of children on the autism spectrum*. *Teaching Exceptional Children Plus, 4*(6), 2-15. Retrieved from http://www.escholarship.bc.edu/education/tecplus/vol4/iss6/art7

Marsden, E., & Torgerson, C. J. (2012). Single group, pre-and post-test research designs: Some methodological concerns. *Oxford Review of Education, 38*(5), 583-616.

Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16*(2), 191-198.

Mataiti, H., van Bysterveldt, A., & Miller, J. (2016). Changing roles and responsibilities: The development of coaching in early intervention education settings, in Aotearoa New Zealand. *New Zealand Research in Early Childhood Education,* (19), 15-31.

McConachie, H., & Diggle, T. (2007). Parent implemented early intervention for young children with autism spectrum disorder: A systematic review. *Journal of Evaluation in Clinical Practice, 13*(1), 120-129.

McLaughlin, T., & Clarke, L. (2018). Performance feedback: The missing component in early childhood professional learning and development. *Early Education [invited message to the Minister of Education], 63*, 24-29.

McWilliam, R. A. (1992). *Family-centered intervention planning: A routines-based approach.* Tucson, AZ: Communication Skill Builders.

McWilliam, R. A. (2010). *Routines-based early intervention. Supporting young children and their families*. Baltimore, MD: Brookes.

McWilliam, R. A. (2015). Future of early intervention with infants and toddlers for whom typical experiences are not effective. *Remedial and Special Education, 36*(1), 33-38.

McWilliam, R. (2016). Metanoia in early intervention: Transformation to a family centered approach. *Revista Latino-Americana de Educación Inclusiva, 10*(1), 133-153.

Meadan, H., Snodgrass, M. R., Meyer, L. E., Fisher, K. W., Chung, M. Y., & Halle, J. W. (2016). Internet-based parent-implemented intervention for young children with autism: A pilot study. *Journal of Early Intervention, 38*(1), 3-23.

Moore, H. W., Barton, E. E., & Chironis, M. (2014). A program for improving toddler communication through parent coaching. *Topics in Early Childhood Special Education, 33*(4), 212-224.

Ministry of Education (2007). *Principles and practices in early intervention: A literature review for the Ministry of Education*. Retrieved from https://www.educationcounts.govt.nz/

Ministry of Health. (2008). *New Zealand Autism Spectrum Disorder Guideline*. Wellington, New Zealand: Ministry of Health.

Ministries of Health and Education. (2016). *New Zealand Autism Spectrum Disorder Guideline* (2nd ed.). Wellington, New Zealand: Ministry of Health.

Ministry of Education (2010). *Evaluation of two specific parent education programmes for parents and whānau of young children (from 0 to starting school age) with Autism Spectrum Disorder*. Retrieved from https://www.educationcounts.govt.nz/

Mundy, P., Kasari, C., Sigman, M., & Ruskin, E. (1995). Nonverbal communication and early language acquisition in children with Down syndrome and in normally developing children. *Journal of Speech, Language, and Hearing Research, 38*(1), 157-167.

Ogilvie, E., & McCrudden, M. T. (2017). Evaluating the social validity of the Early Start Denver Model: A convergent mixed methods study. *Journal of Autism and Developmental Disorders, 47*(9), 2899-2910.

Persicke, A., Bishop, M. R., Coffman, C. M., Najdowski, A. C., Tarbox, J., Chi, K., ... & Ranick, J. (2014). Evaluation of the concurrent validity of a skills assessment for autism treatment. *Research in Autism Spectrum Disorders, 8*(3), 281-285.

Punch, K. F., & Oancea, A. (2014). *Introduction to research methods in education.* London, United Kingdom: Sage Publications Ltd.

Raab, M., & Dunst, C. J. (2005). Interest-based child participation in everyday learning activities. *CASEinPoint, 1*(2), 1-5.

Rakap, S. (2017). Impact of coaching on preservice teachers' use of embedded instruction in inclusive preschool classrooms. *Journal of Teacher Education, 68*(2), 125-139.

Rakap, S., & Balikci, S. (2017). Using embedded instruction to teach functional skills to a preschool child with autism. *International Journal of Developmental Disabilities, 63*(1), 17-26.

Rakap, S., & Rakap, S. (2014). Parent-implemented naturalistic language interventions for young children with disabilities: A systematic review of single-subject experimental research studies. *Educational Research Review, 13*, 35-51.

Roberts, M. Y., & Kaiser, A. P. (2011). The effectiveness of parent-implemented language interventions: A meta-analysis. *American Journal of Speech-Language Pathology, 20*(3), 180-199.

Rogers, S. (Ed.). (2010). *Rethinking play and pedagogy in early childhood education: Concepts, contexts and cultures.* New York, NY: Routledge.

Rogers, S. J., & Dawson, G. (2010). *Early Start Denver Model for young children with autism: Promoting language, learning, and engagement.* New York, NY: Guilford Press.

Rogers, S. J., Estes, A., Lord, C., Vismara, L., Winter, J., Fitzpatrick, A., ... & Dawson, G. (2012). Effects of a brief Early Start Denver Model (ESDM)–based parent

intervention on toddlers at risk for autism spectrum disorders: A randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry, 51(*10), 1052-1065.

Rogers, S. J., Estes, A., Vismara, L., Munson, J., Zierhut, C., Greenson, J., ... & Whelan, F. (2018). Enhancing low-intensity coaching in parent implemented Early Start Denver Model intervention for early autism: A randomized comparison treatment trial. *Journal of Autism and Developmental Disorders.* Advance online publication

Rouse, L. (2012). Family-centred Practice: Empowerment, self-efficacy, and challenges for practitioners in early childhood education and care. *Contemporary Issues in Early Childhood, 13*(1), 17-26.

Rule, S., Losardo, A., Dinnebeil, L., Kaiser, A., & Rowland, C. (1998). Translating research on naturalistic instruction into practice. *Journal of Early Intervention, 21*(4), 283-293.

Rush, D. D., & Shelden, M. L. L. (2011). *The early childhood coaching handbook.* Baltimore, MD: Brookes Publishing Company.

Rush, D. D., Shelden, M. L. L. & Hanft, B. E. (2003). Coaching families and colleagues: A process for collaboration on natural settings. *Infants and Young Children, 16*(1), 33-47.

Ryberg, K. H. (2015). Evidence for the implementation of the Early Start Denver Model for young children with autism spectrum disorder. *Journal of the American Psychiatric Nurses Association, 21(*5), 327-337.

Salisbury, C., Woods, J., Snyder, P., Moddelmog, K., Mawdsley, H., Romano, M., & Windsor, K. (2018). Caregiver and provider experiences with coaching and embedded intervention. *Topics in Early Childhood Special Education, 38*(1), 17-29.

Sandall, S., McLean, M. E., & Smith, B. J. (2000). *DEC recommended practices in early intervention/early childhood special education.* Longmont, CO: Sopris West.

Schreibman, L., Dawson, G., Stahmer, A. C., Landa, R., Rogers, S. J., McGee, G. G., ... & McNerney, E. (2015). Naturalistic developmental behavioral interventions: Empirically validated treatments for autism spectrum disorder. *Journal of Autism and Developmental Disorders, 45*(8), 2411-2428.

Shields, J. (2001). The NAS EarlyBird Programme: Partnership with parents in early intervention. *Autism, 5*(1), 49-56.

Snyder, P. A., Hemmeter, M. L., & Fox, L. (2015). Supporting implementation of evidence-based practices through practice-based coaching. *Topics in Early Childhood Special Education, 35*(3), 133-143.

Snyder, P., Hemmeter, M. L., Sandall, S., McLean, M., & McLaughlin, T. (2013). Embedded instruction practices in the context of response to intervention. In V. Buysse & E. Peisner-Feinberg (Eds.), *Handbook of response-to-intervention in early childhood* (pp. 283-300). Baltimore, MD: Brookes.

Snyder, P., Hemmeter, M. L., McLean, M., Sandall, S., McLaughlin, T., & Algina, J. (2018). Effects of professional development on preschool teachers' use of embedded instruction practices. *Exceptional Children, 84*(2), 213-232.

Snyder, P., Hemmeter, M. L., Meeker, K. A., Kinder, K., Pasia, C., & McLaughlin, T. (2012). Characterizing key features of the early childhood professional development literature. *Infants & Young Children, 25*(3), 188-212.

Snyder, P., McLaughlin, T., & Bishop, C. (2018). Contextually relevant learning opportunities through embedded instruction. *DEC Recommended Practices Monograph Series Number 4 Instruction: Effective Strategies to Support, Engagement, Learning, and Outcomes*, 51-64.

Snyder, P. A., Rakap, S., Hemmeter, M. L., McLaughlin, T. W., Sandall, S., & McLean, M. E. (2015). Naturalistic instructional approaches in early learning: A systematic review. *Journal of Early Intervention, 37*(1), 69-97.

Statistics New Zealand. (2013). *New Zealand in profile 2013: An overview of New Zealand's people, economy and environment.* Wellington: Statistics New Zealand.

Statistics New Zealand. (2016). *New Zealand: An urbun/rural update.* Wellington: Statistics New Zealand.

Steiner, A. (2013). Early Social-Communication Scales (ESCS). In *Encyclopedia of Autism Spectrum Disorders* (pp. 1033-1034). New York, NY: Springer.

Stephan, T., & Manning, K. (2017). *Parent-implemented early language intervention: What really works* [White paper]. Retrieved from http://www.hanen.org/SiteAssets/Helpful-Info/Whitepapers/parent-implemented-early-language-intervention-wha.pdf

Swanson, J., Raab, M., & Dunst, C. J. (2011). Strengthening family capacity to provide young children everyday natural learning opportunities. *Journal of Early Childhood Research, 9(*1), 66-80.

Tarbox, J., Dixon, D. R., Sturmey, P., & Matson, J. L. (2014). *Handbook of early intervention for autism spectrum disorders.* New York, NY: Springer.

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246.

Turnbull, A. P., Summers, J. A., Lee, S. H., & Kyzar, K. (2007). Conceptualization and measurement of family outcomes associated with families of individuals with intellectual disabilities. *Mental Retardation and Developmental Disabilities Research Reviews, 13*(4), 346-356.

VanDerHeyden, A. M., Snyder, P., Smith, A., Sevin, B., & Longwell, J. (2005). Effects of complete learning trials on child engagement. *Topics in Early Childhood Special Education, 25*(2), 81-94.

Vismara, L. A., Young, G. S., & Rogers, S. J. (2012). Telehealth for expanding the reach of early autism training to parents. *Autism Research and Treatment*. Retrieved from https://www.hindawi.com/journals/aurt/2012/121878/cta/

Warreyn, P., Van Der Paelt, S., & Roeyers, H. (2014). Social-communicative abilities as treatment goals for preschool children with autism spectrum disorder: The importance of imitation, joint attention, and play. *Developmental Medicine & Child Neurology, 56*(8), 712-716.

Webster-Stratton, C., Mostyn, D., & Marie, J. S. (2005). *The Incredible Years: A trouble-shooting guide for parents of children aged 2-8 years.* Seattle, WA: Incredible years.

Weitzman, E. (1994). The Hanen Program for Early Childhood Educators: Inservice training for child care providers on how to facilitate children's social, language, and literacy development. *Infant-Toddler Intervention: The Transdisciplinary Journal, 4*(3), 173-202.

Weitzman, E. (2013). More Than Words—The Hanen Program for Parents of Children with Autism Spectrum Disorder: A teaching model for parent-implemented language intervention. *SIG 1 Perspectives on Language Learning and Education, 20*(3), 96-111.

Wetherby, A. M., Guthrie, W., Woods, J., Schatschneider, C., Holland, R. D., Morgan, L., & Lord, C. (2014). Parent-implemented social intervention for toddlers with autism: An RCT. *Pediatrics, 134*(6), 1084-1093.

Wetherby, A. M., Prizant, B. M., & Hutchinson, T. A. (1998). Communicative, social/affective, and symbolic profiles of young children with autism and pervasive

developmental disorders. *American Journal of Speech-Language Pathology, 7*(2), 79-91.

Wetherby, A. M., & Woods, J. J. (2006). Early social interaction project for children with autism spectrum disorders beginning in the second year of life: A preliminary study. *Topics in Early Childhood Special Education, 26*(2), 67-82.

Wolery, M., & Hemmeter, M. L. (2011). Classroom instruction: Background, assumptions, and challenges. *Journal of Early Intervention, 33*(4), 371-380.

Wolfberg, P. (2015). Play's role and meaning in the lives of children with autism. In D. P. Fromberg & D. Bergen (Eds.), *Play from birth to twelve: Contexts, perspectives, and meanings* (3rd ed., pp 63-71). New York, NY: Routledge.

Wooller, S. K. (2015). *Early childhood teachers' perceptions of the social validity of the incredible years teacher classroom management programme in Aotearoa New Zealand* (unpublished Master's thesis). Massey University, Palmerston North, New Zealand. Retrieved from http://hdl.handle.net/10179/6970

Zager, D., Cihak, D. F., & Stone-MacDonald, A. (2017). *Autism spectrum disorders: Identification, education, and treatment* (4th ed.). New York, NY: Routledge.

Zuna, N. I., Turnbull, A., & Summers, J. A. (2009). Family quality of life: Moving from measurement to application. *Journal of Policy and Practice in Intellectual Disabilities, 6(*1), 25-31.

Appendices

Appendix A: Descriptions of the Various Components of Complete Learning Trials

Antecedents (A): Cue and prompt for the child to join in the embedded learning opportunity, by participating in the target behaviour. There can be one or more types of antecedents occurring at the same time.

1. **Environmentally arranged (EA):** The antecedent can occur naturally i.e. initiated by environmental stimuli. One example of an environmentally arranged antecedents is when the child has access to toys that require adult help to operate and was not introduced by the adult.

2. **Parent delivered (PD):** An antecedent can be delivered by a parent (e.g. the parent asks a question, gives a direction or makes a comment). A parent-delivered antecedent can also be delivered through visual cues (e.g. the parent shows the child and object the child likes and waits for the child to ask for it), through body gesture and expression (e.g. the parent use an expectant look and looks towards the child, while pausing in the middle of a familiar song).

3. **Parent response (PR):** When a child initiates a social communication behaviour and there are no clear environmental stimuli to which the child is responding to – the episode begins at the adult's response to the interaction (e.g., child reaches out into air with hand open (no clear environmental stimuli), the adult says, 'what do you want?'

Target Behaviour (TB): The social communication behaviour (skill) the parent has identified is important for the child to be able to do.

Any Social Communication Behaviour (B): These occur communicative behaviours occur when a child attempts to convey a message to a partner by;

- Initiating communication towards the parent, without an antecedent provided by the parent.
- Responding to parent's bid for their attention i.e. through prompting or by providing an antecedent (A), but this is not the target behaviour (e.g. the child pulls the parent's hand to ask for help or looks towards the parent in response to something the adult said, instead of using the target behaviour 'help me').

Consequence (C): Response after the child demonstrated the target behaviour (or other social communication behaviour). This can occur naturally (e.g. the song continues after the child filled in the missing word/words/actions) or the consequence is provided by the adult (e.g. the parent meets the child's request, or the parent provides praise).

Additional Help (AH): Extra support given by the adult to the child when the child has performed the incorrect behaviour or no behaviour in response to the antecedent. Additional help is designed to increase the likelihood of the target behaviour (or other social communication behaviour) occurring.

Feedback (F): Adult response when the child does not demonstrate the target behaviour (or any social communication behaviour) to encourage the behaviour in the future. To count as feedback, the parent's response should be descriptive feedback related to the target behaviour.

Embedded Learning Opportunity (ELO): An intentional, planned and individualized learning opportunity created by a parent and occurring in the context of a play interaction with the child i.e. while the child is engaged with a toy, a people game and song, or sensory play. An ELO is set in motion by a naturally occurring antecedent or a parent arranged antecedent.

Complete Learning Trial (CLT): An interlocking correct sequence of interaction/instruction components (i.e., A-B-C, A-NB-F, A-NB-AH-B-C, A-NB-AH-NB-F) during each embedded learning opportunity between the parent and the child, whether the social communication behaviour of the child occurred or did not occur.

Complete Learning Trial with Target Behaviour (CLTw/TB): An interlocking sequence of interaction/instruction the components (i.e., A-TB-C, A-NB-AH-TB-C) during each embedded learning opportunity between the parent and the child, where the social communication behaviour of the child, is the target behaviour.

The following are examples of Complete Learning Trials:

<table>
<tr>
<td rowspan="2">Context: Playing with toy vehicles (target behaviour – names the item he is playing with e.g. ‘a car’)
Parent: Sets up the cars and the playmat [Environmental arrangement]
Parent: ‘I found a truck’ [A-PD]
Child: ‘a truck’ (imitates the parent) [B]
Parent does not acknowledge.
Parent: ‘look it’s a bus!’ [A-PD]
Child: ‘a bus!’ (imitates the parent) [B]
Parent: Points to the car the child’s holding and says, ‘a car’ [AH]
Child ‘a car’ [TB]
Parent: ‘yeah, you’ve got a car.’ [F]
Parent: ‘I found a train’ [A-PD]
Child: ‘I found a train’ [B]
Parent: Points the what the child has in his hand and waits [AH]
Child: ‘A train’ [TB]
Parent: ‘Cool train!’ [F]</td>
<td>Context: Ball play (target behaviour – ‘I’m ready!’)
Parent: ‘let’s play outside’ (and shows him the ball) [A-PD]
Child: ‘ball!’ [B]
Parent: ‘are you ready?’ [A]
Child: ‘ready!’ [B]
Parent: ‘you can say, I’m ready!’ [AH]
Child: ‘I’m ready!’ [TB]
Parent: Throws the ball to the child and cheers when he catches it. [C]</td>
</tr>
<tr>
<td>Context: Building a number puzzle (target behaviour ‘this is fourteen’)
Parent: ‘What number is next? [A-PD]
Child: ‘thirteen” [B]
Parent: ‘thirteen that’s right!” [C]
Child: ‘fourteen’ (and shows another piece)
Parent: ‘this is fourteen’ [AH]
Child: ‘this is fourteen’ [TB]
Parent: ‘good job!’ [C]</td>
</tr>
</table>

Core constructs for embedded instruction and complete learning trials from the Embedded Instruction for Early Learning project (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013; Snyder et al., 2017).

Appendix B: Parent Information Sheet

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

The impact of a parent-implemented, naturalistic instruction approach to promote early social communication skills in pre-schoolers with Autism Spectrum Disorder.

PARENT INFORMATION SHEET

GENERAL INFORMATION

I would like to invite you and your child to participate in a study to examine the impact of a parent-implemented, naturalistic intervention to promote social communication skills in pre-schoolers with Autism Spectrum Disorder.

I am a Speech Language Therapist employed by McKenzie Centre for the last 10 years. I obtained my bachelor degree in Speech Language Therapy at the University of Pretoria, South Africa, and have accumulated over twenty years' experience in the field of early childhood intervention.

This research is being carried out as part of the Master in Speech and Language Therapy programme at Massey University under the supervision of Dr Sally Clendon and Dr Tara McLaughlin. I have approached Trisha Benge, Centre Director, McKenzie Centre, and she has granted me permission to complete this study.

PARTICIPANT IDENTIFICATION AND RECRUITMENT

I am recruiting four parent-child dyads to participate in this study. To be included in the study, the child will have (1) a formal diagnosis of Autism Spectrum Disorder, or present with features of an Autism Spectrum Disorder, as confirmed in a clinical referral letter to McKenzie Centre, (2) normal hearing and vision, (3) English as the language medium at home, (4) be between 2 and 5 years of age, and (5) present with limited social and functional communication skills, as reported by parents.

This will be a positive intervention that may support your child's ability to communicate, and to begin to respond to, and engage in, social interactions with you. Parents will be supported to learn strategies to promote these skills, while interacting with their child in their home setting.

PROJECT PROCEDURES

This project will involve the following procedures:

- A pre-intervention assessment of your child's social communication skills, which will take place at McKenzie Centre, and involve interactions between your child and myself.
- A pre-intervention home visit, involving a parent interview, and a video recording of play interactions between you and your child.
- At the pre-intervention home visit, you will be asked to complete a checklist of your child's current social communication skills, and this will be repeated at the post-intervention home visit.

- You will also be asked to complete a rating scale with questions regarding your experiences and understanding of parent-implemented intervention at the start and the end of the project.
- Four practical and informative workshops at McKenzie Centre on four consecutive weeks, lasting 2 hours each. During these workshops, I will train and coach you in the use of interaction promoting strategies to support the social communication skills of your child;
- Following this, I will visit you and your child at home, once a week, for a total of 8 weeks. These visits will last 60-90 minutes each. Four of the home visits will occur before the 2-week term break on 13th April 2018, and four more home visits will occur after the term break starting the week of 30th May 2018. During these visits, you will receive coaching in the implementation of these strategies. If your child becomes fatigued, or upset, or indicates that they do not want to participate at any time during the study, the session will be stopped.
- A post-intervention home visit, involving a parent interview, and a video recording of play interactions between you and your child.
- A post-intervention assessment of your child's social communication skills, which will take place at McKenzie Centre, and involve interactions between your child and myself.

THE USE OF VIDEO RECORDINGS

Video feedback is a powerful tool in reflecting on progress for you and your child, therefore, video recordings will be used throughout the project.

The following interactions recorded on video, will be transcribed by myself and a Research Assistant (a staff member at the McKenzie Centre), to examine the efficacy of the intervention.

Video recordings will be made of:

- Play interactions between your child and myself at McKenzie Centre in March 2018 (pre-intervention);
- Three 10-minute interactions between you and your child in your home in March 2018;
- Three 10-minute interactions between you and your child in your home in June 2018 (post-intervention);
- Play interactions between your child and myself at McKenzie Centre in June 2018 (post-intervention).

In addition, video recordings will be made of play interactions between you and your child, during the 8 coaching home visits. The purpose of these videos will be for immediate feedback during the coaching visit. These videos will not be used for data collection.

I have extensive experience video recording parent-child interactions. I will be sensitive to any behaviour that indicates that you or your child are uncomfortable about the video recording, and will discontinue immediately if your child becomes upset, or there is any conversation about sensitive information. You will have the opportunity to view these video recordings at any time. Videos used for coaching and for data collection can be deleted at any time, on your request.

After completion of the project, I may use the videos for internal staff professional development, which occurs at McKenzie Centre. This will only be done if you give your approval via a signature on the Consent Form.

CONFIDENTIALITY AND DATA STORAGE

Confidential information about this project will be stored securely in Dr. Clendon's locked office at Massey University, and/or on our password protected computers. It will only be accessed by myself and my supervisors. It will be kept for 5 years following the completion of the final publication. When disposed of, the University confidential waste service will be used for any printed materials.

When the project has finished, the results of the study may be presented at conferences or published in journal articles, however, information related to this study will not include your name, your child's name, but it will state that the intervention took place at McKenzie Centre. At the end of this project, a summary of the research findings will be sent to you and to the Centre Director of the McKenzie Centre.

YOUR RIGHTS

You are under no obligation to consent to you or your child's participation in this study. If you choose to participate, you have the right to:

- Withdraw from the study at any time before the end of the data collection period and have any data pertaining to you and/or your child erased;
- Review any video footage that includes you and/or your child;
- Ask for any video segment that features you and/or your child, to be erased from the data set;
- Ask for any video segment that features you and/or your child, to not be used in internal staff professional development at McKenzie Centre;
- Ask any questions about the study any time during your participation.

MCKENZIE CENTRE SERVICES

Whether you choose to participate in this project, or not, you will continue to receive the usual services offered at McKenzie Centre. The intervention you will participate in, during the study, will be additional to the early childhood intervention services that McKenzie Centre provides to your family. If you have any questions about this, you may contact Trisha Benge, Centre Director of McKenzie Centre.

CONTACT INFORMATION

Thank you for taking the time to consider my request. If you are interested in being part of this project, please complete the attached consent form and return it to Trisha Benge, Centre Director of McKenzie Centre, by Friday, Tuesday, 27th February 2018.

This project is under the supervision of Massey University, not the McKenzie Centre. Should you have any questions about this project, please contact me or my supervisor Dr. Sally Clendon on:

Estelle Pretorius
Speech Language Therapist
McKenzie Centre
07 839 5357 ext. 707
slt2@mckenziecentre.org.nz

Sally Clendon
Senior Lecturer
Institute of Education
Massey University
09 414 0800 ext. 43537
s.clendon@massey.ac.nz

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

ETHICS COMMITTEE APPROVAL STATEMENT

This project has been reviewed and approved by Massey University Human Ethics Committee: Northern, Application NOR 17/55. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern email humanethicsnorth@massey.ac.nz.
Kind regards

Estelle Pretorius
Masters in Speech-Language Therapy Student
Massey University

Appendix C: Parent Consent Form

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

The impact of a parent-implemented, naturalistic instruction approach to promote early social communication skills in pre-schoolers with Autism Spectrum Disorder.

PARENT CONSENT FORM

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree / do not agree to interactions of myself and my child being video recorded.

I agree / do not agree to video recorded interactions between my child and I, and video recordings of interactions between the researcher and my child, being used to support internal staff professional development at McKenzie Centre.

I agree to myself and my child participating in this study under the conditions set out in the Information Sheet.

Signature: _____

Name printed in full: _____

Date: _____

Appendix D: Overview of Workshop Structure and Content

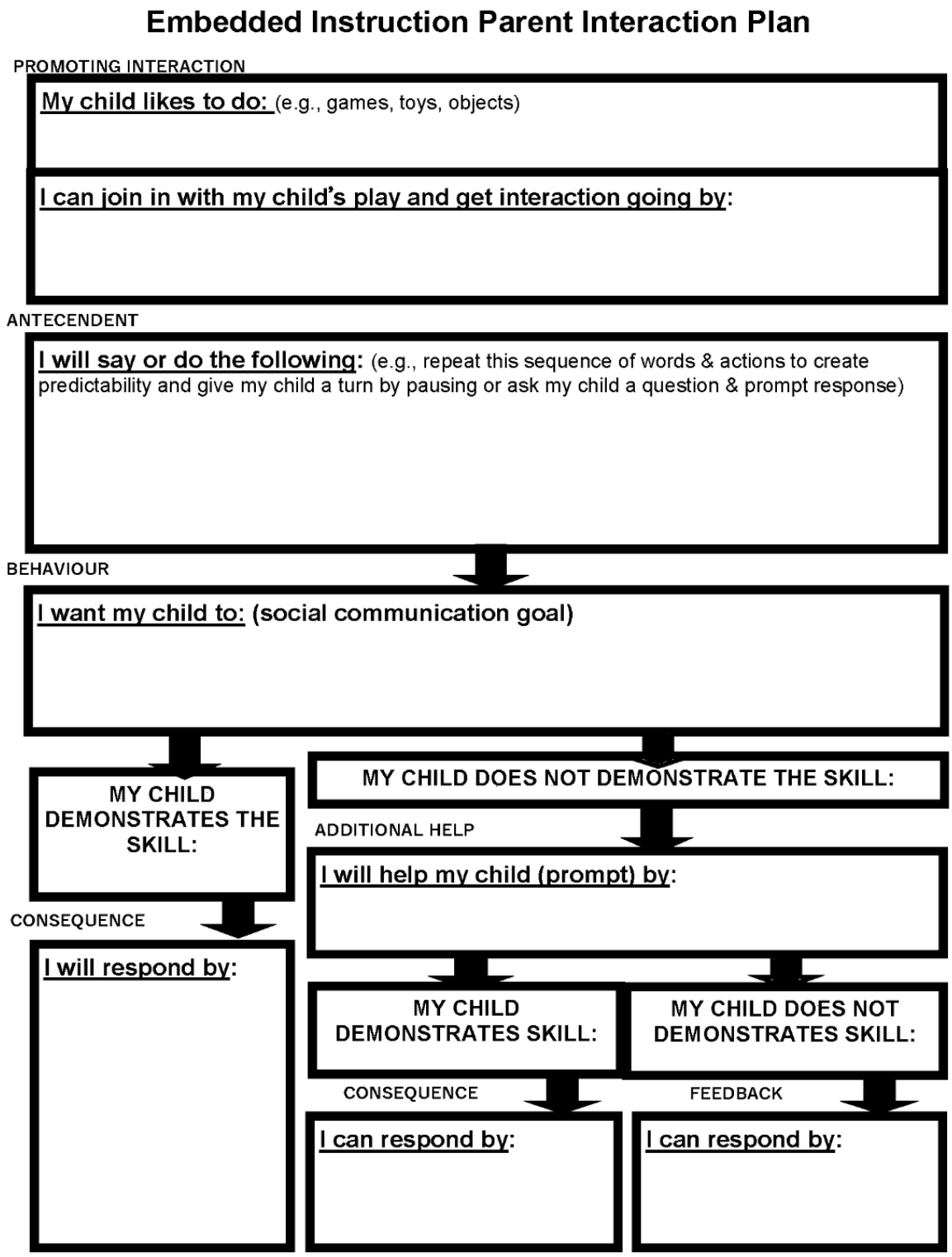
<table>
<tr><td rowspan="2">Workshop One</td><td>In this session, parents will receive a brief overview of the key concepts of this training and coaching intervention involving interaction promoting strategies and naturalistic instruction practices. Parents will learn to promote interaction with their child by positioning themselves, so their child can connect with them at their level. Parents will also learn about ‘tuning in’ strategies and acting as an interpreter and modelling language that matches child’s interest and focus of attention. During this session, parents will be introduced to the Embedded Instruction Parent Interaction Plan which will be referred to for the duration of the workshops.</td></tr>
<tr><td>Strategy 1: Position for play
Position themselves so they are better able to connect with their child.
Strategy 2: Tuning in
Actively observe their child and pay attention to:
where the child’s focus of attention is; and
what the child is doing with a toy;
the child’s sounds and words.
Strategy 3: Interpreting
Model language that match their child’s interest and focus of attention as well as noticing and commenting when their child is sending them a message.</td></tr>
<tr><td rowspan="2">Workshop Two</td><td>In this session, parents will review the strategies learnt in session one by giving feedback on how they implemented the strategies with their child at home. Parents will also provide feedback on their child’s responses following their use of a more tuned-in interaction style. Parents will learn three more interaction promoting strategies i.e. joining in with their child’s play by imitating them and matching their interests, introducing new ideas and actions, and learning to pause at the right time. Parents will continue to add to their individual Embedded Instruction Parent Interaction Plan EI PIP.</td></tr>
<tr><td>Strategy 1: Joining in with play – copy or match interest
Join in their child’s play, following their lead, by copying his/her actions, sounds, words and ideas.
Parents learn to add ideas and actions that matches the child’s interest.
Strategy 2: Introduce new ideas and actions
Keep the interaction going with their child by modelling language that describes the child’s play and introducing new ideas that keep the interaction fun and playful.
Strategy 3: Pause with a purpose
Create anticipation and interest by using an interesting tone of voice, exclamations, and then create a pause.</td></tr>
</table>

Core constructs for embedded instruction and complete learning trials from the Embedded Instruction for Early Learning project (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013; Snyder et al., 2017).

	Workshop content (continued)
Workshop Three	In this session, parents will review the strategies learnt in session 1 and 2 by giving feedback on how they joined in with their child's play. Parents will also provide feedback on their child's responses following their use of any of the interaction promoting strategies. In this session parents will be introduced to the concept of a complete learning trial, as a unit of instruction where they create or plan opportunities for learning (A = Antecedent), identify child social communication behaviours as learning targets (B = Behaviour) and plan for giving consequence or feedback following the child's response.
	Strategy 1: Behaviour Identify the target communication behaviour for their child in terms of the means (what will the child do or say) and the function (the reason for the message). **Strategy 2: Antecedent** Identify ways to provide natural cues with or without prompts, that would set the occasion for their child to use the communication behaviour. **Strategy 3: Consequence/Feedback** Identify natural and planned consequences following the child's use of the target social communication skill.
Workshop Four	In the final session parents will learn how to provide additional help to their child to increase the likelihood that the target social communication skill occurs; parents will be introduced to the various prompts (verbal, visual, physical etc.) Parents will then consolidate their learning by integrating the use of interaction promoting strategies to get interaction going with their child, and then implement the components of the Complete Learning Trial. For the remainder of the final session, parents will view several video examples of parent-child interactions and practice identifying the key components of the embedded instruction parent interaction plan, to consolidate their learning during the four workshops. Parents will also be prepared for the home visits and the process of video feedback and coaching.
	Strategy: Additional Help Provide appropriate assistance when needed, to increase the child's opportunities of being successful and using the target social communication skill. Fade help as soon as the child no longer requires it.

Core constructs for embedded instruction and complete learning trials from the Embedded Instruction for Early Learning project (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013; Snyder et al., 2017).

Appendix E: Embedded Instruction Parent Interaction Plan



Embedded Instruction Instructional Plan modified for student research Massey University with permission from Snyder, P. and the Embedded Instruction for Early Learning Project. (2017). *Tools for Teachers Embedded Instruction Series*. Unpublished professional development series. Anita Zucker Center for Excellence in Early Childhood Studies.

Appendix F: Coaching Protocol

	DEFINITIONS	PROCESS
1	*Greeting and welcome – establishing report and relationship.*	The interventionist will observe and be sensitive to the family's culture e.g. not sitting on, or leaning against tables or head pillows, not leaving shoes or a hat on a table, and using appropriate greetings and farewells.
2	*Conversation and Information Sharing* – establishing and maintaining a collaborative relationship between parent and interventionist. Both caregiver and interventionist share information, make comments, ask questions relevant to the workshop content and the interaction plan prepared for the visit. Discussions take place to clarify what is expected for the visit and the process it will follow.	• The interventionist checks in on the family's health and wellbeing, and the child's participation in family activities since the last visit. • A discussion takes place around the interactions that have been happening between the parent and child since the last contact including successes and challenges. • The parent describes an interaction that she has practiced during the week and would like feedback on, using the EI Parent Interaction Plan.
3	*Observation* – The primary role of the parent is to engage in interaction with the child (which was just discussed) while the interventionist observes and collects data. No feedback is given at this stage.	• The interventionist makes a video recording of the parent interacting with the child (5-7minutes of video). • The interventionist observes the interaction and makes written observations where necessary.
4	*Guided feedback* – discussions take place specific to the parent's implementation of the interaction promoting strategies and the components of the interaction plan, and observations of the child's behaviour while in interaction with the parent. This discussion is a collaborative one where the interventionist facilitates the process, but the parent leads the discussion.	• The interventionist and the parent watch the recorded video together. • A discussion takes place around the parent's impression of the interaction that was just recorded. • The interventionist listens to and reflects on the parent's message and emotion. • The interventionist guides the parent in a discussion around the flow of the interaction, and the behaviour of the child during the interaction. • The parent or interventionist may request that sections of the video clip may be repeated to show or demonstrate a strategy or a child behaviour.

	DEFINITIONS	PROCESS
5	*Problem solving and reflection* – reflective conversations that aim to identify ideas of what to do when a strategy did not work, or the child did not master the skill expected. The purpose of this discussion is to lead the parent in increasing their fluency in the implementation of the interaction plan in a variety of naturally occurring activities.	• The interventionist guides the parent in reaching her/his own conclusion but also offers recommendations and suggestions related to the videoed interaction.
6	*Joint interaction, modelling and parent practice with guided feedback – only if required or requested*.	• *Modelling* - the interventionist engages directly with the child, while the parent observes actively. • *Joint interaction* – the parent and interventionist work as partners with the child, by taking turns interacting with the child or each other during a naturally occurring activity. • *Parent practice* – the parent interacts with the child while the interventionist provides feedback and encouragement to the parent from the side.
7	*Personalization and Summary* – The interventionist facilitates parent's reflection on the visit as well as 'next steps'.	• The parent is supported to identify next steps and to summarise strategies the parent wishes to focus for the next week. • The interventionist leaves something in writing (feedback discussion summary) which includes the next steps decided by the parent.
8	*Wrap up and closure*	• Date and time for the next visit is confirmed. • Celebrations or words of encouragement take place if appropriate. • Greetings and closure.

Appendix G: Parents' Use of Embedded Learning Opportunities for Promoting Interaction Coding Schedule

Parent's Use of Embedded Learning Opportunities for Promoting Social Interaction (PELO-PSI) Coding Form

Purpose: The PELO-PSI coding system is designed to count the number of embedded learning opportunities that parents use during play interactions with their child to elicit social communication behaviours. The system examines the extent to which a parent used embedded learning opportunities and complete learning trials to help support their child's learning.

Background: The system was developed for use in a student research project (Estelle Pretorius) at Massey University in collaboration with supervisors Tara McLaughlin and Sally Clendon. Core constructs for embedded instruction and complete learning trials from the Embedded Instruction for Early Learning project (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013; Snyder et al., 2017). The coding systems has been informed by the Embedded Instruction Observation System – Teacher Version (EIOS-T; Crowe-Bishop, Snyder, Crow, Mullin, & Embedded Instruction for Early Learning Project, 2011) and the California Embedded Learning Opportunity Coding System (CA-ELOCS; Snyder, McLean, McLaughlin, & Shannon, 2017). Developed with permission from P. Snyder and the Embedded Instruction for Early Learning Project (2017) Anita Zucker Center for Excellence in Early Childhood Studies, University of Florida.

Instructions: See the coding manual to guide use of the PELO-PSI coding form. Use the coding form to record time stamps from videos when embedded learning opportunities occur. In Part A, indicate the extent to which different components of complete learning trials occurred for each embedded learning opportunity (i.e., occurred, did not occur); whether the components constitute a complete (or correct) learning trial (i.e., A-B-C, A-NB-AH-B-C, A-NB-AH-NB-F); and whether the social communication behavior that occurred was the target behavior for the child. In Part B record the nature of how different embedded learning opportunities were implemented (e.g., the types of antecedents the parents used).

PART A: COMPONENTS OF COMPLETE LEARNING TRIALS (Mark **1** when occurred)

Parent:			**Collected on:**											
Child:			**Notes**											
Activity:														
Time stamp		**Descriptive notes**	**A**			**B**	**AH**	**B**	**C/F**		**ELO**	**CLT**	**TB**	**CLT W/TB**
	Goal	*Type child target social communication behaviours here.*	**EA**	**PD**	**PR**									
		TOTALS												

Time stamp		Notes	A			B	AH	B	C/F		ELO	CLT	TB	CLT W/TB
	Goal		EA	PD	PR									
		TOTALS												

PART B: PARENT IMPLEMENTED COMPONENTS (Mark **1** when occurred)

	Time stamp at start of ELO:																					Totals
Parent Arranged Antecedents	Created opportunity to comm.?																					
	Made a comment or exclamation?																					
	Suggested action/activity?																					
	Asked a question?																					
	Used any type of prompt?																					
	Paused with anticipation?																					
	Any other type of antecedent?																					
Additional Help	Repeated the antecedent?																					
	Gave a verbal prompt?																					
	Modelled target behaviour?																					
	Gave visual or gestural prompt?																					
	Prompting question/comment?																					
Consequence/ Feedback	Naturally occurring consequence?																					
	Used verbal acknowledgement?																					
	Used gestural praise?																					
	Used descriptive praise?																					
	Imitated the child?																					
	Used descriptive feedback?																					
	Used any other form of C/F?																					

							Total
Interaction Promoting Strategies	Face to Face and at child's level?		Used an enthusiastic tone of voice?		Paused frequently for child to respond?		
	Extended/added descriptive language?		Actively played with the child?		Responsive to child's communication attempts?		
	Matched child's communication skills?		Balanced comments + questions?		Responsive to child's interest + attention?		

Appendix H: Child Social Communication Skills Coding Schedule

CHILD SOCIAL COMMUNICATION SKILLS – CODING SHEET

See the coding manual to guide use of the Child Social Communication Skills Coding Sheet. This coding sheet was developed using the following resources: (1) Steiner (2013). *Early Social Communication Scales (ESCS)*; (2) Indiana Resource Centre for Autism. *Communicative Functions or Purpose of Communication*; (3) Rowland (1990, 1996, 2004); *The Communication Matrix* and (4) Sussman, F et al. (2007). *Hanen More than Words Leaders Guide*.

Name of child	
Total duration of video	
Toy/People play PRE/POST	
Date coded	
Coder	

[+] Behaviour observed

		PART A: POTENTIALLY COMMUNICATIVE FUNCTION												PART B: POTENTIALLY COMMUNICATIVE BEHAVIOUR														
		BEHAVIOUR REGULATION			SOCIAL INTERACTION			SHARING INFORMATION							GESTURE OR SYMBOLIC							VOCAL OR VERBAL							
	TIME STAMP	Wants an object	Wants help/assistance	Wants an action/directs	Uses social routines	Wants social activity/attn	Responds to prompt/cue	Makes a choice	Answers a question	Directs adult attention	Labels/names/comments	Asks a question	TOTALS - FUNCTION	GAZE SHIFT TO ADULT	Performs an action	Reaches/takes/touches	Leads adult by hand	Gives an item	Shows an item	Points to something	Symbolic gesture	Vocalisation	Exclamation	Single word	Jargon	Imitation/echo	Connected speech	TOTALS – MODE	OVERALL TOTALS
COMMENTS		A	B	C	D	E	F	G	H	I	J	K		1	2	3	4	5	6	7	8	9	10	11	12	13	14		
TOTALS																													

Appendix I: Parent-Child Interaction Parent Rating Scale

PARENT-CHILD INTERACTION

PARENT RATING

PARENT	
CHILD	
DATE	

Rate your skill level in the use of the following naturalistic interaction strategies. Circle the number that best describes your use of these strategies. In the column to the right, select 5 strategies you would like to prioritise for yourself during this intervention.

	NOT GOOD AT ALL	POOR	FAIR	GOOD	VERY GOOD	EXCEPTIONAL	PRIORITY (select 5)
1. I adjust my physical level to get face to face with my child.	1	2	3	4	5	6	
2. I stop what I am doing to pay attention to what my child likes to do with a toy.	1	2	3	4	5	6	
3. I pause to listen to the sounds my child is making, or to observe the actions he/she is using while playing.	1	2	3	4	5	6	
4. I join in with my child's solitary play by including his/her interest and ideas.	1	2	3	4	5	6	
5. I encourage my child to take the lead about what and how we play with toys/objects or actions.	1	2	3	4	5	6	
6. I join in with my child's play by copying his/her actions.	1	2	3	4	5	6	
7. I join in with my child's play by copying his/her sounds and words.	1	2	3	4	5	6	
8. I adjust the way I talk, to help my child understand what I am saying.	1	2	3	4	5	6	
9. I join in with my child's play by commenting on or describing what I see him/her doing.	1	2	3	4	5	6	
10. I join in my child's play by turning it into a game which has predictable language and a sequence of actions.	1	2	3	4	5	6	
11. I wait for my child to communicate something towards me.	1	2	3	4	5	6	
12. I create opportunities for my child to communicate his/her need towards me.	1	2	3	4	5	6	
13. When my child communicates a need towards me, or communicates towards me, I respond immediately.	1	2	3	4	5	6	

Informed: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198.

PARENT-CHILD INTERACTION PARENT RATING

	NOT GOOD AT ALL	POOR	FAIR	GOOD	VERY GOOD	EXCEPTIONAL	PRIORITY (select 5)
14. I adjust the way I talk to match my child's skills level.	1	2	3	4	5	6	
15. I offer my child choices or options, by showing and labelling his/her options.	1	2	3	4	5	6	
16. I encourage my child's efforts by using words and gestures.	1	2	3	4	5	6	
17. I tell my child what to do by offering suggestions, where needed.	1	2	3	4	5	6	
18. I give my child help to communicate, when needed.	1	2	3	4	5	6	
19. I let my child know what to do by showing him/her when needed.	1	2	3	4	5	6	
20. I know how to select the correct level of help my child needs.	1	2	3	4	5	6	

Informed: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198.

Appendix J: Child Social Communication Skills Parent Rating Scale

CHILD SOCIAL COMMUNICATION SKILLS - PARENT RATING

PARENT	
CHILD	
DATE	

Based on your observations in a variety of situations, rate your child's skill in the following aspects of social communication. Circle the number that best describes your child in each of the 27 items on the list below. After completing the checklist, place a check mark or asterisk (*) in the right-hand column, next to the five (5) skills you would like to target for your child during this intervention.

RATING SCALE DEFINITIONS		
1	NEVER	My child has never demonstrated this skill.
2	VERY RARELY	My child very rarely demonstrates this skill e.g. only once or twice.
3	RARELY	My child rarely demonstrates this skill e.g. with one person in one context or setting only.
4	SOMETIMES	My child sometimes demonstrates this skill e.g. in one setting, with one or two familiar people.
5	OFTEN	My child often demonstrates this skill e.g. in more than one setting, with a few familiar people, and some unfamiliar people.
6	ALL THE TIME	My child demonstrates this skill all the time e.g. in all situations and with familiar and unfamiliar people.

	NEVER	VERY RARELY	RARELY	SOMETIMES	OFTEN	ALL THE TIME	PRIORITY (SELECT 5)
COMMUNICATIVE FUNCTIONS							
1. My child protests or refuses toys, games or activities.	1	2	3	4	5	6	
2. My child comes to seek my attention or comfort.	1	2	3	4	5	6	
3. My child lets me know he wants something.	1	2	3	4	5	6	
4. My child lets me know he or she needs help.	1	2	3	4	5	6	
5. My child lets me know he or she wants a game to start.	1	2	3	4	5	6	
6. My child lets me know he or she wants a game to continue.	1	2	3	4	5	6	
7. My child draws my attention to something or someone.	1	2	3	4	5	6	
8. My child makes a choice when I offer him or her options.	1	2	3	4	5	6	
9. My child greets or says/shows good bye.	1	2	3	4	5	6	

Informed by: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198

CHILD SOCIAL COMMUNICATION SKILLS - PARENT RATING

	NEVER	VERY RARELY	RARELY	SOMETIMES	OFTEN	ALL THE TIME	PRIORITY (SELECT 5)
COMMUNICATION MODES							
10. My child cries, screams, hits, or has a tantrum.	1	2	3	4	5	6	
11. My child uses simple gestures e.g. grabbing, reaching, touching, pulling or pushing.	1	2	3	4	5	6	
12. My child uses vocalisations or sounds.	1	2	3	4	5	6	
13. My child uses symbolic gestures or signs e.g. head shakes (yes/no) or signing 'up'.	1	2	3	4	5	6	
14. My child brings me toys or objects.	1	2	3	4	5	6	
15. My child exchanges a picture.	1	2	3	4	5	6	
16. My child points to pictures or photos.	1	2	3	4	5	6	
17. My child uses single words.	1	2	3	4	5	6	
18. My child uses jargon or babble.	1	2	3	4	5	6	
19. My child uses phrases or sentences	1	2	3	4	5	6	
SOCIAL INTERACTION AND ENGAGEMENT							
20. My child likes to play near or beside me.	1	2	3	4	5	6	
21. My child pays attention to me when I talk to him.	1	2	3	4	5	6	
22. My child allows me to join in his play.	1	2	3	4	5	6	
23. My child allows me to make changes or add to his play.	1	2	3	4	5	6	
24. My child shares his enjoyment by looking towards me.	1	2	3	4	5	6	
25. My child allows me to take a turn with the toy he is playing with.	1	2	3	4	5	6	
26. My child imitates my actions.	1	2	3	4	5	6	
27. My child imitates my sounds or words.	1	2	3	4	5	6	
TOTALS							

Informed by: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198

Appendix K: Intervention Rating Scale

PARENT INTERVENTION RATING SCALE

PARENT	
CHILD	
DATE	

Use this rating scale to indicate your level of agreement with the following statements regarding the parent-implemented coaching intervention you have just participated in.

Please note the following definitions for key terms used in the rating scale:

Naturalistic Instruction: Naturalistic Instruction is a collection of teaching strategies that are implemented in everyday routines. They are used to support and increase a child's learning, development and participation in these settings. Instructional opportunities are planned for, and implemented in these settings, to promote social, communication and learning skills across the day

Interaction promoting strategies: These strategies promote interaction and language between an adult and a child. These strategies promote interaction and communication that is fun and creates an environment for engagement, connection and relationship.

Parent training: Parent training is a group training program that is designed to help parents develop the skills necessary to support their child's social communication and development.

Coaching: Coaching in early intervention involves the coach (interventionist) working alongside learners (parents/caregivers) to support reflection, goal setting and refinement of strategy use. Coaching relies on a positive collaborative relationship between the coach and the learner.

	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
THE NATURALISTIC INSTRUCTION INTERVENTION						
1. This intervention has taught me to follow my child's lead in play.	1	2	3	4	5	6
2. This intervention has given me the necessary skills to improve my child's social communication skills.	1	2	3	4	5	6
3. This intervention has helped me to engage in more meaningful interactions with my child.	1	2	3	4	5	6
4. This intervention has enabled me to set appropriate social communication goals.	1	2	3	4	5	6
5. This intervention is an acceptable intervention for increasing my child's social interactions skills.	1	2	3	4	5	6
6. I would recommend this intervention to other parents.	1	2	3	4	5	6
7. This intervention is appropriate to a range of children.	1	2	3	4	5	6
8. I am willing to use this intervention at home.	1	2	3	4	5	6
9. This intervention has not resulted in negative side effects for my child.	1	2	3	4	5	6
10. This intervention was effective in supporting my child's early social communication skills.	1	2	3	4	5	6
11. This intervention was a good fit for our family and our cultural values.	1	2	3	4	5	6

Informed by: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198

PARENT INTERVENTION RATING SCALE

	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
MY EXPERIENCE OF RECEIVING TRAINING AND BEING COACHED						
12. The training workshops have equipped me to use strategies that promotes interactions with my child.	1	2	3	4	5	6
13. The training workshops have equipped me with the skills to use naturalistic instruction.	1	2	3	4	5	6
14. Coaching has helped me implement these strategies more consistently.	1	2	3	4	5	6
15. I am satisfied with the experience of being coached.	1	2	3	4	5	6
16. Coaching has increased my knowledge of interaction promoting strategies.	1	2	3	4	5	6
17. Coaching has increased my knowledge of naturalistic instruction practices.	1	2	3	4	5	6
18. The training and coaching intervention is suitable for parents.	1	2	3	4	5	6
19. Overall, being coached was beneficial to me.	1	2	3	4	5	6
20. The training and coaching intervention was a good fit for our family and our cultural values.	1	2	3	4	5	6

Informed by: Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. Professional Psychology: Research and Practice, 16(2), 191-198

Appendix L: Prompt Sheet for Informal Verbal Feedback

Post intervention parent assessment
Question 1: What did you find most useful about embedded instruction and the use of complete learning trials? Can you give examples?
Question 2: What did you find most useful about the training plus coaching intervention? Can you give examples?
Question 3: What changes have you noticed in your skills when interacting with your child at home following your participation in this project?
Question 4: What skills do you continue to focus on (your goals)?
Post intervention child assessment
Question 1: Tell me about the changes you have you noticed in your child's social communication skills now that the project is complete. Can you give some examples?
Question 2: What impact has the changes in your child's social communication skills had on his participation in your family routines and his interactions with others in his world? Can you give some examples?
Question 3: What are your child's current social communication goals?

Appendix M: Human Ethics Committee Approval Letter

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Date: 05 December 2017

Dear Estelle Pretorius

Re: Ethics Notification - **NOR 17/55** - **Examining the impact of a parent-implemented naturalistic social communication intervention for children with Autism Spectrum Disorder: A training plus coaching approach.**

Thank you for the above application that was considered by the Massey University Human Ethics

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Brian Finch
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand **T** 06 350 5573; 06 350 5575 **F** 06 355 7973
E humanethics@massey.ac.nz **W** http://humanethics.massey.ac.nz