USING DIALOGIC READING FOR MOTHERS OF CHILDREN WITH AUTISM IN SAUDI ARABIA

By

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ABSTRACT

This study aimed to: (i) examine the effect of dialogic reading on social communication, emergent literacy and engagement of children with autism, (ii) explore mothers' experience and perception of shared reading with their children and (iii) provide a set of guidelines to adapt dialogic reading for mothers and their children with autism in Saudi Arabia. To achieve that, two phases were conducted. In phase one, a single case design was used to assess the effectiveness of dialogic reading on children's behaviour. Four mothers implemented the intervention with their children with autism for a duration of five weeks. In addition, three semi-structured interviews (pre-intervention, post-intervention and follow-up) were conducted with the mothers to examine their experiences with the intervention. The findings showed that children exhibited more verbal and nonverbal social communication and emergent literacy and better reading engagement during the intervention condition compared to the baseline. Their mothers reported that dialogic reading affected their interaction with their children and that they were satisfied with the intervention. In phase two, another sample of 12 mothers of children with autism was interviewed about their perception of shared reading with their children. The interview indicated that the majority of mothers did not read with their children and some of them had reservations about reading with their children with autism. However, they had, to some extent, a good understanding of shared reading. The interviews also revealed that many of the mothers' ideas and suggestions about shared reading were similar to aspects of dialogic reading. The data from the two phases provided evidence about the feasibility of using dialogic reading for mothers of children with autism in Saudi Arabia. Finally, the study used the findings from both phases to provide a set of suggested guidelines to adapt dialogic reading in order to meet the needs of mothers and their children with autism in Saudi Arabia.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABA	Applied Behaviour Analysis
ADHD	Attention Deficit Hyperactivity Disorder
ADOS	Autism Diagnostic Observation Scale
CARS	Childhood Autism Rating Scale
CROWDS	Completion, Recall, Open-ended, Wh-question, Distancing and Special prompts
DD	Developmental Delay
DSM	Diagnostic and Statistical Manual of Mental Disorders
ESCS	Early Social Communication Scales
GADS	Gilliam Asperger's Disorder Scale
IBR	Initiating Behavioural Requests
IJA	Initiating Joint Attention
ISI	Initiating Social Interaction
LD	Language Delay
PEER	Prompt, Evaluate, Expand and Repeat
PLS-3	Preschool Language Scale-3
PND	Percentage of Non-overlapping Data
RBR	Responding to Behavioural Requests
RCT	Randomised Controlled Trial
RJA	Responding to Joint Attention
RSI	Responding to Social Interaction
SCD	Single Case Design
TD	Typical Development
VIG	Video Interaction Guidance
ZPD	Zone of Proximal Development

CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter presents the introduction of this thesis. It starts with the origins of the study, then provides the study context which includes a brief overview of autism in general and autism in Saudi Arabia. After that, the significance and theoretical framework of the study are discussed, and the research aims are mentioned. The chapter concludes by outlining the structure of the thesis and presenting a note on terminology.

1.2 Origins of the study[1]

My journey in the field of autism started when I began my undergraduate study for a special education degree in Saudi Arabia. During my undergraduate studies, I met families of children and young adults with autism. Since then, I have maintained a close relationship with a few mothers and became more involved with the community of mothers of individuals with autism. It was impressive how eager they were to learn about autism to help their children even though autism awareness was not widespread at that time in Saudi Arabia. However, one thing I have always noticed every time I listened to their experiences or had a conversation with them was the lack of family support and training. They expressed how they could not communicate with their children, which made them feel that they were failing as parents. They felt powerless as they

[1] Third-person pronouns were used in the whole thesis. Only in this section, first-person pronouns were used to emphasise the researcher's personal interest in the matter.

knew that their children needed them but did not know how to reach them. This made me aware of the urgent need to inform them with evidence-based strategies and interventions as these are based on research and are likely to be effective for their children. These strategies and interventions can help them with the difficulties that they face in communicating with their children with autism.

During my masters programme at the University of St. Thomas in the USA, I took a course about teaching literacy for children with moderate and severe learning/intellectual disabilities. For this course, I worked with an eight-year-old boy with autism in a special education school under the supervision of his teacher. This boy had a range of difficulties in communication and academic abilities. He was described as a passive communicator. He sometimes responded to requests but did not initiate communication. However, he exhibited better communication skills during shared reading time, especially when using dialogic reading which is a popular shared reading intervention in the Western world. During these times, he was always responsive and showed attempts to communicate with me, such as pointing to show me the pictures, and asking me to read by putting my hand on the text. He even initiated eye contact and joint attention with me when he smiled or laughed at pictures. Since he was less engaged in the other literacy activities (for example, alphabet knowledge and phonological awareness activities), we incorporated them during shared reading and got better results. Shared reading and dialogic reading times were our tool of communication and engagement.

This experience made me reflect on mothers of children with autism in Saudi Arabia. I thought that dialogic reading could be a great parental intervention for four reasons. First, my experience of using dialogic reading and witnessing how it helped that child with his communication made me believe in its effectiveness for children with autism. It made me believe that although

children with autism are likely to show some difficulties in communication due to their autism and the associated to the condition difficulties, it is very important that the environment and the people around them are adapted so that people with autism are supported to reach their full potential. My own positive experience in addition to the research evidence on the benefits of the intervention on children with autism made me think that it might be beneficial to introduce it to mothers in Saudi Arabia. Second, shared reading is not a very common practice in Saudi Arabia which means that some mothers might not be aware of it. Third, shared reading, dialogic reading in particular, is an easy practice to implement in real world environments, which increases the chances that mothers will use it with their children. Fourth, less attention is given to building the academic skills of many children with autism in Saudi Arabia as the focus is mainly on their social communication skills, which makes dialogic reading a good opportunity to expose them to literacy. Therefore, this study aimed to investigate the use of dialogic reading for mothers of children with autism in Saudi Arabia.

1.3 Context of the study

1.3.1 Autism

Autism is a lifelong pervasive neurodevelopmental condition that interferes with behaviours and communication (Elsabbagh et al., 2012). Autism is usually diagnosed in the early years of life and is identified by observation (Masi et al., 2017). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5, American Psychiatric Association (APA), 2013) identified two core diagnostic criteria for autism. The first one is difficulties in communication and social interaction which might include behaviours like initiating communication, responding to social interaction,

nonverbal communicative behaviours and maintaining conversation. The second criterion is exhibiting restricted, repetitive patterns of interests, activities or behaviours which might involve behaviours such as inflexibility to routines, stereotyped motor movement and fixated interests.

Autism is a global condition and its prevalence varies across countries. However, the prevalence has been increasing. Estimates in 2016 stated that around one in 54 children has autism in the USA (Maenner et al., 2020). In the UK, it was estimated that approximately 1.1% of people have autism (Brugha et al, 2012). Similarly, according to studies in North America, Europe and Asia, the average prevalence of individuals with autism was identified between 1% and 2% (Centers for Disease Control and Prevention, 2018). Autism is more likely to occur among boys than girls as studies frequently reported that for every female, four boys have an autism diagnosis (for example, Maenner et al., 2020). However, this gender ratio is being challenged recently in Western research. Loomes et al. (2017) stated that the ratio is actually closer to 1:3. They argued that there is diagnostic gender bias against females who would meet autism diagnostic criteria but not having an autism diagnosis. Indeed, Geelhand et al. (2019) stated that the socio-cultural factors and cognitions contribute to the unequal gender ratio in autism.

Individuals with autism need support as autism directly or indirectly affects their abilities to communicate, socially interact with others, be independent, behave, think and learn. Thus, many autism interventions and programmes were developed over the years targeting developmental, behavioural, communicative and cognitive aspects (Corsello, 2005). Social communication interventions are one of the most important supports provided to children with autism as communication and social interaction are the core difficulties in autism. Parental interventions also play a major role in supporting children with autism because they have countless hours and opportunities to influence the development of their children (Mahoney and Wiggers, 2007).

1.3.2 Autism in Saudi Arabia

Autism awareness has increased in the last decade in developing countries like Saudi Arabia (Al-Salehi et al., 2009). The estimate of the Saudi population in 2019 was 34,218,169 (General Authority for Statistics, 2019). To date, the prevalence of autism is still unknown, and there is no accurate data on the number of individuals with autism in Saudi Arabia (Alotaibi and Almalki, 2016). A few studies provide estimated information about the numbers of autism cases in Saudi Arabia. However, those studies have methodological issues or do not provide evidence to support their estimates. In terms of the gender distribution of autism in Saudi Arabia, autism appears to be more prevalent in males than females. Following the trends in international literature, it has been reported that boys outnumber girls in Saudi Arabia in ratios of 4:1 and 3:1 (Al-Zaalah et al., 2015; Murshid, 2011; Al-Salehi et al., 2009). Both ratios are consistent with the autism sex ratio in Western societies (for example, Loomes et al., 2017; Fombonne, 2003).

Children with autism in Saudi Arabia are usually diagnosed by doctors at public and private hospitals and clinics. Having a medical report confirming the diagnosis of autism is essential in Saudi Arabia in order to receive financial support and governmental services (Ministry of Labour and Social Development, 2019). The medical report is usually conducted by a team of specialists often including a developmental-behavioural paediatrician, a speech-language therapist and a psychologist. To diagnose autism, the team uses assessments such as the Autism Diagnostic Observation Scale (ADOS, Lord et al., 2000), the Childhood Autism Rating Scale (CARS, Schopler et al., 1980) or the Gilliam Asperger's Disorder Scale (GADS, Gilliam, 2001). ADOS is a standardised assessment based on observations of the intellectual/verbal development of the

whole age range of individuals who are suspected to have autism. It is a combination of structured and semi-structured activities in which the examiner interacts with the examinee to assess their communication, social interaction, play and imaginative use of objects (Lord et al., 2000). CARS is a rating scale conducted by clinical observations to identify children with autism by assessing 15 characteristics: relationship to people, imitation, emotional response, use of body, use of object, adaptation to change, visual response, auditory response, taste-smell-touch response and use, anxiety reaction, verbal communication, nonverbal communication, activity level, intellectual consistency and general impressions (Chlebowski et al., 2010; Schopler et al., 1980). GADS is a questionnaire assessment developed to identify individuals with Asperger's syndrome. It has 32 items assessing four subscales: social interaction, restricted patterns of behaviour, cognitive patterns and pragmatic skills. The assessment is completed by parents or teachers (Gilliam, 2001). However, it is important to acknowledge that CARS and GADS are more likely to be considered as screening tools rather than diagnostic tools. For example, Park et al. (2018) suggested using CARS for the purpose of screening children who are suspected to have autism and then using ADOS as an additional measurement. While ADOS does not have an Arabic version, both CARS and GADS have Arabic versions. The medical reports should mention that the child has autism; however, only a few reports mention the diagnosis assessment used and the score.

The medical report also assesses children's verbal skills. Standardised tests, such as the Preschool Language Scale-3 (PLS-3, Zimmerman et al., 1992) and non-standardised tests are used. PLS-3 is a standardised assessment tool used to evaluate receptive and expressive language skills for young children from birth to six years old. It has two subscales: auditory comprehension and expressive communication. The tool measures children's language

development using tasks and activities in addition to a checklist and a questionnaire which is completed by parents (Zimmerman et al., 1992). Then, the decision of the child's verbal ability is made. In addition to autism, the medical report mentions any additional diagnosis/es. It is common for the autism population to have additional diagnosis/es (Simonoff et al., 2008). In Saudi Arabia, the most common disorder which tends to co-exist with autism is Attention Deficit Hyperactivity Disorder (ADHD), while other diagnoses include learning/intellectual disabilities, epilepsy, cerebral palsy and psychiatric comorbid problems (Alnemary et al., 2017a; Hussein et al., 2011; Al-Salehi et al., 2009).

In terms of the educational placement, children with autism in Saudi Arabia usually have three options: (i) attending mainstream schools with autism inclusion programmes, (ii) attending autism centres or (iii) staying at home. In 2000/2001, the General Secretariat for Special Education in the Ministry of Education established autism inclusion programmes to include students with autism in mainstream schools (Al-Mousa, 2010). To enrol students with autism into inclusion programmes in a mainstream school, the following criteria must be met:

- The student's age should be between six and 15 years old for admission.
- The student should not have challenging behaviours that prevent them from benefitting from the educational programme.
- The student should be diagnosed by a team of specialists.
- The student should be subject to a period of observation for no less than a full semester before issuing the final acceptance or non-acceptance.

- The student should get the approval of the Special Committee according to the regulations of the institutions and programmes of special education.

- The student remains in the programme until the end of it or until the student reaches the age of 21, whichever comes first (Ministry of Education, 2019).

However, enrolling children with autism in mainstream, private or public, schools is difficult (Zeina et al., 2014). The mainstream schools that have autism inclusion programmes are limited and accept very small numbers of students with autism. Thus, most children with autism are referred to autism centres. A study reported that 88.5% of its sample (227 families) mentioned that autism centres played a major role and effectively contributed to their children's treatment (Al-Zaalah et al., 2015). Autism centres in Saudi Arabia focus mainly on developing independent living, language and social communication skills. On the other hand, autism centres pay less attention to academic skills and usually do not provide educational programmes. Unlike the classrooms in primary schools, centres usually have only a few children per classroom with two teachers (Babatin et al., 2016; Alhudaithi, 2015). The majority of autism centres in Saudi Arabia are private while the public ones are few and located only in the big cities. The Saudi government usually pays the whole or part of the private centres' fees (depending on some factors such as the amount of a centre's cost and the family's income) as part of the governmental financial support for children with disabilities.

The third option of educational placement for children with autism is staying at home. The main reason children with autism might stay at home is that there is no place for them in mainstream schools or autism centres or that their families could not afford the private schools or centres even with the financial support. Athbah (2015) gathered information about 170 Saudi children

with autism and found that 46% of the sample attended centres while 24% attended school. The rest of the sample (30%) were staying at home. Athbah reported that parents were complaining about not having enough public centres. In another study with a sample of 205 families, 42% of children with autism received services at centres while only 14% of the sample were educated in schools. For the other 44%, the home was their educational placement (Alnemary et al., 2017a). The studies concluded that a high percentage of children with autism in Saudi Arabia did not attend either mainstream schools or autism centres. Staying at home means that the responsibility of teaching those children lies with their parents. There is no regulation for training parents whose children stay at home which means these parents might not be prepared to teach their children with autism.

1.4 Significance of the study

This study aimed to fill the following three research gaps: the need for autism shared reading interventions, the need for parental interventions in Saudi Arabia and the need for non-Western autism research and interventions.

1.4.1 The need for autism shared reading interventions

Reading profiles of children with autism may include difficulties in word recognition, decoding, reading accuracy and comprehension (Nation et al., 2006). Language and early literacy development during the first years can predict later reading achievement (Missall et al., 2008) which means that those reading difficulties in children with autism can start from the early childhood years (Davidson and Weismer, 2014). Therefore, there is a need for providing early

literacy support for children with autism in order to prevent future reading difficulties (Fleury and Lease, 2018). One of the important and common practices that can support early language and literacy development in children is shared reading (Boyle et al., 2019). Shared reading can affect future reading comprehension skills which can be beneficial for children with autism (Hudson et al., 2017).

Teachers and parents are encouraged to use shared reading interventions to develop language and early literacy skills of their children with autism aged between two and 14 years (Boyle et al., 2019). However, there is a lack of shared reading interventions for children with autism. Only one systematic review of shared reading for autism was found in which only 11 studies were identified (Boyle et al., 2019). In general, knowledge about early literacy skills and instructions for children with autism is relatively lacking (Fleury and Schwartz, 2017). Therefore, the present study aimed to investigate the use of dialogic reading, a shared reading intervention, for children with autism. However, the study used the intervention mainly to examine its effect on social communication and reading engagement of children with autism as they are likely to have difficulties in those skills which usually make it hard for them to participate in literacy activities without instructional support (Fleury and Schwartz, 2017). In addition to social communication and reading engagement, children's print awareness, a component of emergent literacy, was also included in the target investigated skills to examine if the intervention has a potential effect on emergent literacy.

Moreover, using a shared reading intervention for children with autism in Saudi Arabia is more significant because as mentioned above (see 1.2 Origins of the study), in Saudi Arabia, less attention is usually given to improve the academic skills, including literacy, of many children with autism. Lawson et al. (2012) argued teaching literacy should not be abandoned as a result of

favouring teaching communication skills to students with severe learning/intellectual disabilities. However, this is usually the case in Saudi Arabia for children with autism. Particularly in autism centres, teachers usually see building social communication and independent living skills as the main goal of teaching, which is likely to lead them to ignore teaching literacy skills.

1.4.2 The need for parental interventions in Saudi Arabia

Saudi Arabia has a growing interest in autism and put great efforts into improving autism research and services. The interest and efforts are evidenced by encouraging autism research, offering scholarships to medical and graduate students who are interested in the field and providing financial support for individuals with autism, such as receiving a monthly allowance and covering autism centres' costs (Alnemary et al., 2017a; Hussein and Taha, 2013). However, Saudi Arabia still has issues regarding autism support which are mainly related to the availability of interventions, especially parental interventions.

Parents of children with autism express their needs for training support and interventions to help their children (Babatin et al., 2016; Al-Aoufi, 2011). Their need for this kind of support exceeds their need for financial support (Alotaibi and Almalki, 2016). Moreover, it is critical to provide parents with evidence-based inteventions to increase awareness and opportunities of using these interventions with their children with autism. Alqahtani (2012) interviewed a sample of Saudi parents of children with autism and found that they did not use behavioural, developmental or educational interventions. Thus, this study aimed to support mothers with an evidence-based intervention to use with their children with autism. Additionally, providing parental interventions is significantly helpful for parents whose children do not attend mainstream schools and autism

centres. More about the situation of parental interventions in Saudi Arabia is discussed in the literature review chapter (see 2.3.3.1 Parental early interventions for children with autism in Saudi Arabia).

1.4.3 The need for non-Western autism research and interventions

Most of the research in human psychology and behaviour uses samples from Western, Educated, Industrialized, Rich and Democratic (WEIRD) nations (Henrich et al., 2010). Particularly in the field of autism, the majority of studies were conducted in Western societies, mainly the United States and Western Europe (Kossyvaki, 2017). This situation is problematic because it narrows the understanding of autism, especially when considering the strong relationship between autism and culture. Culture affects how autism is perceived, diagnosed and understood and the relevant interventions which are put in place (Freeth et al., 2014). One of the most popular examples that explains how understanding autism is related to culture is the issue of eye contact. Even though the fixation about eye contact has become less, lacking eye contact is still considered as a sign of autism in Western societies (DSM-5, APA, 2013). The issue, however, is that the act of eye contact has different interpretations depending on the culture. For instance, while maintaining eye contact is a sign of paying attention and that the listener is engaged with the speaker in the White American society, in Chinese and Asian American cultures, maintaining eye contact may be interpreted as a sign of disobedience and challenge (Liu, 2005). Thus, non-Western autism research is needed to broaden the understanding of autism and individuals with autism.

Therefore, there is a significant need to have more non-Western research in the field of autism. The present study aimed to contribute to the building of non-Western autism research by

conducting a research project in Saudi Arabia. Conducting research in other countries and cultures will enrich the understanding of autism and make interventions more relevant and accurate (Kossyvaki, 2017; Freeth et al., 2014). More importantly, conducting more non-Western and cross-cultural research about autism can have tremendous benefits for individuals with autism and their families in those cultures. It can help the field of autism to understand how they perceive autism and to identify their needs in the light of their own culture.

Conducting autism research in Western societies also means that most autism interventions are originally developed in Western cultures (Fong and Lee, 2017). Applying those interventions for children with autism from other cultures only because they work in Western societies can be very inefficient if not dangerous. Non-Western families may not be interested in some Western interventions because they target behaviours that may not be a priority for those families. Parents from different cultures may choose different interventions because they may look differently at the importance of certain behaviours. Perepa (2014) interviewed parents of children with autism from four different ethnicities (Somali, South Asian, West African and White British) within the UK to investigate the cultural influence of the importance of several social behaviours. He found that the cultural background of the families was one of the factors that influenced parents' decisions of what social behaviours they believed children with autism should learn. While Somali and West African parents rated eye contact as the most important skill, South Asian and White British chose following social rules and respecting personal space as the important ones.

Cultural background plays an important role in the type of interventions that families seek for their children with autism (Ravindran and Myers, 2012). However, there might be an issue when all the available interventions in a society are coming from a different culture. For example, the government of Saudi Arabia aims to increase interest in autism by sending autism professionals

to study and to be trained abroad in the USA and European countries. Those Saudi professionals, as is the case of the researcher, learn Western interventions and are trained by Western professionals who are likely not to be fully aware of the Arab culture. Then, the Saudi professionals return to Saudi Arabia and train parents in these interventions which were developed for different needs in different cultures. Thus, this study aimed to adapt a Western intervention in order to provide a culturally sensitive intervention for Saudi mothers of children with autism. A good culturally sensitive intervention recognises and respects the cultural context of participants and their needs (Fong and Lee, 2017).

1.5 Theoretical framework

Before discussing the theoretical framework of this study, a brief overview of how autism is perceived in Saudi Arabia is presented. Understanding the perception of autism in Saudi Arabia adds to the importance of the theoretical framework followed in this study. Thus, the overview explains the medical model of disability, which is followed in Saudi Arabia. After that, the theoretical framework of this study is presented.

The perception of autism in Saudi Arabia is highly impacted by the medical model of disability. The medical model of disability views the disability as a physical or mental problem that the individual has, which requires medical attention and treatments to cure it if possible (Silvers, 1998, cited in Goering, 2002). The influence of the medical model of disability is particularly clear in Saudi autism research. Firstly, there has been an increase of interest in autism in the medical field compared to the educational field (Athbah, 2015). In addition, both medical and non-medical autism research use medical terminology. Terms such as ‘abnormality’, ‘deficits’,

‘treatment’ and ‘cure’ were mentioned a lot in almost all Saudi published studies. Even some non-medical research has seemed to view autism as a medical condition. For instance, in a study investigating parents’ beliefs about autism, most of the interview questions were about the cause and cure of autism (Alqahtani, 2012). Furthermore, medical personnel are seen as the experts in the field of autism in Saudi Arabia, and parents often seek exclusively their support, help and advice (Al-Zaalah et al., 2015).

The medical model of disability has been criticised in the field of autism because it treats autism as an illness that is not a ‘normal’ condition. The risk of seeing autism as an ‘abnormality’ is that it makes the goal of interventions to achieve normality, as much as possible, in the communication, interaction and behaviours of individuals with autism (Shyman, 2016). As a result of framing autism within the medical model of disability in Saudi Arabia, many parents aim to use specific interventions in order to ‘cure’ autism which explains the increase of using biomedical interventions (for example, medications, special diets) and traditional cultural interventions (for example, camel milk intake, cauterisation: using hot metals for skin application, Aboushanab and AlSanad, 2019) and the lack of using educational interventions (see 2.3.3.1 Parental early interventions for children with autism in Saudi Arabia). The approach is dangerous as it leads to seeing autism as a tragedy, refusing to accept individuals with autism and their differences, focusing on the difficulties and what they cannot do and using harmful interventions. Therefore, the social model of disability, which opposes of the medical model, has been used in the field of autism. The social model views the disability as a social creation (Shakespeare, 2006). In the social model, the lack of fit between people with impairments and the society leads to disability (Goering, 2002). While the medical model aims to make individuals with disability fit their society, which implies that their environment is fixed, the

social model draws attention to the environmental and social barriers which cause the difficulties in the lives of people with disabilities (Burchardt, 2004). Thus, individuals with disabilities should be supported by their environment and the people around them.

However, rather than following the medical or the social model of disability independently, the present study followed the biopsychosocial model of disability as its theoretical framework. The biopsychosocial model incorporates elements from both the medical and social models of disability by acknowledging both the individual's impairment and social and environmental barriers (Petasis, 2019). The biopsychosocial model is a compromise approach between the medical and the social model of disability and views disability as an interaction between physical/biological (for example, age, sex, sensory sensitivities), psychological (for example, behaviour, theory of mind and communication difficulties) and social factors (for example, cultural contexts, parents' expectations) (Bath et al., 2014). Following this theoretical approach, the present study acknowledged the social communication difficulties in children with autism (bio-psycho elements) and aimed to support them by modifying their mothers' interaction style and reading behaviours (social elements) during shared reading. Dialogic reading can support the mothers' interaction and reading style, which in turn breaks down the barriers of communication between them and their children with autism and improves the latter's social communication skills.

In addition, this study drew upon the sociocultural theory of learning and development. Similar to the social model of disability, the sociocultural theory of learning and development highlights social and environmental aspects. It was originally developed by Vygotsky and argues that learning and development are socially constructed and culturally specific (John-Steiner and Mahn, 1996). The theory highlights the important role of social interaction in children's learning

and development. The social interaction during joint activities between children and adults (for example, parents and teachers) enables children to acquire essential knowledge and useful strategies for understanding and participation (John-Steiner and Mahn, 1996). The present study explored the interaction between mothers and children with autism in a shared reading context. In fact, dialogic reading, the intervention used in this study, is developed based on the Zone of Proximal Development (ZPD) which is one of the Vygotskian concepts of the sociocultural theory of learning and development. More about the ZPD is presented when discussing dialogic reading in the literature review chapter (see 2.5.2 Dialogic reading).

1.6 Research aims

The study aimed to achieve the following aims in the context of Saudi Arabia:

- To explore the effectiveness of dialogic reading on the social communication, emergent literacy and reading engagement of children with autism
- To explore mothers' experience and perception of shared reading with their children with autism
- To provide a set of suggested guidelines to adapt dialogic reading to meet the needs of mothers of children with autism

1.7 Structure of the thesis

This thesis includes the following seven chapters. Chapter 1 (this chapter) provides the origins of the study and an overview of the study context. It also presents the significance of the study followed by its theoretical framework. Chapter 2 reviews the literature related to this study. The literature review contains four topic-specific parts: social communication development, parental interaction and parental early interventions, shared reading and dialogic reading. Each part starts with information related to children with typical development (TD), and then focuses on children with autism. The literature also includes sections on parental early intervention for children with autism in Saudi Arabia and shared reading in the Arab world. Chapter 3 discusses the methodology followed for the study in which two phases were conducted. In phase one, four mothers participated to implement the dialogic reading intervention with their children with autism. Phase one aimed to examine the intervention effectiveness on children's participation and mothers' experiences of using dialogic reading. Phase two interviewed another sample of 12 mothers of children with autism to examine their perception of shared reading in order to assess the usefulness and suitability of using such an intervention in the Saudi context. The chapter also provides details about the research aims and questions, research design, sample, intervention procedure, data collection methods, analysis and ethical considerations. Chapter 4 contains the findings of phase one of the study. The results of the children and their mothers who participated in the dialogic reading intervention are presented case by case for each child. Chapter 5 includes the findings of phase two of the study. Following the thematic analysis approach, the results of the mothers' interviews are presented by themes related to shared reading. Chapter 6 discusses the findings of both phases. First, the effect of the intervention on children with autism is discussed. Then, the feasibility of using dialogic reading for mothers is presented. After that, the

chapter presents guidelines for adapting dialogic reading for mothers of children with autism in Saudi Arabia. Finally, Chapter 7 summarises the main findings of the whole study. It then discusses the contribution of the study to the field followed by the limitations of the study. The chapter concludes by presenting directions for future research.

1.8 A note on terminology

The term autism is used throughout this thesis. As the study did not follow the medical model of disability, terms like disability and disorder were not used, in this thesis, to describe autism (for example, Autism Spectrum Disorder). In this thesis, the term autism refers to the whole autism spectrum. In addition, the term learning/intellectual disability is used in this thesis. Both terms learning disability and intellectual disability are used in research, and there is no agreement on which term should be used. One term might be more popular than the other depending on the region. For example, the term learning disability is used more in the UK, and the term intellectual disability is used more in the USA (Cluley, 2017). Saudi Arabia also uses the term intellectual disability. In this thesis, the term learning/intellectual disability is used as it combines both terms.

In terms of the language used to refer to the autism community, there is person-first language, which is a structural form that puts a person before referring to a diagnosis/disability (for example, children with autism). In contrast, there is also identity-first language, which is a structural form that puts the diagnosis/disability before the person (for example, autistic children; Gernsbacher, 2017).

As there is no universally accepted term for referring to the autism community, the researcher of the present study conducted a brief exploration of Saudi autism research to identify the preferences of the autism community and their families. However, she was not able to find information regarding this issue. In one study in the field of Saudi disability research, Alariefy (2017) mentioned that the study used person-first language 'persons with disability' to make the study more acceptable to Saudi society because terms like 'disabled persons' are viewed as inappropriate. The researcher of the present study agreed with this explanation taking into account her own experiences as a Saudi autism practitioner. She knows many Saudi families of individuals with autism who prefer person-first language and dislike using the term 'autistic' to describe their children. Therefore, even though the researcher acknowledged that identity-first language is preferred in the Western autism community and more commonly used recently, person-first language is used in the thesis.

However, Gernsbacher (2017) argued that the problem of person-first language is that while its core principle is treating everyone as a person first, the reality is that person-first language is only used with people with disabilities. On the other hand, people without disabilities are usually described with identity-first language (for example, typically developing children). Thus, the study used person-first language to describe both children with and without autism (for example, children with TD).

1.9 Summary

This chapter presented the introduction of this thesis. It provided the origins and the context of the study. It also discussed the significance and theoretical framework of the study. Then, it

mentioned the research aims and briefly outlined the structure of the thesis and presented a note on terminology. The next chapter is the literature review which presents in detail the literature relevant to this study. The literature review includes the following four topic-specific parts: social communication development, parental interaction and parental early interventions, shared reading and dialogic reading.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This study aimed to examine the effectiveness of dialogic reading on social communication, emergent literacy and reading engagement of children with autism and explore mothers' experience and perception of shared reading in Saudi Arabia. This chapter reviews the relevant literature in four topic-specific parts. Each part starts with an introduction presenting the sections included and ends with a summary reviewing the part and connecting it to the next one. The first part examines the verbal and nonverbal social communication development of children with autism. Since parents play an important role in developing children's social communication development, the second part discusses parental interaction and parental early interventions for children with autism. After that, the third part focuses on shared reading for children with autism because shared reading depends largely on parent-child interaction and usually has a positive effect when used as a parental intervention. Then, the fourth part focuses on dialogic reading which is the shared reading intervention that this study investigated. The fourth part ends with a conclusion discussing how previous studies used the intervention for children with autism. Finally, the chapter concludes with an overall summary.

Before discussing the literature review, it is important to mention that the literature related to Saudi Arabia and the Arab world in this chapter (see 2.3.3.1 Parental early interventions for children with autism in Saudi Arabia and 2.4.3.1 Shared reading in the Arab world) was limited to English language sources (English published articles, English dissertations). The literature did

not include Arabic sources unless they were government documents. The present study recognised that the decision only to include sources in English might have limited the literature. Including Arabic sources may have provided more information, leading to enriching the literature and discussion. However, the decision was made after the researcher conducted an exploration of the Arabic sources. The exploration revealed a lack of Arabic sources concerning the topics of the present study (autism in Saudi Arabia and shared reading in the Arab world), and the few relevant Arabic sources were outdated (published in the 1980s and 1990s). Additionally, the Arab world encourages using English as a language of research (Al-Aufi, 2012). Particularly, over the past few decades, Saudi universities and research centres have focused on publishing research in English journals. The recent and most reliable research would be published in English. Therefore, this limitation did not largely impact the literature review.

2.2 Part One: Social communication development

2.2.1 Introduction

The focus of this part is on the social communication development of children with autism. First, the terms communication and social communication are defined and explained. Then, social communication development in children with TD is presented to help understanding social communication development in children with autism. The section examines verbal social communication and nonverbal social communication in separate sections because they may have different stages of development rather than developing at the same time. After that, the development of verbal and nonverbal social communication for children with autism is

discussed. Finally, the theories that are presumed to explain the social communication difficulties in children with autism are presented.

2.2.2 Social communication

According to the Oxford English Dictionary (2000), the verb 'to communicate' means 'to convey one's thoughts, feelings, etc., successfully or effectively; to gain understanding or sympathy.' Human beings communicate from birth. Without learning the purposes of communication, infants succeed in conveying messages to parents or caregivers through their movements and cries. Children then learn to use communication to achieve various purposes such as seeking comfort or requesting a drink (Buckley, 2003).

Bogdashina (2005) defined communication as 'the transmission and reception of information' (p.21). In order for communication to occur, it is necessary to have a sender send a message, a receiver to receive it, a message to communicate, a communicative intent and a medium of communication to convey the message. The medium of communication could be nonverbal means (including eye gaze, facial expression, body language, gestures and symbols), linguistic or verbal means (referring to the use of language; spoken, written and sign language) or a combination of both verbal and nonverbal means (Bogdashina, 2005; Buckley, 2003). For communicative intents, children, by the end of their first year, communicate in order to express three intentions (Wetherby and Prizant, 1993, cited in Wetherby, 2006; Bruner, 1981):

1. Behavioural regulation, communicating to regulate the behaviours of another person in order to achieve desirable ends (for example, requesting and protesting objects).

2. Social interaction, communicating to direct another person's attention to themselves for the purpose of affiliation (for example, greeting and calling).

3. Joint attention, communicating to draw another person's attention to objects or events of interest in order to share them with others (for example, pointing at objects and showing objects to others).

In terms of autism, the DSM-IV (APA, 1994) had one autism diagnosis criterion for difficulties in communication and another one for difficulties in social interaction. However, the DSM-5 (APA, 2013) combined both criteria into one core criterion and used the term 'social communication'. The social communication criterion included communication and social interaction behaviours such as social-emotional reciprocity, social interactions, nonverbal communicative behaviours and maintaining relationships. Merging both categories was important since communication skills are the core of social interaction (Buckley, 2003). The term 'social communication' refers to a broad range of verbal and nonverbal communication behaviours that are used in social interaction (Wetherby et al., 2007). This study uses the term social communication in the same way as the DSM-5 (APA, 2013) and Wetherby et al. (2007) used it.

2.2.3 Social communication development in children with TD

Discussing the typical developmental milestones in social communication is critical because it plays an important role in understanding social communication development in children with autism. Examining how social communication typically develops reveals the similarities in social

communication between children with TD and children with autism. It also helps to understand the different ways in which social communication develops in children with autism. This section examines both nonverbal and verbal social communication separately. Exploring them separately is important since verbal and nonverbal social communication skills of children with autism do not usually develop side by side. The section covers the social communication development from birth to five years old because children's basic skills (including those of verbal and nonverbal social communication) often start to emerge during their first five years (Fernald et al., 2009).

2.2.3.1 Nonverbal social communication development in children with TD

Infants seek communication with their parents or caregivers from birth. They exhibit a range of social and communicative behaviours during their first months (Buckley, 2003). Before the end of their first year, the development of joint attention starts. The term 'joint attention' refers to the coordination between the child's attention and their communicative partner's attention in order to share an experience of events or objects. Infants start joint attention by looking at what others are looking and pointing at and giving objects when others request them (Mundy et al., 2010; Mundy and Newell, 2007). Table 1 presents the development of nonverbal social communication skills in children with TD from birth to five years old based on The Early Years Foundation Stage (EYFS, 2012) and Buckley (2003).

Table 1: Nonverbal social communication in children with TD

Age	**Nonverbal social communication**
Between birth and three months	- Seek contact with others - Enjoy their company

Between three and nine months	- Make eye contact with others - Gaze at others' faces and copy their facial movements - Show a range of emotions - React to others' emotions, such as smiling when someone smiles - Participate in turn-taking - Show interest in what others are doing
Between nine and 12 months	- Learn to shift gaze between caregivers and objects to see if they are attending to the objects - Follow caregivers' direction of pointing and gaze to something of interest - Use a combination of looking, gestures and vocalisations to make comment, protest or request
Between the first and second year	- Start to communicate with others for more social reasons - Begin to build a relationship with caregivers - Attract caregivers' attention in a variety of ways - Draw caregivers into social interaction
Between the second and third year	- Show affection and concern for special people like family members - Express feelings and respond to others' feelings and wishes - Be interested in watching others' play and occasionally join them - Increase flexibility in attention until being able to shift focus from activity to verbal direction and back to activity again - Respond to simple instruction
Between the fourth and fifth year	- Demonstrate friendly behaviours - Seek out the companionship of peers and enjoy it - Play in groups and cooperate with peers - Shift attention spontaneously from activity to what someone says and back to activity - Follow instructions of two-part sequences

2.2.3.2 Verbal communication development in children with TD

Speech development begins from birth, involving babies' production and perception of sounds. Children start to understand words and use conventional language at the end of their first year (Tager-Flusberg et al., 2005). Then, their vocabulary size rapidly increases, and they start using language for social and communicative purposes, also known as pragmatics. The term 'pragmatics' refers to the rules that govern an individual's use of language in conversation and social context (Bogdashina, 2005). It includes understanding and using socially appropriate language for relevant contexts (Whyte and Nelson, 2015). Pragmatics enable the person to use language to communicate different meanings (for example, greeting, answering questions and making requests), to adapt to the listener's needs (for example, talking to children differently than talking to adults) and to hold a conversation (for example, looking at the speaker and taking turn during the conversation; Bates, 1976, cited in Buckley, 2003). Table 2 provides the development of verbal social communication in children with TD from birth to five years old based on different sources (EYFS, 2012; Bogdashina, 2005; Tager-Flusberg et al., 2005; Buckley, 2003).

Table 2: Verbal social communication in children with TD

Age	**Verbal social communication**
Between birth and six months	- Respond to speech by looking towards the speaker - Make sounds such as vowel-type sounds in response to the speaker - Recognise their own names and the names of family members - Start to produce consonant sounds - Participate in back-and-forth vocalisation games with caregivers

Between six and nine months	- Look towards the speaker when calling their name - Stop activity in response to ‘no’ - Enjoy babbling with a range of consonants - Vocalise to request things
Between nine and 12 months	- Use sounds when they play - Use single words - Make a verbal response when others request them to do so (for example, say bye-bye) - Experiment with using vocalisation to communicate with others
Between the first and second year	- Name familiar objects - Begin to put two words together - Start to ask questions - Talk about things and people that are not present - Communicate by combining speech-like vocalisations and gestures - Use 100 words average of expressive vocabulary at 18 months
Between the second and third year	- Use simple sentences or three-word phrases - Start to use grammatical structures - Initiate and hold a conversation, jumping from one topic to another - Talk about past and future events - Learn very rapidly new words and use them to communicate - Use an average of 300 words of expressive vocabulary at 24 months - Use an average of 900 words of expressive vocabulary at three years - Use spoken language as a medium of communication by the third year

Between the fourth and fifth year	- Understand sentences which have up to six key words - Understand and use basic grammatical structures - Use a range of tenses, pronouns and articles correctly - Begin to use more complex sentences - Tell stories including an evaluation of their elements - Express new communicative functions such as projecting, imagining and narrating - Use 1500 words average of expressive vocabulary at four years

2.2.4 Social communication development in autism

Social communication weaknesses have been considered an essential feature of autism since Leo Kanner's definition of autism in 1943 (Arciuli and Brock, 2014). Indeed, social communication difficulties are universal in individuals with autism across ability levels and ages regardless of heterogeneity of their language abilities (Tager-Flusberg et al., 2001). Social communication weaknesses generally take place early in life in children with autism and may appear well before identifying other developmental difficulties and receiving a diagnosis of autism. Communication disruption is often the trigger for parents and caregivers to seek professional consultation about their children (Keen, 2014). The following sections present nonverbal and verbal social communication development in children with autism.

2.2.4.1 Nonverbal social communication development in autism

Signs of nonverbal social communication struggles are likely to be presented in children with autism during their first year (Landa et al., 2007). They may have difficulties in joint attention,

symbolic and conventional gestures and symbolic play which are typically developed throughout the first and second year of life (Wetherby et al., 2004). However, not all children with autism have nonverbal social communication difficulties early in their life. Some children exhibit typical development or mild delay until the age of 15 to 24 months, after which they show difficulties in their nonverbal social communication skills (Landa et al., 2007; Werner and Dawson, 2005). Landa et al. (2007) compared social communication skills in a sample of infants who either had TD, an early autism diagnosis (receiving the diagnosis before 14 months of age) or a late autism diagnosis (receiving the diagnosis after 14 months of age). The findings stated that children with an earlier autism diagnosis demonstrated difficulties in initiating joint attention, gaze shift, gestures, shared positive affect (looking at someone while smiling), and initiation of behaviour regulation bids by 14 months of age. On the other hand, children with a later autism diagnosis (after 14 months of age) were similar to the TD group with the frequencies of social communication behaviours at 14 months of age. Children with a later autism diagnosis only differed on the frequency of the gaze shift variable as they presented fewer gaze shifts compared to children with TD. However, by 24 months, the social communication behaviours of children with a later autism diagnosis were similar to those with an earlier autism diagnosis. The researchers indicated that their findings suggested that autism 'has a progressive phase involving a developmental arrest, slowing, or even regression in social and/or language systems' (p. 865). The study concluded that some children with autism might exhibit social communication difficulties at an early age, while others might show those difficulties at a later age, which explained the different ages at which autism diagnosis occurred.

In contrast, Swain et al. (2015) compared nonverbal social communication abilities such as eye gaze, joint attention and gestures between children with an early diagnosis of autism and children

with a late diagnosis and found that both groups shared similarities in their social communication difficulties at 12 months. In other words, Landa et al. (2007) found that the social communication profile was different between children with an early and a late diagnosis at the age of 14 months while no clear differences were found between them at the age of 12 months in the study of Swain et al. (2015). The contradiction in findings might be due to the great variations in the definitions of earlier and later diagnoses. While Landa et al. (2007) defined early and late diagnosis groups as meeting diagnostic criteria before or after the age of 14 months, Swain et al. (2015) identified them as meeting diagnostic criteria before or after the age of five years. This means that both Landa's early and late diagnosis groups (receiving an autism diagnosis before or after the age of 14 months) could be included in Swain's early diagnosis group of children who received a diagnosis under the age of five.

Nevertheless, both studies indicated that children with autism have difficulties with nonverbal social communication behaviours when compared to children with TD. Landa et al. (2007) showed that the autism group had less social communication and play behaviours such as joint attention and shared positive affect. Swain et al. (2015) also found clear differences in communication abilities between children with autism and their peers with TD in the social composite (for example, eye gaze and gestures) and in the symbolic composite (for example, symbolic play). Similar results were found by other studies that compared nonverbal social communication profiles in children with autism to their peers with TD using different assessments and different sample ages (for example, Wetherby et al., 2007; Wetherby et al., 2004). They all concluded that the nonverbal social communication of children with autism has weaknesses and differences in comparison to children with TD.

In addition to the TD group, research indicated that children with autism also differ in their nonverbal social communication from other groups such as children with language delay (LD) and developmental delay (DD). For example, Stone et al. (1997) compared a group of children with autism to a group of children with DD and/or LD between the age of 25 to 39 months. Children were assessed by a structured communication assessment the authors developed and called Prelinguistic Communication Assessment (PCA), involving 16 situations developed for eliciting commenting (acts used to direct the attention of the examiner to an object or event) or requesting behaviour. The findings showed differences between nonverbal social communication of children with autism and children with DD/LD groups. Children with autism showed less communication and were less likely to initiate joint attention than the other group. 33% of communicative acts of the DD/LD group was for the purpose of commenting while the percentage of commenting in the autism group was less than 1%. In addition, children with autism showed fewer acts of eye gaze, gestures combined with commenting (such as pointing and showing objects) and complexity (such as associating eye gaze, gesture and vocalisations) compared to the DD/LD group. On the other hand, children with autism were found to be more likely to request action or objects when they communicated. They showed more acts of direct manipulation of the tester's hand which served the function of request.

Stone et al.'s results aligned with Wetherby et al. (2007) who investigated social communication profiles in 50 children with autism and 23 children with DD with a mean age of 21 months. The researchers compared children's skills using the Communication and Symbolic Behaviour Scales Behaviour Sample (CSBS BS, Wetherby et al., 2002) which involved 14 social communication items categorised into three composites: social composite (including gaze shifts, shared positive affect, gaze/point follow, rate of communicating, acts for behaviour regulation, acts for social

interaction, acts for joint attention and inventory of gestures), speech composite (including an inventory of consonants and inventory of words) and symbolic composite (including understanding, inventory of play actions, pretend to play actions and stacking blocks). The study showed that children with autism scored significantly lower than the DD group on five communicative measures: gaze shifts, gaze/point follow, rate of communication, acts for joint attention, and inventory of conventional gestures. Both the Stone et al., (1997) and Wetherby et al. (2007) studies agreed that children with autism showed lower scores than the DD/LD group in some nonverbal social communication behaviours, such as joint attention, eye gaze and gestures. However, while Wetherby et al. (2007) did not find differences between the autism and DD groups in the communication act with requesting function, Stone et al. (1997) found that children with autism exhibited more request acts. Those different results might be because of the different assessments used in the two studies.

When looking at nonverbal social communication profiles from all the previous studies, it appears that they all found that children with autism experienced weaknesses in joint attention. Indeed, delay and weaknesses in joint attention are one of the early indicators of autism (Wetherby et al., 2007). Children with autism have difficulties in joint attention involving coordinating their attention with others via gaze shifting, responding to others' attempts to share attention and initiating attempts to grab others' attention to share experiences with them (Landa et al., 2007). They also experience difficulties with joint attention skills, such as gaze shift, spending time in joint engagement and following others' attentional focus via gaze or pointing (Stone et al., 1997). Mundy et al. (2010) studied 30 years of autism and joint attention research and summarised what they found in the following points. First, children with autism exhibit less joint attention than their peers with TD and peers with DD. Second, infants at risk of autism

exhibit less initiating and responding to joint attention as early as the age of 15 to 18 months. Third, children with autism tend to have more weaknesses in initiating joint attention than responding to joint attention. Finally, early interventions that focus on joint attention impact the social learning of children with autism, which indicates that difficulties in joint attention have a critical role in the development of children with autism (Mundy et al., 2010).

In relation to joint attention, nonverbal social communication difficulties also include social orientation which is defined as a spontaneous orientation to social stimuli that naturally occur in children's environment. As joint attention, weakness in social orientation is one of the earlier social difficulties in autism and might contribute to other social communication difficulties that emerge later (Dawson et al., 1998). In their experimental study, Dawson and colleagues (1998) assessed the ability to orient to name calling and hand clapping (social stimuli) and to a rattle and a musical toy (non-social stimuli) in children with autism, Down's syndrome and TD. The results demonstrated that children with autism showed more frequent failures in orientation to both social and non-social stimuli compared to the other two groups. Also, their performance for social stimuli was worse than their performance towards non-social stimuli. Similar results were found when Dawson et al. (2004) replicated and extended the previous study by using a larger and younger sample of children with autism, DD and TD and a larger number of social stimuli (humming, calling the child's name, snapping fingers, and patting hands on thighs) and non-social stimuli (timer beeping, phone ringing, whistleblowing, and recording of a car horn). The study demonstrated that young children with autism showed weaknesses in responding to social and non-social stimuli and performed significantly worse than the DD and TD groups. Their responses to social stimuli were less than to non-social stimuli, which also aligned with Dawson et al. (1998).

2.2.4.2 Verbal social communication development in autism

Over the years, the focus on the language aspect of autism has changed. In the past, severe speech and language disorder was essential for an autism diagnosis to be given (Creak, 1964, cited in Arciuli and Brock, 2014). Bartak et al. (1975) stated, more than four decades ago, that 'language disability is probably necessary for the behavioural syndrome of autism' (p. 142). Forty years ago, the DSM-III (APA, 1980) mentioned 'gross deficits in language development' as one of the criteria that were required to have an autism diagnosis. Then after 14 years, DSM-IV (APA, 1994) stated that 'delay in, or total lack of, the development of spoken language' is one of the diagnostic criteria. However, it was mentioned as an optional criterion which did not need to be met to have a diagnosis of autism. Recently, on the other hand, when describing the core criterion of social communication difficulty, DSM-5 (APA, 2013) emphasises nonverbal communication and pragmatic interaction while it does not reference language development, including all individual variation in language abilities (Arciuli and Brock, 2014). Thus, while impairment in language development was a defining characteristic of autism at one time, it became an optional diagnostic feature, and it is now no longer considered a diagnostic criterion (Gernsbacher et al., 2016).

This shift in emphasis on the language aspect occurred when research established that language ability can differ significantly among people with autism (Nevill et al., 2019). While some children with autism do not develop the ability to speak or are considered minimally verbal, others demonstrate age-appropriate language skills, with a few having superior language ability (Arciuli and Brock, 2014). Research in the past reported that the rate of nonverbal individuals with autism was approximately 50% of the autism population (Bryson et al., 1988). However, more recent research indicates that the number of individuals who does not develop any

functional verbal skills is in fact less than 50%. For example, Anderson et al. (2007) stated that 25% - 30% of individuals with autism are nonverbal. Additionally, Bacon et al. (2019) used one of the largest natural language samples containing toddlers with autism, LD and TD at age three and found that only a small number of toddlers with autism met the definition of nonverbal or minimally verbal. Only 3.7% of children with autism used no words at all, and 34% had fewer than 20 words (17% of them had fewer than five words).

The contrast of the rates of verbal children with autism between older and more recent research might be due to the changes in autism diagnostic criteria and inconsistencies in the definitions of verbal abilities. For example, there is a lack of a clear definition of the term 'preverbal' or 'minimally verbal' children. Studies that examined language development in children with autism had different definitions of the term. The definitions had criteria ranging from fewer than five words to fewer than 20 spoken words (Bacon et al., 2019; Tager-Flusberg and Kasari, 2013). In the present study, the term minimally verbal is used to describe children who have less than 10 intelligible spoken words as it is explained in the methodology chapter (see 3.6.3 Sample and setting). In addition, the different rates of verbal children with autism might be also explained by the increase in the number of children with autism who develop verbal skills. This increase is the result of the increase in autism awareness and detection, the increase in earlier diagnosis and the increase of early interventions (Bacon et al., 2019; Zwaigenbaum et al., 2015; Dawson and Bernier, 2013; Eigsti et al., 2011).

However, this shift does not suggest that individuals with autism do not have difficulties in verbal social communication. On the contrary, research indicates that language difficulties are present in all people with autism; even the ones whose language skills are age-appropriate usually have difficulties with pragmatics which means using language in the social interaction

context (Arciuli and Brock, 2014; Eigsti et al., 2011; Bartak et al., 1975). Pragmatics are a socially motivated domain in language, and they are considered as the most impaired domain in autism (Eigsti et al., 2011). Difficulties in pragmatic comprehension are evident in children and adults with autism even if they have a normal range of intelligence (Loukusa and Moilanen, 2009). For example, Reichow et al. (2008) used standardised measures to assess the pragmatic abilities in 35 participants with autism, between three and 15 years of age, who had high functioning abilities. The results confirmed weakness in the social communication area. While participants scored at a high level on formal aspects of language subtests, they scored near the bottom on the pragmatic judgment subtest (assessing the understanding of the use of language in real-life contexts) and the inference subtest (assessing the ability to derive meaning from previous knowledge).

Similar findings were established by Bacon et al. (2019) who found that children with autism had communication problems beyond the difficulties seen in children with LD when looking at the use of language in social interaction instead of language standardised assessments. Compared to children with LD, the language that children with autism used in social situations was significantly different at the age of three. Both the LD and autism groups showed a reduction in the use of words. However, the autism group also exhibited fewer initiations, responses to parents and use of wh-questions while the LD group initiated the interaction, responded to their parents and used wh-questions. Therefore, since children with LD did not show difficulties in social communication aspects, lower language ability in children with autism cannot account for the difficulties in social communication (Bacon et al., 2019). However, the autism and LD samples in Bacon et al.'s (2019) study were not matched in language abilities. The language assessments revealed that children with autism had lower language skills. Moreover, while

children were assessed before they were three years old, 55% of the LD group were not classified as having LD when they were evaluated again at three years old. Nonetheless, the study, alongside Reichow et al. (2008), indicated that individuals with autism showed evidence of weakness in pragmatics regardless of their language abilities.

In addition to pragmatics, a usual characteristic of children with autism related to verbal social communication is echolalia. The term echolalia means the repetition or imitation of other's spoken language. Echolalia usually appears in two types: immediate echolalia which is the imitation of language just heard and delayed echolalia which is the imitation of language heard in the past (after a short or a long period of time; Bogdashina, 2005). In the past, echolalia was considered non-functional and undesirable behaviour in children with autism. More recently, research indicates that it may actually serve specific functions (Tager-Flusberg et al., 2005). Prizant and Duchan (1981) stated that immediate echolalia had seven functional categories: categories that had a communicative purpose (turn-taking, request, affirmative answers and declarative) and categories that had a non-communicative purpose (non-focused, self-regulatory and rehearsal). For delayed echolalia, Prizant and Rydell (1981, cited in Prizant, 1983) stated 14 functions in two categories: categories that had communicative purpose (turn-taking, verbal completion, labelling, providing information, protest, calling, request, affirmation and directive) and categories that had non-communicative purpose (non-focused, self-directive, situation association, labelling and rehearsal).

A third important characteristic in autism is that language acquisition and development is generally delayed compared to typical language development. A large number of studies have reported that compared to their peers with TD, children with autism had less receptive language, which means the child's ability to understand language, and expressive language, which means

the child's ability to produce language (Gernsbacher et al., 2016). For example, Brignell et al. (2018) compared language patterns between children with autism and children with TD from four to seven years and found that the mean scores in the receptive and expressive language of children with autism were lower than their peers with TD. Likewise, Bacon et al. (2019) used the Mullen Scales of Early Learning (MSEL, Mullen, 1995) to compare the language profile between 109 children with autism and 61 children with TD at the age of three. The findings showed that children with autism scored less in the receptive language (31.5) and in the expressive language (30.9) subtests compared to the scores of their peers with TD (55.1 in receptive language and 55.4 in expressive language subtests).

In addition to the comparison between children with autism and children with TD, studies have also measured the expressive and receptive language abilities of children with autism to compare them to each other. However, less agreement was found among the results of those studies which resulted in three hypotheses. The first one is that expressive language is more developed than receptive language in children with autism. Hudry et al. (2010) examined the language profile in a large sample of 152 children with autism between 24 to 59 months of age whose language abilities varied from nonverbal to age-appropriate language abilities. To measure language, three different assessment techniques were used: one direct clinician assessment, the Preschool Language Scales - 3rd Edition (PLS, Zimmerman et al., 1992); and two parent-report assessments of language, the MacArthur – Bates Communication Development Inventory (MCDI, Fenson et al., 1993) and the Vineland Adaptive Behaviour Scales II (VABS, Sparrow et al., 2005). The results indicated that children with autism showed more difficulties in their receptive language compared to their expressive language ability. The findings aligned with Charman et al. (2003) who used the MCDI (Fenson et al. 1993) to investigate the language

abilities of 134 children with autism with a mean age of three years old. They found that word production of children with autism was notably in advance compared to their word comprehension, which had more delay.

In contrast, the second hypothesis argues that the receptive language abilities are better than the expressive language abilities in children with autism. Chan et al. (2005) studied the language characteristics of 46 children with autism from five to six years old. The results indicated that children with autism were likely to have better receptive language abilities than expressive language ones. 21% of the sample exhibited typical development in language comprehension but had difficulties in expressive language. On the other hand, none of the children had typical development in expressive language while showing difficulties in receptive language. These findings were also supported by one of the findings of Weismer et al. (2010) who used different assessments to investigate the language abilities of 257 toddlers with autism. When using the VABS II (Sparrow et al., 2005), children's receptive language skills were higher than their expressive language skills. However, the two other assessments showed that children's expressive language exceeded language comprehension.

The third hypothesis indicates that there is no variation between receptive and expressive language in children with autism. Brignell et al. (2018) measured the language abilities of children with autism when they were four, five and seven years old. Across the three time points of data collection, no significant difference was found between the expressive language and receptive language domains. The different hypotheses regarding the two language domains (expressive and receptive) might be explained by the variety of samples and assessments. For example, the sample of Chan's study (2005) were Chinese while the majority of other studies' samples were Western. In addition, using assessments that are different in nature (for example,

direct clinician assessments versus parent-report assessments) might lead to having different results. Overall, all the studies agreed that children with autism, in general, are likely to have weaknesses in their expressive and receptive languages.

2.2.4.3 Theories related to social communication difficulties in autism

This section discusses the cognitive accounts that explained the difficulties in social communication for children with autism. Most of the section discusses the social cognitive theory (including the theory of mind) since it mainly accounts for the problems in the social domains. In addition, other theories (executive functions and weakness in central coherence) are briefly explained in the section.

Social communication difficulties in children with autism are presumed to be explained by alterations in social cognition (Isaksson et al., 2019). The term social cognition refers to the mental processing of stimuli that are related to understanding agents and their interactions (Happé et al., 2017). Social cognition combines several cognitive process components including:

a. social attention, which refers to the automatic capture or conscious choice of attention an individual pays to social stimuli;

b. social motivation, which refers to the factors that influence the tendency and quantity of social interaction;

c. emotion recognition, which means an individual's ability to recognise someone's affective state;

d. empathy, which means an individual's ability to adopt the same affective state of someone;

e. action recognition and imitation, which refers to an individual's ability to recognise an action that is performed by someone and then the ability to reproduce that action by the individual;

f. Theory of Mind (TOM), which is defined as the ability to explain and predict human behaviour in terms of intentions and mental states (Happé et al., 2017; Sodian and Thoermer, 2008).

Research examined social cognition in individuals with autism and indicated alterations in their social cognition abilities. For example, Isaksson et al. (2019) used a naturalistic social cognition assessment called the Double Movie of the Assessment of Social Cognition—Multiple Choice (MASC, Bölte et al., 2014) which is based on a narrative fictional film that contains verbal and nonverbal stimuli of social interaction. Participants were asked to watch the film and answered questions about the mental states, emotions and intentions of the characters. The study found that the autism group had reduced social cognition compared to the TD group. In addition, alterations in social cognition abilities were found to be associated with autism, autism severity and autistic traits. This means that after adjusting for shared factors including age, sex, socioeconomic status and shared environment, the alteration of social cognition was still associated with autism. More than that, even after controlling the shared genetic background in monozygotic twins, the association among social cognition, the severity of autism and the traits of autism remained.

To explain the association between social cognition components and the social communication difficulties in autism, the following example is given. The lack of social motivation, which is a

component of social cognition, is likely to be related to the lack of social communication skills in children with autism (Landa et al., 2007; Bogdashina, 2005). Toddlers with TD are likely to attend to and engage in joint attention and other communicative behaviours because of the shared affective experience that accompanies those acts. When an infant shows an object of interest (initiates joint attention), the behaviour is often accompanied by mutual delight between the infant and the adult (affective exchange) which typically is rewarding to the infant. However, in autism, failing to find affective sharing reward might make the child less motivated to participate in those social exchanges which are essential for acquiring social communication skills (Dawson et al., 2004). Toddlers with autism seem to lack the motivations that are required to initiate and respond to communication and to share experiences (Landa et al., 2007).

In addition to social cognition, other theories have also been proposed to explain aspects of social communication difficulties in autism, such as executive functions and weakness in central coherence. Executive functions refer to a set of mental processes and goal-directed tasks including planning, organising, inhibitory control, cognitive inhibition, working memory, shifting attention and cognitive flexibility (Tager-Flusberg et al., 2001). Problems in executive functions may explain difficulties that children with autism experience in engaging in reciprocal social interactions which need an evaluation of different context information and appropriate responses (Bennetto et al., 1996). Children with autism who have executive function problems are likely to struggle with the initiation of social interaction and being flexible in social response (Brunsdon and Happé, 2014).

Finally, central coherence refers to the tendency to integrate information in context for meaning. Children with autism are likely to have weakness in central coherence because they tend to focus on details and process information locally rather than globally (Noens and van Berckelaer-

Onnes, 2008). While some studies could not find an association between central coherence problems and social aspects in children with autism (for example, Morgan et al., 2003), weakness in central coherence may affect the social communication in children with autism. Communication and social interaction require the integration of several auditory and visual cues in order to understand the social situation. Without central coherence, children with autism in this situation have disconnected pieces that do not make sense without placing them in context (Brunsdon and Happé, 2014; Noens and van Berckelaer-Onnes, 2008).

2.2.5 Summary

This part of the literature review focused on social communication development in autism. It started with communication and social communication definitions. Then, the typical development of nonverbal and verbal social communication was explained to help to understand the differences in social communication development between children with TD and children with autism. After that, the verbal and nonverbal social communication of children with autism were discussed. The discussion included several studies in which their findings suggested that children with autism usually show nonverbal social communication difficulties, such as problems with joint attention and gestures. In addition, the findings also showed that verbal social communication weakness such as pragmatic difficulties are common in children with autism. They are also more likely to have a receptive and expressive language delay. Finally, this part closed with a discussion of theories that explain social communication difficulties in children with autism.

As mentioned at the beginning of the section, social communication needs two participants to occur: a sender and receiver. Since social communication skills develop during children's early years of life, parents are more likely to be their children's communication partner during the process of learning those skills. This means that parent-child interaction and parental early interventions play an essential role in children's social communication development. Therefore, the next part discusses parental interaction and parental early interventions for children with autism.

2.3 Part two: Parental interaction and parental early interventions

2.3.1 Introduction

This part presents parent-child interaction and parental early interventions for children with autism. It starts with a brief introduction about parental interaction style for children with TD, and then discusses parental interaction style for children with autism. The critical role that parental interaction plays on children's social communication development highlights the importance of parental early interventions to help parents provide their children with more effective interaction. Therefore, the discussion moves to a section about parental early interventions for children with autism. After that, a subsection about parental early interventions for children with autism in Saudi Arabia is presented.

2.3.2 Parental interaction style

During the early period of typical development, parents establish and maintain joint attention with their infants by using two interactive strategies. They continually engage their young children in routine interactive activities such as playing, and they focus their communication on their children's attention, communicative signals and activities (Siller and Sigman, 2008). Parents also use countless opportunities to develop their children's verbal social communication skills by encouraging them to participate in verbal interactions in which they expand on their children's utterances, ask them questions and monitor their comprehension (Crain-Thoreson et al., 2001). Research indicated that parents who follow their young children's focus of attention and activities and provide language input related to those situations have children developing language skills faster than the children of parents who do not follow their children's interests and do not provide language input (Crowell et al., 2019).

For children with autism, parental interaction style widely varies (Wan et al., 2012; Siller and Sigman, 2002). Studies described two common interactive styles that parents usually use with their children: responsive/sensitive and directive approaches. Responsive/sensitive (synchronous) parental style occurs when parents tend to be sensitive to the child's own interests, and their responsive communication behaviours contribute to keeping with what the child is doing in the activity (Hudry et al., 2013). Parental sensitive style during interaction is found to be linked to developmental communication and language skills in children with autism. Siller and Sigman (2002) found that children with autism whose parents exhibited more synchronisation with their children's attention during play activities developed superior social communication skills such as joint attention over a long-term period (one, 10, and 16 years) than children of parents who showed less synchronisation. Similar findings were reported in another study by the same

researchers (Siller and Sigman, 2008) in which pattern change in language skills of children with autism were evaluated. The results indicated that one predictor of children's language growth was parents' responsiveness toward their children's interest. Children whose parents responded more to their children's focus of attention and activities during play interaction developed language at a faster rate compared to children of parents who had lower levels of responsive behaviours toward their children during play.

The second common interaction style is directive (asynchronous) parental style which occurs when parents of children with autism tend to redirect their children's attentional focus and modify their behaviours and activities (Hudry et al., 2013). Studies found that parents of children with autism tend to be more directive and less sensitively responsive (for example, Patterson et al., 2014; Wan et al., 2012). Freeman and Kasari (2013) examined parent-child interaction during free play time of 16 parents of children with autism and 16 parents of children with TD. The results showed that parents of children with autism controlled the activities and commanded their children by using verbal request, gesture and hand-over-hand prompt more than parents of children with TD. Those behaviours resulted in shorter play routines compared to when the child controlled the play. Unbalanced directive-oriented behaviours between a parent and a child during interactions usually affect the mutual interaction by reducing it (Freeman and Kasari, 2013). Moreover, directing children's attention instead of following their own focus during interaction limits children's opportunities to improve their social communication skills (Hudry et al., 2013).

When the interactive behaviours of parents of young children with autism and parents of children with TD were compared, both similarities and differences were found. Kasari et al. (1988) investigated parent-child interaction during play among children with autism,

learning/intellectual disabilities and TD. The findings indicated that parents of children with autism respond to their children's nonverbal communication bids in a similar way as the other parents. Parents of children with autism also did not differ in their engagement with their children in the mutually sustained play. However, parents of children with autism used more control strategies than parents of children with TD. They were observed spending more time holding their children physically on task. The researchers also found that in the autism sample, parents of the more communicatively able children showed more mutual play, provided more positive feedback and regulated the behaviours of their children less. The findings in the study were similar to Freeman and Kasari's (2013) study identifying controlling behaviours in parents when interacting with their children with autism. In addition to Kasari et al. (1988), Siller and Sigman (2002) examined parents' behaviours during play interaction with their children. They found that parents of children with autism did not differ from parents with children with TD and parents of children with DD in synchronising their verbal and nonverbal behaviours to their children's focus of interest.

Therefore, both Kasari et al. (1988) and Siller and Sigman (2002) indicated that parents of children with autism were as responsive as parents of children with TD. However, while Kasari et al. (1988) found that parents of children with autism used more directive strategies than parents of children with TD, Siller and Sigman (2002) indicated that both groups had a sensitive interaction style with their children. An explanation for the contrast may be that children of Siller and Sigman's studies were matched on language age, mental age and maternal education age while the sample in Kasari et al.'s study was only matched on mental age and maternal education age. The difference in language and communication abilities between the autism and TD groups

may explain why parents of children with autism exhibited more directive behaviour in Kasari et al.'s (1988) study.

The previous explanation which indirectly suggested that the abilities of children with autism influence the nature of parent-child interaction has some research evidence. For instance, Hudry et al. (2013) indicated that children's language ability is associated with the interaction between parents and children with autism. Better language skills may support and help children to engage with their parents in interactive situations. In addition to language, children's social communication, in general, can affect the nature of parent-child interaction in autism. The less children with autism performed nonverbal and verbal social-communicative behaviours, the more their parents exhibited behaviours such as initiating activities, eliciting their children's own attention and physically holding them on task, and the less time parents engaged with them in mutual play (Kasari et al., 1988). Another factor influencing parent-child interaction in autism is non-social communication behaviours such as restricted/repetitive behaviours. Hudry et al. (2013) stated that the symptom of repetitive behaviours contributes to the nature of the interaction between parents and their children with autism. Restricted/repetitive behaviours may interrupt parental focuse to follow children's interest and also may limit the attentional focus of children. As a result, the ability to sustain shared attention is reduced for both parents and their children. In conclusion, it seems that children with autism who exhibit more language skills and social communication behaviours and show less repetitive behaviours are more likely to engage in parent-child interaction (Hudry et al., 2013; Kasari et al., 1988).

While the previous factors may affect parents' interaction style with their children with autism, it is also true that children's social communication behaviours can be shaped by their nurturing environment to some extent (Kasari et al., 1988). Harker et al. (2016) stated that parental

interactive style makes an important contribution to the social engagement development of children with autism. They studied mothers' engagement with their infants with autism and found a positive association between a high level of maternal responsive interaction and a high level of social smiling in infants at high and low risk of autism. On the other hand, a high level of maternal directive interaction was associated with slower growth in infants' social smiling. These findings along with all the previous ones presented above highlighted the importance of providing parental early interventions in order to encourage parents to become more responsive to their children. Therefore, the next section discusses parental early interventions for children with autism.

2.3.3 Parental early interventions for children with autism

This section presents the importance of parental early interventions in general. Then, the research on parental early interventions for children with autism is discussed. Since several studies have examined parental early interventions for children with autism, the section only focuses on the literature that reviewed the effect of those interventions. The discussion is also limited to the interventions that targeted social communication skills and parent-child interaction since these are the focus of this study. After that, the section discusses parental early intervention for children with autism in Saudi Arabia as this study aimed to implement a parental intervention in Saudi Arabia.

Parental early interventions provide parents with interaction and communication strategies to use with their children to help develop children's social communication abilities (Beaudoin et al., 2014). It prompts enjoyable parent-child interaction and help to maximise children's potential for

developmental learning in their daily interaction with their parents (Kim and Mahoney, 2004). Mahoney and Wiggers (2007) argued that parents should play a major role in early interventions for three important reasons. The first reason is based on Bronfenbrenner's ecological systems theory, which examines the relation and accommodation between the child's development and the surrounding environments. The theory highlights the important role of parents in influencing their children's early development by interacting with them to enable them to learn in their natural environment and daily routines (Bronfenbrenner, 1979). The second reason is that parents have countless opportunities to influence their children's development (Mahoney and Wiggers, 2007). The rationale behind this reason is that young children spend most of their day with their parents at home (Meadan et al., 2009) which, in turn, enables children early access to interventions (Oono et al., 2013). The final reason is related to the effectiveness of early interventions. Mahoney and Wiggers (2007) indicated that early interventions seem to have an effect on children's developmental skills only when they affect parents' interacting style with their children. Therefore, it is important for interventions with children with autism to focus not only on children's communication skills but also to focus on the responsiveness and sensitivity of parents' or caregivers' communication (Keen, 2014).

Research on parental early intervention for children with autism reported positive results for both children and their parents. McConachie and Diggle (2007) reviewed studies that investigated parental interventions for children with autism between the age of one and six. 12 studies including randomised controlled trials (RCTs) and controlled group studies met the review inclusion requirements. The results of those studies suggested that parental training interventions improved children's social communication skills and parent-child interaction. Moreover, the interventions also positively affected parents' interaction style and their knowledge of autism and

may have reduced parents' depression and stress level. The results were consistent with another systematic review in which 17 studies focusing on parent-mediated interventions for children with autism were examined by Oono et al. (2013). The authors found that parental early interventions improved parent-child interaction and increase children's language abilities, particularly in the receptive language domains. However, Oono et al. (2013) did not find statistical evidence of improvements in children's social communication skills as a result of parental interventions, which did not align with McConachie and Diggle's (2007) results. One explanation of the results conflict might be due to the different ways of measuring social communication skills that the studies examined. For example, Oono et al. (2013) reported results on specific aspects of social communication involving children's initiation and joint attention while McConachie and Diggle (2007) reported results about social communication in general.

In addition to the previous systematic reviews, Beaudoin et al. (2014) conducted a systematic review of 15 studies involving interventions implemented by parents for children with autism from birth to three years old. The study reported inconsistent but substantial results of children's social communication aspects, such as the number of understood and expressed words and the frequency of eye contact, joint attention and imitative behaviours. The increase of verbal social communication agreed with the results of Oono et al.'s (2013) and McConachie and Diggle's (2007) reviews while the increase of nonverbal social communication consisted with the results of McConachie and Diggle's (2007) review. For parents' outcomes, Beaudoin et al. (2014) stated that parental interventions improved parents' skills and attitudes. Parents reported a high rate of satisfaction and were able to implement the interventions with a high level of fidelity, which indicated the acceptability and feasibility of parental early interventions for children with autism. Similar findings were reported by a review of parental communication interventions for children

with autism (Lang et al., 2009). The review identified six studies in which the social validity of the intervention regarding parents' views of the intervention training, their satisfaction and the increase in their children's skills were investigated. Parents reported high rates of effectiveness, satisfaction and feasibility in all the studies (Lang et al., 2009).

On the other hand, parental early interventions may come with challenges. One of the basic aspects of interventions that could be a challenge is practicality (Barnett et al., 1999). Can parents have enough time to implement an intervention with their children with autism? Koegel (2000) argued that asking parents to schedule specific times to implement an intervention with their children may not be convenient for parents and may increase their stress. Thus, he encouraged the introduction of parental interventions that can be fitted into families' routines and lifestyles so that parents do not feel overwhelmed, which in turn decreases parental stress. This approach would also provide children with many opportunities to improve their skills in their natural environment during the day (Koegel, 2000). Interventions should support parents taking advantage of natural learning opportunities. Therefore, it is important for parental early interventions to occur in the context of families' daily routines rather than out of the context (Rantala et al., 2009).

2.3.3.1 Parental early interventions for children with autism in Saudi Arabia

This subsection presents parental early interventions and also parental interventions in general for children with autism in Saudi Arabia. Before presenting what is known from research about parental interventions in Saudi Arabia, the subsection discusses parents' educational level, their knowledge of autism and their choice of interventions for their children. Those aspects are

presented to gain a comprehensive understanding about parents which may have an association with the situation of parental interventions in Saudi Arabia. First, the subsection starts with the parents' level of education and level of autism knowledge. Then, the common interventions that parents usually use with their children are mentioned. After that, research about parental interventions with children with autism is discussed.

Little is known about parents of children with autism in Saudi Arabia due to the lack of research involving parents. A few studies investigated parents' views and perceptions regarding autism and autism services. In general, it seems that parents of children with autism have a high level of education compared to the whole Saudi population. Al-Aoufi (2011) collected information from 251 families of children with autism and found that half of the mothers and fathers in those families had a bachelor's degree, and another 9% completed postgraduate level. Similarly, Alnemary et al. (2017a) reported that 50% of their participating parents had a bachelors' or a higher degree. It is interesting to note here that the level of education of both samples (50% or more) exceeded the percentage of people with graduate degrees (23.7%) in the general population in Saudi Arabia in 2017 (Alnemary et al., 2017a).

Two explanations can be given as to why it appears that many parents of children with autism are highly educated in Saudi Arabia. The first one is that parents who have a higher level of education are more likely to notice their children's developmental difficulties and then seek professional help. Indeed, even beyond Saudi Arabia, children of highly educated parents tend to receive their autism diagnosis at an earlier age (Fountain et al., 2011). However, a more likely explanation is that parents who participate and give consent for their children's participation in Saudi autism research are the ones who have a higher educational level. If this is the case, the findings of autism studies in Saudi Arabia should be interpreted with caution, taking into account

that the samples do not represent the actual autism population. Also, it is important to reach parents with lower educational levels or uneducated parents to engage them in research.

Discussing parents' educational level leads to their level of autism knowledge. Evidence suggests that to some extent, parents in Saudi Arabia are knowledgeable about autism. When Athbah (2015) interviewed parents about their beliefs regarding autism, he concluded that more than half of the sample had an appropriate knowledge about autism and were able to define autism properly. He also found that 50% of the sample emphasised the fact that autism is not a disease. Similarly, Alnemary et al. (2017a) used the Autism Knowledge Questionnaire (Schwartz and Drager, 2008) to examine Saudi parents' knowledge regarding autism aetiology, diagnosis and specific features. The results showed that parents gained high scores in the questionnaire, especially on the subscale of the Criteria Necessary for Diagnosis, Descriptive Features and Social Communication Features. Having a child with autism may encourage parents in Saudi Arabia to be self-learning about autism and use sources such as the Internet, television and books to educate themselves about autism (Athbah, 2015; Al-aoufi, 2011). However, it seems that their knowledge was mostly related to understanding autism and its features. While assessing this type of knowledge is essential to know how autism is understood by parents in Saudi Arabia, it is also important to assess other types of knowledge such as their knowledge of interventions, the available autism services and support and how to access them. It has been reported that Saudi parents of children with autism are not aware of the importance of early interventions and early intervention services for their children (Omar, 2014), and that Saudi parents, in general, have a lack of awareness about their children's rights (Dubis, 2015).

In relation to education, an association may exist between parents' educational level and the interventions and services they choose for their children. Alnemary et al. (2017a) reported that

mothers who have a graduate degree are more likely to have children who started receiving interventions at an earlier age. On the other hand, mothers who do not have a graduate degree are more likely to choose more cultural and religious interventions for their children with autism. Alnemary et al. (2017a) mentioned that those mothers may not be aware of educational interventions examined by research. This explanation may support the previous theory that parents with less education attainment may be less involved in autism research compared to parents with higher educational attainment.

As seen above, parents' educational level might be a factor of parents' choice of interventions for their children with autism. However, it seems that culture has the most influence on their choice of interventions. It was found that cultural interventions, such as reciting the Quran, were the most frequent interventions that parents of children with autism use (Alqahtani, 2012). In a similar way, in a study with 227 Saudi families, 42.2% reported that they used a traditional (cultural) therapy such as cauterisation (using hot metals for skin application; Aboushanab and AlSanad, 2019) and/or Roqia (reciting the Quran) to treat their children with autism (Al-Zaalah et al., 2015). Moreover, Alnemary et al. (2017a) investigated the interventions that parents use for their children with autism. 205 parents were asked to choose from a list of 29 interventions which were grouped into three categories: non-medical interventions (for example, ABA and speech therapy), biomedical interventions (for example, medications and special diets) and cultural and religious interventions. The last category included 'reciting the Quran, honey diet, religious/traditional healers, camel milk intake, goat milk intake and herbs and homeopathic treatments' (Alnemary et al., 2017a, p. 594). The authors found that families used all three intervention categories: non-medical interventions (94%), biomedical interventions (88%) and cultural and religious interventions (84%).

The popularity of cultural and traditional interventions might raise two concerning issues. The first one is when a cultural intervention is considered harmful or potentially harmful for children. For example, some religious/traditional healers in Saudi Arabia use cauterisation which is painful and put children with autism in danger. Therefore, it is critical that autism professionals increase families' awareness regarding those practices. On the other hand, the mission of increasing awareness may be difficult since some of those interventions (for example, cauterisation) have religious roots. Practitioners, in this case, need to use sensitive approaches to negotiate with families. They should start by asking parents about their beliefs about the cause of the disability, their reasons for choosing those interventions and what they are hoping to get from using them in order to understand parents' decisions and then guide them (Ravindran and Myers, 2012).

The second issue of increasing the use of cultural and traditional interventions is that relying on them may narrow the opportunities for families to use educational interventions. Alqahtani (2012) interviewed 47 parents of children with autism to investigate the interventions they chose for their children. When asked what would help their children with autism, cultural interventions were used a lot. On the other hand, behavioural, educational or developmental interventions were completely absent from parents' answers. However, this might also be explained by their lack of awareness about educational interventions. It is common that non-Western communities have difficulties assessing information about interventions and education programmes. Increasing parents' awareness by helping them to access the latest interventions is important to improve the outcomes of children with autism (Freeth et al., 2014). Practitioners in Saudi Arabia should inform parents about behavioural and educational interventions to increase their awareness about the available interventions (Alqahtani, 2012).

In addition to the lack of awareness, there is also a lack in autism interventions. Saudi research about autism interventions is very limited, which is also the case of Arab research. Alnemary et al. (2017b) examined autism research in Arab countries between 1992 to January 2014 and identified 124 publications which 39.4% (56) of them were Saudi. Out of those 142 publications, only 13 articles (9.2%) were about autism interventions. The review did not provide information about those studies, so it is unknown how many of them were Saudi. Nevertheless, the small number is an indication of the scarcity of autism intervention research in Saudi Arabia. Alotaibi and Almalki (2016) suggested that the Saudi government and researchers should focus more on autism research to provide highly important interventions and other types of information that would be significantly useful to children with autism and their parents.

Subsequently, there is a lack in Saudi autism research that involved parents even though parents are usually eager to participate in research (Athbah, 2015). Saudi parents want parental training services and support to help them with their children with autism (Babatin et al., 2016; Al-Aoufi, 2011). In fact, their need for information and support exceeds their need for community services and financial support (Alotaibi and Almalki, 2016). Thus, research in parental interventions and family training and support should be provided to them to assist them with their children with autism (Hussein and Taha, 2013).

Saudi parental intervention research is almost non-existent. To the best of the researcher's knowledge, only a few studies investigated interventions for parents of children with autism in Saudi Arabia. For example, Eid et al. (2017) investigated the effects of training parents to implement the Discrete Trial Teaching (DTT) programme which is a method of teaching using systematic instructions, prompts and reinforcement. A multiple probe design was used, and three mothers and their children with autism between four to six years old participated in the study.

During the baseline, mothers were given a list of DTT steps and were asked to use those steps when teaching their children. Then, the mothers went through training with a therapist and practised implementing DTT with their children for 10 trials. After that, post-training probes occurred similar to those in the baseline sessions. Data were collected during the baseline, training and post-training conditions. The findings indicated that the training improved the mothers' implementation during the training and post-training trails. The mothers stated that what they learned was important and enjoyed participating in the intervention.

Another Saudi parental study was conducted by Alquraini et al. (2018) who assessed the feasibility of a relationship-based intervention, called Responsive Teaching (RT) with 28 mothers and their young children with autism. The intervention was about encouraging mothers to engage in highly responsive interactions with their children to prompt their development. The intervention ran for a duration of four months using an RCT. The findings showed that the intervention was highly effective at helping mothers to improve modifying their interactive style with their children. Compared to the control group, mothers in the intervention group scored higher in the Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO, Roggman et al., 2013) which measures parenting behaviours in four domains: affection, responsiveness, encouragement and teaching. However, the PICCOLO was used only as a post-intervention assessment. Not having pre-intervention scores made it impossible to ensure that the RT group's behaviours increased as a result of the intervention because of the possibility of pre-existing differences between the groups. On the other hand, the pre- and post-intervention children's assessments showed a dramatic increase in the social, language and fine motor skills of children with autism in the intervention group. Both Alquraini et al. (2018) and Eid et al. (2017) indicated that mothers of children with autism in Saudi Arabia

benefited from participating in the interventions and were able to modify their behaviours and teaching strategies with their children as a result of their participation.

In addition, Hemdi and Daley (2016) conducted a psychoeducation intervention delivered via WhatsApp for mothers of children with autism. However, the study mainly examined the effect of the intervention on mothers' wellbeing. The intervention included five sessions: What is autism?, Stress, Managing behaviour, Mood and Resources for families. The study found a significant mothers' reduction in stress and depression but not anxiety. Mothers also reported that their children's autism symptoms were reduced.

The authors of the studies did not mention the reason for choosing mothers to participate instead of using fathers or both parents. However, having mothers as participants is expected since the majority of participants in Saudi autism studies involving parents were mothers. For instance, when Al-aoufi (2011) sent a questionnaire to families of children with autism, 79.1% of mothers responded while only 14.2% father responded, and 6.7% of responses arrived from other family members. The author interpreted her findings by the fact that in Saudi Arabia, mothers are the primary caregivers compared to fathers. Her other explanation was regarding the gender segregation system in the Saudi culture. Al-aoufi sent the questionnaire through autism centres most of which have only female staff, which means that they would approach mothers and not fathers. Likewise, Athbah (2015) conducted a questionnaire and found that mothers were the most common respondents. He mentioned that the reason might be due to the fact that mothers spend more time with their children with autism than fathers in Saudi Arabia. On the other hand, Western research also has more mothers participating in parental interventions. Flippin and Crais (2011) conducted a systematic review of parents' involvement in early autism interventions and found a great lack of fathers' involvement in those interventions.

In addition to mothers' involvement, another point that might be worth mentioning when talking about parental interventions in Saudi Arabia is the lack of cultural considerations. It seems that Saudi autism intervention and parental intervention studies do not usually consider or mention cultural adaptations when implementing interventions. They use interventions and methodologies which are often Western-based and apply them without assessing the need for cultural modifications. As a result, a contradiction between the studies and the Saudi culture sometimes occur. For example, the intervention procedure of Alquraini et al. (2018) included video observation to assess mothers' interaction and to provide mothers with the opportunity to observe themselves when they used the intervention. However, the study failed to consider the Saudi cultural concerns regarding video recording women. While mothers had signed the consent forms in which they agreed to be video recorded, 'after the study began the majority expressed extreme reluctance to participate in this aspect of the study for cultural reasons' (Alquraini et al., 2018, p. 7). To solve the conflict, the authors used in-person observation to record mothers' style of interaction rather than video observation. Indeed, Alkhalifah and Aldhalaan (2018) highlighted the importance of cultural consecrations when introducing autism telehealth services. They conducted an overview about telehealth services for family children with autism in rural areas in Saudi Arabia and stated that there are many obstacles due to culture and religion which emphasised the need to adapt these services. Thus, there is a need for autism research that considers the context of the Arabic countries and cultures when determining effective and efficient interventions (Hussein and Taha, 2013).

2.3.4 Summary

Parental interaction affects children's verbal and nonverbal social communication. Two parental interaction styles for children with autism have been identified by research: responsive/sensitive and directive approaches. Parents of children with autism are more likely to use a directive approach. Hence, they are recommended to use more responsive/sensitive approach. Parental early interventions have been proven to be effective in modifying the parents' interaction style. Studies have showed that parental early interventions have positive effects on parental interaction style which in turn help children's verbal and nonverbal social communication. In Saudi Arabia, it appears that there is a lack of parental early interventions for children with autism which might be a result of the lack of awareness about the importance of early interventions and the popularity of traditional and cultural interventions. Another reason might be the lack of research on parental interventions in general which increases the need for conducting more studies implementing interventions with Saudi parents and their children with autism.

While parental early interventions have a promising impact on parent-child interaction and children's social communication, parents, for practical reasons, might find it hard to implement parental early interventions. Thus, it is best to integrate parental interventions into parents' and children's daily routines. Shared reading interventions are good examples because they can perfectly be fitted into families' routines. In addition, shared reading interventions are suitable for improving parent-child interaction since the nature of shared reading is mainly dependent on the interaction between parents and their children (Mol et al., 2008). Therefore, the third part of the literature review chapter focuses on shared reading and shared reading interventions for children with autism.

2.4 Part three: Shared Reading

2.4.1 Introduction

This part focuses on the topic of shared reading for children with autism. Before discussing shared reading, a section about home literacy environment is presented because it is important to first understand the environment in which shared reading is a component. The section starts with presenting home literacy environment for children with TD followed by discussing home literacy environment for children with autism. After that, shared reading is defined and explained. Then, the discussion moves to a section about shared reading in the Arab world. After that, shared reading for children with autism is discussed. Next, a section about shared reading interventions for children with autism is presented. Finally, the part closes with a section about using relevant objects in shared reading interventions because the intervention in this study combined dialogic reading with relevant objects.

2.4.2 Home literacy environment

2.4.2.1 Home literacy environment for children with TD

The interest in understanding how home literacy environment influenced children's literacy acquisition has increased during the past few decades (Roberts et al., 2005). The term 'home literacy environment' refers to children's early exposure to literacy and engaging them in literacy-related activities with parents and caregivers (Kassow, 2006). It involves a range of

opportunities such as observing family members reading (newspaper, books, cooking recipes), writing (shopping list, homework, letters) and being around available reading and writing materials (children's and adult's books, magazines, pens, papers). Other activities include visiting libraries with family members, having shared reading routines with parents and participating in language games, like games fostering phonological awareness (Baker et al., 2001; Leseman and De Jong, 1998).

Home literacy environment has a critical influence on literacy development in children, especially their emergent literacy, which means the knowledge and skills that developmentally precede conventional reading and writing (Whitehurst and Lonigan, 1998; Sulzby and Teale, 1991). Emergent literacy includes knowledge of print, oral language, phonological awareness, alphabet knowledge, emergent reading and emergent writing (Whitehurst and Lonigan 1998). The early acquisition of emergent literacy begins from birth and builds over time (Rohde 2015). From their first few months of life, babies enjoy listening to familiar rhymes. During their early ages, they start to purposively manipulate many objects including books and implements of writing to explore. They use board books and alphabet blocks in their play (International Reading Association (IRA) and National Association for the Education of Young Children (NAEYC), 1998). Babies of parents who regularly read to them exhibit progress from mouthing and grabbing books to holding books and turning pages. Also, through their interaction with adults (usually parents and caregivers), young children start to recognise that print actually carries meanings (National Research Council, 1998). Table 3 presents more specific details about the typical development of emergent literacy from birth to the age of five years.

Table 3: Emergent literacy in children with TD

Age	**Emergent literacy development**
From birth to three years	- Enjoy rhyming and games about nonsense words - Start book-sharing routine - Recognise the covers of some books - Ask an adult to read to them - Pretend to read books - Listen to stories - Look at pictures in book and realise that they are symbols of real objects. - Label some objects in books - Talk about books' characters - Distinguish between drawing and scribbling - Purposively scribble
From three and four years	- Pay attention to repeating sounds - Participate in rhyming play - Start to understand that alphabet letters are individually named and represent a certain category of visual graphics - Identify 10 letters, usually from their own names - Recognise environmental print in their local area - Increase interest in books and reading - Make attempts to read stories and writing messages (scribbling) - Ask questions and make comments about stories - Connect stories' events to their own life experiences - Understand that print in the books is read and carries a message.
Five years	- Exhibit familiarity with beginning sounds - Exhibit more alphabet knowledge by identifying and naming alphabet letters and knowing that the sequence of letters represents the sequence of sounds in a written word - Use letter knowledge and phonemic awareness to independently spell - Write some or most letters - Use unconventional writing in order to express own meaning - Exhibit more print awareness - Know the functions of a book's parts (front and back cover, title) - Understand how print is read (for example, left to right and top to bottom) - Track print when pretend to read or when adult reads stories

	- Retell stories - Predict what happens based on stories' illustrations - Correctly answer questions about the stories

Based on the report of the National Research Council (1998)

Home literacy environment significantly varies among families depending on several factors (Sloat et al., 2015). For instance, parents' perspectives and beliefs toward literacy influence the home literacy practices they provide to their children (Serpell et al., 2002). Parents may look at literacy as a source of entertainment and as enjoyable activities or as a set of skills that children have to learn. Providing home literacy experiences oriented toward entertainment was found to be related to developing emergent literacy skills such as phonological awareness and print knowledge. It also made children more engaged compared to activities with skills-oriented approaches (Sonnenschein et al., 1997). Moreover, Sonnenschein et al. (1997) found that children of parents who emphasised entertainment during literacy activities obtained better scores in word recognition and comprehension test in their first, second and third years of school than children of parents who emphasised skills during literacy activities.

In addition, the context of home literacy is one of the most critical factors that are responsible for the variation of home literacy practices among families. It is absolutely impossible to separate home literacy experiences from social and cultural contexts. Serpell et al. (2002) argued that parents' socialisation practices and the beliefs informing those practices are what matter most for children's literacy development. The literacy opportunities provided to children at their homes are likely to be related to their parents' use of literacy at home which in turn is based on parents' educational level, jobs, lifestyle characteristics, social networks, communities, traditions and cultures (Leseman and De Jong, 1998). Research indicated that ethnic and cultural differences

exist in the type of literacy activities and the number of literacy events (Sonnenschein et al., 1997; Ortiz, 1986). This point is illustrated more when talking about home literacy and shared reading in Arab societies (see 2.4.3.1 Shared reading in the Arab world).

2.4.2.2 Home literacy environment for children with autism

In general, research on home literacy environment for children with autism is minimal (Lucas and Norbury, 2018). Few studies have examined home literacy environment for children with autism (for example, Lucas and Norbury, 2018; Fleury and Hugh, 2018; Westerveld et al., 2017; Lanter et al., 2012). Dynia et al. (2014) investigated home literacy of children with autism and their peers at the age of three to five years old. Dynia et al. used three scales to measure children's home literacy environment: frequency of book reading, literacy teaching and parents' belief about literacy. The results showed that parents of children with autism reported positive literacy beliefs which were similar to the beliefs of caregivers of children with TD. Parents of children with autism stated that reading with their children was enjoyable and important to their literacy and language development. In addition, no differences were found between the two groups regarding teaching literacy. These findings aligned with the findings of Fleury and Hugh (2018) and Lanter et al. (2013) studies which indicated that parents of both children with autism and children with TD frequently engaged their children in shared reading and provided numerous children's books to them. Indeed, research showed that parents of children with autism provide home literacy environment to their children and prompt their literacy development. They start reading to their children at a young age on at least a weekly basis (Lucas and Norbury, 2018; Lanter et al., 2012).

While the previous studies indicated that parents of children with autism have positive attitudes toward literacy and engage their children in literacy practices, it is important to notice some limitations of those studies. First, it appears that the participants (parents of children with autism) generally had a high level of education (Fleury and Lease, 2018; Lanter et al., 2012). In addition, their children had language abilities, and some of them were speaking fluently (Fleury and Lease, 2018). Even when the studies included children with autism and language difficulties, they were still verbal and had language abilities (Lucas and Norbury, 2018; Lanter et al., 2012). Also, in general, parents who volunteered for studies exploring home literacy are likely to have positive beliefs and practices about literacy. Thus, those findings must be interpreted with caution.

While the previous similarities were found between home literacy practices of children with autism and their peers with TD, research also showed some differences. Lucas and Norbury (2018) examined the home literacy environment in school-aged children with autism (with and without language difficulties) and their peers with TD and found that home literacy activities reflected children's characteristics. For example, children with autism and language difficulties were more frequently engaged in shared reading and discussion than their peers with autism who did not have language difficulties and their peers with TD. 85% of the autism and language difficulties group participated on a weekly basis in shared reading activities compared to less than 50% of the other two groups. This might be because parents whose children were at early stages in literacy and language might engage their children in more literacy activities to support their literacy and language development (Lucas and Norbury, 2018).

Likewise, the results of Dynia et al.'s (2014) study also indicated that the frequency of shared reading and children's language abilities are associated. However, while Lucas and Norbury

(2018) suggested that the frequency of shared reading for children with autism and language difficulties was more than it was for their peers with TD, Dynia et al. (2014) suggested the opposite. Dynia et al. (2014) found that without controlling for language ability, parents of children with autism engaged their children in significantly less shared book reading comparing to their peers with TD. The differences in the results between the two studies might be explained by the home literacy scales that they used. Dynia et al. (2014) used a frequency of storybook reading scale that measured three aspects: caregiver read to child, child asked to be read to and child read books on their own, while Lucas and Norbury (2018) only measured the frequency of parents reading to their children.

In addition, Lucas and Norbury (2018) found another difference between the autism and TD groups which was that children with autism participated in shared reading for a shorter duration than their peers with TD. The study hypothesised that the short duration of shared reading with children with autism may reflect their social interaction difficulties. Zimmer (2017) and Koppenhaver and Erickson (2003) argued that, in general, children with autism have few literacy experiences and opportunities in both home and school settings because of the social communication difficulties they are likely to have during literacy interaction. Thus, providing parents with literacy practices with explicit teaching rather than implicit teaching may benefit children with autism during shared reading (Lucas and Norbury, 2018). In fact, parents of children with autism were found to be less confident in their ability to teach literacy skills to their children compared to parents of children with TD (Lanter et al., 2013). Similarly, Lanter et al. (2012) found that roughly one-third of their sample of parents of children with autism, regardless of their level of education, felt somewhat or minimally secure about their ability to teach their children with autism literacy. They felt that they were not experts and unprepared for

this role.

The differences between children with autism and children with TD in home literacy environment also include print awareness, which is the only component of emergent literacy that this study aimed to examine. The term ‘print awareness’ or ‘print knowledge’ refers to the ability to understand the conventions, function and purpose of print (Gunn et al., 1995). The skills of print knowledge include print progressing sequence and direction (from the front cover of the book to the end), print direction on each page (for example, left to write and top to bottom in English), interacting with books (for example, handling books, turning pages, distinguishing between books’ covers and pages), distinguishing between print and pictures in books and understanding the meaning of space between words and punctuation between sentences (Pullen and Justice, 2003; Foorman et al., 2002; Whitehurst and Lonigan, 1998). Only a few studies investigated emergent literacy skills, including print knowledge, of children with autism. For example, Dynia et al. (2014) examined emergent literacy skills of 35 children with autism and 35 children with TD, aged between three and six. The study found that the performance of children with autism on the print-concept knowledge subtest was significantly below the performance of their peers with TD. Similarly, Westerveld et al. (2017) found that children with autism showed weakness in print concept tasks.

In addition, Dynia et al. (2014) also examined print interest in children with autism and found that it was significantly lower than the TD group. In contrast, Lanter et al. (2012) investigated print motivation and home literacy in 41 children with autism, aged between four and seven. The study used a semi-structured parental interview questionnaire called the Home Early Literacy Profile for Children with Autism Spectrum Disorders (HELPA, Lanter, 2009). Parents reported that their children engaged with literacy materials such as books and toys with letters and were

highly motivated by them. The contradiction between the results may be due to the items that were used to measure print interest in each study. Lanter et al. (2012) measured print interest by assessing children's enjoyment during shared reading and their reaction to receiving a book as a present and the frequency of the child's reading and writing behaviours and requesting shared reading. Dynia et al. (2014), however, measured print interest by how frequently the child asked a family member to help them read words and write their name. On the other hand, both findings of Dynia et al.'s (2014) and Lanter et al.'s (2012) studies could be combined in one explanation. As Lanter et al. (2013) stated, children with autism are more likely to be motivated by literacy activities and material but less likely to initiate requesting literacy activities such as shared reading.

2.4.3 Shared reading

Shared reading is one of the most popular home literacy activities that parents use with their children. Shared reading (also known as joint reading, interactive book reading and read aloud) is a broad term that describes the social practice involving adults reading aloud to children and interacting with them using storybooks. During the activity, adults also use other behaviours to support oral language and literacy development and to prompt interaction between them and children, for example, asking questions, commenting, expanding on children's language and pausing (Woods, 2017; Lonigan and Shanahan, 2009).

Research has widely established the important role that shared reading plays for children's development. Shared reading provides opportunities for children to share experiences with adults, interact with them by asking and answering questions related to the book and engage in

conversation about the text. As a result, it develops their listening skills and increases their vocabulary (Zimmer, 2017). It also helps children learn word–object mappings in a structured context and extends their existing vocabulary by learning the meaning of new words (Farrant and Zubrick, 2013). In addition, it increases children's comprehension of the story and their understanding of its structure (Morrow and Brittain, 2003). Crain-Thoreson et al. (2001) examined the richness of children's language during parent-child interaction in three conversational contexts: shared reading, play and joint remembering (remembering a family outing). The study found that compared to play and joint remembering conditions, shared reading exposed children to more complex language in utterance length and richness of vocabulary. Moreover, the frequency of parent-child shared reading can predict children's early reading skills and later reading development. On the other hand, children who lack early reading experiences may face difficulties in becoming literate (Bus et al., 1995).

As this study aimed to examine aspects of print knowledge, it is important to discuss the relationship between shared reading and print knowledge. It was assumed that shared reading, in particular, has a causal relation with children's print awareness development (Evans and Saint-Aubin, 2005). However, it appears that exposing children to shared reading without making reference to print may not be sufficient enough to obtain print knowledge. Some studies found that young children rarely pay attention to print during joint reading activities. For instance, Evans and Saint-Aubin (2005) conducted two studies to examine to what extent children focused on the print of storybooks during shared reading activities. They found that regardless of the nature of print and illustrations, four and five-year-old children spent very little time paying attention to the printed words on the pages. The researchers argued that while research found shared reading develops children's print knowledge, it is hard to see how shared reading has a

major effect on children's print awareness without making explicit references to print during the reading. In the same way, evidence also indicated that adults do not usually evoke their children's attention to print in the storybooks. They rarely make comments or ask questions about print and do not usually point to or track print (Hammett et al., 2003; Ezell and Justice, 2000).

Therefore, many studies have explored using shared reading activities and context in which adults make simple adjustments in order to increase the benefits of shared reading such as improving print awareness skills (Piasta et al., 2012). Indeed, research established that children significantly gain print knowledge skills when adults use print references in shared reading interventions. For instance, Ezell and Justice (2000) investigated a shared reading intervention designed to increase adults' references to print when reading to four-year-old children. The results found an increase in adult's verbal references (comments, questions and request) and nonverbal references (pointing and tracking print) when applying the intervention. Subsequently, children's verbal references to print significantly increased during the intervention. Overall, this relationship between shared reading and children's print awareness highlights how adults' reading behaviours affect the benefits of shared reading.

In addition to adults' reading style, the benefits of shared reading are also dependent on children's reading engagement. Reading engagement refers to the level and amount of time that a child spends being attentive to a storybook (Moody et al., 2010). Children's engagement in reading activities can predict their emergent literacy and is critical to literacy outcomes, including reading comprehension (Wigfield et al., 2008; Justice et al., 2003). The level of reading engagement can also determine the effectiveness of reading practices (Wigfield et al., 2008). Thus, parents need to keep their children actively engaged in shared reading by

encouraging them to explore the storybooks and interacting with them about the reading (Moody et al., 2010).

Indeed, the social interaction between the adult and the child during the reading is hugely important to shared reading (Mol et al., 2008). Bingham (2007) investigated the quality of mother-child shared reading interaction by rating how mothers provide engaging and enjoyable reading interaction. Three quality dimensions were assessed: reading expression, involvement and sensitivity. The findings showed that the quality of shared reading interaction positively affected children's early literacy development, particularly children's concept of print and letter knowledge. It was also found that children who had emotionally sensitive, supportive and interesting parent-child interaction during shared reading activities were likely to be more motivated toward reading and exploring books (Bingham, 2007). These results were in line with Whitehurst and Lonigan (1998) indicating that high-quality parent-child interaction strategies lead to engaging children more in shared book reading.

Moreover, enjoyment during shared reading is another important aspect of shared reading quality. Meagher et al. (2008) examined the connection between mothers' beliefs about shared reading and their behaviours during the activity and found that mothers who viewed shared reading as a fun practice were found to have more positive interaction with their children. More than that, parental enjoyment during shared reading motivates parents to read to their children. Preece and Levy (2018) found a connection between parental enjoyment and the feedback that they receive from their children during the reading. Parents enjoy shared reading when they see that their children benefit from book reading and enjoy it. On the other hand, when children show negative feedback and lack of enjoyment, shared reading would not be enjoyable for

parents which in turn, makes them less likely to share books with their children (Preece and Levy, 2018).

2.4.3.1 Shared reading in the Arab world

Compared to the research in Western societies, very little is known about home literacy practices in the Arab world. In general, most of the early home literacy practices in Arab societies include oral activities such as reciting the Quran, storytelling, chanting and singing (Callaway, 2012). Indeed, oral storytelling is a common practice in the Arab tradition in which parents take the role of the storyteller while the children listen (Carroll et al., 2017). The popularity of those activities can be explained by the fact that oral communication is highly valued in Arab culture (Mohamed and Omer, 2000). On the other hand, shared reading including bedtime story reading is not a tradition in many Arab cultures. Reading to young children is not usually one of Arab children's daily routine activities (Carroll et al., 2017; Barza and Von Suchodoletz, 2016; Callaway, 2012).

Since shared reading is not considered a common practice in Arab families, research investigating how parents read to their children is hard to find. To the best of the researcher's knowledge, there is almost no research solely examining Arab parents' perspectives regarding shared reading. Only a few studies partially focused on some aspects of shared reading. For example, Carroll et al. (2017) investigated Emirati parents' language practices with their children. The study used an open-ended questionnaire with 22 parents. When asked about shared reading, 16 parents out of 22 reported that they read to their children. However, only two of those 16 stated that they read to their children regularly (more than three times a week). Parents in the studies reported some benefits of shared reading including increasing their children's

vocabulary and improving their grammar and pronunciation. On the other hand, no parent mentioned enjoyment, interaction and engaging in literacy practice as benefits of shared reading.

Another study examined Emirati parents' shared reading preferences for their children (Barza and Von Suchodoletz, 2016). Semi-structured interviews were conducted with 118 parents of children between the ages of four and 11. Similar to Carroll and colleagues' findings, parents provided three reasons for reading to their children: teaching vocabulary and reading skills, gaining factual knowledge and teaching moral lessons. They believed that literacy acquisition is about teaching decoding skills, and therefore the purpose of shared reading is teaching how to read. Instead of talking about print meaning during shared reading, they said that they focused on the print itself such as naming letters and pronouncing words. Nevertheless, parents reported that they valued the relationship and conversation that shared reading creates. They considered the time they read to their children as a special family time in which they showed their affection to their children. Their perception of shared reading aligned with the family closeness that the Arab culture values (Barza and Von Suchodoletz, 2016). While the study reported important findings regarding shared reading, no information was provided about how regularly parents read to their children. In fact, the study did not include the number of participants who read to their children. It was stated that parents were recruited by using snowball sampling, but the sample inclusion criteria were not mentioned. Knowing if the parents in the sample practised shared reading or not may provide better insight when interpreting the results.

In addition, the study of Barza and Von Suchodoletz (2016) also examined Emirati parents' preferences for their children's storybooks. The findings indicated that parents preferred children's books that are culturally relevant and value moral lessons and family closeness. Parents wanted storybooks that represent their setting and dress code and respect Islamic values

to help children learn their own culture. However, 67% of the sample reported that they orally told their children Arabic folk stories, and many parents were unable to name Arabic storybooks which suggested that there is a lack of children's books with culturally relevant texts. Therefore, the researchers argued that more culturally appropriate children's books should be available which, in turn, helps encourage parents to create a rich literacy environment for their children.

In terms of parent-child interaction during shared reading, neither Carroll et al. (2017) nor Barza and Von Suchodoletz (2016) investigated this aspect. Indeed, the researcher of the present study was not able to locate a study that focused on book reading interaction in Arab societies. However, a study that looked at Turkish mothers' reading style by Leseman and De Jong (1998) was identified. While Turkey is not an Arab country nor do their people speak Arabic, Turkish culture has a lot of similarities with Arab countries because they share the same religion (Islam) and are located in the same region, the Middle East (Turan and Kara, 2007). Thus, explaining the dynamic of shared reading in Turkish families may help understanding parent-child interaction during joint reading in the Middle Eastern context.

In their study, Leseman and De Jong (1998) conducted a longitudinal study to investigate the relationship between home literacy environment and children's developmental and educational outcomes from the age of four to seven. Participants were children and their families from three ethnic groups: indigenous Dutch and first and second-generation immigrants from Surinam and Turkey. When looking at the shared reading sessions, Turkish mothers' interaction was found to be different from the interaction of both Dutch and Surinamese mothers. Turkish mothers showed difficulties when dealing with the spontaneous reactions of their children during shared reading. While Turkish children tried to hold the book, turn pages and look at pictures (in the same way as the Dutch and Surinamese children did), their mothers considered those behaviours

as inappropriate. In fact, the Turkish group showed a relatively high rate of difficult cooperation in the activity. Leseman and De Jong provided a possible explanation for those findings. In Turkish culture, parents' beliefs about raising children tend to be authoritarian in comparison to other cultures, Western ones for example, which tend to have authoritative parenting beliefs.

In terms of mothers' reading style, Turkish mothers' use of pictures in the storybook to support the text or to help children comprehend the story was far less than the other mothers. Another remarkable finding was that Turkish mothers were reported to ask their children for literal repetition far more compared to the Dutch mothers. The authors argued that this finding might be influenced by religious memorisation practices since religion is often important to the Turkish culture. This Islamic memorisation practices are called 'Talqeen' which means teaching by repetition. This practice was originally used to teach the Quran to young Muslim children who have not yet acquired literacy or Muslim adults who are illiterate in order to memorise it. In summary, during Talqeen, the adult asks the child to open the Quran and look at the chapter that they want to read. The adult reads a verse or a chunk of a long verse while pointing at it. The child then repeats it while pointing at it in the exact way as the teacher did (Islamic Forum Foundation, 1996). The practice is still used in Muslim societies, and it is now one of the reading methods used when teaching children how to read in schools in Saudi Arabia. In fact, this practice might be considered as echo reading, which is a fluent reading method (Duran, 2017). Echo reading is a repeated read aloud strategy in which the adult reads a phrase or short sentences while the child follows along in the text then repeats it. In echo reading, the adult models a proper expressive fluent reading for the child (Ellis, 2009).

In summary, the Arab world is not known for having a reading culture (Mahrooqi and Denman, 2016). As a result, parent-child shared book reading is an uncommon practice in Arab societies

(Carroll et al., 2017; Barza and Von Suchodoletz, 2016; Callaway, 2012). There is a gap in the literature about research investigating the existence of shared reading or the possibility of introducing it to the Arab world. The available research suggests that a few parents read to their children on some occasions. In general, it appears that Arab parents view shared reading as an educational activity to teach their children decoding, grammar and pronunciation skills (Carroll et al., 2017; Barza and Von Suchodoletz, 2016). The lack of reading to children led to a dearth of Arabic children's books, especially books that represent the Arab cultures and traditions. Thus, Arab societies need to foster a culture of reading. Parents need to be aware of the importance of literacy practices on their children's early literacy development. More Arabic children's books should be published and become available to parents and their children (Carroll et al., 2017). Finally, considering that parenting styles in many Arab societies tend to be authoritarian (Dwairy et al., 2006), parents may usually have the active role (reading, turning pages and holding the book) while children have the passive role (just listening) which may limit the opportunities of parent-child interaction and reading engagement (Leseman and De Jong, 1998). Therefore, parents in this region are likely to benefit from shared reading interventions that modify their reading style in order to increase the interaction between them and their children.

2.4.3.2 Shared reading and autism

In general, there is a lack of research examining the nature of parental shared reading with children with autism. Two studies exploring parental shared reading interaction have been identified. The first one was conducted by Lanter et al. (2012), who interviewed 37 parents of children with autism who had typical, mild and severe language difficulties to explore aspects of

home literacy environment, including shared reading activities. When asked about shared reading, many parents reported that they used identification questions during the activity. They sometimes also posed feeling and predication questions. Some parents stated that they purposely asked feeling questions because they wanted to teach their children who had difficulties in that area. On the other hand, fewer parents who had children with language difficulties used feeling, application and predication questions in order to meet their children's current language levels. Thus, the researchers emphasised the importance of supporting those parents by providing appropriate children books and strategies (for example, including picture answer choices) that provide communicative supports to their children with autism and language difficulties.

Similarly, Tipton et al. (2017) investigated parents' language and literacy strategies during shared reading activity with their children with autism and explored the relationship between those strategies and their children's characteristics. 111 children between the age of four to seven years participated in the study along with their mothers. Shared reading sessions were video recorded in which mothers were asked to read to their children in whatever way they felt comfortable. Mothers' behaviours were coded into four techniques: clarification, feedback, teaching and evocative techniques. The results showed that mothers used a range of techniques in general. Clarification techniques (questions about functions/attributes and praise/confirmation) were used the most, followed by feedback techniques (giving directions to the child and reading/conversation). When looking at the association between the strategies and children's characteristics, a positive correlation was found between children's social interaction abilities and parents' language and literacy techniques. Mothers were modifying their behaviours to their children's level by increasing or decreasing the amount of their directed talk such as directions, questions and feedback. Mothers of children who had better social language and interaction used

more clarification techniques to elicit a verbal response from their children and to expand on their interaction. However, even mothers of children who exhibited clinically challenging behaviours were able to use clarification and evocative techniques (such as open-ended questions, yes/no questions) with their children.

From the two previous studies, it seems that children's language and social communication abilities are associated with their parental shared reading interaction. This finding is similar to the findings of Kasari et al. (1988) and Hudry et al. (2013) indicating children's language and social communication and non-social communication behaviours impact parent-child interaction during play among children with autism (see 2.3.2 Parental interaction style). In terms of sensitivities and directedness styles, it is hard to conclude what style parents tend to use when reading to their children with autism, due to the lack of research. However, Tipton et al. (2017) found that giving directions was one of the feedback techniques that mothers of children with autism used a lot during shared reading. While nothing was mentioned about sensitivity styles, parents in the two studies appeared to be sensitive to their children's abilities as they modified their interaction during shared reading to meet their children's ability levels (Tipton et al., 2017; Lanter et al., 2012).

2.4.3.2.1 Shared reading interventions for children with autism

Recently, a few studies have examined shared reading interventions for children with autism (Fleury and Schwartz, 2017; Mucchetti, 2013; Bellon et al., 2000). To the best of the researcher's knowledge, only one review focused on shared reading interventions for children with autism (Boyle et al., 2019). Boyle et al. (2019) conducted a systematic review about the effectiveness of

shared reading interventions for children with autism. The meta-analysis of 11 studies indicated that shared reading practices had a positive impact on early literacy and language skills of children with autism across a variety of ages. Even interventions with a small number of sessions (five sessions or less) were effective, which suggested that shared reading is an efficient intervention. In addition, studies that involved a variety of adults' behaviours (pausing, asking questions, relating to experiences, evaluating and expanding) during shared reading had a positive effect size which 'provides initial evidence that shared reading is a robust intervention that is resilient to the presence or absence of individual components' (Boyle et al., 2019, p. 6).

When looking at the interventions' dependent variables in the systematic review, interventions that targeted expressive communicative participation (for example, joint attention) had a small effect size while interventions that targeted noncommunicative participation (for example, turning pages) had a moderate effect size. On the other hand, interventions that examined both communicative and noncommunicative participation were found to have a very large effect size. This finding suggested that children with autism can gain a variety of benefits from shared reading interventions. Therefore, the researchers of the review concluded that future research should examine the effect of shared reading on both communicative and noncommunicative behaviours of children with autism (Boyle et al., 2019).

In addition, the systematic review provided explanations for the limited impact of shared reading interventions on communicative participation. One explanation was that children with autism who usually have difficulties with expressive communication aspects may need longer shared reading interventions delivered with more intensity to help them. In addition, the structure of shared reading interventions might restrict children's opportunities to initiate communication. A third explanation was that children with autism might not have been provided with a range of

communication tools to support and increase their expressive communication. Just one intervention in the review allowed children to use gestures to communicate (Whalon et al., 2015). Thus, the limited effect of shared reading on children's communicative acts might be because of the lack of opportunities and means to communicate with their partners during the activities (Boyle et al., 2019).

All but two of the shared reading studies included in the systemic review were implemented by teachers or researchers. Only one paper (Whalon et al., 2016) and one dissertation (Vogler-Elias, 2009) involved parents as shared reading partners. In fact, most studies on interventions for children with autism in the field of literacy were conducted in schools while a few interventions were home-based. For instance, in one meta-analysis about reading comprehension interventions with children with autism, all interventions were implemented by teachers or researchers (El Zein et al., 2014). The same finding was reported in another meta-analysis about computer-based interventions targeting literacy skills for children with autism (Ramdoss et al., 2011).

One explanation of the research's focus on school-based literacy and shared reading interventions might be related to the situation of children with autism in schools. Students with autism are usually excluded from literacy activities. They miss many rich literacy opportunities because their teachers may underestimate their literacy development abilities, do not know how to include them in literacy activities or lack the appropriate strategies and instructions to teach them literacy (Kluth and Darmody-Latham, 2003). Therefore, there is a critical need for studies providing teachers with effective literacy interventions in order to support their students with autism. Shared reading interventions, in particular, build children's emergent literacy, improve their language abilities and increase their engagement, which therefore help include children with autism in more literacy activities in schools. The need for shared reading interventions is

more obvious in schools than it is in homes which in turn resulted in giving more attention to teacher-implemented shared reading interventions and less attention to parent-implemented interventions (Alharbi et al., in preparation).

2.4.3.2.1 Using relevant objects in shared reading interventions

This section discusses the use of relevant objects in shared reading interventions for children with autism as this study used relevant objects with dialogic reading. The term 'relevant objects' refers to a storybook's adaptation in which tactile material and objects that go along with the storybook's content are used during shared reading activities (Browder et al., 2008). Using relevant objects in conjunction with storybooks prompts meaning, represents concepts, illustrates events and actions and provides multisensory contexts of stories to increase children's attention and participation (Browder et al., 2008; Bellon et al., 2000).

A few studies have used relevant objects in shared reading activities for children with autism. For example, Mucchetti (2013) investigated an adapted shared reading intervention for children with autism who were minimally verbal. The adapted shared reading activities included simplified text, visual supports and three-dimensional objects. The visual supports and objects were used to increase children's engagement and help them interact and participate in the activities. During the intervention, the teacher provided the children with opportunities to see and touch the objects when introducing the book topic. The teacher also pointed to visual support and objects while reading the story. When the teacher asked a question, the children could verbally respond, respond by pointing to the visual support and objects or respond by removing them and giving them to the teacher. The results showed an increase in children's comprehension and

engagement during the intervention. Relevant objects and visual supports provided children with ways to engage and interact during the reading. However, the study did not particularly investigate the effect of the relevant objects on increasing children's attention and establishing their joint attention. Also, while teachers were satisfied with intervention in general, no specific information about the objects was mentioned. For example, knowing to what extent using the objects was easy for the teachers and helpful for them and their students might add more insight about the benefits of including relevant objects in shared reading activities.

Similarly, Golloher (2018) used an adaptive shared reading intervention package including relevant objects with three children with autism and their parents. During the intervention, the parents used the objects when interacting with their children. For example, when they asked a question about the story, they presented two objects to help the child to answer. The findings showed that using the adaptive shared reading intervention increased children's engagement during shared reading. In the social validity questionnaire, parents appreciated how the intervention helped their children's attention and reported that their children attended to the relevant objects in the storybooks more during the intervention condition.

2.4.4 Summary

This part covered home literacy environment and the development of emergent literacy skills for children with TD. It also discussed home literacy environment of children with autism. After that, shared reading which is one of the most popular home literacy activities was presented. The section included the definition, the benefits and quality indicators of shared reading. It then moved to a discussion about shared reading in the Arab world which showed that shared reading

is not a common practice for Arab families, and there is a lack of shared reading research. The next section focused on shared reading for children with autism by presenting the studies that examined autism parent-child interaction in shared reading. Finally, shared reading interventions for children with autism were discussed based on a recent systematic review. The discussion revealed the positive effect of shared reading interventions, the importance of investigating the effect of shared reading on several aspects of children's behaviours and the lack of parental shared reading intervention.

As mentioned in this part, shared reading is mainly dependent on parent-child interaction. Children with autism have difficulties with interaction which means that they are likely to have difficulties in shared reading activities. Therefore, parents would benefit from shared reading interventions that modify their interaction and reading style to help increase their children's participation. The next and last part of this literature review discusses one of the shared reading interventions that has been used with children with autism, which is called dialogic reading.

2.5 Part four: Dialogic reading

2.5.1 Introduction

This part discusses the dialogic reading intervention which is the focus of this study. First, a brief description of the intervention and the theory behind it are provided. Then, a discussion on the evidence of dialogic reading effectiveness is presented. The discussion covers the effect on children's verbal participation and parents' reading style and how that influences parent-child interaction in general. The part then mentions the use of the intervention in other settings since

this study implemented it in a different context and language as well. After that, it discusses the use of the intervention with children with autism. The section focuses on studies investigating children's verbal and nonverbal participation, print awareness, reading engagement during the intervention as this study mainly examined these areas. Finally, the part ends with a conclusion summarising and discussing applying the intervention with the autism population.

2.5.2 Dialogic reading

Dialogic reading is an interactive shared reading practice between an adult and a child in which the adult aims to engage the child in the reading. What is unique about the dialogic reading technique is that it shifts the roles in typical shared reading. Rather than only reading the story, the adult becomes an active listener by asking the child questions to make them an active participant instead of a passive listener (Whitehurst et al., 1994; Whitehurst et al., 1988). The authors of dialogic reading (Whitehurst and colleagues, 1994, 1988) developed two sets of techniques for the intervention: one for young children between two and three years old, and another set for children older than three years old, which this study focused on. The dialogic reading technique includes the acronyms *PEER* and *CROWD* to help adults remember their role during dialogic reading. The acronym *PEER* presents the steps that adults use during the reading. First, the adult *prompts* the child to participate in the reading by asking them specific questions. Then, the adult *evaluates* the child's response and *expands* on it. Finally, the adult encourages the child to *repeat* the expanded response. The specific questions (prompts) that the adult asks the child are represented in the acronym *CROWD* (Whitehurst and Lonigan, 1998). Table 4 provides descriptions and examples of the *CROWD* prompts.

Table 4: *CROWD* Prompts

Prompt	**Description**	**Example**
Completion prompt	Questions require completing sentences or phrases	She goes to the school and meets ____
Recall prompt	Questions require remembering previous aspects of the story	Do you remember what happened to Cat when she went to bed?
Open-ended prompt	Questions encourage the child to talk about pictures or the story	Can you tell me what do you see in the picture?
Wh-prompt	Questions start with Wh (what, where, when, why and who)	Where does she go?
Distancing prompt	Questions connect the story to the child's own life	John went to the park and played with his friends. Did you go to the park too? What did you do there?

Based on Whitehurst et al. (1994)

Dialogic reading follows Vygotsky's theory of the ZPD (Zevenbergen and Whitehurst, 2003). Vygotsky (1978) argued that children have two levels of development, the actual developmental level and the level of ZPD. The actual developmental level is defined as the mental functions that are completely developed and independently mastered by the child. On the other hand, the level of ZPD is defined as the mental functions that the child is in the process of mastering and which they need assistance to demonstrate. In summary, the actual developmental level includes the functions that the child masters today while the level of ZPD includes the functions that the child will master tomorrow (Vygotsky, 1978). Since the child cannot independently demonstrate the functions in the level of ZPD, the adult provides guidance and assistance to help the child. Vygotsky (1978, p. 90) stated:

> ‘that an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. Once these processes are internalized, they become part of the child’s independent developmental achievement’.

Dialogic reading focuses on the child’s ZPD. During the reading activity, the adult interacts with the child in order to increase their verbal participation and interaction level. The adult prompts the child to participate, assesses the child’s interaction and reflects upon it by providing feedback and expanding on the responses. Talking about the story and interacting with the adult during shared reading are skills that the child cannot accomplish independently. Therefore, dialogic reading provides the adult with supportive strategies to help the child accomplish those skills.

Dialogic reading has the assumption that children’s language development is affected by how adults talk to them (Whitehurst et al., 1988). Practicing using language and getting feedback about their use of language during adult-child interaction facilitates the language development of children (Zevenbergen and Whitehurst, 2003). Thus, in order to impact children’s language and verbal participation during shared reading, adults’ reading style and their use of language should be targeted. Dialogic reading aims to change the reading behaviours of adults by asking them to use evocative and feedback techniques. Adults encourage children to have a participant role, rather than being passive and just listening, by asking them a variety of questions about the reading. Adults also provide feedback in the forms of repeating, recasting and expanding and praising their children’s verbal participation (Whitehurst et al., 1988). As a result, shared reading changes from a telling and listening activity to a conversation activity in which both adults and children have equal active roles. By changing adults’ reading behaviours, the children’s use of

language changes without directly teaching them how to respond and verbally participate in the reading (Fleury and Schwartz, 2017).

2.5.2.1 Dialogic Reading intervention

A large body of research indicates positive outcomes of dialogic reading on children's language (for example, Opel et al., 2009; Hargrave and Sénéchal, 2000; Crain-Thoreson and Dale, 1999; Whitehurst et al., 1994). More particularly, several studies demonstrated a positive effect of dialogic reading on children's verbal participation and expressive languages. For example, in their first study examining dialogic reading, Whitehurst et al. (1988) examined the effect of a four-week dialogic reading programme in children's language. The study randomly divided 30 families into experimental and control groups. Children in both groups had similar language abilities as the pre-test measurements indicated. In the experimental group, parents participated in two training sessions in which they learned how to implement dialogic reading while parents in the control group were asked to read to their children as they normally did. The findings showed that children in the dialogic reading group scored significantly higher than children in the control group in the expressive language post-tests. More specifically, they had an 8.5-month gain when assessed by the Illinois Test of Psycholinguistic Abilities (ITPA-VE, Kirk et al., 1968) and a six-month gain when assessed by the Expressive One-Word Picture Vocabulary Test (EOWPVT, Gardner, 1981). In addition, when the reading audiotapes were analysed, the mean length of utterance and the frequency of using phrases were higher in children whose parents used the dialogic reading condition compared to the control group. On the other hand, when assessing children's receptive language using the Peabody Picture Vocabulary Test (PPVT-III,

Dunn and Dunn, 1981), no significant differences were shown between the experimental and control groups.

Similar results were found by Wing-Yin Chow and McBride-Chang (2003) who compared children's receptive language among a dialogic reading group, typical shared reading and control group. In the control group, parents were asked to do their usual literacy habits. The findings indicated that children in both the dialogic reading and typical shared reading groups did not differ in their scores of the PPVT-III. They both performed significantly higher than the control group. However, Whitehurst et al.'s (1988) and Wing-Yin Chow and McBride-Chang's (2003) findings contradicted the results of Vally et al. (2015) who investigated the outcomes of eight-week dialogic reading intervention on infants between 14 and 16 months old. Compared to the control group, children in the dialogic reading group had a significant gain in the number of words they understood on the MacArthur-Bates Communication Development Inventory (MCDI, Fenson et al., 1993). The contrast between the studies' results might be due to the different assessments that were used to assess children's expressive language. Also, it was not clear what the parents in the control group did in the study of Vally et al. (2015). If they did not read to their children during the study, then the results agreed with Wing-Yin Chow and McBride-Chang's results (2003) which indicated that children in the dialogic reading gained more than the control group in which no reading occurred. The no difference indication was only between the dialogic reading and typical shared reading groups. In general, the previous studies alongside others agreed on the positive effect of dialogic reading on children's language abilities.

In addition, research indicated a positive impact of dialogic reading on parents' reading style. Dale et al. (1996) found that parents benefited from a brief instructional dialogic reading programme and were able to implement it with their three to six-year-old children with LD. In

fact, the study findings suggested that the effect of dialogic reading on parents' use of language was more than its effect on their children's use of language. While children's verbal responses to questions and their mean length of utterances increased, the change was modest compared to the significant increase of parents' use of wh-questions, open-ended questions and expansions. However, the study lacked information about the mothers' characteristics and family background which might play a role in results. Also, it was not mentioned how many times mothers read to their children during the two-month intervention. Furthermore, the study found that the change in parental behaviours can predict the change of children's behaviours which was the theoretical assumption behind developing dialogic reading (Whitehurst et al., 1988). Parents who changed their behaviours more during the intervention were likely to have children whose behaviours changed more. When mothers asked more wh-questions and provided sufficient time for children to respond, children's verbal engagement was found to increase (Dale et al.,1996).

Likewise, Huebner and Payne (2010) found a strong association between parental dialogic reading behaviours and children's verbal participation during the reading. However, this association was found after controlling the mother's educational level, child's age and family reading frequency. Nevertheless, while the population sample in Huebner and Payne's study was different (two and three-year-old children without language delay) to the ones in Dale et al. (three and six-year-old children with language delay), both studies stated that a brief training about dialogic reading had an effect on the mothers' reading style with their children. Mothers in Huebner and Payne's (2010) study were also able to maintain the use of dialogic reading behaviours two years after receiving the instructions.

Dialogic reading changes parents' reading style in order to increase the social communication interaction between them and their children during shared reading. Brannon and Dauksas (2012)

investigated the effect of dialogic reading intervention on the interaction between family members and their children. 40 family members who were mostly parents participated in the study with their children who were classified as 'at-risk' based on their language, social, gross motor and intellectual abilities. The study, however, did not provide details on the children's abilities and how they were assessed. Families were divided into a dialogic reading group and a traditional family time group in which family members read to their children without given instructions. Participants in both groups were video recorded while reading to their children before and after the intervention to assess parent-child interaction by using the Adult Child Interactive Reading Inventory (ACIRI, DeBruin-Parecki, 2007). This tool measures behaviours of both parent and child in three categories: enhancing attention to text, promoting interactive reading/supporting comprehension and using literacy strategies.

The pre-intervention videos showed no differences between the intervention and the control groups. However, significant differences between the groups were found in the post-intervention videos in terms of the number of times the family members used questions, provided feedback and expanded on their children's responses. The dialogic reading group showed significantly more verbal interaction by using a variety of literacy communication behaviours (for example, questioning and expanding) than the control group. As a result, children in the intervention group engaged in a longer conversation than children in the traditional family time group. The study agreed with all the previous ones about the effect of dialogic reading on both parents' and children's use of language and their interaction.

As it appears from the evidence above, dialogic reading has positive outcomes in both children's and parents' behaviours. Therefore, studies started using dialogic reading in different countries with other languages (for example, Turkey (Simsek and Erdogan, 2015) and China (Fung et al.,

2005)). In general, the intervention continued to have promising results even though the settings were different to the one in which the intervention was developed (USA). For example, Vally et al. (2015) used dialogic reading with mothers and their infants in South Africa. The researchers stated that the participants' community did not have a culture of shared reading with young children. Thus, before the intervention, mothers were sceptical about the concept of shared reading with their children. However, once the purpose was explained and the dialogic reading training started, they were motivated, reported the positive impact from the first weeks and committed to all the eight-week programme. The study concluded that dialogic reading can profoundly benefit families with no or little shared reading culture.

On the other hand, not all parents form other cultures reported positive experiences when implementing dialogic reading with their children. Kotaman (2007) conducted a study investigating Turkish parents' experiences in using dialogic reading with their children. The findings of the interview analysis showed themes like frustration, negative transferring and obligation. Parents said that their children became frustrated because of the many questions and wanted their parents to read to them as they usually did. The parents also reported that their children struggled with the transition from traditional reading to dialogic reading. Moreover, parents felt obliged to use dialogic reading techniques which made them look at the guide note all the time during the reading. However, the fidelity of implementation was missing in the study. Parents received a two-hour dialogic reading training session and then were asked to implement it with their children for seven weeks. It was not mentioned how the researcher measured the fidelity of implementation, especially since the sessions were not video recorded. Thus, the difficulties might be because the intervention was not implemented as it should be.

Another explanation might be related to cultural influence; however, the study did not point to the cultural aspects.

2.5.2.2 Dialogic Reading intervention for children with autism

Recently, studies started investigating the use of dialogic reading or adapted dialogic reading interventions with children with autism (for example, Jackson and Hanline, 2020; Hudson et al., 2017; Whalon et al., 2015). To provide a comprehensive review of dialogic reading interventions for children with autism and their effectiveness, a systematic review was conducted by the researcher of the present study (Alharbi et al., under review). A summary of the methodology as well as the main findings of this review are provided below. Two electronic databases: PsycINFO and Education Resources Information Centre (ERIC); and one hand search in a generic database (Google Scholar) were used to conduct the systematic review. To be included in the review, a study should: (1) be published in a peer-reviewed journal or be a masters' dissertation/doctoral thesis, (2) be written in English, (3) be published between 1990 and 2020, (4) be an empirical study, (5) include at least one participant with autism, (6) use dialogic reading (as defined by Whitehurst et al., 1988) or use a modified version of dialogic reading as the independent variable and (7) involve at least an adult (for example, teacher and parent) to deliver the intervention. After identifying the targeted articles, the following features of the studies were extracted: (a) research design, (b) participant characteristics (for example, age and gender), (c) intervention characteristics (for example, intervention and intervenor), (d) dependent variables, (e) outcomes, (f) certainty of evidence and (g) intervention effectiveness. Appendix 1 presents a summary of the 18 studies' features, outcomes and quality scores.

To assess the quality of evidence, the quality assessment of Terlektsi et al. (2019) was adapted and used. The matrix developed specific criteria in order to assess different aspects of the study. For each aspect, a score of 1 is given if there is only impressionistic evidence of impact, a score of 2 if there is modest evidence of impact or a score of 3 if there is strong evidence of impact. Then, the overall study is rated based on the mean scores across all components. If the scoring is between 1 and 1.9, the study has impressionistic to moderate quality or if the scoring is between 2 and 3, the study has moderate to strong quality. More information about the matrix and its scores can be found in Terlektsi et al. (2019).

The systematic review found 18 studies examining dialogic reading interventions for children with autism. Sixteen studies provided evidence of moderate to strong quality, while the other two (Lundy, 2020; Ward, 2018) had impressionistic to moderate quality. When looking at the intervention types, eight studies used pure dialogic reading (Lundy, 2020; Balsamo, 2019; Towson et al., 2019; Fleury et al., 2017; Hudson et al., 2017; Fleury et al., 2014; Tan, 2014; Pamparo, 2012), and seven studies used an adapted version of dialogic reading (Jackson and Hanline, 2020; Lo and Shum, 2020; Rodrigues-Queiroz et al., 2020; Ward, 2018; Kang, 2017; Whalon et al., 2016; Whalon et al., 2015) whilst the last three compared pure dialogic reading versus an adapted version of dialogic reading (Grygas Coogle et al., 2020; Grygas Coogle et al., 2018; Plattos, 2011). In terms of delivering the intervention, only four studies recruited parents to deliver the intervention to their children (Balsamo, 2019; Lo and Shum, 2020; Ward, 2018; Whalon et al., 2016).

The review found that the studies investigated the interventions' effect on a variety of children's skills, but most of the studies (12) examined skills related to language (for example, verbal participation, expressive vocabulary, spontaneous responses and verbal initiation). The studies

that examined the effect of dialogic reading on children's verbal participation found that children's verbal responses increased confirming previous results of the effect on children with TD (for example, Whitehurst et al., 1994). On the other hand, measuring verbal initiation resulted in mixed results. Moreover, only three studies measured nonverbal participation (Queiroz et al., 2020; Ward, 2018; Whalon et al., 2015). The results indicated that dialogic reading was less effective for the nonverbal participation of children with autism.

The most significant of the above studies are discussed in more detail below. First, the study of Fleury et al. (2014) is discussed extensively since the present study replicated most of its aspects. Fleury et al.'s study was used as the basis for the present study for the following reasons: the intervention timeline and duration were very appropriate for the limited time that the researcher had to conduct the fieldwork. The other reason is that it had a sufficient intervention description and a clear procedure which enable the replication. In particular, the present study replicated Fleury et al.'s storybooks' criteria, some of the participants' inclusion criteria, intervention duration, intervention number of sessions, outcomes measures and fidelity of implementation measurement. After presenting Fleury et al.'s study, this section discusses other studies investigating dialogic reading with children with autism as well.

Fleury et al. (2014) conducted a multiple baseline design across participants to examine the impact of dialogic reading on the verbal participation of children with autism aged between three to five years. Verbal participation was defined as children's utterance that was related to the book and had one or more intelligible words. Three children who communicated verbally using at least two-three-word phrases participated in a five-week intervention with nine sessions. During the baseline sessions, the adult read to the child without elaborating or posing questions. In the intervention sessions, the adult read the stories while implementing the dialogic reading

techniques (*PEER* and *CROWD*). The findings showed that all children exhibited higher levels of verbal participation during the intervention condition compared to the baseline. The increase was immediately after introducing the intervention. However, the results of the baseline-intervention comparison must be interpreted with caution because of the nature of shared reading during the baseline. The study mentioned that the adults 'refrained' from asking questions during the baseline sessions. The word refrained might imply that the adults, who were two of the researchers, deliberately did not ask children during baseline rather than reading to the child as they typically did. This might mean that the data might have been compromised. Nevertheless, the improvement in children's verbal participation was expected as a result of the nature of the dialogic reading which was designed to prompt children's language. However, the findings did not provide information to determine whether the effect was on children's verbal initiation or responses.

The study also indicated that dialogic reading is a beneficial intervention to children with autism because participants spent a longer duration in the intervention condition (an average of 4.48 minutes) than the baseline (an average of 2.57 minutes). On the other hand, no improvement was found on children's reading engagement. The researchers' explanation was that all participants showed high levels of engagement from the baseline which continued during the intervention. Thus, no difference occurred even though they were engaged in the dialogic reading condition. Similar findings were found by Rodrigues-Queiroz et al. (2020) who investigated the use of dialogic reading with two children with autism. The children showed high task engagement during both baseline and dialogic reading conditions. While these findings of Fleury et al. and Rodrigues-Queiroz et al. might not add to dialogic reading, it may give an indication that shared

reading can be a promising practice for children with autism because participants were highly engaged during both baseline and intervention conditions.

The last finding of the study of Fleury et al. (2014) revealed that children responded differently to the dialogic reading prompts. For example, the youngest child had difficulties answering recall, open-ended and distancing questions. This suggested that some children with autism may lack the ability to respond to some prompts and may need modification or additional support. Fleury et al. (2014) concluded with a few suggestions to encourage those children to participate. Indeed, when Fleury and Schwartz replicated the study in 2017, they used those suggestions and modified the intervention by adding 'special prompts' to *CROWD* prompts to become *CROWDS*. The special prompts included providing answer choices, asking yes/no questions, asking children to point at the correct answer and asking them to repeat targeted words.

As in the original study, Fleury and Schwartz (2017) assessed children's verbal participation during the modified dialogic reading. However, more children (seven males and two females) participated in this study. They were also across a range of autism severity (mild, moderate and severe autism). The procedure was similar to Fleury et al. (2014); however, this time, the five teaching assistants who implemented the intervention were asked to read as normal in the baseline sessions. Children's verbal participation was counted and categorised into responses to adult questions and independent initiations. The findings showed that all participants had an increase in their verbal responses during the dialogic reading compared to the baseline. The Tau-U statistic for measuring the effect size (0.80–1.25, $p < .01$) indicated that the intervention had a large to a very large change in children's verbal responses. These results were consistent with the findings of Fleury et al. (2014) which indicated that dialogic reading can impact the verbal participation of children with autism.

On the other hand, no impact was found on children's initiating comments and questions. The authors argued that since the nature of dialogic reading requires adults to prompt children to participate by asking them questions, children might not get enough time to make a comment or pose a question. This was what happened with one child in the study. The visual analysis showed that he exhibited a high level of verbal initiations during the baseline which was then followed by a decrease during the intervention. Providing him with many dialogic reading prompts might have limited his opportunities for verbal initiation. Another explanation might be because children with autism usually exhibit difficulties with initiating social communication and interaction (Stone et al., 1997). Thus, Fleury and Schwartz suggested that children with autism may benefit from explicit teaching about how to initiate interaction during the shared reading context.

Indeed, when dialogic reading was adapted to include prompting children to initiate and providing them with sufficient time, the verbal initiation of children with autism was impacted. This adapted dialogic reading was developed by Whalon et al. (2013) and called Reading to Engage Children with Autism in Language and Learning (RECALL). The RECALL strategy combined the dialogic reading with visual support and systematic instruction to prompt joint attention and social reciprocity by increasing initiation and responding to others' initiation. In addition to the *CROWD* prompts, three other prompts were added: a secure attention prompt to elicit joint attention, an intentional pause prompt to encourage initiation and an initiation question prompt to explicitly prompt the child to initiate interaction. Moreover, the intervention included a four-level prompting hierarchy to support children who fail to respond to the prompts.

To examine the effect of this adapted dialogic reading version, Whalon et al. (2015) used a multiple baseline design across four children with autism in a preschool setting. The verbal and

nonverbal initiation of the children were assessed during the intervention. Verbal initiation was counted when the child made a spontaneous comment and asked a spontaneous question about the storybook that did not depend on others' comments. Nonverbal initiation was counted when the child made a nonverbal act to show or share information related to the storybook. In addition to the dialogic reading strategies, the teachers used cards which included the visual support and the three additional prompts: secure attention, intentional pause and initiation question. The visual analysis indicated that three out of four children increased their verbal levels of initiation, and their Tau-U effect side calculations estimated moderate, large and very large improvement. On the other hand, the frequency of their nonverbal initiations overlapped, and the Tau-U calculations range from 0.37 to 0.49, which is considered as a weak improvement. The non-improvement in children's nonverbal initiation (pointing and gesturing to show adults) might be because the nonverbal initiations were not taught to the students; they were just modelled when using secure attention prompts. The fourth child showed no improvement in both verbal and nonverbal initiation.

Similar findings were found by Kang (2017) who replicated Whalon et al. (2015). In her study, Kang used a multiple baseline design with four children with autism between four and eight years old. The dependent variables were children's verbal initiation attempts which included their comments, requests and questions related to the story. Compared to the baseline sessions, all children showed an increase in the mean of verbal initiation in the dialogic reading sessions. While both Whalon et al. (2015) and Kang (2017) were similar in using intentional pause and initiation question cards with students, Kang's study added a direct teaching element in which the teacher directly taught children how to ask questions and to make a comment during the intervention, which may explain the high effect with Tau-U calculations of children's verbal

initiation in the study. In general, the findings from Whalon et al. (2015) and Kang (2017) stated that the modified dialogic reading intervention can positively impact initiating participation of children with autism. In addition, their findings also proved that the intervention increased the verbal participation and responses, which aligns with both studies of Fleury and colleagues (2017, 2014).

As it appeared from the previous studies, the dialogic reading systematic review stated that the majority of the interventions were conducted in school settings, and only four studies examined parental dialogic reading in the home setting (Alharbi et al., in preparation). The first study was conducted by Whalon et al. (2016) who used a systemic case study to examine the impact of mother-implemented RECALL on correct spontaneous responses of a four-year-old child with autism. The correct spontaneous responses were counted when the child answered questions within five seconds and the answer was about the storybook. The mother participated in two 30-minute training sessions before implementing the intervention with her child. The findings showed that the average of the child's correct unprompted answers increased from 30% on the pre-test to 54% on the post-test. The results were similar to Whalon et al. (2015) in which an increase occurred in the correct spontaneous answers of all the four participants. In addition, the post-intervention interview revealed that the intervention was well received by the mother. She stated that it was beneficial to her as it changed her reading style with her child. Instead of just reading to him, she started engaging him more by asking questions. She also noticed the effect of the intervention on her child's language: his verbal and nonverbal participation (asking questions, reading and pointing) increased.

While Whalon et al. (2016) had encouraging results, caution must be taken when interpreting them since the study involved just one parent. Thus, Ward (2018) replicated the study using a

multiple baseline design and increasing the sample population and the intervention duration. Four families with their five children with autism (one parent participated with two children) between the age of three and five years participated in the study. Parents conducted baseline shared reading sessions before participating in a three-hour training session. Then, they implemented the dialogic reading intervention with their children. In addition, parents filled a shared book reading survey before and after the intervention. During the reading sessions, the researcher measured children's social reciprocity using a checklist counting response to questions, initiation of interaction, turn-taking in conversation, joint attention and eye contact. She also used a parents' competencies checklist which measured providing sufficient responding time, praising, providing visual support when appropriate and adding additional questions.

In general, the social reciprocity behaviours of four children increased during the dialogic reading intervention. However, not all behaviours had a noticeable growth. Turn-taking, initiation and eye contact had a lower frequency, increasing from a frequency count of zero in the baseline up to three. On the other hand, the increase of responding and joint attention behaviours was evidenced, which agreed with the results of Whalon and colleagues (2016). Furthermore, results for one child were excluded because of a lack of data collection compliance; his parents read to their child once a week rather than five days a week as the study suggested. This may raise the importance of considering parents' preferences when planning a parental intervention. Participating in a 10-week intervention in which parents implemented the intervention five days a week might be overwhelming for some parents. For parents' confidence and competence, the shared reading survey and parents' competencies checklist indicated that parents increased their positive perception of competence and confidence about their abilities to participate, engage with their children and use the dialogic reading strategies.

The third one was a small study conducted by Balsamo (2019) in which three mothers delivered dialogic reading with their children with autism. After the dialogic reading training, the mothers implemented the intervention with their children for four to six weeks. The study found that dialogic reading was effective in increasing the independent and accurate responses for two children and slightly effective for the third child. Additionally, the study indicated that mothers were able to implement dialogic reading with their children with moderate fidelity. Mothers reported that the intervention was feasible to use and that they found it effective for their children. These findings are in accordance with the findings of Ward's (2018) and Whalon et al.'s (2016) studies in which parents provided positive feedback about their experiences in using the adapted dialogic reading intervention.

Finally, Lo and Shum (2020) conducted an RCT to investigate a parent-implemented RECALL with their children with autism. A sample of 31 parents with their children randomly assigned to experimental and control groups. The experimental group attended a RECALL training workshop and was asked to use the intervention with their children twice a week for six weeks, while the control group was asked to read with their children as they normally did for the same period. For children in the experimental group, RECALL significantly improved their receptive vocabulary, spontaneity in reciprocal communication, story comprehension, and reading engagement. On the other hand, children in the control group significantly increased only their receptive vocabulary scores. In addition, a positive correlation was found between the amount of reading during the intervention and parent-child relationship, parents' self-efficacy in supporting child's reading and learning and parents' motivation to read with their children. The authors stated that this correlation could have two interpretations. It might imply that the more parents read with their children, the more confident they feel about supporting their children and the

better their relationship with their children becomes. It might also be the other way around; parents who feel confident about their ability to help their children and have a better relationship with their children read more with them (Lo and Shum, 2020). When looking at all the four studies that used parental dialogic reading interventions (Lo and Shum, 2020; Balsamo, 2019; Ward, 2018; Whalon et al., 2016), it appeared that they all agreed that parents were able to use dialogic reading with their children with autism.

In addition to examining children's verbal and nonverbal participation and engagement, the effect of dialogic reading on children's print awareness was also investigated. Hudson et al. (2017) and Pamparo (2012) examined the use of dialogic reading on the emergent literacy of children with autism between three and five years old. The studies used the Test of Preschool Early Literacy (Lonigan et al., 2007), which has a print knowledge subtest measuring letters knowledge and sounds such as naming specific letters, pointing to specific letters and identifying the letters that are associated with specific sounds. The results of the subtest in both studies showed that dialogic reading did not affect children's print knowledge.

2.5.3 Conclusion

Dialogic reading is a shared reading practice that has strong evidence of its positive effect on children's and adults' use of language and interaction during the reading. For autism, most of the dialogic reading research has investigated the effect of dialogic reading or adaptive dialogic reading interventions on children's verbal participation. When looking closely at the term 'verbal participation', two categories were examined by the studies: verbal responses and verbal initiation (Alharbi et al., in preparation). Research provided evidence for the effect of the

dialogic reading and adaptive dialogic reading interventions on the verbal responses of children with autism (for example, Fleury and Schwartz, 2017; Whalon et al., 2016). The positive impact is expected since the dialogic reading was mainly developed to increase children's verbal responses. In terms of verbal initiation, research indicated that the intervention could be a promising practice to increase initiating verbal participation especially when modifications were added such as providing children sufficient time to participate (for example, Rodrigues-Queiroz et al., 2020; Kang, 2017; Whalon et al., 2015).

However, not all verbal participation acts were examined, and some verbalisations were even excluded. For example, any verbalisation that was not related to the storybook was excluded from studies (for example, Fleury and Schwartz, 2017; Kang, 2017; Fleury et al., 2014). In addition. Fleury and Schwartz (2017) excluded echolalic verbalisation, and Fleury et al. (2014) included only verbalisation that had one or more intelligible words. Excluding unintelligible words and responses that were out of the topic can be justified by arguing that those studies focused on the quality of children's participation. On the other hand, those verbalisation acts should not have been ignored. Children's unintelligible words may be meaningful for them, and their unrelated response may be in fact related, but adults miss the connection between those responses and the storybook topic. Moreover, since shared reading is a social practice (Woods, 2017), it is important not just to look at the child's vocabulary, language and comprehension abilities, but also social communication aspects. Children may use unintelligible and unrelated vocalisations to communicate with adults during the reading. The same can be said about echoic verbalisation. Echolalia in autism is rarely meaningless and usually has a purpose and function (Tager-Flusberg et al., 2005). In fact, children with autism may use echolalia as a means of communication (Prizant and Duchan, 1981). Thus, having studies that include all verbal acts may

give more understanding about the impact of the intervention on children's verbal social communication.

While studies examined verbal participation, on the other hand, there was not enough information about the effect of the intervention on nonverbal participation of children with autism (Alharbi et al., in preparation). Ward (2018) and Whalon et al. (2015) included measuring a few nonverbal acts in their studies. Ward (2018) indicated an increase in children's joint attention after implementing an adaptive dialogic reading intervention. However, Whalon et al. (2015) found no improvement in children's pointing and gesturing as a result of the intervention. Nevertheless, research examining the impact of dialogic reading or adaptive dialogic reading interventions on different nonverbal social communication behaviours of children with autism is needed. Moreover, studies investigating the effect of dialogic reading on children's emergent literacy and reading engagement are also needed as only three studies investigated the effect on children's engagement (Lo and Shum, 2020; Rodrigues-Queiroz et al., 2020; Fleury et al., 2014) and two studies examined the effect on emergent literacy (Hudson et al. 2017; Pamparo 2012).

Finally, most of the dialogic reading interventions for children with autism were implemented in school settings (Alharbi et al., in preparation). Whalon et al. (2016) stated that parental shared reading interventions with children with autism are almost non-existent. They argued that this is unfortunate for children with autism because they would miss the many advantages that parent-child shared reading offers. The studies that conducted dialogic reading with parents and their children with autism reported encouraging findings and indicated that parents were able to implement the intervention (Lo and Shum, 2020; Balsamo, 2019; Ward, 2018; Whalon et al., 2016). However, they were only four, and more is needed to establish well-documented evidence. Thus, having studies investigating parental implementation of dialogic reading or

adaptive dialogic reading interventions with their children with autism is very important and critical.

2.6 Summary of the chapter

This chapter reviewed the relevant literature for this study. The first part focused on social communication literature which included the discussion of verbal and nonverbal social communication for children with TD and children with autism. The second part presented the literature on parental interaction and parental early interventions. First, parental interaction with children with autism was presented by discussing what research revealed about parent-child interaction in the field of autism. Then, the importance of parental early interventions for children with autism and their effect on parental interaction and children's social communication skills were presented followed by a section on parental early interventions for children with autism in Saudi Arabia. The third part focused on shared reading literature which started with the role of home literacy environment for both children with TD and children with autism. After that, the shared reading practice was explained followed by the situation of shared reading in the Arab world. Then, interventions of shared reading for children with autism are presented. The last part focused on dialogic reading. It started with the definition of dialogic reading and explaining its rationale and how to use it. After that, the research on the intervention was reviewed in general. Finally, the studies that used dialogic reading for children with autism were discussed.

The main findings from the literature review conducted for this thesis and the review paper will now be summarised to demonstrate how the research questions were developed. Children with

autism have been reported to have difficulties in both verbal and nonverbal social communication. Moreover, children with autism may exhibit difficulties in emergent literacy including print awareness. The literature review highlighted the importance of shared reading on improving a variety of skills of children with autism, such as social communication, emergent literacy and reading engagement. Dialogic reading intervention was reported to be the most used shared reading intervention in the field of autism and showed promising results on different aspects of participation. The literature review found that dialogic reading showed encouraging results in improving children's verbal social participation and reading engagement. On the other hand, lack of investigating nonverbal social communication and emergent literacy skills was found in the systematic review which increased the need to examine those aspects. Based on the above summary points, the first research question was developed:

- Can dialogic reading be effective to enhance the social communication, emergent literacy and reading engagement of children with autism?

The literature review of dialogic reading found that most of the interventions were delivered by teachers or researchers. There was a lack of parental dialogic reading interventions which highlighted the need to conduct more research on this area. In addition, the literature review showed that shared reading research in the Arab world is nearly non-existent. This might be due to the fact that shared reading may not be a common practice in Arab societies, as suggested in some research. Therefore, it was important to explore how mothers in Saudi Arabia understood shared reading and if they had any experience with shared reading. It was also important to conduct dialogic reading with them and to examine how they implemented, experience and perceive dialogic reading with their children. Based on this, the second research question was developed:

- How do mothers experience and perceive shared reading with their children with autism?

Dialogic reading has never been used with Arab children with autism. Research highlighted the importance of culturally appropriate interventions as shown in the introduction chapter. However, the relatively limited studies in Saudi autism intervention research showed the absence of cultural considerations. Thus, since dialogic reading is a Western-developed intervention, it was significant to adapt and make it more culturally appropriate to meet the needs of mothers in Saudi Arabia. The above points informed the last research question:

- How can dialogic reading be adapted to meet the needs of mothers of children with autism?

CHAPTER 3: METHODOLOGY

3.1 Introduction

This study aimed to investigate the effectiveness of dialogic reading on the social communication, emergent literacy and reading engagement of children with autism and explore mothers' experience and perception of shared reading in Saudi Arabia. To achieve these aims, two phases were conducted. In phase one, to examine the intervention effectiveness on children and mothers' experiences of using dialogic reading, four mothers implemented the dialogic reading intervention with their children with autism. All sessions were video recorded, and the mothers were interviewed at three stages: pre-intervention, post-intervention and follow-up after 10 weeks of the end of the intervention. Then, phase two examined mothers' perception of shared reading to assess the usefulness and suitability of using such an intervention in the Saudi context by interviewing another sample of mothers of children with autism about shared reading topics. The methodology of the whole study is discussed in this chapter. First, the research questions are presented followed by the research's philosophical approach and methodology. After that, phase one is described in detail. Then, phase two is described in detail.

3.2 Research questions

The main research questions were (in the context of Saudi Arabia):

- Can dialogic reading be effective to enhance the social communication, emergent literacy and reading engagement of children with autism?

- How do mothers experience and perceive shared reading with their children with autism?

- How can dialogic reading be adapted to meet the needs of mothers of children with autism?

The first question was answered by phase one while the second and third questions were answered by both phase one and two.

3.3 Philosophical Approach

When conducting research, researchers need to be aware of their beliefs and practices that affect the research questions they ask and the selection of the research methods they use to answer them. Those beliefs and views are called paradigms and are defined as the 'shared beliefs among the members of a specialty area' (Morgan, 2007, p. 54). The present study followed the pragmatic paradigm which recognises the importance and existence of both the natural world and the emergent social world. When pragmatists look for the truth, they search 'what works' and focus on the practical implications (Robson and McCartan, 2016). The pragmatic paradigm concerns the research problem and uses whatever philosophical and methodological approach is available to understand and solve the problem (Robson and McCartan, 2016; Creswell, 2014). The present study combined the philosophical approaches of both positivism and interpretivism and used both quantitative and qualitative methods (mixed method research) to gain a better understanding of the research problem. More information on how the pragmatic approach

adopted in this thesis used the quantitative and qualitative methods is discussed later (see 3.5 Research methodology).

This study used a positivistic approach to examine the effect of the dialogic reading intervention on children's behaviours in order to answer the first question. The positivistic approach has the assumption that knowledge can be obtained objectively from observation and direct experience, and it is based on quantitative data (Robson and McCartan, 2016). However, for the second and third questions, this study followed an interpretive philosophy to understand the suitability of the intervention for the Saudi context and to introduce an adapted version of the intervention to mothers in Saudi Arabia. To establish that, it was important to focus on the subjective meaning of social situations and actions (Bryman, 2012). What is being investigated has been mainly influenced by how the mothers who participated in the two phases depicted the social reality they had been experiencing.

3.4 Positionality

This study used the pragmatic approach, which combines both positive and interpretive philosophies. However, the main part of this study lay within the interpretive approach, which follows 'an explicitly value-oriented approach to research that is derived from cultural values; specifically endorses shared values' (Robson and McCartan, 2016, p. 29). The interpretive approach was chosen because one of the main goals of the research was to provide a set of guidelines for how dialogic reading can be adapted to meet the needs of mothers of children with autism in Saudi Arabia and can work in Saudi real-life contexts. To achieve this goal, the researcher tried to be sensitive to the context, culture and participants. Thus, the researcher,

being Saudi and coming from the Arab culture, was aware that her understandings, opinions, values and beliefs might affect the research. She recognised that some of the research choices that she made might be influenced by her own values and understanding of her culture, such as the decision of using baseline (A) and intervention (B) phases design (AB design), rather than multiple baseline design (see 3.6.1 Single Case Designs).

3.5 Research methodology

This study followed the mixed methods approach, which combines collecting, analysing and interpreting quantitative and qualitative data in the same research framework (Creswell, 2014; Leech and Onwuegbuzie, 2009). The approach was chosen to have the strength of both quantitative and qualitative data and to provide an answer to the research questions. Mixed method research contains different research designs in terms of the purpose and the procedure of using both quantitative and qualitative data. In particular, the present study followed a multi-phase mixed methods design using a sequential approach (Creswell, 2014; Tashakkori and Teddlie, 2009). In phase one, an embedded mixed methods design, which is very popular when conducting an intervention (Creswell, 2014), was used; in this, qualitative data collection is embedded in a quantitative procedure. To measure the effectiveness of the dialogic reading intervention on children's participation, an educational intervention was conducted, and quantitative data were collected. Within the implementation of the dialogic reading intervention, qualitative data were also collected; mothers were interviewed three times while the researcher also kept field notes during the intervention. The qualitative data were used to enrich and support

the quantitative data, to examine the mothers' experiences about using the intervention and to examine the mothers' perceptions of how the intervention impacted them and their children.

The quantitative data were important for the present study and provided a quantitative measure to examine the effect of the intervention on children's behaviour. However, measuring behaviours on its own would not have provided enough information about the impact of the intervention, which highlighted the need to have qualitative data as well. Indeed, the qualitative data looked beyond counting particular behaviours and focused on different aspects such as how mothers experienced the intervention. The qualitative data were critical to determining the feasibility of the intervention.

The approach of including qualitative aspects and qualitative studies in autism practice research has recently increased. It is well established that the field of autism has a strong focus on experimental designs and quantitative studies regarding evidence-based practices and 'what works' (Guldberg, 2017). However, this emphasis has created a gap between research and practice (Parsons and Kasari, 2013). Kazdin (2008) stated that qualitative studies can play a special role to bridge this gap. He argued that the qualitative methods look at many aspects of participants' experience that the quantitative methods have been usually designed to overlook. To make a positive contribution to practitioners and individuals with autism, research needs to move beyond relying on 'what works' by combining objective measures obtained from controlled experiments with subjective perspective focus on the experiences and interpretations of practitioners (Guldberg, 2017).

In phase two, only a qualitative method (interviews) was used to collect data. The qualitative data were intended to provide valuable information to understand shared reading and to shape the

intervention to be more suitable and useful for the Saudi culture. It was also used to enrich and give an explanation of the data gained from phase one. Thus, another sample of mothers of children with autism was interviewed about shared reading. The interview in phase two was developed to understand the suitability of the dialogic reading intervention in Saudi Arabia. By conducting the two phases and combining their results, the research aimed to provide a set of guidelines on how the dialogic reading intervention can be adapted for the Arab world generally and Saudi society specifically.

3.6 Phase one

3.6.1 Single Case Designs

This study used a single case design (SCD) to investigate the effect of the dialogic reading intervention on children's participation. SCDs (also called N of 1 research and single subject designs) are considered quasi-experimental designs because there is no random assignment of participants (Riley-Tillman and Burns, 2009; Creswell, 2008). SCDs observe single individuals during the baseline and the intervention periods by having repeated and frequent observations and measurements of the target behaviour (Creswell, 2008).

SCDs are widely used in the field of special education and provide high-level evidence in intervention research studies (Kratochwill et al., 2010). Some features of SCDs make the designs appropriate to use in special education research, including autism research (Bulkeley et al., 2013; Horner et al., 2005). In fact, SCD research can solve the problems regarding autism intervention research, including the need for individualising interventions and the difficulty of recruiting a

large sample (Bulkeley et al., 2013). In terms of the need for individualising interventions, SCDs, unlike other experimental designs, follow an idiographic approach and focus on the individual (Morgan and Morgan, 2009). Heterogeneous or low-incidence populations are often the focus of research in the special education field, which means that findings of group performance may be less significant for application to individuals (Horner et al., 2005). SCDs individualise interventions by allowing the development of individual responses within the overall intervention framework (Bulkeley et al., 2013). Group designs cannot tell the whole story of individual responses as those designs usually mask the variability that often occurs (Horner et al., 2005). The nature of autism as a spectrum creates the need to understand the responses of individuals to intervention (Bulkeley et al., 2013). Indeed, individualised variation in interventions for children with autism is considered by several researchers as best practice (Barton et al., 2012; Delmolino and Harris, 2012). A one-size-fits-all intervention is rarely appropriate for children with autism (Bulkeley et al., 2013). SCDs allow detailed information on the responses of individual participants with autism by having continuous observations and measurements of the responses over time, which makes SCDs sensitive to the changes in those responses (Bulkeley et al., 2013; Morgan and Morgan, 2009). In addition, SCDs provide information beyond individual responses. The designs deliver an analysis of the characteristics of the non-responders by using an empirically rigorous method. This analysis may help to identify intervention adaptations that are needed to become suitable for more participants (Horner et al., 2005).

Moreover, SCDs involve a small number of participants. This feature helps to overcome the difficulty of recruiting participants in autism research. The recruitment of a large number of participants with autism who are sufficiently similar can be difficult because of the

heterogeneous nature of autism (Bulkeley et al., 2013). The heterogeneity in autism can be explained by the fact that autism is associated with different functional qualities; for example, some individuals with autism use speech to communicate while others are nonverbal (Georgiades et al., 2013). In addition, autism is also associated with different severity levels; for instance, some individuals with autism have severe social communication difficulties and mild repetitive behaviours while the opposite is the case for others. Also, some have learning/intellectual disabilities whilst others do not (Georgiades et al., 2013). On the other hand, it must be acknowledged that having a small number of participants is considered a limitation of the designs as well as an advantage (see 7.4 Limitations of the study).

SCDs were appropriate to use in this study for the above-mentioned features. In addition, the use of SCDs is in accordance with the model that Smith et al. (2007) developed to address the methodological challenges in autism intervention research. The first step of the model is having initial efficacy studies to establish that an intervention has promising results. The authors argued that using SCDs is a useful strategy to start testing a new intervention because SCDs can provide evidence that the intervention has a replicable effect on target behaviour. Likewise, the present study used an SCD because dialogic reading is considered a new intervention to use in the Saudi contexts. Thus, it was appropriate to use an SCD to test the intervention with a few children and over a short time period to see if the SCD can yield some indication that the dialogic reading intervention appears useful for application in the Saudi context (Rogers and Vismara, 2008).

From the range of SCDs, the present study used the AB design, which has two experimental conditions: baseline condition (‘A’ phase) and intervention condition (‘B’ phase; Robson and McCartan, 2016). An AB design may be the most utilised design in educational environments (Riley-Tillman and Burns, 2009). However, using AB can result in a few limitations because it is

not usually sufficient in controlling the threats to internal validity (Byiers et al., 2012). Therefore, it is not considered a powerful tool compared to multiple baseline design which may serve as a quality indicator for single case research on autism intervention (Smith et al., 2007). However, it was not possible to use multiple baseline design in the present study because of time limitations. More time was needed to employ a multiple baseline design which would not be possible as the researcher, due to her scholarship regulations, had only three months to conduct the fieldwork. The other reason for not using a multiple baseline design is that in the specific design the intervention is applied at different times, meaning that for some participants the baseline should last longer than others, to demonstrate the effect of the intervention (Robson and McCartan, 2016). If the present study had used multiple baseline design, the baseline phase would have varied from three to six sessions. Coming from the Saudi culture and having good relationships with several mothers of children with autism, the researcher was aware that the mothers might not be comfortable with delaying the intervention for six sessions because most of them wanted to try the intervention as soon as possible. This is due to the lack of autism parental support in Saudi Arabia and the keenness of parents to receive parental interventions (Babatin et al., 2016). In fact, when conducting phase one, and although all mothers were informed about the number of baseline sessions they had to go through one of them asked if she could start the intervention after the second baseline session because she was eager to use it with her child as soon as possible. For all the above reasons, the present study used AB design, which means that all participants had the same number of baseline sessions (three).

3.6.2 Dialogic reading intervention

3.6.2.1 Intervention description

This study in phase one investigated the use of the dialogic reading intervention. As mentioned in the literature review, dialogic reading is a shared reading intervention developed by Whitehurst and collegues (1994, 1988) to increase children's verbal participation and interaction with adults. The dialogic reading intervention procedure in the present study used the steps represented in the acronym *PEER* and the prompts represented in the acronym *CROWDS* as follows (based on Fleury and Schwartz, 2017; Whitehurst et al., 1994):

During shared reading, mothers were asked to use the following steps (*PEER*):

1. ***P****rompts:* the mother prompts the child by using one of the following prompts (*CROWDS*):

    - ***C****ompletion*: the mother says the initial part of a repetitive phrase and allows the child to finish the phrase.

    - ***R****ecall*: the mother asks questions about previous aspects of the story.

    - ***O****pen-ended****:*** the mother encourages the child to tell her what is happening in a picture.

    - ***W****h-questions:* the mother asks wh-questions (*what, where, when, why and who*) about a picture.

    - ***D****istancing****:*** the mother asks questions that relate elements of the story to the child's personal experiences.

- ***S****pecial prompts:* the mother provides choice, ask yes/no questions or request the child to point and/or repeat

2. ***E****valuates:* the mother evaluates the child's responses.

3. ***E****xpands:* the mother expands on the child's verbalisation by repeating what the child has said and adding information to it.

4. ***R****epeats:* the mother encourages the child to repeat the expanded utterances

After providing a prompt, the mothers were asked to wait five seconds for children to respond. In the case that they did not respond, the mothers were asked to continue the reading. Moreover, the mothers were given the option of using relevant objects to help increase their children's attention, interaction and reading engagement during the activity. In addition to the dialogic reading strategy, five principles were included in the intervention. The principles which were added after reviewing the literature to increase children's participation during the intervention were as follows:

a. Responding to the child's attempt to participate (Zevenbergen and Whitehurst, 2003);

b. Following the child's lead (Zevenbergen and Whitehurst, 2003);

c. Enjoying the activity with the child (Zevenbergen and Whitehurst, 2003);

d. Giving the child time to respond (five seconds; Fleury et al., 2014);

e. Avoiding repeating questions (Fleury et al., 2014)

The first three principles were based on the dialogic reading techniques that Zevenbergen and

Whitehurst (2003) developed for young children between two and three years old. The authors developed two sets of techniques for the intervention: one set for young children, and another set (*CROWDS* and *PEER*), which the present study used, for children older than three years old. The fourth and fifth principles were based on Fleury et al.'s (2014) study which used dialogic reading with children with autism. For the fourth principle, the adult in the study of Fleury et al. (2014) was asked to pause for five seconds after asking the questions. Similar to the last principle, the adult was also asked to move on if the child did not answer a question (Fleury et al., 2014).

3.6.2.2 Intervention piloting

Prior to conducting the intervention, a small pilot study was conducted to ensure that mothers could use the intervention, to identify any issues that occurred when implementing the intervention and to make any needed adjustments. The researcher asked a special education teacher in Saudi Arabia to identify two mothers to pilot the intervention. The teacher, who was a member of a WhatsApp group for mothers of children with autism from many cities of Saudi Arabia, asked the group's members. Two mothers whose children had autism and communicated verbally volunteered. The children were an eight-year-old girl who attended a mainstream primary school and a six-year-old boy who attended an autism centre. Both mothers reported that they did not read to their children. The researcher conducted an individual guidance session with each mother via a teleconferencing session in which she explained the intervention and provided them with examples of how to use the strategies. The researcher asked them to use any children's books they had or wanted because she wanted to gain the mothers' feedback about storybooks before choosing the book criteria. The researcher was not able to observe them because she was

in the UK during that time. She asked them to implement the intervention for six sessions and report what happened to her. The mothers reported that they found the intervention easy to apply and their children enjoyed it. They said that their children participated during the reading by responding to the interventions' prompts. They were also engaged with the storybooks: looking at pictures, turning pages and pointing. When asked about their suggestions, one mother mentioned that she had never used shared reading with her boy which made him refuse to sit with her during the initial sessions. However, he became engaged and responded to her after the second session. The other mother mentioned the importance of choosing appropriate storybooks. She said that her daughter did not participate well when using books with many lines and unattractive pictures and colours. The pilot study indicated that the individual guidance session was clear for both mothers and the intervention was easy to apply. Therefore, nothing was changed as a result of the pilot study. In addition, the mother's suggestion regarding the storybooks helped the researcher when choosing the storybook criteria.

3.6.2.3 Materials of the intervention

The mothers were provided with materials to use during the sessions. This section presents the materials that were used for the intervention, which included the storybooks and the relevant objects. A description for each material is provided below.

3.6.2.3.1 Storybooks

The storybooks used in this study were chosen according to the criteria that were developed by Hargrave and Sénéchal (2000). Those criteria were chosen for the present study because they were in accordance with the result of piloting the intervention, as mentioned above (see 3.6.2.2 Intervention piloting), and they were the criteria that Fleury et al. (2014) used in their study. The criteria were as follows (Hargrave and Sénéchal, 2000, p. 80):

> '(a) colorful illustrations provided the opportunity for narrating the story without complete reliance on the text; (b) potentially new vocabulary appeared in the illustrations and in the text, allowing children to be exposed to the new words either through being read to in a dialogic manner or through conventional reading; (c) texts were not excessively long to increase the likelihood of reader-child interactions; (d) books were appropriate for the entire age range of children participating in this study; (e) books were not specific to certain holidays (e.g., Christmas books in the month of February); (f) rhyme and word books were not used; (g) children had not been previously exposed to the books'.

In the present study, two more criteria were added to the previous ones. The first criterion was that all the stories were from the same collection by the same author to eliminate the potential effect of having a different level of difficulties, writing styles, illustrations or book sizes and designs. The second one was that storybooks were written by an Arab author and represented in some way a few features of the Arab culture. This criterion arose from the importance of exposing children to storybooks that represent their culture in both the contents and illustrations.

The storybook collection that was selected for the present study is called ‘My Family’ by Aulfat Abdukareem and illustrated by Ali Alzaini. The collection has six storybooks about family members (My Mother, My Father, My Brother, My Sister, My Grandmother and My Grandfather); each story contains 10 pages. While each story focuses on one family member, other members also appear in the story which connects all the stories together. To the researcher’s knowledge, the ‘My Family’ collection was one of the best collections that met all the criteria. While several collections met the first eight criteria, they did not represent the Arab culture. On the other hand, most of the collections that represented Arab society did not meet other criteria (for example, not appropriate to children’s age in terms of difficulty, having poor illustrations or long texts). The ‘My Family’ collection has beautiful and colourful illustrations and one clear line of text on each page and is suitable for children in the Arab culture (for example, the characters have Arabic names, and the mother and grandmother wear Hijab).

3.6.2.3.2 Relevant Objects

Relevant objects are tactile objects related to the stories. Originally, using relevant objects was not part of dialogic reading. However, other studies have used relevant objects when implementing shared reading interventions with children with autism to increase attention, reading engagement, improve effective participation, represent concepts and provide multisensory context to the activity (Mucchetti, 2013, Bellon et al., 2000). The present study used relevant objects in conjunction with the storybooks to increase the children’s reading engagement and participation with their mothers. For example, one of the objects was a coloured pencil set. The specific object was used with a page of the ‘My Mother’ story depicting the

mother and the boy using coloured pencils to draw together. When reaching this page, the mother could use the coloured pencil set to increase her child's engagement and participation during the shared reading activities (for example, asking the child to hold it, label the colours or match the pencils with the ones in the pictures). However, it was important that children would not lose interest of the storybook or get distracted by using many relevant objects; thus each storybook had no more than two objects which were appropriate to the children's ages and the length of the activity. Table 5 represents the relevant objects in each storybook. The two objects were chosen depending on the availability of the objects that are similar to the ones in the storybooks.

Table 5: Relevant objects for each storybook

Storybook	**Relevant Objects**
My Mother	Coloured pencil set, button and thread
My Father	Car, cutlery
My Sister	Dress, nail polish
My Brother	Ball, car
My Grandmother	Picture frame, dress
My Grandfather	Cutlery, coloured pencil set

3.6.3 Sample and setting

This study used purposive sampling, which is a non-probability type of sampling and common in small-scale research studies (Robson and McCartan, 2016). The study followed all the participant quality indicators within single case research in special education interventions (Horner et al., 2005) and in interventions for individuals with autism (Smith et al., 2007). The

quality indicators were: the inclusion and exclusion criteria, detailed process for selecting participants, detailed description of participants and documentation of drop-outs.

3.6.3.1 Inclusion and exclusion criteria

In order to be included in the study, children should:

- have a diagnosis of autism as stated in their medical report
- be described as verbal or at least minimally verbal[2] in their medical report
- be between three to nine years of age
- attend autism centres or mainstream schools

The only exclusion criterion was having a vision or a hearing disability. Having other additional needs was not an exclusion criterion. In fact, one of the participants had ADHD (Khaled), and another had a learning/intellectual disability (Sarah; see 3.6.3.3.1 Children).

Since the research aimed to investigate dialogic reading with children with autism, having a diagnosis of autism was the essential criterion. In Saudi Arabia, children with autism need a medical report which indicates that they have autism in order to enrol in autism centres or mainstream schools. The report often contains a brief medical history of the child, the diagnosis and recommendations for schools/centres and parents. In addition, the criterion of having verbal or minimally verbal ability was selected because the dialogic reading intervention was originally

[2] The children's medical report describes a child as minimally verbal if they have less than 10 intelligible spoken words

developed to increase children's verbal participation. Due to the limited time of the fieldwork, the present study depended on the medical reports of the participants to indicate that participants had a diagnosis of autism and at least minimal verbal ability.

For the age criterion, early interventions are usually for children up to seven years old (Caron, 2017; Oono, 2013). However, the present study extended the range to include children up to nine years old (early primary years) because many children in Saudi Arabia have a late diagnosis, like Sarah (one of the participants in the present study) who was diagnosed at the age of six years old. Thus, the age criterion was chosen to provide those children with opportunities to access early interventions. For the last criterion, participants had to attend autism centres or schools because one of the researcher's scholarship regulations was that participants' recruitment should be through autism centres and schools.

3.6.3.2 Process of selecting participants and setting

As presented in the introduction chapter (see 1.3.2 Autism in Saudi Arabia), young children with autism in Saudi Arabia usually attend autism centres while a few of them are included in mainstream schools, mainly in big cities such as the one in which this study took place, Medina. However, some children with autism do not attend schools and centres and stay at home. The researcher was not able to recruit children staying at home due to the researcher's scholarship regulations. Thus, this study aimed to conduct the intervention with children from both autism centres and mainstream schools to investigate the possibility of using the intervention with children from different settings.

The three most popular autism centres in Medina were contacted to gain permission to conduct this study with their children. Two centres were very slow with their process of providing permission, which would have considerably delayed the intervention. As a result, those centres were excluded because of the limited time that the researcher could spend in Saudi Arabia conducting the fieldwork. On the other hand, the head of the third centre was very welcoming and collaborative. After the centre identified the potential participants, the researcher sent the Phase One Participant Information Sheet to the head of centre who sent it to the potential participants' mothers (see Appendix 2 for Phase One Participant Information Sheet). Then, the researcher met the mothers face to face and explained the research project to them. As a result, three mothers agreed to participate in this study and signed the Consent Forms (see Appendix 2a for a blank copy of the Intervention Consent Form and Appendix 2c for the Interview Consent Form).

The process of conducting research projects in schools in Saudi Arabia is slightly different compared to autism centres. Researchers should first get permission from the Ministry of Education. Therefore, the researcher of the present study gained permission from the Ministry and then contacted the Department of Education in Medina to identify the mainstream schools with children with autism. The Department of Education identified two female primary schools with an autism inclusion programme. The two schools were contacted and asked to identify the potential participants. One school reported that the few children they have did not meet all the criteria or their mothers could not participate because of their busy schedules. However, the other school identified two children whose mothers might have been able to participate. Then, the researcher sent the Phase One Participant Information Sheet to the head of school who sent them to the potential participants' mothers. After that, the researcher met with the two mothers and

explained the intervention to them. The mothers were happy to participate with their children and signed the Consent Forms. However, one mother withdrew from the study (see 3.6.3.4 Drop out), which resulted in having a total of three children from a centre and one child from a mainstream primary school. The small number of participants was established to be manageable for the researcher considering that the researcher was present during all the reading sessions with each participant. Additionally, Smith et al. (2007) indicated the quality indicator of the number of participants in single case research is that the intervention should be replicated across three or more participants.

In terms of the intervention setting, mothers were given the option of implementing the intervention in their home or in their children's educational placements (centres or schools). All mothers chose to have the sessions in their children's educational placements. Thus, the intervention setting was an autism centre for three children and a mainstream school for the fourth child.

3.6.3.3 Description of participants

3.6.3.3.1 Children

A summary of children's characteristics is provided in Table 6.

Table 6: Characteristics of children in phase one

Child[3]	**Age**	**Gender**	**Diagnosis**	**Educational placement**
Ali	Seven years and six months	Male	Autism	Mainstream school
Khaled	Nine years	Male	Autism	Autism centre
Sarah	Seven years	Female	Autism	Autism centre
Ahmad	Five years	Male	Autism	Autism centre

3.6.3.3.1.1 Child 1: Ali

Ali was seven years and six months old, educated in a mainstream primary school. He received a diagnosis of autism at the age of two years and six months. He communicated verbally, and he was able to use simple complete sentences with three words. He responded to his name and followed simple orders. His medical report indicated that he had a delay in his verbal and nonverbal social communication skills. According to Ali's PLS-3 scores, his receptive and expressive language skills were at the level of a four-year-old. He received a score of 34 on CARS which indicated 'moderate' autism. According to his mother, Ali started talking when he was five years old.

3.6.3.3.1.2 Child 2: Khaled

Khaled was nine years old and attended an autism centre. He was diagnosed with autism when he was three years old. He communicated through verbal speech, and he was able to use complete sentences with more than three words. He was able to start a conversation and follow orders. His receptive and expressive language were at the level of a five-year-old child as his

[3] All children's names have been replaced with pseudonyms

PLS-3 scores indicated. According to his medical report, he had ADHD and sensory issues associated with hearing and tactile senses. Khaled received a score of 27 on CARS which indicated ‘mild’ autism. His mother reported that he started to communicate verbally when he was six years old

3.6.3.3.1.3 Child 3: Sarah

Sarah was a seven-year-old who attended an autism centre. She received a diagnosis of autism at the age of six years. She had a limited verbal ability. She primarily communicated by babbling, pointing and sometimes saying one or two words. She was able to follow orders and respond when her name was called. Sarah’s medical report stated that she had language and communication delay and difficulties in social interaction, and her IQ score was 84. As her PLS-3 scores indicated, Sarah’s receptive language skills were at the level of a three-year-old while her expressive language skills were less than the level of 18 months old. According to her mother, Sarah started saying a few words when she was four.

3.6.3.3.1.4 Child 4: Ahmad

Ahmad was five years old attending an autism centre. He was diagnosed with autism when he was three years and six months old. He communicated verbally and followed simple orders. It was indicated in his medical report that he had a language delay. According to his PLS-3 score, he had receptive and expressive language skills at the level of a two-year-old. Ahmad was able to use verbal and nonverbal social communication skills (for example, pointing) when

communicating with others. His mother reported that he started talking six months prior to the intervention. She believed that his younger brother (three years old) had an enormously positive effect on Ahmad's ability to speak. Ahmad learned to speak by interacting with and imitating his younger brother.

3.6.3.3.2 Mothers

Four mothers participated in implementing the intervention with their children. Demographic information was collected prior to the intervention including: marital status, educational level, occupation and number of children. The demographic information of the mothers is presented in Table 7.

Table 7: Characteristics of mothers in phase one

Mother's identifier	**Age**	**Marital status**	**Number of children**	**Order of child with autism**	**Educational level**	**Occupation**
Ali's mother	31 – 40	Married	Three	First	Bachelor's degree	Teacher
Khaled's mother	41 – 50	Married	Four	Fourth	Intermediate school*	Housewife
Sarah's mother	20 – 30	Married	Three	First	High school**	Housewife / student

Ahmad's mother	20 – 30	Married	Four	Second	Bachelor's degree	Housewife

* Equivalent to GCSE
** Equivalent to A Level

3.6.3.4 Drop out

Initially, five children participated in the study with their mothers. However, one mother whose child attended a mainstream school withdrew from the intervention after the second session. She withdrew because of a family crisis she had during the intervention period. However, she was eager to continue the intervention and asked if she could delay it, which was not possible due to the limited time frame of the researcher's fieldwork. Thus, four children with their mothers participated in this study.

3.6.4 Procedure

3.6.4.1 Baseline condition

All participants in this study had three baseline sessions. Each mother received a box which contained five storybooks and the relevant objects of storybooks before starting the baseline sessions. Mothers were asked to allow their child to choose the story they wanted their mother to read from the storybook collection. During the baseline sessions, mothers were asked to read with their own child as they wanted. They were given the choice to use the relevant objects if they wished. The mothers did not receive any guidance about how to read the storybooks or how

and when to use the relevant objects. All the baseline sessions were video recorded and directly observed by the researcher.

3.6.4.2 Individual guidance session

After the third baseline session, each mother attended an individual guidance session in which the researcher provided her with direct guidance on applying dialogic reading. A presentation was prepared to use for the individual guidance session to explain the intervention. The presentation was in Arabic, and all the academic terms were replaced by simple everyday synonyms. For example, the Arabic translation of the word 'evaluate' may be considered an academic term and rarely used in non-academic situations. Therefore, the researcher used another common word with a similar meaning.

The researcher started with defining dialogic reading and explaining why it was chosen. Then, she presented the intervention by explaining the steps of *PEER* and the prompts of *CROWDS*. A few examples for every step and prompt of the intervention were included in the presentation. After that, the researcher explained how the sessions should be organised and the intervention should be applied. The researcher ensured that mothers had a good understanding of how to follow the specific steps and prompts by practicing and modelling the strategies of the intervention (*CROWDS* and *PEER*) and the use of relevant objects. She also answered the questions they had about implementing it. In addition, the mothers received an intervention information sheet which outlined the intervention protocol (see Appendix 4 for a copy of the intervention information sheet).

When the researcher introduced the principles and explained their importance, some mothers expressed their doubts about their abilities to follow those principles. Indeed, the researcher anticipated this because the principles might carry new concepts for mothers, oppose what they used to do or be unusual in their culture. To make sure that mothers did not feel pressure to use all those principles, the researcher encouraged them to apply them as best as they could and told them not to worry if they could not apply some of them.

3.6.4.3 Dialogic reading intervention condition

After the individual guidance session, mothers had six intervention sessions with their children. During those sessions, mothers used the dialogic reading intervention while reading with their children. Specifically, they prompted their children to participate more by asking them questions about the stories. All the intervention sessions were video recorded and directly observed by the researcher. Immediately after each intervention session, the researcher provided mothers with feedback on their implementation of the intervention. The feedback duration did not exceed 15 minutes. More details on the nature of the feedback are mentioned later in this chapter (see 3.6.6 Fidelity of implementation and feedback).

3.6.5 Data collection methods

In phase one, four data collection methods were used: Early Social Communication Scales (ESCS), video recorded observations, researcher field notes and semi-structured interviews. The ESCS were administered before conducting the intervention while the video recorded

observations and the researcher field notes were used to collect data during the intervention. Three semi-structured interviews were conducted with the mothers: one was conducted before the intervention, the second immediately after it and the third 10 weeks after the end of the intervention.

3.6.5.1 Early Social Communication Scales

The Early Social Communication Scales (ESCS, Mundy et al., 2003, unpublished manual, University of Miami) is an observation assessment designed to provide measures of young children's nonverbal social communication skills that typically develop between the age of eight and 30 months. It is a 15-25-minute video recorded structured interaction involving several tasks to provide opportunities for social communication between the examiner and the child. Typically, the child is seated facing the examiner at a small table with a set of toys and objects to use during the tasks.

ESCS targets three categories of early social communication behaviours: joint attention (referring to use nonverbal behaviours to share experiences with others), social interaction (referring to the ability to engage in playful turn-taking interaction behaviour) and behaviour regulation (referring to use of nonverbal behaviour to obtain objects or events). The three categories are classified into six subscales based on whether the child initiates them or responds to the examiner. The subscales are: Initiating Joint Attention (IJA), Responding to Joint Attention (RJA), Initiating Behavioural Requests (IBR), Responding to Behavioural Requests (RBR), Initiating Social Interaction (ISI) and Responding to Social Interaction (RSI, see Table 8 for the subtest description).

Table 8: Description of ESCS's subscales

Subscales	Description
Initiating Joint Attention (IJA)	The frequency of making eye contact; switching gaze between objects and tester; pointing to objects and showing tester objects
Responding to Joint Attention (RJA)	The percentage of correct trials in which child turns head and eyes to follow tester's line of regard
Initiating Behavioural Requesting (IBR)	The frequency of using eye contact when object is inactive; eye contact with reaching; pointing to objects out of reach and giving objects to tester
Responding to Behavioural Requesting (IBR)	The percentage of correct trials in responding to tester's verbal or gestural command to obtain objects from child
Initiating Social Interaction (ISI)	Child's skills in initiating turn-taking sequences
Responding to Social Interaction (RSI)	The frequency of eye contact, turn-taking and gesture in responding to tester's social interaction

Based on Mundy et al. (2003)

The ESCS has been used with children with autism as well as children with TD. The assessment has reliably revealed that children with autism display difficulties in the nonverbal joint attention skills (Mundy et al., 1990). Mundy et al. (1994) indicated that the ESCS showed that children with autism have difficulties in nonverbal social interaction and requesting behaviours in addition to joint attention behaviours. Moreover, those three behaviours of children with autism differed significantly from their peers with TD (Goldberg et al., 2005).

The present study used ESCS to assess children's social communication skills. It was important to assess children's nonverbal social communication skills as the study investigated the effect of the intervention on these skills as well as children's verbal social communication. The ESCS was used because, as shown in the previous studies, it can measure the nonverbal communication skills of young children with autism. In addition, the ESCS is not a time-consuming assessment, which was an important aspect since the researcher had a time frame to conduct this study. ESCS was used in the present study as a screening assessment of children's nonverbal social communication skills. It was not used to measuring outcomes of the intervention.

Other assessments like ADOS (Lord et al., 2000), CARS (Schopler et al., 1980) and the Pragmatics Profile of Everyday Communication Skills in Children (Dewart and Summers, 1995) can also be used to identify social communication skills. Indeed, ADOS and CARS are used in Saudi Arabia to diagnose autism and mentioned in children's medical reports. However, this study was not able to use the results of these assessments to assess children's social communication skills because some medical reports only mention children's scores without providing detailed subtest scores such as the social communication subtests, while the others do not even mention their scores. As for the Pragmatic Profile (Dewart and Summers, 1995), there is no Arabic version of the assessment, and it would have been problematic to use it in this study because translating and adapting the assessment would have been time consuming and required some expertise. The translation of the Pragmatic Profile is needed to interview parents and teachers. On the other hand, while the ESCS also does not have an Arabic version, the assessment does not need a translation because it only involves demonstrating several tasks between the tester and the child. For all these previous reasons, ESCS was chosen in this study instead of other assessments and was administered by the researcher.

3.6.5.2 Video data collection

To examine the effect of the dialogic reading intervention, this study was designed to collect data on children's behaviours. However, observing the behaviours of children with autism in a mainstream school or autism centre settings would have been challenging even with using a structured observation sheet to help document children's behaviours. It would have been hard for the observer to capture all the acts in the sessions without video recordings. The camera eye, indeed, often captures the relevant cues and the moments that might be ignored by the human eye (Collier and Collier, 1986, cited in Rosenstein, 2002). Thus, the present study included video observation as a data collection method. All the sessions were video recorded by a camera set on a tripod.

Video footage collection has the advantage of minimising the subjectivity and the selective observation which increases the objectivity, unlike human observation which is often influenced by the observer's feelings, values and attitudes (Latvala et al., 2000). Moreover, video observation captures more than the identified behaviours on the observation sheet and provides potentially useful data such as information about the context of the behaviours (Rosenstein, 2002). During the observation, the researcher's main focus was on the children's behaviours which narrowed her awareness of the surroundings. In addition to the previous advantages, a major strength of video footage is that sessions can be repeated and observed by multiple viewers (Latvala et al., 2000). This advantage was essential for providing complete analyses and establishing inter-rater reliability which would be impossible without video footage.

On the other hand, the use of video recording has limitations such as the technical effect and the camera effect. The technical effect is related to the mechanical nature of the video footage which influences the production of the record (Jewitt, 2012). For example, while mothers agreed to video record the sessions, they explicitly asked not to be included in video recordings for cultural reasons (see 3.8 Ethical considerations). To fulfil their request, the researcher pointed the camera to capture the child only which might have resulted in losing some of the interaction between the mother and her child. Another limitation is the influence of the camera on participants, also called the camera effect, which means that participants might act differently because of the camera (Rosenstein, 2002). Participants also might be nervous to be video recorded. While it seemed that mothers and children were not concerned about the camera in this study, it was impossible to be certain whether the presence of the camera influenced them or not. In addition to those limitations, using video footage usually leads to a number of ethical issues too, which are discussed in the ethical considerations section (see 3.8 Ethical considerations).

3.6.5.2.1 Children's participation and observation sheet

The purpose of phase one was to investigate the effect of the dialogic reading intervention on children's participation. This study identified three types of participation as dependent variables: verbal social communication acts, nonverbal social communication acts and emergent literacy acts as presented in Table 9. Different categories were chosen because it is recommended that research examines the impact of shared reading interventions on different aspects of participation of children with autism rather than focusing on one category because shared reading interventions can provide a variety of benefits for children (Boyle et al., 2019).

Table 9: Participation categories and acts

Verbal Social Communication Category	**Nonverbal Social Communication Category**	**Emergent Literacy Category**
Correct response	Eye contact	Pointing
Incorrect response	Joint attention	Turning page
Comment	Smiling/laughing	
Repetition	Gesture	
Reading	Physical communication	
Unrelated		
Babbling		

The verbal social communication category was included as a dependent variable as dialogic reading was originally designed to increase verbal participation (Zevenbergen and Whitehurst, 2003). The verbal social communication acts included: *(i) correct response, (ii) incorrect response, (iii) comment, (iv) repetition, (v) reading, (vi) unrelated word and (vii) babbling.* The acts were identified according to their function based on previous studies (Ellis, 2009; Drew et al., 2007; Stone et al., 1997).

In addition, the nonverbal social communication category was included based on studies stating that shared reading activities positively affect the category's chosen acts (Brown et al., 2018; Farrant and Zubrick, 2013; Moody et al., 2010; Baker et al., 2001). The nonverbal social communication category acts included: *(i) eye contact, (ii) joint attention, (iii) laughing and smiling, (iv) gesture and (v) physical communication*. Whenever a child exhibited a gesture and physical communication act, a description of the act would be added. For example, if the child

hugged his mother because the picture showed a child hugging his mother, the act would code as, physical communication: hugging mother and imitating picture.

Moreover, since it is well established that shared reading builds emergent literacy, an emergent literacy category was added. While there are many emergent literacy skills, the researcher chose two acts (*(i) pointing and (ii) turning page*) that were likely to be affected during the short period of the intervention and could be captured by observation. For example, while alphabet knowledge is an emergent literacy behaviour, a child's knowledge of the alphabet cannot be determined by observation. Additionally, alphabet knowledge is not likely to increase in a short time period such as that of the intervention (six sessions). The emergent literacy acts were based on Downing (2005) and Justice and Kaderavek (2002).

A structured observation sheet was developed by the researcher in which the categories and their acts were presented based on previous studies (Brown et al., 2018; Moody et al., 2010; Drew et al., 2007; Downing, 2005; Justice and Kaderavek, 2002; Baker et al., 2001; Stone et al., 1997). A specific description was provided for each act to help to record children's participation accurately (see Appendix 5 for the acts' descriptions). The researcher piloted the observation sheet with one child for five shared reading and dialogic reading sessions. The child was a verbal seven-year-old boy with autism. As a result of piloting the observation sheet, a few changes occurred in the way the acts were presented in the observation sheet. A new category (other acts) was also added to the observation sheet to capture acts that children might display and were not mentioned in the observation sheet. In addition, the nonverbal social communication and the emergent literacy acts were presented in one section in the first version while they were split in two separate sections in the final version (see Appendix 6 for the final version of a blank copy of the observation sheet).

3.6.5.2.2 Children's reading engagement

In addition to children's participation, this study examined their reading engagement during the intervention. This study relied on other studies to measure children's engagement in shared reading sessions (Fleury et al., 2014; Moody et al., 2010). The engagement of children was determined by:

- The duration of the session in which the child was sitting on a chair and/or standing beside their mother with their body oriented towards the mother and/or the storybook.
- The time spent on each page in which the child was looking and showing interest in pictures and/or words or listening to the mother reading the story or engaging with her in a discussion about the page.
- Interacting with more pages, which normally meant that the child was spending time on the covers of the storybooks in addition to the pages.
- Continuing the session in which the child finished the reading with the mother without asking or expressing behaviours to indicate their desire to end the session.

3.6.5.2.3 Researcher's role

During observation research, the researcher usually takes one of the following four roles: complete participant, participant-as-observer, observer-as-participant and complete observer (Gold, 1958, cited in Cohen et al., 2011). In this study, the researcher took the role of observer-

as-participant, which meant that the researcher did not take part in the activity but her status as researcher was known to the participants (Robson and McCartan, 2016). By not taking part in the activity, the role of the researcher would not bias the findings. However, the issue is that it was not possible to determine whether the researcher's presence did not affect the participants. The observed participants might have changed their behaviour because of the researcher's presence, which is known as the observer effect or the Hawthorne effect (McCambridge et al., 2014). To reduce the observer effect, the interaction between the researcher and the participants were kept to a minimum (Robson and McCartan, 2016). Thus, the researcher did not interact with the mothers until the end of each session. It appeared that the mothers accepted the researcher's role as they did not seek interaction with her for the majority of the sessions. In rare occasions, some mothers interacted with the researcher. However, their interactions were very brief to make a story related comment or a joke which indicated that they were comfortable with the researcher's presence. The interaction was not related to implementing the intervention. It seemed that three children also were not disturbed by the presence of the researcher. On the other hand, the fourth child, Sarah, might have been affected as she kept smiling and looking at the researcher during a few sessions.

3.6.5.3 Researcher's field notes

The researcher took rich field notes during implementing the shared reading sessions. Those field notes involved the time, place and surroundings in which the sessions took place. It also contained detailed information about what happened during the sessions and information describing the mother and the child (where the mother and the child sat, how they interacted,

whether they looked relaxed, et cetera). In addition to the descriptive information, the field notes included the researcher's impression, personal thought and queries regarding the observations. The field notes were written during and shortly after each session. The field notes were an essential component to provide the fidelity of the intervention and to provide a rich context for the data analysis.

3.6.5.4 Semi-structured interview

There are three types of interviews: fully structured, unstructured, and semi-structured interviews. The fully structured interview has fixed wording pre-determined questions in a pre-set order and is usually used in the context of survey research. The only difference between this and the interview-based questionnaire is that the fully structured interview uses more open-response questions than the interview-based questionnaire (Robson and McCartan, 2016). On the other hand, the unstructured interview has a completely informal style, and the interviewer has a general idea of the topic. The interviewer lets the conversation grow within the area of interest (Bryman, 2010). The third type is the semi-structured interview, which sits in-between the previous two types. It describes the context in which interviewers have their list of topics and a series of questions that are usually in the form of an interview schedule. The interviewers have freedom in the sequence of questions and in the amount of time spent on different questions and topics (Robson and McCartan, 2016; Bryman, 2010).

This study used semi-structured interviews for two reasons. On one hand, they covered the specific topics that this study aimed to investigate in order to answer the second and third research questions. On the other hand, they gave the researcher the flexibility to ask probes to

expand on the mothers' responses. The researcher conducted three one-to-one semi-structured interviews with each mother in phase one. These were a pre-intervention interview, a post-intervention interview and a follow-up interview. The semi-structured pre- and post-intervention interviews took place in the autism centre and the primary mainstream school while the semi-structured follow-up interviews were conducted over the phone as the researcher was in the UK. All the interviews lasted between 15 and 30 minutes.

The purpose of the pre-intervention interviews was to gain information about the role of books, storytelling and shared reading for mothers and their children with autism (see Appendix 7 for a blank copy of the pre-intervention interview schedule). On the other hand, the post-intervention interviews aimed to explore how the intervention was received by mothers and the benefits and the challenges of applying the intervention with their children from their perspective (see Appendix 8 for a blank copy of the post-intervention interview schedule). The decision to choose a semi-structured post-intervention interview rather than other methods as an intervention evaluation checklist was made because some specific details might have been missed if a checklist was used. The checklist might also not have been sensitive to the mothers' experiences of using the intervention. On the other hand, the interview would provide deeper data because it allowed the mothers to answer in their own words at the length they preferred (Given, 2008). The interview also would enable the researcher to gain more information by expanding on the mothers' answers if needed. Finally, the follow-up interviews took place in order to examine whether or not mothers continued using the intervention with their children (see Appendix 9 for a blank copy of the for the follow-up interview schedule). All the interviews were audio recorded after receiving the mothers' written and verbal permissions.

To ensure that all the questions would be clear for the mothers, the three interview schedules were piloted with one of the mothers who piloted the intervention with her child with autism. The researcher had a phone call with the mother, went through the interview schedules with her and asked her to identify any difficult or unclear questions. The mother did not have difficulty understanding the questions. However, two adaptations were included as a result of the piloting; two follow-up questions (When? For how long?) were added to the question: 'Do you normally read with your child?' in the pre-intervention interview to allow deeper responses from mothers.

3.6.6 Fidelity of implementation and feedback

Implementation fidelity, also called treatment fidelity, is a major indicator of the quality of implementing any autism intervention (Stahmer et al., 2015). The term 'fidelity of implementation' refers to the act of monitoring whether the intervention has been delivered in a way it was originally intended (Keller-Margulis, 2012). One of the key foundations for monitoring fidelity of implementation is providing feedback for those implementing the intervention, also known as performance feedback (Keller-Margulis, 2012). The performance feedback involves a brief meeting in which the researcher or consultant has a discussion with the intervener about what went well and what went poorly and how to improve the implementation (Fallon et al., 2015).

This study used a similar procedure of performance feedback to establish the fidelity of implementation. The mothers received ongoing feedback on their implementation immediately after each intervention session. The duration of the feedback was up to 15 minutes. However, the provided feedback did not have all the elements of performance feedback. While performance

feedback focuses on both what is going well and poorly during the session, the feedback in this study only focused on the positive aspects of mothers' implementation of the intervention. The nature of this feedback followed the protocol of Video Interaction Guidance (VIG). VIG is a video-enhanced intervention which aims to increase effective communication between parents and their children (Kennedy et al., 2010). It provides parents with opportunities to observe and reflect on their own interaction with their children (Barlow et al., 2016). VIG builds on parents' successful moments of the interaction, drawing their attention to strengths and potentials, rather than focusing on problems or weaknesses (Gibson, 2014; Kennedy et al., 2010).

The decision not to provide negative feedback was made because of the following considerations. Generally, receiving negative feedback might create an undesirable situation which limits the feasibility of performance feedback (Fallon et al., 2018). In addition, the researcher anticipated that due to the lack of parental support in Saudi Arabia, particularly in Medina, the city in which this study took place, most mothers, if not all, would have not participated in a programme in which they were asked to implement an intervention while someone observed and video recorded them for the whole programme duration. Going through this experience for the first time would not be easy for the mothers and might have put a lot of pressure on them. The researcher, thus, was careful not to increase those uncomfortable feelings by pointing out what they did poorly or what they did not do.

However, the decision of not providing feedback on the low performance might negatively affect the fidelity of implementation. To eliminate this issue, the present study included a measurement of implementation fidelity regarding the intervention which was used in a previous study (Fleury et al., 2014). The measurement stated that mothers should use at least 10 prompts during each intervention session to be considered dialogic reading. If a session did not meet this criterion, it

would be excluded from the analysis. All the intervention sessions met this criterion. On the other hand, using the dialogic reading principles was not a requirement of the fidelity of implementation as the researcher anticipated that mothers might not be able to implement all of them for cultural considerations (see 3.6.4.2 Individual guidance session).

3.6.7 Validity and Reliability

Phase one used both quantitative and qualitative approaches. This section, however, only focuses on the quality of the quantitative methods and data. The quality of the qualitative methods and data is discussed when talking about phase two since the whole phase used a qualitative approach (see 3.7.3 Credibility). In this section, both validity and reliability are discussed.

3.6.7.1 Validity

One of the fundamental issues about quantitative research is validity. The term validity is concerned with the accuracy, integrity and generalisability of the findings and the truthfulness of the relationships established in the findings (Robson and McCartan, 2016). In terms of validity, Yin (2014) indicated that internal validity, external validity and construct validity are commonly used to establish the quality of empirical social research.

Internal validity involves the issue of causality (Bryman, 2010). It ensures that the change in the dependent variable is, in fact, due to the independent variable. The present study used an SCD which involves two direct replications; intrasubject replication and intersubject replication.

Intrasubject replication means repeating the intervention (manipulating the independent variable) at the level of an individual participant. Establishing intrasubject replication increases the confidence levels about the causal conclusions of the independent and dependent variables which enhances the internal validity of a study (Morgan and Morgan, 2009). Thus, the present study established its internal validity by having a baseline condition and an intervention condition. This design contributed to establishing that the variation in children's participation during the two conditions was due to the intervention, which demonstrated the internal validity.

External validity concerns the extent to which the findings of a study are generalisable or applicable to other individuals or settings (Bryman, 2010). Using an SCD raises issues regarding generalisability (Riley-Tillman and Burns, 2009; Kazdin, 1982). Researchers who seek to establish generalisability often follow a nomothetic approach and study large-scale group designs. On the other hand, SCDs are not designed to produce generalisable findings because of their idiographic approach which means that the designs focus on the individual (Morgan and Morgan, 2009). Similarly, the present study did not aim to establish generalisability, which means it would not be able to answer whether its finding will generalise to other children.

Nevertheless, Kazdin (1982) argued that effective interventions determined by single case research have been generalisable across different subjects and settings. The problem with generalisability is not that the results of SCDs lack generality but that investigating the factors that determine the generality of findings is hard to establish in single case research. In fact, SCDs can examine the generalisability of an intervention by utilising intersubject replication (Riley-Tillman and Burns, 2009). Intersubject replication means applying the same intervention across a different number of individuals (Morgan and Morgan, 2009). Thus, the present study established

its external validity by examining the effectiveness of the intervention across four children with autism.

In addition to internal and external validity, there is construct validity, also known as measurement validity, which involves the question of whether a certain measure in fact reflects the concept that the researchers want to be measured (Bryman, 2010). Determining construct validity is complex because any way of gathering or measuring data has its shortcomings (Robson and McCartan, 2016). Thus, using multiple sources of data collection is a tactic to increase construct validity, which the present study has followed. This study increased its construct validity by using observation, field notes and interviews. Moreover, construct validity is related to reliability; the assessment of construct validity necessitates that a measure is reliable because an unreliable measure cannot be valid (Bryman, 2010). Reliability is discussed in the next section.

3.6.7.2 Reliability and inter-rater reliability

Reliability, like validity, is particularly an issue related to quantitative studies. It involves the consistency and stability of the measures that the studies use (Bryman, 2010). The assessment of the reliability of data gathered from structured observation, as the quantitative data of this study, follows a particular approach which is called inter-rater reliability or inter-observer reliability (Robson and McCartan, 2016).

Inter-rater reliability refers to the degree to which two or more observers agree in the scoring of a set of behaviours. Establishing inter-rater reliability is important to reduce the situation in which

behaviours are misrecorded or overlooked and to minimise the biases that an individual observer may have (Kazdin, 1982). The formula that was chosen to calculate the degree of agreement between the two observers in the present study was the percentage of agreement formula (Watkins and Pacheco, 2000). The percentage of the agreement is defined by the number of times the two observers agree divided by the sum of both agreement and disagreement between them, multiplied by 100:

$$\frac{\text{Agreement}}{\text{Agreement + Disagreement}} \times 100$$

To ensure the observers' reliability, Cohen et al. (2011) provided a few suggestions, such as having the essential experience to make informed judgments about the observational data, using the same definitions and recording the observations in the same ways. The present study followed those suggestions during the process of establishing inter-rater reliability. The two observers were the researcher and a speech-language therapist from Saudi Arabia. The speech-language therapist has a bachelor's degree in special education and two years of experience working with children with a variety of disabilities and conditions, including autism. Arabic, the language of the intervention, is the therapist's first language and she was blind to the present study's purpose and the order of the observed sessions. To follow the suggestions about using the same definitions and recording the observations in the same way, she had a copy of the acts' descriptions sheet (see Appendix 5 for the acts' descriptions) and was trained in using the observation sheet when recording them (see Appendix 6 for a blank copy of the observation sheet).

Reichow et al. (2008) argued that at least 20% of sessions should be checked for inter-observer reliability with agreement at or above 80% to consider inter-rater agreement as a quality indicator for single subject research. Thus, eight randomly chosen sessions which represented 22% of the video sessions (58 minutes from a total of 260 minutes) were coded separately by the two observers. The inter-rater reliability for the eight sessions was 81% (ranging from 74% to 90%) which exceeded the 80% which is what Reichow et al. (2008) recommended (see Appendix 10 for inter-rater reliability results). However, a few acts had low percentages which raised the need to provide the following explanation. When those acts were examined, it appeared that the low percentages were not mainly because of a large number of disagreements, but because of the small number of the times the act was presented. Thus, the disagreement on those acts, which occurred less frequently than other acts, dramatically decreased the percentages of agreement. For example, in one session, the act of comment which occurred three times had a low percentage agreement (33%) even though the observers disagreed only twice. On the other hand, the act of correct response which occurred 17 times had a high percentage agreement (70.5%) even though the observers disagreed five times.

3.6.8 Cultural appropriateness within the Saudi context

The present study took into account cultural considerations when designing this phase. A number of decisions had to be made to ensure that phase one was more appropriate within the Saudi context. First, in addition to the steps and prompts of dialogic reading, the intervention included five principles (see 3.6.2.1 Intervention description). While the principles were important to increase children's participation, the researcher anticipated that those principles might oppose

what mothers used to do, carry new concepts for them or be unusual in their culture. Thus, using the principles was not a requirement of the fidelity of implementation. Moreover, mothers were told not to feel pressurised to use all of them and to do their best at applying them (see 3.6.4.2 Individual guidance session). The second decision had to do with the research design. Rather than using multiple baseline design, the present study used AB design. While one reason for choosing the AB design was because of the time limitation of the field work, the other reason was regarding the Saudi culture. The researcher anticipated that mothers might not be comfortable with having many baseline sessions and delaying the intervention because of their eagerness to try new interventions and programmes with their children (see 3.6.1 Single Case Designs).

The third decision had to do with the selection of the intervention's storybooks. A criterion about using storybooks that were written by an Arab author and represented a few features of the Arab culture (such as having Arabic names and the female characters wearing Hijab) was added to the initial storybooks' criteria (developed by Hargrave and Sénéchal, 2000) which were used in the present study. This criterion was included to ensure that storybooks represent the participants' culture in both the contents and illustrations (see 3.6.2.3.1 Storybooks). In addition, the decision of providing mothers with only positive feedback was because of cultural consideration. Due to the lack of parental support in Saudi Arabia, most mothers would not have had the opportunity to participate in an intervention while a practitioner or a researcher observed them for its full duration. The researcher anticipated that it would not be easy for mothers to go through this experience for the first time. Therefore, it was ensured that these uncomfortable feelings of pointing out what they did not do when providing them with feedback were not added (see 3.6.6 Fidelity of implementation and feedback). Finally, women in some Saudi families do not like to

publish and post videos about themselves as it is still not considered culturally acceptable for some Saudi communities. Taking this cultural consideration into account, two additional options were given to the mothers: performing the sessions in their house or the centre/school while the researcher directly observed them without recording the sessions (see 3.8 Ethical considerations).

3.6.9 Analysis

3.6.9.1 Intervention analysis

The children's participation was coded from video observations by using an observation sheet to record the acts. Then, each act was converted to a rate (frequency of the act divided by minutes) in order to eliminate the possibility that a child's increase in displaying an act was a result of having a longer session. Presenting the acts as rates also allowed to compare the children's participation change across sessions with different durations (Fleury et al., 2014). Converting the acts was important because the intervention sessions were longer than the baseline sessions, as presented in the next chapter (see Chapter 4: Findings of phase one). Then, the mean rate of each act and category of both the baseline and intervention conditions was calculated. Microsoft Excel sheets were used to present the rate of the acts, to combine the acts of each category and to calculate the mean of each act and category. The analysis mainly depended on visual analysis. While there is general agreement about using visual analysis as the only or the primary method for analysing and evaluating the intervention effect in SCDs, using effect size measures as a supplement to visual analysis is recommended (Rakap, 2015). Thus, the study also used the Percentage of Non-overlapping Data (PND), which is a common procedure used to calculate single case research effect sizes (Parker et al., 2009). PND is calculated by the number of data

points in the intervention phase (B) that were above the highest data point in the baseline phase (A) divided by the number of all the data points (Scruggs and Mastropieri, 1994, cited in Parker et al., 2009):

$$\text{PND} = \frac{\text{Data points (B) above data points (A)}}{\text{All the data points}} \times 100$$

PND interpretational guidelines are: (i) very effective intervention for PND above 90%, (ii) effective intervention for PND between 70% and 90%, (iii) questionable intervention for PND between 50% and 70% and (iv) ineffective for PND less than 50% (Scruggs and Mastropieri 1998, cited in El Zein et al. 2014). Although PND is an objective measure of determining the intervention effect, it has its own limitation. PND ignores all the baseline data and focuses on the highest data point, which is likely the most unreliable one (Parker et al., 2009). More importantly, the focus of this study was not determining the statistical effectiveness of the intervention but to investigate the feasibility of using dialogic reading with children with autism and their mothers in Saudi Arabia. Therefore, even though the study reported children's PND scores to provide room for more interpretation, the findings of the study were presented and discussed based on the visual analysis.

In addition to the children's behaviour, the duration of the sessions and the time spent on each page were used to determine children's reading engagement. The average duration and the percentage for the baseline sessions and for the intervention sessions were calculated. The same process was used to find the average rate of seconds spent on each page during the baseline and intervention conditions. The results of the intervention effect on the children's behaviours, the

duration of the sessions and the time spent on each page are presented in Chapter 4: Findings of phase one.

3.6.9.2 Interview analysis

Thematic analysis was used to analyse the interviews in phase one. Thematic analysis is a method for qualitative analysis which is used to identify, analyse and report themes (patterns) within data. It illustrates the data by interpreting different aspects of the research topic (Boyatzis, 1998, cited in Alhojailan, 2012). The thematic analysis provides accuracy and enhances the meaning of the research. It is also very flexible and enables researchers to determine the relationship between the concepts and compare them within the data (Robson and McCartan, 2016; Alhojailan, 2012). Thus, thematic analysis was the most appropriate approach to use for answering the research questions of this study. Other analysis approaches such as narrative analysis and grounded theory analysis would not have been suitable to use because of the nature and the techniques of these analyses. Grounded theory analysis would not have worked because the present study did not aim to evolve a theory regarding the topic (Bryman, 2010) and because the methodology used for grounded theory research is very different to the present study's methodology. Similarly, narrative analysis typically focuses on the participant's own story and how it is narrated, which disagreed with the type of data that were collected in this phase and the purpose of collecting it (Bryman, 2010).

There are two types of this analysis; inductive and deductive thematic analysis. Inductive analysis is data-driven, which means that the process of coding the data occurs without aiming to put the codes into pre-existing themes. On the other hand, deductive thematic analysis means that

the research theoretical interest drives the thematic analysis (Robson and McCartan, 2016). Phase one used a deductive thematic analysis approach as it is discussed in the next section.

3.6.9.2.1 Process of thematic analysis

After conducting the interviews with mothers, the interviews were transcribed by the researcher. The researcher was also the only coder for the interviews. The study used NVivo (Version 12, 2018) to analyse the interviews. NVivo 12 is a computer software program designed for qualitative data analysis which allow researchers to classify, sort, organise, arrange and analyse data in a coherent way. The interviews were transcribed in Arabic, but the codes were given in English. In other words, the codes were given in English while the corresponding passages of coded text was in Arabic. Only the illustrative quotes that were included in the finding chapters were translated into English.

The thematic analysis process followed the guidance by Braun and Clarke (2006, see Table 10 for thematic analysis steps). The first step was familiarisation with the data. This step included the transcription of the interviews and reading each interview twice. In the first reading, the researcher simply read all the interviews to get a general sense of all mothers' responses, while the second reading was 'active reading' as Braun and Clarke described it. During the active reading, the researcher tried to search for meaning, patterns and what was interesting by taking notes of initial ideas.

Table 10: Thematic analysis's steps

Steps	**Description**
Familiarisation with the data	Transcribing, reading and re-reading the data and taking notes about initial ideas

Generating initial codes	Coding interesting and important features of the data in a systematic way across the content of the entire data
Searching for themes	Collating and sorting codes into potential themes
Reviewing themes	Reviewing the themes to make sure they worked in relation to the coded extracts
Defining and naming themes	Refining the specifics of each theme, naming each theme and generating clear definitions for them
Producing the report	Selecting extract examples, analysing the selected extracts, relating the analysis to the research question and producing the analysis report.

Based on Braun and Clarke (2006) p. 87

The second step is generating initial codes. A deductive approach was followed when coding the interviews. This means data was approached with specific questions in mind to code around (Braun and Clarke, 2006). In the pre-intervention interview, the main planned outcome was about mothers' and children's experiences with shared reading and books. In the post-intervention interview, the main planned outcome was regarding the intervention's effectiveness on children and mother experiences. In the follow-up interview, the pre-existing coding frame was about the continuation of the intervention.

Then, the third and the fourth steps which were employed is searching for themes and reviewing the themes respectively. Codes were sorted and collated into potential themes. As mentioned above, phase one used deductive thematic analysis which means that the focus was on specific aspects of the data that were decided before the process of analysis. Therefore, the themes were strongly linked to the specific questions used during the coding process. After these steps, the themes were examined to ensure that they were in accordance with the extracted codes. Table 11

presents the themes for each interview in phase one. The last two steps are discussed in the finding chapter (Chapter 4: Finding phase one) as they focus more about the interview findings. However, it is important to mention here that rather than presenting the analysis for the four children together, this is presented in four separate cases, one case for each child following the way of presenting the intervention analysis.

Table 11: Themes of phase one

Pre-intervention interview	**Post-intervention interview**	**Follow-up interview**
Lack of shared reading	Child's participation	Intervention sustainability
Child's interaction with books	Child's reading engagement	
	Mother's experience	

3.6.9.3 Field notes analysis

Field notes were kept during and/or immediately after each session. While the field notes' aim was to document everything that happened during the sessions and were, overall, unstructured, they were mainly used to check the fidelity of the intervention. After conducting the intervention sessions for all of the participant dyads, all the field notes were collected and organised. Then, they were reviewed to ensure that all of the notes were clear. In case of unclarity or confusion, the researcher watched the recorded session to clarify a certain note. For example, one note was 'the mother applied a principle at the begging of the session'. However, it was not mentioned what type of principle. Thus, the video session was watched, and the principal was identified. After that, data regarding the intervention fidelity were identified across the notes. More specifically, the data included mothers' use of the dialogic reading prompts, the type of the used prompts and their use of the dialogic reading principles. In addition to the fidelity, the field notes

were also examined to identify potential aspects that might have affected the intervention. For example, the intervention external factors that were documented in the field notes (such as when electricity was cut off before Ali's fifth session) were extracted and included when analysing the results of the intervention sessions.

3.6.10 Rationale for using the intervention as the first phase

Before moving to phase two, it is important to explain the rationale of using the intervention as phase one of the study. The researcher felt that it was necessary to observe mothers implementing dialogic reading with their children in Saudi Arabia before conducting phase two as this would provide her with an opportunity to modify/add to phase two's interview schedule. This way the researcher could ensure that the questions to ask mothers in phase two would make more sense to them and would be more appropriate for the cultural context of Saudi Arabia. This was important because, the researcher although Saudi, she has studied autism in the USA and UK for seven years and she is not a parent of a child with autism currently living in the country and using relevant services. Indeed, some of the results of phase one informed phase two. For instance, the results of the pre-intervention interview showed mothers' lack of understanding of what shared reading entails. One mother mentioned that shared reading and books should start being used when children go to school and not before that. This made the researcher wonder how the mother understood shared reading. Did she understand it as social interaction with her child or as teaching the child how to read? Based on this result, the following question was added to phase two's interview schedule: 'What comes to mind when you think of the term shared reading?'

In addition, one result of the pre-intervention and post-intervention interviews with some mothers in phase one was that they thought that their children's limited communication and understanding would prevent them from participating and benefiting from shared reading. This result informed the following question of phase two's interview schedule: 'What would prevent you from having effective shared reading activities with your child?' The question was included to explore if other mothers would have the same view regarding their children's limited abilities or if they would have other views as to what hinders shared reading.

3.7 Phase two

In phase two, 12 mothers of children with autism were interviewed. None of them participated in phase one. More than that, the mothers were not even aware of the dialogic reading intervention. Phase two took an indirect approach to assess the nature of the intervention as a shared reading practice in the Saudi context. The mothers were interviewed about shared reading in general to see to what extent their answers were related to the intervention's nature and aspects which would then lead to determine the acceptability and usefulness of the intervention in the Saudi real-life context.

While phase one would provide valuable data regarding the effectiveness of the intervention for the children and how their mothers experienced it, the researcher anticipated that more data would be needed to explore the adaptability of the dialogic reading intervention for mothers of children with autism in Saudi Arabia. Of course, the mothers who participated in implementing the intervention (phase one) provided their insight regarding dialogic reading, which could be used to assess the appropriateness of the intervention. However, the sample number was very

small. In addition, those mothers were very involved with the intervention by implementing it. So, gaining the perceptions of more mothers who did not have experience of the intervention would provide deep insight regarding the intervention's suitability and its acceptance. By conducting phase two, the researcher wanted to get a better insight from a wider range of mothers on adaptations that such an intervention might need for the Saudi culture. In a nutshell, phase two was developed to collect data from more mothers in order to provide an adapted version of the dialogic reading intervention in Saudi Arabia.

While both phases had different samples and approaches, their findings are linked to each other. Data from the two phases were analysed with the aim to explore whether phase one could enrich, agree with, support and give an explanation to the data gained from phase two and vice versa. The discussion of the two phases is concluded by introducing an adapted version of the dialogic reading intervention that meets the needs of Saudi or even Arab mothers of children with autism (see Chapter 6: Discussion).

3.7.1 Sample

12 mothers from Saudi Arabia were interviewed for phase two. The only inclusion criterion for choosing mothers to be interviewed was that having a child with autism while the only exclusion criterion was that having taken part in phase one of this study. The researcher randomly chose three centres from different cities in Saudi (Riyadh, Jeddah and Medina), contacted them, explained phase two to them and asked them to send the information to mothers. Those centres posted the information on their social media channels. 17 mothers contacted the researcher and were happy to participate. Since the researcher conducted the interview while she was in the UK,

she sent an electronic photocopy of the Phase Two Participant Information Sheet (see Appendix 11 for Phase Two Participant Information Sheet) to the mothers. 12 mothers were able to be interviewed in the time frame for phase two. After reading the Participant Information Sheet, they gave verbal consent to participate which were audio recorded because it was inconvenient to get their written permission. All the interviews were also audio recorded after receiving mothers' verbal permissions. The mothers were from different cities of Saudi Arabia, and their children had different ages, verbal and reading abilities. The mothers classified their children as verbal or nonverbal according to their medical diagnosis report. The descriptive information of the mothers and their children are presented in Table 12.

Table 12: Descriptive information of mothers and children in phase two

Mother identifier	**Job**	**Child's age**	**Child's gender**	**Child's verbal ability**	**Is child able to read?**	**Does Mother read with her child?**	**Number of children**	**Order of child with autism**
M1	Teacher	Nine	Male	Nonverbal	No	Yes	Four	Fourth
M2	Housewife	13	Female	Verbal	Yes	Yes	Five	Second
M3	Teacher	11	Male	Verbal	Yes	Rarely	Five	First (with a twin sister)
M4	Housewife	Seven	Male	Nonverbal	No	No	Triplets	Triplets
M5	Teacher	Nine	Female	Verbal	Yes	Rarely	Two	Second
M6	Doctor	10	Female	Verbal	Yes	No	Four	First
M7	Housewife	11	Male	Verbal	Yes	Yes	10	Tenth

M8	Teacher	Eight	Male	Nonverbal	No	No	Four	Second
M9	Teacher	Eight	Female	Verbal	Yes	No	Four	Third
M10	Housewife	Eight	Male	Verbal	No	Yes	Four	Third
M11	Housewife	Eight	Male	Nonverbal	No	No	Four	Second
M12	Housewife	Six	Male	Verbal	No	No	Five	Fifth

3.7.2 Data collection method

3.7.2.1 Semi-structured interview

The data collection tool for phase two was a semi-structured interview. The key topics of the interview were: role of shared reading in mothers' and children's life, role of books in children's life, mothers' understanding of the meaning of shared reading, their ideas of effective shared reading and their willingness to receiving shared reading support (see Appendix 12 for a blank copy of the phase two interview schedule). The interview topics and schedule were based on the literature review of this study and were chosen in order to provide valuable information to assess the feasibility of dialogic reading and to shape it to be more appropriate, acceptable and useful for mothers in Saudi Arabia. The interviews were conducted over the phone with 12 mothers and lasted between 30 and 60 minutes.

As mentioned in phase one, the semi-structured interview was chosen instead of other tools (for example, the questionnaire) because of its flexibility to expand on the mothers' answers and its ability to provide deeper data and specific details. In addition, while it is possible that some

questions would not get a response in the questionnaire, the chance of not getting a response during the interview is very low. More importantly, due to the fact that the Arab culture highly values oral communication (Mohamed and Omer, 2000), Saudi mothers would be more comfortable and open to being interviewed than to filling in a questionnaire.

The interview schedule for phase two was piloted with two Saudi mothers who have children with autism. A special education teacher (the one who helped to choose the mothers who piloted the intervention) asked a few mothers if they were willing to pilot the interview schedule, and two mothers volunteered. One of them had a ten-year-old verbal girl with autism while the second had an eight-year-old nonverbal boy with autism. The researcher contacted the mothers and piloted the interview schedule with each one of them. The interview questions were clear to them. However, both of them asked the researcher to clarify one question which was: 'In your opinion, how would reading with your child be an effective activity for you and your child?' When the researcher explained it to them, one mother said that the question confused her because it was similar to another question which was: 'Can you describe to me what an effective shared reading session looks like for you?' Thus, the researcher removed the first question to avoid confusion.

3.7.3 Credibility

Credibility is the criterion that judges the quality of a qualitative study (Guba and Lincoln, 1981, cited in Beck, 1993). The credibility of qualitative research depends on the researcher's ability and effort (Golafshani, 2003). Noble and Smith (2015) stated that qualitative researchers can ensure the credibility of their studies by establishing truth value and consistency. The term 'truth

value', which is the qualitative alternative terminology to validity, includes recognising the researcher's experiences and bias and presenting participants' perspectives accurately in findings. Following Noble and Smith's (2015) suggested strategies, the researcher of the present study stated her position and acknowledged that her personal views and experiences might affect the research (see 3.4 Positionality). Additionally, this study used audio recorded interviews to allow revisiting the data to remain true to participants' accounts and used extracts from participants' interviews to ensure that the themes are true to participants' accounts. The term 'consistency', which is the qualitative alternative terminology to reliability, is related to the 'trustworthiness' of the methods that the researcher undertakes and maintaining clear and transparent decisions (Noble and Smith, 2015). Similar to the truth value, the present study used Noble and Smith's strategies to achieve consistency. This study provided a clear description of the purpose of collecting qualitative data, the development of the methods (interview schedules) and the interview process. In terms of the findings, the researcher continually discussed every step of the thematic analysis process and the emerging themes with her supervisors to uncover biases and assumptions.

3.7.4 Interview analysis

As in phase one, phase two used thematic analysis to analyse the interviews. The only difference between the analysis followed in the two phases is that phase one used a deductive approach while phase two used both inductive and deductive approaches when coding the data. It means that a few themes/subthemes emerged from the interview questions while other identified

themes/subthemes were data-driven and had an indirect relation to the specific interview questions.

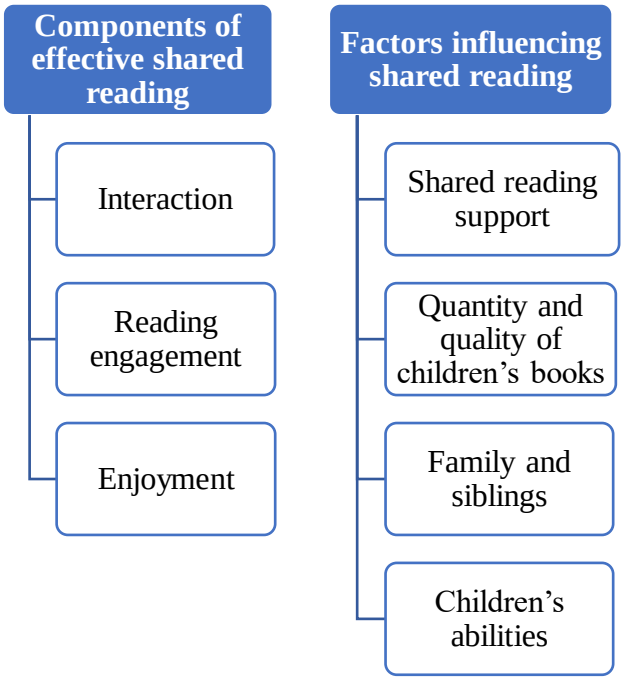
3.7.4.1 Process of thematic analysis

As mentioned when discussing the thematic analysis in phase one (3.6.9.2.1 Process of thematic analysis), the guidance by Braun and Clarke were followed. The first step which was familiarisation with the data. The interviews were transcribed, and each one was read twice. The first read was to be familiarised with mothers' responses while the second read was to search for patterns, meaning and what was interesting. After that, the second step started which was generating initial codes. All the interviews were coded. The coding process used both inductive and deductive approaches. In the latter, the coding was dependent on two specific questions in mind which were: 'What would an effective shared reading session look like from the mothers' perspective?' and 'Would the mothers be interested in shared reading support?' Those questions were chosen because their answers would lead to answering the research questions of this study. However, the researcher relied more on the data during the coding (inductive approach) because the themes were intended to be more data driven. In addition, all data that was relevant to each code was collated together.

The third step was searching for themes. While the focus in the previous step had been on the level of codes, the focus of analysis during this step was on the broader level, which was the level of themes. Those different codes with their relevant coded data extracts were sorted into potential themes. Visual representation, mind-maps in particular, was used in this step to sort and organise the codes into themes. A thematic map was developed to examine the relationship

between the codes and between the themes (see Appendix 13 for the first thematic map). After working on a few thematic maps, a collection of themes and subthemes arose. Then, the next step, which was reviewing themes, began. This step involved two levels. Level one was about reviewing all the coded data extracts in relation to each theme while level two was about reviewing the theme in relation to the data set. After that, a final thematic map showing the final themes and subthemes were generated (see Figure1). The last two steps (naming themes and producing the analysis report) were not mentioned here as they are covered when discussing the results in Chapter 5: Findings of phase two.

Figure 1: Final thematic map of main themes and subthemes



3.8 Ethical considerations

Before conducting the research project, this study received ethics approval from the University of Birmingham Ethics Committee (see Appendix 14 for the ethical approval). This study took into account the following ethical considerations when conducting the two phases. Before participation in both phases, mothers received the Phase One Participant Information Sheet or Phase Two Participant Information Sheet (see Appendix 2 for Phase One Participant Information Sheet and Appendix 11 for Phase Two Participant Information Sheet) which stated all the information they needed to make a decision about their participation. The document explained the aim of this study, what the mothers needed to do and how the data would be stored and used. In addition, it was clearly stated that the mothers' participation was entirely voluntary, and they had the right of withdrawing from the project without any consequences. Mothers who agreed to participate with their children in phase one after reading the document signed the Consent Forms (see Appendix 3a for a blank copy of the Intervention Consent Form and Appendix 3c for a blank copy of the Interview Consent Form). For mothers who were interviewed for phase two, they also verbally gave their consent about being interviewed and audio recorded because it was inconvenient to get their written permission as the researcher was in the UK.

There was no risk of harm from participation in this study. Moreover, any potentially uncomfortable feelings that participants might have during participation were addressed. For instance, in phase one, the nature of the intervention required an observation of the sessions and reception of ongoing feedback, which might have caused distress for the mothers. They might have felt anxious about having someone observing them especially during the baseline sessions where they were not provided with any guidance. To reduce their anxiety, the researcher stated several times that it was a judgment-free observation focusing on the child's behaviours. Mothers

might have also felt uncomfortable about receiving feedback. Thus, the feedback was not critical, harsh or offensive. On the contrary, the researcher used positive feedback focusing on the strengths and the successful moments of interaction during the session instead of focusing on weaknesses.

According to the British Educational Research Association (BERA, 2018), when participants' circumstances limit their ability to voluntarily participate, researchers should find ways in which participants can be supported to participate with assent. Similarly, children's approval to participate in the intervention was difficult to seek because of their young age and cognitive and social communication difficulties. Thus, this study took actions to protect them and to ensure that their participation in the intervention would not put them at potential risk. As mentioned above, the mothers' approvals for their children to participate were gained. In addition, children were not at risk of harm at any stage of the intervention. Having the reading sessions in the centre and the mainstream school, which was what all mothers chose, could have put children at risk of missing their daily lessons. To minimise this potential risk, the researcher collaborated with the teachers and the mothers to ensure that there was no scheduling conflict between the shared reading sessions and the children's classes.

The children's willingness to participate during the sessions was important, so this study carefully considered the situations that might indicate the lack of assent to participate. The researcher stated clearly to the mothers that the shared reading session is supposed to be an enjoyable activity for children, as one of the principles indicated. Thus, mothers were explicitly asked not to force their children to participate. If the child asked to end the session, the mother would end it immediately. If the child refused to participate or if they engaged in challenging behaviours, such as crying, screaming or throwing objects, the mother would end the session

immediately. In addition to children's willingness to participate, this study aimed to give them a sense of control over the reading sessions. To establish that, the researcher encouraged the mothers to follow the principle about following the child's lead. Moreover, mothers were asked to allow their child to choose the book they want to read from a selection of five choices each week. This would make the children feel that they had a choice during the reading sessions.

Another issue was the confidentiality of the participants. The term 'confidentiality' in research means protecting the identities, records and personal information of participants and maintaining them as confidential (Bryman, 2010). To achieve confidentiality, the researcher replaced the children's names with pseudonyms in the entire study while their mothers were identified by referring to their child's pseudonyms (for example, Ali's mother). Participants' names, their identification and the descriptive information that could identify them have been changed or omitted in the research. The same was applied to the mothers from phase two. However, they were given numbered labels (for example, M1).

When using video footage collection, ethical issues are important to consider. One of the most key ethical considerations of video recording is confidentiality. The confidentiality of video footage in this study was absolutely critical for three reasons. First, as mentioned, this study involved vulnerable participants which increased the importance of confidentiality. In addition, 'videotaped data is so much more vulnerable to abuse. It is difficult to maintain confidentiality when the video has recorded faces and contexts as well as interactions' (Rosenstein, 2002, p. 25). The final reason is about the cultural context in Saudi Arabia. Women in some families and communities in Saudi Arabia still do not prefer to publish and post videos about themselves. Therefore, the informed consent explained to mothers that their videos would be secured, protected and used for the research purpose only.

As stated above, using the video camera to record the sessions might not be considered culturally acceptable for some Saudi families. Even with providing an explanation about the purpose of recording and the confidentiality procedure, the mothers might not have felt comfortable about being video recorded. To eliminate this threat for those mothers, the researcher provided them with two additional options which did not include the video camera. Mothers could also perform the sessions in the centre/school or their house while the researcher directly observed them without recording the sessions. All the four mothers who participated in the intervention were happy to video record the sessions as long as they would not appear in the videos.

Moreover, storing the data is an important issue to ensure data security against unauthorised and unlawful accessing and accidental loss. The Birmingham Environment for Academic Research (BEAR) which is a collection of IT resources from the University of Birmingham was used for storing the data. This study specifically used the BEAR Research Data Store (RDS) and the BEAR Research Data Archive (RDA). For the paper-based data, the researcher locked them in a locker in her house. Following the University of Birmingham code of practice for data, the data will be preserved for 10 years after the research has been completed.

3.9 Summary

This chapter discussed the methodology that this study followed to conduct the two phases. The chapter started with stating the philosophical approach of this study and describing and justifying the use of mixed-method design. In phase one, an SCD was used to examine the effect of the dialogic reading intervention. SCD was the appropriate design to use for the intervention implementation considering the nature of autism and the sample size. Multiple data collection

methods were used to assess the effect of the intervention on different aspects and to increase the construct validity. In addition, phase two was conducted with a larger sample to assess the usefulness and appropriateness of the dialogic reading intervention. A semi-structured interview was the data collection method used because of the instrument's ability to gather deep data which would enable the researcher to understand how the dialogic reading intervention can be adapted for the Saudi society. The chapter concluded by discussing the ethical considerations. In the next two chapters, Chapter 4 and 5, the results of the two phases are presented and discussed.

CHAPTER 4: FINDINGS OF PHASE ONE

4.1 Introduction

As mentioned in the methodology chapter, there were two phases in the present study. In this chapter, the findings of phase one are presented. The chapter starts with the analysis of the ESCS and children's participation. Then, the results of implementing the dialogic reading intervention are analysed. The results are presented as four separate cases, one case for each child. Each case includes the findings from the video observation, interviews with the mother and researcher's field notes. After that, the results of the ongoing feedback are discussed. Phase one then is concluded with a summary of the whole intervention.

4.2 Early Social Communication Scale (ESCS)

As described in the methodology chapter (see 3.6.5.1 Early Social Communication Scales), the ESCS contains six subscales which are: Initiating Joint Attention (IJA, for example, eye contact), Responding to Joint Attention (RJA, for example, turning head to follow tester), Initiating Behavioural Requests (IBR, for example, giving objects to tester), Responding to Behavioural Requests (RBR, for example, responding to tester's verbal command), Initiating Social Interaction (ISI, for example, initiating turn-taking) and Responding to Social Interaction (RSI, for example, turn-taking; Mundy et al., 2003). In phase one, children were assessed using the ESCS before starting the reading sessions. All mothers gave permissions to assess their children

and to video record the assessment sessions. The mean length of all ESCS sessions was 18:49 minutes (ranged from 15:38 to 20:26 minutes). Ali's assessment took place in a classroom in his primary school while the other three children were assessed at their centre.

Scoring the ESCS followed the scoring guidelines in the ESCS manual (Mundy et al., 2003). Scores for IJA, IBR and RSI were calculated based on frequencies of occurrence of behaviours for each subscale. Scores for RJA, RBR and ISI, on the other hand, were calculated based on the percent of trials in which the child correctly demonstrated the targeted behaviours for each subscale. Children's scores on the ESCS are presented in Table 13. Previous studies that used the ESCS with children with autism interpreted their scores by comparing them with other groups such as children with TD. Since the present study did not have a comparative group, the scores of children in the present study were compared to other studies' scores. This comparison is presented in this chapter rather than in the discussion chapter to provide a comprehensive understanding and add meaning to the ESCS results.

Table 13: Children's ESCS Scores

Behaviour	**Joint Attention**		**Behavioural Request**		**Social Interaction**	
Child	**Initiating (IJA)**	**Responding (RJA)**	**Initiating (IBR)**	**Responding (RBR)**	**Initiating (ISI)**	**Responding (RSI)**
Ali	2	71%	16	37.5%	100%	28
Khaled	5	100%	17	54.5%	100%	33
Sarah	22	78%	13	61.9%	50%	34
Ahmad	4	75%	15	13.6%	50%	19

In the present study, children's scores in some subtests were similar to the scores of children with autism in Goldberg et al.'s (2005) study. Goldberg et al. (2005) compared the autism group with siblings of children with autism and children with TD and found that the scores of children with autism and siblings of children with autism were significantly lower than the scores of children with TD in the IJA, IBR and RSI subtests. Children in the present study had similar results to the autism group in Goldberg et al.'s (2005) study in terms of IJA and IBR measurements. However, children in the present study showed good RJA skills, which confirmed Goldberg et al. (2005) and Mundy et al.'s (1994) results that children with autism do not significantly differ from the TD group on the RJA measurement of the ESCS.

On the other hand, the present study showed that children had better scores in the RSI subtest with a mean of 28.5, which contradicted previous studies (Goldberg et al., 2005; Mundy et al., 1994; Mundy et al., 1990). One explanation might be because participants in the present study were older than the children in those previous studies. However, that does not explain why they had similar results in the other subtests (IJA, RJA, IBR). A possible interpretation might be that older children with autism may perform better in the RSI subtest while their age does not affect the other subtests. Nevertheless, more details about each child's scores are provided when presenting the children's profiles in the next sections of this chapter.

4.3 Children's participation

As mentioned in the previous chapter, the behaviour acts were classified into four categories: verbal social communication, nonverbal social communication, emergent literacy and others. Throughout the intervention, only one child (Ali) displayed an act (yawning) that was included

in the others category (see 4.4.1.5 Ali's reading engagement). Table 14 contains the acts of each category. However, during the intervention, participants did not present all the acts in Table 14. Indeed, some children never displayed certain acts during the sessions. All the acts have been converted to a rate (number of the act divided by minutes) before being presented for each case (see 3.6.8.1 Intervention analysis). Table 15 presents a summary of children's mean rate results and PND scores across the categories. The results are presented in detail for each child in the next sections.

Table 14: Children's participation categories and acts

Verbal social communication category	**Nonverbal social communication category**	**Emergent literacy category**	**Others**
Correct response	Eye contact	Pointing	Yawning
Incorrect response	Joint attention	Turning page	
Comment	Smiling/laughing		
Repetition	Gesture		
Reading	Physical communication		
Unrelated			
Babbling			

Table 15: A summary of children's mean rate results and PND scores across categories

Name	Condition	Verbal social communication	Nonverbal social communication	Emergent literacy
Ali	***Baseline***	2.35	1.70	0.11
	Intervention	4.76 PND = 100%	3.43 PND = 100%	0.75 PND = 100%
Khaled	***Baseline***	10.18	2.04	1.31
	Intervention	13.55 PND = 100%	3.14 PND = 33%	1.89 PND = 66%
Sarah	***Baseline***	5.17	2.92	4.74
	Intervention	6.02 PND = 33%	2.03 PND = 16%	4.20 PND = 0%
Ahmad	***Baseline***	3.31	4.15	3.97
	Intervention	6.27 PND = 100%	7.16 PND = 100%	5.47 PND = 83%

PND = percentage of non-overlapping data

PND above 90% = very effective intervention, PND between 70% and 90% = effective intervention, PND between 50% and 70% = questionable intervention, PND less than 50% = ineffective intervention

4.4 Intervention results

This section discusses the results of the intervention by presenting a case study for each child. The data was gained from the ESCS assessment, video observations, mothers' interviews (pre-intervention, post-intervention and follow-up interviews) and researcher's field notes. Each case presents data about the child's ESCS assessment and their participation before, during and after the intervention. In addition, the findings of the child's reading engagement and how their mother perceived the intervention are included.

4.4.1 Ali

4.4.1.1 Summary of Ali's profile

Ali was seven years and six months old attending primary school. He communicated verbally, and his receptive and expressive language skills were at the level of four years old. He had a delay in his verbal and nonverbal communication and social interaction. His mother indicated that his lack of interaction was the basic challenge that she was facing with Ali (for more information, see 3.6.3.3.1.1 Child 1: Ali).

4.4.1.2 Ali's ESCS

Ali obtained a low score in IJA, engaging in eye contact just twice during 18 tasks. His IJA score was the lowest frequency score of all the ESCS's subscales. However, he displayed more eye contact combined with giving behaviours for IBR. Indeed, he initiated 16 behavioural requests during 19 tasks. In terms of RJA, he scored got 71%, reflecting the percentage to which he was able to follow the tester's attentional shift. On the other hand, he failed to response to the tester's behavioural request for most of the trials and only responded to 37.5% of them. The last subscales were ISI and RSI. Ali got a complete score by initiating all the social interaction opportunities, and he responded to 28 social interactions during 33 tasks, demonstrating eye contact and turn-taking behaviours.

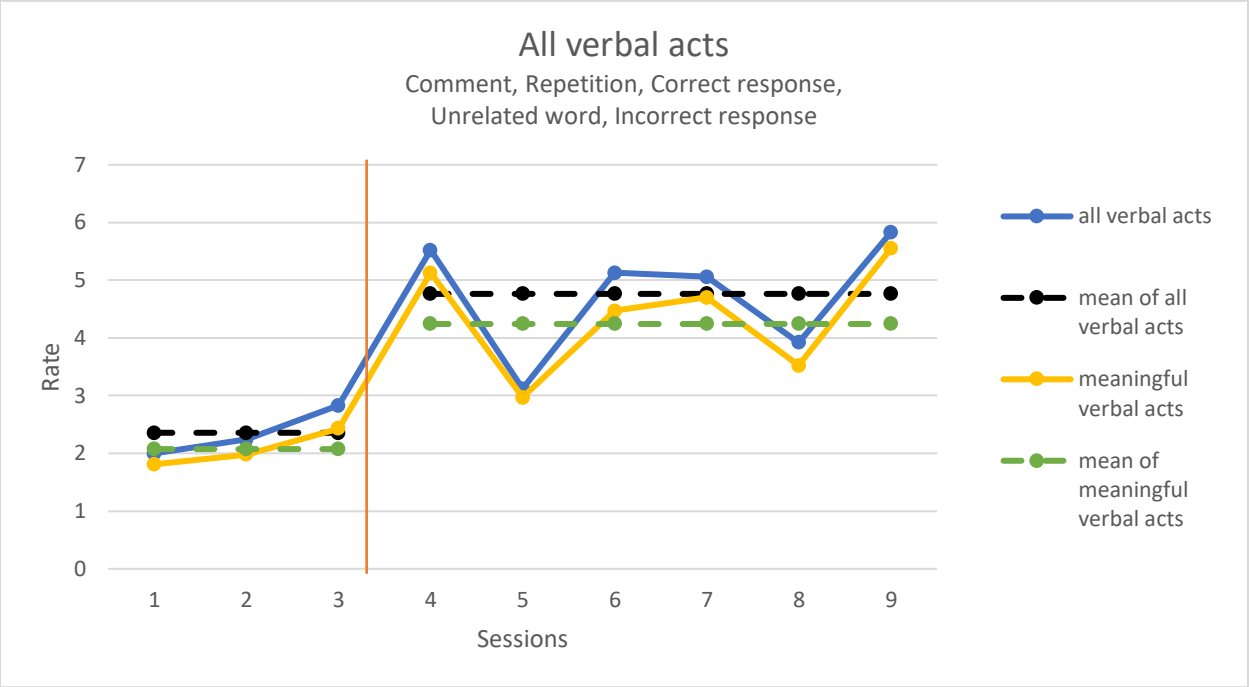
4.4.1.3 Before the intervention

During the pre-intervention interview, Ali's mother reported that she did not read with him because she simply had not thought about using shared reading with him before. She also did not bring children's storybooks for Ali even though he loved books and spent a lot of time looking at them. However, she indicated that she understood the importance of storybooks for children. While Ali's mother did not read with Ali, she said that she usually told him bedtime stories using his siblings as characters. When she was asked about the activities that she normally did with him, she mentioned doing physical activities with Ali, such as playing football and cycling. She said that Ali's siblings also participated in those activities.

4.4.1.4 During the intervention

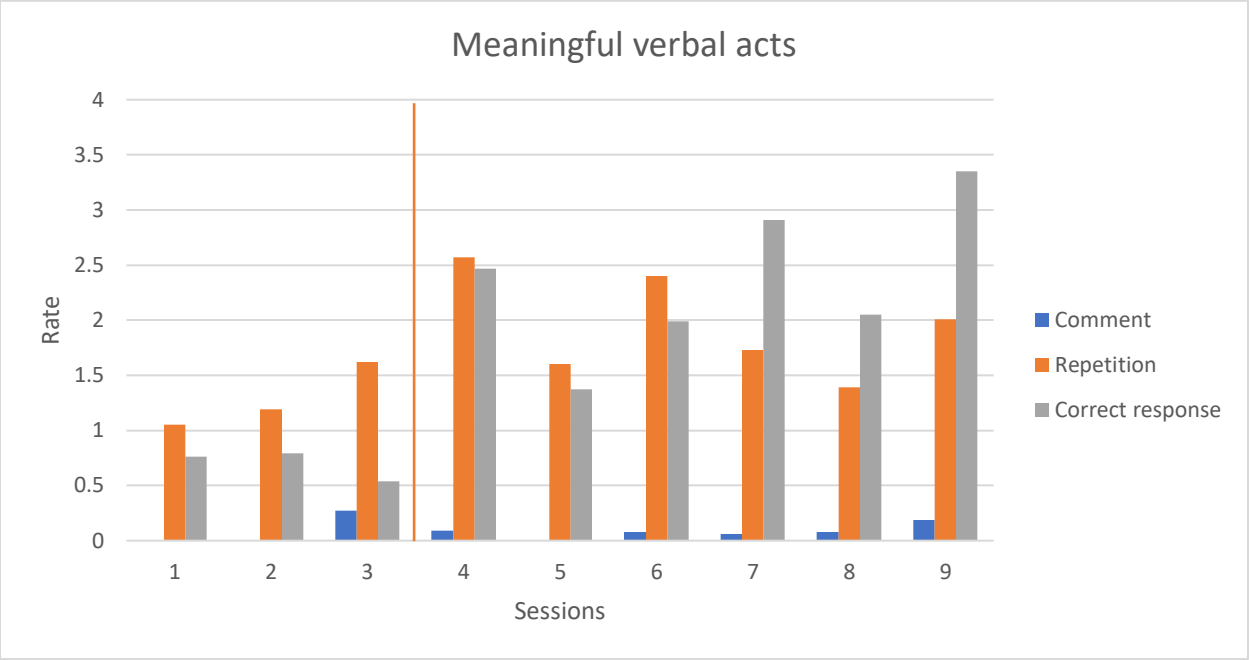
Ali showed a clear increase in his verbal participation during all the dialogic reading intervention sessions as shown in Figure 2. The mean rate of his verbalisation in the baseline session was 2.35 which rose to 5.52 during the fourth session and to 5.83 during the last intervention session. However, there was a fluctuation in his verbalisation in the intervention condition. The rate of his verbal participation dropped to 2.79 in the fifth session. According to the researcher's field notes, before the session started at that day, electricity was cut off in the school. The classroom was dark, so the session has been moved to the school playground. It was a sunny and quiet place, but the change of place might have affected Ali's participation.

Figure 2: Ali's all verbal acts



Even when looking at the quality of his verbal participation, the increase was still evident in his meaningful verbal acts. Figure 3 presents the types of meaningful acts that Ali displayed in the reading sessions. During both reading conditions, most of his talk was *correct responses* to questions and *repetition*. The act of *correct response* significantly increased from 0.69 in the baseline phase to 3.35 in the ninth session. This increase is consistent with the original purpose of developing the dialogic reading intervention which is increasing the verbal participation by answering the specific prompts. His *repetition* also rose from the baseline to intervention sessions, but no change occurred in his *comments*. Ali's PND score of the verbal social communication category was 100%, indicating that dialogic reading was very effective for this category.

Figure 3: Ali's meaningful verbal acts



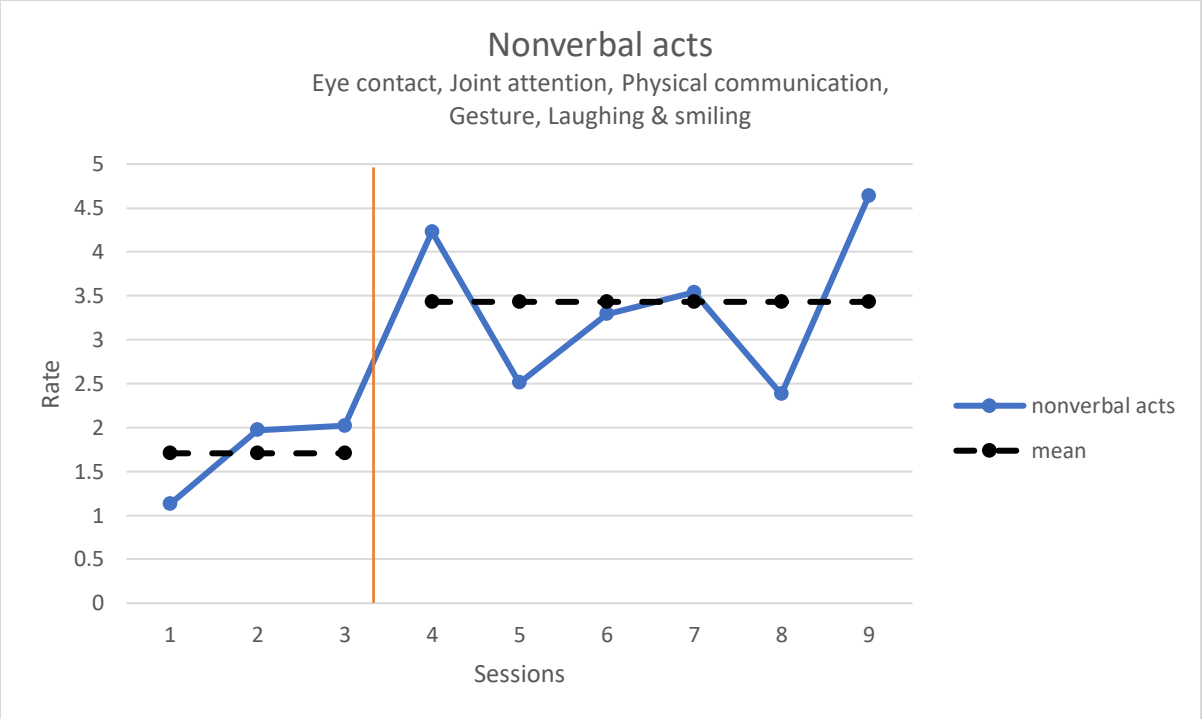
Ali's mother was pleased with Ali's verbal social communication during the intervention. During the post-intervention interview, she mentioned that he started to make comments about the pictures. She also reported that some of his verbal responses indicated improvement in his memory skills, which made her very happy and impressed. According to her, Ali used to forget easily and would need a lot of repetition. However, during the intervention, she noticed from his answers that he remembered the characters of the stories and the answers she had given him before.

Similar to his verbalisation, Ali displayed more nonverbal social communication skills during the intervention sessions compared to the baseline sessions (see Figure 4). His nonverbal social communication skills included *eye contact, joint attention, physical communication, gesture, laughing and smiling*. The most frequent act that Ali demonstrated during the intervention condition was *eye contact*, which was 0.89 in the baseline condition, followed by an immediate

increase when the intervention was introduced in the fourth session, to 2.27. On the other hand, his *joint attention* was the least frequent act he showed in all the reading sessions. Ali's PND score of the nonverbal social communication category (100%) indicated that dialogic reading was very effective for him.

Ali's mother indicated in the post-intervention interview that she found that books can strengthen the relationship between a mother and her child. She then gave an example of her child hugging her after reading the stories. Moreover, she said that the intervention was an entertaining activity for both her and her child, not merely a learning activity. She mentioned that Ali smiled and laughed, and that he was happy and enjoying the reading during the sessions.

Figure 4: Ali's nonverbal acts

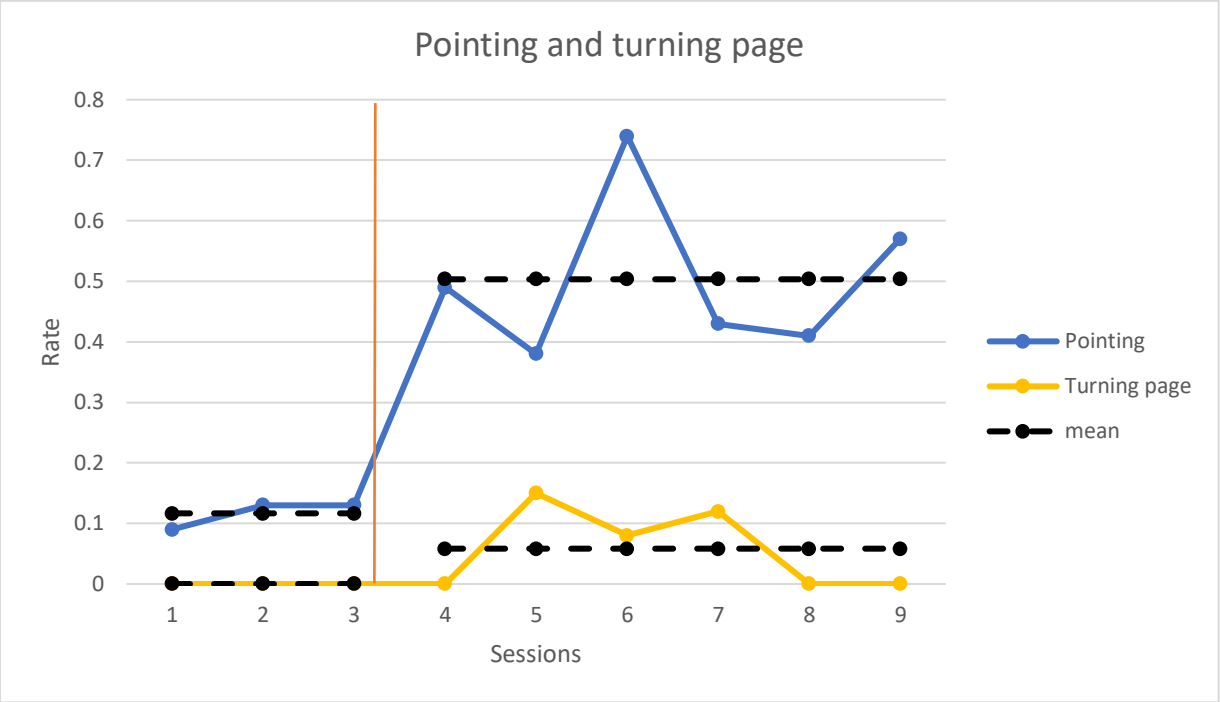


Unlike his verbal and nonverbal social communication acts, Ali's literacy skills did not differ much from baseline to intervention sessions. The mean rate of his emergent literacy acts was

0.11 during baseline followed by a slight rise to 0.75 during the intervention condition. However, when examining each literacy act, it appeared that his *pointing* increased during the dialogic reading sessions compared to the baseline condition (see Figure 5). On the other hand, no change on the *turning page* act occurred. This might be explained by what happened during the shared reading sessions. The observation and the researcher's field notes revealed that his mother was controlling the storybooks. She was holding them and turning the pages, which might have limited Ali's opportunities to display the act of *turning page*. However, Ali's PND score of his emergent literacy category (100%) indicated that dialogic reading was very effective for his emergent literacy.

In addition to *pointing* and *turning page*, the post-intervention interview with Ali's mother revealed that Ali demonstrated other emergent literacy acts when interacting with books. She reported that Ali's interaction with storybooks changed and became better after the dialogic reading intervention. While he was just flipping pages in the past, following the intervention he started looking at the front and back covers of the books, turning pages and focusing on pictures. Ali's mother said that the reading during the intervention condition felt different from the reading that they used to do when reading the stories in his Arabic textbooks, in which he did not stay long on pages and did not want to interact with her.

Figure 5: Ali's emergent literacy acts



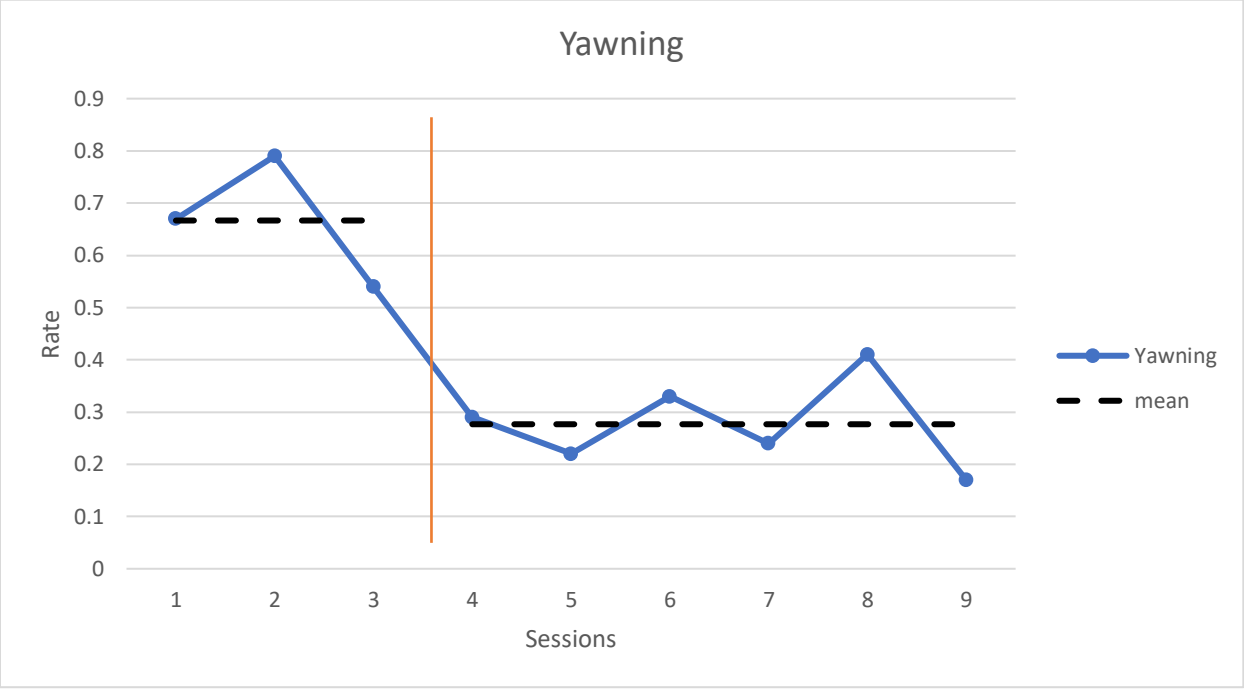
4.4.1.5 Ali's reading engagement

Ali appeared very engaged during the shared reading sessions. He did not ask to end any of the sessions, and he did not display behaviours such as crying to indicate an unwillingness to continue the reading. Moreover, video observation was used to calculate the duration of the sessions and the time that Ali spent on each page to determine his engagement. The average duration of baseline sessions was 8.45 minutes which increased to 12.24 in the dialogic reading sessions (a 41.71% increase). Similarly, the average number of seconds that Ali spent on each page during the baseline condition increased 76.47% in the dialogic reading sessions (from 34 seconds to 60 seconds). In addition to increasing the time, Ali's interaction with storybooks improved. During the baseline condition, he was interacting with the front cover and the story's pages. However, his interaction with storybooks went beyond those pages to the books' back

covers in the intervention condition. This indicated that Ali was more engaged during the dialogic reading intervention sessions.

Moreover, Ali displayed a certain behaviour (*yawning*) which could be used as an indicator of his interaction and reading engagement during the book reading sessions. While he yawned several times during the baseline reading condition (see Figure 6), his yawning decreased when the dialogic reading was implemented. Showing less yawning even though he spent more time reading compared to the baseline sessions might indicate that his level of reading engagement increased when using the intervention. More about interpreting the *yawning* behaviour can be found in the discussion chapter (see 6.2.4 Dialogic reading impact on children's reading engagement).

Figure 6: Ali's yawning



Additionally, the relevant objects were added to the intervention to increase children's reading engagement and participation with their mothers. Ali's mothers used the relevant objects to engage him more in the activity. She made sure that there was a clear connection between the objects and the story. For instance, when reading the 'My Mother' story, Ali's mother held the coloured pencil set, put it near the coloured pencil set in the picture and said, "Look, these coloured pencils are like those ones that the boy in the story has." In addition, his mother also used the intervention prompts with the objects which provided Ali with more participation opportunities. For example, when she used the plastic cutlery, she prompted her child to participate by asking questions such as, "What is this?", "Is this a knife or a spoon?" and "How do we use the knife?" Ali looked at each object, held it and answered his mother. Ali was engaged with the objects and interacted appropriately with them when his mother gave him the objects. The relevant objects did not distract him from the reading activity. Whenever his mother asked him to give her the objects back, he immediately did so, and he continued the reading activity. Moreover, Ali's mother liked the idea of combining the relevant objects with shared reading. When she talked about what she learned from the intervention, she mentioned:

"I learned that we can use objects with storybooks during shared reading."
Ali's mother

4.4.1.6 Ali's mother's experience of dialogic reading

During the post-intervention interview, Ali's mother reported that she learned from the intervention how to read with her child and how to include him in shared reading. She also realised that shared reading is more than reading the written lines of the stories. She found it very

helpful to have an evidence-based strategy to follow instead of trying without guidance. Moreover, Ali's mother indicated that her behaviour was positively affected by the intervention. She said that whenever Ali did not answer immediately, she used to answer for him. However following the intervention, she was trying to apply the principle of giving him more time to think and respond.

In addition, she started using the intervention's prompts with Ali. Particularly, she started asking questions about specific details. What was more interesting was that using the prompt appeared to help her realise one of her son's strengths.

> *"I benefit from the intervention. Before, I would have never thought of asking him about specific things like the details of the story pictures. Now, I ask him about the details when he is playing with LEGO or whatever he is doing. I like that I am asking him about details because I notice that he is good at picking and noticing details." Ali's mother*

Finally, she mentioned that she would continue using the intervention with him in the future.

4.4.1.7 After the intervention

During the follow-up interview, which took place 10 weeks after the intervention, Ali's mother said that she still continued using the dialogic reading intervention with her child twice a week. She focused on following the steps of the intervention and used it as an entertaining activity between her and Ali. She read with him for 10-15 minutes using the intervention's storybooks and sometimes other stories. She also started including his siblings in the shared reading activity. Compared to the intervention sessions, she reported that Ali responded more to the questions and

occasionally read one or two words. In addition, he started to engage people around him in the storybooks. She mentioned that he brought his storybooks to her or to his aunts and showed them the pictures by pointing, labelling and talking about their details. Practicing the intervention also changed how she interacted with him: she became more patient with him and did not rush him to answer. Ali's mother said that the intervention was important for him because it helped to improve his social communication skills. At the end of the interview, Ali's mother said that she would continue using the intervention.

4.4.2 Khaled

4.4.2.1 Summary of Khaled's profile

Khaled was nine years old attending an autism centre. He communicated verbally and used full sentences. His language skills (receptive and expressive) were at the level of a five-year-old. In addition to autism, he had ADHD and sensory issues (for more information, see 3.6.3.3.1.2 Child 2: Khaled).

4.4.2.2 Khaled's ESCS

Khaled was presented with 18 tasks for IJA. During those tasks, he initiated joint attention five times, displaying four alternate behaviours (looking between an active object and the tester's eyes) and one act of pointing. He had a low frequency score on the IJA subscale. On the other hand, he did well in RJA, receiving the full score of 100%. In terms of IBR, he did better than

IJA, initiating 17 requests by displaying eye contact, reaching, pointing and giving behaviours during 19 tasks of IBR. For RBR, he responded to 54.5% of the trials while he failed to respond to the rest of them. Finally, he received high scores on both ISI and RSI subscales.

4.4.2.3 Before the intervention

Before the intervention, a pre-intervention interview was conducted with Khaled's mother. During the interview, she reported that the activities that she usually did with Khaled were educational, such as learning letters and labelling shapes and colours and entertainment activities such as LEGO. When asked about reading with Khaled, she said that she did not read with him. She tried to read with him once in the past to teach him specific behaviours from a storybook. However, he did not let her continue and asked her to stop. In terms of storytelling, she told him stories on rare occasions for the same purpose as reading. She mentioned that there was no interaction from his part during the storytelling, and she wished that she could communicate with him and get his attention. Even though she did not read with him, Khaled's mother believed that books should be used with children at an early age. She said that Khaled loved all kinds of books, even his siblings' textbooks. Whenever he found a book, he turned pages, looked at letters, pointed at them and tried to read. He sometimes read the short verses of the Quran and asked his mother to read the difficult words for him.

4.4.2.4 During the intervention

Khaled's mean rate of verbal social communication (*comment, repetition, correct response, reading, unrelated word and incorrect response*) was measured during the reading sessions, as displayed in Figure 7. Overall, he showed lower verbal participation during the three baseline sessions followed by increased verbal participation in the intervention sessions. To assess the quality of the verbal social communication skills, meaningful verbal acts were identified (*comment, repetition, correct response and reading*), and then compared to his total verbalisation. The rates of both the total verbal social communication acts and the meaningful ones were very similar, as shown in Figure 8. The rate difference between the two categories during the baseline sessions (0.96) was higher than the rate difference between them during the intervention sessions (0.25) which indicates that Khaled's meaningful verbal participation increased during the intervention. This difference was mainly because of the decrease in his *incorrect responses* during the dialogic reading sessions, with a mean of 0.21, compared to the baseline reading sessions, with a mean of 0.87.

Figure 7: Khaled's verbal acts

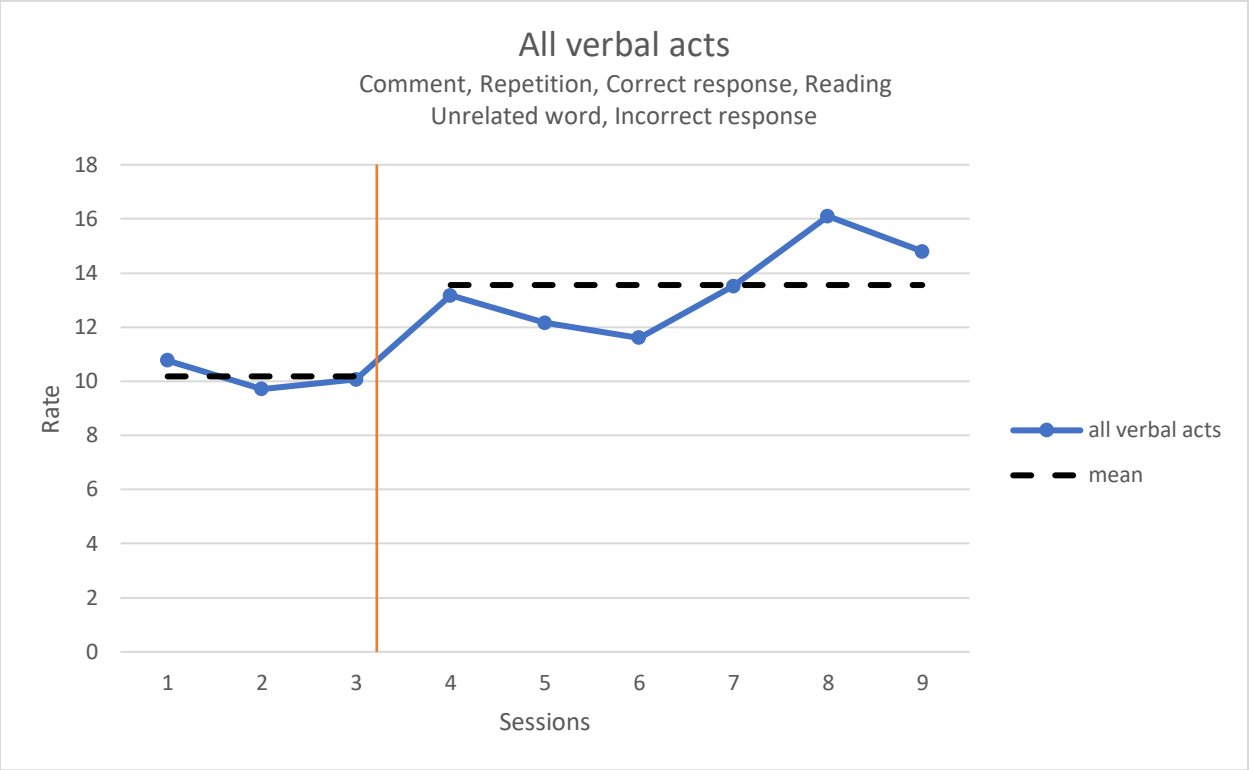


Figure 8: Khaled's verbal acts versus meaningful verbal acts

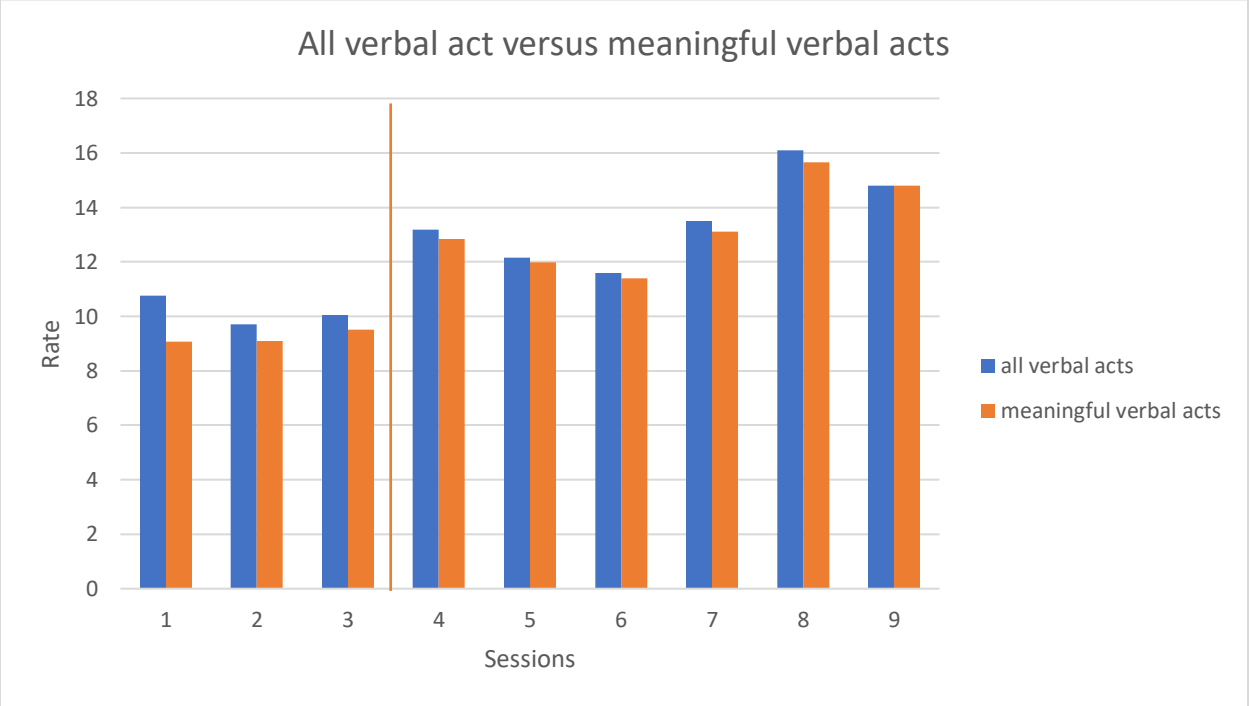
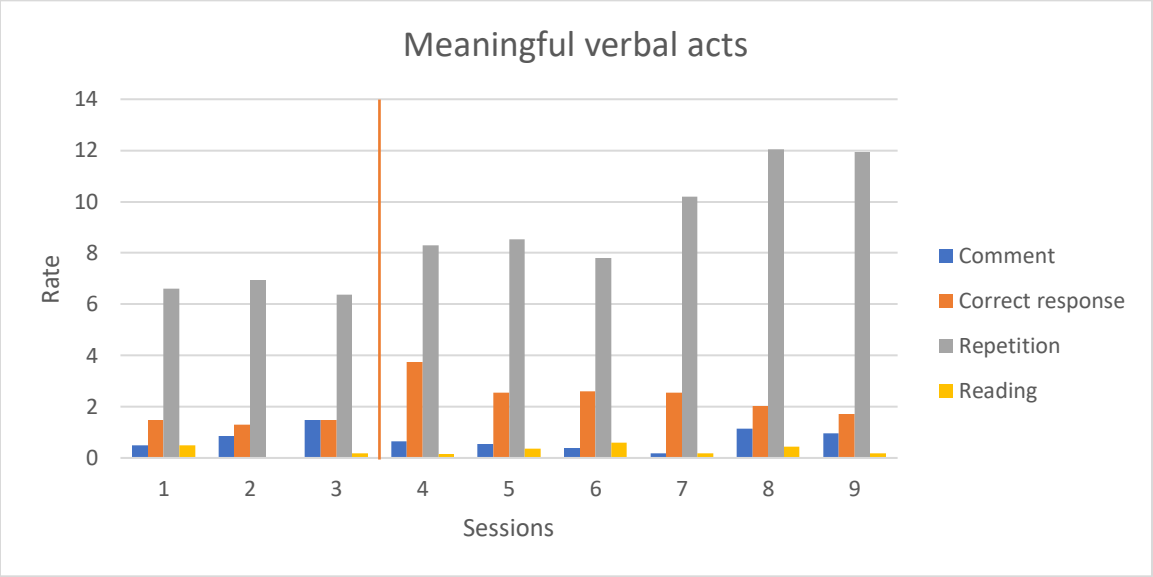


Figure 9 clearly represents the rate of the meaningful verbal social communication acts that Khaled displayed. Most of Khaled's verbalisation was *repetition*, which was also the most improved act during the intervention. In addition to *repetition*, the act of *correct response* increased when the intervention was implemented. On the other hand, both *comment* and *reading* acts had low levels during all reading sessions. Khaled's PND score of the verbal social communication category (100%) indicated that dialogic reading was very effective for him.

Figure 9: Khaled's meaningful verbal acts

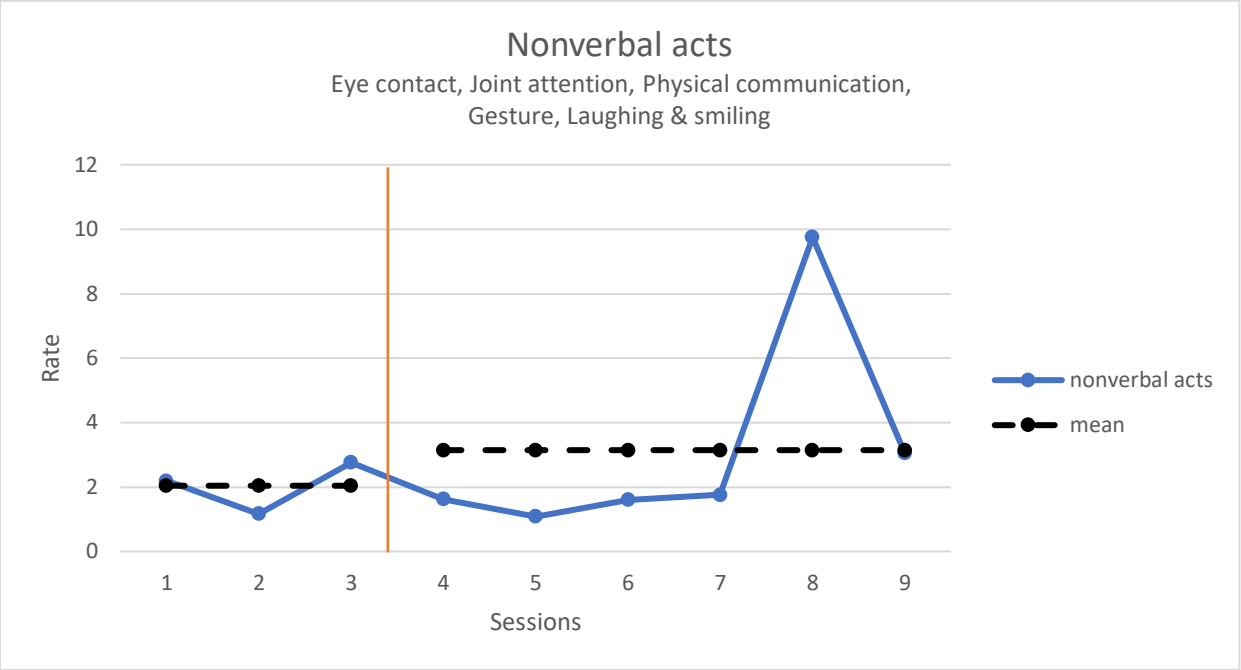


During the post-intervention interview, Khaled's mother talked about his interaction. She reported that the dialogic reading intervention benefited his verbal participation. According to her, the effect of the intervention on his verbal interaction continued after the reading sessions. She said that Khaled sometimes talked with her about the stories at home and asked her when they would go to the centre to read more stories.

The nonverbal social communication category included Khaled's *eye contact, joint attention, physical communication, gestures and laughing and smiling* (see Figure 10). His nonverbal social communication acts had less increase than his verbalisation. The mean rate of the acts was 2.04 during the baseline observation, which rose to 3.14 during the last intervention session. However, a dramatic increase (with a mean rate of 9.75) appeared in the eighth session. In fact, the growth in his participation during the eighth session was not just limited to his nonverbal social communication acts. It also happened with both his verbal participation (see Figure 7) and literacy participation (see Figure 11). While Khaled was happy during all the reading sessions, he was happier during the eighth session. According to the researcher's field notes, even his mother made a comment about his laughing and his excitement on that day. His state of mind during that day might have a positive effect on his participation in the session. Khaled's PND score of the nonverbal social communication category was 33%, indicating that dialogic reading was not effective for this category.

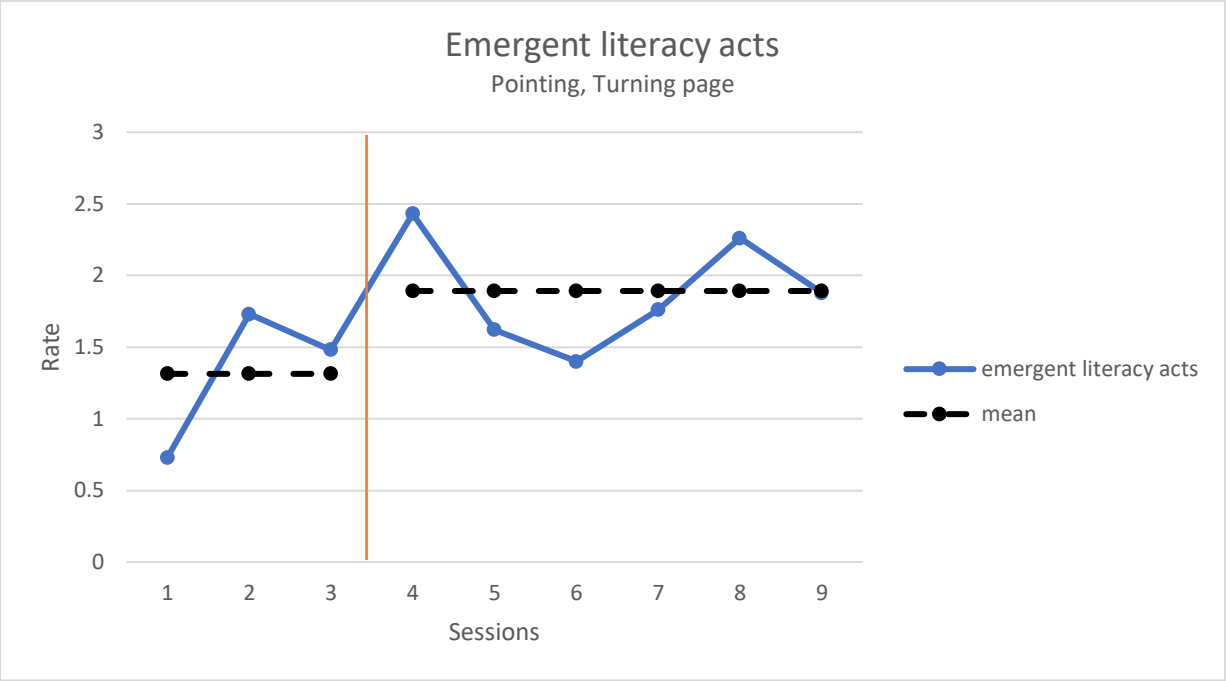
During the post-intervention interview, Khaled's mother mentioned that she noticed the increase of Khaled's social communication behaviours. In terms of *smiling and laughing* acts, Khaled's mother believed that he enjoyed the dialogic reading intervention. She said that his facial expression indicated his enjoyment and excitement because they were doing the intervention together.

Figure 10: Khaled's nonverbal acts



Khaled's emergent literacy acts (*pointing and turning the page*) had a mean rate of 1.31 in the baseline condition (see Figure 11). The rate immediately went up to 2.43 when the intervention was introduced at the fourth session. Then, the rate of his behaviours fluctuated slightly during the following sessions until it was 1.89 by the end of the intervention. Overall, the emergent literacy acts were the least frequent acts that Khaled displayed during the reading sessions. Khaled's PND score of the emergent literacy category (66%) indicated that dialogic reading had a questionable effect on his emergent literacy.

Figure 11: Khaled's emergent literacy acts



4.4.2.5 Khaled's reading engagement

Khaled was engaged during the shared reading sessions. He did not ask to end the sessions, nor did he display behaviours to indicate an unwillingness to continue the reading. Khaled's mother reported that Khaled responded to the dialogic reading intervention and interacted with the story. He was paying attention, interacted with her and did not get distracted, which made her feel that they were achieving something. It was clear to her that her son was engaged with the shared reading activity. She said that it was obvious in his face that he was paying attention unlike when he was at home, where he was always distracted.

Moreover, the duration of the sessions and the time that Khaled spent on each page were calculated from the video observation. Khaled spent an average of 4:31 minutes in the baseline sessions, which increased to 5:22 minutes during the dialogic reading intervention (an 18.81%

increase). Likewise, the average duration of time he interacted with each page rose by 40%, from 20 seconds in the baseline to 28 seconds in the intervention sessions. In addition to the increased time, Khaled started to spend time on the storybooks' covers during the last three sessions of the dialogic reading condition.

Mothers were given the choice to use the relevant objects during the reading. Khaled's mother chose not to use them during the baseline sessions. When the researcher explained to her how to use the objects in the guidance session, Khaled's mother expressed that she would not be comfortable using the objects because she wanted to concentrate on the intervention. For her, it was hard to use the relevant objects and to apply the dialogic reading intervention at the same time during the sessions. Thus, the relevant objects were not used with Khaled.

4.4.2.6 Khaled's mother's experience of dialogic reading

Khaled's mother was interviewed after she implemented the dialogic reading intervention. When asked what she thought about the intervention, she answered that the intervention helped her notice the social communication between her and her child that occurred when reading the stories. She also reported that the intervention increased the communication between them: he sat, listened to her and interacted with her. In addition, she said that she started using some of the intervention's principles with Khaled at home, such as giving him more time and a choice. She mentioned that she once tried to dress him, and he refused. Instead of forcing him, she told him that he would not go with her. He then came to her and asked her to dress him. However, giving him time in this situation was difficult for her because she did not have patience. Finally, she indicated that she wanted to use the dialogic reading intervention with her son in the future, but

she had doubts about her ability to use it at home. It was easier for her to do it in the centre because Khaled was more disciplined in the centre than at home.

4.4.2.7 After the intervention

During the follow-up interview, Khaled's mother reported that she still used the intervention from time to time. She said that she found it easier and more effective to use the dialogic reading in the centre compared to using it at home. During the sessions in the centre, Khaled paid more attention to the story and participated more. She reported that the reasons might be that he always resisted sitting with her or because she was not doing the intervention correctly, but she said that she would continue using it.

4.4.3 Sarah

4.4.3.1 Summary of Sarah's profile

Sarah was seven years old attending an autism centre. Her verbal ability was very limited, and she mainly pointed, babbled or said a few words to communicate. Her expressive language skills were less than the level of an 18-month toddler, and her receptive language skills were at the level of a three-year-old (for more information, see 3.6.3.3.1.3 Child 3: Sarah).

4.4.3.2 Sarah's ESCS

When presented with the 18 tasks of IJA, Sarah had a high IJA frequency score by initiating joint attention 22 times. Her IJA behaviours included eye contact and switching gaze between objects and tester. For the tasks that targeted her RJA such as book presentation and gaze following, she received a score of 78%, responding to 11 trials and failing to respond to only three. Likewise, she had a good performance on RBR, passing 61.9% of the trials in which the researcher asked to obtain objects from her. In terms of IBR, she got a score of 13 during the 19 IBR tasks which indicated that her ability to initiate request was good. Finally, she did well in RSI, demonstrating eye contact and turn-taking behaviours 34 times.

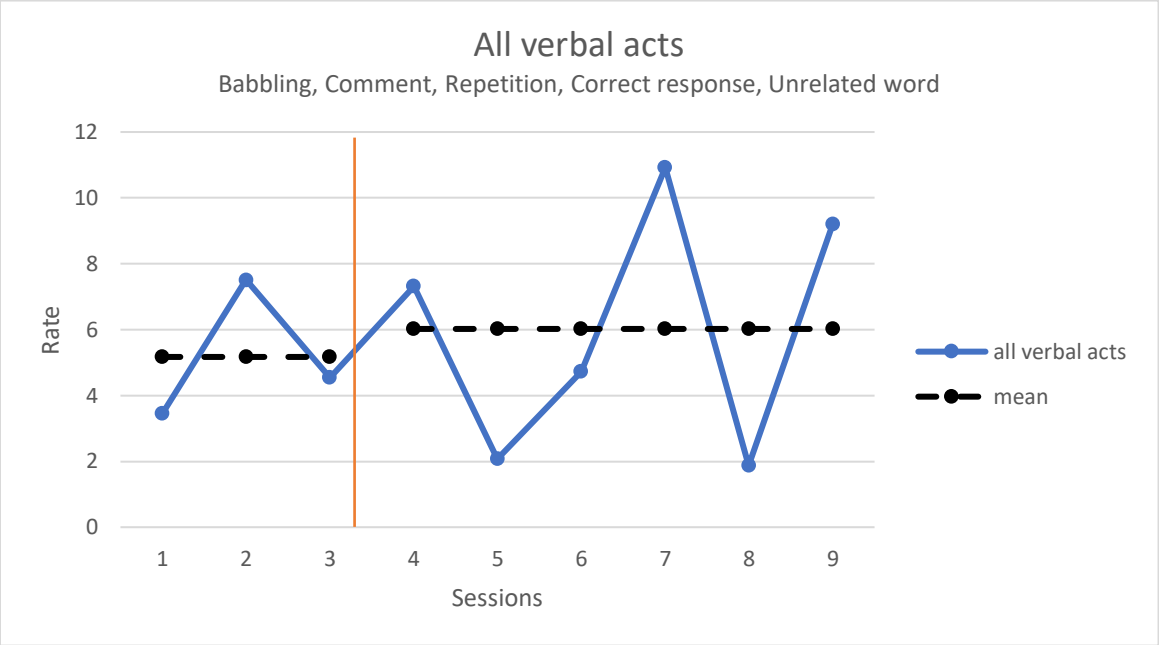
4.4.3.3 Before the intervention

In the pre-intervention interview, Sarah's mother talked about the usual activities she and Sarah did together. The activities included educational and entertaining ones such as learning numbers and playing with makeup. She did not do shared reading with Sarah because she thought that Sarah was not able to understand the stories. However, she knew that Sarah loved holding books and scribbling on books' pages. When Sarah found a letter she recognised in books, she drew a circle around it and pronounced it. While Sarah's mother did not read with Sarah, she reported that she sometimes told her daughter stories using her siblings as characters to help Sarah understand the stories.

4.4.3.4 During the intervention

Sarah participated verbally during the shared reading sessions. However, her mean rate of verbal social communication acts was similar in both the baseline and intervention conditions, as shown in Figure 12. The similarity in performance between conditions continued when focusing on meaningful verbal social communication acts (excluding the unrelated words). The *babbling* act was considered a meaningful verbalisation because it was Sarah's tool of verbal communication, as her mother reported. In addition, as it seemed from the observation, most of Sarah's babbling had a meaningful function such as making a comment.

Figure 12: Sarah's verbal acts



When looking at the types of her verbalisation, it appeared that most of her verbalisation was *babbling.* As shown in Figure 13, the rating mean of her *babbling* was 2.02 in the baseline reading condition, which rose to 6 in the last session of the intervention. However, there was a variation in her babbling during the intervention condition, for which potential explanations

could be given. Sarah's participation was low during the fifth and the eighth sessions, compared to the other sessions. According to the researcher's field notes of the fifth session, the researcher noticed only at the end of the session that Sarah was chewing gum. Her mother was surprised because Sarah did not like chewing gum. As for the eight session, Sarah's mother mentioned that Sarah woke up late and had to go to the centre without finishing her breakfast. Those external factors might have affected Sarah's behaviours during those sessions. In terms of PND, Sarah's score of the verbal social communication category (33%) indicated that dialogic reading was not effective for her.

Figure 13: Sarah's babbling

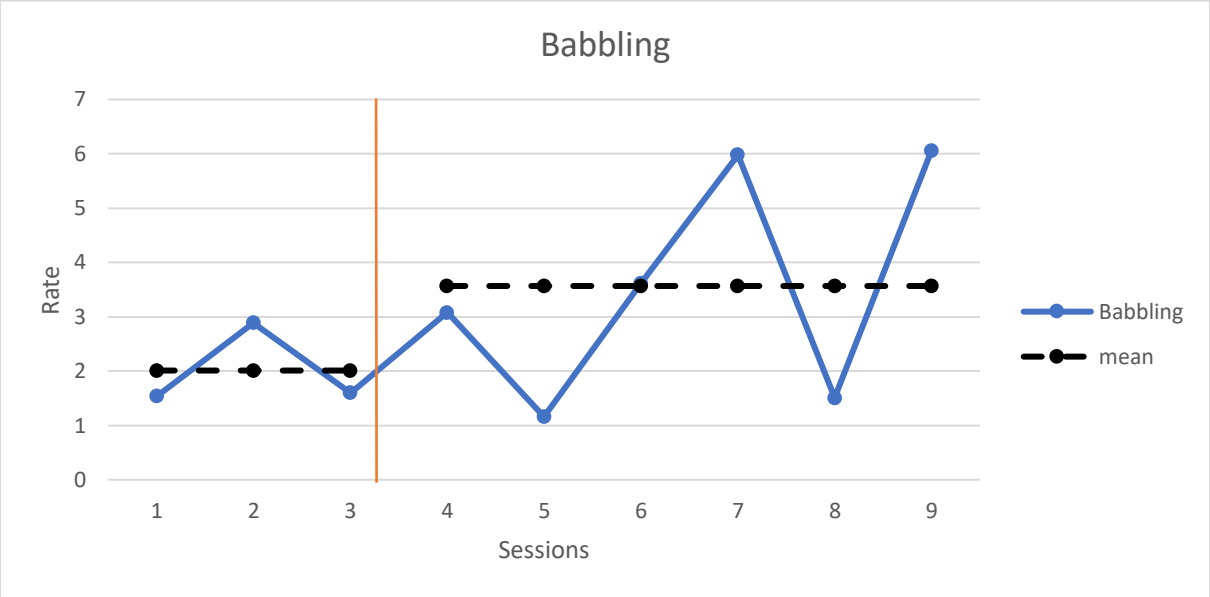
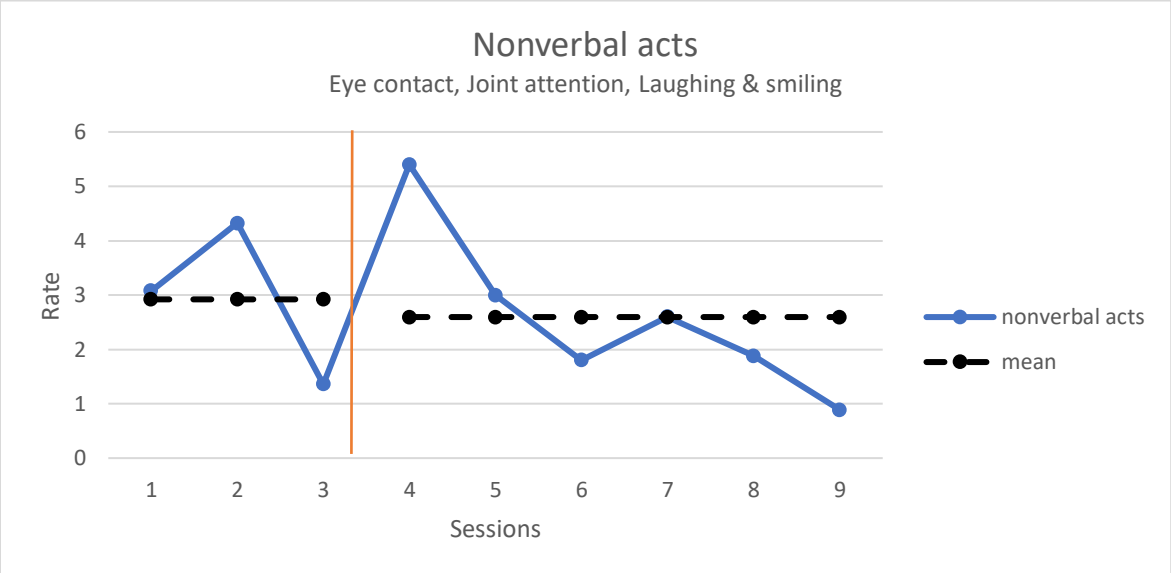


Figure 14 represents Sarah's nonverbal social communication skills which included *eye contact, joint attention, laughing and smiling*. Generally, the mean of her nonverbal social communication acts was 2.92 in the baseline condition, followed by an increase to 5.4 when the intervention was introduced at the fourth session. This might indicate the immediate change of the dialogic reading on Sarah's nonverbal social communication acts. Nonetheless, her nonverbal

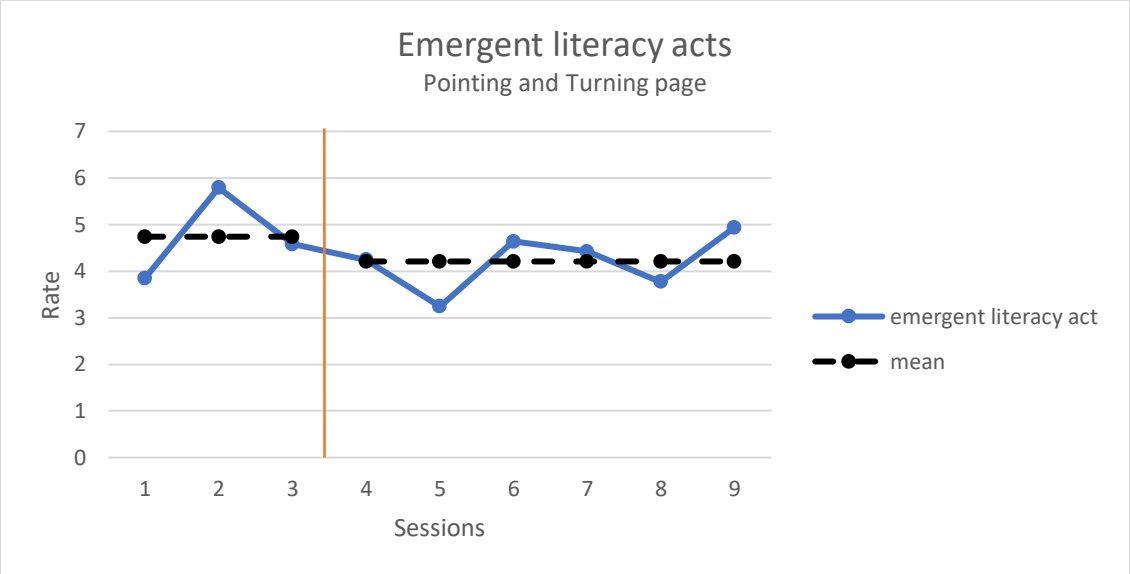
participation decreased during the following sessions. When looking at each act separately, it appeared that the drop was not related to her displaying *eye contact* and *joint attention*. Indeed, her mother reported that Sarah communicated better during the intervention. The decrease was because of the *smiling and laughing* act. While it was hard to explain the reason for this change, Sarah's mother reported in the post-intervention interview that she asked her daughter many questions during the intervention. She said that those many questions might have distracted Sarah and reduced her enjoyment of the shared reading. However, the fact that she was smiling and laughing less during the other intervention sessions did not mean that she was not happy. On the contrary, her mother mentioned that her daughter enjoyed the shared reading and was very engaged during the intervention. Evidence regarding her reading engagement in the dialogic reading sessions is discussed in the next section (see 4.4.3.5 Sarah's reading engagement and understanding the concept of books). Sarah's PND score in the nonverbal social communication category was 16%, indicating that dialogic reading was not effective for her.

Figure 14: Sarah's nonverbal acts



In terms of emergent literacy category, the mean rate of the category did not differ much from the baseline condition to the intervention one (see Figure 15). While it was 4.74 in the reading baseline, it slightly decreased to 4.20 in the intervention condition. However, the mean rate increased to 4.94 during the last intervention session. There was a decrease during the fifth and the eighth sessions which might be explained by the reasons mentioned when discussing Sarah's babbling. Similarly, her PND score of the emergent literacy category (0%) indicated no effect on her emergent literacy.

Figure 15: Sarah's emergent literacy acts



4.4.3.5 Sarah's reading engagement and understanding the concept of books

Sarah was similar to Ali and Khaled in terms of reading engagement. She finished all her sessions without asking or showing behaviours to indicate her desire to end a session. She seemed to be happy, having fun and engaging during the reading. Sarah's mother reported that

Sarah enjoyed the intervention because it was a fun activity, not an educational one, and because she loved the colourful pictures of the books.

Moreover, the duration of Sarah's interaction was examined using the video observation. The average duration of her intervention sessions (4:12 minutes) was longer by 11.50% than the average duration of her baseline ones (3:46 minutes). In a similar way, she spent more time on each page during the dialogic reading condition than she did in the baseline condition. Indeed, the average duration of time per page roughly tripled (288% increase) from baseline (09 seconds) to intervention (35 seconds). Sarah's engaging with pages also increased during intervention sessions because she started spending time on the books' covers during the dialogic reading sessions. However, similar to Khaled's mother, Sarah's mother did not use the objects with Sarah during the baseline and the intervention sessions. Her reason for not using them was that she believed that Sarah would easily get distracted by them and she would lose interest in the storybooks.

Finally, it seemed that the effect of shared reading generally and the dialogic reading intervention specifically went beyond the participation during the sessions. Sarah's mother mentioned in the post-intervention interview that she noticed a change in Sarah's understanding of books after applying the intervention:

> *"In the past, whenever my daughter used to hold a book, she would ask me for a pen to write on the book's pages. To her, books meant something to write on. However, after the intervention, I noticed that she stopped writing on books' pages. Now instead of writing, she points at pictures and puts her finger under some words asking me to read them. Last week, she came to me holding a book without a pen and pointed at a picture to show me. It was the first time that I*

saw her holding a book without a pen. She stopped asking me for a pen as she used to do." Sarah's mother

4.4.3.6 Sarah's mother's experience of dialogic reading

During the post-intervention interview, Sarah's mother talked about the change in her perspective of using books with children with autism. She explained that she learnt from the intervention that storybooks should be more than reading the lines. They should be about pictures and colours in order to grab her child's attention and make it easier for her to understand the story. She thought that Sarah would not be able to understand the story, but she actually did. Storybooks also helped to create communication between her and Sarah and helped her to notice and pay attention to that communication.

In addition, Sarah's mother said that by using the intervention, she was able to simplify the story to her child which enabled her to understand it. She found that the intervention's prompts were the best part of the whole intervention, specifically the specific questions (wh-questions). Those types of prompts were beneficial in her daily life. Instead of using general questions, she started to ask Sarah specific questions (about specific details) and found that Sarah understood and responded to them better than to general questions. In terms of difficulties and suggestions, she reported that there were no difficulties but suggested using puppets to represent the story characters because Sarah loved them. Finally, Sarah's mother reported that she would continue using the intervention with Sarah in the future because she thought that with time and repetition, the dialogic reading intervention would have a great effect on her daughter; it would help Sarah to pay more attention, understand more and learn new words.

4.4.3.7 After the intervention

During the follow-up interview, Sarah's mother reported that she continued reading with her child but stopped recently because Sarah was bored of repeating the same stories. However, her mother said that she would buy new storybooks for her soon. She said that Sarah was always asking her to read the stories, so they did the intervention daily or even twice a day on some occasions. During the shared reading, Sarah brought a storybook, sat with her mother, pointed, labelled what she saw in pictures and turned pages. Also, her mother used the intervention's prompts to ask her about the story. Sarah's mother thought that the intervention helped Sarah to focus on details. When she looked at a photo on her mother's phone, she was able to point at all the details in the photo. Sarah's mother concluded the interview by saying that she decided to continue using the dialogic reading intervention because she liked its results.

4.4.4 Ahmad

4.4.4.1 Summary of Ahmad's profile

Ahmad was five years old attending an autism centre. He communicated with others using verbal and nonverbal skills. His receptive and expressive language skills were at the level of a two-year-old (for more information, see 3.6.3.3.1.4 Child 4: Ahmad).

4.4.4.2 Ahmad's ESCS

Ahmad initiated joint attention four times during 19 tasks, which indicated his low frequency score on the IJA subscale. However, he did better in IBR, initiating 15 behavioural requests. Most of his IBR behaviours were reaching towards an out of reach object. In terms of RJA and RBR, while he received a high percentage of 75% in RJA, he got a percentage of 13% in responding to behaviour requests. During most of the RBR trials, he failed to give the objects to the tester when she asked for them. For ISI, he initiated the turn-taking on the first task and did not initiate it for the second one. Finally, his frequency score of RSI was 19 during 33 tasks, which indicated that he demonstrated social interaction for nearly half of the tasks and failed for the other half.

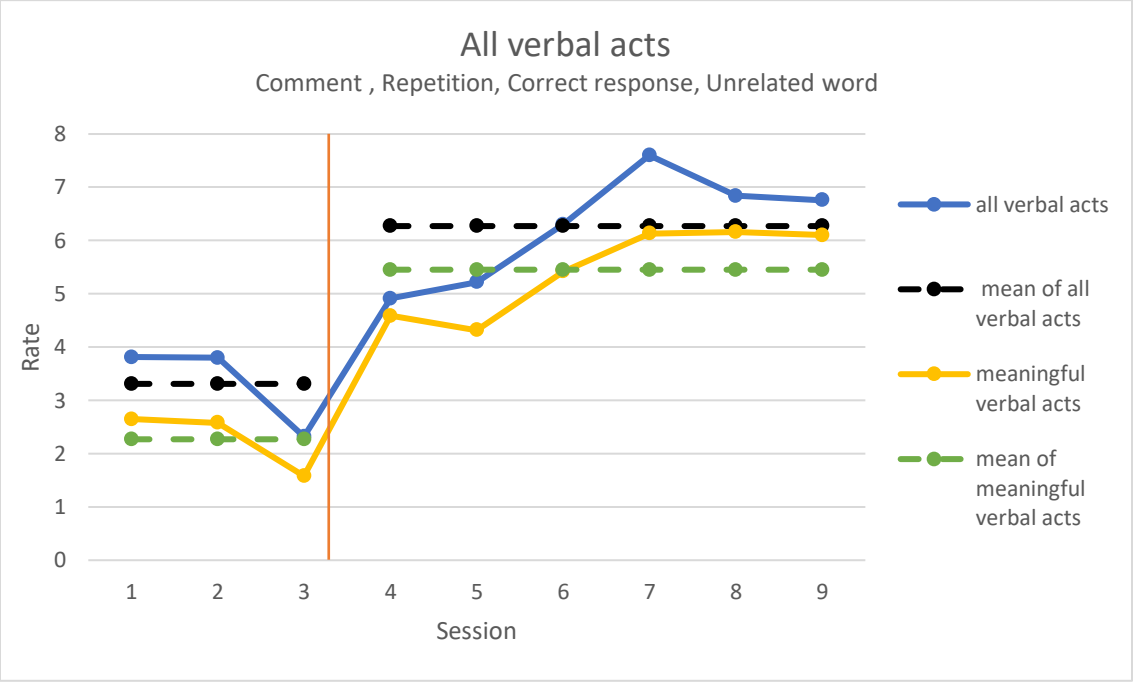
4.4.4.3 Before the intervention

During the pre-intervention interview, Ahmad's mother mentioned that she and Ahmad enjoyed doing outside physical activities such as running and swimming. She said that his siblings also joined them in those activities. Regarding shared reading, she said that books should be important for children when going to school but not before. Thus, she had not thought about reading with Ahmad. She also did not tell him stories even though she told bedtime stories to his siblings. She mentioned that Ahmad usually joined the bedtime storytelling and sat with his siblings even though he did not participate in the storytelling activity. When she was asked about Ahmad's interaction with books, she answered that he did not have storybooks, but he usually took his siblings' books, turned pages and moved his lips pretending to read.

4.4.4.4 During the intervention

Ahmad participated across all the categories in the shared reading sessions. In the verbal social communication category, the mean rate of his total verbal acts during the baseline sessions was 3.31 (see Figure 16). However, it remarkably rose to the mean rate of 6.76 by the last intervention session. The increase stayed constant even when only the meaningful verbal social communication acts (*comment, repetition and correct response*) were compared, with a rise in the mean from 2.27 to 6.10. When looking across the intervention sessions, it appeared that Ali's verbal participation progressed from a mean of 4.91 in the fourth session (the first intervention session) to a mean of 6.76 in the ninth session (the last intervention session).

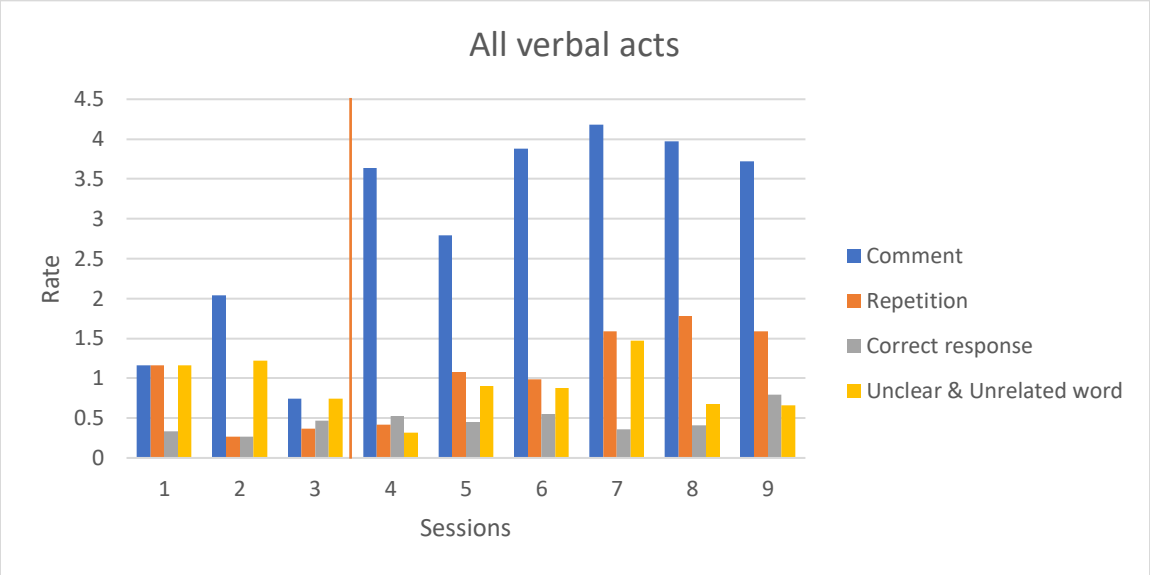
Figure 16: Ahmad's verbal acts



As shown in Figure 17, the *comment* act was the greatest part of Ahmad's talk. Indeed, he made more comments during the intervention sessions than he did in the three baseline sessions. Like

his comments, the *repetition* act also increased when implementing the intervention, while the act of his *correct response* was not greatly affected. In addition, his *unrelated words* dropped from the mean rate of 1.04 in the reading baseline to 0.66 by the ninth session which meant that the dialogic reading intervention might help to increase his meaningful verbalisation. Ahmad's PND score of the verbal social communication category was 100%, indicating that dialogic reading was very effective for this category.

Figure 17: Ahmad's verbal acts



Ahmad's mother believed that the intervention increased Ahmad's verbal social communication with her and helped him to use more expressive language. His verbal social communication skills increased, and he labelled a lot of things in pictures. She also mentioned that he became able to identify the characters of the story (for example, mother, father, brother and sister) and to understand the differences between their roles. For her, this meant that he understood the stories and the characters, which made her very happy.

Similar to his verbal skills, Ahmad showed growth in his nonverbal social communication acts including *eye contact, joint attention, physical communication, gesture, and laughing and smiling* during the intervention condition (see Figure 18). In the baseline sessions, the mean of his nonverbal acts was 4.15 which rose to 6.09 in the fourth session and rose again to 7.16 in the last dialogic reading session. *Joint attention* was the most increased act of the nonverbal social communication category, which rose from 0.90 in the baseline phase to 1.82 when the dialogic reading was implemented in the fourth session (see Figure 19). Then, it increased further during the eighth and ninth sessions (3.83 and 3.45). Ahmad's PND score of the nonverbal social communication category (100%) indicated that dialogic reading was very effective for him.

Figure 18: Ahmad's nonverbal acts

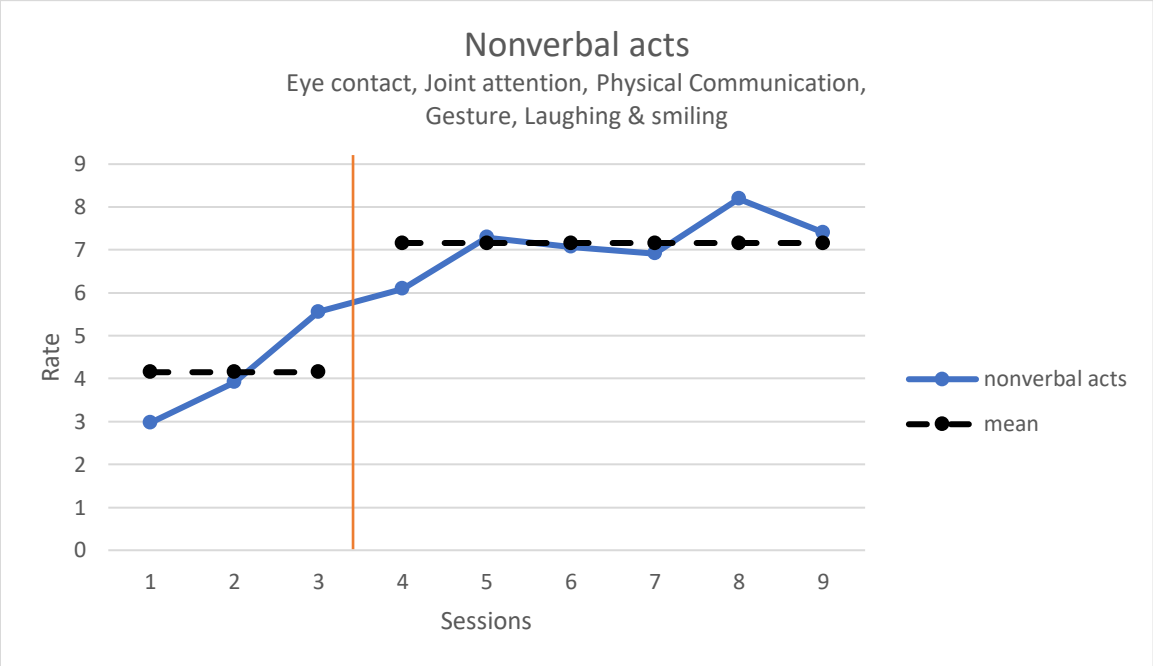
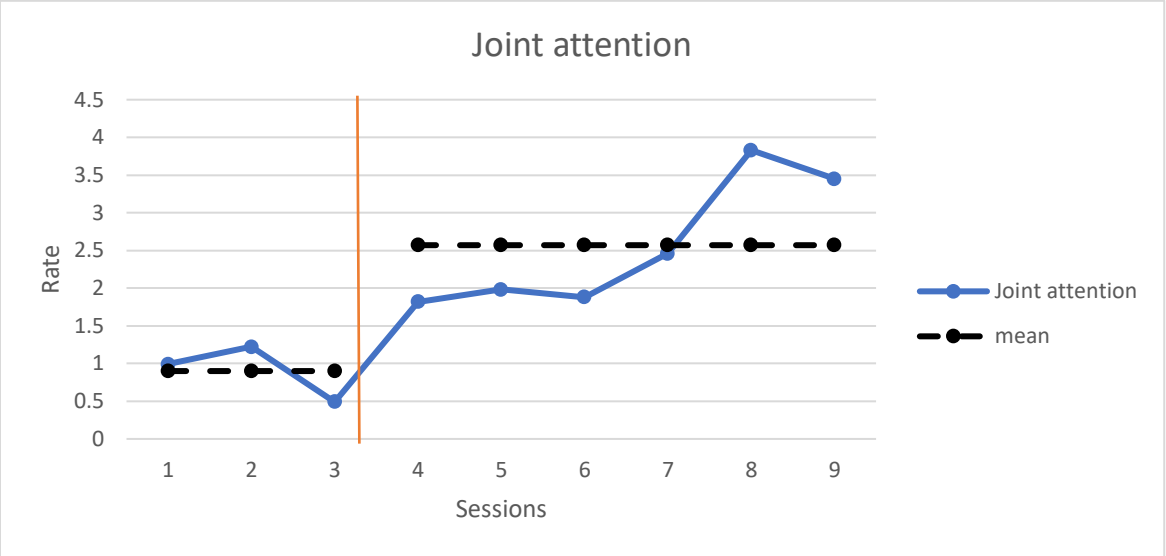


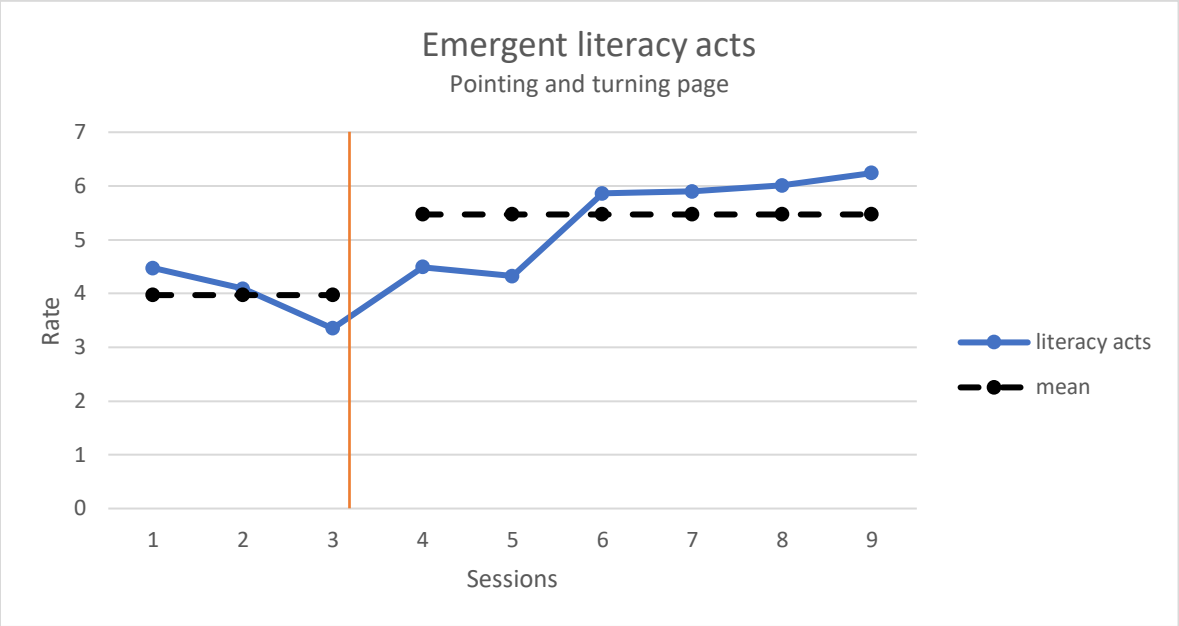
Figure 19: Ahmad's joint attention



This finding was consistent with what was reported by his mother during the post-intervention interview. She said that the intervention improved Ahmad's *eye contact* and *joint attention*. She believed that the dialogic reading intervention positively affected his nonverbal social communication behaviours.

For the emergent literacy category, there was also a rise in Ahmad's emergent literacy acts during the intervention condition compared to the baseline (see Figure 20). The increase was evident across the intervention sessions, raising from the fourth session with a mean rate of 4.49 to the ninth sessions with a mean rate of 6.24. When looking at the acts separately, it appeared that the increase in his literacy behaviours was due more to his *pointing* than to his *turning page*. In fact, the act of *turning page* was not much affected by the intervention. However, Ali pointed during the baseline sessions with the mean rate of 3.08, followed by a rise to 3.69 in the fourth session which also increased to 4.92 by the last session. The PND score of Ahmad's emergent literacy category (83%) indicated that dialogic reading was effective for his emergent literacy.

Figure 20: Ahmad's emergent literacy acts



Ahmad's mother talked about some of Ahmad's behaviours which were related to his literacy skills. She believed that Ahmad's interaction with books changed compared to his interaction before the intervention. When implementing the dialogic reading intervention, he paid attention to pages, pointed at pictures, took her hand to show her a picture and labelled things in pictures.

4.4.4.5 Ahmad's reading engagement

Ahmad's mother reported that before she started applying the intervention, she doubted Ahmad's ability to be engaged with the stories, and she was afraid that he would be bored. However, she was surprised to find out that he interacted and put a lot of effort in the shared reading. In addition, she said that she knew that her child enjoyed the intervention because he was smiling, did not resist sitting during the sessions and continued reading with her until they finished.

Like all the children, Ahmad spent more time participating during the dialogic reading sessions. While the average duration was 7:25 minutes in the baseline condition, it became 8:46 minutes in the intervention sessions (18.20% increase). Similarly, Ahmad interacted with each page for an average of 33 seconds in the intervention sessions, compared to an average of 19 seconds during the baseline sessions (73.68% increase). Ahmad also interacted with more pages as well because he started to engage with the books' covers during the dialogic reading intervention sessions.

Similar to Ali's mother, Ahmad's mother used the relevant objects to engage him more in the reading activity by connecting them to the story. When there was a different detail between the object and the picture, she used it as an opportunity to use the dialogic reading prompts to make a comparison. For example, while reading the 'My Sister' story, Ahmad's mother held the blue doll dress and put it near the picture of a red dress in a closet. She said to Ahmad, "Look, this dress is like the girl's dress, but they have different colours." She pointed at the dress in the picture and asked Ahmad about its colour, and he answered her. Then she held the doll dress and asked him about its colour, and he answered her. Moreover, on some occasions, Ahmad's mother used the objects to replicate events from the stories. For instance, there was a picture of two boys playing with a ball in the 'My Brother' story. When Ahmad and his mother read the story, she said to him, "Look, they play with the ball. Now, we will play like them." She held the ball and was gently throwing and rolling it to Ahmad while she repeated, "We are playing with the ball like the boy and his brother do in the story."

Ahmad engaged with the objects, held them, looked at them and used them in the right way. For example, while reading the 'My Father' story, Ahmad's mother showed him the plastic cutlery and gave him a fork. He held it near his mouth and opened it like he was eating something imitating the boy in the story picture. He was not distracted by the objects and gave them back to

his mother when she asked him to do so. Ahmad's mother was satisfied with the objects and liked the multisensory context that the objects added to the story. During the post-intervention interview, she mentioned that she liked the intervention because:

> *"It develops different skills: the visual skills, tactile skills, because he touched and held the objects, and of course the verbal ones." Ahmad's mother*

4.4.4.6 Ahmad's mother's experience of dialogic reading

When interviewed straight after the end of the intervention, Ahmad's mother reported that she found that using books with children with autism was a great idea. She liked the effect of the intervention on Ahmad's participation, especially that he was taking the lead role in the reading sessions. While Ahmad's mother did not face any difficulty when using the intervention, she suggested that including video stories might help more because Ahmad loved hearing sounds. Regarding her experience with the dialogic reading intervention, she explained that the best part of the intervention was increasing the social communication between her and Ahmad. Then, she talked about the things that surprised her during the intervention:

> *"I was surprised when he used (the word) brother for the boy and (the word) sister for the girl […]. Also for colours, I knew that he knows a few colours, but I had no idea that he can identify and name all of them. This was a shock for me […]. In fact, for the last two or three weeks, whenever we are out and he sees a traffic light, he says: red, green. It makes me very happy." Ahmad's mother*

The above quote indicated that the intervention helped Ahmad's mother learn more about her son. While she was naming the family members during the reading sessions, she did not expect

him to name them back. However, as with many cases of individuals with autism, naming family members might not mean that Ahmad had learned and understood their roles. He might have just memorised them. For the colours, nearly all the stories have a picture with coloured pencils in it. Whenever Ahmad saw the coloured pencils, he pointed at each pencil and name its colour. This was how his mother knew that her son could name and identify all colours. The final point in the quote was regarding the traffic light. While it was clear that Ahmad learned the colours before the intervention, according to his mother he started verbally identifying them during the sessions. He then started naming the colours outside the sessions (for example, in the street). It might be possible that he transferred what he was doing in the reading sessions to other situations.

When asked if she was able to use the intervention strategies in other situations, Ahmad's mother answered that she started using the completion prompt with her child at home. Instead of telling him a word, she would say the first two letters of it, and he would continue. She found this prompt very effective with her child. At the end of the interview, she mentioned that she would continue using the intervention with Ahmad and include his siblings in the shared reading activity. She also wished that the autism centres would include shared reading activities similar to the intervention.

4.4.4.7 After intervention

In the follow-up interview, Ahmad's mother reported that she continued reading with Ahmad and his siblings once a week. Ahmad usually chose the book and participated by making comments and responding to questions when she asked him about the pictures. She noticed that his verbal participation improved over time. In addition, she stated that she started to give him

more freedom when they read the storybooks. She allowed him to control the books, turn pages and choose the picture and the details he wanted to talk about. She also used the intervention prompts with photos, especially photos on her phone. She showed him a photo and asked him about its details using the dialogic reading prompts. Ahmad's mother reported that the intervention helped her notice her child's progress in terms of understanding the story and interacting with her. Finally, she explained that the dialogic reading intervention was better than the traditional ways of teaching a child reading and writing. The intervention attracted Ahmad's attention and made him focus more and communicate better than other traditional ways.

4.4.5 Intervention fidelity

As mentioned in the methodology chapter, the present study used ongoing feedback and a fidelity measurement to establish better fidelity of implementation (see 3.6.6 Fidelity of implementation and feedback). For the feedback, immediately after each intervention session, mothers were provided with positive feedback on the implementation of the intervention. The feedback focused on the strengths and was built on the successful moments of interactions during the sessions rather than on the weaknesses. In particular, the researcher reflected on how mothers used the intervention and the type of prompts they used. The discussion also included their children's answers and how mothers responded to them. In addition, the researcher drew their attention to whatever principle/s they used in that session. The duration of the feedback was less than 15 minutes to keep it short and easy to follow for the mothers.

The fidelity measurement was adapted from Fleury et al. (2014) indicating that mothers should use at least 10 prompts during each intervention session to be considered dialogic reading. To

ensure that, the researcher documented in her field notes the prompts mothers used during the intervention. The field notes showed that all mothers used at least 10 prompts in each intervention session. Figure 21 shows the number of prompts each mother used for each intervention session. The field notes also documented the types of prompts they used. Data showed that most mothers used prompt related to wh-questions, followed by distancing questions. Figures 22, 23, 24 and 25 show the frequency of types of prompts used in all intervention sessions by each mother. These results were consistent with the post-intervention interview data as mothers mentioned there that they preferred wh-questions and distancing questions. For example, when asked what was the best part of the whole intervention, Sarah's mother said "the intervention's prompts, specifically the specific questions (wh-questions) […] she understood and responded to them better than to general questions," and "I like distancing questions. She responded to them, especially when I connected the stories with her brothers' name."

In addition to documenting the prompts mothers used, the field notes also included data on to what extent mothers applied the principles. It appeared that mothers were able to respond to their children's attempts to participate and enjoy the activity with them. On the other hand, mothers were struggling with pausing after asking questions to give their children time to respond. It was documented in the field notes that even when mothers waited, it was less than five seconds which was the recommended time. Moreover, mothers had difficulties following the child's lead. They were often leading the activity, controlling the books and sometimes turning the pages. The last principle was to avoid repeating questions which mothers, especially Ali's mother and Sarah's mother did not follow. For example, the field notes showed that in many cases, when Ali did not respond, his mother repeated the question twice or more.

Figure 21: Number of prompts for each session

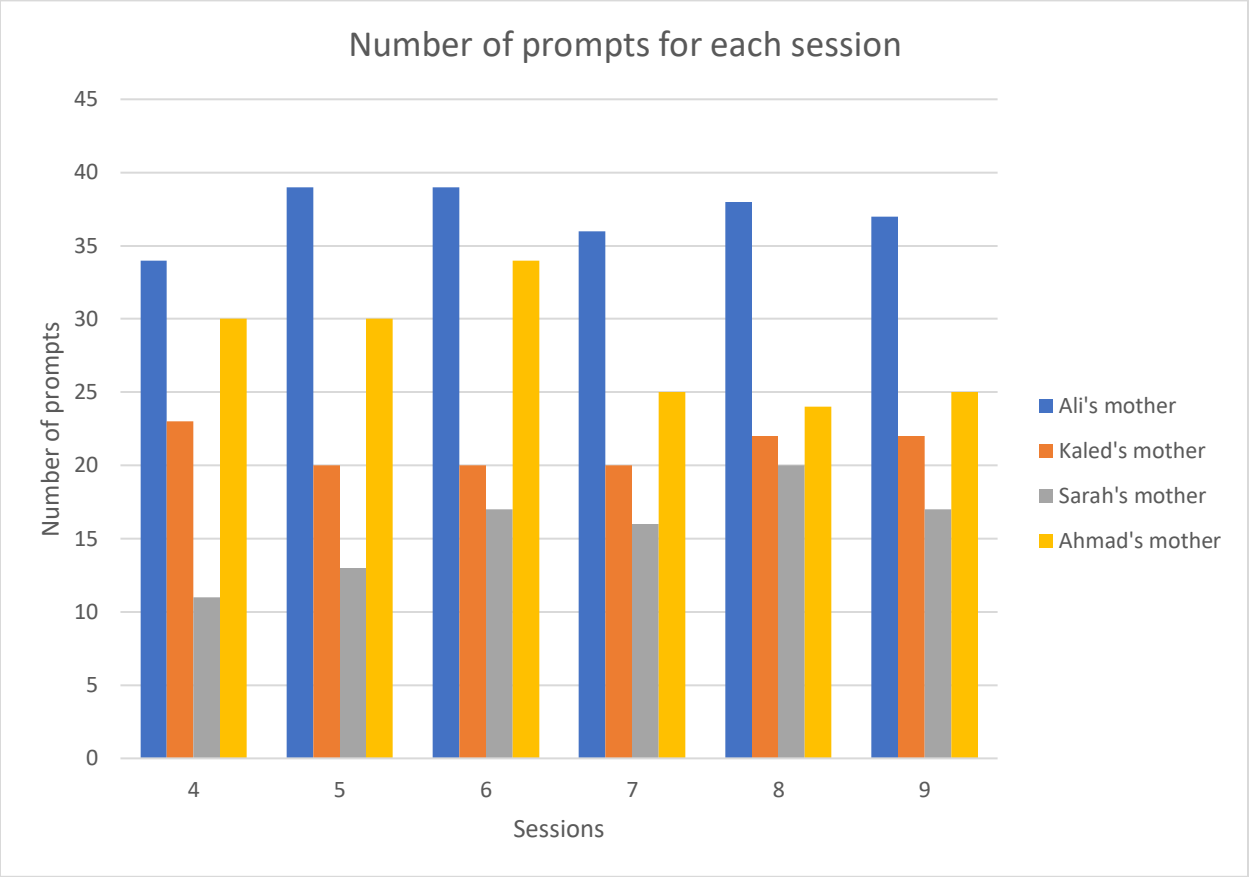


Figure 22: Ali's mother frequency of prompt types

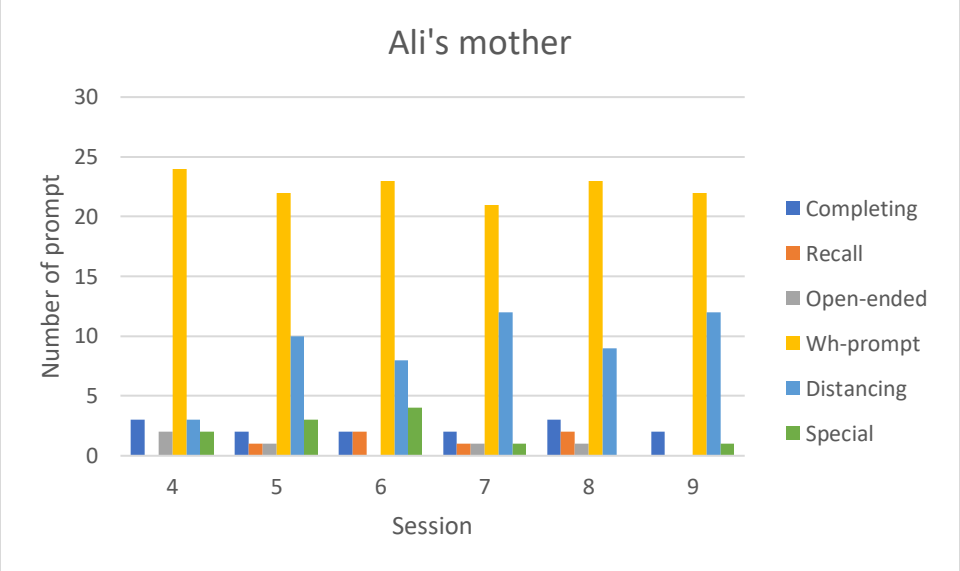


Figure 23: Khaled's mother frequency of prompt types

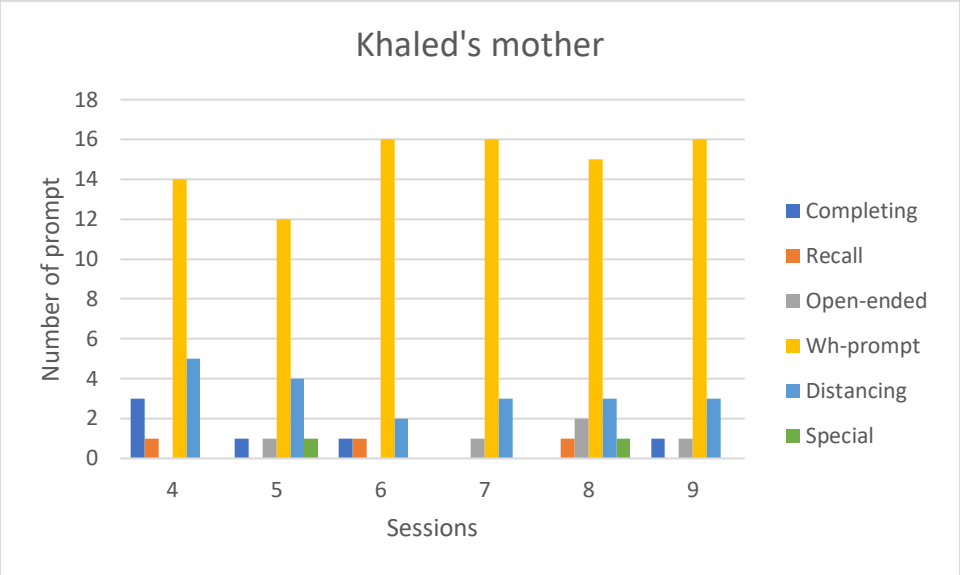


Figure 24: Sarah's mother frequency of prompt types

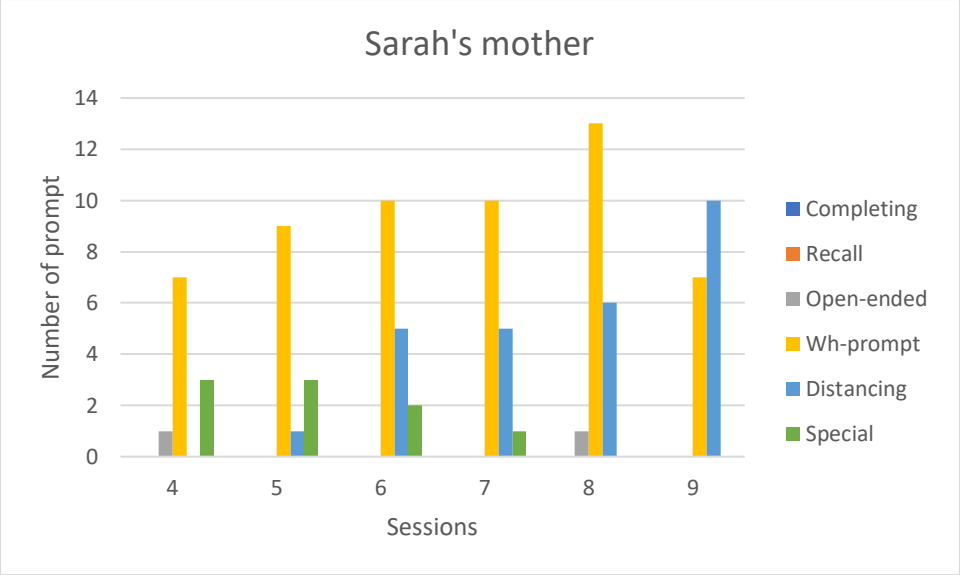
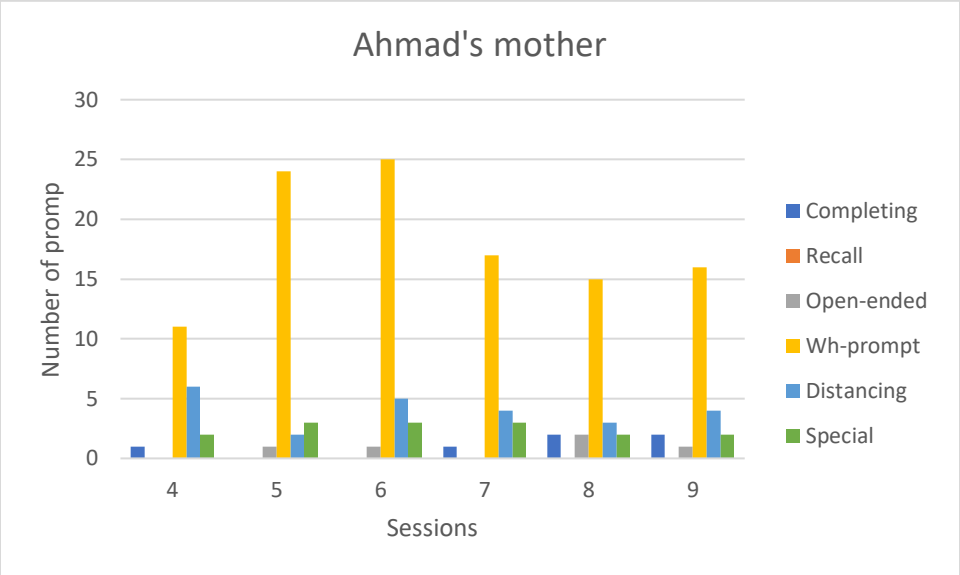


Figure 25: Ahmad's mother frequency of prompt types



While the purpose of the feedback was to establish good implementation fidelity, it appeared that it also had an effect on mothers that is worth mentioning here. In the first feedback sessions, the researcher provided feedback regarding the sessions. She mentioned the positive moments in which mothers used the intervention correctly, engaged their children in the reading and interacted with them. The researcher gave examples of how the child responded and interacted with mothers while the mothers were listening and agreeing with the feedback.

What was interesting is that around sessions six and seven, the mothers started to have a more active role during feedback. They participated in the feedback discussion by mentioning what their children did and reflecting on their behaviours. By the last sessions, the roles shifted: all mothers did most of the feedback by reflecting on what they and their children did while the researcher listened and agreed. It appeared that the nature of the feedback (providing only positive feedback) took the pressure off mothers and made them relax because they did not receive negative comments such as pointing out what they did wrong. It felt that being comfortable and relaxed led mothers to participate during the feedback sessions.

Mothers' participation in the feedback discussions revealed that they were paying attention to their children's participation and communication. They were acknowledging their children's attempts and gave them meaning. For example, Sarah said the word "water" when looking at a picture in the sixth session. However, there was no water in that picture. During the feedback discussion, the mother told the researcher that her daughter said water because she saw the juice jug in the picture. Similarly, during session five, Ali's mother pointed at a picture of bed and asked her son," What is this?" Ali answered," Night." In the feedback discussion, Ali's mother made a comment about this. She said that she was teaching him at home the difference between day and night. One of the pictures she was using was a bed picture. This was why when he saw the bed, he said, "Night." It appeared that providing the mothers with opportunities to think and reflect on the sessions helped them to notice and explain their children's behaviours.

4.5 Summary

In general, all mothers were able to implement the dialogic reading intervention, and all children participated in the sessions. However, the effect of the intervention was different on each child, and the effect was also different on each identified participation category (verbal social communication, nonverbal social communication and emergent literacy). The mean rate of the verbal social communication category increased for all children. This meant that the children achieved the original purpose of dialogic reading, which was to improve the children's verbal participation. The improvement included other categories in addition to the verbal social communication category. On the other hand, some children's categories had an increase when the intervention was introduced in the fourth session but then a decrease, like Khaled's emergent

literacy and Sarah's nonverbal social communication acts. Others were not affected much, like Khaled's and Ali's emergent literacy participation. However, for example, when looking at Ali's emergent literacy acts separately, it appears that his *pointing* in fact increased, but his *page turning* behaviour was roughly the same.

In addition, it appeared from the evidence that children were engaged with the intervention. They all completed all the sessions and did not ask to stop any of them. Additionally, they all spent more time in the dialogic reading intervention sessions compared to the baseline sessions. They also spent more time on each page in the intervention condition than they did in the baseline. Moreover, they started to engage with the front and back covers of the storybooks during the intervention condition. In terms of the relevant objects, Ali's and Ahmad's mothers used them with their children and found them helpful to be included in the intervention.

All the mothers liked the dialogic reading intervention and found it easy to apply. They indicated that their children enjoyed the intervention, and it positively affected them. Furthermore, they stated that it even had an impact on their interaction style with their children. The intervention also helped them to pay attention to their children's behaviours and interaction attempts. In the follow-up interview, three of them said that they were using it with their children. However, Khaled's mother mentioned that she did not use it regularly because Khaled was not responding at home as he was doing when she did the intervention with him in the centre. The next chapter presents the findings of phase two.

CHAPTER 5: FINDINGS OF PHASE TWO

5.1 Introduction

Phase two, which followed phase one, was designed to interview mothers of children with autism who did not participate in phase one and were not aware of the dialogic reading intervention. It was developed to examine mothers' views of shared reading to explore the suitability and the usefulness of the dialogic reading intervention for mothers and their children in the context of Saudi Arabia. 12 mothers of children with autism were interviewed in this phase (see Appendix 12 for a blank copy of phase two interview schedule). While their detailed descriptive information was presented in the methodology chapter (see 3.7.1 Sample), their relevant characteristics are mentioned during the analysis alongside their quotes. Participants were given numbered labels (for example, M1) to ensure confidentiality. A thematic analysis approach via NVivo (Version 12, 2018) was used in this phase to analyse mothers' interview transcripts. As a result of the thematic analysis process (see 3.7.3.1 Process of thematic analysis), two main themes and seven subthemes have emerged from the interviews (see Figure 26). The number of the final codes and references of each theme and subtheme are presented in Table 16. This section discusses those themes and subthemes. First, a brief description is given for the first main theme. Then, each subtheme is presented by discussing the related points and using illustrative quotes. The process is repeated with the second theme and its subthemes.

Figure 26: Thematic map of main themes and subthemes

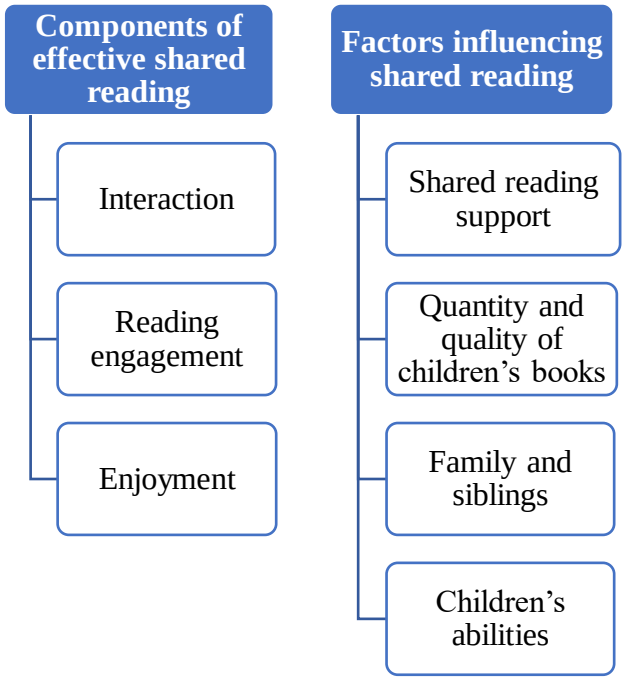


Table 16: Numbers of codes and references for main themes and subthemes

Themes and subtheme	Number of codes*	Number of references**
Main theme: components of effective shared reading	**75**	**189**
Subtheme: interaction	27	69
Subtheme: reading engagement	26	64
Subtheme: enjoyment	22	56
Main theme: factors influencing shared reading	**56**	**117**
Subtheme: shared reading support	18	37
Subtheme: quantity and quality of children's books	16	32
Subtheme: family and sibling	14	31
Subtheme: children's abilities	8	17

*Code: A collection of references about a specific topic
**Number of references: The count of times a particular code was mentioned by participants

5.2 First main theme: Components of effective shared reading

Components of effective shared reading was the first key theme in phase two. The theme described the essential components to establish effective shared reading for mothers and their children with autism. During the interview, mothers were asked what an effective shared reading session would look like. However, this theme did not emerge from mothers' responses to that question alone. The theme, indeed, evolved throughout the whole interview from answers to many questions such as questions about usual activities, the meaning of shared reading, the role of books and reading and literacy support. This theme included three subthemes: interaction, reading engagement and enjoyment.

5.2.1 Subtheme: Interaction

Interaction was the most commonly recorded subtheme (69 references) that arose from the interviews. Mothers' responses indicated that interaction was important to them and an essential component for shared reading. This subtheme first appeared when mothers described the activities that they usually shared with their children. Their interaction included verbal, nonverbal and physical interactions such as hugging and tickling. M2, who stated that she read with her daughter, gave an example of how she and her daughter interacted while singing nursery rhyme.

> *"When we sing together [video nursery rhymes], I sing the first lyric and stop while looking at her expectantly. Then, she tries to say the second lyric or even tries to hum the tune […]. Or I say the first two letters of a word and she continues […]. Sometimes, we have a conversation about the story in the song:*

I would ask her, "what happened to the boy? Why is he sad?" and she answers me […].” M2

In this activity, M2 focused on nonverbal social communication (eye contact) and verbal social communication (conversation) with her daughter. It also appeared that M2 used two of the dialogic reading prompts (*wh questions* and *completion questions*) in the activity. According to M2, this activity, which they used to do for a long time, helped her daughter with speaking and communication.

In addition, when mothers were asked about the meaning of shared reading, some mothers defined it as an interaction between a mother and her child. M1, who read with her nine-year-old child, and M4, who did not read with her seven-year-old child, gave the following definitions:

“It means that I read with him to establish an interaction and a dialogue between me and him” M1

“It means that he interacts with me. He progresses, improves and leaves behind the isolation and silence.” M4

Both mothers indicated that shared reading was interaction between them and their children even though their children were nonverbal. This indicated that both mothers were aware that interaction during shared reading did not necessarily have to be verbal interaction. In fact, M4 mentioned that shared reading typically increased vocabulary. However, since her child was nonverbal, she believed that shared reading would just increase his interaction.

The concept of interaction was also reported when mothers who read with their children talked about how they did so. They mentioned that they interacted with their children by asking them questions regarding the storybooks such as, “What is the title of the story?” and “What do you

see in the picture?" Here are two examples, one from M10 whose child was verbal and one from M1 whose child was nonverbal:

> *"I read to him, then I stop. So, he points at the words, as asking me to continue. However, instead of reading, I say to him, "You tell me what this word is." He then says: "Woof, woof."" M10*

> *"I do ask him, like, "Where is the dog's house?" He sometimes responds by pointing, but other times he does not pay attention to me. I also ask him to do something like, "Kiss the dog in the picture," and he does as I ask him." M1*

In both examples, mothers established interaction during shared reading by encouraging their children to have an active role. M10 waited for her child to initiate communication in order to read with him. M1 made a request (kiss the dog in the picture) if her child did not pay attention to her questions. Their children responded to them with verbal and nonverbal behaviours depending on their abilities.

While most of the interaction mentioned in the interviews was initiated by mothers, a few mothers reported that their children sometimes sought their mothers' attention by initiating social communication. M5, who rarely read with her nine-year-old daughter, reported that her daughter liked to share with her what she saw in the storybooks and in the magazines:

> *"When she sees pictures, she would say, "Mom! Look! It is a rabbit." And when she looks at the supermarket's ad magazine, she would say, "Mom! Look! It is oil. Mom! Look! This soap is different than the one we use."" M5*

When mothers were asked what an effective shared reading session would look like, they all mentioned establishing interaction. For them, having interaction was absolutely important to have effective shared reading. They reported that they should interact with their children by

explaining the story to them, taking turns reading, connecting the story's events to their children's life experiences and asking them questions about the characters, events and pictures. M2 and M7 who had the oldest children in the sample (a 13-year-old daughter and an 11-year-old son respectively) read with their children since they were young. They explained what an effective shared reading session looked like by providing the following scenarios:

> *"There would be an interaction between us. We would sit and open a book. We would read and then explain what we read. I would ask her, "What do you see in the picture?" […]. I would make a connection between the pictures and the words, and I would ask her about the details in the pictures […]."M2*

> *"...Not just reading the lines, I would also ask about the story […] For example, the boy went to the park. I would ask him, "How did he go to the park? Walking or by car? Maybe the park was near his house, so he went walking. Maybe it was far away, so his dad drove him […]" We have a park near us, so we would look from the window at the park, and I would say to him, "Maybe the park in the story looks like our park […]."" M7*

Both M2 and M7 asked many questions to interact with their children. It seemed that they used four of the dialogic reading prompts (*wh question, distancing prompt, open-ended prompt and special prompts*). While M2 asked the questions by using the storybooks' pictures, M7 asked the questions by expanding on the text.

5.2.2 Subtheme: Reading engagement

The second most popular subtheme (64 references) that appeared in the interviews regarding the components of effective shared reading was reading engagement. This subtheme included the mothers' desire to see their children actively engaged in reading. The reading engagement was

explained by the behaviours that children show to indicate their interest in the shared reading activity with their mothers. Mothers believed that being engaged during the reading was an indication that their children understood the story. While talking about effective shared reading, when M9 was asked how she would know if her daughter understood the storybook, she answered:

> *"If she was engaged, I would know that she was able to understand something from the story. However, if there was no engagement, then I would need to try again." M9*

Even though M9 did not read with her eight-year-old child, she emphasised the importance of reading engagement. For her, understanding the story would not necessarily be demonstrated by answering questions or retelling the story. Being engaged in the activity could also show understanding. If her daughter did not understand the story, she would not be interested and engaged in the activity.

In addition, it appeared from the interviews that children's reading engagement included the acts that they display while interacting with the storybooks. Those acts included turning pages, pointing at words or pictures, looking at pictures, reading and trying to read. M1, who read with her child, talked about how he was actively engaging when they read together:

> *"He loves to turn pages. He also spends a lot of time on a page when it has a picture of something he knows, like a picture of an apple […]." M1*

Some mothers were aware of the effect of their reading style on their children's reading engagement. They reported that in order to have an effective shared reading activity, they should do more than reading the story's written lines to engage their children in the activity. M8 and M4

both did not read with their boys. When they were asked about describing an effective shared reading activity, they said:

> *"He likes dramatic reading and musical voices. He pays attention to musical tones. So, when I would read to him, I would say, "The duck enters her house," [raising her voice]. I would grab his attention by using a clear voice. The picture also needs to be clear. The reader should use different voices. Also, I would include a lot of acting because he loves to look at my face and focus on my expression. This way, he would see if my face is angry, sad or happy. He would look at me and listen. After that, he would smile and laugh. This is how I imagine it [an effective shared reading session] would be." M8*

> *"I would need to look at the storybook, read and memorise it. Then, I would need to perform the story to him. I think this is how I would grab his attention and help him focus […]. If I just look at the story and read it to him, the results would be different to when I would perform it to him. I would need to make it interesting to him by acting and asking him questions." M4*

In the above quotes, the two mothers mentioned several points regarding their reading style to make shared reading more effective. The suggested reading style included doing a preparation before the activity, being enthusiastic when reading, adjusting reading speed to draw attention to what happened in the story, changing tones of voice to fit the characters and the dialogue, using plenty of facial expressions to increase interest in the reading and explaining the story.

5.2.3 Subtheme: Enjoyment

Enjoyment was another subtheme that arose from the mothers' interviews (56 references). The specific subtheme came from the importance the mothers placed on their children's enjoyment

during shared reading. This subtheme first emerged from the beginning of the interviews when mothers talked about the activities that they usually shared with their children. Mothers mentioned that if their children loved and enjoyed the activities, their level of communication and interaction increased. Their children even initiated the interaction by trying to get their mothers' attention or asking their mothers to join them. When M6 talked about interaction during activities, she reported that the quality of her ten-year-old daughter's interaction was mainly dependent on the activity:

> *"If she loves the activity, she will come to me and interact with me. If she does not [like it], she will not interact with me even if I try to." M6*

In addition, it seemed that children liked books and reading. Books, regardless of their types, were very enjoyable for children. All mothers who read and did not read with their children reported that their children loved books and spent a lot of time interacting with them. Even though M4 did not read with her son, she said that he really liked books:

> *"He does not get bored of books. He holds them and looks at their pictures all day. The books stay with him whether he is sitting, walking or even sleeping." M4*

Likewise, children who were able to read enjoyed reading books and tried to read the difficult words. M3, who rarely read with her 11-year-old verbal son, mentioned that he did not only enjoy reading books, but he also loved reading almost anything, like the street signs and cooking recipes.

In term of shared reading, the data conveyed a strong relationship between shared reading and enjoyment. Indeed, when M3 was asked about the meaning of shared reading, she answered:

"Something fun. Something he [her child] is very happy to do." M3

She defined shared reading by enjoyment. Seeing that her child was happy during shared reading motivated her to read with him on a number of occasions. On the other hand, experiencing shared reading as a fun activity might be one of the reasons that her child loved reading and books as mentioned above.

Three mothers (M1, M2 and M7) reported that when they read with their children, they made sure to make shared reading an enjoyable and fun activity. For them, it was very important that shared reading did not look like a compulsory activity or a teaching one. They would stop when their children were bored, and they would not force them to continue. They used this approach because they wanted their children to love books and reading.

In addition, when mothers talked about having effective shared reading, all of them mentioned that having fun, enjoying the reading and being happy were essential aspects to have an effective shared reading session. They wanted to see their children's happiness in their faces, and they wanted their children to smile, laugh, applaud, jump and hug them to display their happiness. When M10 who read with her son was asked what her child should do during an effective shared reading session, she said that she wanted him to respond to her. When asked what form of responsiveness she wanted from him, she answered:

"Enjoyment, being happy, seeing in his face that he is happy that I read with him." M10

For the mothers, having enjoyment was very critical because it determined the effectiveness of the activity. Enjoying shared reading was the response that the mothers wanted from their children. For example, M11 did not read with her nonverbal eight-year-old child because she did

not get the impression that he was having fun. According to her, shared reading was not an interesting activity for him. She wanted him to enjoy the reading as much as he enjoyed their playing activities together. Similar to M3's previous quote, M11 viewed shared reading as a fun activity.

5.3 Second main theme: Factors influencing shared reading

Factors influencing shared reading was the second key theme identified from the interviews in phase two. The theme entailed four factors that mothers considered an assistance or barrier to shared reading with their children. While mothers were not directly asked about what would influence their shared reading, the theme emerged from their answers during the interviews. This theme included four subthemes: shared reading support, quantity and quality of children's books, family and sibling and children's abilities.

5.3.1 Subtheme: Shared reading support

The subtheme of shared reading support was the most commonly reported (37 references) of the factors that appeared to influence shared reading. Mothers' interviews revealed that receiving support would help them a lot. The subtheme included the importance of shared reading support, the issues that mothers faced and the help that they wanted to guide them through shared reading. This subtheme primarily emerged from the mothers' responses when they were asked whether they would be interested in receiving shared reading support or not.

All mothers agreed about their need to have shared reading support. They would welcome any support. Offering shared reading support was critical for them because it would spread shared reading awareness. Indeed, some of them mentioned that they had not thought about using shared reading with their children with autism before the interview as M6, who did not read with her daughter, said:

> *"I know autism centres provide help about teaching letters and reading, but no one talks about shared reading […]. Now after we spoke about it, I will go tomorrow to my daughter's centre and tell them about shared reading […]. They should read with my daughter. They should have a shared reading hour, shouldn't they? No one came and told me that shared reading can be effective […]. I want our centres to offer shared reading activities and provide us with support. I wish your voice would reach them." M6*

M6 believed that it was the responsibility of her daughter's educational placement (an autism centre) to provide shared reading awareness by including a shared reading session in her daughter's daily schedule and providing families with shared reading support.

Receiving support would not only help mothers who did not use shared reading with their children. It would also benefit the ones who had a negative shared reading experience. M11, who did not read with her nonverbal child, said that she tried to read with him once, but he did not respond to her and was not interested. She believed that reading with her child was an impossible activity to achieve. However, when she was asked if she would like to get support, she answered:

> *"Yes, of course, without any doubts […] I wish there were support for mothers […] Look at shared reading for example! I will never think of using storybooks with my child on my own again because I have tried and failed. I will not try it again [without support], instead, I will use something that I know*

how to use […] So if there were shared reading support, I would be very grateful." M11

In addition to mothers who did not read with their children, the four mothers who read with their children also wanted shared reading support to help them with some issues regarding reading that they did not know how to deal with. They had tried to seek help on these matters, but they were not successful. For example, M10 read regularly with her child. Her child loved English storybooks and preferred them to Arabic books. While she understood the importance of shared reading, she was not sure if using English books were good or bad for him:

"[…] but there is one negativity. Actually, I do not know whether this is a negative or positive thing. I could not find someone who could help me with it. The thing is that he loves English books. He loves anything in English […] People told me this is not good." M10

Moreover, mothers mentioned a variety of support they would like to receive regarding shared reading. They wanted guidelines about reading with their children, increasing their interaction during shared reading and including siblings in the activity. They needed strategies to help their children understand the stories. They also wanted help regarding choosing appropriate storybooks. The following are examples from M1, M2 and M9.

"I want someone to teach me what the best way to read with a child is. What are the steps? Do I focus on pictures or words? What kind of pictures and colours are important?" M1

"I want to learn how to read with her and how to increase her interaction with me during reading." M2

"[…] choosing the storybooks is very important […]. How can I choose the appropriate storybooks for her?"M9

It appeared that M1 and M2, who read with their children, wanted guidance to make shared reading more effective. On the other hand, M9, who did not read with her daughter, needed help with the first step of practicing shared reading (choosing books).

5.3.2 Subtheme: Quantity and quality of children's books

Quantity and quality of children's books was the second most commonly reported subtheme (32 references) that influenced shared reading. The subtheme highlighted the importance of the availability of children's books which encouraged shared reading. On the other hand, the lack of access to children's books negatively affected practicing shared reading. M2 said that she read with her daughter. However, she did not read with her regularly because they did not have enough storybooks.

"We read stories whenever we have them. I do not have many stories." M2

She reported that her daughter owned a few stories. Then, she gave an explanation of why her daughter had just a few storybooks.

"I think our bookshops and libraries do not have good stories. I don't like the stories there because I think they don't benefit children, they are fictional, or the words are difficult for children […]."M2

Similarly, other mothers talked about the importance of having appropriate storybooks for their own children. For example, M1, who read with her nine-year-old son, talked about how choosing

the right book for her child had an impact on his interaction and reading engagement with the story. She mentioned that books should be of the right level for her child's cognitive and linguistic ability:

> *"However, he does not pay attention to pictures of things that he does not recognise. I think it is important to read stories about things that the child is aware of and knows them […]." M1*

When mothers were asked how to have an effective shared reading activity, they talked about the storybooks in addition to talking about their own and their children's roles. They reported that the books that they read should have particular characteristics. The first characteristic was having clear and colourful pictures. They also wanted children's books focusing on moral lessons or desired behaviours. In terms of the written lines, they preferred to have a small number of words which had to be written in a clear way, such as written in a frame outside the picture so children could recognise them. However, some mothers thought that it would be better to have picture books without words as M8, who did not read with her son, mentioned:

> *"[…] I would use a picture book, one that does not have words. […] I think he depends on pictures more than words." M8*

M8 might want to use wordless picture books because her child was nonverbal. Maybe she thought that her child would not benefit from the written words in books as he did not speak. This view might be similar to M4's view, who said that shared reading would not increase her child's vocabulary because he was also nonverbal.

Finally, some mothers reported that they sometimes did not know the suitable storybooks for their children's age, cognitive and linguistic abilities. They were not sure what to choose for their

children. As mentioned in the shared reading support subtheme, mothers reported that they wanted to receive support regarding choosing the right books.

5.3.3 Subtheme: Family and siblings

The third most mentioned subtheme (31 references) within factors influencing shared reading was family and siblings. Mothers believed that family and siblings played an important role for their children. First, family and home environment encouraged children's literacy. M7, who read with her 11-year-old son who has been able to read for a long time, explained how the home atmosphere and the family members positively helped her child love shared reading and books:

> *"We are a reading house. The house is full of books, papers, desks and printers. His father is a university professor. My son always watches his siblings, who all attend schools, read and write. He is surrounded by books." M7*

In addition, children's interaction with books was influenced by their siblings. M10, who read with her son, said that her older children's love of books and reading encouraged her son with autism to use books:

> *"All my children love reading. Going to bookshops and buying books is the best reward for them. I think this atmosphere helps him. When they leave their books, he opens them and looks at the pages. Also, he sees them sitting with their books, and he sits with them and holds a book to imitate them. He turns pages like them." M10*

Both quotes from M7 and M10 showed how family created a home literacy environment for their children with autism. This environment likely motivated their children to interact with books and be engaged in shared reading with their mothers.

In addition to home literacy environment, mothers emphasised the role of siblings in their children's life. When mothers talked about the activities and the times in which their children's level of interaction with them increased, they mentioned that the siblings also participated with them in those activities. Moreover, they reported that their children with autism, in fact, often preferred to play and communicate with their siblings than with their mothers alone.

> *"I want to say something: my child interacts and responds to his sister more than responding to me." M1*

> *"I am the one who initiates the communication with her. She loves to communicate with her sister though. Maybe because I am always correcting her behaviours, and she does not like that. So, she avoids me. If she needs something, she might come to me. However, if she wants to play, she goes to her sister more than she goes to me." M6*

Another aspect of the siblings' influence was mentioned by M6. While she did not do shared reading with her ten-year-old daughter with autism, the daughter who was the oldest of the siblings did shared reading with her younger siblings.

> *"I have a twin who is two years old. They usually come to her and ask her to read with them. It is like they persuade her to do it. She sits with them and tells them about the storybooks, but she does not stay long. She leaves in the middle of the story, and they run after her." M6*

For the four mothers who read with their children, siblings were also included in the shared reading. They did shared reading as a family activity as M10 mentioned:

> *"I sit and he sits beside me listening like his siblings. They sit near him and they all listen." M10*

On the other hand, some of the mothers who did not read with their children with autism read with their other children. When they read with their other children, they did not ask their sons or daughters with autism to join the activity. What was interesting, however, was that their children with autism usually joined their siblings and listened to the reading without being asked to. M11 and M8, who did not read with their eight-year-old sons, said:

> *"I am convinced that storybooks are important. This is why I read with his siblings. He actually comes to the room and sits with them when I read to them. However, I think he is not interested." M11*

> *"Look, I read with his siblings. I have three children besides him. I read with them and tell them stories before they go to sleep. When I read with them, he sits with them, looks and listens to me. I know he does not understand anything, but it is alright as long as he is sitting and listening. However, I never sit with him and do shared reading with him." M8*

These quotes indicated that some of the mothers who did not read with their children with autism were aware of shared reading and its importance because they used it with their other children. The quotes might also indicate that doing shared reading as a family activity helped children with autism to join the activity. However, it was unknown whether children with autism joined because of their siblings or because they enjoyed shared reading.

Nevertheless, siblings were linked to shared reading effectiveness. When asked how to have an effective shared reading, mothers mentioned that it was important to include siblings during the reading activity. They believed that this would help with shared reading and add a more prominent social communication aspect into the activity as M2, who read with her daughter, said:

> *"I think it would be good if I make the reading a family activity, maybe every day one person reads, and the others listen and look at the book […]." M2*

5.3.4 Subtheme: Children's abilities

The subtheme of children's abilities (17 references) was revealed as mothers explained how their children's lack of abilities made it difficult or meaningless to read with them. The limited abilities of certain children were considered a barrier for doing the shared reading. For some mothers, lacking the ability to speak and the ability to read were the obvious explanations for not reading with their children and not providing them with children's books as M4, who did not read with her nonverbal son, and M12, who did not read with her son, mentioned:

> *"No, [he does not have children's books] because he does not speak." M4*

> *"No, he does not have children's books, because he is not able to read." M12*

In addition, M11 did not read with her eight-year-old son because she had a bad shared reading experience. She said that she tried to read with her child once. However, she stopped and never tried again because he was not paying attention.

"I tried. I brought a picture book with a few words. I tried to read it with him. I said to him, "Look! This is a little girl." But he was not with me. He was sitting and flipping pages. He was not paying attention and was not interested." M11

Some mothers' perspective of shared reading was also affected by their children's abilities. They believed that shared reading was not for their children because they lacked the abilities that children should have in order to read with them. This influenced how they viewed shared reading. When they were asked what comes to their mind when they heard the term 'shared reading', M8 and M11, who did not read with their sons, said:

"It has no benefit. It is a high step that he cannot reach." M8

"It is an impossible thing to do. I would read to someone who understands me. But reading to someone who does not understand my words and is not interested is very hard." M11

This subtheme went beyond the children's current abilities. It seemed that mothers had also low expectations for their children's abilities in the future. M6 did not do shared reading with her verbal ten-year-old daughter. When she was asked to describe an imaginary shared reading scenario which she believed would be effective, she mentioned that she wanted her daughter to read and explain the story. However, when she was asked what kind of interaction she would like her daughter to exhibit, she answered:

"She would not interact. I cannot imagine that she would interact." M6

However, it was important to notice that this theme emerged from the interviews with mothers who did not read with their children. It appeared that mothers who read with their children,

verbal and nonverbal, did not see the lack of abilities by their children as a barrier for reading with them. For example, M1 read with her child even though he was nonverbal and hyperactive during the shared reading activities, as she mentioned.

5.4 Summary

Phase two provided valuable information that helped to understand the perception of mothers of children with autism in Saudi society regarding shared reading. It also provided data that could be linked to phase one in order to support the decision of introducing a culturally adapted version of dialogic reading intervention to mothers and their children with autism in Saudi Arabia. Even though mothers in phase two were not aware of the dialogic reading intervention, they gave evidence that indicated that the intervention could be useful for them and suggested ways that it can be adapted to better suit their needs.

Interaction and reading engagement were two important elements that mothers wanted their children to display during an effective shared reading activity. Those two elements are strongly established in the dialogic reading intervention. All children in phase one interacted with their mothers and were actively engaged during the intervention sessions. In addition, mothers in phase two also wanted the enjoyment aspect to be present in shared reading. According to the four mothers who participated in phase one of the study, they and their children had fun and enjoyed the dialogic reading intervention.

The second theme focused on the factors that influenced shared reading. The shared reading support subtheme emphasised the importance of offering shared reading practice such as the

dialogic reading intervention. The same could be said for the children's abilities subtheme because participating in shared reading intervention might help mothers change their perception about which children can benefit from shared reading and whether it is appropriate for nonverbal children. Indeed, some mothers in phase one doubted their children's participation before implementing the intervention. The other subthemes (family and siblings and quantity and quality of children's books) provided recommendations that could be included in the intervention to make it more suitable for Saudi society. The results of the two phases are discussed together and linked in more depth in the following chapter, the discussion chapter.

CHAPTER 6: DISCUSSION

6.1 Introduction

This chapter discusses the findings of the two phases of this study. The chapter includes three main parts. Firstly, a discussion about the impact of the dialogic reading intervention on children with autism is presented. This part relies on the findings from phase one. The second part discusses the feasibility of using dialogic reading for mothers of children with autism. Findings from both phases were used in this part. Finally, guidelines for adapting dialogic reading for mothers of children with autism in Saudi Arabia are presented. Similarly, the guidelines are based on data from both phases.

6.2 Dialogic reading impact on children

This part presents the impact of dialogic reading on children with autism in phase one. It particularly discusses the dialogic reading impact on verbal social communication, nonverbal social communication and emergent literacy. In each section, first the children's mean rates and PND scores for the respective category are presented in general. Then, the acts of the category are discussed separately. The final section goes on to discuss the dialogic reading impact on children's reading engagement.

6.2.1 Dialogic reading impact on verbal social communication

The verbal social communication acts included: *(i) correct response, (ii) babbling, (iii) comment, (iv) repetition, (v) reading, (vi) incorrect response and (vii) unrelated word.* Dialogic reading increased the mean rates of verbal social communication for Ali, Khaled and Ahmad and was very effective for them according to their PND scores. Sarah's mean rate also increased; however, her PND score indicated that dialogic reading was not effective for her verbal social communication.

The increase in children's verbal social communication category was expected as dialogic reading was originally developed to improve children's verbal participation by using specific prompts (*CROWD*) in a certain strategy (*PEER*) during shared reading activity (Whitehurst et al., 1994; Whitehurst et al., 1988). The present study supports the assumption that dialogic reading increases verbal participation even though it used dialogic reading in a culturally different setting with a different language to the culture and language of the original intervention. Therefore, the present study adds to the previous ones which used dialogic reading with different countries and languages (for example, Vally et al., 2015; Fung et al., 2005).

The findings of this study show that the three children with greater verbal abilities (Ali, Khaled and Ahmad) improved their *correct response* after using the intervention, which confirms the existing literature of using dialogic reading with children with autism. For instance, Jackson and Hanline (2020), Fleury and Schwartz (2017) and Whalon et al. (2015) looked at the dialogic reading effect on children's responses to the intervention prompts and reported that children with autism showed an increase in their verbal responses as a result of the intervention's implementation. On the other hand, Sarah, who had minimal verbal ability, did not increase her

correct response. However, she showed an increase in her *babbling* from 2.01 to 3.56 mean rate in the intervention condition. Since Sarah's babbling was her main verbal communication tool, according to her mother, the increase in her babbling might suggest that dialogic reading could help the verbalisation of children with autism whose verbal ability is minimal. In a similar way, previous studies about children with language delay (for example, Dale et al., 1996) and children with autism who had language delay (for example, Plattos, 2012) stated that dialogic reading was effective for their language development.

In addition, the verbalisation included the *comment* act which was coded when the child labelled or made a remark about a picture, character or event related to the story to direct their mother's attention. The present study found that Ahmad, the youngest participant, increased his comments from a mean rate of 1.31 to 3.69 during the intervention while the other three children's comments had a slight increase or no increase at all. The result of Ahmad is in broad agreement with Rodrigues-Queiroz et al. (2020), Kang (2017) and Whalon et al. (2015) who found that some children with autism increased their verbal initiation attempts including comments during dialogic reading. However, it is important to notice that these studies (Rodrigues-Queiroz et al., 2020; Kang, 2017; Whalon et al., 2015) did not measure the act of comment separately as the present study did. They measured the acts of comment, asking questions and request all together and called them verbal initiation. Thus, it is hard to establish to what extent the act of comment, in particular, increased or if it increased at all in Rodrigues-Queiroz et al.'s (2020), Kang's (2017) and Whalon et al.'s (2015) studies.

On the other hand, the findings for the other three children (Ali, Khaled and Sarah) who did not increase their comments contradict the previous studies. Nevertheless, these three children's results confirm the results of Fleury and Schwartz (2017) showing that dialogic reading did not

impact children's initiating comments. Two reasons might be given to explain the low level of commenting for children in both the present study and that of Fleury and Schwartz (2017). First, it is well-established in the literature that children with autism have difficulties with initiating verbal communication including commenting during interaction (Bacon et al., 2019; Stone et al., 1997). Therefore, Fleury and Schwartz (2017) suggested that it might be worth teaching children with autism explicitly how to make comments during dialogic reading.

The other reason why children in both the present study and that of Fleury and Schwartz (2017) did not increase their comments might be related to the structure of dialogic reading. Since dialogic reading focuses on using prompts to increase children's participation, asking many questions might limit children's opportunities to verbally initiate communication. In the present study, Khaled made more comments during the baseline than he did in the intervention condition which might suggest that his mother provided him with fewer opportunities to initiate comments by asking him many questions during the intervention sessions. A similar case was found in Fleury and Schwartz's (2017) study in which the adult asked one child six questions per minute, which might have restricted the child's chances to initiate communication. Therefore, it is important, especially when the intervention is used with children with autism, to consider avoiding the overuse of prompts and to pause between them to allow children time to make comments.

Furthermore, *repetition* was another act that improved during the intervention. In the present study, the act of repetition was counted when the child immediately repeated a word, phrase or sentence of the story after the mother read it and when the child immediately repeated a word, phrase or sentence related to the story that the mother said. Since participants were children with autism, the question arising here is: should echolalia be encouraged or reduced? While some

researchers have argued that echolalia has a functional and communicative purpose (Tager-Flusberg et al., 2005; Prizant and Duchan, 1981), others have argued that echolalia can negatively affect social communication and have developed interventions to reduce this behaviour (Neely et al., 2015).

Nonetheless, the question that should be addressed first is: should this act be considered as echolalia or not? To answer this, the mothers' reading style in this study was examined. The observation revealed that mothers expected their children to repeat the utterances after them, especially when reading the written lines of the storybooks. Mothers' reading style of requesting their children to repeat what they read was also found when Turkish mothers read to their children with TD (Leseman and De Jong, 1998). During mother-child shared reading interaction, the Turkish mothers read sentences of the text and asked their children to repeat verbatim after them. Leseman and De Jong (1998) connected this finding to the influence of religious memorisation practices. Indeed, this reading style is similar to the Talqeen practice in the Arab world in which the adult reads a verse or a chunk of a long verse of the Quran and asks the child to repeat it (Islamic Forum Foundation, 1986). This means that this reading style of encouraging repetition is a cultural reading practice impacted by religion.

Repetition is also similar to echo reading in which the adult models fluent reading for the child to repeat (Ellis, 2009). Therefore, children's repetition in the present study was very unlikely to be echolalia but a response to their mothers modelling proper reading. Since Khaled could read at the time of the study (a beginning reader), this technique might have been very helpful to increase his fluency. More importantly, echo reading might have helped all children with other skills. For example, when Knoll (2015) used a strategy of echo reading while tracking print with preschool children with TD, she found that the strategy improved children's concept of print and

their social communication skills such as turn-taking, respecting their reading partner and engagement. Thus, encouraging mothers in Saudi Arabia to use this reading method with their children with autism might be beneficial not only because it can help their social communication skills but also because it is a common cultural reading practice.

Khaled was the only child who exhibited the *reading* act during the sessions. However, no clear effect was found on his reading as the mean rate only slightly rose from 0.22 to 0.32 during the intervention sessions. In terms of the *incorrect response* act, only Ali and Khaled showed this act during the shared reading sessions. For Ali, his incorrect responses did not differ much between the baselines and the intervention sessions. Khaled, however, showed less incorrect responses during the intervention as his mean rate decreased from 0.87 to 0.21. This finding confirms Whalon et al.'s (2015) study showing that dialogic reading decreased the frequency of incorrect responses of children with autism. Both Khaled's and Whalon et al.'s results might suggest that dialogic reading can improve the quality of children's verbal participation.

The final verbal act was *unrelated word*. Ali, Khaled and Ahmad slightly decreased the frequency of words that were not related to the story or to their mothers' questions. Similar to the incorrect response act, the decrease in the unrelated words might indicate that dialogic reading can help the quality of verbal participation. On the other hand, Sarah increased the act of unrelated word from 0.52 mean rate in the baseline to 0.97 in the intervention sessions. The increase of uttering words, regardless if they were related or unrelated to the topic, might be positive for children who have minimal verbal abilities like Sarah. She might have used those unrelated words to communicate with her mother. Also, unrelated words might have been, in fact, related to the story or the question, but the adults (Sarah's mother and the researcher) might have missed the connection between the word and the topic.

6.2.2 Dialogic reading impact on nonverbal social communication

The nonverbal social communication category included: *(i) eye contact, (ii) joint attention, (iii) physical communication, (iv) gesture and (v) laughing and smiling.* The mean rates of nonverbal social communication increased during the intervention sessions for Ali and Ahmad, and dialogic reading was very effective for them according to their PDN scores. Khaled also increased his mean rate when using dialogic reading; however, his PDN score indicated that the intervention was not effective for his nonverbal social communication. Sarah's mean rate did not increase, which agreed with the interpretation of her PDN score stating that the intervention had no effect on her nonverbal social communication.

Children exhibited more *eye contact* when their mothers used dialogic reading compared to the baseline. For three children (Ali, Khaled and Ahmad), there was a correlation between their eye contact scores of ESCS and the intervention. For instance, Ali exhibited more eye contact (15 times) than Ahmad (eight times) on ESCS. Likewise, Ali showed greater increase in the frequency of eye contact (1.85 mean rate increase) than Ahmad did (0.08 mean rate increase) in the intervention compared to the baseline. Nonetheless, all participants increased the frequency of eye contact during dialogic reading. The increase of eye contact happened when mothers modified their interaction style according to the dialogic reading guidelines to encourage their children to interact with them in the reading. This means that mothers encouraged their children's social communication in general rather than targeting eye contact or teaching their children how to demonstrate it during dialogic reading. This is similar to the developmental/relationship-based approaches in which social communication is prompted without targeting specific methods or function of communication. It is also the opposite of the

behavioural approaches like ABA in which the emphasis is put on teaching children specific communicative behaviour (Kaiser et al., 1992, cited in Kossyvaki, 2017).

In addition to *eye contact*, Ahmad's mean rate of *joint attention* increased from 0.90 to 2.75 during the intervention sessions. Ahmad's progress on joint attention confirms previous results of Whalon et al. (2015) who investigated the dialogic reading effect on joint attention (named as nonverbal initiation) of children with autism. The study found that three children out of four exhibited improvement in their nonverbal initiation during dialogic reading. The joint attention of the other three children in the present study slightly increased or was not affected, which contradicts the results of Whalon et al.'s study. This might be because children with autism usually have difficulties with joint attention, especially initiating joint attention (Landa et al., 2007). However, this interpretation does not explain why Ahmad, who also had autism, improved his joint attention. The difference between Ahmad's progress and the others might be due to their abilities. When looking at the medical reports of the children, it seems that Ahmad had advanced social communication skills compared to the other three children, which might explain the improvement in his joint attention and also his comments. The individual characteristics of children with autism might moderate the relation between interventions and their outcomes (Bono et al., 2004).

In terms of other nonverbal social communication acts, Ali, Khaled and Ahmad exhibited *gesture* and *physical communication* acts. However, no difference between their results in the baseline and intervention conditions was found. On the other hand, the act of *laughing and smiling* was affected by the intervention for these children, increasing from mean rates of 0.49 to 0.78 for Ali, 1.39 to 2.34 for Khaled and 1.29 to 2.22 for Ahmad. The findings confirm Harker and colleagues' study (2016) showing that parental interaction style contributed to social smiling

development in autism; they found that a high level of responsive interaction resulted in social smiling in infants who were at high risk of autism.

Sarah's *laughing and smiling*, however, was negatively affected in the intervention condition. Her laughing and smiling decreased by a half-rate point in the intervention sessions compared to the baseline. During the post-intervention interview, her mother provided information that might be a possible explanation for this change in Sarah's behaviour. When asked what did not work in the intervention, her mother said that asking Sarah a lot of questions and repeating them reduced Sarah's enjoyment of the activity. If that was the case, it is likely that the intervention might have a negative affect when providing many prompts during the reading. This is another reason to emphasise the importance of not overwhelming the child by asking a lot of questions.

6.2.3 Dialogic reading impact on emergent literacy

The emergent literacy acts included: *(i) turning page and (ii) pointing.* The mean rates of emergent literacy category increased in the intervention condition for all children but Sarah. However, the increase did not mean that dialogic reading was effective for all children. According to the PND scores, the intervention was very effective for Ali, was effective for Ahmad, had a questionable effect for Khaled and had no effect on Sarah.

All children increased their behaviour of *turning page* during the dialogic reading condition. However, the intervention had little improvement on this behaviour of children (from 0 to 0.05 for Ali, 0.12 to 0.8 for Khaled, 0.88 to 0.97 for Sarah and 1.07 to 1.23 for Ahmad). One explanation, as it appeared from the observation, might be because their mothers were the ones

who usually turned the pages, as they were controlling the books. In addition to *turning page*, *pointing* was measured when the child pointed to print or a picture when the mother read or asked a question. The intervention had an impact on the pointing for two children (Ali and Ahmad). This is a promising result, as young children were found to pay less attention to print and more attention to pictures during shared reading (Evans and Saint-Aubin, 2005). Therefore, making reference to print by pointing to or tracking increases the development of children's print awareness. On the other hand, the other two children (Khaled and Sarah) did not increase their pointing during the intervention. These findings might support the argument that shared reading without explicit referencing to print is not enough to gain print awareness including pointing behaviour (Evans and Saint-Aubin, 2005). Thus, parents need to point at print, make comments and ask questions about it during shared reading (Hammett et al., 2003; Ezell and Justice, 2000).

Furthermore, the findings of the present study indicated that children were able to improve other skills of print knowledge in the dialogic reading condition. They began to recognise the function of the books' parts by engaging with the storybooks' front and back covers. During the baseline condition, children rarely interacted with the books before the reading. However, in the intervention sessions, children started to hold the book, look at the picture on the front cover and sometimes point to the title while mothers read it before starting the reading. After finishing the reading and closing the storybook, children also started to look at the back cover. All the storybooks' covers have the stories' characters at the top and the collection of the storybooks at the bottom, which seemed to increase children's interest in the back covers. This interest gave their mothers more opportunities to interact with them and to use the intervention prompts. Mothers asked their children what the names of the characters were, what storybook they were reading, and what storybooks they had already read. All children usually answered those

questions verbally or by pointing. Those findings support the findings of Lanter et al. (2012) indicating that children with autism can be motivated by print and engaged with literacy activity and material.

Additionally, one of the most interesting findings related to print awareness was the case of Sarah. In the pre-intervention interview, her mother reported that her daughter loved books but viewed them as a material used for scribbling and drawing. During the post-intervention interview, her mother said that Sarah no longer scribbled on the books' pages. Instead, she started to point at pictures and trace print with her finger. Not being involved in shared reading activities in the past made Sarah fail to understand the reading behaviour. However, when her mother started shared reading with focusing on the quality of interaction using dialogic reading, Sarah was able to understand the concept of books even though the duration of the intervention was short. This finding confirms previous ones indicating that shared reading has a significant effect on children's understanding of print (Sim and Berthelsen, 2014).

Thus, this study suggests that dialogic reading can affect the levels of children's print awareness, which contradicts the existing literature. Two studies (Hudson et al., 2017; Pamparo, 2012) investigated the dialogic reading effect on the emergent literacy of children with autism. Both studies found that dialogic reading did not affect children's concept of print. The contradiction might be explained by the different assessments used to measure print knowledge skills. The present study focused on print awareness to measure the concept of print. On the other hand, Hudson et al. (2017) and Pamparo (2012) used the print knowledge subtest of the Test of Preschool Early Literacy (Lonigan et al., 2007). According to the description of the print knowledge subtest, many of the 36 subtest items measure letters knowledge and sounds such as naming specific letters, pointing to specific letters, saying the sounds that are associated with

specific letters and identifying the letters that are associated with specific sounds. In other words, Hudson et al. (2017) and Pamparo (2012) focused on alphabet knowledge to measure the concept of print.

In addition to print awareness, vocabulary is another important part of emergent literacy. However, it was an informed decision not to measure vocabulary in this study as it mainly focused on the effect of dialogic reading on the social communication of children with autism. The second reason for not measuring vocabulary was the short duration of the intervention (six sessions in three and a half weeks). This decision was made taking into account previous findings from the literature. When looking at the studies that used standardised vocabulary measures with dialogic reading interventions for children with autism, it appears that the ones that used the intervention for a short period of time (four to eight weeks) found no significant gain in children's vocabulary (Towson et al., 2019; Plattos, 2011). On the other hand, when the intervention was conducted for a long duration (20 weeks), a significant increase in children's vocabulary was found (Hudson et al., 2017).

Nonetheless, even though the present study did not measure vocabulary, some of the findings suggest that dialogic reading contributed to a growth in the children's vocabulary. For example, in the post-intervention interview, Ahmad's mother reported that her child started to use the word 'brother' for the boy's picture and the word 'sister' for the girl's picture. He also began to name colours. As mentioned in the methodology chapter (see 3.6.2.3.1 Storybooks), the storybooks collection is about family members and the colours were included in the stories and their pictures which meant that Ahmad increased his knowledge of the books' vocabulary. This result is consistent with previous studies showing that book-specific vocabulary of children with

autism increased when dialogic reading was introduced (Grygas Coogle et al., 2018; Fleury et al., 2017).

6.2.4 Dialogic reading impact on children's reading engagement

All children were engaged during the dialogic reading intervention. They did not ask to end any sessions, neither did they display any behaviours suggesting their desire to end the sessions such as crying or running away. During the post-intervention interviews, the mothers also indicated that their children were engaged in the sessions because they were paying attention, not getting distracted, interacting with them and did not resist sitting. In addition, the average duration of the reading sessions increased (between 11.50% and 41.71% increase) during the intervention compared to the baseline for all children. More than that, children also spent more time interacting with each page in the dialogic reading condition than they did in the baseline sessions (between 40% and 288% increase). The present study echoes the findings of Fleury et al. (2014) indicating that children with autism spent a longer reading session duration when dialogic reading was used.

Children's reading engagement during the intervention was related to their enjoyment. All mothers reported in the post-intervention interviews that the clearest sign of their children's engagement was witnessing their enjoyment during the reading sessions. Their children seemed happy and to be having fun with the activity. For example, Sarah's mother said that her child was engaged because dialogic reading was a fun activity, not an educational one. The results are in line with Sonnenschein et al.'s study (1997) which stated that providing home literacy

experiences with an entertainment-oriented approach makes children more engaged in the activities.

Another example showing an increase in children's engagement levels was related to Ali's yawning. In the baseline Ali yawned several times during the reading activity, while in the intervention condition his yawning dramatically decreased. Literature about yawning has indicated that the concentration ability is lowered when someone is bored, which stimulates their yawning (Suganami, 1977, cited in Askenasy, 1989). More yawns happen during uninteresting stimuli and activities, and fewer yawns are produced when someone is interested in a certain activity (Provine and Hamernik, 1986). Therefore, Ali was probably more interested in the activity when the dialogic reading was introduced which impacted his interaction and reading engagement.

6.3 Feasibility of using dialogic reading for mothers of children with autism

This part discusses the feasibility of using dialogic reading with mothers of children with autism in Saudi Arabia. Both phases one and two were integrated to discuss the feasibility of dialogic reading. Therefore, the following sections in this part resulted from the analysis of the two phases. Most of the sections are applicable to the mothers in both phases while a few other sections are only applicable to the mothers in phase one as presented in Table 17. To distinguish between the two phases in the following sections, mothers in phase one are referred by their children's pseudonyms (Ali's mother, Khaled's mother, Sarah's mother and Ahmad's mother) while mothers in phase two are referred to with numbered labels (for example, M1) following the example of the respective findings chapters.

Table 17: Sections emerging from phase one and from both phases

Sections emerging from only phase one	Sections emerging from both phases (one and two)
6.3.4 Dialogic reading as a tool for social communication	6.3.1 Practicality of using dialogic reading
6.3.5 Using relevant objects	6.3.2 Using dialogic reading strategies
6.3.7 Impact of ongoing feedback	6.3.3 Using dialogic reading principles
6.3.8 Satisfaction of mothers	6.3.6 Dialogic reading impact on mother-child interaction
	6.3.9 Sustainability and generalisation of dialogic reading

6.3.1 Practicality of using dialogic reading

Before discussing the mothers' ability to use dialogic reading, it is important to shed light on a few points to reflect on the practicality of using the intervention. The first point was the absence of shared reading. All mothers in phase one reported in the pre-intervention interviews that they did not read with their children. Comparably, half of the participants in phase two (six mothers) also did not read with their children, while another two mothers rarely read with them. Therefore, the majority of the sample in both phases (75%) did not practise shared reading activities with their children. These results were expected since shared reading is still not a common practice in Arab societies (Carroll et al., 2017).

However, the remaining four mothers in phase two read with their children with autism. It was unknown why those four mothers read with their children while the other 12 (in both phases) did not. Even when the characteristics of those mothers and their children were examined, no possible explanation could be found. Three of the children whose mothers read with them were

verbal and attending mainstreaming schools, while the fourth child was nonverbal and attending an autism centre. In terms of reading ability, two of the children could read and the other two could not. However, all those characteristics were the same as those of the children whose mothers did not read with them. The four mothers had different jobs and maternal level of education and varied in the number of children they had. What the four mothers had in common was that they all had a positive view of shared reading, but that did not explain the difference between them and the ones who did not read with their children because some of the latter also had a positive view of reading, as is presented in the following sections. Nevertheless, the finding that only four mothers out of 16 read with their children was similar to the finding of Carroll et al. (2017) showing that only two out of 22 Emirati parents read with their children, which confirms to a certain extent the lack of shared reading practice in Arab societies. On the other hand, in terms of autism, the results of those four mothers confirmed previous literature stating that parents of children with autism involved their children in shared reading activities (Fleury and Hugh, 2018; Lanter et al., 2013).

While shared reading was absent from the majority of the sample's daily routine, more than half of the mothers in both phases reported that they sometimes told their children stories. Again, this was another expected finding as storytelling is popular in Arab families (Callaway, 2012). One explanation for its popularity is that Arab culture is considered as an oral culture (Mohamed and Omer, 2000). In general, using storytelling with Arab children is important not only because it is part of their culture but also because it strengthens the parent-child relationship and develops literacy skills (Cutspec, 2006). However, storytelling might not be the best practice when it comes to children with autism because of the absence of the visual aspect. It is widely reported that individuals with autism tend to process and understand information more easily with visual

support (Rao and Gagie, 2006), while they often have difficulties processing auditory information (O'Connor, 2012). Therefore, it is highly likely that children with autism may prefer shared reading rather than storytelling.

The lack of practicing shared reading led to having misconceptions about shared reading. For instance, Ahmad's mother said that shared reading and books are important when children go to school but not before. One explanation might be that she did not view storybooks as interactive tools for children to explore and engage with print and did not view shared reading as an interactive activity in which mothers encourage children to communicate about the story. It appears that she viewed shared reading as teaching children how to read, which might explain why she connected shared reading to school. Similarly, three mothers in phase two explained that shared reading and children's books are for children who can speak and read. It seems as if they viewed shared reading as taking turns to read aloud the story; thus, for them, it did not make sense to practise shared reading with nonverbal children and children who could not read.

In addition to the lack of shared reading awareness, mothers had reservations about reading with their children. For instance, in the pre-intervention interviews in phase one, Sarah's mother believed that her daughter would not be able to understand the stories if she read to her. Also, Ahmad's mother mentioned that she usually told her other children bedtime stories; however, she used not to do this with Ahmad. Although Ahmad joined his siblings to listen to the storytelling, his mother said that she still did not include him in the activity because he was not able to understand. Even when implementing the intervention, some mothers still had some doubts about their children's abilities. For example, Ahmad's mother said, during the post-intervention interview, that she thought her child would be bored in the reading sessions and did not expect him to be as engaged as he was. In phase two, some mothers also believed that their children

with autism did not have the required abilities for shared reading. Three mothers reported that their children were unable to interact, understand, pay attention and be interested in reading. Even when asked to describe effective shared reading scenarios with their children, they insisted that their children could not participate, and their responses included words such as “there will be no benefit”, “impossible” and “I cannot imagine.” Those results indicate that mothers had lower expectations for their children’s abilities because they had autism. Overall, the findings of mothers’ expectations are in accordance with previous findings. Ivey (2004) examined parents’ expectations about the importance and likelihood of future achievements of their children with autism. Parents of children with autism reported that while being successful in school was important for them, the likelihood that their children would be successful was questionable.

It is important to notice that, in the present study, having lower expectations of children’s abilities were only associated with mothers who did not read with their children. Indeed, there appears to be a correlation between parents’ expectations for their children and reading activities. ‘Low expectations for development may translate into a neglect of literacy-related activities’ (Light and McNaughton, 1993, p. 40, cited in Browning, 2002). Moreover, mothers who practised shared reading with their children did not view the abilities that their children lacked as a barrier to do shared reading with them. For example, even though M1 in phase two reported that her child was hyperactive and easily became distracted, she said that they both enjoyed shared reading. Therefore, while having lower expectations of children’s abilities might lead to avoiding shared reading, practicing shared reading might lead to changing mothers’ expectations. Offering mothers shared reading support explaining the activity and providing them with tools to increase their children’s participation might help mothers to overcome their reservations towards shared reading.

The lack of shared reading experiences, having misconceptions about shared reading and having low expectations from their children, however, did not prevent mothers in phase one from participating in a shared reading intervention. In other words, those previous points which might be considered obstacles to shared reading did not stop mothers from taking part in a relevant intervention. On the contrary, they were very interested and keen to use it with their children. Mothers in phase two also reported that they would love to receive shared reading support. The mothers' willingness to receive a shared reading intervention and support might have been influenced by the fact that there is a lack of support for parents of children with autism in Saudi Arabia (Babatin et al., 2016; Al-Aoufi, 2011). Nevertheless, the findings indicate that it is possible to introduce shared reading interventions in general and dialogic reading in specific to families with no shared reading awareness and experiences. Vally et al. (2015) reported similar results suggesting that families with no or little shared reading culture can use and benefit from dialogic reading. Vally et al. reached this conclusion after using the intervention with mothers and their infants in South Africa.

6.3.1.1 Children's books in Saudi Arabia

The practicality of using dialogic reading in Saudi Arabia is likely to be affected by the availability of children's books there and how mothers view them. All mothers in phase one and some from phase two said that their children did not have children's books. In fact, phase two's mothers agreed about the lack of availability of children's books on the market. Even the mothers who read with their children reported that it was difficult to find storybooks. The results might be explained by the children's book situation in Saudi Arabia. In general, the Arab world

started to pay attention to children's books and literature almost a century later than the Western world (Mdallel, 2003). Furthermore, it was later than that for Saudi Arabia as it was one of the last Arab countries to attend to children's literature (Al-Sudairi, 2000). While the production of Arabic children's books has increased in the last decade (Taha et al., 2020), more Arabic children's books are still needed in the Arab world (Carroll et al., 2017). The lack of books goes beyond preventing children from shared reading. Not exposing children to books means that they would miss enormous opportunities that affect their literacy and language development, knowledge acquisition and curiosity-led exploration (Neuman, 1999).

In addition, phase two also revealed the importance of the books' quality. In fact, mothers in phase two were concerned about the quality of the existing storybooks. They believed that the available children's books are not suitable for them and their children. They mentioned that they wanted their children's books to have moral lessons and teach them desired behaviours. M2 said that she did not prefer fictional storybooks because they had no values and would not benefit her daughter. The findings confirmed previous literature indicating that Arab societies viewed children's books as a tool to teach Islamic values and good behaviours rather than viewing them as a tool to encourage reading and entertain children (Taha et al., 2020; Mdallel, 2003). In a similar way, Barza and Von Suchodoletz (2016) found that Arab parents wanted culturally relevant children's books that valued moral lessons. They wanted the stories to represent their setting and dress code and also to respect their values. Indeed, the lack of culturally appropriate children's books was apparent when the storybook collection of the present study was chosen. As mentioned in the methodology chapter (see 3.6.2.3.1 Storybooks), the book collection for phase one of this study was selected following criteria developed by Hargrave and Sénéchal (2000) with the addition of two criteria, one of them was that of representing the Arab culture.

While several storybook collections that met those criteria were identified, they failed to represent features of the Arab culture. On the other hand, the identified collections that were culturally appropriate had quality issues such as poor illustrations or long texts which prevented them from meeting other criteria. Time and effort were consumed until the chosen collection 'My Family' was identified, which suggests the need for culturally relevant children's books in terms of quality and also quantity.

6.3.2 Using dialogic reading strategies

All mothers in phase one were able to use dialogic reading with their children. During the intervention sessions, they prompted children by asking them questions about the storybooks. When their children answered them, they evaluated their responses, expanded on them and encouraged their children to repeat them. They also used many prompts during the interaction. Similar results were found in the studies in which parents implemented dialogic reading with their children with autism (Lo and Shum, 2020; Balsamo, 2019; Ward, 2018; Whalon et al., 2016). Parents in those studies were able to use the intervention after attending training sessions. The findings from the present study and the previous ones suggest that parents of children with autism do not differ from parents of children with TD (for example, Dale et al., 1996; Whitehurst et al., 1988) in terms of their ability to implement dialogic reading with their children.

Mothers used all the prompt types (*completion, recall, open-ended, wh-questions, distancing and special prompts*) in all intervention sessions. During the post-intervention interviews, mothers reported that they mostly liked *wh-questions* and used them more than the others. Mothers might have liked *wh-questions* the most because their children usually responded to this type of

prompt. The reason that children responded more to *wh-questions* might be because these questions were usually about the pictures in the storybooks (for example, “Who is this?”, “What is this place?”) which gave children cues about the answers. Likewise, a previous study indicated that visual support during shared reading helped children with autism comprehending the stories and the questions (Mucchetti, 2013). Mothers’ use of *wh-questions* in the present study confirms the findings by Dale et al. (1996) who indicated that parents used more *wh-questions* when using dialogic reading with their children.

In addition to *wh-questions*, mothers also mentioned in the post-intervention interviews that they preferred *distancing questions*. *Distancing prompts* are the questions that connect the story to the child’s own life. Mothers might have liked these prompts to make the reading activity more meaningful to their children by reflecting on their own experiences. Also, mothers might have made references to their children’s own lives to increase the latter’s interest and understanding of the stories. For instance, Sarah’s mother used her children’s names for the stories’ characters. So, rather than saying: “the boy is writing”, she said: “(the name of Sarah’s sibling) is writing.” She reported that her daughter would comprehend the stories better and be more interested if they were about her own family. Also, Aram and Shapira (2012) found that using a lot of connection between the story and the child’s own life during shared reading is connected to the child’s empathy development. Thus, using dialogic reading might be helpful for children with autism as they might tackle another of their common difficulties, that in empathy (Lombardo et al., 2007).

While mothers in phase two neither participated in the dialogic reading intervention nor were aware of it, an analysis of their interviews supports the use of dialogic reading with mothers of children with autism in Saudi Arabia. Firstly, mothers who read with their children reported that they interacted with their children by asking them questions, which is the core of dialogic

reading. The questions that mothers said they mostly used were *wh-questions* such as "What is the title of the story?" Secondly, when mothers in phase two were asked what effective shared reading should look like, both mothers who read and did not read with their children mentioned some dialogic reading prompts including asking questions about the characters, connecting the story to the child's own life experiences and asking open-ended questions about the story pictures. Finally, mothers from phase two identified a few areas in which they would like to receive shared reading support such as how to read to their children, how to increase their interaction, and what strategies and guidelines they could use and follow during shared reading. Providing them with dialogic reading support would give them the answers they sought. Thus, the three previous points support that dialogic reading could be an appropriate and suitable intervention for mothers of children with autism in Saudi Arabia.

6.3.3 Using dialogic reading principles

The dialogic reading intervention used in this study included five principles to increase the intervention's effectiveness on children's participation and reading engagement. The principles included: *(i) responding to the child's attempt to participate, (ii) following the child's lead, (iii) enjoying the activity, (iv) giving the child time to respond and (v) avoiding repeating questions* (Fleury et al., 2014; Zevenbergen and Whitehurst, 2003). However, mothers were only encouraged to apply these principles as best they could because the researcher anticipated that it might have been difficult for mothers to use all of those principles as they were new concepts for them, opposed what they were used to doing, or were unusual in their culture (see 3.6.4.2 Individual guidance session).

As expected, mothers were not able to implement all the principles. For example, mothers did not successfully use the principle of pausing after asking questions to allow children time to process and answer. The researcher's field notes showed that while the pausing was better in the intervention sessions than the baseline, it was less than five seconds for most of the cases. Two mothers in the post-intervention interview reported that the pausing principle was hard to apply because they were not used to it. However, it appears that they were aware of its importance and were trying to use it more. For instance, Khaled's mother reported that she used it with her child and was happy with how it worked for him. Therefore, mothers might just have needed time and practice, as is discussed in the sustainability of the intervention section (see 6.3.9 Sustainability of the intervention).

Mothers also struggled with giving children control and following their lead. They were controlling the storybooks and the activity and expecting their children to follow. As mentioned before (see 6.2.3 Dialogic reading impact on emergent literacy), data showed that the intervention had little effect on children's turning page act. One explanation might be because their mothers were the ones who turned the pages as they were controlling the books. These findings were consistent with the literature of autism parental interactive style. Patterson et al. (2014) and Wan et al. (2012) indicated that parents of children with autism are more likely to have a directive approach than a sensitively responsive one when interacting with their children. On the other hand, the results might also have been impacted by a cultural aspect. Arab parenting style in general, and Saudi in particular, tends to be authoritarian (Dwairy et al., 2006) leading parents to have a controlling role and expecting children to have a passive role.

On the other hand, all mothers were able to follow the principle of enjoying the activity. They made sure that their children were enjoying dialogic reading by reading the stories to them,

interacting with them, looking at the pictures together and talking about them, displaying affection such as hugging and playing with them using the relevant objects. As a result, the intervention looked like a natural interaction and fun activity rather than a teaching activity. In the post-intervention interviews, mothers reported that both they and their children enjoyed the intervention. Sarah's mother said that presenting the intervention in a fun way was what made Sarah enjoy and engage with the reading. The findings confirm Meagher et al. (2008) suggesting that when shared reading is viewed as a fun practice, more positive mother-child interactions occur.

In addition, the principle of enjoying the activity also appeared in phase two in which shared reading enjoyment featured as a subtheme. Mothers who read with their children talked about the importance of presenting shared reading as an enjoyable practice because their goal of shared reading was to make their children love reading and books. Thus, they did not do it as a compulsory or teaching practice, and they stopped if their children did not want to continue. The emphasis on children's enjoyment during shared reading was not limited to mothers who read regularly with their children. M3, who rarely read with her child, defined shared reading as something fun that made her child happy. Even mothers who did not read with their children linked enjoyment to shared reading effectiveness. When asked what beneficial shared reading would look like, they said that if their children were looking happy, smiling, laughing, jumping, hugging, kissing and applauding, they would then know that shared reading was effective. These findings are in line with previous ones indicating that parents used their children's enjoyment during book reading as feedback that their children benefited from shared reading (Preece and Levy, 2018).

6.3.4 Dialogic reading as a tool for social communication

Mothers in phase one reported many social communication benefits for them and their children and believed that they were the result of using dialogic reading. However, those benefits might not have been because of the effect of dialogic reading per se, but because of the effect of using a parental intervention in general. In other words, it was more likely that providing mothers with a tool (the dialogic reading intervention in this instance) to use with their children resulted in those changes. This explanation was supported by reflection on the current situation of autism support for parents in Saudi Arabia where parents of children with autism still lack parental support and parental interventions (Hussein and Taha, 2013). Parents express their need for information, support and training to help them with their children (Babatin et al., 2016; Al-Aoufi, 2011). As a result, parents may not be aware of educational and developmental interventions and this might be the reason they do not use them (Alqahtani, 2012). Therefore, when mothers in phase one were provided with an intervention in which they followed simple guidelines, they immediately noticed the benefits of using such an intervention.

Mothers in phase one mentioned that during the intervention, they learned more about their children and became more aware of their communication. This point might indicate that providing mothers with the intervention enabled them to have valuable time with their children with autism. It did not mean that they did not usually spend time with their children. On the contrary, children with autism usually spend many hours of their days with their mothers. However, the issue is about the quality of the time spent with their mothers. When Al-Aoufi (2011) conducted a questionnaire about the activities that parents did with their children with autism, she concluded by questioning the quality of the time parents spend with their children. For example, a high percentage of the parents (76%) reported that talking with children was the

most common activity. On the other hand, when parents were asked about the most important skills that they wanted their children to have, they mentioned speech and verbal and nonverbal social communication skills. Therefore, the question raised was that if children had many social communication difficulties, how were the parents able to spend a lot of time talking with them? The conflict between those two results suggested a lack of quality in the activity parents did with their children (Al-Aoufi, 2011). Thus, parents may need guidance to help them support their children and build their skills to benefit from the time they are spending together. By supporting parents with interventions such as dialogic reading, they can independently use it as a daily activity with their children.

6.3.5 Using relevant objects

During the intervention, mothers were given the choice of using relevant objects with dialogic reading. Only Ali's and Ahmad's mothers selected to use relevant objects during the intervention. They used the objects to increase their interaction with their children by presenting the object, making a connection between them and the stories, comparing them to the pictures and using them to imitate the actions in the stories. Children were paying attention and engaged appropriately with the objects. These results aligned with Golloher's (2018) and Mucchetti's (2013) studies in which relevant objects were included in shared reading interventions for children with autism. Both studies found an increase in children's interaction, comprehension and reading engagement. In addition, Ali's and Ahmad's mothers used objects to prompt their child's participation. Connecting dialogic reading to relevant objects in one intervention was beneficial for mothers. The relevant objects provided mothers with more opportunities to use the

intervention prompts. Mothers asked *wh-questions* about the objects and *distance questions* connecting the objects to their children's own lives. These results might also indicate the mothers' ability to generalise the use of the intervention skills from the storybooks to the relevant objects.

On the other hand, Khaled's and Sarah's mothers did not want to use the relevant object with their child. For Khaled's mother, the reason for not using the objects was probably related to the extent of confidence in implementing the intervention. In the individual guideline session after the baseline and before the intervention sessions, Khaled's mother mentioned that she did not want to use the objects because she needed to focus on using the intervention correctly with Khaled. Mothers' lack of confidence in their ability to teach their children with autism is common. Lanter et al. (2013) found that parents of children with autism were less confident than parents of children with TD about teaching their children literacy. However, it appears that practising dialogic reading empowered Khaled's mother's confidence, as she reported in the post-intervention interview that she found the intervention easy to use. For Sarah's mother, her expectations of her daughter's abilities were likely the reason for not using the objects. During the individual guideline session, Sarah's mother refused to use the relevant objects, claiming that they would distract her child. However, during the post-intervention interview, she suggested using objects with the intervention such as puppets. This conflict might have been due to changing her view regarding her child's ability. Before the intervention, she might have thought that shared reading would be a difficult activity for Sarah, which made her refuse the use of objects.

6.3.6 Dialogic reading impact on mother-child interaction

The results of phase one showed that dialogic reading had an impact on mother-child interaction. The intervention affected mothers' behaviours which in turn impacted their interaction with their children. Mothers' implementation of the intervention led to increasing the opportunities for their children to interact with them. The intervention prompts provided mothers with tools to interact with their children. The findings align with Dale et al.'s study (1996) which showed that dialogic reading impacted parents' use of language more than children's use of language. They increased their use of questions and expansion when interacting with their children. Similarly, Whalon et al. (2016) reported that the mother who implemented the intervention found dialogic reading beneficial as her reading style changed to be more interactive with her child with autism.

Moreover, the variety of intervention prompts enabled mothers in the present study to distinguish between the prompts and choose the ones that were more suitable for their children's abilities. The distinction, in turn, helped mothers in asking the right questions when interacting with their children in daily life. For example, Sarah's mother said that her child did not respond well to her questions when talking to her at home (before the intervention). While implementing the intervention, Sarah's mother noticed that Sarah responded better when she asked her specific questions (about specific details). Therefore, she started to limit her use of general ambiguous questions and replace them with questions about specific details because they were easier for her child to understand. Her modification in her behaviour to her child's ability confirms the results of a previous study investigating mother-child interaction during shared reading (Tipton et al., 2017). The study found that mothers of children with autism decreased or increased their language techniques (for example, directed talk) to be suitable for their children's level of understanding and verbal social communication.

As a result of mothers' changing their interactive style in the present study, their children started to engage more in the reading activities which resulted in increasing their interaction. Children interacted by showing the behaviours mentioned in the previous part (see 6.2 Dialogic reading impact on children). The same findings were established by previous studies in which the changes of parents' behaviour during dialogic reading led to an increase in children's participation and interaction (for example, Huebner and Payne, 2010; Dale et al., 1996). Additionally, children's interaction with their mothers was not limited to the time of the activity, but also occurred before and after the reading. Mothers reported in the post-intervention and follow-up interviews that their children sometimes initiated communication with them, requested the activity and asked them to read the storybooks. Children also expressed more affection towards their mothers, for example, hugging their mothers whenever they finished the readings. The findings are in broad agreement with Lo and Shum (2020) who suggested that when parents read with their children with autism, their relationship with them improves. Moreover, Ali generalised his interaction with his mother to his other relatives. His mother said in the follow-up interview that he sometimes brought his storybooks to his aunts to do shared reading with them. He talked with them about the stories and pointed to the pictures and words to show them.

Since dialogic reading improves mother-child interaction, examining whether book reading interaction was significant for mothers in phase two would help assess the feasibility of using dialogic reading with mothers of children with autism. When using thematic analysis, shared reading interaction was the most frequent subtheme (69 references). The interaction subtheme was mentioned by both mothers who read and did not read with their children. Firstly, shared reading was defined as an interaction between the mother and her child by two mothers (M1 and M4). This was an accurate description as shared reading is a social practice that prompts the

interaction between the adult and the child by using storybooks (Woods, 2017; Lonigan and Shanahan, 2009). What was interesting was that both M1 and M4 viewed shared reading as interaction even though they had nonverbal children. Their view was different from the view of Sarah's mother who thought that shared reading was not a good activity for her child because Sarah had minimal verbal ability. An interpretation might be that Sarah's mother was looking at shared reading as a verbal interaction while the others had a broader view of interaction going beyond verbal aspects. Indeed, M4 reported that since her child did not speak, shared reading would increase his interaction rather than his vocabulary. Her distinction between vocabulary and interaction might indicate that she used the term interaction to describe the nonverbal aspects.

In addition to defining shared reading as interaction, when mothers, both those who read and did not read with their children, were asked to describe an effective shared reading scenario, they all mentioned the interaction element. They said that if they wanted their children to interact and to be interested in shared reading, reading the written lines of the storybooks alone would not be enough. They needed to use several interaction strategies including: performing dramatic reading, using facial expressions, using role-play, taking turns reading, asking questions about the stories, explaining the story, expanding vocabulary, using story's pictures and connecting pictures to words. All those strategies mentioned indicate that mothers were aware that their reading style played a critical role in increasing their children's interaction. These findings suggest that dialogic reading can be a feasible intervention for mothers of children with autism in Saudi Arabia because it focuses on modifying adults' interaction style during shared reading. Indeed, changing adults' interactive style in order to change children's participation is the theoretical assumption behind developing and using dialogic reading (Fleury and Schwartz,

2017; Whitehurst et al., 1988). Furthermore, while some of the strategies mentioned by mothers in phase two are addressed in dialogic reading, the other strategies could be combined with dialogic reading to maximise the quality of interaction during shared reading. Having a high-quality mother-child shared reading interaction affects children's literacy skills, increases children's engagement in the activity and motivates children toward reading and books (Bingham, 2007; Whitehurst and Lonigan, 1988).

6.3.7 Impact of ongoing feedback

In addition to dialogic reading, the ongoing feedback that mothers received during the intervention condition was another aspect that impacted mothers' awareness of their own and their children's behaviours. After each intervention session, the researcher provided mothers with feedback about their implementation. The feedback involved positive reflections on mothers' use of the intervention and their interaction with their children. Mothers' role in the feedback sessions shifted during the duration of the intervention. In the beginning, they had a passive role by only listening to the researcher's reflection. After two to three sessions, they began to engage in the feedback discussion. By the end of the intervention, mothers had a more active role in the feedback session than the researcher, reflecting on their own and their children's participation.

Mothers' participation during the feedback sessions suggested that the ongoing feedback helped them to recognise mother-child interaction. Listening to the researcher's reflection on the positive opportunities they had with their children gave them a sense of appreciation of those moments, which helped them pay more attention to similar situations to reflect on and share

them with the researcher during the next sessions. In addition, it appears that the feedback discussion supported their awareness about their children's communication. Mothers started to acknowledge their children's attempts at communication and put them into meaningful contexts. The findings confirm Foster et al.'s (2013) study showing that providing mothers of children with autism with opportunities to reflect on strategies used with their children enables them to gain more insight.

6.3.8 Satisfaction of mothers

The post-intervention and follow-up interviews of phase one revealed that mothers were satisfied with dialogic reading. They reported that the intervention was easy to learn and to use with their children. They also stated that their children benefitted from it. Dialogic reading helped their children's social communication and reading engagement and made them pay more attention to the activity. They specifically liked how the intervention prompts increased their children's interaction with them. Mothers also believed that the intervention was important for them because it made them aware that shared reading is more than reading the story while their children listen. They were pleased with how dialogic reading impacted their reading style in particular and their interaction style in general. Another indication about their satisfaction is that they continued using the intervention after the end of the study (see 6.3.9 Sustainability and generalisation of dialogic reading). These findings are in agreement with Balsamo's (2019) and Whalon et al.'s (2016) findings of mothers using dialogic reading with their children with autism. The mothers in both studies were satisfied with the intervention and reported positive feedback about the intervention effect on their children.

6.3.9 Sustainability and generalisation of dialogic reading

Ten weeks after the intervention, all mothers in phase one reported in the follow-up interviews that they continued using dialogic reading with their children. They included the activity in their children's daily and weekly routines using the intervention's storybooks and other children's books. This finding broadly confirms Huebner and Payne's study (2010) which reported that mothers were able to maintain their use of dialogic reading for two years after the intervention. While both the present study and Huebner and Payne's study found that mothers continued using dialogic reading after the intervention, the present study checked the sustainability only 10 weeks after the intervention while Huebner and Payne checked it after two years.

In addition, three mothers (Ali's, Sarah's and Ahmad's mothers), in the present study said that they noticed an improvement in their children's participation after the end of the study. Their children responded to the prompts more than they did during the study. Their children also started to have a more active role in the reading activity by exhibiting behaviours such as reading, turning pages and making comments. Those results are in line with Wainer and Ingersoll (2013) who argued that using parents as intervention agents enhances the effectiveness and sustainability of the interventions used for children with autism.

As mentioned before, mothers in phase one were not able to use all the intervention principles well during the research project period (see 6.3.3 Using dialogic reading principles). However, it appears that they got better at applying those principles with time. In the follow-up interviews, Ali's mother said that she became more patient in waiting for her child to respond when asking him questions. Ahmad's mother mentioned that she gave her child more freedom during the activity and allowed him to control the books and lead the interaction. These results might

indicate that the intervention duration did not allow mothers enough time to apply the principles of the intervention. They might have needed more time to practise those principles in order to master them. Therefore, those findings suggest that mothers of children with autism can use dialogic reading strategies and principles if they have sufficient time to practice.

Furthermore, the mothers made a number of generalisations and adaptations of dialogic reading. While the intervention is used in shared reading context, some mothers also used it in non-reading contexts. They used the dialogic reading prompts when doing other activities with their children such as playing with LEGO and looking at family photos, as they reported in the follow-up interviews. Mothers' ability to generalise dialogic reading strategies to situations not related to reading and their ability to make adaptations to the intervention are desirable outcomes because flexibility and adaptations to interventions lead to better results and more sustainability (Blakely et al., 1987, cited in Wainer and Ingersoll, 2013).

Another adaptation was including siblings in dialogic reading. Two mothers (Ali's and Ahmad's mothers) said that rather than using the intervention only with their children with autism, they made it a family activity and also included the siblings during dialogic reading. This finding was supported by phase two which highlighted the importance of family and siblings in the children's life. More precisely, mothers in phase two reported that siblings played a significant role in prompting social communication in their children with autism. Mothers also said that the level of their children's interaction increased when their siblings joined the activities. M1 and M6 reported that their children interacted, in general, more and better with their siblings than with their mothers. These results confirm the existent literature acknowledging the importance of siblings of children with autism because they can be potential partners for social interaction and

practice which leads to siblings' involvement in autism interventions (Shivers and Plavnick, 2014).

Additionally, mothers in phase two valued the siblings' role in the literacy development of their children with autism. Being surrounded by the home literacy atmosphere and watching their sibling being involved in literacy practices (for example, reading, writing, going to bookshops) affected children with autism by evoking their curiosity and interest in books and reading. Mothers specifically linked siblings to shared reading. Mothers who read with their children included the sibling in the shared reading activities. They often did shared reading as a family practice rather than a one to one activity. Also, some of the mothers who did not read with their children with autism but read with their other children said that their children with autism usually joined the reading. Therefore, it was expected that most of the mothers, both who read and did not read with their children, suggested that including siblings and making shared reading a family practice would be effective for their children with autism because it would increase their social interaction. The suggestion might be beneficial because many children with TD engage with their siblings in literacy activities at home (Sokal and Piotrowski, 2011), and siblings affect each other's literacy development (Jalil and Abu Bakar, 2006).

Thus, dialogic reading might be more appealing to Saudi mothers if it is used as a shared reading practice for the whole family. While in the present study the intervention was conducted between two reading partners, dialogic reading does not have to be a one to one intervention for children with autism. Indeed, a systematic review about dialogic reading with children with autism showed that five studies used the intervention with small groups of children (Alharbi et al., in preparation). However, no research so far has involved siblings of children with autism in dialogic reading or shared reading interventions. Nevertheless, two mothers from phase one were

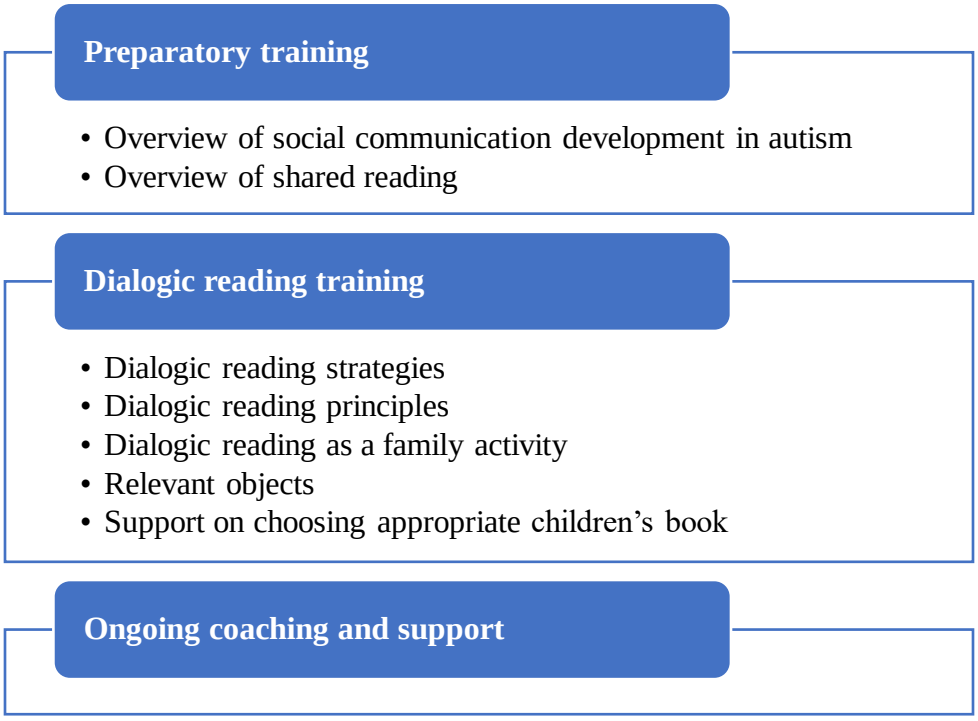
able to make the adaptation of including the siblings when they continued practicing dialogic reading after the intervention sessions. This result combined with the studies using dialogic reading with a group of children might suggest that dialogic reading can be used with children with autism and their siblings.

The final point about the sustainability of dialogic reading was related to Khaled's mother. Khaled's mother, who used the intervention with her son outside the home as the other mothers did, reported in the follow-up interview that she did not use the intervention with her child at home as much as the other mothers did. It seemed that she was struggling with implementing the intervention. She reported that using dialogic reading at home was not easy for her and was not effective for her child as it had been in the centre. One explanation might be that unlike the other mothers, Khaled's mother might have needed support in implementing the intervention at home. A similar case was found by the study of Rocha et al. (2007) in which parents were asked to generalise the use of strategies when interacting with their children with autism in the home environment. One mother was not able to implement the strategies at home, and the researchers suggested that the reason was because she was probably dependent on the provider (researchers) of the intervention. However, it was not clear why this did not happen to the other parents in Rocha et al. (2007). Nonetheless, the suggestion of Rocha et al. could be the case for Khaled's mother. It might be that unlike the other mothers, Khaled's mother needed ongoing support when using dialogic reading in the home setting, which might have led to better outcomes and better sustainability. The ongoing support can be regular coaching (face to face or via teleconferencing) at home in which the intervention's provider watches the mothers use dialogic reading with their children, then provides feedback about the implementation.

6.4 Guidelines for adapting dialogic reading for mothers of children with autism

One of the main aims of this study is to provide a set of guidelines on how dialogic reading can be adapted to meet the needs of mothers and their children with autism in Saudi Arabia. The guidelines were developed mainly based on the results of the two phases of the study detailed in the previous chapters. The guidelines were also designed taking into account the researcher's knowledge and experiences as a Saudi/Arab autism researcher and practitioner. These guidelines are suggested to be applied in three stages: (i) preparatory training, (ii) dialogic reading training and (iii) ongoing coaching and support. The preparatory training prepares mothers for dialogic reading training by providing the background of social communication development in autism and the theoretical framework and rationale of shared reading. The intervention training includes the core guidelines of dialogic reading and aims to train mothers on how to deliver dialogic reading to their children. The ongoing coaching and support are provided after the training to guide mothers when implementing dialogic reading with their children. Figure 27 presents the stages of dialogic reading guidelines. Before discussing them, it is important to note that while the training is specific to mothers in Saudi societies, it also can be used with mothers in other Arab societies as the Arab countries share a lot of similarities in terms of language, religion, culture, social practices and family values (Tradoc, 2006).

Figure 27: Stages of dialogic reading guidelines



6.4.1 Preparatory training

Mothers of children with autism are advised to receive preparatory training before receiving dialogic reading training. The preparatory training needs to cover two topics: firstly, an overview of social communication development in autism and secondly an overview of shared reading. Mainstream schools and autism centres can arrange this training, and teachers and/or autism experts (researchers and university professors) can deliver them. It is recommended that the preparatory training has a short duration (for example, two to three hours), so mothers do not lose interest before starting dialogic reading training. On the other hand, the preparatory training should not be rushed as it is important for mothers to acquire some basic background knowledge before starting to use the intervention with the specific cohort.

6.4.1.1 Overview of social communication development in autism

Some mothers in this study had reservations about reading with their children with autism because they believed that their children were unable to communicate, interact and pay attention to them during the reading. Those beliefs about their children were likely to result from a lack of understanding of autism. Therefore, it is absolutely crucial for mothers to understand how autism affects their children's social communication. Since shared reading is mainly dependent on social interaction between the adult and the child (Woods, 2017), mothers need to be aware of how their children communicate and interact before providing dialogic reading training. Any shared reading training is likely to fail to achieve its purpose if mothers continue to believe that their children cannot communicate. Thus, this overview needs to cover the basic knowledge of social communication development in children with autism. Table 18 presents the overview's themes that are suggested for inclusion. The overview can be provided in an informative presentation; however, extra caution should be paid to the language used in the presentation. The language (for example, social cognitive, joint attention, receptive language) should be clear and jargon-free and should explain the terminology in simple ways rather than assuming that mothers understand it. In addition, it is suggested to include short video clips presenting examples of how children with autism communicate in real life situations. Providing an overview of social communication development in autism is likely to increase mothers' awareness and minimise their reservations toward shared reading, which in turn increases the likelihood of them participating in dialogic reading training.

Table 18: Themes of the overview of social communication development in autism

Theme	Description
What is social communication?	- Social communication definition - Communication components
Why is social communication different in autism?	A summary of two or three autism theories: - Social cognition theory - Executive function theory - Central coherence theory
What does social communication in autism look like?	Verbal and nonverbal social communication: - Initiating social communication - Responding to social communication - Expressive and receptive language
How to enhance social communication in children with autism?	- The role of environment in enhancing social communication in children with autism - The role of adults in enhancing social communication in children with autism

6.4.1.2 Overview of shared reading

In this study, some mothers thought that shared reading would not be an appropriate activity for their children with autism. Their concerns about using shared reading were related to their way of understanding the practice. For example, a few mothers reported that shared reading would not be possible as their children were nonverbal or did not read. Therefore, it is important to present an overview of shared reading before providing dialogic reading training. To ensure that the overview provides mothers with a comprehensive understanding of what shared reading is about, it is suggested that four parts be included. Taking into account that shared reading is still not considered a common practice in Saudi Arabia, the first part needs to explain the meaning of shared reading. The second part includes the common misconceptions about shared reading

which are based on the mothers' answers in this study (for example, shared reading is only for children who can speak). As one of the misconceptions was that shared reading is not for children with autism, it is recommended that the third part briefly presents the benefits of using shared reading for children with autism. Table 19 shows the topics of the first three parts of the shared reading overview. The three parts can be presented in a theoretical informative presentation incorporating short video clips to increase mothers' understanding. For example, when discussing the meaning of shared reading, a video showing how a mother and her child interact while reading a storybook can fully explain how shared reading is a social practice and provide more understanding of the active roles that the mother and her child take in the reading.

Table 19: Topics of the first three parts of the shared reading overview

Part	**Topics**
Meaning of shared reading	The following points are explained: - Shared reading as a social interaction - Shared reading beyond reading aloud the texts - Mothers' and children's active roles in shared reading
Common misconceptions about shared reading	The following misconceptions are addressed: - Shared reading is only for children with TD - Shared reading is only for children who can speak - Shared reading is only for children who can read - Shared reading cannot be used for children with autism
Benefits of shared reading for children with autism	The effect of shared reading on the following areas is discussed: - Language - Literacy - Social communication - Mother-child interaction

Some mothers in this study reported incidents regarding their children's behaviours which they found challenging when they attempted to read with them. Others mentioned concerns about

some behaviours of their children that would prevent them from shared reading. Thus, the fourth part aims to help mothers with these issues by presenting possible scenarios of how children with autism are likely to behave during shared reading. The scenarios, which are based on those incidents and concerns, are recommended to be followed by possible explanations and suggested solutions. Table 20 presents a few examples of scenarios with their explanations and solutions. Mothers can work in small groups, analysing each scenario and suggesting some solutions. Receiving an overview of shared reading before dialogic reading training is likely to enable mothers to be more confident about using dialogic reading with their children with autism.

Table 20: Shared reading scenarios, explanations and solutions

Scenario	**Explanations**	**Solutions**
Omar refuses to do shared reading with his mother	- He may not know what to expect	- Use picture timetable of his daily activities including shared reading - Let him choose the storybook he wants to read
Rana refuses to sit still on her chair in the living room during shared reading	- The reading duration may be very long for her	- Reduce the duration of the reading - Let her fidget during the activity
Noor does not participate in the reading	- She may not know how to participate with her mother during the reading	- Ask her to perform simple tasks (for example, holding the book, turning the pages) - Model the behaviours you want her to do (for example, point at the picture after asking her to point at it)
Rawan does not respond when her mother asks her questions	- She may find it hard to understand the questions	- Use simple and clear language to ask the questions - Give her time to respond after asking her a question (for example, five to 10 seconds)

Adapted from Milton (2012)

6.4.2 Dialogic reading training

During the post-intervention interview, a mother said that schools and centres need to provide a shared reading programme like the intervention. A few mothers in phase two also mentioned their children's schools and centres when talking about shared reading support as they were expecting that the support should come from them. So, it is recommended that the dialogic reading training is also arranged by mainstream schools and autism centres and takes place there as they are convenient channels to provide accessible parental support. Teachers and/or autism experts (researchers and university professors) are best placed to provide this. In this study, the intervention individual guidance session (training) that was provided for mothers in phase one took around an hour. However, as the suggested training includes more guidelines and protocols and designs for a group rather than one person, more time is needed. Therefore, the duration of the training programme is likely to be for a few hours (around six hours), and it is recommended to be divided into two days to be more convenient for mothers. To make sure that all mothers have the opportunities to discuss, practise and ask questions during the training, the number of participants needs to be limited (for example, not exceeding 10 mothers). The training protocol should include:

- PowerPoint presentations of dialogic reading
- Explicit instructions on how to use dialogic reading strategies
- Videos of modelling dialogic reading
- Live demonstration of dialogic reading (the trainees work with one another as children will not be included in the training for ethical and practical considerations)

6.4.2.1 Dialogic reading strategies

Mothers in phase one were able to understand and implement the intervention after the training that they received in the intervention individual guidance session. Thus, similar to the presentation used in the individual guidance session, the training of the dialogic reading intervention needs to start by defining the intervention and explaining why it was chosen from other shared reading interventions. However, another section needs to be included in the introduction. According to the researcher's field notes, during the individual guidance session, two mothers asked the researcher if the intervention can benefit children with autism. Thus, the training introduction needs to also emphasise that dialogic reading is used with children with autism and can affect their language, early literacy and social communication.

Then, the trainer can present the main parts of dialogic reading, which include the steps of *PEER*. Each step and prompt needs to be fully explained and supported with scenarios and examples. To make it more appropriate for the Saudi context, the abbreviations PEER can become أقنى *(Aqnaa)* which is translated as give satisfaction. Table 21 shows a scenario of using *PEER*. In terms of the intervention prompts, further adaptations were required to make it more appropriate for the Saudi culture. In phase one, when mothers were asked to use the *CROWDS* prompts during the intervention, the field notes showed that not all the prompts were equally used. The most used prompt was *Wh-prompt* followed by *Distancing prompt* and *Special prompt.* Mothers also used *Completion prompt*s occasionally. Some of them also mentioned in the post-intervention interview that they liked those types of prompts and started using them when communicating with their children even outside the shared reading activity. On the other hand, mothers rarely used the *Recall prompt* and *Open-ended prompt.* In fact, one mother said in the post-intervention interview that asking general questions *(Open-ended prompt)* was not good

for her daughter as they were hard to understand. Thus, it is suggested to remove the *Recall prompt* and *Open-ended prompt* from the *CROWDS* prompts. The abbreviations of the remaining prompts, in Arabic, become رخاء *(rukha)* which is translated as *Prosperity*. Therefore, it is important to mention that the acronyms have positive meanings in Arabic and can be phrased: using dialogic reading for prosperity and satisfaction. Table 22 shows the adaptation of the Arabic prompts.

Table 21: Scenario of using the steps of *PEER*

Step	**Scenario**
P: prompt The mother prompts the child by asking him a wh-prompt	Mother (pointing at a picture of a car): What is this?
E: evaluates The mother evaluates the response (a correct answer)	Child: Car Mother: Excellent!
E: expands The mother expands on the child's response by adding one word	Child: Car Mother: A red car
R: repeat The mother encourages the child to repeat after her by looking at him expectantly when expanding	Mother: A red car Child: a red car

Table 22: Arabic prompts رخاء *(rukha)*

Prompt	**Example**	**Arabic prompt**
Distancing prompt	This boy is playing with his friends. What is the name of your friend?	أسئلة ربط (ر)
Special prompt	Point at the sun in the picture	أسئلة خاصة (خ)
Wh-prompt	What is she eating?	أسئلة أدوات الاستفهام (ا)

Completing prompt	Fatimah goes to the school and meets ____	أسئلة إكمال (ء)

Moreover, as it is expected to have some mothers who have not practised shared reading before, it is important to provide specific guidance and additional instructions for using dialogic reading in the shared reading contexts. Table 23 presents additional instructions which are based on the scaffolding strategies that mothers mentioned in phase two.

Table 23: Additional reading instructions

Reading stage	**Instructions**
Before reading	- Select two or three storybooks - Read them before the activity to familiarise yourself with them and prepare the questions - Ask the child to choose a storybook
During reading	- Talk about the picture on the cover - Ask the child to point at the title - Read the title (or ask the child to read if they can read) - Ask the child to turn the page - Ask the child about the picture (dialogic reading prompts) - Perform a dramatic reading of the text on the page - Ask the child to point at the words and repeat after you (if they can) - Explain the text - Talk about the picture - Ask the child about the line or ask them a second question about the picture (dialogic reading prompts) - Repeat the last seven steps for each page

Then, the trainer can provide mothers with a variety of books and ask them to choose one to practise dialogic reading. After choosing a book, mothers can try the steps with each other after coming up with their own prompts from the *CROWDS*. The trainer also needs to encourage mothers to use dialogic reading regularly and give them suggestions on when to read (for

example before bedtime, at the weekend). It is very important to identify times to read which are more likely to work for the mother and the child.

6.4.2.2 Dialogic reading principles

After explaining the steps and the prompts of dialogic reading, the trainer presents the dialogic reading principles. The principles are: (*i) responding to the child's attempt to participate, (ii) following the child's lead, (iii) enjoying the activity, (iv) giving the child time to respond, (v) avoiding repeating questions more than twice and (vi) avoiding overusing questions*. Two modifications were added to the principles used in the intervention in this study to make it more appropriate for the Saudi culture. First, the principle of *avoiding repeating questions* was modified to be *avoiding repeating questions more than twice.* While it is recommended not to repeat the question (Fleury et al., 2014), it was hard for mothers to follow this principle. In fact, some mothers in phase one repeated questions three times or more on some occasions. Repeating the question until receiving an answer might be related to the Arab parental style, which tends to be authoritarian (Dwairy et al., 2006). Therefore, modifying the principle to allow mothers to ask the question twice was necessary to be more culturally appropriate. The second modification was the addition of the principle of *avoiding overusing the questions*. Two mothers in phase one overused the prompts in some sessions by asking certain questions multiple times in many of the sessions. As a result, the opportunities to initiate communication were limited for one child while the other was overwhelmed which led to reducing her enjoyment during the reading as her mother reported in the post-intervention interview.

When presenting the principles, it is recommended that the trainer first explains to mothers why those principles are important when practising shared reading. As most of the principles are probably different from what Saudi mothers do when interacting with their children, the trainer needs to provide examples, suggestions and specific guidance about how to apply the principles. Table 24 shows a few examples and suggestions for the principles. The examples can be presented using short video clips to analyse the child's and mother's behaviours in order to provide possible suggestions. Additionally, the specific guidance should be simple, clear and reassuring for mothers such as the following:

- Be aware that the principles may be different from what you are used to doing
- Be patient; you need time and practise to get familiar with them
- Pick one or two principles per session
- Start to use it/them once or twice per session
- When you become more comfortable with using it/them, increase the number of times you use it/them

Table 24: Examples and suggestions of dialogic reading principles

Principles	**Examples and suggestions**
Responding to the child's attempt to participate	Examples: - Your child attempts to participate by looking at you then looking at the boy in the picture. You point at the picture and say: "Yes, the boy is playing with the ball." - You ask your child: "What is she doing?" Your child babbles. You say: "Yes, she is eating. Well done!" Suggestions: - Observe your child's behaviour during the reading - Think of your child's behaviour in a meaningful context
Following the child's lead	Examples: - Your child points at the picture of a car. You ask: "What is the colour of the car?"

	- Your child wants to look at a page in the middle of the storybook before starting the reading. You allow them to look at it, talk about the picture and/or ask a question about the picture, then start the reading Suggestions: - Allow the child to hold the book - Allow the child to turn the pages
Give the child time to respond	Example: - You point at the picture and ask your child: "Where is the girl going?" You wait (five seconds), then repeat the question: "Where is the girl going?" You wait for them to respond Suggestion: - After asking a question, count to five before repeating the question or moving on - If you think that you lost your child's attention while waiting, call your child's name or tap on the book to get their attention again
Enjoy the activity	Example: - In the story, a boy and his mother play with a ball. After reading the page, you and your child play with a ball (relevant object) for a few seconds, then continue the reading Suggestions: - If your child does not want to do the reading with you, stop it and try at another time - If your child does not want to do the reading with you, let them choose the book or try to use relevant objects to increase their interest - Express affection during the reading (if they do not bother your child) such as tickling, kissing and hugging
Avoid repeating questions more than twice	Example: - You point at the picture and ask your child: "What is this?" You wait (five seconds), then repeat the question: "What is this?" You wait (five seconds), and if there is no response, then say: "It is a bag." Suggestions: - Aim to ask the question only twice - After asking the question for the first time, make sure to wait for your child's response before asking for the second time
Avoid overusing questions	Example:

	- You ask your child: “Where is the cat?” Your child points at the cat in the picture. You say: “Well done” and ask: “What is the cat doing?” Your child answers: “Eating.” You say: “Excellent! She is eating” After the child repeats it, you move to the next page. Suggestions: - Read the story by yourself before the reading activity - Write one or two questions for each page on sticky notes (or on a separate paper) - Put the sticky notes at the top or bottom of the pages - Only use those questions during the reading

6.4.2.3 Dialogic reading as a family activity

Several mothers in this study highlighted the importance of family and the role of siblings in prompting the social communication and literacy development of their children with autism. They wanted to include siblings in shared reading practices to increase children’s interaction and reading engagement. Previous studies have conducted dialogic reading with a group of children with autism as well as one to one (Alharbi et al., in preparation). Indeed in the present study, two mothers in phase one reported in the follow-up interviews that they were able to include the siblings in dialogic reading. Therefore, as this seems to be a common practice in Saudi Arabia, it is recommended that the trainer provides mothers with the option of using dialogic reading as a family activity. However, the trainer should first start by presenting dialogic reading to mothers as a one to one activity so mothers understand how to use the steps and prompts of the intervention with children with autism. After that, the trainer then presents how to use dialogic reading as a family activity. The training can start with an introduction about the important role that siblings can play in the life of children with autism and the benefits of including them in dialogic reading. After that, mothers need to be provided with practical suggestions to help them include siblings in the activity. The suggestions can be establishing rules for siblings to follow

during the reading to make the activity organised, assigning specific tasks for siblings during the reading to ensure that all are involved in the activity and differentiating the level of dialogic reading prompts according to children's abilities in order to keep everybody's interest and engagement in the activity. Table 25 presents examples for each suggestion. Mothers can be divided into small groups and asked to brainstorm more reading rules and tasks and/or to come up with other suggestions.

Table 25: Suggestions to include siblings in dialogic reading

Suggestion	**Examples**
Establishing ground rules for children with autism and their siblings to follow during the reading activity	The rules for siblings can be: - Wait your turn - Answer when you are asked - Do not answer when your sister/brother is asked - Raise your hand if you want to say something
Assigning specific tasks for siblings during the reading activity	The tasks for siblings can be: - Choosing the book - Reading the story - Holding the book - Turning the pages
Differentiating the level of questions according to the children's abilities	The differentiation can be: - Making the prompt more complicated for older siblings or siblings with higher cognitive/verbal abilities. For example, summarise what happened in the story from the beginning until this page (*recall prompt*) - Using easy prompts with younger siblings or siblings with fewer cognitive/verbal abilities. For example, point at the sun in the picture (*special prompts*)

6.4.2.4 Relevant objects

Children with autism can benefit from using relevant objects during shared reading (Golloher, 2018; Mucchetti, 2013). Two mothers in this study used the relevant objects and were able to connect them to the stories. They found that the objects got their children's attention and helped increase their children's participation and reading engagement. Thus, the use of relevant objects can be included in the dialogic reading training. Additionally, including the relevant objects in the training can help mothers who have doubts about their abilities to engage their children in the reading. In this study, some mothers in both phases thought that their children would not participate in shared reading because they were nonverbal or had minimal verbal abilities. Therefore, using relevant objects may make it easier for mothers to engage these children in the reading. When discussing relevant objects, the following questions need to be answered:

- What are the relevant objects?
- Why use relevant objects during the reading?
- What is the appropriate number of relevant objects to use?

In addition, it is important to mention that one mother in phase one found it overwhelming to use both the dialogic reading strategies and relevant objects. Therefore, the training should address this issue by mentioning the following points. Firstly, the use of relevant objects is optional. Mothers can choose not to use the object in the reading until they feel comfortable using dialogic reading. The second point is providing more specific guidance about how to use the objects. This point was added because the individual guidance session in this study only provided a brief instruction on using the objects. The lack of providing detailed guidance might have contributed to the two mothers' decision to refuse to use the objects. Accordingly, specific instructions

should be provided for mothers about choosing, presenting and removing the relevant objects. Examples are presented in Table 26. The last point is using relevant objects on top of the dialogic reading prompts. Table 27 provides examples of how to link the relevant objects with the dialogic reading prompts.

Table 26: Steps of using relevant objects

Step	**Suggestions**
Choosing the objects	- Choose two to three objects related to the story - Do not choose more than one object for one page - Avoid choosing your child's favourite objects to maintain your child's interest in the story
Presenting the objects	- Put the objects out of the child's sight and reach - When reaching the object's page, talk and/or ask about the picture - Present the object - Give it to the child - Ask the child about the object using the dialogic reading prompts (see Table 27) - Make the connection between the object and the picture/story
Removing the object	- Give the child a few seconds to look and/or play with the object - Ask the child to give you the object, put it away (out of sight) and continue the reading - If the child refuses to return the object, give them a few more seconds then ask them to return it to you

Table 27: Linking relevant objects to dialogic reading prompts

Object	**Dialogic reading prompt**	**Question**
Ball	*Wh-prompt*	What is the colour of the ball?

Car	*Special prompts*	Is this a car or a train?
Apple	*Recall prompt*	Do you remember who was eating the apple in the story?

6.4.2.5 Support on choosing appropriate children's books

In general, the Arab world needs more children's books (Carroll et al., 2017). In the present study, all the mothers agreed on the lack of availability of children's books. In fact, some mothers from both phases reported that their children did not have children's books. Additionally, mothers in phase two were also concerned about the quality of children's books. They found it difficult to identify suitable children's books and wanted help to choose good storybooks for their children. Thus, the dialogic reading training should provide mothers with support on how to select the right children's books. The trainer needs to provide guidance about the good qualities that storybooks should have to be appropriate. Table 28 presents a few examples of good and poor qualities of children's books in the Saudi context based on some Arabic books the researcher found when choosing the storybook collection used in this study. Moreover, the trainer should also provide mothers with a list of appropriate and available children's books. To be more beneficial to mothers, the list should answer the following questions for each book (as much as possible):

- What is the name of the book?
- What is the book about?
- What are some features of the book (for example, without words, small book, text in frames)?
- What is the age level of the book?

- Where can you find the book?

Table 28: Good and poor qualities of children's books

Aspect	**Good qualities**	**poor qualities**
Illustration	- Colourful illustrations - Illustrations presenting the book's theme(s)	- No illustration - Complicated illustration
Text	- Clear text - Text in frames	- Blurred text - Text inside illustration - Too long text
Context	- Characters with Arab characteristics - Characters with Arabic names - Presenting aspects of the Arab culture - Presenting moral lessons or Islamic values	- Characters with non-Arab characteristics - Characters with non-Arabic names - Presenting aspects of Western cultures

To summarise, the dialogic reading training includes five guidelines. The first two guidelines are the core of the intervention: the dialogic reading strategies and principles. The third guideline provides the option of using dialogic reading as a family activity with siblings. The next one is using relevant objects with dialogic reading. The training ends with providing support on how to choose appropriate children's books (See Figure 27 for the five guidelines for dialogic reading training).

6.4.3 Ongoing coaching and support

Mothers in phase one benefitted from the ongoing feedback they received after each intervention session. It helped them to reflect on their implementation of the intervention, impacted their awareness of their own and their children's behaviour and enabled them to recognise mother-child interaction. Additionally, after finishing the intervention sessions in the centre, one mother in phase one had some difficulties using the intervention with her child at home. Therefore, it is suggested, after delivering the dialogic reading training, to continue delivering feedback and supporting mothers while they use dialogic reading with their children in natural settings. Mainstream schools and autism centres need to provide ongoing support to mothers. The support is suggested to be ideally regular live coaching (face to face or via teleconferencing), and it is better that the coaches are teachers from the schools/centres who know the mothers and teach their children. Those teachers are likely to establish a rapport with the mothers, which is an important aspect of coaching. Also, teachers would have a good understanding of the children's abilities, behaviours and interaction which helps to provide more accurate feedback to mothers during the coaching. In live coaching, the coach observes mothers using dialogic reading with their children and then provides them with valuable positive feedback about their implementation which follows the protocol of VIG (Gibson, 2014). The positive feedback is likely to increase mothers' confidence in using dialogic reading with their children. In addition, regular live coaching should provide mothers with opportunities to reflect on their own and their children's behaviours. Those reflections are important as they increase mothers' awareness of the communication and interaction between them and their children (Kennedy, 2010). Mothers also need to have opportunities during the live coaching to ask any questions they may have about dialogic reading and discuss any issues they face about the implementation. Mothers can decide

what type of live coaching they want, where and when it should take place. They can have it face to face at schools/centres or at their home, or they can have it via teleconferencing at their home. Other coaching options can be provided as live coaching may not be always possible or convenient for some mothers and teachers. For example, mothers can send videos of themselves using dialogic reading with their children to the teachers. Then, the teachers send them their feedback and have a short discussion with them. Finally, the number of ongoing coaching sessions can be determined according to mothers' need for support.

6.5 Summary

This chapter discussed the findings of this study. The first part discussed the dialogic reading impact on children's verbal social communication, nonverbal social communication, emergent literacy and reading engagement. After that, the feasibility of using dialogic reading for mothers of children with autism was presented. The discussion of this part was driven by the findings of mothers from both phases. Finally, the chapter proposed adapted dialogic reading guidelines for mothers of children with autism in Saudi Arabia. The guidelines were presented in three stages: preparatory training, dialogic reading training and ongoing coaching and support. The next chapter is the conclusion, which summarises the findings of the whole study. It also discusses the study's contribution, limitations and implications and concludes with suggesting directions for future research.

CHAPTER 7: CONCLUSION

7.1 Introduction

The conclusion chapter provides a summary of the main findings of the study. It then discusses the contribution of the study to the field. After that, the limitations of the study, implementations for mainstream schools and autism centres in Saudi Arabia and implementations for the Arab world are presented. Finally, the chapter concludes by suggesting directions for future research.

7.2 Summary of the findings

The summary of the findings is presented to address the main research questions which were asked in the context of Saudi Arabia:

7.2.1 Can dialogic reading be effective to enhance the social communication, emergent literacy and reading engagement of children with autism?

Phase one contributed to answering this question by investigating the effect of dialogic reading on children's verbal and nonverbal social communication, emergent literacy and reading engagement during shared reading sessions. This study found that children participated more in the dialogic reading sessions compared to the baseline. The mean rates of verbal social communication, nonverbal social communication and emergent literacy increased in the

intervention condition for all the four children, apart from Sarah's nonverbal social communication and emergent literacy which decreased (see 4.4.3.4 During the intervention). In addition, children in the present study were more engaged when dialogic reading was introduced. They also spent more time interacting with each page, and the intervention sessions lasted longer than the baseline sessions. Their mothers reported that their children enjoyed the intervention as they seemed to have fun and be happy during the activity.

7.2.2 How do mothers experience and perceive shared reading with their children with autism?

Both phase one and two contributed to answering this question. Phase one examined mothers' experiences of using dialogic reading as shared reading intervention. The four mothers were able to implement the dialogic reading intervention with their children. They said that they found it easy to use and enjoyed using it. They also reported that it was useful for them because it affected their interaction with their children and their reading style. Additionally, it helped them become more aware of their children's behaviour and of the communication between them and their children. All mothers were satisfied with the intervention, and three of them continued to use it regularly with their children after the intervention ended. On the other hand, mothers in the present study were not able to apply some of the dialogic reading principles during the intervention due to cultural reasons. However, they reported during the follow-up interview that they became more familiar with the principles, which made them easier to use.

In phase two, mothers were interviewed to investigate how they perceive shared reading with their children with autism. The interviews revealed that the majority of mothers had, to some

extent, a good understanding of shared reading. However, some mothers had reservations about reading with their children who had autism. When mothers were asked about how to make shared reading effective for their children, their ideas and suggestions were similar to the aspects of dialogic reading. Finally, all mothers, whether they practised shared reading or not and whether they had reservations about using it with their children or not, reported that they would like to receive shared reading support.

7.2.3 How can dialogic reading be adapted to meet the needs of mothers of children with autism?

The data from both phases provided strong evidence about the feasibility of using dialogic reading for mothers of children with autism. More importantly, the findings of the two phases provided valuable information to develop guidelines to make dialogic reading more appropriate to meet the needs of mothers of children with autism in Saudi Arabia. The suggested guidelines were designed to be applied in three stages: preparatory training, dialogic reading training and ongoing coaching and support (see 6.4 Guidelines for adapting dialogic reading for mothers of children with autism).

7.3 Contribution of the study to the field

This study aimed to cover a number of the literature gaps. Most autism research comes from Western societies (Kossyvaki, 2017). Only fairly recently has the Arab world started to pay attention to autism research (Hussein et al., 2011). However, most autism research studies

coming from the Arab countries focus on the medical field, including biology, risk factors and diagnosis (Alnemary et al., 2017b). Thus, research about educational interventions for children with autism is scarce. The present study attempted to fill this gap by conducting a dialogic reading intervention to investigate its effect on children's social communication and mother-child interaction, as social communication is one of the core difficulties in autism (APA, 2013). Additionally, the present study contributed to parents' involvement in research which is another area that needs to be explored in Saudi autism research (Babatin et al., 2016). Mothers' involvement in the present study was not limited to implementing the intervention. In phase one, after participating in the intervention, they provided their reflections and experiences about the intervention on two occasions (post-intervention and follow-up interviews). In phase two, another sample of mothers shared their perceptions of shared reading and insights about using shared reading with their children with autism. The information from both phases provided valuable information as it helped to shape the dialogic reading intervention to become more feasible and useful for them and their children. Mothers' involvement in the present study was critical as Arab countries need to involve parents in designing autism programmes and interventions (Hussein and Taha, 2013).

In terms of the nature of the intervention, dialogic reading is a well-established shared reading intervention for children with TD and children with disabilities (Zevenbergen and Whitehurst, 2003). While it was originally developed in English, it is widely used in other languages and across the globe. Previous studies have used it in non-English societies such as China (Fung et al., 2005) and South Africa (Vally et al., 2015). However, to the best of the researcher's knowledge, it has not been used with children with disabilities in the Arab world. Only one study examined dialogic reading with Egyptian children with TD (Elmonayer, 2013). Thus, the present

study added to dialogic reading research as it used dialogic reading with Arab children with autism and investigated how it can be more appropriate to Arab societies. Considering the cultural aspects is essential, as good interventions need to be culturally sensitive (Fong and Lee, 2017). This is another contribution of the present study to the field of dialogic reading as it showed that it is possible to adapt dialogic reading to the Arab world and provided a culturally adapted dialogic reading version.

7.4 Limitations of the study

This study had a number of limitations regarding the research design, sample, intervention design and measurement. Firstly, this study used a single case design (SCD) which entails concerns about external validity (Riley-Tillman and Burns, 2009; Kazdin, 1982). SCDs are not usually able to provide sufficient information answering to what extent the findings are applicable to other settings and individuals as the designs follow an idiographic approach which means that the entire research is designed to have findings at the level of individuals (Morgan and Morgan, 2009). However, the present study did not aim to establish generalisability. If the focus was on generalisability, the present study would have used large-scale group designs (for example, RCT) which are used when examining the generalisability of interventions (Morgan and Morgan, 2009). In other words, a feasibility study investigating if the intervention can be done is usually needed before conducting RCT to investigate the generalisability (Eldridge et al., 2016). Therefore, the present study did not use RCT design because it aimed to investigate the feasibility of using dialogic reading with children with autism and their mothers and also because RCT requires a large sample to be conducted. Additionally, while RCT is a desirable research

practice, it can only be successful if the sample is from a population that is generally homogeneous (Reichow and Wolery, 2009). Thus, the methodology of the RCT may not be practical or appropriate to use with the autism population, which is by all accounts extraordinarily heterogeneous (Mesibov and Shea, 2011).

Secondly, the small sample of the present study added to the external validity limitations. SCDs can investigate the intervention's generalisability by using the intervention across a different number of individuals (intersubject replication (Riley-Tillman and Burns, 2009)), but this was not possible for the present study as it implemented the intervention with a small number of children with autism and their mothers. However, it is recommended to use SCDs with a small number of participants when testing a new intervention for the first time (Rogers and Vismara, 2008). Additionally, the number of children participating in the present study met the quality indicator of the number of participants in single case research autism intervention which is three or more (Smith et al., 2007).

In addition, the AB design used in phase one is another limitation. AB is not a powerful design as it does not necessarily demonstrate experimental control. It is not usually sufficient in controlling the threats to internal validity (Byiers et al., 2012). However, the AB design was the appropriate design to use because of time limitations. The researcher, due to her scholarship regulation, had only three months to complete the fieldwork which made using a more rigorous design such as multiple baseline design impossible. Nevertheless, even though AB design has its own limitation, it can provide preliminary objective results (Byiers et al., 2012). Moreover, phase one did not only rely on the AB design's findings. It used a methodological triangulation including data from mothers' interviews and researcher's field notes in addition to the AB design's data. Another limitation connected to the intervention design is the lack of baseline

stability for a few categories. One desirable quality of baseline data is having limited variability which is known as stability (Byiers et al., 2012). If the baseline data were not stable, it is recommended to have more baseline sessions until the stability is established. However, this was not possible for the present study due to the time limit mentioned above. Additionally, the present study followed the requirement of having at least three baseline data points (Kazdin, 1982).

A fourth limitation was that this study did not include stay-at-home children in the intervention. Within the four participants, one child attended a mainstream school and three children attended an autism centre. While children with autism in Saudi Arabia usually attend mainstream schools and autism centres, a significant percentage of children with autism stay at home without receiving formal teaching (Alnemary et al., 2017a). Not attending schools and centres for those children means that their parents, primarily their mothers, are responsible for teaching them, which in turn means that those parents need a lot of support. Recruiting stay-at-home children with autism in such parental interventions as the one in the present study is significant because their parents would benefit most from those types of interventions. Thus, it was important to include those children and their mothers in the present study even though it would have been difficult to draw conclusions about these families given the very small sample the present study used. However, it may have given some ideas for extra adaptations to meet the needs of these families. Unfortunately, it was not possible to recruit them due to the researcher's scholarship regulations which stated that the recruitment of participants should be only through schools and autism centres. In addition, it would have been hard to identify and recruit those children.

Another limitation was in regard to the length of the intervention. The intervention was conducted in five weeks with three baseline sessions and six dialogic reading intervention

sessions. Implementing the intervention for a longer period of time would have provided more data to establish the effect of the intervention on children with autism. The longer duration would have also enabled the present study to investigate more emergent literacy skills such as vocabulary and alphabet knowledge. The short intervention duration in the present study was chosen for two reasons. Firstly, Fleury et al. (2014), which the present study replicated several aspects of, used the same duration. Secondly, the scholarship regulations of the researcher allowed a limited time for conducting fieldwork outside the UK.

Furthermore, no standardised measures were used to assess the effect of the intervention on children with autism. This limitation is related to the previous one regarding the duration of the intervention. It was highly unlikely that children's pre- and post-intervention scores would differ with only six intervention sessions, which informed the decision not to use standardised measures such as the Test of Preschool Early Literacy (Lonigan et al., 2007) which measures children's emergent literacy. Thus, measurements were developed for the present study to assess children's progress during the intervention sessions. While the observation sheet was not a standardised measure, the acts of each category were chosen based on previous studies (see 3.6.5.2.1 Children's participation and observation sheet) and the observation coding reached high inter-rate reliability (see 3.6.7.2 Reliability and inter-rater reliability).

In addition, it was impossible to determine that only the intervention and not another factor has contributed to the progress of the children. Indeed, this study recognised that a few factors might have affected both mothers and their children such as the camera effect (see 3.6.5.2 Video data collection camera) and the Hawthorne effect (see 3.6.5.2.3 Researcher's role). These in turn might have affected the data. However, the study aimed to control external factors as much as possible. The researcher ensured that the children did not receive any other intervention

alongside the dialogic reading intervention and asked their mothers not to read with their children at home during the intervention. Additionally, the researcher's field notes documented any other factors that might have affected children's behaviours, for example, what happened in Ali's fifth session (see 4.4.1.4 During the intervention) and Sarah's fifth and eighth sessions (see 4.4.3.4 During the intervention).

Finally, the present study did not include post-intervention and follow-up observations. Observing a few dialogic reading sessions in the post-intervention and follow-up stages would have provided more data on children's participation and mothers' interaction and the use of dialogic reading. The data would also have provided more evidence about the intervention's impact on children. However, that was not possible due to the timeline of the fieldwork that the researcher had to follow according to the regulations of her scholarship. Additionally, the lack of post-intervention and follow-up observations did not negatively influence the findings of the present study. Data about the post-intervention and follow-up stages were obtained from interviewing the mothers. During the interviews, mothers provided valuable information about how the intervention impacted them and their children and gave examples of children's participation during the intervention.

7.5 Implications of the study

This study suggested the following implications for mainstream schools and autism centres in Saudi Arabia and implications for the wider Arab world because of the similarities in the language, religion and culture.

7.5.1 Implications for mainstream schools and autism centres

In the present study, one mother in phase one said after finishing the intervention that she wished that schools and centres include shared reading activities similar to the intervention. Similarly, another mother in phase two reported that she was not even aware that shared reading could be used with children with autism and could benefit them and wondered why her daughter's centre had never used shared reading activities or encouraged her to use it with her daughter. These findings suggested that mainstream schools and autism centres need to pay more attention to shared reading activities in the curricula for young children with autism. This implication is particularly important for autism centres which often pay less attention to children's literacy and academic skills and more attention to language, social communication and independent living skills. Therefore, schools and centres should be encouraged to expose children with autism to regular shared reading sessions and encourage parents to use it.

Furthermore, as mentioned in the discussion chapter (see 6.4 Guidelines for adapting dialogic reading for mothers of children with autism), it is recommended that teachers present the adapted dialogic reading training and provide the coaching and support. To achieve that, schools and centres need to provide teachers with dialogic reading training. The suggested guidelines for adapting dialogic reading can be used to train teachers by including a few modifications. For example, the guideline about dialogic reading as a family activity should be modified to become dialogic reading as a classroom activity. Moreover, teachers can then use dialogic reading with their students. If teachers use dialogic reading, they are likely to encourage parents to use it with their children. This can provide both teachers and parents with opportunities to work together

which, in turn, establishes collaboration and consistency between home and school/centre. This collaboration is highly important because one of the challenging issues of the educational system in Saudi Arabia and the Middle East area, in general, is lack of parental involvement in general and special education, which creates a gap between home and schools/centres (Dubis, 2015).

Additionally, mothers in the present study mentioned the lack of children's books and a few of them said that their children did not have books. Some mothers also reported that they needed help choosing appropriate books for their children. Thus, schools and centres need to support parents to use shared reading by providing them with children's books. Schools and centres need to encourage parents to visit schools' and centres' libraries and borrow children's books. The librarians can help them choose books for their children. Providing children with storybooks can enrich children's home literacy environment and help parents support their children's literacy development.

7.5.2 Implications for the Arab world

The majority of the sample (both phases) in the present study (75%) reported that they did not practise shared reading with their children with autism. This finding was expected because it is not common to do shared reading in Arab societies (Carroll et al., 2017). Research indicated that shared reading has many benefits for children with TD and children with disabilities and conditions (Boyle et al., 2019; Zimmer, 2017; Farrant et al., 2013). Therefore, the Arab world needs to disseminate reading culture in its societies. Families need to be encouraged to read with their children. One way to do that is following the suggestion of Carroll et al. (2017) for Arab governments to design a system that sends out children's books shortly after a child is born to

promote literacy and shared reading. Moreover, the ministries of education in Arab countries should consider including more literacy and shared reading activities in the curricula of nursery and elementary schools and autism centres to foster shared reading culture.

In addition, mothers in the present study reported that they had difficulties finding suitable books for their children. Similarly, the researcher spent a lot of time searching for storybooks of good quality which were suitable for children from Arab culture to use with the intervention in this study. Thus, Saudi Arabia and Arab countries in general need to pay more attention to children's literature. The Arab publishing industries should prioritise publishing more Arabic children's books. Moreover, the quality of children's books should be taken into consideration as much as the quantity. Arab parents usually prefer more culturally appropriate books for their children (Barza and von Suchodoletz, 2016). Providing children's books that represent Arab cultural aspects in their illustration and Islamic morals in their themes is likely to encourage parents to buy and use those books with their children (Barza and von Suchodoletz, 2016; Mdallel, 2003). Children's books also need to be more accessible to parents and their children by providing more public libraries and electronic copies.

7.6 Future research directions

To the best of the researcher's knowledge, this study is the first one to use a dialogic reading intervention to support the social communication, emergent literacy and reading engagement of children with autism in Saudi Arabia and the Arab world. Therefore, future research should replicate the present study to establish the impact of using dialogic reading on children with autism in the Arab world. When replicated, it is suggested to investigate the intervention effect

on other dependent variables including vocabulary, phonological awareness and alphabetic knowledge, because previous studies found promising results regarding the effect of dialogic reading on vocabulary and emergent literacy in children with autism (Grygas Coogle et al., 2018; Hudson et al., 2017). It is also suggested that in any following studies the intervention is conducted for a longer period of time as it is unlikely for those variables to be affected in a short duration.

Moreover, future research needs to investigate the use of dialogic reading by parents in home settings. Since there is a greater likelihood of having only mothers in parental intervention, future research should consider recruiting both mothers and fathers and design studies focusing mainly on fathers' involvement in such intervention, as their involvement is limited even in the Western world (Flippin and Crais, 2011). In addition, future research should consider trialling the effectiveness of the adapted dialogic reading version suggested in this study (See 6.4 Guidelines for adapting dialogic reading for mothers of children with autism) with Saudi and Arab families. One important adaptation guideline that needs investigating is the inclusion of siblings of children with autism in the intervention. Researchers should examine the feasibility and effectiveness of parent-implemented dialogic reading with children with autism and their siblings at home. To the researcher's knowledge, there are no studies in this area even in Western research, which increases the need to investigate the topic in both Arab and Western societies. Additionally, when focusing on fathers' involvement, it is important to investigate whether the suggested guidelines can work for fathers or if other modifications are needed.

In addition to parents, future research should also examine teachers' implementation of dialogic reading with children with autism in Saudi Arabia and other Arab countries. The feasibility of teachers using dialogic reading in schools and autism centres and the feasibility of including

dialogic reading in schools' and centres' curricula should be investigated. As with the present study, having studies of teachers implementing dialogic reading in schools and autism centres is likely to provide more valuable guidelines of how dialogic reading can be used and adapted in those educational settings. Such a development would have significantly enhanced the sustainability of dialogic reading use.

Furthermore, future studies also need to explore the use of dialogic reading with Arab children with TD and children with disabilities. Dialogic reading was originally developed to be used with children with TD and its effect on them is well-established (for example, Wing-Yin Chow and McBride-Chang, 2003; Whitehurst et al., 1994). Previous dialogic reading studies also showed promising results with children with disabilities such as Down syndrome and hearing disability (Scott and Hansen, 2020; Jordan et al., 2011). In the Arab world, however, only one published study was identified in which dialogic reading was used with Egyptian children with TD (Elmonayer, 2013) and no study using dialogic reading for Arab children with disabilities was identified. This makes the present study the first one using the intervention with Arab children with disabilities and conditions and the second study using dialogic reading with Arab children in general. Thus, it is important to encourage future studies to use dialogic reading with both children with TD and children with disabilities.

Finally, future research should pay attention to the field of shared reading in Arab societies. Studies are needed to investigate several topics such as home literacy environment for Arab children, to what extent shared reading practices are common in Arab families, parents' views and understanding of shared reading and parent-child interaction during shared reading. Future studies should also examine the effect and feasibility of shared reading interventions implemented by both parents and teachers in both home and educational settings in Arab

countries. Overall, shared reading research is almost non-existent in this part of the world and needs to be established as shared reading plays an important role in children's literacy development.

7.7 Summary

This chapter presented a summary of the main findings of the present study. The findings discussed the effect of the dialogic reading intervention on children's participation and reading engagement during shared reading. As video observation and mothers' interviews from phase one revealed, dialogic reading had an impact on children's verbal and nonverbal social communication, emergent literacy and reading engagement. The impact of dialogic reading was also evident in mothers' interaction and reading styles in phase one. Mothers in phase two talked about shared reading, provided suggestions on how to use it in effective ways and expressed their need for shared reading support. Both phases emphasised the suitability and feasibility of mothers using dialogic reading. The findings from both phases also led to a set of guidelines to adapt dialogic reading for mothers of children with autism in Saudi Arabia. In addition, the chapter presented the contribution of the present study to the field. It also discussed the limitations, implementations and directions for future research.

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APPENDICES

Appendix 1- Summary of studies' features, outcomes and quality scores

Study	Study design	Participants			Intervention	Intervenor	Setting/ adult: child ratio	Duration	Dependent variable	Outcomes and effectiveness	Study quality score
		N	gender	age							
Balsamo (2019)	Single subject repeated acquisition design	3	2 males, 1 female	4 – 5.7 years	DR	3 mothers	Home / 1:1	16 sessions for 4-6 weeks	Independent and accurate verbal responses	Increased independent and accurate responses for two children PND = 100%, 100%, 50%	2.1
Fleury and Schwartz (2017)	Multiple baseline design across groups of children	9	7 males, 2 females	3 – 5.11 years	DR + special prompts	5 teaching assistants	School/ Group	Baseline: 3-4 times per week for 4-7 weeks. Intervention: 4 times per week for 5 weeks	- Children's verbal participation: responses and initiations. - Book-specific vocabulary	-Increased verbal participation - No effect on initiation - Increased book-specific vocabulary Verbal responses PND = 0%, 10%, 20%, 60%, 70%, 90%, 100%, 100%, verbal initiations PND = 0%, 0%, 0%, 0%, 0%, 0%, 10%, 20%	2.5
Fleury et al. (2014)	Multiple baseline design across participants	3	3 males	3.4 – 5.11 years	DR	2 researchers	School / 1:1	9 sessions for 5 weeks. Baseline: 3-5 sessions	- Session duration - On-task behaviour - Verbal participation - Response to prompt type	- Increased session duration - Increased children's verbal participation - DR had little effect on children's on-task behaviour Verbal participation PND = 83%, 100%, 100% On-task behaviour PND = 80%, 0%, 0%	2.5
Coogle et al. (2020)	Alternating treatment design	2	1 male, 1 female	4 – 5 years	Three conditions: - DR - Modelling - DR + Modelling	1 teacher	1:1 school	Baseline: 3 sessions Intervention: 14 sessions Sessions duration: 10-15 minutes	Labeling of target vocabulary words	Increased vocabulary in the DR condition PND = 100%, 100% Increased vocabulary in the DR + Modelling condition PND = 100%, 100%	2.4
Coogle et al. (2018)	Single case adapted alternating treatments design	4	4 males	3.6 – 4.3 years	Two DR conditions: - DR - DR + technology-enhanced books using a tablet	1 graduate assistant	School / 1:1	Baseline: 3 times. Intervention: 1-4 times per week for 6 months	- Vocabulary-naming - Vocabulary definition or function	- Increased vocabulary knowledge during both conditions (DR and DR using a tablet). - Three children increased their definitional knowledge	2.3

										Vocabulary naming PND (for DR condition) = 40%, 70%, 70%, 90% Vocabulary naming PND (for DR + tech condition) = 30%, 50%, 80%, 90%	
Hudson et al. (2017)	RCT	133	108 males, 25 females	3.2 – 5.7 years	Three conditions: - DR + extra waiting time + repeating the prompt + special prompts. - Phonological awareness intervention - Control condition	20 tutors (teachers, psychologists, no certifications but have autism experiences)	21 schools/ 1:1	3-4 days per for 20 weeks Sessions duration: 7-15 minutes.	- Vocabulary and listening comprehension - Emergent literacy (phonological awareness, print knowledge and letter-word reading)	- Increased children's vocabulary and phonological awareness - Increased listening comprehension - No effect on print knowledge and letter-word reading Receptive vocabulary ES = 0.54 Expressive vocabulary ES = 0.44 Listening comprehension ES = 0.33 Emergent literacy ES = 0.20	2.9
Jackson and Hanline (2020)	ABAB single-case research design	2	2 males	5 years	RECALL (DR + least-to-most prompting hierarchy + visual supports) + concept map	1 researcher	Therapy center/ school/ Home / 1:1	4-5 days per week for 8-12 weeks Sessions duration: 20 minutes	Independent correct responses	- Increased independent correct responses PND = 100%, 88%	2.3
Kang (2017)	Multiple baseline design across participants	4	3 males, 1 female	4 – 8 years	RECALL (DR + least-to-most prompting hierarchy + visual supports)	1 teacher	School/ 1:1	Not reported	- Listening comprehension - Initiation	- Increases students' correct responses (listening comprehension) - Increased students' initiation Listening comprehension PND = 33%, 47%, 50%, 90% Initiation PND = 66%, 83%, 94%, 95%	2.2

Lo and Shum (2020)	RCT	25	26 males, 5 females*	3 – 6 years	RECALL (DR + least-to-most prompting hierarchy + visual supports)	31 parents	Home / 1:1	Twice per week for 6 weeks Sessions duration: 10-15 minutes	- Receptive vocabulary - Emotion situation knowledge - Story comprehension - Responsiveness - Reading engagement	- RECALL group significantly improved all variables Receptive vocabulary ES = 0.028 Emotion situation knowledge ES = 0.58 Story comprehension ES = 0.45 Responsiveness ES = 0.19 Reading engagement ES = 0.56 - Control group significantly improved only receptive vocabulary	2.9
Lundy (2020)	Action research	2	Unknown	Unknown	DR	1 teacher	1:1 school	12 sessions	Not mentioned	Increased expressive language *Not enough information to assess effectiveness*	1.4
Pamparo (2012)	Multiple baseline design across participants	14	11 males, 3 females	3 – 5 years	DR	13 teachers and teaching assistants	Schools / 1:1 or 1:2	Baseline: 3-4 times per week for 4-7 weeks Intervention: 3-4 times per week for 5 weeks.	- Emergent literacy (print concepts, phonological awareness, listening comprehension and definitional vocabulary) - Children's knowledge of book specific vocabulary	- Increased students' knowledge of book specific vocabulary, but one student. - Increased in verbal responses and listening comprehension - No effect on phonological awareness and print knowledge. Test of Preschool Early Literacy (TOPEL) ES = 0.23% Oral and Written Language Scales (OWLS) ES = 0.45% Verbal participating PND = 100% for all participants	2.6
Plattos (2011)	Alternating treatment design	2	2 males	5.2 – 7.9 years	Two DR conditions: - DR - DR+ attention cues	6 graduate students	School/ 1:1	8 times per week for 6-8 weeks	- Labelling and explicating verbalisation - Spontaneous verbalisation	- Increased expressive vocabulary in both conditions - Increased spontaneous verbalisation in DR for one and in DR+AC for the other *Not enough information to assess effectiveness*	2.4
Queiroz et al. (2020)	Multiple baseline design across participants	2	2 males	7 years	DR + least-to-most prompting hierarchy	2 experimenters	School/ 1:1	16-30 sessions Sessions duration: 6-11 minutes	- Independent verbal responses - Verbal and non-verbal initiations	-Increased independent responses PND = 62%, 0% - Increased verbal initiations for one child PND = 16%, 0%	2.3

									- Task engagement	- No effect on non-verbal initiations PND = 0%, 0% - Slightly increased task engagement PND = 29%, 0%	
Tan (2014)	Multi-element design to compare an intervention versus a no-treatment condition	3	2 males, 1 female	5.2 – 6.9 years	Two conditions: - DR - control play sessions	1 teacher and 1 teaching assistants	School/ 1:2	5 days per week for 3 weeks Sessions duration: 10-15 minutes.	- Labelling (correct response to the target vocabulary questions) - Spontaneous verbalisations	- Increased students' knowledge of target vocabulary - DR condition had less spontaneous verbalisations than control condition *Not enough information to assess effectiveness*	2.3
Towson et al. (2019)	Pre post-test design	1	1 male	3 – 5.11 years	DR	4 paraprofessionals	School/ 1:1 1:2 1:2 1:3	Baseline: at least 3 sessions Intervention: 3 weeks (8 - 9 sessions)	Receptive and expressive vocabulary	- No significant differences on standardized measures - No improvement of both expressive and receptive vocabulary *Not enough information to assess effectiveness*	2.4
Ward (2018)	Not reported	5	5 males	3 – 6 years	RECALL (DR + least-to-most prompting hierarchy + visual supports)	4 families (5 parents)	Home / 1:1	5 times per week for 10 weeks	Child social reciprocity behaviours (turn-taking in conversation, joint attention, responses, initiation, eye contact)	- Increased social reciprocity - No result for one child Social reciprocity behaviours PND = 41%, 60%, 60%, 69%	1.9
Whalon et al. (2016)	Repeated acquisition design	1	1 male	4 years	RECALL (DR + least-to-most prompting hierarchy + visual supports)	1 mother	Home / 1:1	3 baseline sessions and 6 intervention sessions for 6 weeks	Unprompted correct responses on comprehension monitoring probes.	- Increased unprompted correct responding to fact, inference and open-ended questions - Unprompted correct responses PND = 66%	2
Whalon et al. (2015)	Multiple baseline design across participants	4	4 males	4 – 5 years	RECALL (DR + least-to-most prompting hierarchy + visual supports)	2 PhD students	School / 1:2	3 days per week for 2.5 months.	- Responses - Verbal and nonverbal initiations.	- Increased correct, spontaneous responding - Increased initiations for three students - Decreased incorrect or no responses Responses PND = 30%, 46%, 68%, 77% Verbal and nonverbal initiations PND = 10%, 20%, 29%, 57%	2.3

ES effect size

PND percentage of non-overlapping data

* The numbers included the six children who were not identified with autism officially because the gender of these six children was not mentioned so it was not possible to report gender if they were excluded.

Appendix 2- Phase One Participant Information Sheet

Participant Information Sheet

Using dialogic reading for mother of children with autism in Saudi Arabia

Dear Mother,
You and your child are invited to take part in a research study. Before you decide whether you would like to participate with your child, it is important that you understand why the research is taking place and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?
The aim of the research is to find out about the effect of the dialogic reading intervention on young children with autism in Saudi Arabia. The principle (NAME) has agreed that I can carry out this study in the school/centre.
The dialogic reading is a shared reading intervention in which the mother asks specific questions to encourage her child to engage with her and the book they are reading. The Intervention Information Sheet will provide you with more information about the dialogic reading intervention.

Why have I and my child been invited to participate?
You have been invited because your child is 3-9 years old, has autism and has verbal or minimal verbal ability. Four to six mothers with their children will be recruited.

Do I and my child have to take part in this study?
It is up to you to decide whether or not to take part, and you can keep this information sheet to remind you about the study.

What will happen to me and my child if we take part?
I will make an appointment to see your child at the school/centre. I will use an assessment with your child for 15–25 minutes to find out about their nonverbal social and communication skills. In the assessment, I will present to your child objects (toys, hat, comb, book, etc.) and simple tasks (turn-taking, requesting, and pointing) to see how your child requests and responds to the objects and tasks.
Then, I will ask you questions about books and reading with your child. Next, you will read to your child as you normally would for 3 sessions (2 sessions a week). After that, you will attend an individual guidance session in which I will explain to you the intervention. Next, you will do the intervention with your child for 6 sessions (3 weeks).
After the intervention, I will ask you questions about how the intervention went. Then after 10 weeks, I will interview you again to see if you still use the intervention. I will audio recorded the interviews if you give me permission.

How the data will be collected during the intervention?
I will observe your child during the sessions. You can choose what works best for you from the three following options:

- You can perform the sessions in the school/centre while I directly observe your child.
- You can perform the sessions in the house while I directly observe your child.
- You can perform the sessions in the house while you use your phone's camera to video record the sessions.

What are the possible disadvantages and risks of taking part?
There should be no disadvantages or risks of participating in this study.

What are the possible benefits of taking part?
The intervention will provide you with strategies to support your child's social communication skills. Also, it may increase your child's participation during shared reading activities, and it gives your child the opportunity to engage with books.

Will the information collected in this study be kept confidential?
All the information that will be collected about you and your child d will be kept strictly confidential. Only the researcher and her supervisors will have access to it. Yours and your child's personal information will not be used in the research. All the data will be used in a way that neither you nor your child can be identified.
After the completion of the research, the data of this study will be kept securely in both paper and electronic form for a period of 10 years. After that, it will be destroyed.
However, if it appears to the researcher that the child is in harm's way, the researcher may need to break confidentiality and disclose this to the relevant authority (e.g. Saudi Child Helpline).

What should I do if I want to take part with my child?
If you would like to take part with your child in the study, please sign the consent form and return it to the school/centre. This indicates that you agree to participate with your child in the study and give me permission to contact you.
Once you have given the consent, you may change your mind at any point and withdraw. You can withdraw within 4 weeks after completing the intervention and the first interview.
You can request to withdraw from the project by calling or sending an email to me. If you do so, all the information about you and your child will be destroyed. There will be no consequences for you and your child if you withdraw from the study.

What will happen to the results of the research study?
Results of the research will be used in my PhD thesis. Parts of the study may also be submitted for publication. You and your child will not be identified in the thesis and any report. A summary of the results will be sent to the school/centre, but your child's results will be anonymised. If you wish to be given a report of the findings, you can request it by sending an email to the researcher.

Who will review the study?
This project has been ethically approved by the University of Birmingham Research Ethics Committee. If you have any concerns about the way in which the study has been conducted, you should contact my supervisor Dr. Kerstin Wittemeyer on ,,,

Contact for further information
If you have any question or you want more information about the study, please do not hesitate to contact the researcher Hadeel Alharbi

Thank you for taking the time to read this information sheet.

Appendix 3 – Phase One Consent Forms

Appendix 3a: A blank copy of the Intervention Consent Forms (English)

UNIVERSITY OF
BIRMINGHAM

Intervention Consent Forms

Research Title: Using dialogic reading for mother of children with autism in Saudi Arabia

Researcher's Name: Hadeel Alharbi

Researcher's Status: PhD Student / School of Education

HREC Approval Number: ERN_17-1152

……

I confirm that:

- I have read and understood the Participant Information Sheet.
- I have had the opportunity to ask questions if necessary and had them answered.
- I understand that all personal information will remain confidential and the identities of me and my child will be protected and cannot be identified.
- I understand that the participations of me and my child are entirely voluntary.
- I understand that I have the right to withdraw from the study at any stage of the intervention.
- I understand that the sessions will be video recorded.

Based upon the above, I agree to participate with my child in this study.

Name of the child: …….

Name of the mother: ……...

Date: ……

Signature: ……

Appendix 3b: A blank copy of the Intervention Consent Forms (Arabic)

UNIVERSITY OF BIRMINGHAM

نموذج موافقة

عنوان الدراسة:
استراتيجية القراءة الحوارية للأطفال ذوي التوحد بالمملكة العربية السعودية

أتعهد:
- أني قرأتُ وفهمتُ ورقة معلومات المشاركة.
- أنه قد أتيحت لي الفرصة لطرح الأسئلة إذا لزم الأمر، وأنه قد تم الإجابة عليها.
- أني فهمتُ أن جميع المعلومات الشخصية ستبقى سرية ومحمية وأنه لن يتم الكشف عن هويتي وهوية وطفلي
- أني فهمتُ أن مشاركتي ومشاركة طفلي هي طوعية تماما.
- أني فهمتُ أن لدي الحق في الانسحاب من الدراسة في أي مرحلة من المراحل.
- أني موافقة على تصوير الجلسات

اعتماداً على ما ذكر أعلاه، فإني أوافق على المشاركة مع طفلي في الدراسة

اسم الطفل: .....

اسم الأم: .....

التاريخ: .....

التوقيع: .....

الباحثة
هديل علي الحربي

Appendix 3c: A blank copy of the Interview Consent Forms (English)

UNIVERSITY OF BIRMINGHAM

Interview Consent Forms

Research Title: Using dialogic reading for mother of children with autism in Saudi Arabia

Researcher's Name: Hadeel Alharbi

Researcher's Status: PhD Student / School of Education

HREC Approval Number: ERN_17-1152

……

I confirm that:

- I have had the opportunity to ask questions if necessary and had them answered.
- I understand that all personal information will remain confidential and the identities of me and my child will be protected and cannot be identified.
- I understand that my participation is voluntary.
- I understand that the interview will be audio recorded.
- I understand that I have the right to withdraw at any stage of the interview.

Based upon the above, I agree to participate in this study.

Name of the child: …….

Name of the mother: ……...

Date: ……

Signature: ……

Appendix 3d: A blank copy of the Interview Consent Forms (Arabic)

UNIVERSITY OF
BIRMINGHAM

نموذج موافقة المقابلة

عنوان الدراسة:
استراتيجية القراءة الحوارية للأطفال ذوي التوحد بالمملكة العربية السعودية

أتعهد:
- أنه قد أتيحت لي الفرصة لطرح الأسئلة إذا لزم الأمر، وأنه قد تم الإجابة عليها.
- أني فهمتُ أن جميع المعلومات الشخصية ستبقى سرية ومحمية وأنه لن يتم الكشف عن هويتي وهوية وطفلي
- أني فهمتُ أن مشاركتي ومشاركة طفلي هي طوعية تماما.
- أني فهمتُ أن لدي الحق في الانسحاب من الدراسة في أي مرحلة من المراحل.
- أني موافقة على تسجيل المقابلة صوتيا.

اعتماداً على ما ذكر أعلاه، فإني أوافق على المشاركة مع طفلي في الدراسة

اسم الطفل: .....

اسم الأم: .....

التاريخ: .....

التوقيع: .....

الباحثة

هديل علي الحربي

Appendix 4 – Phase 1: Intervention information sheet

Intervention information sheet

What is the intervention?

Dialogic reading is a shared reading intervention in which the adult asks specific questions to prompt the child to verbally participate during book readings (Fleury et al., 2014).

How can I implement the intervention?

During shared reading, you will:

1. ***P****rompts:* the mother prompts the child by using one of the following prompts (*CROWDS*):
   - ***C****ompletion*: the mother says the initial part of a repetitive phrase and allows the child to finish the phrase.
   - ***R****ecall*: the mother asks questions about previous aspects of the story.
   - ***O****pen-ended****:*** the mother encourages the child to tell her what is happening in a picture.
   - ***W****h-questions:* the mother asks wh-questions (*what, where, when, why and who*) about a picture.
   - ***D****istancing****:*** the mother asks questions that relate elements of the story to the child's personal experiences.
   - ***S****pecial prompts:* the mother provides choice, ask yes/no questions or request the child to point and/or repeat
2. ***E****valuates:* the mother evaluates the child's responses.
3. ***E****xpands:* the mother expands on the child's verbalisation by repeating what the child has said and adding information to it.
4. ***R****epeats:* the mother encourages the child to repeat the expanded utterances

What if the child does not respond to a prompt?

When you ask a question, wait five seconds for the child to answer. If the child does not respond within five seconds, you will continue to read.

What are the intervention's materials that I need?

Storybooks and relevant objects related to the stories' themes. (You will be provided with all the materials).

Why do I need objects?

Objects will help you get your child's attention and/or to increase your child's engagement and participation during the shared reading.

Appendix 5 – Descriptions for the observed acts

Verbal Social Communication Acts	
Act	**Description**
Correct response	The child correctly answers the mother's question.
Incorrect response	The child incorrectly answers the mother's question.
Comment	The child remarks about character(s), event(s), picture(s) or object(s) related to the story which has no obvious instrumental function but is more conversational (modified from Drew et al., 2007). The child remarks about character(s), event(s), picture(s) or object(s) related to the story to direct the mother's attention to it (modified from Stone et al., 1997).
Repetition	The child immediately repeats a word or line of the story after the mother reads it. The child immediately repeats a word or phrase related to the story after the mother says it.
Read	The child reads a word or a line of the story. The child tries to decode a word.
Unrelated words	The child utters a word or phrase that is unrelated to the story or to the mother's question.
Babble	The child utters sounds like language and combinations of syllables but not identifiable as any real words. (modified from Drew et al., 2007).
Nonverbal Social Communication Acts	
Act	**Description**
Eye contact	The child looks at the mother's eyes during the reading session.
Joint attention	The child attempts to draw/direct mother's attention toward print or picture. The child takes an object and lifts it towards mother to draw her attention to it (modified from Drew et al., 2007). *Notes:* *- Joint attention here is limited to gestures. Verbal acts to establish joint attention is considered as a comment act.*

Smiling/laughing	The child smiles or laughs while looking at the picture(s) of the story. The child smiles or laughs at the mother's reaction(s) (for example, voices, facial expressions) while reading the story. The child smiles or laughs when the mother tickles them. The child smiles or laughs when the mother uses an object. The child smiles or laughs while using or playing with an object.
Gesture	The child makes a gesture to imitate a character's action in the story. The child makes a gesture to imitate the mother's action or gesture during the activity. The child makes a gesture to describe an object or a picture in the story. The child makes a gesture to indicate his rejection.
Physical communication	The child makes a physical communication act during the reading session (for example, the child hugs the mother after the reading). The child makes a physical communication act to imitate a picture (for example, the child hugs their mother as the boy in the story did). The child makes a physical communication act when the mother asks them to do it (for example, the mother asks the child to kiss her).
Emergent Literacy Acts	
Act	**Description**
Pointing	The child extends their index finger (or the whole palm with the intention to point) to print or picture while the mother reads. The child extends their index finger (or the whole palm with the intention to point) to print or picture to answer a question (modified from Drew et al., 2007). *Notes:* *- Child can either touch the page or points to it by far (contact and distal point)*
Turning page	The child turns a page after the mother reads it. The child turns a page when the mother asks them to do it. The child turns a page after talking about it. The child turns a page to go to a specific page.

Appendix 6 – A blank copy of the observation sheet

Observation sheet

Verbal Social Communication Acts						
Correct Response	Incorrect Response	Comment	Repetition	Reading	Unrelated	Babbling

Nonverbal Social Communication Acts				
Eye contact	Joint attention	Smiling/laughing	Gesture	Physical communication

Emergent Literacy Acts		Others	
Pointing	Turning page		

Note: ……...……
…….

Appendix 7– A blank copy of the pre-intervention interview schedule

Pre-intervention Interview Schedule

Introduction

1- The researcher will:
   - Explain the purpose of the interview
   - Go through the Consent Form to sign
   - Ask if the mother is happy with audio recording the interview

Questions

1- What kind of activities do you usually do with your child?
2- Do you normally read with your child?
   - follow-up questions:
   - If yes:
     - How often did you read with your child?
     - When? (bedtime?)
     - For how long?
     - For what purpose? (to have fun, to teach literacy, to communicate, etc.).
   - If no:
     - Why?
3- Do you tell your child stories without using books?
   - follow-up questions:
   - If yes:
     - When?
     - Do you use objects?
     - How does your child interact during listening to the story?
4- What is your opinion about using books with your child?
   - follow-up questions:
     - Why?
5- How does your child interact with books?
   - follow-up questions:
     - Can you give me an example?

Closure

1- Would you like to add or ask anything?

2- The research will:

- Thank her for her time.
- Talk with the mother about the first reading session.

Appendix 8 – A blank copy of the post-intervention interview schedule

Post-intervention interview schedule

Introduction

1- The researcher will:
   - Explain the purpose of the interview
   - Go through the Consent Form to sign
   - Ask if the mother is happy with audio recording the interview

Reading and books

1- What is your opinion about using books with your child now after the intervention?
   - ➢ follow-up questions:
     - o Why?
2- How does your child interact with books now after the intervention?
   - ➢ follow-up questions:
     - o Can you give me an example?

Dialogic reading

A. About mothers:

1- How was your experience of learning and using the intervention?
2- Do you feel that there is any benefit that you gained from the intervention?
   - ➢ follow-up questions:
   - If yes:
     - o Can you tell me more?
     - o Can you give me an example?
3- What do you think is the most effective part of the intervention?
   - ➢ follow-up question:
     - o Why?
4- What are the challenges that you faced during the intervention?
   - ➢ follow-up question:
     - o What did you do?
5- What suggestions can you think of to improve the interventions?

- follow-up questions:
    - How do you think it would help the interventions?
    - Can you tell me more?

B. About Children:

1- Can you tell me how did your child participate during the intervention?
- follow-up question:
    - How did that make you feel?

2- Do you think the intervention was effective for your child?
- follow-up questions:

- If yes:
    - How?
    - Can you give me an example?

- If no:
    - Why?

3- Do you think your child enjoyed the intervention?
- follow-up questions:
    - Why?
    - Can you give me an example?

Intervention's principles and strategies in other situations

1- Have you used some of the intervention' principles and/or strategies with your child in other situations?
- follow-up questions:

- If yes:
    - Was it easy to use it in those situations?
    - Can you give me an example?

- If no:
    - Why?

2- Have you noticed any difference in your interaction style with your child that you can think of it as a result of the intervention?
- follow-up questions:

- If yes:
    - How did it change?
    - Can you give me an example?
- If no:
    - Why?

3- Have you noticed any difference in your child's behaviour that you can think of it as a result of the intervention?

➢ follow-up questions:

- If yes:
    - Can you give me an example?

Future:

1- Are you going to continue using the intervention in the future?

➢ follow-up question:

- Why?

2- What strategies and/or principles of the intervention that you think will help you in the future?

Closure

3- Would you like to add or ask anything?

4- The research will:

- Thank her for her time.
- Tell her how she can request the result if she wishes.

Appendix 9 – A blank copy of the follow-up interview schedule

Follow-up interview schedule

Introduction

1- The researcher will:
   - Explain the purpose of the interview
   - Ask the mother to give verbal consent to participate
   - Ask if the mother is happy with audio recording the interview

Questions

1- Since our last interview, can you tell me about your experience with the intervention?
   - follow-up questions:
     - Did you continue using it? Why?
     - How often have you used it?
     - Have you made any changes to it? Why?
2- Have you used books with your child since the intervention?
   - follow-up questions:
     - How often?
     - Do you think the intervention encouraged/discouraged you to use books?
3- Since our last interview, are there principles and/or strategies from the intervention that you used with your child outside the shared reading situation?
   - follow-up questions:
   - If yes:
     - Can you give me an example?
   - If no:
     - Why?
4- Are you going to continue using the intervention in the future?
   - follow-up question:
     - Why?

For mothers who used the intervention:

Since our last interview,

1- Have you noticed any difference in your interaction style with your child that you can think of it as a result of the intervention?
   - ➢ follow-up questions:
   - If yes:
     - How did it change?
     - Can you give me an example?
   - If no:
     - Why?
2- Have you noticed any difference in your child's behaviour that you can think of it as a result of the intervention?
   - ➢ follow-up questions:
   - If yes:
     - Can you give me an example?

Closure

1- Would you like to add or ask anything?
2- The research will:
   - Thank her for her time.
   - Tell her how she can request the result if she wishes.

Appendix 10 – Inter-rater reliability results

Inter-rater reliability results of eight sessions

Selected Sessions	Session	Session1	Session3	Session2	Session3	Session2	Session6	Session6	Session7	Total
	Child	Ahmad	Sarah	Ali	Ahmad	Sarah	Ali	Ahmad	Khaled	
Inter-rater reliability results		79%	79%	90%	74%	88%	77%	83%	78%	81%

Appendix 11 – Phase Two Participant Information Sheet

UNIVERSITY OF BIRMINGHAM

Participant Information Sheet

Using dialogic reading for mother of children with autism in Saudi Arabia

Dear Mother,
You are invited to take part in a research study. Before you decide whether you would like to participate, it is important that you understand why the research is taking place and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?
The aim of the research is to investigate if a shared reading intervention can be used and be useful for mothers of children with autism in Saudi Arabia. Thus, the researcher will interview mothers of children with autism to understand how they understand shared reading.

Why have I been invited to participate?
You have been invited because your child has autism.

Do I have to take part in this study?
It is up to you to decide whether or not to take part, and you can keep this information sheet to remind you about the study.

What will happen to me if I take part?
I will contact you to arrange an appointment to interview you. On the interview day, I will call you (phone call or via Skype as you prefer). I will ask you questions about the meaning of shared reading as you understand it, the role of books in your child life, your experiences (if you have) of shared reading and/or storytelling, your ideas about using shared reading with children and the importance of shared reading for you. I will audio recorded the interview if you give me verbal permission.

What are the possible disadvantages and risks of taking part?
There should be no disadvantages or risks of participating in this study.

Will the information collected in this study be kept confidential?
All the information that will be collected about you will be kept strictly confidential. Only the researcher and her supervisors will have access to it. Yours and your child's personal information will not be used in the research. All the data will be used in a way that neither you nor your child can be identified.
After the completion of the research, the data of this study will be kept securely in both paper and electronic form for a period of 10 years. After that, it will be destroyed.

What will happen to the results of the research study?

Results of the research will be used in my PhD thesis. Parts of the study may also be submitted for publication. You and your child will not be identified in the thesis and any report. If you wish to be given a report of the findings, you can request it by sending an email to the researcher.

Who will review the study?
This project has been ethically approved by the University of Birmingham Research Ethics Committee. If you have any concerns about the way in which the study has been conducted, you should contact my supervisor Dr. Kerstin Wittemeyer on ,,,

Contact for further information
If you have any question or you want more information about the study, please do not hesitate to contact the researcher Hadeel Alharbi

Thank you for taking the time to read this information sheet.

Appendix 12 – A blank copy of the phase two interview schedule

Phase two interview schedule

Introduction

1- The researcher will:
   - Explain the purpose of the interview
   - Ask the mother to give verbal consent to participate
   - Ask if the mother is happy with audio recording the interview

Part One

1- During which activities and which time of the day do you feel there is an increased level of communication/social interaction happening between you and your child?

➢ Follow up question:
   - How do you interact (play) with your child?
   - How does your child respond to you?
   - Do you usually initiate the interaction?
   - For how long do you interact with your child?

2- Do you normally read with your child?

- If yes:
   - Can you tell me how you read to your child? (When? Where? For how long?)
   - How is communication/social interaction between you and your child during the reading activity?
   - How often did you read with your child?
   - For what purpose? (to have fun, to teach literacy, to communicate, etc.).
- If no:
   - Do you do any kind of storytelling activities (or literacy activities) with your child (for example, bedtime story, alphabet letters songs etc.)?
   - How is the communication/social interaction between you and your child during the activity?

➢ Follow up question:

- On a scale from 1 to 10, how would you rate the importance of learning to read for your child?

3- Does your child have storybooks?

- If no:
  - Does your child like to interact/play with any kind of books (for example, their siblings' schoolbooks, magazines, advertisement booklet, etc.)?

➢ Follow up question:
  - How does your child interact with books (for example, looking at pictures, pretending to read, asking you to read them)?
  - For how long does your child normally engage with books?

Part Two

1- What comes to mind when you think of the term shared reading? (What does it mean to you?)
2- Can you describe to me what an effective shared reading session looks like for you?

➢ Follow up question:
  - What would you be doing?
  - What would your child be doing?
  - How would the reading environment look like? (When? Where?)

3- What would prevent you from having effective shared reading activities with your child?
4- What would help you to have effective shared reading activities with your child?

➢ Follow up question:
  - Do you think that receiving shared reading support might help you?

- If no:
  - What kind of support would you like to receive?

- If yes:
  - What specifically would you like to be supported with? (for example, how to read to your child, how to engage your child during shared reading)

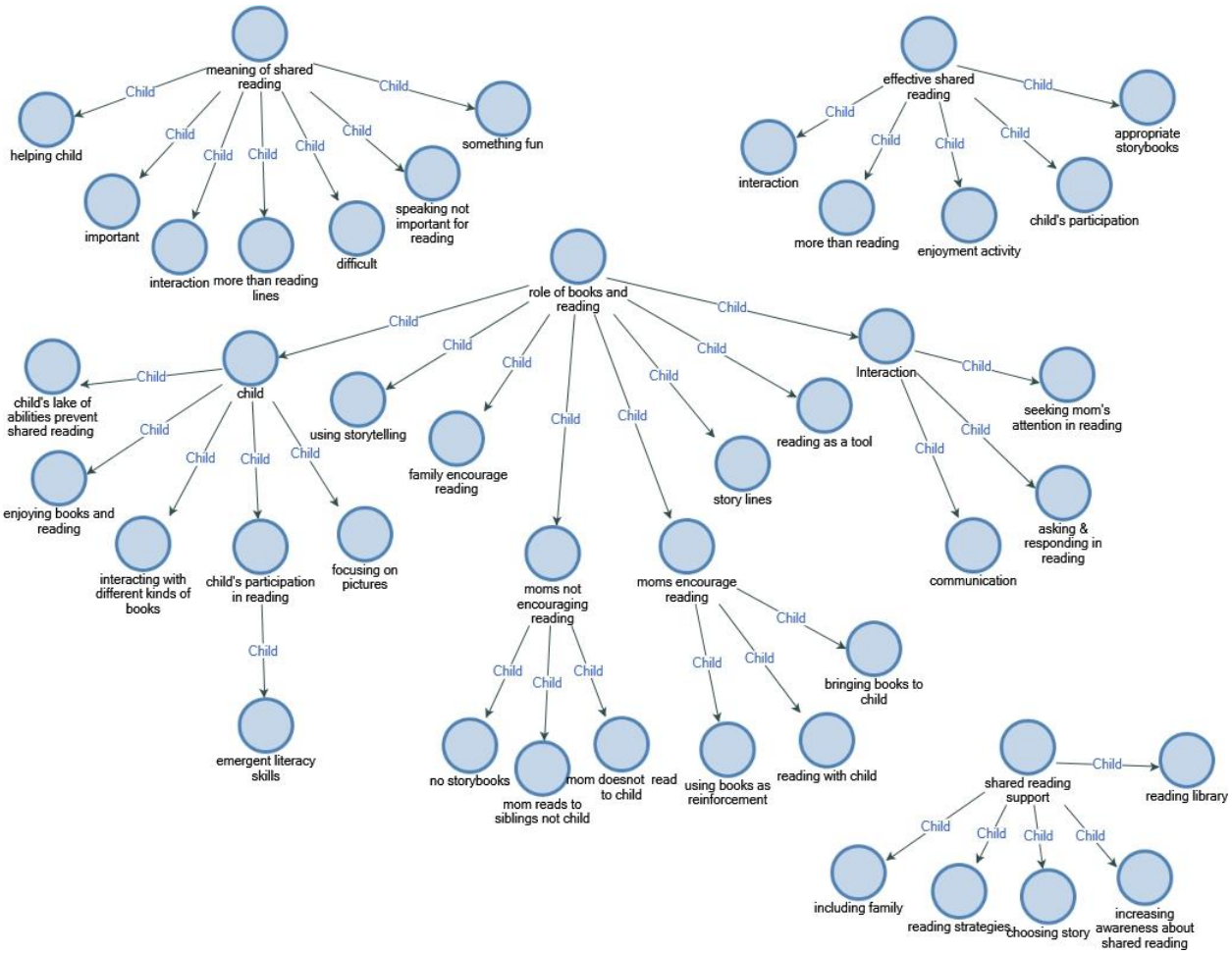
Closure

1- Would you like to add or ask anything?

2- The research will:

- Thank her for her time.
- Tell her how she can request the result if she wishes.

Appendix 13 – First thematic map



Appendix 14 – University of Birmingham ethical approval

Dear Dr Kerstin Wittemeyer

Re: "Introducing a dialogic reading interventions for children with autism in Saudi Arabia" Application for Ethical Review ERN_17-1152

Thank you for your application for ethical review for the above project, which was reviewed by the Humanities and Social Sciences Ethical Review Committee.

On behalf of the Committee, I confirm that this study now has full ethical approval.

I would like to remind you that any substantive changes to the nature of the study as described in the Application for Ethical Review, and/or any adverse events occurring during the study should be promptly bought to the Committee's attention by the Principal Investigator and may necessitate further ethical review.

Please also ensure that the relevant requirements within the University's Code of Practice for Research and the information and guidance provided on the University's ethics webpages (available at https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Links-and-Resources.aspx) are adhered to and referred to in any future applications for ethical review. It is now a requirement on the revised application form (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-Forms.aspx) to confirm that this guidance has been consulted and is understood, and that it has been taken into account when completing your application for ethical review.

Please be aware that whilst Health and Safety (H&S) issues may be considered during the ethical review process, you are still required to follow the University's guidance on H&S and to ensure that H&S risk assessments have been carried out as appropriate. For further information about this, please contact your School H&S representative or the University's H&S Unit at healthandsafety@contacts.bham.ac.uk.

Kind regards,

Ms Sam Waldron
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[redacted]