Parental scaffolding behaviours during co-viewing of television with their preschool children in Taiwan

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Abstract

The digital media play an increasingly pervasive and influential role in children's lives (Rideout & VJR Consulting, 2011). However, whilst there has been extensive investigation into the media use of this age-group in the USA and western Europe, there has been little research on the media use of children under the age of 6 in Taiwan. Therefore, Phase 1 of the study began by conducting an online survey (n=535) in order to situate the work undertaken in Phase 2. The results showed that TV dominates the media use of young Taiwanese children.

Opinions differ regarding the effects of TV viewing on young children. Some child development specialists warn of the dangers of too much viewing, especially for infants (Christakis, 2008). However, more programmes are designed specifically for young children and many aim to support their learning. Evidence has shown that TV can have a positive impact on learning (Wright, Huston, Scantlin, & Kotler, 2001). The key issue is the extent to which children engage with the programme. The literature into children's learning from media content indicates that the child's engagement with the programme is strongly related to their understanding of the programme content (Calvert, Strong, Jacobs, & Conger, 2007). However, little is known about how parents can support their child's engagement by co-viewing children's TV programmes with them. Therefore, Phase 2 of the study aimed to explore in-depth this particular link between parental scaffolding and child engagement. Adopting a social constructive paradigm and using case study methodology, the researcher gathered video recordings of thirteen parent/child dyads of 3- to 5-year-olds co-viewing the same episodes of two animated educational television programmes in natural conditions. In the analyses, measures of children's engagement and thematic coding of the scaffolding behaviour of the parent were used to deductively and inductively analyse video recordings of the home observations.

The findings indicated that there is a positive association between the child's engagement and the level of parental scaffolding. It is suggested that dissemination of the findings from this study could help parents to understand and appreciate the value of parent-child co-viewing of educational children's television programmes and promote children's learning from the programmes.

Declaration and Word Count

The candidate hereby declares that the work presented in this thesis is entirely her own and that appropriate credit has been given where explicit reference has been made to the work of others.

Word count: 70,428 words

Acknowledgements

The completion of this thesis is due to the help of many people in various ways and at various times. I would like to thank Dr. Jeni Riley for all her support throughout the PhD and made the 4 years such an enjoyable time. During this great journey in pursuing knowledge, I am extremely fortunate to learn from a master in early childhood and life. Thank you for your tireless encouragement and always believing in me. I also would like to thank Dr. Maria Kambouri for her brilliant insight. I am grateful to have both of you as my supervisors, and I have gained so much more than I expected. I would like to pay special gratitude to Dr. Sandra Calvert, who not only is my mentor but also a friend of many adventures.

I would like to thank the parents, children, and respondents who participated in this study. I also would like to thank the kindergartens for their assistance in conducting the survey. I am especially thankful for the thirteen families who participated in Phase 2. Thank you for your generosity for sharing your family lives with me and thank you for the time and effort you devoted during the observations.

I am extremely grateful to my parents for their love, support and always having faith in me. Last but not least, I would like to thank my husband, Mu-Chun, who always stands by me with all his heart. Your smiles always encourage me to look on the bright side. I am so happy that we can study our PhDs together in this beautiful country. I had such a wonderful time and it is unforgettable.

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Chapter 1

Introduction

1.1. Context of the study

Taiwan, also known as the Republic of China (R.O.C), is a sub-tropical island situated in the western Pacific Ocean. It is separated from the Asian Continent by the Taiwan Strait, the main island is 245 miles long and 89 miles wide. The island is characterised by the contrast between the east, comprising of rugged mountains, and the flat plains in the west, which are also home to the majority of the population. The history and culture of Taiwan have been shaped by successive waves of migration and colonisation by the Portuguese, Spanish, Dutch, Japanese, and, primarily, the Chinese. The Chinese mainland first extended its imperial control over Taiwan in the 17th century during the Ching Dynasty. The descendants of immigrants from the coastal provinces (mainly Fujian and Guangdong) constitute over 80% of the current 23 million population (Hakka Affairs Council, 2011). Taiwan was ceded to the Empire of Japan after the first Sino-Japanese War in 1895. After World War II, Taiwan was freed. Four years later, Chiang Kai-Shek's Nationalist Party (or Kuo Ming Tang, KMT) lost mainland China to Mao Tse-Tung's Communist Party in the Chinese Civil War, and re-settled its government in Taiwan. Another wave of immigrants, mainly Chiang's soldiers, bureaucrats, and followers from various inland provinces, fled to Taiwan in 1949.

With the aid of the United States and the infrastructure left by the Japanese government, the KMT quickly built up its new regime in Taiwan. Taiwan's rapid economic growth after World War II transformed it into an industrialised developed country, and it was characterised as one of the 'Four Asian Little Dragons'. Its advanced technology plays a crucial role in the global industry. Taiwan is classified as an advanced economy by the International Monetary Fund (Clements, Coady, & Gupta, 2012).

Mandarin is the official language of Taiwan and is spoken by almost all Taiwanese people. Taoism and Buddhism are the two main religions of Taiwanese people.

Confucianism is a philosophy comprising a set of moral ethics which serve as the foundation of Taiwanese culture. Most Taiwanese people combine the moral teaching of Confucianism with whatever religions they are affiliated with. Confucian values are conveyed in Taiwan's nine-year mandatory education, while Western values have an increasing influence on society via the media.

1.2. Aims of the study

The digital media is playing an increasingly important role in children's lives across the developed world. Taiwan is especially technologically orientated. For example, the time spent going online per day by Taiwanese adults is more than other countries (Ofcom, 2013a; Yahoo online marketing Taiwan, 2013). Also, the country ranks fifth in national fibre network penetration (FTTH Council, 2012). The children have unprecedented access to a diverse range of media. Therefore, they also have the opportunity to learn through and obtain knowledge from the media. The introduction of a variety of media into families' daily lives opens a new chapter in child-rearing: one that takes place, partially, in front of a screen. However, the rapid changes in our media environment have not been accompanied by a similar growth in our full understanding of how these changes have played out in the way that parents educate and support the learning of their young children.

The starting point of this study traces back to the Spring of 2007 when the researcher was collecting the data for her masters' dissertation on Chinese parenting styles (Wang, 2007). In that study, she observed a 100 hours of parent-child interactions. During the fieldwork, she found that TV was used differently in these families. Some parents used TV as a tool to educate their children. They selected appropriate programmes for their children and had rules about what to watch on TV and how much time their children can spend watching TV. Children who lived in this type of family usually had a wide range of leisure activities, e.g. listening to music/radio, playing chess, playing outside, and reading. TV viewing was only one of their many family activities. Meanwhile, other families used TV passively. The parents or the children sat in front of the TV not because they wanted to watch it but because they didn't know what else to do. Some parents

looked upon TV as a babysitter. A frequently seen situation was that the child watched alone in the living room when the parent was cooking or doing chores. The parents put their child in front of the TV because they wanted to do the chores uninterrupted. These parents believed that children are capable of learning from the programme by themselves, simply by watching. Sometimes, the parents took children's TV time as the time for them to take a break. The researcher came to realise that the media play an important role in children's lives and the experience with media now may influence children's attitude towards how they approach media in the future. A question then surfaced: if it is difficult to ask parents to refuse their children using TV as a pastime, how can TV viewing become as beneficial as shared book-reading? And in what circumstances can children have opportunities to learn from TV?

The thesis consists of eight chapters. The first introductory chapter describes the context and aims of the study. Chapter 2 situates the study in the literature by addressing relevant aspects of child development and theories of learning. It gives an overview of young children's media use, the challenge that TV viewing presents to the child, children's learning from media, with a particular emphasis on the evidence on scaffolding of learning using vehicles such as books or TV. From this conceptual framework the chapter concludes with the research questions of this study.

Chapter 3 outlines the research design of the two phases of the study, presenting the methods involved in data collection, research procedures followed during fieldwork, as well as an explanation of the data analysis.

The research findings of Phase 1 and Phase 2 of the study are presented in Chapter 4 and 5, respectively. Chapter 4 presents young Taiwanese children's media use, their habits and the media environment at home. Chapter 5 provides an in-depth exploration of parental scaffolding patterns and its relationship with the child's engagement and other variables.

The discussion of aspects of the findings is presented in Chapter 6 and 7. Chapter 6 discusses the key features of Taiwanese young children's media use, and compares this to other cultures. Chapter 7 presents the relationship between the findings of Phase 2 to the research literature in the field. This Chapter discusses the features of parent-child interactions during the co-viewing. It also explores the relationship between a number of variables, including parental scaffolding pattern, children's levels of engagement and the relationship of this with a child's age, a parent's educational level, the co-viewing context, the two programme types, in the context of TV co-viewing. The notion of co-engagement and the importance of parent's attitudes towards TV co-viewing are also discussed. Finally, the conclusions and recommendations, as well as the limitations of the study are offered in Chapter 8.

Chapter 2

Literature Review

Introduction

Early childhood is a crucial period in life for learning. The first five years are the period of rapid development of the brain. Children develop physically, intellectually, socially and emotionally through interacting with a rich, supportive environment surrounding them and supported by the adults that care for them (Berk, 2009). It is a time when one's ordinary day-to-day life has huge impact on who a person will become. So whilst children are born with innate capabilities, such as a potential intellectual capacity, a supportive environment is required along with adults' facilitative interactions for children to develop to their full potential. Considerable evidence has also shown that the environmental stimulation is key to the development of the neuronal synapses which support the formation of memory and intellectual functioning generally (Greenough, Black, & Wallace, 1987; Turner & Greenough, 1985; Wallace, Kilman, Withers, & Greenough, 1992). Therefore, the variety and intensity of visual and auditory experiences that are offered to the child throughout early childhood has great influence on their brain development.

Nowadays a pervasive part of the many environmental influences that impact on the young child are the use of screen media for infants and toddlers. Children begin to be exposed to screen media younger and younger and for several hours a day (Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011; Rideout, Vandewater, & Wartella, 2003). It is thought that the screen media may be replacing picture books and many toys in the young child's life and have the potential to be a very powerful learning tool. Given this evidence and this starting point, the role of media and to what extent parents can support children's learning through viewing television is the focus of this study.

Since I have chosen this relatively recent phenomenon to focus upon, this chapter outlines the importance of the early years in a human's life. It describes current understanding of learning in the phase of early childhood and sets it within young children's media use overall. It also explores the main conceptual tasks that TV viewing presents to children as well as the massive potential learning from TV. It then describes the types of scaffolding and potential support of learning using vehicles such as books or the media. Then, in the last section of this chapter, the related research in Taiwan will be presented.

2.1. The importance of and learning in early childhood

It is now widely accepted by child development specialists, educators, and policy makers that success in later life is established in early childhood, as it is the period for building the foundations of learning, life, and work. And a child's experience in the first five years has a great impact on future progress (Berk, 2009; UK Government, 2012). This section will briefly explain the importance of early childhood by focusing on the development of brain and then describe the key concepts in the two major theories of learning, Piaget's cognitive developmental theory and Vygotsky's socio-cultural theory, which have influenced thinking greatly in the contemporary field of child development. Finally, the links between a child's learning and the role adults play in young children's learning will be addressed.

2.1.1. The importance of early years-Brain development

The development of a brain provides evidence for the significance of the first years of life and the importance of environmental stimuli. The newborn brain develops rapidly for the first few years of life, and it is also highly absorbent and plastic during this period. The newborn brain triples in size in the first two years, from an average of 333g to almost 1kg (Christakis, 2008). Neurons grow at an astonishing pace during infancy and early childhood and external stimulation plays a vital role in the formation and existence of neurons (Barkovich, Kjos, Jackson, & Norman, 1988; Yamada, et al., 2000). Neurons which are consistently stimulated by input from the environment continue to establish synapses. The stimulation from the environment helps to form increasingly intricate systems of communication, which

makes neural circuits work more quickly and efficiently and supports the brain to acquire more complex abilities. The abundance of neurons ensures that the child will acquire the motor, cognitive, and social skills easily and quickly. Conversely, neurons which are rarely stimulated lose their synapses and may fall away. This process is known as 'synaptic pruning'. The appropriate stimulation of the young brain is crucial when formation of the synapses is at its peak in the early years (Greenough, et al., 1987; Nelson, Thomas, & de Haan, 2006). Studies also reveal the existence of particularly sensitive periods of brain development (Greenough & Black, 1992; Greenough, et al., 1987; Kandel & Jessel, 1991). The type and intensity of physical and social stimulation offered by surrounding adults and environments have a profound influence on children's brain development. In the context of this extraordinary brain growth and the role this critical period plays in a person's life, the question of what influences media use might have and how it might be supported naturally emerges.

2.1.2. Theories of learning

Before going into what effects media might have in early childhood and how it can be used to enhance young children's learning, how young children learn will now be firstly explained. This study borrows the definition of learning from Plowman, Stephen, & McPake's study (2010). Learning here is seen as 'a process which is unseen but made evident by changes in children's level of skills, confidence or knowledge' (Plowman, et al., 2010, p. 35). Theorists have considered for a long time the way young children's intellectual capacity develops. Piaget and Vygotsky's theories to be discussed here help us understand how children learn from the media.

Piaget's theories have influenced hugely the way that researchers view children's intellectual development. He suggested that, in infancy and early childhood, children's ways of thinking are qualitatively very different from that of adults. For Piaget, as the brain develops and children gain experience by acting within the world, they move through four stages, which are characterised by distinctively different ways of thinking. Piaget's four stages of development are sensorimotor (0-2 years old), preoperational (2-7 years old), concrete operational (7-11 years

old), and formal operational (11 years old and older). These stages move from making sense of the world through the senses, actions, symbols and concepts, and finally, abstract and logical thoughts (Berk, 2009). In Piaget's theory, children's psychological structures, also called schemas, change with age. Two processes account for the change of schemas within and between stages: adaptation and organization.

Adaptation is a necessary process when building schemas through interaction with the external world. Two complementary activities are involved in adaptation, these are assimilation and accommodation. Assimilation occurs when young children are faced with new objects or events and referred to their own pre-existing cognitive structures in order to make sense of new information. However, if the current structures cannot explain the new information, they are altered to take account of this new challenge. The process of altering pre-existing mental structures is called accommodation. Through assimilation and accommodation, children fit their environment and new information into their mental schemas. They revise incorrect ideas and achieve an equilibration between the internal structure and the experiences of the encounter. As for organization, it is a process that takes place internally. When children form new schemas they rearrange and link with other existing schemas to form a strongly interconnected cognitive system. Gradually, children develop schemas which can be jointly applied to understand the surrounding environment and allow them to effectively describe the world.

While Piaget highlights children's independent efforts in making sense of their world, Vygotsky's perspective, known as socio-cultural theory, emphasises that children's cognitive development is a socially-mediated process, in which children gain their knowledge by interacting with adults or more-expert peers in society. Vygotsky's theory has been widely applied in contemporary education theory and practice. Vygotsky's theory focuses on how cultural values, beliefs, customs and skills are transmitted to the next generation in a social group. Vygotsky believes that children firstly learn culturally-meaningful concepts and activities from adults. Afterwards, they start to guide their own thinking and behaviour by talking to themselves in the way more expert members encourage and guide them. This

process enables them to internalise the ways of thinking of society into their own thoughts and actions. This theory suggests that children are supported through scaffolding to their 'Zone of proximal development'. A zone of proximal development (ZPD) is described as being:

> *'The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers'.*
>
> *(Vygotsky, 1978, p. 86)*

For Vygotsky, adults need to distinguish the gap between what a child can achieve with guidance and their current level of performance in order to use scaffolding to guide to make progress and promote children's cognitive development. In the literature, the ZPD has become synonymous with the term 'scaffolding'. However, the term 'scaffolding' was never used by Vygotsky in his writing. It was introduced by Wood, Bruner, & Ross (1976) and their definition of scaffolding is as followed:

> *'This scaffolding consists essentially of the adult "controlling" those elements of the task that are initially beyond the learner's capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence'.*
>
> *(Wood, et al., 1976, p. 90)*

Scaffolding involves adults adjusting their assistance to a level which is easily comprehended by children and guiding them step by step to acquire a new concept or skill (Berk, 2009). According to Vygotsky (1978), children develop all cognitive skills through social interaction. A child learns a skill in a supportive social context and once the child has mastered the skill, the skill or concept will be internalised. Therefore, this learning can be applied to new contexts.

2.1.3. The conceptual framework for the study

Vygotsky's insightful socio-cultural theory is chosen as the conceptual framework for this study. The adult supports and interacts with the young child in order to maximize a learning opportunity offered by the media. The interactions appeared to scaffold many aspects of development including brain, language, and social-emotional development.

According to Vygotsky (1978), children develop their cognitive skills through social experiences. Based on this theoretical approach, parents can mediate their child's viewing of television by directing their attention to particular content. Therefore, a higher level of appropriate parental scaffolding during television co-viewing should positively influence children's engagement with the programme and learning from the television.

It is now clear that the first few years of life provide the foundation for children to make the most of their potential ability. The enabling environments ensure children learn and develop well. Given what has been discussed about the importance of early learning, how does the media provide opportunities to learn? In what ways can its potential value be enhanced? The following sections will firstly examine the role of the media in young children's lives before moving to other related issues.

2.2. Young children's use of media

Children today are living in a world where the media play an increasingly important role in the lives of the entire family. The exposure of very young children to the media has been a controversial issue in the field. Partly in response to rapid changes in the media environment and its pervasive nature, the American Academy of Pediatrics (AAP), Canadian and Australian Governments have recommended to the parents of preschoolers to limit their young children's screen time (American Academy of Pediatrics, 2010; Australian Government, 2010; Mark S. Tremblay, et al., 2012). For children under the age of 2, it is recommended that there should be no screen time at all. These recommendations are based on two major concerns, the first of which is that numerous studies have shown that using

media at a very young age may cause a range of developmental problems, including poor school performance, bullying, attention deficit, and sleep problems (Christakis & Zimmerman, 2006; Christakis, Zimmerman, DiGiuseppe, & McCarty, 2004; Thakker, Garrison, & Christakis, 2006). The second concern is that time spent on screen media may be displacing other activities which are more important for children's development, such as face-to-face time and quality interaction with parents and playing. Conversely, Karmiloff-Smith (2012) argues that early media exposure can be beneficial for children. Her study indicates that programmes specifically designed for toddlers can be more educational than a book because infants tend to be more attracted to moving rather than still images.

Due to the fact that there is little research on Taiwanese preschool children's media use, this section will highlight the crucial role that the media play in young children's lives, building on mainly the USA data as it is the most available, comprehensive, up-to-date, and detailed (Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011). Similar patterns of children's media use also appear in the UK (Marsh, et al., 2005; Ofcom, 2013b). This section will also describe the factors that are associated with young children's media use, including media rules, the media environment, issues connected with TV and food, and demographic differences. The knowledge of young children's viewing habits and factors that influence children's media use helps researchers to understand how and why young children spend their time in front of screens and if it is of educational value will inform thinking. The literature relating to both the extent and type of media use of Taiwanese young children will be presented separately in the last section of this chapter.

2.2.1. Young children's viewing habits (USA): Frequency and amount

The data regarding young children's frequency and extent of media usage is mostly based on parents' knowledge of their young children's media use.

	0-8 years old	0-1 year old
Percentage who…		
Use screen media	75%	47%
Watch TV every day	65%	37%
Read or are read to every day	58%	44%
Have TV in bedroom	42%	30%
Average time spent on a typical day		
Using screen media (amongst all)	2:16	0:53
Using screen media (amongst those who used it)	2:58	1:54
Listening to music (amongst all)	0:29	0:39
Reading or being read to (amongst all)	0:29	0:23

Table 2.1: Media use amongst US children aged 0-8 and under twos (Source: Rideout & VJR Consulting, 2011). Note: Screen media includes TV, videos/DVDs, video games, or computers.

The latest US national representative survey (Rideout & VJR Consulting, 2011) reported that almost all (98%) children aged 0 to 8 live in a house with at least one television set and 42% of children have a television set in their own bedrooms. On a typical day, 75% of children aged 8 and under, use some form of screen media, including TV, videos/DVDs, video games, or computers. Seventy percent of them watch television, 38% watch videos or DVDs, 17% play computer games, and 17% play console video games. Television continues to dominate young children's media use. About two-thirds (65%) of children in this age range watch television every day. As for time spent on media, children aged 8 and under spend an average of 2 hours and 16 minutes a day using screen media. For children aged 0 to 1, they mostly watch videos and DVDs. Nearly half (47%) of US children under two use screen media on a typical day and 37% of them watch TV at least once a day. For those who watch TV/DVDs, an average of nearly two hours (1:54) is spent in front

of screens. Amongst all children under 2, they spend an average of 53 minutes watching TV/DVDs, 39 minutes listening to music, and 23 minutes reading or being read to a day.

In general, children's television viewing time increases steadily from infancy to age 8, slightly declines when they start to go to school, and tends to increase through late childhood, peaking at the age of 11 or 12 (Huston, Wright, Marquis, & Green, 1999; Roberts, Foehr, & Rideout, 2005). In terms of gender differences in media use, boys and girls tend to use media in similar ways until the age of six with the exception of playing with videogames (Scantlin, 2008). Boys are more likely than girls to have access to, and play, videogames (Anand & Krosnick, 2005; Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011; Roberts, et al., 2005). In terms of television content, it is interesting that boys are more likely to choose male-orientated content than girls are to choose female-orientated content (Luecke-Aleska, Anderson, Collins, & Schmitt, 1995). Possible reasons for this might be that boys are culturally more constrained in traditional gender attributes whilst girls also consider programmes with male characters are generally more exciting and challenging (Hust & Brown, 2008).

Given the fact that using media is one of the main activities children engage within their waking hours, it is thus important to know what are the factors that influence their media use behaviours, and in Taiwan, specifically.

2.2.2. Media environment at home

Children usually develop their media habits by observing the people around them. The media environment at home, e.g. a whole family's media use pattern including the parent's media use habits, importantly shapes young children's TV viewing patterns (Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011). Parental rules about young children's media use also seem to have a direct influence on their television consumption. This section will briefly discuss the relationships between the above factors and young children's actual media use habits.

2.2.2.1. Media use patterns of families

According to the latest US survey (Rideout & VJR Consulting, 2011), nearly four out of ten children aged 0 to 8 live in homes where the television is on for all (10%) or most (29%) of the time, even when there is no one watching it. The report indicates that children who live in heavy TV user households (where the television is on for all or most of the time) are more likely to watch television on a typical day than children who live in households where the television is on only half the time or less. In fact, the former watch almost twice as much TV than the latter (2:11 vs. 1:19 per day). Children from heavy TV user households also tend to begin watching at a younger age and are more likely to watch television every day. They are also less likely to read or be read to every day (Roberts, et al., 2005).

2.2.2.2. Parental media use

In a national survey conducted in 2005 (Rideout & Hamel, 2006), 83% of US parents with children aged 6 months to 6 years said that they spend some time watching television, using a computer, or playing video games at home on a typical day. Amongst those who use screen media, an average of two hours and thirteen minutes were spent on it. Perhaps not surprisingly, the study finds an association between parents' and their child's media use patterns. For example, children whose parents spend 2 hours or more using screen media per day are significantly more likely to watch television than those whose parents spend less than one hour in front of the screens (81% vs. 64%); the former also spends an average of 28 minutes more watching TV a day (1:14 vs. 0:46).

2.2.2.3. Parental rules relating to media use

Parental rules about children's media use is one of the key factors that influence the way in which their children use media. The 2005 US survey (Rideout & Hamel, 2006) found that a large majority (85%) of parents whose preschool children have ever watched television claim that they have rules about what their children can and cannot watch, and 60% of parents say that they have rules about the amount of time their children can spend watching television. Studies indicate that rules about television time are linked with lower levels of viewing. Children of parents

with television time rules spend less time watching television (Rideout & Hamel, 2006; Vandewater, Park, Huang, & Wartella, 2005).

In summary, parent and family's media use pattern influences that of the younger family members. Children not only imitate the adult's media use and behaviours but also learn how to use media by observing the people around them. That is, children learn the nature and value of media (e.g. as a source of knowledge and/or entertainment, using the media actively or passively, and how to spend their spare time) from adults. Adults are important media role models for young children to develop their own attitudes toward the media. Children also learn how to make the best of media from people around them.

2.2.3. Demographic differences in media use

Demographic characteristics-namely family income and parental education- also have an impact on children's media use and behaviour. In general, children from upper-income, more highly educated families tend to spend less time using media than children from lower-income, lower-educated families. The former are also less likely to have a television in their own bedroom (Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011). In a US survey (Rideout & VJR Consulting, 2011), for instance, children from lower-income families spend an average of 47 minutes longer with media than children from upper-income families (3:34 vs. 2:47). In terms of TV in the bedroom, 20% of upper-income children and 64% of lower-income children have a television in their bedroom. This big difference between higher-income/higher-educated parents and lower-income/lower-educated families could probably be due to the fact that the former are reluctant to let their children spend too much time in front of television because they are aware of the importance of stimulation on the brain. They want their children to be active and learning and wish to discourage merely gazing at the screen.

However, Plowman and Stephen (2007) suggest that the use of media can be made more valuable for young children by supportive adults. These researchers introduce the concept of guided interaction in their study of young children's encounters with information and communication technologies (ICT) in pre-school

settings. Guided interaction describes the ways that practitioners can actively support children's experiences with ICT and enhance different types of learning through the use of ICT. The researchers indicate that adults can enhance young children's engagement with ICT through multimodal interactions. That is, children can be supported not only by language but also by gesture and touch. Even though this work focuses on a different medium (computers), and in a in different context (i.e. pre-school settings), it provides the current study insight into the role of adult-child interactions in the context of child's media use.

And interestingly, Plowman, Stephen, & McPake (2010) argue that there is a more complex picture about the relationship between demographic differences and the child's media use habits. They found that children's different patterns of media experience are not divided by the socioeconomic status of their families but are more related to the parents' own experience of media in the workplace or in schools.

Another issue that is related to demographic characteristics is computer access and use. Unequal access to and use of computers between different groups of people has been called the 'digital divide' (Buckingham, 2007; Scantlin, 2008). The digital divide has been particularly linked to a number of demographic and socioeconomic characteristics, including family income, parental education, and race (Calvert, Rideout, Woolard, Barr, & Strouse, 2005; Roberts, et al., 2005). The underlying concern about the digital divide is whether children with no computer and Internet access at home will be disadvantaged particularly in their development of the new literacies in the increasingly wired schools. The latest US survey (Rideout & VJR Consulting, 2011) suggests that the digital divide continues to persist amongst young children. Less than half (48%) of children from low-income families have a computer at home, compared to 91% of those from upper-income families.

In summary, demographic differences have mainly two kinds of impact on young children's media use. Firstly, families of more highly-educated/higher-income parents perhaps are more likely to be aware of the environment children need in

order to develop fully and they tend to be careful about the use of media, which in turn influences the family's and their own media use pattern, and also the rules about their child's media use. Secondly, low-income families are less likely to be able to afford high-technology equipment at home and this might disadvantage their child's learning of new technologies.

2.2.4. TV and meal times

Watching TV whilst eating meals is also a topic that the researcher would like to explore in the present study. In the 2005 US media survey, Rideout & Hamel (2006) found that watching television whilst having meals is common amongst young children. More than half (53%) of children aged 6 and under eat meals or snacks in front of the television. And 30% of children in this age range live in homes in which the television is on all or most of the time during meals. The researchers also found an association between watching TV during meals and children's viewing pattern. For example, children who live in homes where television is on all or most of the time when eating are more likely to watch TV every day and spend more time watching television than those who live in families where the TV is on less often during meals (79% vs. 60%) (1:22 vs. 0:49). Furthermore, a study by Coon, Goldberg, Rogers, & Tucker (2001) also indicates there is an association between watching television during meals and children's dietary patterns. Children from families where television viewing is a part of meal routines consume significantly fewer fruits and vegetables and more pizza, snacks, and soda than those from families where television viewing and eating are two separate activities. There is also concern that watching television during meals can lead to over eating and mindless eating which can eventually cause children to be at the risk of becoming overweight (Boulos, Vikre, Oppenheimer, Chang, & Kanarek, 2012). Whilst watching TV during mealtimes was observed in the US, the present study will explore whether the situation is similar in Taiwan.

In summary, the media is playing an increasingly important role in young children's lives. The pattern of young children's media use is influenced by the media environment at home, parent's media use pattern, and demographic characteristics, etc. It is becoming more and more crucial to understand how and

what young children learn from the media and how the value of using the media can be enhanced. Given that television is still the most popular amongst all media, particularly for very young children, the following sections focus on children's comprehension of and learning from television.

2.3. The task TV viewing presents to the child

Watching television is an activity which requires a level of cognitive maturity, a developed range of concepts and skills, and also a level of life experience in order to access the meaning and learning potential. An individual must pay attention to the content, understand the symbolic system (both the language and pictures which appear in the programme), comprehend the visual and auditory editing techniques used in the production, and also be able to combine the meanings of various aspects of the content into an understandable whole. In fact, watching television is so cognitively demanding that most or all of these skills need be undertaken simultaneously and automatically for the full meaning to be accessed. If one or more of these skills are poorly developed, the meaning of the programme may be compromised. This next section discusses issues how children make sense of a television programme. Three main aspects will be discussed: attention, representation, and the formal features of TV programmes. At the end of the section, a model explaining the processing needed for the reading of printed texts will be used to explain children's processing of televisual texts in order to explore to what extent adults are able to support young children's comprehension of televised information.

2.3.1. Attention

The relationship between visual attention and comprehension of televised content has long been discussed. In the 1970s, the reactive model of television viewing was embraced by television researchers (Anderson & Pugzles Lorch, 1983). It was believed that the more children attended to televised content, the more they should be able to understand. The model has been applied as a production principle for children's educational television programmes. Television producers use salient features, such as special visual effects, sound effects, and rapid character action to ensure high levels of visual attention in the belief that once

children's attention to the screen is guaranteed, their comprehension automatically follows (Lesser, 1974). According to this model, children's attention to television is passively controlled by salient formal features. However, the model was not always supported by the data. For example, Lorch, Anderson, & Levin (1979) tested the relationship between visual attention and comprehension of televised content by creating a viewing situation where half the children had toys and others did not. It was found that although children in the no-toys group attended to twice as much of the programme as those in the toys group, a higher level of attention did not result in better comprehension.

Afterwards, Anderson, Lorch, Field, & Sanders (1981) proposed the comprehensibility hypothesis which suggests that comprehension of the content is the main factor for children's attention to television. The comprehensibility hypothesis was then examined by two studies where *Sesame Street* was used as the source material. In the first study, 3- to 5-year-olds attended most to the parts where dialogue was supported by immediate visual referents, followed by parts with no dialogue at all, the least attention was paid to the parts where dialogue had no links to visual content (e.g. conversation about events which happened earlier in the day). In the second study, the researchers used three techniques to distort the 1-hour shows: random editing, foreign language dubbing, and backward speech dubbing. The segments were made logically inconsistent, difficult to understand, or semantically unintelligible. Visual attention was highest during the normal intact segments, followed by the ones with random editing, the ones with foreign dialogue, the ones with backward dialogue received the least attention. The results of the two studies strongly support the hypothesis that understandable dialogue is key to children's visual attention to a television programme.

In the comprehensibility model, attention is a result of a confluence of factors, including programme comprehensibility, the cognitive developmental level of the child, and programme features (Anderson, et al., 1981; Calvert, Huston, Watkins, & Wright, 1982; Huston, Wright, Rice, Kerkman, & St. Peters, 1990). Therefore, rather than a direct causal relationship, the relationship between attention and comprehension appears to be circular (Krcmar, Grela, & Lin, 2007). That is, initial

attention is needed to ensure comprehension; however, continued comprehension is necessary for further attention to occur. The model assumes that children use their existing cognitive schema as well as programme features to guide their attention to the screen (Anderson & Pugzles Lorch, 1983). It would appear that children pay little attention to a television programme that is incomprehensible or is too easily comprehensible. If the programme is moderately comprehensible, it challenges the viewer to retain attention. The researchers suggested that a sophisticated strategy is developed with children's television viewing experience and that strategy allows them to effectively divide their attention between the television and other activities. Instead of watching passively, children actively pay attention to television when they think they can understand the television programme (Anderson, et al., 1981; Pugzles Lorch, et al., 1979).

2.3.2. Symbol-real world relations

As mentioned, comprehension of televised content is related to the level of the children's attention to television (Pugzles Lorch, et al., 1979). However, the processing of televised material for young children is cognitively demanding. In order to understand images on television, preschoolers must realise that each symbol corresponds to a particular object/state of affairs in everyday life. The major task in understanding the televised content is the transformation of two-dimensional (2D) images and three-dimensional (3D) real objects/situations (Troseth, 2010; Troseth & DeLoache, 1998). Carver, Meltzoff, & Dawson (2006) indicate that children require different levels of cognition to process 2D and 3D information. They use Event-Related Potential (ERP), the measured brain response to stimulus, to demonstrate that 18-month-olds need more time to process 2D images than they require to process 3D real objects.

The abilities required for the 2D to 3D transformation develop at different times during the first two years of life, including 1) be able to perceive depth and dimensions, 2) to recognise objects across different modalities, 3) to understand pictures as symbols that are different from the real world and yet represent or 'stand for' an object or scenario. DeLoache and her colleagues (DeLoache, Pierroutsakos, Uttal, Rosengren, & Gottlieb, 1998), for example, report that 9-

month-olds manually explore the pictures by touching, patting, and rubbing the depicted objects as if they were 3D objects. They even grasped at the pictures trying to pick the depictions off the page. By the time children are 19 months old, their manual manipulation is replaced by pointing to depicted objects. Also, children often looked up to an adult for labelling when pointing to the pictures. The researchers interpret the manual investigation of the 9-month-olds as the exploration of novel and puzzling stimuli, which indicates their uncertainty about the nature of 2D pictures.

DeLoache (1995) has developed a model to account for children's understanding and use of symbols. Symbolic artefacts are social products that were created to facilitate communication between people in a society (Tomasello, 1999). DeLoache defines a symbol as an "entity that someone intends to stand for something other than itself" (DeLoache, 1995). During their development, children learn a variety of symbolic artefacts.

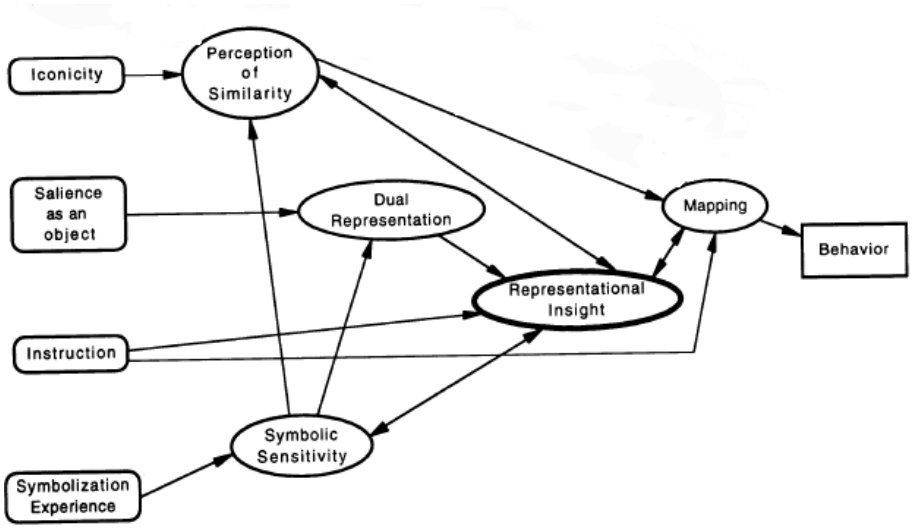


Figure 2.1. Model of children's understanding and use of symbols (Source: DeLoache, 1995:110)

According to her theoretical model (see Figure 2.1), DeLoache (2000) considers that one must firstly have some awareness of the dual reality in symbolic artefacts (i.e. they have both concrete and abstract nature). And one should detect and mentally represent the relationship between the symbol and its referent. The symbol user also has to draw an inference about one based on knowledge of the other, in order to use a symbol such as a picture, map, or model. The attainment of

this insight depends on the interaction of several factors, including the physical similarity between symbol and referent, information provided about the symbol-referent relation, and the level of prior experience the child has had with symbols. Last but not least, the support of knowledgeable people around the child play an important role in children's understanding and use of symbols (Troseth, 2003). For example, in one model task in which children were shown a scale model of a room with a miniature toy in it and children were asked to retrieve the real toy hidden in the corresponding place in the room. The researchers found that 3-year-old children succeed in the task in which the relation between the model and the room was explicitly explained to them, but they perform very poorly when less complete instructions were given (DeLoache, 1989). In addition, adults can help children to link a symbol to its referent and practise the association between symbols and objects in everyday life to develop children's symbolic sensitivity.

To apply DeLoache's model (1995) to the production of TV programmes, the more real-world cues and the less mental transformation involved in using and processing a mediated representation, the less effort will be required to use and the more natural the use will seem. That is, 2D images on the television should be as real as the objects they represent in the 3D real world. The more a symbol resembles its referent, the easier it is to perceive the similarity between the two. Similarly, the pace of the video should be as slow as it happens in the real world. This helps children to relate the video to the real world. Based on this principle, there should not be too many 'cuts' in one scene. When children fail to transfer what they have seen on television into their real lives, video deficit occurs. Video deficit is a phenomenon whereby children are unable to further apply the knowledge that he/she gains from a video presentation to his/her real life (Anderson & Pempek, 2005; Hudson & Sheffield, 1999).

In summary, children who do not have representational insight are not likely to fully understand televised content and unable to link the depicted object on the television with the real object in his/her real life. It is expected that with the support of experienced adults, children can avoid or decrease video deficit effects. Besides 2D and 3D transformation, there are other techniques and effects in

television programmes that children need to understand in order to access televised content.

2.3.3. Production techniques

The grammar and syntax of television which guide viewers' attention and information processing are called formal features. Formal features are the auditory and visual production, along with other editing techniques which characterise the medium, such as zooms, cuts, dissolve, split screens, narratives, dialogues, music, and sound effects (Wright & Huston, 1983). Table 2.2 shows formal features which are widely used in children's programmes.

Category	Definition
Macrolevel	
Action	Gross motor movement through space, including locomotion activities such as walking, running, or riding in vehicles.
Pace	Change of scenes, sets, or characters (unfamiliar or previously shown).
Microlevel-Visual	
Cuts	Instantaneous shifts between cameras.
Pans and trucks	Vertical or horizontal movement of camera.
Zooms	Camera moves continuously in (toward) or out (away from) a scene or object in the scene.
Fades	Picture/scene to black, followed by a different picture/scene.
Dissolves	One picture superimposed on top of another as the visual image changes.
Visual special effects	Visual camera techniques such as freeze frames, special lenses, distorting prisms, slow motion, fast motion, superimposition, trick photography, instant appearances or disappearances.
Microlevel-Audio	
Dialogue	Adult, child, or nonhuman (e.g. animal or robots) speaking to one another.
Narration	Speech from an off-screen person.
Vocalizations	Noises that are not speech.
Music	Prominent foreground music versus background music overlaid with speech.

Laugh track	Sound of laughter from unseen audience.
Singing	Music and language in combination.
Sound effects	Prominent noises.

Table 2.2: Formal features of children's television programmes (Source: Calvert, 1999: 461)

Children need to acquire understanding of these conventions of media in order to fully access the meaning of TV programmes. Some of the special effects are related to children's everyday experiences, such as in-zoom and out-zoom as they move objects close to or further from the eyes, and a cut is similar to closing one's eyes; whereas some techniques do not happen in real life, for example, the flashback and replay. Many of the formal features, such as sound effects and rapid actions are perceptually salient and are likely to elicit attention in infants and very young children (Wright & Huston, 1983). However, the influence of formal features extends beyond sensory level. In the production of programmes for young children, formal features can be used as a tool to highlight learning points for children and direct their attention to the valuable content (Calvert, 1999).

The understanding of formal features is complicated for young children as one formal feature may be used to indicate different meanings in different contexts. For example, a dissolve may represent a shift in time (from now to past) but it may also be a shift in consciousness (from dreaming to being awake). A zoom to a specific face in the crowd may be used to show a character is seeing, but also to suggest that this face will be important later on in the story. The use of threatening music may reflect the feeling of a character, but also suggest danger that the character is not aware of. Children must understand the meaning of the formal features in many different contexts, otherwise they may misinterpret the story (Beentjes, De Koning, & Huysmans, 2001).

Studies suggest that formal production features affect children's comprehension of televised content (see, for example Calvert, 1988). And much evidence has shown that children's understanding of formal features is associated with cognitive maturation and a child's viewing experience (Abelman, 1989; Abelman, 2004;

Acker & Tiemens, 1981; Beentjes, et al., 2001; Calvert, 1988; Calvert, et al., 1982; Lowe & Durkin, 1999; Munk, et al., 2012; Rice, Huston, & Wright, 1986; Wilson, 1991). In the study by Abelman (1989), 3- to 4-year-olds watched a video presentation which showed an in-zoom, an out-zoom, an object getting closer with each cut, and an object getting further away with each cut. The children were asked to indicate if the object was "getting closer", "moving away", or "staying the same" every 5 seconds during the presentation. The findings suggest that children understood zooms better than cuts. Four-year-old children demonstrated a higher level of understanding of both editing techniques than 3-year-olds. In addition, a positive association was found between children's viewing frequency and their ability to comprehend accurately zooms and cuts. Heavier viewers performed better than did lighter viewers, suggesting that viewing experience affords children the opportunity to familiarise themselves with visual formal features on television and to practise their media skills. Calvert (1988) examines a more complex formal feature-flashback. Children from two age groups (kindergarten or Grade 1 vs. Grade 4-5) viewed a television programme containing a flashback depicting events from a much earlier time. The flashback was visually represented with either a dissolve or a cut. Older children were found to be more likely to understand the flashback than the younger children. And children who watched the dissolve version had a better understanding of temporal concepts presented in the flashback than those who watched the cut version.

Furthermore, Acker and Tiemens (1981) map children's comprehension of television editing techniques onto Piaget's cognitive developmental stages. According to Piaget, children aged 2 to 7 are in the pre-operational stage and their capacity to represent their world develops extraordinarily during this stage. In their study, Acker and Tiemens (1981) analogise zoom-in technique to changes in the perceptual dimension of volume or mass in Piaget's conservation tasks. The size of the visual image of an object on television is changed by zooming in or cutting to a close-up without altering the actual size of the object. Children from kindergarten to sixth grade were given a traditional conservation test before viewing. They found that children who were in the second grade or below are more likely to perceive the close-up object as 'growing larger'; whereas children at

fourth grade or above are more likely to see the image as having the same amount of space. In addition, even though there is a strong relationship between children's performance on the traditional conservation task and their understanding of zoom-in or close-up cut, a high percentage of children who were classified as conservers failed to realise the zoom-in and close-up on television. The researchers then suggest that children demonstrate conservation of televised content at a later stage.

2.3.4. A model of children's processing of televised content

Some television researchers have drawn upon the knowledge gained from research into children's making sense of books and print to children's understanding of TV. It is mainly because there are similarities between how children process the two media: both require children's attention, the ability to transform two-dimensional information to the real world, and the application of knowledge of the real world to comprehend the presented content.

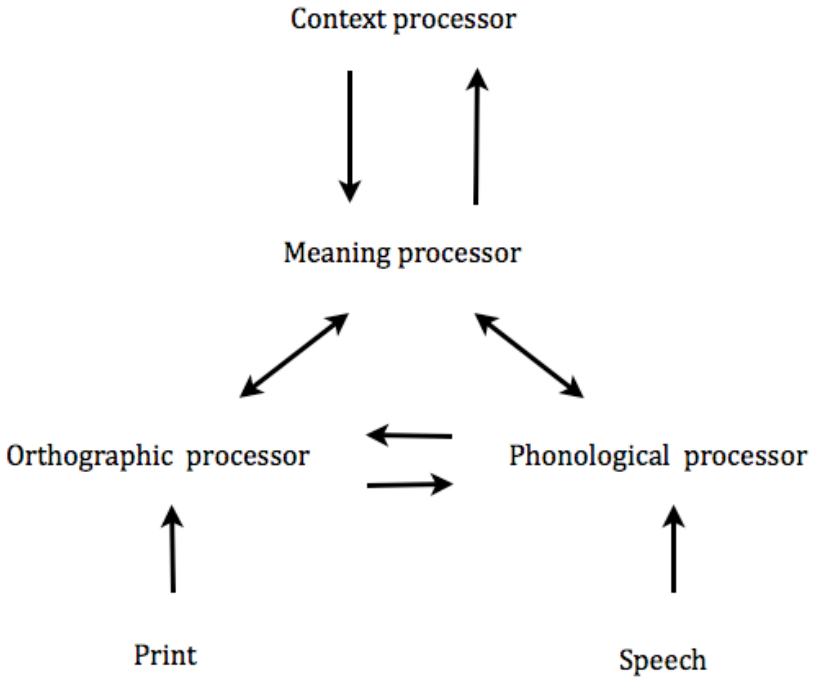


Figure 2.2: Reading print texts (Source: Adams, 1990:158)

Adams (1990) proposed an interactive model (see Figure 2.2), which represents a combination of 'bottom-up' and 'top-down' reading processes (Riley, 1996). She suggests that in order to decode a printed text the visual stimuli of the print are processed together with the sound units of speech but the decoding is informed also by the context of the text. The circular connectivity between orthographic, phonological, and meaning processors are especially important because it ensures that each processor will effectively guide and facilitate the efforts of the others. The context processor serves to construct a contextually appropriate interpretation of the words when the meanings are ambiguous. The accuracy and speed of the recognition of written words depends largely on reader's familiarity with the word in their working vocabulary. When readers encounter a word that they have read many times before, the orthographic processor can recognize the spelling pattern more quickly. The more frequently a written word has been interpreted, the stronger the connection between the word and its meaning, and thus the faster it will be linked in the meaning processor. The more frequently a spelling pattern has been mapped onto a particular pronunciation, the less processing time it requires in the phonological processor.

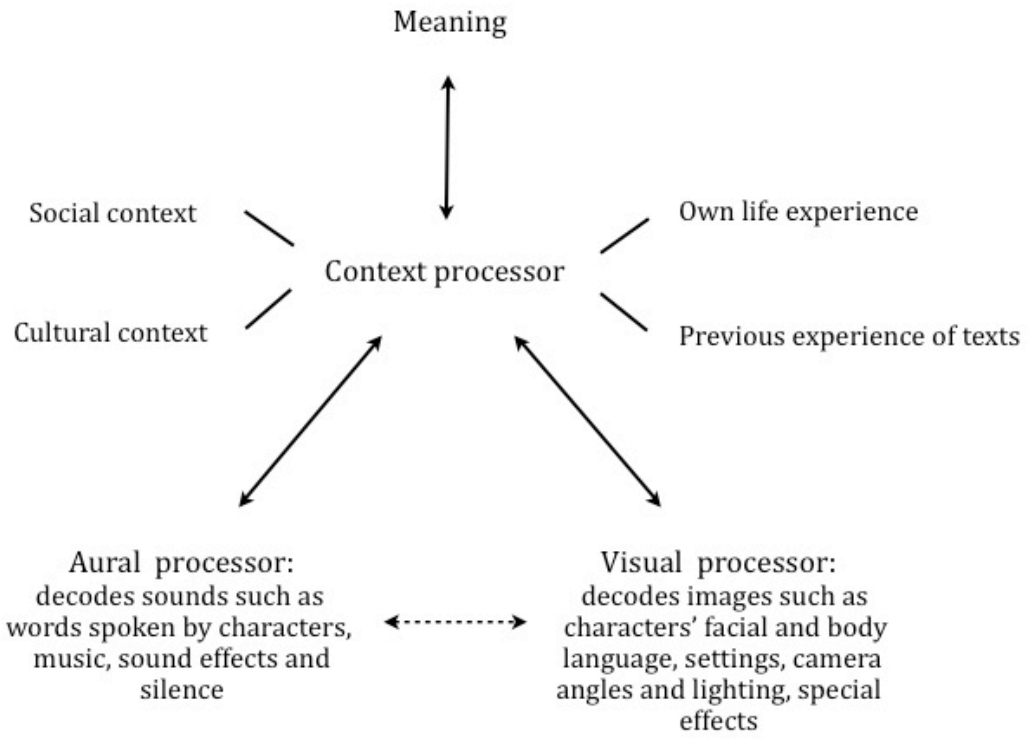


Figure 2.3: Reading televisual texts (Source: Marsh and Millard, 2004:221)

Marsh and Millard (2004) adapted Adams's model to explain the information processing of televisual texts (see Figure 2.3). The researchers suggest that the complex interplay happens in processing written texts also enables the construction of meaning from televisual texts. It is only the decoding systems that are different. Instead of orthographic and phonological processors, the readers of televisual texts use visual and aural processing skills to 'read' the televised content. In addition, televised content is distinct from printed texts as the formal features used in television programmes are screen specific (Salomon & Cohen, 1977). Therefore, apart from understanding the content (e.g. as in book-reading), children will also need to interpret the conventions of the formal features in order to fully comprehend the meaning of the story/programme.

2.3.5. Moderators that enhance children's understanding of televised content

As mentioned above, children's understanding of televised content increases with age and experience. However, there are three moderators that can support the child's cognitive processing of programme content, they are repetition, active co-viewing, and engagement.

Repetition is a simple and inexpensive way to enhance the learning of a programme content. This is partially because comprehension increases across presentations until it finally reaches ceiling level. A study (Crawley, Anderson, Wilder, Williams, & Santomero, 1999) demonstrated that children who viewed *Blue's Clues* for 5 consecutive days showed greater comprehension of, and memory for, the material presented than one-time viewers. In addition, contrary to expectation, the overall visual attention did not decrease as the children watched the same episode repeatedly. In fact, overt audience participation, such as shouting out answers to questions, pointing at the screen, and laughing, greatly increased with repeated viewing. The effect stopped when it finally reached ceiling level. Repetition can also be used to reduce the video deficit effect. Barr, Muentener, Garcia, Fujimoto, & Chávez (2007), for instance, found that infants exhibited the same level of deferred imitation after observing a live and a televised model if the identical information presented on television were doubled.

Television co-viewing is similar to shared book-reading in which parents watch or read with their child. However, due to the different nature of book and television, there are in general two types of television co-viewing: these are active and passive co-viewing (Chakroff & Nathanson, 2008). In active co-viewing (or active mediation), parents scaffold children in order to help them understand programme content; whereas in passive co-viewing, parents watch with their children without any interaction. Active co-viewing is suggested to have particularly positive effects on low-income children's reported enjoyment of the programme, which may have mediated the impact of co-viewing on their comprehension (Salomon, 1977). By means of scaffolding, adults may also enhance the effectiveness of educational television for children by answering questions, drawing attention to important parts of the programme, and extending the lessons presented in the programme. Valkenburg and colleagues (1998) compared passive co-viewing (non-mediation) with more active co-viewing (mediation) during television viewing. It was found that, following the programme, comprehension scores were significantly higher for the active co-viewing group than the passive co-viewing group. In general, the more questions, descriptions, and labels about programme content that are provided by parents, the more young children look at and interact with child-directed programme content. More details about the parental styles of scaffolding during the co-viewing will be discussed in 2.5.2.

Encouraging children's participation is also recommended during viewing. Children's interaction with media content is thought to increase their information processing because of the higher level of active cognitive engagement. Calvert, Strong, Jacobs & Conger (2007) found that children who actively responded to the character understood more of the content, and this strategy can also be used to enhance the effect of pro-social messages (Abelman, 1985; Singer & Singer, 2008). Moreover, parents can also use role-play and verbal labelling to emphasise the key content of the programme. The former is reported to be particularly beneficial for boys and the latter is especially effective for girls. This kind of rehearsal is influential in enhancing programme effects (Friedrich & Stein, 1975).

To summarise the tasks that children encounter to understand and learn from televised content. Initially, children may actively (their own preference) or passively (supported by the formal features or parents) attend to television. Once the child attends to the televised content he/she effectively allocates his/her attention to the content. A programme that is moderately comprehensible challenges the child to further attention. Once the child attends to the content, he/she needs to decode the aural and visual input and link them with contextual appropriate meanings. In order to obtain meaning, children need to have representational insight to map the two-dimensional picture (symbol) on the screen to the object (its referent) in the three-dimensional real world. Also, children need to interpret the meaning of the formal features accurately in order to get a clear idea of the story meaning. In general, children's understanding of televised content grows with age and experience. Adults play an important role in children's comprehension of televised content. Repetition, parent's active co-viewing, and child's engagement can increase rehearsal and foster children's learning. The present study hypothesises that parents who actively co-view with their child and use a higher level of scaffolding, are most likely to elicit higher levels of child's engagement than low-scaffolding parents. The next section will focus on what children can potentially learn from watching television.

2.4. Young children's learning from TV

The media enables children to gain access to a wider world and learn without having to actually experience events in real life, in other words they are able to learn vicariously. In this way, young children acquire knowledge through viewing television. Based on studies conducted over decades, some important evidence has been found about the impact of the media on children's learning, such as enhanced academic learning, pro-social behaviour, imaginative play, portrayals, and less positively, aggressive behaviour.

2.4.1. Academic learning

Sesame Street, the most widely-viewed children's programme in the world (Sesame Workshop, 2009), was created to offer disadvantaged children learning opportunities. It applies visual and sound effects to emphasise basic literacy and

numeracy concepts, and uses human characters and puppets to teach children general knowledge, to promote social and emotional development, and social skills. The friendly characters and playful style promotes children's interest to learn from the programmes. Evidence has shown that television viewing of educational programmes is positively associated with gains in early skills in literacy and mathematics in elementary school (Wright, et al., 2001). A longitudinal study (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001) further highlights the link between the pre-school viewing of educational programmes and achievements in high school. Adolescents who frequently watched *Sesame Street* and similar educational programmes during their pre-school period achieved higher grades, read more leisure books, and have higher levels of creativity in high school. In addition, children who regularly watch *Blue's Clues* also demonstrate a greater problem-solving ability (Crawley, et al., 1999). However, it is important to note that not all educational programmes are suitable for all children at all times. For example, the benefits of *Sesame Street* were only found in children who were in its target age range, i.e, between 2-5 years old (Rice, Huston, Truglio, & Wright, 1990; Wright, et al., 2001). Research demonstrates the importance of developmental appropriateness in assessing the impact of educational television which should be noted by both media producers and parents (Kirkorian & Anderson, 2008).

2.4.2. Pro-social behaviours

In the field of media research, pro-social behaviour is usually defined as demonstrating positive inter-personal attitudes and behaviour, including sharing, helpfulness, and turn-taking (Mares, Palmer, & Sullivan, 2008). Researchers have found that some pro-social content on television programmes can affect children's actual thoughts and behaviour. Friedrich & Stein, for example, conducted a series of studies on the pro-social effects of viewing *Mister Rogers' Neighbourhood* (Friedrich & Stein, 1973, 1975; Friedrich-Cofer, Huston-Stein, Kipnis, Susman, & Clewett, 1979). They found that children who watched *Mister Rogers' Neighbourhood* demonstrated several positive changes compared with children who did not watch it. In general, children who watched the programme were more likely to obey rules, to delay gratification without protest, and they persisted

longer when performing tasks. The researchers further pointed out that extra training or materials, such as role playing, verbal labelling, and reading pro-social books help to reinforce the effects of pro-social programmes amongst children (Friedrich & Stein, 1975; Friedrich-Cofer, et al., 1979). Gorn and colleagues (1976) also indicate that, after viewing a programme of people playing with others from different racial groups, children's willingness to choose playmates from other ethnic groups was increased.

2.4.3. Imaginative play

Psychologists maintain that the children's use of imagination in their play is crucial for cognitive development, since it shapes children's interaction with their environment. Evidence suggests that television content, such as *Mister Rogers* which places strong emphasis on pretend play, leads children to develop more elaborate imaginative play (Singer & Singer, 1976; Tower, Singer, Singer, & Biggs, 1979). One study (Huston-Stein, Fox, Greer, Watkins, & Whitaker, 1981) also found that children who watched low action/low violence programmes were observed to increase their imaginative play, whereas a considerable decrease was seen in the imaginative play of high action/high violence groups. Thus, it is suggested that it is not the presence or absence of television, but the nature of the content that the children watch, which is crucial to encourage fantasy play. Singer & Singer (1976) further contended that children learn ideas best when a concerned adult mediates the viewing. Their study divided participants into three groups. A control group watched no television and was led by a trained adult in an open-ended group play activity. The first experimental group watched *Mr. Rogers,* while the second experimental group not only watched the programme, but was also accompanied by an adult, who occasionally drew the children's attention to specific content. The results showed that the first experimental group increased their imaginative play compared with the control group. Moreover, the second experimental group demonstrated an even greater increase in the imaginativeness of play.

2.4.4. Social learning from media portrayals

According to social cognitive theory (Bandura, 2001), the media contributes to children's learning of value systems and rules of conduct for society by providing

models, particularly when the models are attractive and similar to the child (i.e. attention and identification). Media messages can be seen to be a set of social instructions, which provide children with the scope of what the world is like, how to behave, and how to interact with others in society (Greenberg & Mastro, 2008). Gender role, for example, is one of the portrayals children may learn from television. Traditionally, young children learn the norms and expectations of males and females by observing family members' behaviour and interaction. However, in recent decades, children have also begun to learn from the 'early window' on the world provided by television. Children usually internalise what they have learned into notions about each gender, and then reproduce it in everyday life. Finally, children construct their gender identities, which are made up of various attributes and schemas, and then display them in different social settings. This is an ongoing and cyclical process (Huston, et al., 1999).

Hust and Brown (2008) indicated themes that are prevalent in the content of US children and adolescents' media programmes: 1) It is a man's world. In most children and adolescents' media, men appear twice as much as women, even though women outnumber men in real life. 2) Men are strong and muscular, while women are slim and sexy. 3) Men are serious and powerful, and women are emotional and passive. 4) Heterosexuality prevails. Homosexuality is rarely presented in mainstream media, and scholars are concerned that this lack of representation may result in stigmatisation, as well as young people being reluctant to acknowledge their sexual orientation (Fejes & Petrich, 1993; Gross, 2001). 5) A women's place is still in the home. It seems that the media continue to portray males and females in traditional stereotypical ways, which will influence children's gender schema and limit their expectation of what is valued and possible as a male or female in their culture. Ultimately, it will influence children's self-perception and motivation to achieve. Therefore, it is crucial that television programmes capture and transmit social phenomena and values as coherently as they are in reality and according to what our children are expected to learn and become.

2.4.5. Aggressive behaviours

Many child-directed programmes contain violent scenes and the concern about whether children would apply what they see on television to reality was raised half a century ago. Since then, a wide variety of research has confirmed that TV violence increases the likelihood of verbally and physically-aggressive behaviour, and of hostile thoughts and emotions (Anderson, et al., 2003; Comstock & Scharrer, 2006). The classic experiments conducted in the 1960s were the first to point out the link between TV violence and children's aggressive behaviour. Children aged 3 to 5 years old were grouped into aggressive and non-aggressive video groups. The results showed that children who were exposed to aggressive video clips reproduced a great deal of physical and verbal aggressive behaviour resembling that in the clip, as opposed to the children exposed to non-aggressive clips (Bandura, Ross, & Ross, 1961; Bandura, Ross, & Ross, 1963a, 1963b). A study conducted by Steuer, Applefield, & Smith (1971) also indicated that children who viewed aggressive television programmes demonstrated significantly increased interpersonal aggression compared to their prior 10-day baseline behaviour. However, Friedrich & Stein (1973) maintained that there was a more neutral explanation of the link between violent TV content and aggression. They found that, when children with high interpersonal aggression were exposed to violent content, this led to higher levels of aggression than were shown in similar children who viewed neutral programmes. However, this pattern did not appear in a group with low levels of initial aggression. This result suggests that TV violence may raise the expression of violence in children with existing impulses, rather than equally affecting all children.

In summary, it would appear that TV on the whole has a potentially positive impact on young children. Children are able to learn different aspects of knowledge, skills, and behaviour from television. On the whole, it seems that what children watch on the screen, e.g. high quality, age-appropriate programmes, and how they use the media content (actively or passively), are the keys for their learning from media. Parents thus play a crucial role in helping young children to select content that is appropriate and beneficial to them. By co-viewing with their child, parents not only prevent children from watching detrimental content but

also can reinforce children's learning from content that will support their cognitive development. Parents can valuably guide their child's attention to meaningful content during the co-viewing and use activities, e.g. pretend-play, to strengthen the effect of a television programme after their child's viewing. In the next section, different parental scaffolding styles during parent-child book-reading and TV viewing will be discussed.

2.5. Scaffolding of learning using vehicles such as books or TV

Due to the shared features between the processing required in order to access meaning of books and TV programmes, researchers have used their knowledge of book-reading to explore the issues with television co-viewing. This section will first briefly describe different types of scaffolding behaviour parents can potentially offer and the positive effect it can have on children's learning from books and television. The findings of the REPEY project (Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002) and especially the concept of sustained shared thinking, will also be discussed at the end of this section in order to shed light on our understanding of how adults can effectively support children's learning.

2.5.1. Parent-child joint book-reading

Parent-child joint book-reading has been widely studied for decades as a powerful support of early literacy development. Evidence has shown that parents play a crucial role in young children's early exploration of books (Heath, 1982). Parental book-reading styles change between different adults and with the child's age. The quality/style of parental scaffolding during the book-reading directly influences the effectiveness of child's learning from books and their reading ability later.

2.5.1.1. Parental book-reading styles

In 1980s, researchers tried to find patterns of parental support during the parent-child joint book-reading. Those studies usually used a cross-sectional design. They audiotape or/and videotape the book-reading sessions and use cluster analysis to see whether there are patterns within and between the groups.

Ninio (1980) identifies three dyadic interaction styles between mothers and their infants (17-22 months) during picture-book reading sessions, namely, label-elicitors, gesture-elicitors, and labelling mothers. Label-elicitors use "what" questions and provide confirmation following infants' responses. Gesture-elicitors use "where" questions and infants respond using a gesture instead of providing a verbal response. Labelling mothers focus on giving labels and, in general do not expect the child to participate.

A number of following studies confirm the two main types of parental book reading styles with young children: high-level scaffolding and low-level scaffolding (Britto, Brooks-Gunn, & Griffin, 2006; Haden, Reese, & Fivush, 1996; Reese, Cox, Harte, & McAnally, 2003; Sigel, 1982). High-level scaffolding parents tend to use high level distancing strategies which encourage children to think beyond the information available in the book. The parents focus on understanding the meaning of the story, provide extra-textual comments and give more positive feedback. They also tend to link the reading with the child's experience. On the other hand, low-level scaffolding parents focus most of their conversations with the child on reading the text. They name characters, describe pictures, give labelling, and generally discourage interaction (Haden, et al., 1996; Heath, 1982; Reese, et al., 2003; Sigel, 1982).

Ninio (1980) further points out that lower-class mothers were less likely than middle-class mothers to engage in a number of potentially instructive behaviours during story time. To be more specific, middle-class parents tend to talk to children with 'book language' when they are talking about the books. They tend to be able to model the language that the book is presenting so the child gets used to the written language in books and thus their children have the advantage when learning to read in school settings (Britto, Fuligni, & Brooks-Gunn, 2002; Brooks-Gunn & Markman, 2005; Hoff, 2003; Vernon-Feagans, Hammer, Miccio, & Manlove, 2001). To link the above literature with our study, it is possible to compare parental TV co-viewing scaffolding styles across family backgrounds, e.g. social and economic status, and parents' education levels.

2.5.1.2. Parental book-reading styles and children's learning from books

While Ninio (1980) found that the children of the label-elicitors acquired the greatest amount of vocabulary; Sigel (1982) argues that parental use of high-level distancing, in which parents extend the texts to a child's experience, positively relates to children's skill development, especially their representational abilities. Many researchers also suggest that parent-child shared book-reading is associated with language skills, reading ability, and school achievement (Britto, et al., 2002; Brooks-Gunn & Markman, 2005; Bus, van IJzendoorn, & Pellegrini, 1995; Ewers & Brownson, 1999; Hoff, 2003; Senechal & Lefevre, 2001; Vernon-Feagans, et al., 2001; Whitehurst, et al., 1988). Britto, Brooks-Gunn, & Griffin (2006), for example, link reading patterns to children's language acquisition and indicate that children of high-scaffold parents spoke more words during book reading and demonstrated a higher expressive use of language skills than the children of low-scaffold parents. The study concluded that mothers who treated book-reading interaction as an opportunity to engage in conversation with their children beyond the pages of the book tended to use language, and extended their child's participation in the activity, compared to mothers who limited the interaction to the pages of the book.

Another study (Whitehurst, et al., 1988) used comparison groups to demonstrate the association between parental mediation during book reading and a child's language acquisition. In the study, the experimental-group parents were instructed to increase the frequency of open-ended questions and to respond appropriately to their children's attempts in answering those questions, and decrease the rate of straight reading and questions which could be answered by pointing. Parents also received instructions to repeat, expand, and recast the child's speech more often, and to provide praise and corrective feedback contingent on the child's speech and they also encourage the child to talk about visual materials, such as pictures. These instructions aimed to increase the child's spontaneous imitation and spontaneous production. In addition, the mother's book-reading skills and responses should show progressive changes which were sensitive to the child's developing abilities. The study demonstrated that a simple intervention (less than an hour of training) could lead to appreciable effects on language development, including higher scores in expressive language ability, greater mean length of utterance, higher frequency

of phrases, and lower frequency of single words, compared to the children in the control group. They emphasise the key role played by parents in book reading and the importance of giving children active responses during book-reading sessions. The contingent parental speech in the form of expansion and recast is believed to provide ideal opportunities for children to contrast their own syntactic strings with those of their parents, and confirms that corrective feedback provides important motivational and informational functions for the child.

2.5.1.3. Book-reading style changes over child's developmental stage

Based on Vygotsky's (1978) notion of the zone of proximal development, the joint book-reading session has been used to examine children's internalisation of adult-provided learning strategies, or the extent to which children move from being guided by others to solve the problem independently. It appears that as children develop, adults' scaffolding behaviour diminishes; the children themselves assume greater responsibility for tasks. This developing ability of children to guide their own behaviour may be the result of them gradually internalising strategies learned in adult-child dialogues (Pellegrini & Brody, 1985).

It has been shown that mothers provide younger children with more support than they do older children in a learning situation (DeLoache, 1983) and the speech directed by parents to their young children during book reading changes with the age and linguistic sophistication of the child (Whitehurst, et al., 1988). For example, parents provide younger children with labels for pictures in a book-reading task, but may expect older children to generate the label themselves. DeLoache's (1983) cross-sectional study of mothers' reading to children (17-38 months of age) found that the mothers of the youngest children were the most directive: they pointed to and labelled objects for children. Mothers of the middle group were less directive, and children were given a more active role in reading. Mothers of the oldest children were the least directive and they related stories to children's experience. Wheeler (1983) also found that mothers of children aged 3 and 4 often ask questions which go beyond the text in the book and extend the interaction to the children's experience, whereas mothers of 1-year-olds focus on the names of individual objects in the book. The above evidence shows that, as

children developed, so did the task demands parents made on them. Therefore, parents' interaction styles with their children during joint book-reading are closely related to their children's cognitive development (Hess & Shipman, 1965; Schachter, 1979; Sigel & McGillicuddy-DeLisi, 1984).

In summary, it is amazing that parents know their child's need for learning so well and they provide exact scaffolding to support their child's understanding. Parents adjust their book-reading strategies to their children's level of competence as well as age. Parents tend to be more directive and actively provide more information to younger children, whereas they tend to become more demanding and expect children to produce thoughts and labelling as they mature. The present study hypothesises that parents will show different patterns of scaffolding behaviours which correspond to their child's developmental stage.

2.5.2. Television viewing styles and their effects on learning

Researchers of parent-child co-viewing of television follow the path of joint book-reading to explore whether there are different scaffolding patterns similar to those which occur during joint book-reading sessions and to explore the effect of these different patterns on a child's learning from TV. Barr, Zack, Muentener, & Garcia (2008), for example, investigated the association between parental scaffolding styles during co-viewing of TV and children's attention to the programme content. The researchers played clips of DVDs targeting infants and videotaped the parent-child interactions during viewing. The children were aged 21 to 35 months old. Similar to previous research on book-reading, three clusters of parental scaffolding pattern were found in the study: 1) Low scaffolding is characterised by using low questions, labels or descriptions with a high proportion of verbalization unrelated to media contents; 2) Medium-scaffold parents tend to use higher questions, labels or descriptions; 3) High scaffolding is featured by the greatest number of questions, labels or descriptions with the lowest proportion of verbalization unrelated to media contents. Specifically, infants in the low-scaffold group spent a significantly lower percentage of time viewing than infants in high- and medium-scaffold groups and the former responded less to the media content. The study

demonstrates that parents use the similar type of verbalisations during television viewing as they do in parent-child book reading.

In Calvert, Strong, Jacobs, & Conger's study (2007), they explore young children's interaction and participation in learning from an animated educational television programme. *Dora, the Explorer* was used as the material and four conditions were created for comparison. An adult sat next to the child in all conditions except the *Control* condition. In the *Control* condition, the child viewed with the adult who was in the back of the room. In the *Observation* group, the child viewed beside the adult. In the *Participation* group, the adult co-viewer participated at Dora's requests. In the *Interaction* condition, 9 targeted programme points were created and the children had to use a computer mouse to make correct decisions for the programme to continue. The results indicate that children in the participation and interaction conditions were more engaged with the content than those in the control or observation conditions. And children who actively engaged with the programme were more likely to understand the important programme content than were those who simply observed it. This important principle is adopted for the present study: in order for children to learn from the content, they need to be actively engaged with the programme.

2.5.3. Effective teaching and learning

The active engagement of children has also been recognised for effective pedagogy in the early years (Dowling, 2006; Siraj-Blatchford, et al., 2002). It is thought that the genuine intellectual growth and progress are more likely to happen when children actively engaged, through making decisions, and offering their views rather than simply knowing about things. The more children are motivated and challenged, the more likely it is that they will develop intellectually.

The Effective Provision of Preschool Education (EPPE) and Researching Effective Pedagogy in the Early Years (REPEY) projects suggest that positive learning outcomes (in terms of intellectual, social and dispositional outcomes) for children are linked to the quality and nature of adult-child interactions. The team found that one characteristic of high quality interaction was 'sustained shared thinking' and

open-ended questioning to extend children's thinking (Siraj-Blatchford & Sylva, 2004; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004).

Sustained Shared Thinking (SST) is defined in the EPPE and REPEY projects as 'an interaction where two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative' (Siraj-Blatchford & Sylva, 2004, p. 718). The most important thing is the way that the knowledgeable adult talks to the child and the skills they have to 'co-construct' with the child. The idea of 'co-construction' is emphasised in children's acquisition of knowledge…

> *'If we consider learning to be the result of a process of cognitive* ***construction,*** *this will only be achieved when the child is motivated and* ***involved****, and it seems entirely consistent to treat the part played by the effective educator in precisely the same way. The cognitive* ***construction*** *in this case would be mutual where each party engages with the understanding of the other and learning is achieved through a process of reflexive "co-construction". A necessary condition for this would be that both parties were* ***involved****, and, for the resultant learning to be worthwhile, that the content should be in some way* ***instructive****' (authors' emphases, Siraj-Blatchford & Sylva, 2004, p. 720)*

The REPEY study has shown that the most effective settings provide the highest proportion of SST interactions, suggesting that a feature of the 'excellent' settings which most successfully promote children's learning is through conversations in which the adult and child co-construct thinking. However, it needs to be known that while it was found that the most effective settings encourage SST, it appears that this does not occur very frequently. But children's thinking was extended when it did occur.

Last but not least, REPEY study suggests these settings which provide more 'responsive teaching', a state that occurs when a sharing of purpose between child

and adult, is established within a joint activity. To achieve this, the adults must have a good understanding of the child's cognitive, cultural, and social perspective so that they can 'build bridges' between what the child knows and what he/she is capable of learning.

To bring the literature about parent-child interaction during the joint book-reading and television co-viewing together, the present study hypothesises that there will be different patterns of parental scaffolding during the TV co-viewing and that a higher level of parental scaffolding style in which parents not only talk to their child about the programme but also extend the content to the child's experience will elicit higher levels of engagement within the child. In addition, based on the concept of sustained shared thinking from the REPEY project, it was also predicted that the SST is more likely to happen in the interactions between high-scaffold parents and their child.

2.6. Related research in Taiwan

There has been little investigation about media use focusing on children under six in Taiwan, thus this section will outline the situation based on limited studies. This section will also describe the research of television co-viewing styles in Taiwan.

2.6.1. Young children's media use in Taiwan

In Taiwan, the most frequently-used media by children is television. A television set is placed in the centre of the living room in almost all households. The television is on for an average of 7 hours on a typical day (吳知賢, 1998). This pervasive use of media in families enables children to access and acquire the capacity to use it at a very young age.

Most studies of children's media use in Taiwan focus on children of elementary school age (7-12 years) (Child Welfare League Foundation, 2004, 2005; Lee, 2006; Liaw, 1995; Tsai, 2000; Wang, 1997; Yang, 2004; 吳翠珍, 1998, 2008, 2009). Little research has been conducted on exploring the nature of media use of young children, children aged 6 and under, in Taiwan. Parent-child co-viewing processes and interaction, children's interpretation of programmes, and media literacy are

usually the focus of media research targeted on this age group in Taiwan. In the last decade, only three studies covered the investigation of the media use of young Taiwanese children (Chien, 2002; Child Welfare League Foundation, 2010; Lee, 2004). The three studies provide a general understanding about young children's media use in Taiwan. The findings will be selectively presented below.

An online survey conducted by the Child Welfare League Foundation, R. O. C. (2010) indicated that 42% of Taiwanese pre-schooler parents report that watching TV is the most frequent parent-child activity and nearly 70% of pre-schoolers live in households with two TV sets (Lee, 2004). About 40% of children watch more than 1 hour and nearly 30% watch more than 2 hours per day (Child Welfare League Foundation, 2010). Another study reports that about 50% of pre-schoolers spend more than 2 hours watching TV on weekdays, and 71% at weekends (Lee, 2004). Approximately 80% of young children watch TV every day (Chien, 2002). And the 'after school, before dinner' time is the most popular time for watching TV (Lee, 2004). In addition, young children also tend to spend more time watching TV at weekends. For example, only 3.9% watch for more than 4 hours on a weekday, whilst 21.2% of children spend more than 4 hours watching at weekends (Chien, 2002). In particular, about 50% of parents of children aged 2 and under allow their children to watch television and this usually occurs when young children are in the same room as their caregivers are watching their own programmes (Child Welfare League Foundation, 2010). In terms of co-viewing, about 60% of parents claim that they co-view with their children (Chien, 2002). However, 15% of parents admitted that they do not pay much attention to how much time their children spend watching television (Child Welfare League Foundation, 2010).

As for media related consumption, 84.9% of parents buy educational DVDs for their children and 90% of them believe that educational DVDs help their children's learning. Parents spend about £70 on DVDs, £56 on children's books, and £57 on toys annually (Child Welfare League Foundation, 2010).

In summary, watching television is the main activity Taiwanese young children engage in after school and they spend more time watching at weekends than on

weekdays. The three studies provided a general understanding of Taiwanese young children's media use. However, there is a need for an up-to-date, more comprehensive, and well-designed study covering various media in young children's lives, for the following reasons: 1) Previous studies tended to gather information about the amount of time spent on media by asking participants to respond to a Likert-type scale based on hours rather than asking them the exact number of hours (Chien, 2002; Child Welfare League Foundation, 2010; Lee, 2004). This sometimes resulted in missing categories (Lee, 2004) or produced scales that were too wide (e.g. 1-4 hours) (Chien, 2002; Lee, 2004). 2) Data were collected mainly in Taipei City, the capital of Taiwan, less information is provided about young children's media use in other cities and counties. 3) The above studies only focus on television, and do not include the impact of other media. There is little knowledge about how other types of media have been used and the relationships between children's use of different media. 4) The definitions of watching and co-viewing are absent or blurred in previous studies. Specifically, programmes designed for adults and children should be separated, since different content creates different patterns of viewing/co-viewing and different impacts to learning.

2.6.2. Television co-viewing styles in Taiwan

Different patterns of parent-child television co-viewing have been found in Taiwan. While the related studies in the Western counties use levels of scaffolding as the criteria to explain different parental styles, Taiwanese studies attribute the differences to the different type of roles parents play during the co-viewing. Generally speaking, studies (Hong, 2008; Su, 2010) have found three types of parent-child co-viewing: 1) Teacher-student type: this type of parent tends to use television as an educational tool, the interactions between child and parent during the co-viewing are like teacher and student. The parents provide instructive mediation. For example, they use the material to guide and integrate particular knowledge, inspire their children's thinking, and at the same time, enrich the parent-child relationship. The parents also expand the media content to the child's everyday experience and/or guide the child to understand the feelings of the characters by asking questions. At the end of the programmes or after the programmes, parents usually discuss the content with their children once again to

reinforce their learning. 2) Peer type: the parents co-view with their children by being by their side, providing empathy, and adapting to the child's way of thinking. Parents and children interact like friends. They discuss the content and characters freely. There is no clear educational comment; parents and children only exchange their own thoughts about the content. 3) Parallel type: the parents co-view with their children without any content-related interaction. They are together in the same room, watching the same programme, but watch it independently. On the whole, the findings of parent-child television co-viewing in Taiwan are similar to those of Barr et al.'s (2008), that parents co-view with their children with high- or low-scaffolding behaviours.

2.7. Research questions

Given the literature on learning in early childhood and the importance, at this point in time, of the role that the media play in young children's lives, and especially the dominance of TV in Taiwan has been discussed. Whilst the media use of young children has been paid much attention in Western countries for decades, most investigations of children's media usage in Taiwan was targeted at older children, e.g. primary school students and adolescents. There is little systematic investigation on the media use of children under 6. Also, studies of Taiwanese children's media use do not provide a great deal of information about their use of a wide range of media, including television, videos, and computers. Thus, the role that media play in young children's lives in Taiwan is unclear. In addition, whilst programmes designed for young children usually encourage parents to co-view with their children, there has been little research about how precisely programmes are being co-viewed by children and parents currently. These issues are the starting point for this study. The present study comprises two phases. The research questions are as followed:

Phase 1 research question

What is the type, range, and pattern of use of digital media by young Taiwanese children (6-72 months olds)?

Phase 2 research questions

1. How do adults support children's viewing of TV?
2. If they do, what types of scaffold do they use and what are the characteristics of each type of scaffolding?
3. What is the relationship between parental scaffolding patterns and children's engagement?
4. Do some viewing contexts appear to make patterns of co-viewing more successful?
5. Do different educational programmes elicit different co-viewing behaviours?

The investigation in Phase 1 will provide statistical information about the Taiwanese context in terms of amount, frequency, and types of media use, in order to situate the work. Phase 2 will explore in-depth the nature of co-viewing. As has been stated, Vygotsky's socio-cultural theory has been taken as the underpinning conceptual and theoretical framework for the study. Based on this theory, it is argued that young children become competent in their media use and are able to learn from it by being offered opportunity to do so in their home environment and if they are supported by the adults closest to them. Adults are able to mediate their child's viewing by guiding their attention to the learning opportunities of the programme and can potentially strengthen its educational value through appropriate scaffolding.

Chapter 3

Methodology

Introduction

This chapter outlines the methodological decisions and research design of the two phases of the study. It describes the research paradigm and epistemology used to guide the exploration of young children's media use in Taiwan and the ways that parents support their child's viewing of two educational television programmes. Also, the relationship between parental scaffolding patterns and the child's engagement with the content were explored. This chapter explains the methods adopted and it includes a description of the research procedures followed during the fieldwork with reference to ethical considerations, as well as an explanation of the proposed data analysis.

3.1. Research Paradigm

The present study is located within a social constructivism epistemological paradigm with pragmatic stances and a mixed-methods design. In social constructivism, culture and context are important factors influencing an individual's understanding of what is happening in society. Based on this understanding the individuals construct their own knowledge about the world. Social constructivism focuses on the individual's learning that takes place through interactions within a social context. This perspective is closely related to many contemporary theories, most notably the developmental theory of Vygotsky. According to Vygotsky (1978), children develop their cognitive skills through social experiences, in which children gain their knowledge by interacting with adults or more-expert peers in society. Specifically, as soon as a child has mastered a skill learned in a supportive social milieu, the skill will be internalized, therefore enabling the child to apply the skill in new contexts. This insightful perspective proposed by Vygotsky is known as socio-cultural theory. And, as was mentioned in Chapter 2, it was chosen as the conceptual framework for this study. Based on this epistemological paradigm, this study aimed to show that parents can support their

child's engagement with televised content by providing high levels of appropriate scaffolding during the co-viewing.

For the purpose of this study, a pragmatic stance was chosen. Pragmatists believe that reality is multiple and constructed and they advocate to 'use whatever philosophical or methodological approach works best for a particular research problem at issue' (Robson, 2002, p. 43). Following this stance hence leads to mixed-method studies where qualitative and quantitative approaches are used side by side. The first phase of this study followed a quantitative approach. An online survey was used in Phase 1 to investigate the scene since there were no up to date statistics for Taiwan in order to situate the work. Phase 2 used a mainly qualitative approach, where the mixed-methods design was embedded in a case study methodology. The research design for Phase 2 was multiple case studies. The use of case study methodology provide an in-depth understanding of the issue of how parents support their preschoolers during television viewing and why they behave in that way. In addition, Phase 2 was coping with the real-life situation, there were many more variables of interest. The main characteristic of case study methodology, i.e. multiple types of evidence, allows the richness of the parent-child interactions to be observed, and whilst retaining the holistic and meaningful features of complex real-life events (Yin, 2009).

The aim of Phase 2 was to carefully observe, explore, and explain the association between parents' scaffolding behaviours and children's engagement with two educational TV programmes. In order to do so, Phase 2 used direct observation, psychological testing, interviews, field notes, questionnaire survey, audio and video recordings, and a research diary. The qualitative data provided a detailed understanding of precisely how parents co-view with their children in great depth; and the quantitative data, e.g. questionnaire survey, provided a general understanding of the patterns of children's media use at home and their media environment. The case study methodology allows the triangulation of data sources and perspectives of the same data set to be established (Patton, 2002). Using the triangulation, the relationship between the performed behaviour and other factors such as the media environment at home, parents' attitudes to media, parents' own

media use and habits, family background, etc. were linked together to provide a full picture of 'how' and 'why' the behaviours occur.

3.2. Phase 1 of the study

As mentioned in Chapter 2, there are a range of opinions regarding young children's use of media. Whilst the issues about children of 6 and under and their media use have been paid much attention in the past two decades in Western countries, there has been no systematic investigation on the media use of this age group in Taiwan. Thus, the first phase of the study aimed to investigate the media use of children aged 6 months to 6 years in Taiwan. The results gathered from Phase 1 will provide a basis for the second phase of the study.

This phase was exploratory and sought to provide the information on young children's media use habits in Taiwan. An online survey was conducted with Taiwanese parents of children aged between 6 months to 6 years old. Young children's media use habits at home, which include the media type, frequency, and amount, as well as the home media environment were investigated.

3.2.1. Overall research design of Phase 1

In order to answer the research questions in Phase 1, the study conducted a parents' online survey. This phase of the study adopted the influential and extensive Kaiser Family Foundation's (KFF) survey in 2005 (Rideout & Hamel, 2006) and it was adapted for both the sample and the purpose of this study. The KFF 2005 survey was a US nationally representative, random-digit-dial telephone survey of 1,051 parents with children aged between 6 months to 6 years old. The most recent US national media survey on young children was conducted in 2011 (Rideout & VJR Consulting, 2011). The present study followed on the work conducted in 2005 rather than the 2011 survey because at the time when the Taiwanese survey was being designed and conducted the 2011 US report had not yet been published. In general, the 2011 survey built on the 2005 one using identical or very similar wording to the previous survey. However, because of the rapidly changing media environment, the 2011 survey included also questions about the use of social networking sites, smartphones, and iPads. Since the time

when the questionnaire was being designed, the researcher was also aware of the impact of smartphones and iPads, questions about both media were included in the survey. Therefore, the researcher is confident that although the questionnaire of the present study was based on the KFF 2005 survey, the questions are up-to-date and relevant.

3.2.2. Justification: Method used to answer the research question

The survey method of collecting data is the best fit for understanding the views of respondents in an entire population. The present study focused on investigating the current picture in Taiwan in terms of media usage. An online questionnaire survey was thought to be the most appropriate research design for Phase 1 due to the following reasons:

1. An online survey could approach a wider range of population in a relatively short period of time.
2. It is economical to conduct.
3. The software of online questionnaire is mature and has been widely used. For example, *Smart Survey* has an advanced mechanism that allows researchers to create a question filter, skip logic, and to set compulsory questions. With the online survey, researchers post the designed questionnaire via an online survey company and then a URL link will be created for the specific online questionnaire. A researcher then can disseminate the URL link online to websites, fora, etc, or forward it to potential respondents.

However, there were limitations and biases of using a web-based survey method in a study. Firstly, people who did not have access or ability to go online were not able to participate the study. However, according to a government investigation (Directorate-General of budget, 2012), the majority of Taiwanese households have computers (71.9%) and Internet access (69%). Therefore, it appears that the ownership of computers and Internet access was less likely to bias the sample. Secondly, people who did not visit those fora/websites were not able to learn about the survey. It was thought that parents who were more aware of child

development were more likely to join this online survey. The limitations may result in an imbalanced sample, namely with a lack of low-income respondents. For comparative purposes the researcher tried to overcome these limitations and biases by seeking help from daycare centres and kindergartens at the later stage of the data collection. These institutions were asked to disseminate the advert (a sheet with information of the survey and the URL link) to their parents. Next section will show the characteristics of the sample gathered from the online survey.

3.2.3. The sample

The main survey collected 603 responses in total. All the participating respondents needed to be the children's primary caregivers or those who have a very good understanding of the child's media use. The respondents were recruited through four sources:

1. Fora of popular Taiwanese parenting websites, e.g. kimy, babyhome.
2. Daycare/kindergarten websites.
3. Adverts disseminated with the help of kindergartens/daycare centres.
4. Friends who have children at this age range.

Amongst the 603 responses, 68 responses were excluded from analyses either because the children were not in the age range required (n=57) or they had a learning or physical disability (n=11). The analyses of the survey was thus based on the data of 535 children (285 boys, 250 girls). Table 3.1 shows the descriptive information about the respondents and their children. The mean age of the children was 3 years 6 months (M=42.01 months, SD=18.36 months). At the time of the survey, 39% of the children were the oldest child in the family, 33% were only children, 25% the youngest, and 3% the middle child. Nearly all respondents were Taiwanese (n=531). The respondents (463 mothers, 72 fathers) had varying levels of education: Postgraduate university (n=127), undergraduate university (n=238), junior college (n=127), senior/vocational high school (n=39), primary school (n=1), others (n=3).

Child Age	Mean=42.01 months	SD=18.36 months	Median= 43.0 months			
Child Gender	Boys 53.3%	Girls 46.7%				
Parental Educational level^	Graduate school and above 23.8%	University 44.7%	Senior/ vocational high school 7.3%	Junior college 23.8%	Primary school 0.2%	
Household Annual Income before tax (in British Pound Sterling)	<10k 13%	10k-15k 17%	15k-20k 19%	20k-25k 17%	25k-30k 10%	30k or more 15%
Employment Status	Full-time work 66%	Homemaker 28%	Part-time work 6%			
Respondent Age	<30 11%	30-39 75%	40-49 14%			
Respondent Gender	Male 13.5%	Female 86.5%				

Table 3.1: Descriptive statistics of the survey sample (*n*=535)
Note: 9% of respondents don't know or refused to answer household income.
^Primary school in Taiwan equals to Year 1-6 in England and junior high school equals to Key Stage 3. At the end of junior high school, students take exams and make their choices to enter senior high schools, junior colleges, or vocational high schools. Senior high schools provide pre-university education, whilst junior colleges and vocational high schools offer vocational areas of study.

Characteristics of the sample

According to the Department of Statistics, Ministry of the Interior of Taiwan, the educational attainment of Taiwanese people aged 30-39 in 2012 were: Postgraduate university 10.2%, undergraduate university 27.9%, junior college 20.2%, senior/vocational High School 32.1%, junior high school 8.6%, and primary school 0.9% (Department of Statistics, 2012). Figure 3.1 shows that educational level of our sample was skewed towards the higher levels. The respondents in the survey had a somewhat higher educational level than the population.

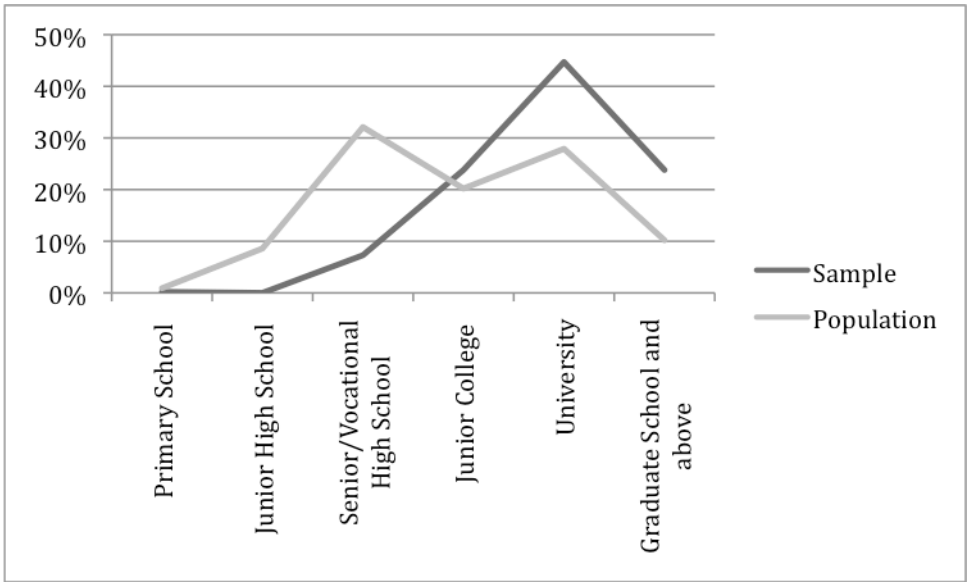


Figure 3.1: The distribution of educational levels of our sample and the TW population

In terms of household income, the average household income in 2010 (the survey asked for the household income before tax in 2010) was equivalent to £17,787 (Directorate-General of budget, 2012). By comparing the average income, Figure 3.2 shows that our sample seemed to be representative to the general population, with a somewhat higher annual household income than the population.

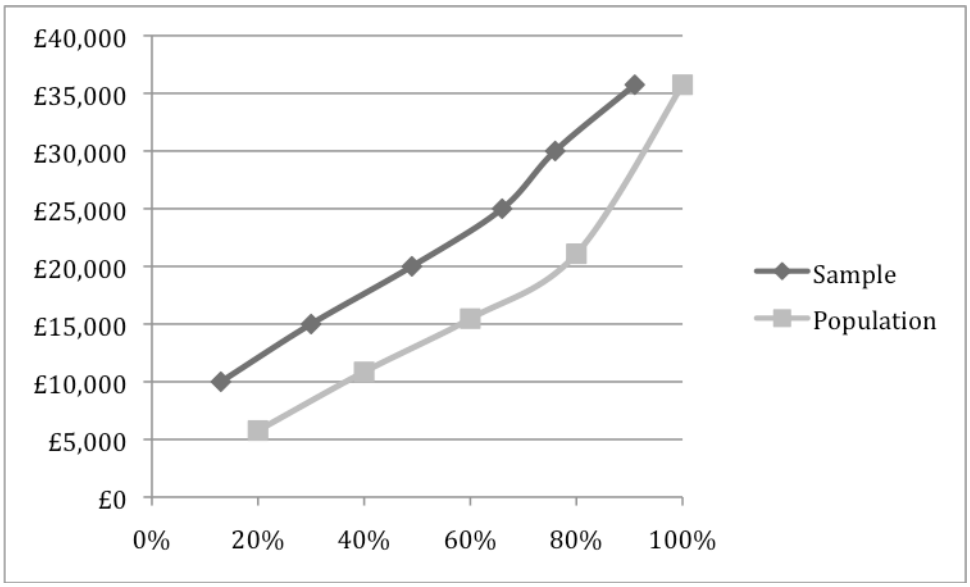


Figure 3.2: The household annual income distribution of our sample and the TW population

Due to the fact that the sample had higher educational and income level than the general Taiwanese population, it was expected that the amount of time children

spend using media will be lower and the parents in the present study are more likely to provide higher level of scaffolding during the co-viewing of TV (Heath, 1982; Ninio, 1980; Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011).

3.2.4. Procedure

All respondents were recruited via advertisements and word of mouth. Respondents found the questionnaire link with the information about the purpose of this survey on the web pages/adverts. On the survey webpage, respondents were asked to answer the questions with reference to their real life situations. Also, it is required that the age of one of the children is between 6 and 72 months old. In the case that participants have more than one child in the age range, they were asked to focus on the older child as a reference when they answer the questions.

3.2.5. Instrument

Initially, it was planned to directly translate and use the questionnaire used in the US national survey conducted in 2005 (Rideout & Hamel, 2006). However, after considering the purposes of this phase and the differences between participants, it was decided to develop a questionnaire based on it rather than adopt it entirely. The revised questionnaire was piloted with 71 parents. The total number of questions in the finalized questionnaire is 78.

1) Development of the instrument

In order to make the questionnaire suitable for the purpose of the study, one item about parental scaffolding during the child's viewing was added and eight items about the child's developmental stages/abilities, personality, and the child's imitation from TV shows were deleted after discussion with supervisors. Also, due to the rapidly changing media environment, smartphones and tablets/iPads were also added to the range of digital media. Demographic items like educational and ethnic background, household income, and language spoken at home were revised according to the situation/system in Taiwan. The first version of the questionnaire contains 60 items. Figure 3.3 shows the procedure of developing the questionnaire.

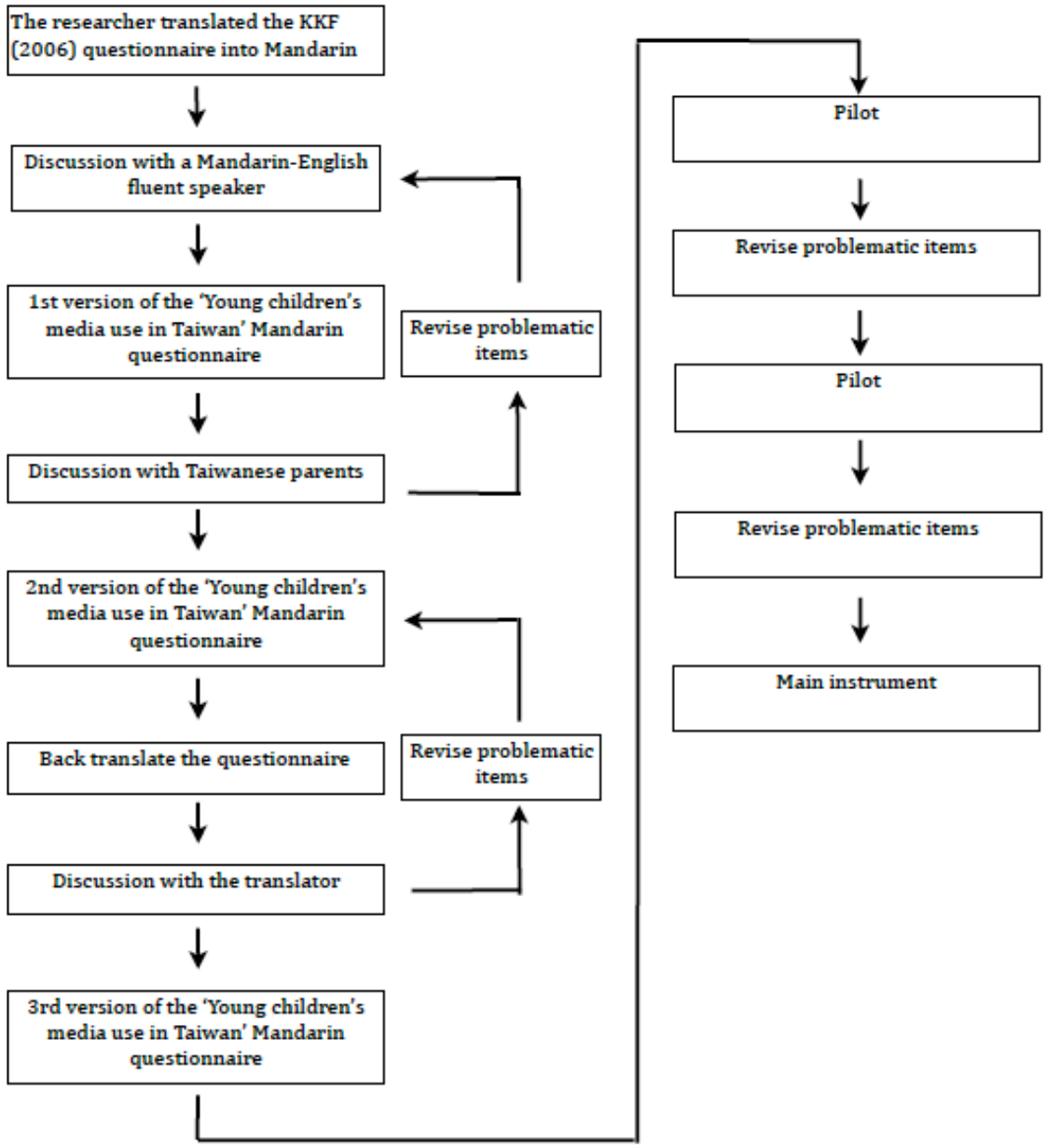


Figure 3.3: Procedure of developing the instrument

Firstly, the researcher translated the KFF questionnaire (Rideout & Hamel, 2006) into Mandarin. And then the researcher discussed the translated questionnaire with a fluent Mandarin and English speaker about its accuracy. Two Taiwanese parents later helped to check whether the items were comprehensible and the wording was appropriate. Finally, the researcher asked a Mandarin and English speaker to translate the Mandarin version of the questionnaire back to English in order to ensure the accuracy of the translation.

Amendments made to questionnaire

After revising the problematic items, the questionnaire then was given to 5 Taiwanese parents. The main feedback and revisions after this pilot included:

a. The KFF 2006 questionnaire asks children's viewing habits on 'the last typical day'. The parents responded that they were confused about 'a typical day' because there is usually a difference between the viewing habits of individuals at weekdays and weekends. This suggested that clarification between a weekday or weekend or a separation between weekday and weekend was needed. Therefore, the 'last typical day' was replaced by weekday and weekend in the revised questionnaire.

b. In order to learn whether the child has typical development, a question about whether the child has any type of disability, whether learning/educational, or physical, was added.

c. The response categories of some of the items were changed, including:
   - KFF 2006 provides age categories, e.g. less than one year, one, two… or six years. In order, in this survey, to have a precise understanding of the children, the focus child's age was asked to be reported in months.
   - The category 'child too young to do this' in any question was deleted and was considered as a 'No' response because 'child too young to do' could be inaccurate and ambiguous.
   - The category 'refused' was deleted due to the nature of the online questionnaire. It is considered that if a respondent doesn't want to continue the questionnaire they can directly dropout, whereas in a telephone interview that is less likely to happen.

After revision, the questionnaire contained 61 questions.

2) Pilot

At the beginning, Phase 1 aimed to investigate the use of media by both Taiwanese (TW) and British (UK) children. Therefore, the questionnaire was piloted online with both TW and UK parents of children aged between 6 months to 6 years old.

The pilot took place during October 5-12, 2010. The findings of the pilot are shown in Appendix 1. The alpha reliability of the 32-item scale was 0.77, indicating that the scale had good reliability. The pilot study showed that there was a significant difference between children's media use on weekdays and weekends. Therefore, the separation of weekday and weekend remained in the main online survey.

At the end of the pilot questionnaire, there was an additional question asked the respondents for any feedback about the questionnaire. The feedback gathered was more concerned with the arrangement of the questions. The US questionnaire (Rideout & Hamel, 2006) was arranged by questions about usage, e.g. frequency, amount, rules, etc, rather than by media types. Therefore, respondents needed to answer for all the different media types e.g. television, DVDs, computer, video games, etc, in every media usage item, no matter whether their child uses it or not. The respondents in the pilot suggested that to rearrange the questionnaire into media types so that respondents can skip a whole section if their child does not use a particular media. In addition, the rearrangement allows respondents to go from one media to another, making it easier for parents to recall and to answer. Therefore, the items were rearranged into media type so the sequence of the items was changed. The scale of the 32 items did not change after the pilot, therefore another pilot after the revision was not thought necessary.

3) Main survey

In the main survey, each respondent completed a self-administered, 36-78 items online questionnaire (depending on whether the participants skip questions). The questionnaire, entitled 'Young children's media use in Taiwan', consisted of ten sections, including:

- Parents' presence during children's media use (5 items)
- Child's media use, including type, amount, frequency, and habits (19 items)
- Type of shows watched by children (4 items)
- Parent-child interactions during viewing (1 item)
- Child's engagement in other activities (2 items)
- Parents' own media use (2 item)

- Parents' attitudes and rules about children's media use (9 items)
- The range of media in the home (11 items)
- TV in child's bedroom (7 items)
- Demographics (18 items)

The finalized questionnaire for the main survey can be found in Appendix 2.

3.2.6. Proposed analysis

The quantitative analyses of the data collected ware carried out producing descriptive statistics, graphical displays, and cross-tabulations aimed to compare and contrast fine distinctions and differences between the data of different groups, e.g. age, gender, SES, heavy/light media user, etc. The analyses of the relationships using contingency tables and correlation coefficients and analyzing differences through statistical tests were also done. The hypothesis is that young Taiwanese children's pattern of media use is similar to developed countries, such as the USA.

The results of the main survey are shown in Chapter 4. The results from the survey provide a greater general understanding of young children's media use at home in Taiwan and provides both a rationale and allows scope for the investigation of Phase 2 of the study which will be a focused and in-depth exploration of parental scaffolding patterns during the co-viewing of television with their young children.

3.3. Phase 2 of the study

As mentioned in Chapter 2, adults play a crucial role in children's learning throughout early childhood in many different ways but also, with regard to this study, by selecting and reinforcing the content offered by different media. For this reason, TV programmes designed for young children usually suggest that parents ideally should co-view with their children. But little research has been done on how these programmes, which are designed for young children, are being watched by parents and their children. Therefore, in Phase 2, the way that the adults and children co-view educational television programmes will be explored and investigated intensively. The aim of Phase 2 is to explore the relationship between parental scaffolding during the programme and their child's engagement with the content.

3.3.1. Research Design of Phase 2

In order to answer the research questions, this phase of the study began with replicating Calvert, Strong, Jacobs, & Conger's work (2007) on children's interaction and participation in learning from an animated educational television programme, but in this study, the context changes from a laboratory to the natural home settings. As mentioned in Chapter 2, Calvert et al. (2007) used *Dora, the Explorer* as the material and created four conditions. An adult sat beside the child in all conditions except the *control* condition: 1) *Control*: the child viewed with the adult in the back of the room; 2) *Observation*: the child viewed beside the adult; 3) *Participation*: the adult co-viewer participated at Dora's requests; 4) *Interaction*: 9 targeted programme points were created and the children had to use a computer mouse to make correct decisions for the programme to continue. The results suggested that children in the participation and interaction conditions were more engaged with the content than those in the control or observation conditions.

Apart from changing the scene from laboratory to natural settings at home, this phase of the study also extended the scope to a different type of animated educational television programme, *Charlie and Lola*, in order to see whether both parents and children would respond differently when co-viewing two programmes of a different type and with different intent. As has been mentioned, Phase 2 of this study used multiple case studies to investigate in-depth the potential benefit if parents actively co-view with their young children. The following describes how the different types of validity and reliability were gained in order to maximise the quality of a multiple case study design (Yin, 2009).

Construct validity

The two main concepts that Phase 2 was exploring were, firstly, the types of parental scaffolding during television co-viewing and, secondly, the level of children's engagement with both programmes.

In order to establish the construct validity, the researcher, firstly, needed to define the nature of parental scaffolding by focusing on both the verbal and non-verbal

communication that parents use during television co-viewing. And secondly, children's level of engagement when watching television was defined as the level of physical and verbal involvement children demonstrate as they view the programme.

The researcher adapted the parental behaviour coding scheme developed by Barr et al. (2008) and Calvert et al.'s (2007) 'Enthusiasm and active programme engagement' measure to match with the concepts that were being explored. In addition, a chain of evidence and multiple sources of evidence were established/used to increase construct validity (Yin, 2009).

External validity

With the use of a case study methodology, Phase 2 was using the previously developed theory, e.g. Vygotsky's social-cultural theory, as a model to compare with the empirical data collected to achieve analytic generalization. In analytic generalization, the researcher aimed to generalize the results into a broader theory. If two or more cases have replicated the same results to support the theory, replication may be claimed (Yin, 2009).

In this phase of the study, even though the participants were recruited through mutual acquaintances, families from diverse backgrounds were sought, e.g. families from a range of household income, and varying levels of parental education and occupation, etc. The purpose of having participants from different backgrounds was that the theory could be examined to see whether it only is evident in a particular social class or it can be generalized to people from all backgrounds.

Reliability

The researcher used the case study protocol, including an overview of the Phase 2, field procedures, case study questions, a guide for the case study report, to deal with the documentation problem in great depth. The researcher also developed a case study database for data collected in families. The database was created in a

formal and presentable way that allows not only the researcher to do a separate, secondary analysis but also for other researchers to view the evidence directly.

In the database, the data include videos, audio recording of videos and interviews, transcripts of the videotaping and interviews, field notes, questionnaire completion, and psychological test results. All sources of data were organized, categorized, and readily retrievable for later perusal. The above tactics helped to increase the reliability of the study (Yin, 2009).

3.3.1.1. Context

This phase of the study was conducted in the area of Taichung City, Taiwan and the rural counties near it. Taiwan was selected because Phase 1 was conducted in Taiwan, it was necessary to do the deeper exploratory study in the same country. The reason for choosing Taichung City was that it was easier to access. The researcher was born and grew up in Taichung City, therefore has a better connection in this area. Due to the research design of this phase, the participating families needed to be visited and observed over four days. These could not be done when families had little understanding and no rapport with the researcher. Taichung City is located in west-central Taiwan, with a population of over 2.6 million people. It is the third largest city on the island after Taipei and Kaohsiung.

In Taiwan, pre-elementary education is not compulsory. However, the government started practising the 'Free tuition fee' project in 2011 in order to increase the enrolment to kindergarten. Children who attend public kindergarten do not need to pay tuition fees and for those who attend private kindergartens can receive a subsidy every semester. Children who want to attend public kindergartens need to enter the schools' ballot. Priority is usually given to low-income families. English is seen as an important issue for most of Taiwanese parents. There are three types of kindergarten in Taiwan each with different learning environments in terms of the language they use. The first type is that teachers speak and teach in Mandarin only. Most of the public kindergartens fall into this type. There are also bilingual kindergartens using and teaching both in Mandarin and English, and all-English kindergartens where teachers speak only English. All-English kindergartens

usually have native English speakers as teachers and Taiwanese teachers as assistants. The fees of the all-English kindergarten are the highest and the fees of the Mandarin-only kindergarten are the lowest. All Taiwanese children at the age of 6 must statutorily attend elementary school, which is the start of compulsory education.

3.3.1.2. Sampling

The sample group consisted of fourteen families with children aged between 3 to 5 years old. Children aged 3 to 5 years old were chosen as target participants because children in this age group are more likely to need adults' help in making sense of the programme content than older children due to their stage of cognitive development. Also, they are able to express themselves and communicate, therefore, the interaction between parents and children could be clearly observed.

At the outset, this phase of the study planned to recruit families from Phase 1. A question about whether or not the participants who have a child aged 3 to 5 years old might be interested in the home observation in Phase 2 was asked at the end of the Phase 1 questionnaire. A hundred and ten people responded they were interested in participating in Phase 2. However, none of these agreed to participate after further information about the procedure was given. The reason to fail to recruit families from Phase 1 may be that Phase 2 involves a complex procedure that required a family to co-operate with the researcher, e.g. four consecutive days to co-view. Also, this phase of the study took place in a participant's house, it may be unappealing for parents who had little knowledge about the researcher to agree to take part. In the end, all participating families in Phase 2 were recruited through mutual acquaintances.

A purposive sampling strategy was used for selecting the participating families for this phase. The principle of the selection in purposive sampling is 'the researcher's judgment as to typicality or interest' (Robson, 2002, p. 265). The sample recruited enables the researcher to explore her specific needs and purposes in a project, therefore sampling was driven by the research questions (Willig, 2001). It was the aim of the present study to ensure that the families were as diverse as possible in

order to compare and contrast the effects of SES. The effort was also made to include children of both gender and from both urban and rural areas.

3.3.1.3. Participating families

	Location	Family code	Child's age	Child's gender	SES
1	Urban	180	3 years 5 month	M	High
2		Architect	3 years 8 month	F	High
3		Smiling Girl	3 years 10 month	F	Middle
4		Talking Adults	3 years 10 month	F	Middle
5		Super Mum	3 years 10 month	M	Low
6		Warm Father	4 years 2 month	F	Middle-Low
7		Eye Doctor	4 years 4 month	M	High
8		Totoro	4 years 4 month	M	Low
9		Poetry Girl	4 years 7 month	F	High
10		Baseball Boy	5 years	M	Middle
11	Rural	Lion Head	3 years 3 month	M	Low
12		Queen	3 years 11 month	F	High
13		Teacher Parents	4 years 3 month	M	Middle-High

Table 3.2: Participating families in Phase 2. Note: The categorisation of SES was based on 黃毅志 (2008).

A total of fourteen families were selected to be part of the study. This was an opportunistic sample. The researcher had only one month to collect the Phase 2 data. There were two parents in the sample were acquaintances of the researcher but she had not met the children prior to data collection. The other families were recommended to the researcher through mutual friends. Thus, there were slightly different relationships between the researcher and the families. Two parents were more familiar with the researcher and there were families who were complete strangers and the researcher needed to build a relationship. However, these different relationships with the families did not impact on the nature data collected. Table 3.2 presents the families visited, living in urban and rural settings, with a range of children's age, and family socioeconomic status in terms of household income, parental education level and occupation. All children (7 boys, 7 girls) in the study were developing normally and were healthy except for one case. This child was excluded because she was diagnosed as autistic and with language delay. The reason the girl was excluded from the analysis is that her untypical development may cause a very different parent-child interaction during the co-viewing and thus becomes an outlier. In Phase 2, in order to protect anonymity, every participant child was given a pseudonym, according to a distinctive

characteristic of the child or the family. All families provided information on their background in relation to the child's age in months, birth order, whether the child attended kindergarten, the parent's own educational background, age, occupation, household income, and house type. More details about the families will be presented in Chapter 5.

	Phase 1	Phase 2
Child's age	Mean=42.01 months (*SD*=18.36, Median=43.0)	Mean=48.38 months (*SD*=5.74, Median=47)
Child's gender	Boys 53.3% Girls 46.7%	Boys 53.8% Girls 46.2%
Parents education level	Graduate school and above: 23.8% University: 44.7% Senior/vocational high school: 7.3% Junior college: 23.8% Primary school: 0.2%	Graduate school and above: 15.4% University: 46.2% Junior college: 38.5%
Household income	<10k: 13% 10k-15k: 17% 15k-20k: 19% 20k-25k: 17% 25k-30k: 10% 30k or more: 15%	<10k: 8% 10k-15k: 15% 15k-20k: 23% 20k-25k: 15% 25k-30k: 15% 30k or more: 15%
Parent age	<30: 11% 30-39: 75% 40-49: 14%	<30: 16.7% 30-39: 75% 40-49: 8.3%
% of children watch TV/DVD on a typical day	90%	100%
Child's time spend on TV/DVD per day	Mean=105 minutes (*SD*=119.45; range=0-1100)	Mean=121 minutes (*SD*=92.56; range=15-360)
n	535	13

Table 3.3: Descriptive statistics of the sample of Phase 1 and 2

By comparing the descriptive statistics for the small sample of 13 participants in Phase 2 with the 535 sample of the online survey respondents in Phase 1 (Table 3.3), it was representative in terms of the distribution of child's gender, parents' educational levels, household income, viewing habits and usage of media. The only difference between the two samples was the child's age, which was intended, as Phase 2 targeted slightly older children. The mean age of participants in the Phase 2 was 48.38 months, whereas the mean age of Phase 1 participants was 42.01 months. In general, the characteristics of participants chosen for the case studies correspond to those of Phase 1.

3.3.1.4. Educational TV programmes used

In order to compare and contrast both the parental scaffolding behaviours and children's engagement between families, two animated educational television programmes, *Dora, the Explorer* and *Charlie and Lola*, were assigned to each family for their use. Whilst there are clearly cultural differences between the US/UK (where the programmes were designed respectively) and Taiwan, it was decided to use the US DVD *Dora, the Explorer* and the UK DVD *Charlie and Lola* because Calvert et al.'s study has been undertaken with *Dora, the Explorer* and we wanted to replicate that study in natural home settings. And *Charlie and Lola* was thought to be accessible to children in Taiwan and deal with issues that are universal to childhood. In addition, these two programmes were chosen not only because they are different in intent and format but also the differences in children's familiarity with the programmes (Haden, et al., 1996). All of the children were familiar with *Dora, the Explorer* whilst none were familiar with *Charlie and Lola*. It was an advantage that *Charlie and Lola* was new to all the dyads so all the families were at similar levels of receptivity but the disadvantage of this was that Lauricella, Gola, & Calvert (2011) indicate that children and adults need to bond with the characters of the programme in order to get maximum benefit from it. Thus, it is important to note that the educational potential of *Charlie and Lola* may have been decreased due to the children's unfamiliarity with it.

Dora, the Explorer

The starting point for designing the study began with replicating Calvert and her colleagues' (2007) work on children's participation and interaction when watching a children's educational TV programme under different conditions. This study was replicated to see whether it showed similar results in natural settings. Thus, the same programme, *Dora, the Explorer* was chosen for this purpose.

Dora is a young Hispanic girl. Dora and her friends go on a trip in every episode. During the trip, the characters encounter tasks and puzzles. The characters invite children to answer questions, to participate, or solve problems with them. For example, Dora asks the audience to help her to find the red square to pass a gate. The programme provides explicit learning opportunities including being exposed

to and learning English words and short phases, counting, shapes, colours, and to develop problem solving skills, etc. In the original American version, Dora speaks Spanish at times. In the Taiwanese version, Dora and the characters speak mainly Mandarin, with English interspersed where Spanish is in the original. *Dora, the Explorer* is well-known and academically recommended for its interactive features (Calvert, et al., 2007). The characters usually invite or request the audience to participate with the programme. When the characters invite the audience to participate, they ask a question and then pause 3-5 seconds to allow the audience to answer. This interactive feature is designed to imitate real life human interaction. The interactive feature is believed to enhance children's learning from the content by increasing children's interaction and participation with the programme (Calvert, et al., 2007). In the episode called *Baseball Boots,* for example, there are 36 programme points in the 20-minute episode.

Charlie and Lola

Along with replicating Calvert et al.'s work (2007), the present study was extended by using a different type of young children's educational programme. *Charlie and Lola* was chosen because it is a programme that is very different from *Dora, the Explorer*. *Charlie and Lola* is a narrative programme which offers the opportunity to learn complex concepts. It does not have an interactive component, therefore giving the parents and children a different experience. This contrast gives opportunities for further exploration of how different types of scaffolding influence child's engagement.

The TV series of *Charlie and Lola* is developed from the popular children's literature books by Lauren Child. Lola is an energetic, imaginative, endearing little girl; Charlie is a kind and patient older brother who is always willing to help Lola learn. The programme covers a range of activities and issues that occur in young children's lives, for example: maintaining a balanced diet, planting seeds, making friends, getting lost, having pets, etc. It embeds concepts and deep learning in the storyline. One of the important features of the programme is that it uses humour and calls on imagination to view the world. For example, instead of directly telling children that a balanced diet is good as many expository programmes do, Charlie

tells Lola, who is a very fussy eater, that carrots are orange twiglets from Jupiter and peas are the green drops from Greenland. Charlie makes eating an interesting and fun activity. The learning potential of *Charlie and Lola* is profound and involves deep thinking. Children also have to develop their own understandings of the plot and characters depending on their individual stages of development.

The assigned episodes

The dyads co-viewed four episodes of DVDs, including three episodes of *Charlie and Lola* and one episode of *Dora, the Explorer*, across the four days. Both *Charlie and Lola* and *Dora, the Explorer* are educational animated programmes, as has been said. The duration of an episode of *Charlie and Lola* is 10 minutes and *Dora, the Explorer* is 20 minutes.

The three episodes of *Charlie and Lola* are: 1) *I'm just not Keen on Spiders*, 2) *I Really Wonder What Plant I'm Growing*, and 3) *What if I Get Lost in the Middle of Nowhere*. And the one episode of *Dora, the Explorer* is called *Baseball Boots.*

In *I'm just not Keen on Spiders,* Lola is afraid of spiders and Charlie explains to her how interesting a creature the spider is to allay her fear. These include 1) spiders make amazing webs with all kinds of patterns, 2) a web is very strong, 3) spiders have six knees so they can run in all directions. Throughout the episode, Charlie helps Lola to catch the spider in their house and at the same time he tells Lola the nature of the spiders. The episode ends as Lola invites the spiders into their house to have a 'tea party' finding that she is no longer afraid of spiders.

In *I Really Wonder What Plant I'm Growing,* Lola is encouraged by Charlie to grow a plant. Lola starts by putting the unknown seed into the pot. But she does not succeed at once. Her plants die from either too much water or too much sunshine. She starts over again and again. Charlie tells her plants need water, sunshine, and air. Charlie also teaches Lola the life cycle of a plant: seed, plant, and flower. Lola keeps wondering what kind of plant hers would be. Throughout the episode, Lola learns how to grow a plant through the process of growing one. The episode ends as Lola's plant grows fully and has a flower. Lola is pleased with her plant, finally.

In *What if I Get Lost in the Middle of Nowhere*, Lola loses her toy Foxy. She looks for it everywhere but is unsuccessful. Meanwhile, their school is planning to go on a school trip. Lola does not like the idea as she is afraid that she will get lost like Foxy. Charlie and his friend tell Lola and her friend Lotta that they can go hand in hand and need to just stand still if they lose their way. They also provide other ways to avoid getting lost. These include 1) wearing bright clothes, 2) dropping pebbles along the way (as Hazel and Gretel in the folktale), and 3) to use a whistle. As it happens, they visit a maze on the school trip. Lola and Lotta do all that the older boys had suggested on the day. The girls manage to find their way safely through the maze. The episode ends as Lola is happy about the school trip and joyfully finds Foxy under her pillow.

In *Baseball Boots,* Dora and her companion, a monkey named Boots, are going to the baseball game to hit Boots' first ball ever. On their way to the baseball game, they encounter a number of obstacles that they must solve to get to the baseball game. These include 1) a Grumpy Old Troll who asks Boots to catch all the balls he throws in order to pass his bridge, 2) they must throw the balls to the right place (with a special reference to a particular colour and shape) to open the gates in the pond. In these tasks, Dora demonstrates some concepts of number, colour, shape, and the audience is exposed to English words and phases frequently. Throughout the episode, the characters also elicit participation and involvement by asking the audience for their help. In this episode, the viewers' assistance involves helping Boots to catch and hit the balls. For example, when Boots is having his last chance to hit the ball, he asks the audience for their help in saying 'ball' in English to help Boots to hit the ball. The episode ends as Boots hits a homerun and Dora thanks the audience for helping.

3.3.2. Data Collection

This section describes methods involved in collecting data in Phase 2, including observations, videotaping, the questionnaire completed by parents, parents' interviews, psychological testing, and researcher's notes and diary. An overview of the features and purposes of multiple methods used in Phase 2 are listed in Table

3.4. Observation and videotaping during the observation were the primary methods of data collection in this phase of the study, providing the information of precisely how a parent supported young children's viewing and each party's level of engagement with the programme. Interviews with the parent offered insight into their attitudes towards the media and the programmes used, and which also, perhaps would explain why they behaved in certain ways during the co-viewing. The questionnaire was the same as the one used in Phase 1. This supplied information of the children's media environment at home and may provide clues into the children's viewing habits.

The observation and videotaping were the main data sources of Phase 2 and the data were extensively analysed. Other methods like interviews, the questionnaire, assessments of the children, field notes, research diary, and audio recording served as supplements to add insights and in-depth understanding of the individual children, the different dyads and their families.

Method	Features	Purpose
Initial observation	Extended period of contact	Become familiar with setting as helper and observer and local meanings; become a familiar presence in setting; gain confidence of participants
Main observation	Parent-child interactions during the co-viewing and the context beyond video lens	Understand how parents support their child's viewing of the programmes and children's responses to the programmes and parents' scaffolding
Audio and video recordings	Precise record of naturally occurring interactions	Understand complexities and dynamics of processes of interaction
Interviews	Semi-structured individual interviews	Gain insights into different perspectives over time; record (in)consistencies in participants' views
Psychological testing	Norm-referenced test of hearing or listing vocabulary	Examine children's language level and developmental stages
Questionnaire	Media environment at home	Gain understandings of wider contexts

Field notes	Memo-like, noting: own and others' comments; details of interaction beyond narrow video lens	Supplement audio/video data, document thoughts and comments; identify themes as they emerge in the field
Research diary	Reflective journal written mostly at home	Document development of study and subjective values; reflect on field notes

Table 3.4: Data collection methods (adapted from Flewitt, 2006: 30)

3.3.2.1. Direct observation

In order to explore how parents support their child's viewing of the assigned programmes, non-participant observation was chosen for this phase. While questionnaire responses and interviews are notorious for discrepancies between what people say and what they do (Robson, 2002); observation is an invaluable method for understanding the actual uses of the animated educational television programmes. However, this method is sometimes criticised on the grounds that the fact of being observed might lead people to behave differently, invalidating the data collected (Goodwin, 2004). To overcome this disadvantage, each dyad was observed over 4 days, rather than on only one occasion. And also it was designed that the researcher was absent on the dyad's Day 2 co-viewing, the parents needed to videotape their co-viewing on that day. Both of these designs were aiming to allow the parents and children to behave as normally as possible. Another concern over the observational evidence is its reliability. The reliability was increased with the aid of the next method: videotaping.

3.3.2.2. Videotaping

The interaction between parents and young children is characterized by its multimodal events. The interaction usually involves eye contact, facial expression, body stance and movement, and the manipulation of objects to improve or replace talk. A social semiotic approach is used to collect, transcribe, represent, and interpret the video data. In social semiotics, meaning is expressed and constructed through multiple 'modes' (Flewitt, 2006). While the most influential studies of parent-child co-viewing and joint book-reading have prioritised the monomodal use of spoken language (Barr, et al., 2008; Ninio, 1980), applying a social semiotics

approach allows the researcher to explore the pluralistic perspective of communication. The social semiotic approach extends the range and complexity to understandings of the parental supporting process by investigating how and why parent and child actively choose different modes to express and explore the meaning.

Using video to collect the data helped to explore the multimodal dynamics of parent-child interaction during the co-viewing, giving us insights of how different modes of messages are expressed, negotiated, and discussed. The use of a video recorder also helped the researcher to record the information that might be neglected or missed by a researcher because too much information is happening simultaneously. In addition, another advantage of videotaping is that it allows a researcher to go back to check the event and to code it appropriately for the variables being examined. Different individuals also can access the material and check the reliability of the coding. One disadvantage of videotaping is the concern that using a camcorder for the recording purpose may change people's behaviours, the other disadvantage of videotaping is the possibility of technical problems. A technical problem that can happen in the field may produce isolated moments, making the recorded event broken into incontinuous parts (Jewitt, 2012). This was dealt by familiarizing the researcher with the use of the camcorders before she started data collection. Furthermore, visual data are just one method amongst many, and researchers remain dependent on supplementary methods, such as interviews, field notes, documentation, that give information about the situation beyond the limited focal range of a video lens.

Four pilots studies for the observation and videotaping were conducted at different stages of the design of Phase 2. The four pilots allowed the researcher to practise and refine her observation and videotaping techniques. The first pilot of Phase 2 was conducted in October, 2011. In Pilot 1, the researcher found that the best location for the video camcorder is about 1 metre away from the television and 45 degrees in front of the dyad. A certain distance should be kept between television and camcorder so that the sound of the television is not too loud and the conversation between the child and the parent can be clearly recorded. In order to

ease the dyad's discomfort of being recorded, the camcorder is put 45 degrees rather than immediately in front of them. Also, the height should be at the child's eye level so that the child's face and eyes are visible at all times (for later assessment of engagement level). Unlike the child in Pilot 1 who sat still to watch, the child in Pilot 2 moved around during the co-viewing. The researcher therefore found that an extra handheld camcorder is needed to cope with very young children with different temperaments and viewing habits. The child in the Pilot 3 was more interested in the researcher than co-viewing the programme. It made the researcher rethink the issue of rapport with participants and how to support the main purpose of the study. Also, Pilot 3 revealed the location of the researcher during the dyad's co-viewing is very important. In order to avoid diverting the dyad's attention from the television, the researcher needs to stay in a place that could not easily be seen by the dyad (but the researcher should still be able to observe the dyad). In Pilot 4, all the procedures and programmes designed for the main observation were followed, this helped the researcher confirm every detail of the design and the procedure was satisfactory.

The experience with the four pilots was invaluable as it enabled the researcher to be fully prepared for all kinds of situations that she might face in the field.

3.3.2.3. Questionnaire

In order to make a connection between the two phases, i.e. the smaller sample from the exploratory study into parental scaffolding (Phase 2) with the large sample in Phase 1, it seems sound that the researcher knows as much about these parents as she knows those from the online survey. None of the participants in the Phase 2 had participated in Phase 1 however the statistics collected for that sample match the average (as mentioned in section 3.3.1.3). The questionnaire developed in Phase 1 was also used in Phase 2 for understanding the wider media use of the families in the second phase. The questionnaire gives the researcher a general idea of the children's viewing habits, e.g. frequencies, amount, and types, which cannot be learned by observation alone. Background information such as the parents' educational level and occupation, the family's social and economic status, was also learned from the questionnaire. The disadvantage of the

questionnaire is that respondents won't necessarily answer the questions and report their beliefs and attitudes accurately (Robson, 2002). The observational data which provides the information of how precisely parents co-view with their children helps to deal with this issue. Furthermore, the 'facts' from the questionnaire were triangulated with other sources of evidence to provide a thorough understanding and possible explanation for parent-child interaction during the co-viewing of television.

3.3.2.4. Semi-structured interviews

Semi-structured interviews with parents were used to explore mainly parental attitudes and beliefs about children's use of and learning from the media. Interviews also helped the researcher to investigate further the issues that arose from the questionnaire/Phase 1 and the motives behind some of the behaviours parents performed during the co-viewing. A semi-structured interview was chosen because it was expected there would be a great deal of variation of parent-child interaction during the television co-viewing. Semi-structured interviews enabled the researcher to probe different issues with each parent. The disadvantages of the method of interview are that it can be time-consuming and the interviewer may be biased (Robson, 2002). To overcome these problems, the researcher firstly was aware of the skills required to conduct semi-structured interviews. She had not only to follow her own line of inquiry derived from the case study protocol but also simultaneously to ask friendly and non-threatening questions in a conversational way. Secondly, the interview guide was developed through several discussions with the supervisors in order to ensure that all the questions are appropriate and there are no leading questions. The semi-structured interviews were also piloted after the pilot observations, giving the researcher opportunities to develop her interview skills. A major lesson that the researcher learned from the pilot was to ask why/how the interviewee performed a certain behaviour rather than why they did *not* do it. The reason being that the negative questioning may give an interviewee the impression that a certain type of behaviour is expected from parents, therefore making them feel guilty if they had not done it.

The interview guide was based on the preliminary findings of the previous phase and expanded and deepened for the research purposes of Phase 2. The interview guide consists of four parts. The first part of the questions is about parental attitudes and beliefs about young children's media use and about their child's favourite programme. In the second part of the interview, questions revolved around parent's views about co-viewing in general and how do parents usually co-view with their child. In the third part of the interview, specific questions from the observations probing the reasons for certain behaviours that had been observed during co-viewing. The last part of the questions is about parent's views on the assigned programmes. The interview guide can be found in Appendix 3.

3.3.2.5. Psychological testing

As the children's ages ranged between 3 years and 3 months to 5 years, in order to have some indication of the child's intellectual functioning and as spoken language is highly correlated with an individual's intellectual capacity, a psychological test was administered at the beginning of this second phase of the study. Peabody Picture Vocabulary Test (PPVT) is an untimed test for receptive vocabulary created in 1959 by two scholars in special education, Lloyd M. Dunn and Leota M. Dunn. The Taiwanese revised version (PPVT-R) was developed by Lu and Li (1998) from national norms obtained on 886 persons in 1998 . The test provides an estimate of the verbal intelligence of children aged 3 to 12. The correlation coefficient between PPVT-R (Taiwan version) and the Wechsler Intelligence Scale for Children (WISC) is 0.61. There is a significant difference between the scores of the typical children and the children with learning problems and intellectual disability. Therefore, the test has also been used to identify children with intellectual disability. The test is given verbally by the examiner and takes about 10-15 minutes. In its administration, the examiner presents a series of pictures in a booklet to the individual. There are four pictures on a page and each is numbered. The examiner gives a label describing one of the pictures and asks the individual to point or say the number of the picture that the word describes.

At a practical level, the researcher faced a difficulty when conducting the test. In one family, the girl is too shy and only talks to the researcher through her father.

The researcher thus cannot exam the child's language ability. At the end, the solution is that the researcher teaches the father how to administer the test and let him to communicate with his daughter and the researcher just watching aside to ensure the procedure is accurately executed.

The scoring is rapid and objective. The total score can be converted into a standard deviation IQ score and percentile rank. The test results helped the researcher to identify children who had intellectual and language problems. A family with a child whose intellectual and language ability had not developed typically would be excluded from the data analysis as the dyad's interaction could be expected to be different from the others.

3.3.2.6. Other sources of evidence: Field notes and research diary

Field notes were taken on site recording the details and context that might not be fully captured by the video camcorder. These included events that happened before or after the co-viewing and/or any informal chats between parent/child and the researcher. Sometimes the informal conversations provided important information for the study. The research diary was usually written at the end of each day. The researcher wrote down reflective thoughts about the visit and the study when the memory and the impressions were fresh. Both the field notes and research diary supplement the main sources of evidence.

3.3.3. Research procedure

In order to explore how parents watch the two animated educational television programmes with their preschooler children, the dyads' co-viewing of the programmes were observed and videoed. The parent/child dyads were visited in their homes before they watched any of the programmes over four days. In the first visit, the researcher met the families to explain fully and demonstrate the procedures to them. The researcher informed the parents that the study is exploring how young children attend and respond to these two different TV programmes which aim to both entertain and educate. The researcher asked the parents to watch the DVD with their children during the DVD presentation in the way that they typically would when co-viewing television. She did not inform the

parents that she was specifically interested in parent–child interaction patterns. If parents asked whether or not they could speak to their child, the researcher answered that they should try to behave as exactly they normally would while they co-view television. Siblings or other family members were permitted to watch also, as this would be representative of the child's normal viewing environment. The exact wording of the instruction was: 'I am conducting a home observation about children's viewing of children's educational TV programmes, I would like you to watch it with your child as you normally would'. After the researcher's explanation of the study, parents read and signed a consent form (see Appendix 4).

	Researcher's presence	Purpose	Programme and episode to co-view	Video equipment	Other procedure
Day 1	Yes	To capture the most normal viewing behaviour of the dyad	The dyad's chosen programme	Two still and one handheld camcorders	PPVT-R test of the child
Day 2	No	To compare the co-situations with and without the researcher's presence	*I'm just not Keen on Spiders* (*Charlie and Lola*) *Baseball Boots* (*Dora, the Explorer*)	Parents video their co-viewing by themselves with a still camcorder	
Day 3	Yes	Data for main analysis	*I Really Wonder What Plant I'm Growing (Charlie and Lola*)	One still and one handheld camcorder	
Day 4	Yes	Data for main analysis	*What if I Get Lost in the Middle of Nowhere* (*Charlie and Lola*)	One still and one handheld camcorder	Interview of the parent

Table 3.5: The design of the co-viewing across four days

The table above illustrates the procedure of Phase 2 research. The time of day to visit/view depended on family's daily routine as, again, the aim was to get the data as near to their authentic viewing as possible. On the first day of co-viewing, the researcher assessed the child with PPVT-R and had some footage of how they co-view a familiar programme that they usually watch/the dyad's chosen programme. Dyads were videotaped throughout the co-viewings with both the child's face and eyes visible at all times. Two still and one handheld camcorders were set on Day 1 in order to video both the dyad's interactions and the programme they choose. The researcher kept notes of the programme and an estimate of the extent to which the child enjoys it, and why this programme had been chosen, etc. The researcher used

the first day to video the dyad on a programme of their choice as a baseline measure of their normal viewing behaviour. After the co-viewing on the first day, the researcher explained to the parent how to video themselves on Day 2 when the researcher was absent. The parents needed to video their co-viewing by themselves on Day 2 with a still camcorder, which was either provided by the researcher, or parents could use the videoing equipment they owned at home. The purpose of the Day 2 co-viewing was mainly to compare the situation with and without the researcher's presence. The researcher was there to observe and video the co-viewings on the other days, i.e. Day 1, 3, and 4. One still and one handheld camcorders were used on Day 3 and 4. The interview of the parent took place on Day 4 after the co-viewing.

3.3.4. Proposed analysis

The mainly qualitative data collected during the four weeks of intensive case study data collection of each of the 13 families were organised, transcribed, and standardized to aid the coding and data reduction. This large (over 120,000 words) data set includes:

- 52 (approximately 24 hours) observations
- Transcripts of the video data;
- Transcripts of the 13 interviews of parents;
- 13 questionnaires;
- 13 PPVT-R test results;
- 52 field notes and research diary taken over the four weeks period.

There are several stages of the data analyses in this phase of the study. Firstly, all video data were transcribed in order to generate a relationship within and between the data and the analysis. Video data were transcribed into multimodal form. Secondly, in order to explore the relationship between the child's engagement and different types of scaffolding behaviours of parents, the engagement levels of the child and the features of parental scaffolding were examined. The main methods of analyses used to answer the research questions were a measure of child's engagement and thematic analysis of parental scaffolding behaviour.

3.3.4.1. Video transcription

As mentioned earlier, a social semiotic approach is used to transcribe/re-present the video data. In a social semiotic perspective, the integral part of communicative activity composes the direction of a gaze, the use of facial expression, gesture, and movement. Without any one of them, the understanding of the meaning would be incomplete and sometimes incomprehensible (Bezemer & Mavers, 2011).

Gesture and speech are seen as 'different sides of a single underlying mental process', with each mode displaying essential and distinct features of mental operation. Studies have suggested that gesture is the visible evidence of the 'operations of the mind' (Alibali, Flevares, & Goldin-Meadow, 1997; Alibali & Nathan, 2007; McNeill, 1992). To include gesture as a part of the transcript is particularly important in this study because it reveals parents and children's levels of engagement. For example, a child who sits slackly during the DVD presentation may reflect that he/she is not very much interested in the content. In addition, young children tend to use gestures to express or support their thinking or feeling as it may be more difficult for them to use verbal expression. For instance, pointing is seen as an important indicator of a child's active engagement with the content (Barr, et al., 2008). Another important non-verbal action to include in the analysis is gaze. The child's gaze is taken as an indicator as to whether he/she is jointly attending along with the adult. Shared attention is used as evidence that the child will be receptive to the learning offered (Moll & Tomasello, 2007; Tomasello & Farrar, 1986; Tomasello & Haberl, 2003). Table 3.6 is an example of how the visual and audio recordings were transcribed in a multimodal form. The rows highlighted refer to the occasions where parents provide scaffolding.

Time/scene	Speech	Gaze	Gesture/body movement
5:44	YS: Daddy, where is the spider?	F	C turns to look at F.
5:48	F: Where is it?	YS	
5:49	YS: It's/		
Scene 27 (5:51)			
5:51	C: He is in the kitchen…on the floor of the kitchen.		Turns back to watch the screen
5:59	F: Is that the kitchen?		C nods.
Scene 28 (6:00)			
6:03	C: …living room.		YS moves closer to F.
6:04	F: Where is it?	YS	
6:07	YS: Under the table.		
6:13			YS rounds her hand into a small hole and looks the TV through it. F has a look at YS.
6:14	YS: I see it [smile]!		

Table 3.6: Example of the transcript of the video recording

3.3.4.2. Measure and analysis of *Dora, the Explorer*

Unit of analysis

In *Dora, the Explorer,* the unit of analysis was the programme points when Dora asked the audience to participate with her. There are 36 programme points in the episode, *Baseball Boots*, used in the current study.

Child's engagement measure

According to the literature, in order for learning to occur from a television programme, first the child has to attend, which is more than merely looking, then they have to be engaged (Calvert, et al., 2007; Pugzles Lorch, et al., 1979). Calvert, Strong, Jacobs & Conger (2007) suggest that engagement is associated with comprehension. Therefore, it was decided that an engagement measure would be used to identify children's level of engagement. The code is based on Calvert et al.'s

(2007) measure of child's "*Enthusiasm and active programme engagement*" when watching *Dora, the Explorer. Enthusiasm and active programme engagement* was defined as the level of physical and verbal involvement children demonstrated as they viewed the programme. These codes were adopted for the same programme (*Dora, the Explorer*) that used in this study. The 4-point rating scale for child's engagement measure for *Dora, the Explorer* adopted from Calvert et al. (2007) are as follows:

Code	Definition
0	No engagement
1	Low level engagement where there is low expenditure and sometimes mumbling (when asked to respond by programme)
2	Average engagement coded as responding to and participating with the television character prompts
3	Enthusiastic engagement in which children sometimes jump up and down, shout, and point at the screen

Table 3.7: Child's engagement measure for *Dora, the Explorer*

Using the videotapes, co-raters scored the level of enthusiasm children demonstrated during programme points. Inter-rater reliability of *Dora, the Explorer* calculated for 1 of the 12 transcripts was 92%. The sum of the scores across programme points was calculated.

Parental scaffolding behaviours

For the co-viewing of *Dora, the Explorer*, the results were compared with Calvert, et al.'s (2007). As mentioned, their measure of *Enthusiasm and active programme engagement* was adopted to explore the child's engagement level in the present study. However, for parents, a strict comparison is not possible as Calvert et al.'s study was a controlled experiment with group assignment ad hoc where parents were expected to provide different levels of engagement/interactions. Alternatively, this study divided parents post hoc. Parents were grouped into high and low interaction group by cluster analysis according to their percentage of interaction. Percentage of interaction, measured from videotaped sessions, was defined as the percentage of programme points the parents interact with their child during the DVD presentation. This was calculated by dividing the parent's frequency of interaction by the total number of programme points in the programme. Two observers coded a videotape of one dyad and the agreement on

total parent interaction frequency was 100%. The results of the grouping are presented in Chapter 5 section 5.5.

3.3.4.3. Measure and analysis of *Charlie and Lola*

Unit of analysis

Due to a very different programme style, there is no programme point in *Charlie and Lola*. Following Barr and colleagues (2008), a scene-by-scene analysis analogous to the page-by-page analysis in book-reading studies (DeLoache & DeMendoza, 1987) was used as a unit of analysis. The units were determined by the inherent structure of the DVDs. There are 40-42 units across the three episodes, with an average length of 14 sec (*SD*=10 sec) ranging in duration from 2 sec to 46 sec, in *Charlie and Lola*.

Child's engagement measure

Because there is no programme point in *Charlie and Lola,* the researcher developed a slightly different engagement measure based on Calvert et al.'s (2007). The adapted codes for child's engagement are:

Code	Definition
0	No engagement. Viewing but not really engaged in which children sometimes gazes with a slack body language and little evidence of intellectual connection with the programme
1	Low level engagement where there is low energy expenditure and watching quietly, i.e. not responding to parent's questions about the programme and producing no verbalization towards the programme. Face/body indicate passive viewing
2	Active viewing. Average engagement, positive body language, signalling enjoyment or interest and sometimes vocalization, talking to self about programme, smiling, and nodding in response to the programme or parent's verbalizations about the programme
3	Enthusiastic engagement in which children actively engages with the programme or parent's verbalization about the programme, makes a comment about programme, laughing and sometimes jumps up and down, shouts, and points at the screen

Table 3.8: Child's engagement measure for *Charlie and Lola*

Using the videotapes, co-raters scored enthusiasm levels of the children demonstrated across the scenes. Inter-rater reliability of *Charlie and Lola* for 3 of the 26 transcripts was 86%. The sum of the scores across the scenes was calculated.

Parental scaffolding behaviours

In order to address the relationships between parental scaffolding and the child's engagement during the co-viewing of television, one of the goals of Phase 2 was to determine whether there are different patterns of parental scaffolding during television co-viewing with their children. Thematic analysis was used to identify, analyse, and report patterns within data (Braun & Clarke, 2006, p. 6). There are two ways to identify themes or patterns within data in thematic analysis: inductive or 'bottom up' way and theoretical or deductive or 'top down' way. The themes identified with the former approach are strongly linked to the data themselves, whereas in deductive approach, the analysis tend be driven by the theoretical framework the researcher applies (Braun & Clarke, 2006). The analysis of parental scaffolding behaviour of *Charlie and Lola* used a thematic analysis following both a deductive and an inductive approach. Specifically, an existing coding scheme, which was drawn from the relevant literature, as well as some posteriori codes emerging from the data themselves were used to describe and analyse the features of the parents' scaffolding.

Parents' scaffolding behaviours were coded with an adaption of Barr, Zack, Muentener, & Garcia's (2008) scheme. Barr et al. (2008) developed a detailed coding scheme based on parent-child joint book-reading studies. However, they focused on parent's verbalization. During the analysis of the data of the present study, two new categories were identified which related to silence. Bligh (2011) discusses the value of silence. It is argued that appropriate use of silence and presence allows the child to comfortably engage in their task and process the information around them, but at the same time knowing that assistance is available if wanted. In their initial study about children's creativity outdoors, Dimmock & Magraw (2007) suggest that 'presence is not just about direct intervention; it is also about holding a silent creative space' (p4). It was found that in the current study, the parents scaffold not by always talking and interacting with a child but by just watching along side them. In addition, two different types of silence, supportive and non-supportive silence, were identified in this study. They helped illustrate the non-verbal behaviours. Supportive and non-supportive

silence will be further explored and discussed in Chapter 5 and Chapter 7. The coding scheme for parent's verbal and non-verbal behaviours during the video presentation is shown in Table 3.9.

Categories	Definition	Example
Questions	Wh- questions, questions beginning with what, who, when, or how, closed questions including yes-no questions, tag questions, and directives or requests.	"Where is Lola?" or "Do you see a flower?" or "She is lost, isn't she?" or "Is that Foxy?"
Labels or descriptions	Labels are single referents provided for the child. Descriptions are utterances longer than single words or labels.	"Plant, flower" or "That's an acorn" or "The plant is growing bigger."
Abstractions or plays	Abstracts are information provided by the caregiver that extended beyond the immediate video context. Plays are comments or encouragements by the caregiver about the way the child is interacting with the media or suggestions about how the child should interact with the media.	"You have grown a plant like that" or "Reach up" or "How does the flower smell?"
Supportive silence	Non-verbal behaviour that guides or supports the child's engagement with the programme.	Smiling, holding the child's hand, holding the child closely on a lap.
Non-supportive silence	No communication, either verbal or non-verbal, between a parent and child while viewing.	
Attentional vocatives	Caregivers' attempts to obtain the child's attention verbally by using an utterance.	"Look" or "Look at that" or ask the child to focus on watching.
Confirmations and corrections	Either positive or negative feedback provided by caregiver related to the child's previous utterance or behaviour.	"Yes, that's right, that's a tomato."
Evaluations	Requests or judgments provided by the caregiver about the video.	"That's really funny."
Singing	Present or absent during singing segments	
Verbalizations unrelated to media content	Verbalizations that are not related to media content.	
Placeholders	Responses that do not provide any new information to the child.	"I don't know."
Uncodable verbalizations	The data that does not fall into any of the other categories	

Table 3.9: Coding parental verbal and non-verbal behaviours during video presentation (adapted from Barr et al. (2008), p 38-39)

The total frequencies of each of these categories of parental scaffolding were calculated across the entire DVD presentations. Then for each category, a proportion measure of the total adult behaviours was calculated. Proportions were

used in this level of analysis because of large individual differences in verbal and non-verbal behaviours and overall level of interaction and communication observed during the DVD presentations (see Barr, et al., 2008). It offered a sense of the extent to which a particular behaviour was common across the data, and therefore the extent to which it might be understood as more broadly shared. Categories were mutually exclusive. Inter-observer agreement was established by two coders who independently coded 3 of the 26 transcripts. Mean agreement (*M*=96%) was established by averaging (agreement/ [agreement + disagreement]) transcript.

Studies on joint book-reading (Britto, et al., 2006; Haden, et al., 1996; Ninio, 1980) and television co-viewings (Barr, et al., 2008) usually use cluster analysis to identify groups of parental scaffolding styles. However, due to the small sample size of this study, it was unable to produce meaningful clusters with only thirteen dyads. So, the features of each parent's scaffolding behaviour were compared and contrasted with the literature and the researcher sought the similarities within and differences across dyads.

To further examine the differences between range of parental scaffolding patterns, the patterns were looked at another way. The researcher linked parental scaffolding behaviours with the literature of both joint book-reading and television co-viewing (Barr, et al., 2008; Haden, et al., 1996; Ninio, 1980; Pellegrini & Brody, 1985; Reese, et al., 2003) and gave each scaffolding category a score. Table 3.10 shows the score defined for each category. Then the scores of all scenes of *Charlie and Lola* were added up to become the sum parental scaffolding score. In general, the higher the parental scaffolding score, the higher the parental scaffolding level.

Score	Parental scaffolding category
-1	Verbalisations unrelated to media content
0	Non-supportive silence
1	Closed questions, confirmations and corrections, attention vocatives, evaluations, supportive silence, and placeholders
2	Wh- questions, labels or descriptions
3	Abstractions or Play

Table 3.10: Score of each parental scaffolding category

3.3.4.4. Parent's engagement, co-engagement and Sustained Shared Thinking

Apart from the child's engagement and the parent's scaffolding behaviour, in another level of analysis, the researcher also examined parent's engagement. Due to the fact that the focus of the study is the way parents scaffold the child's viewing, a measure for both programmes to see parent's level of engagement was also developed. The measure of parents' engagement was extended from the child's engagement measure mentioned. Table 3.11 shows the 4-point rating scale. Using the videotapes, co-raters scored how much enthusiasm parents demonstrated during programme points (*Dora, the Explorer*) or scenes (*Charlie and Lola*). Inter-rater reliability was 82%.

Code	Definition
0	No engagement coded as viewing but not really engaged in which parents sometimes gazes with a slack body language and little apparent intellectual connection with programme
1	Listening, low level engagement perhaps they are not viewing where there is low energy expenditure and watching quietly and passively
2	Average engagement, positive body language, signaling enjoyment or interest, vocalization, coded as asking child questions about the programme or responding to child's verbalization towards the programme. Sometimes smiles and nods while viewing
3	Enthusiastic engagement in which parent sometimes points to the screen, links the content with child's own experience, and apply the televised content to play with the child

Table 3.11: Parent's engagement measure for the two programmes

Furthermore, the co-engagement and Sustained Shared Thinking (SST) incidents were also explored. Co-engagement was defined as when both a parent and child engage with the programme and then each party interacts with each other regarding the content. Co-engagement was demonstrated by a conversation, a smile, or a non-verbal interaction related to the content. And SST was defined as 'an interaction where two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative' (Sylva, et al., 2004, p. vi). Instead of using a scene as a unit of analysis, the measure of co-engagement and SST was attained by event sampling. Event sampling was chosen because it allows the researcher to study ongoing events in its naturally-occurring situation. The total number of co-engagement and SST were calculated across the DVD screenings.

3.4. Ethics

The study was conducted with young children and their parents. According to British Educational Research Association's ethical guidelines for educational research (2011), there are some ethical issues involved in the study. The responsibilities to participants are described below. For the Phase 1 of the study, it was conducted with parents. Parents were informed the purpose of the study. It was their free choice to decide to join the online survey or not. The survey was confidential and anonymous so there is no other ethical issue. The study did not ask the participants of this phase to leave their correspondent details unless they were willing to join the draw for the gift voucher or if they intended to join the Phase 2 of the study.

In Phase 2 of the study the researcher visited participants' homes to observe the interactions between the parent and the child when they co-view the television programmes. There are a number of ethical considerations relating to this phase of data collection. Firstly, the researcher ensured that fully informed consent is obtained from all participants prior to the visits to their homes. In this case, approval of the guardian of the children was obtained. As suggested by Dockett and Perry (2011), the parents were advised to make the participation decisions with their child. Participants were informed of their right to withdraw from the research at any time, with no adverse consequences. To this end, the researcher was aware of the principle of 'assent' to deal with undertaking research with children. Miller, Drotar, and Kodish (2004) discuss the concept of assent which involves 'basic comprehension of procedures and purpose and the ability to indicate a preference' (p256). In the current study, it was explained to the children that the researcher would visit their homes on three days to do her 'homework'. The setup of the camcorders is also a part of her homework and she will bring DVDs for them to watch every time she visited. In addition, the researcher will ask the children whether or they want to watch the DVD or not every time before the DVD presentation. The researcher was alert, all the time, for any cues that the young children were not comfortable with the research process. If the child is not ready to watch, the researcher will wait or come to visit on the other day. For example, the girls of the Warm Father family, usually watch DVDs before dinner,

but they also read books, play with their father when their mother is preparing the meal. In order not to interrupt the activity they are engaging with, the researcher waited quietly for 40 minutes till they actively ask to watch the DVD. During the observation, the researcher was very aware not to disrupt the families' lives. Secondly, ethical concern relating to the filming of observation and recording of interviews is that the researcher ensured that informed consent was provided by all participants, all data were treated with the utmost confidentiality and anonymity, and that all participants agreed to the uses of the data. Also, that the videos would be destroyed after the study. Finally, there is particular ethical concern relating to the interview of parents. In the interview, the researcher's questions focused on parental attitudes towards their child's media use as well as the way, frequency, and extent the parents co-view with their young children. The pilot showed that this series of questions made parents feel guilty when they do not do all these things, i.e. not co-viewing in a supportive way with their children. In this case, after the interview, the researcher explained to parents that the aim of the PhD is to provide information that is helpful to other parents. It is important that more is known about the ways in which parents can be helped to co-view in the most supportive way with their children. The researcher is studying how parents can help children to access the meaning of the programme. She is doing this research because she wants to be able to give advice to parents in the future. The researcher will give feedback after the study to let participants know how they can support/help their children even more successfully.

Chapter 4

Findings of Phase 1

Introduction

The use of media by young children, aged 6 years and under, and the issues related to it, have been paid much attention in Western countries. However, there is no systematic investigation about the media use of children of this age in Taiwan. One of the purposes of Phase 1 was to actually explore the differences between children's media use in Taiwan and the very famous large survey undertaken in the USA. The present survey 'Young children's media use in Taiwan' investigated both the type and amount of the media use of Taiwanese children aged 6 months to 6 years through an online survey. This survey will give a precise understanding about the role media play in young children's lives. This study has been conducted in two phases. The online survey in Phase 1 is pre-viewing and pre-exploring some issues, including frequency of co-viewing and parent-child interactions during the co-viewing, that will be further examined in Phase 2.

As mentioned in Chapter 3, the questionnaire used in Phase 1 was developed from the influential US national survey, *The Media Family* (Rideout, et al., 2006), of 1051 parents of children aged 6 months to 6 years old. It was, however, adapted for both the sample and the purpose of this study. The development of the questionnaire has been discussed in the previous chapter, including the changes made after the pilot. In the main survey, each respondent completed a self-administered online questionnaire of 36-78 items (the questionnaire can be found in Appendix 2).

This chapter outlines the results regarding the range of media used by children of this age, the amount of time children spend watching television, videos/DVDs, playing video and mobile games, and using computers. The survey also investigated parents' media use, parents' attitudes towards media use, the home media environment, media rules, as well as issues regarding TV and food, gender

and demographic effects on media. The findings from the survey will be reported next in this chapter.

In this Chapter, the results of the main survey will be compared with two US surveys. The first one is *The Media Family* study mentioned earlier (Rideout, et al., 2006). The comparison between the current survey and the US data (Rideout, et al., 2006) will be stated when there is a large difference. Details of the comparison can be found in Appendix 5. It is important to note that there are methodological differences between this study and *The Media Family* study, primarily that the current study was conducted online and the US study was conducted over the phone. And also, six years is a considerable time in the rapidly changing world of media use. Another US survey that this study will be compared with is the *Zero to Eight* study (Rideout & VJR Consulting, 2011). It is the most recent US national media survey for young children. Comparison of all the results is not possible due to the different age ranges of the surveys. The only age range that overlaps is for 6 to 23 months age group. Therefore, the comparisons of the media usage of Taiwanese and US children will be shown in the 'children under two' section (section 4.9).

The most up-to-date investigation of British preschool children's media use is Marsh et al.'s study (2005). These data indicated that like US children (Rideout & Hamel, 2006), UK children aged from birth to six are living in a media rich environment. However, UK children seem to spend more time using screen media (including TV, videos/DVDs, video games, and computers) than US young children per day (2:06 vs. 1:36). However, this might due to the fact that the two studies took place in different times of year. The UK survey took place in winter months, whilst the US survey took place in spring months. Children are more likely to stay inside the house in wintertime so their media use is likely to increase.

In the following chapter, 'a typical day' refers to weekdays. The details of the comparisons between weekday and weekend in the survey can be found in Appendix 6. In general, children spend more time on every activity at the weekend,

probably because children have more free time at weekends. The online survey was launched on 31 August 2011 and ended on 31 January 2012.

4.1. Amount and frequency of children's use of media

From this survey, it would appear that the use of media is integral to young children's lives. On a typical day, 92% of children aged 6 months to 6 years use some form of screen media, including the 85% who watch TV, 54% who watch videos or DVDs, 28% who use a computer, 27% who play mobile games, and 11% who play video games (see Figure 4.1).

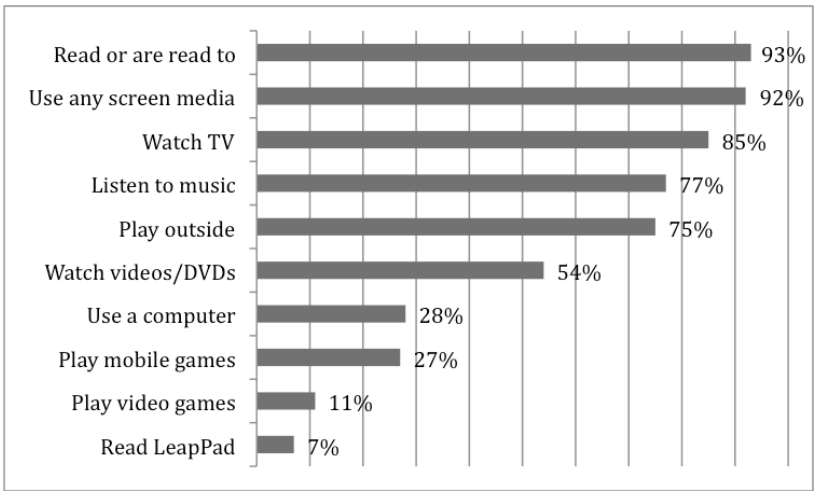


Figure 4.1: On the last typical day, percentage of children aged between 6 months to 6 years who engage in each activity (n=535). Note: Screen media includes TV, videos/DVDs, video games, mobile games, and computers.

It is important to note that the percentage of children who watch TV (85%) is already higher than those who listen to music (77%) (t=5.07, df=534, two-tailed p<0.001) or who play outside (75%) (t=6.36, df=534, two-tailed p<0.001), the two activities that are considered crucial for preschool children (Berk, 2009).

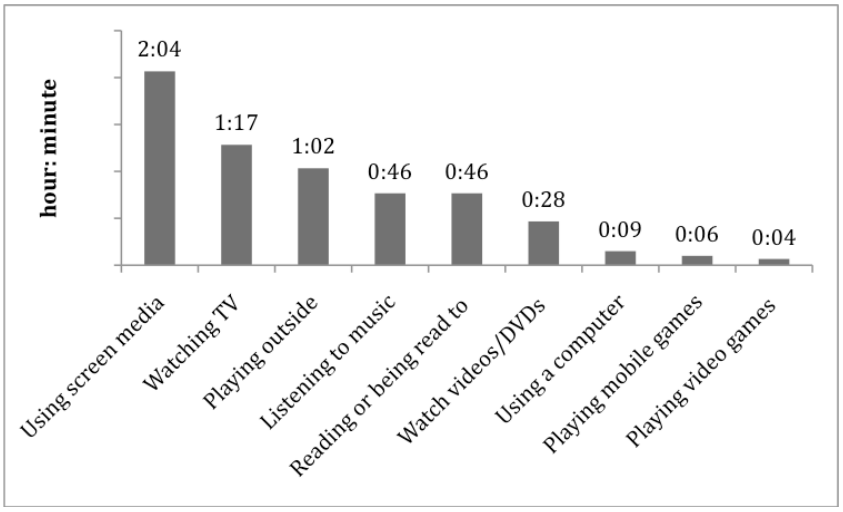


Figure 4.2: Amongst *all* children, average amount of time spend on each activity per day (*n*=535)

In the US, there has been concern about the amount of time all children globally spend using screen media. According to the Taiwanese (TW) parents in this survey, children aged 6 months to 6 years spend an average of 1 hour and 17 minutes watching TV, 28 minutes watching videos or DVDs, 9 minutes using a computer, 6 minutes playing mobile games, and 4 minutes playing video games per day, making the average screen use for all children about two hours (2:04). These figures are the averages amongst *all* children, including those who do not do certain activities at all because of their age and parental rules. At the same time, the average time spent reading or being read to is 46 minutes. Time spent watching television is significantly higher than time spent playing outside (t=3.16, df=533, two-tailed p=0.002), listening to music (t=6.62, df=533, two-tailed p<0.001), and reading or being read to (t=7.67, df=533, two-tailed p<0.001). The average amount of time spent by children who engage in each activity can be found in Table 4.1. The details about the types of TV shows children watch can found in Appendix 7.

In general, most of the statistics of the amount of time children use media are higher than those reported in *The Media Family* study (Rideout & Hamel, 2006) of US children. For example, TW children spend significantly more time watching TV than US children (1:17 vs. 0:59) (t=4.54, df=534, two-tailed p<0.001). But this may be due to the time elapsed between these two studies taking place. As media becomes ever more present in children's everyday lives, the use will increase.

Gender differences in media use

The survey also explores gender differences in media use. The details can be found in Appendix 8. The most interesting finding is that the girls spend more time than boys watching TV, reading, and using screen media. The differences in reading might due to girls tend to perform better than boys in verbal ability at the same age (Berk, 2009). Also, girls might be more interested in the activities that are more sedentary and require greater concentration, e.g. watching TV and reading.

Age differences in media use

Table 4.1 shows that older children (aged 2-3 and 4-6 years) are more likely than younger children (aged 6-23 months) to watch TV, use a computer, and play video or mobile games. Older children are also more likely than younger children to read or be read to; however, older children spend less time than younger children listening to music. Specifically, children aged 2-3 years are the most likely to watch videos and DVDs than children in the other age groups. And 2-3 year-olds also spend the greatest amount of time on screen media (see also Figure 4.3). Children's TV and video skills can be found in Appendix 9. The possible reasons for the above findings will be discussed in Chapter 6.

	On typical day, percentage who did each activity (%)				Average time amongst those who did activity				Average time amongst all children			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Reading or being read to	85	95*	95*	93	0:47	0:53	0:47	0:49	0:40	0:51	0:44	0:46
Listening to music	73	79	78	77	1:31^+	1:06+	0:41	1:00	1:07+	0:52+	0:32	0:46
Watching TV	71	90*	87*	85	1:32	1:40	1:22	1:31	1:06	1:30*+	1:12	1:17
Playing outside	72	84*+	69	75	1:23	1:30	1:14	1:22	1:00	1:15+	0:51	1:02
Watching a video or DVD	43	67*+	47	54	1:16+	0:56+	0:38	0:53	0:32+	0:38+	0:18	0:28
Reading an electronic book	8	5	7	7	0:32	0:25	0:29	0:29	0:03	0:01	0:02	0:02
Using a computer	10	29*	37*	28	0:35	0:35	0:32	0:33	0:04	0:10*	0:12*	0:09
Playing video games	4	11*	14*	11	1:03	0:36	0:34	0:37	0:02	0:04	0:05	0:04
Playing mobile games	14	31*	31*	27	0:23	0:21	0:19	0:20	0:03	0:07*	0:06*	0:06
Total used any screen media	79	95*	96*	92	2:16	2:35+	1:57	2:15	1:47	2:28*+	1:52	2:04
n	108	199	228	535					108	199	228	535

Table 4.1: Time spend using media and other activities, by age
*Significantly higher than ages 0-1, $p<0.05$ (two-tailed); ^Significantly higher than ages 2-3, $p<0.05$ (two-tailed); +Significantly higher than 4-6, $p<0.05$ (two-tailed).

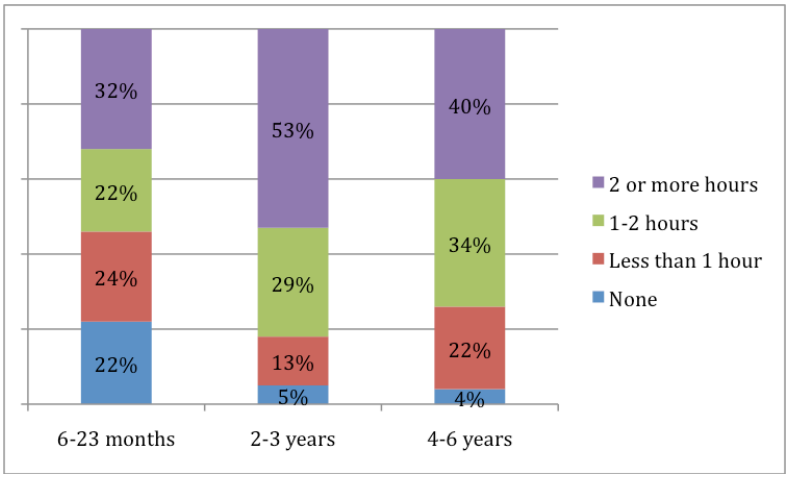


Figure 4.3: On a typical day, time spent with screen media, by age (6-23 months: *n*=107; 2-3 years: *n*=198; 4-6 years: *n*=228).

Frequency of media use

Over half (54%) of children aged 6 months to 6 years watch television every day, 50% read or are read to every day, and 45% listen to music every day. About two-fifths (42%) of children watch videos and DVDs several times a week or more and 19% use a computer that often (see Table 4.2).

	Percentage who engage in activity every day (%)				**Percentage who engage in activity several times a week or more (%)**			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Listening to music	60^+	48+	34	45	83	82	75	79
Reading or being read to	39	56*	49	50	81	93*	90*	90
Watching TV	39	59*	56*	54	59	83*	80*	77
Watching videos or DVDs	18+	26+	7	16	35	61*+	29	42
Using a computer	<1	6*	4*	4	8	19*	23*	19
Playing video games	<1	2	1	2	2	7*	9*	7
Playing mobile games	0	4*+	<1	2	7	15*	12	12
Going online	2	3	2	2	4	9	11*	9
n	108	199	228	535	108	199	228	535

Table 4.2: Frequency of media use, by age
*Significantly higher than ages 0-1, $p<0.05$ (two-tailed); ^Significantly higher than ages 2-3, $p<0.05$ (two-tailed); +Significantly higher than 4-6, $p<0.05$ (two-tailed).

To sum up, the majority (92%) of young children aged 6 months to 6 years use screen media on a typical day. On a typical day, an average of 2 hours (2:04) are spent using screen media. The most frequent activity for children aged 6 and under in the present survey is watching TV. TV is still the most popular media for children at this age range. It is thus very important to know how the children engage in this activity. The next section will look at issues related to co-viewing statistically. The children's viewing context and whether or not the parents support their child's understanding of the content will be explored. The next section will also provide the information leading to the Phase 2 study.

4.2. Interaction during the viewing

4.2.1. Co-viewing by parents

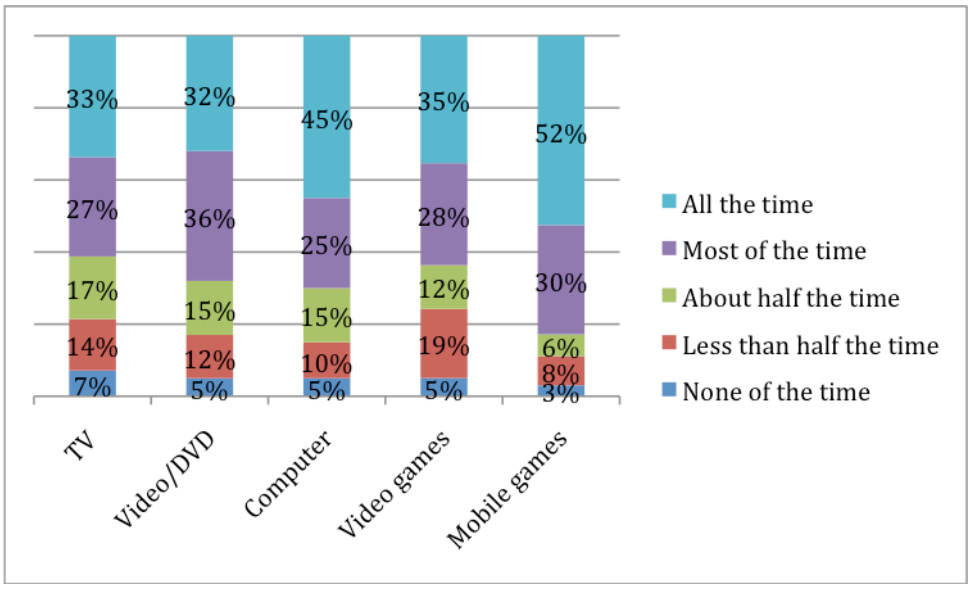


Figure 4.4: Amongst children who use each medium, percentage of parents in the room watching/playing/helping along with the child (TV: *n*=454; Video/DVD: *n*=287; Computer: n=151; Video games: *n*=57; Mobile game: *n*=145).

On a typical day, most parents whose children viewed television are in the room watching along with their children all (33%) or most (27%) of the time, just 7% report that they never watch with their children. Interestingly, 52% of parents whose children play mobile games and 45% of parents whose children use a computer are with their children all of the time. Parents are more likely to be in the same room all of the time when their children are playing mobile games (t=4.67, df=144, two-tailed p<0.001) or using a computer (t=2.96, df=150, two-tailed p=0.004) than watching TV (see Figure 4.4).

Amongst those children who watch TV on a typical day, it is interesting to note that co-viewing is significantly associated with child's birth order and age. Firstly, children who are only children were more likely (χ^2=8.87, df=1, p=0.003) to have parents who co-view with them all or most of the time than those who were the youngest child (70% vs. 52%). Secondly, younger children are more likely to be co-viewed by their parents than older children. The age of the children whose parents co-view with them all or most of the time (M=41.2 months, SD=17.9 months) is significantly younger (t=2.83, df=399, two-tailed p=0.005) than those parents who co-view with children less often (M=45.9 months, SD=16.9 months).

4.2.2. Parent-child interaction during the child's viewing of television

As for the issue of parent-child interaction during children's viewing, 72% of parents whose children watch television on a typical day say that they interact all or most of the time during their children's viewing. In order to further understand the parent-child interaction during the co-viewing, five types of interaction were developed from Barr et al.'s study (2008), including a) explain the plot, b) link the content with the child's experience, c) labelling or a description of something, d) give an explanation of the vocabulary used, and e) sing and play when the programme invited.

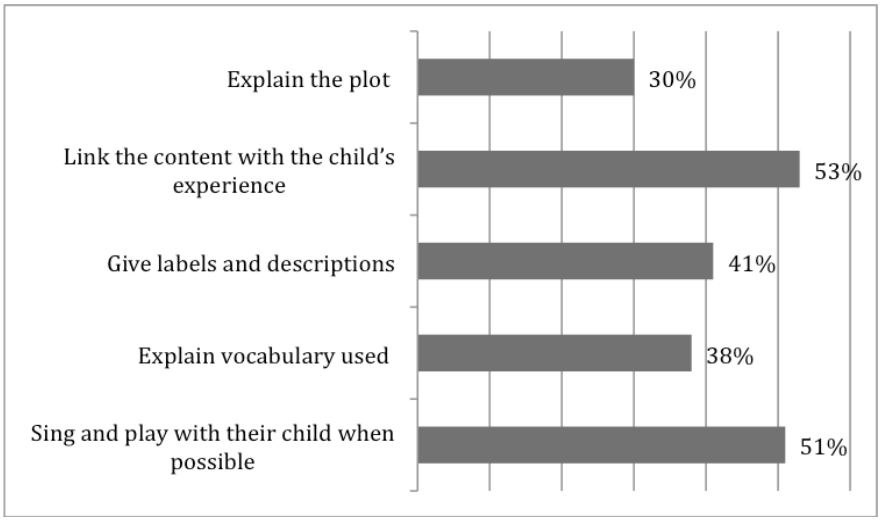


Figure 4.5: For children who watch television on a typical day, percentage of parents who report they apply each scaffolding type all or most of the time (*n*=451)

For children who watch television on a typical day, 30% of their parents say that they explain the plot to the child all or most of the time, 53% link the content with the child's experience all or most of the time, 41% give labels and descriptions all or most of the time, 38% explain vocabulary used all or most of the time, and 51% sing and play with their child all or most of the time (see Figure 4.5). Extending the content (i.e. linking the content with the child's experience) is the most frequent self-reported scaffolding type during co-viewing.

For children who watch television on a typical day, parent-child interaction during the co-viewing is found to be significantly associated with child's age, media rules, parents' attitudes towards media, parent's educational level, and household

income. Firstly, just as with co-viewing, parents are more likely to interact with younger children than older children all or most of the time during co-viewing, which is logical. Specifically, as shown in Table 4.3, children of parents who give labels or descriptions (t=4.69, df=382, two-tailed p<0.001) and play/sing (t=5.22, df=448, two-tailed p<0.001) during TV viewing all or most of the time are significantly younger than those whose parents who do those interactions less often.

Labelling or descriptions	*n*	Mean age (in months)	Std. Deviation
Half the time or less	268	46.21	17.04
All or most of the time	183	38.39**	17.62
Play or sing	*n*	Mean age (in months)	Std. Deviation
Half the time or less	222	47.33	17.26
All or most of the time	229	38.88**	17.11

Table 4.3: Amongst children who watch TV on a typical day, mean age of children whose parents interact with them all or most of the time or half time and less. **Significantly younger than 'half the time or less', p<0.001 (two-tailed).

Secondly, media rules are also associated with the likelihood to interact. The analysis shows that labelling all or most of the time during the co-viewing is positively associated (χ^2=4.16, df=1, p=0.041) with whether parents have regulations about **what** their child can or cannot watch on television/DVD or not. And 'explain the plot all or most of the time' during the co-viewing is positively associated (χ^2=4.47, df=1, p=0.035) with whether parents have regulations about **how much time** their child can spend watching television/DVD or not.

Thirdly, there is also a link between interactions and parents' attitudes towards media. In general, parents who think television viewing is mostly beneficial are more likely to interact, e.g. linking the content to the child's experience (χ^2=9.21, df=1, p=0.002), giving labels or description (χ^2=6.36, df=1, p=0.012), and playing and singing when possible (χ^2=10.26, df=1, p=0.001), with their child all or most of the time during their viewing.

Conversely and surprisingly, there are negative associations between interaction and parent's educational level and household income. In the survey, parents who are less educated and have a lower income are more likely to interact with their child all or most of the time during the co-viewing. For example, parents who had been only to high school or are less educated are significantly more likely (χ^2=4.27, *df*=1, *p*=0.039) to explain the plot to their child all or most of the time than those who are university graduates or higher (44% vs. 28%). And parents whose household annual income are under £10,000 are significantly more likely (χ^2=4.89, *df*=1, *p*=0.027) than those whose household annual income are £30,000 or more to give labels or descriptions all or most of the time (57% vs. 37%). This finding seems to be contradictory to the literature (Heath, 1982; Ninio, 1980) and maybe specific to this study only, but it is consistent with what was observed in Phase 2. The point to be made is that high levels of education and income are not necessary for a high level of scaffolding. Parent's understanding about the value of co-viewing and interacting during the co-viewing are more important than their educational and socio-economic background. This is the joint finding of both Phase 1 and 2.

To sum up, most parents in the survey reported that they are in the company of their child all or most of the time when he/she is watching TV. It is found that parents are more likely to co-view with an only child and the younger children. Similarly, parents are more likely to interact with younger children than older children. In addition, parents who have media rules/who hold positive attitudes towards media appear to be more likely to interact with their child during the co-viewing. Counter to other studies, the findings show that parents who are less educated and have lower income are more likely to interact with their child when they are viewing TV together. These findings about co-viewing and parent-child interaction during the co-viewing provide the basis for the investigation of Phase 2. The above issues will be explored in-depth in Phase 2.

4.3. Parents' own media use

	On a typical day, percentage who use each medium (%)	Average time spend amongst those who use each medium	Average time spend amongst all parents
Watch TV	79	1:22	1:05
Use a computer	79	2:06	1:39
Play video games	15	0:48	0:07
Use any screen media	95	3:01	2:51
n	535		535

Table 4.4: Parents' own media use

Table 4.4 shows that on a typical day, almost all parents (95%) of children aged 6 months to 6 years spend some time using screen media at home. The 95% of parents who use some form of screen media spend an average of just over three hours (3:01) doing so. This is 48 minutes longer than the average time spent on screen media by US parents in *The Media Family* study (Rideout & Hamel, 2006).

Conversely, parents spend significantly more time (t=4.84, df=534, two-tailed p<0.001) using a computer than watching television at home (1:39 vs. 1:05), which is different from the US and UK parents (Ofcom, 2013a; Yahoo online marketing Taiwan, 2013).

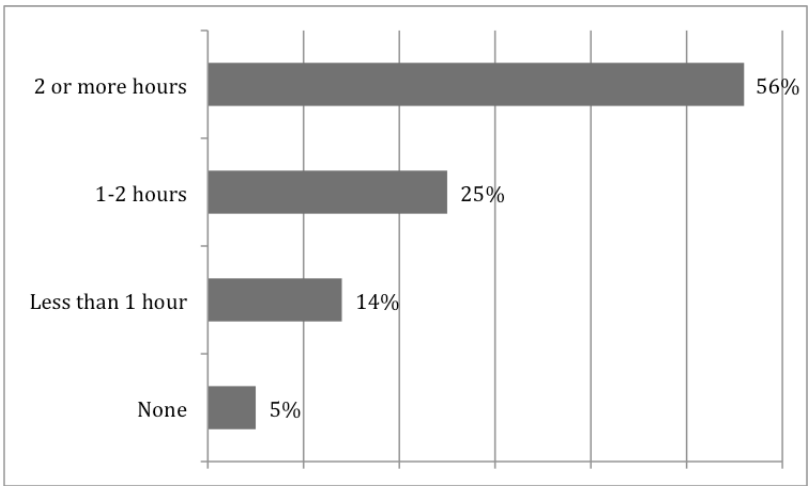


Figure 4.6: On a typical day, amount of time parent spend using screen media at home (n=535)

Over half (56%) of parents spend two hours or more per day using screen media at home (see Figure 4.6). It is found that the more time parents spend on using their own media, the more time their children spend watching television. For example, children whose parents spend more than 2 hours per day using screen media spend significantly more time (t=6.45, df=337, two-tailed p<0.001) watching television than children whose parents spend less than an hour using screen media (1:30 vs. 0:43). Also, the more time parents spend using their own media at home, the more likely their children are to watch television every day. For example, children whose parents spend more than 2 hours per day using screen media are more likely (χ^2=6.05, df=1, p=0.014) to watch TV every day than children whose parents spend less than an hour using screen media (57% vs. 42%). However, they don't spend **less** time than other children reading or be read to. The table of the relationship of parental media use to children's media use can be found in Appendix 10.

To sum up, TW parents spend a great deal of time using their own media at home. Perhaps not surprisingly, there is a positive association between the time parents spend using their own media and the time their child spend in front of the screen. Also, children of 'heavy media users' tend to use media more frequently than children whose parents spend less time using media.

4.4. Parents' attitudes about children's media use

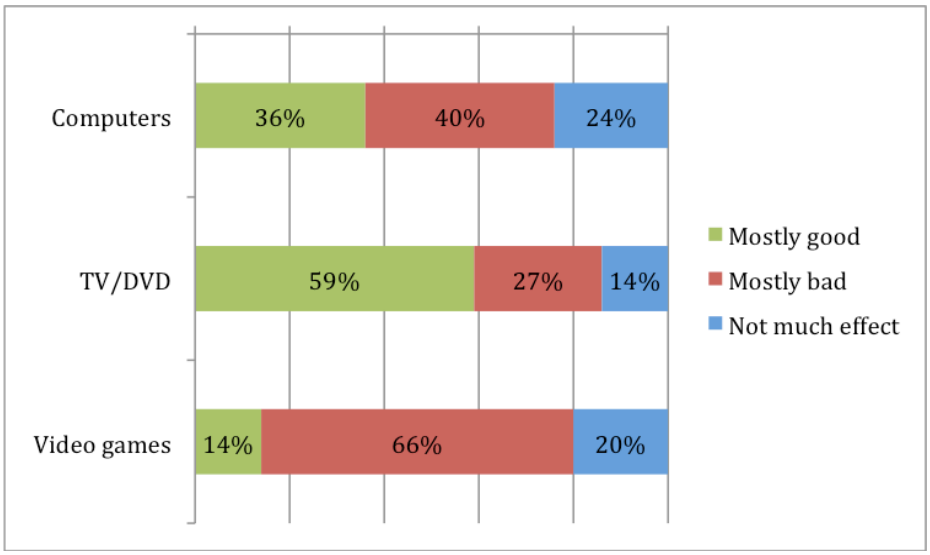


Figure 4.7: Percentage of parents who say each medium mostly good or bad for children's learning (n=535)

Nearly sixty percent (59%) of parents hold positive attitudes towards their children's viewing of TV/DVD. On the contrary, the majority (66%) of parents think that video games do not benefit their children's learning. When it comes to the use of computers, 36% of parents think it is mostly good for their children's learning, while a similar number (40%) of parents hold the opposite view (see Figure 4.7).

There is an association between parental attitudes towards TV/DVD and their children's actual television viewing pattern. Children whose parents think TV/DVD viewing is mostly good for children's learning are significantly more likely (χ^2=24.66, df=1, p=<0.001) to watch television every day than those whose parents think the activity is mostly bad (62% vs. 37%); and the former also spend significantly more time (t=3.30, df=374, two-tailed p=0.001) watching television than the latter (1:25 vs. 0:58). The table of the relationship of parental attitudes to children's media use can be found in Appendix 11.

To sum up, more parents think TV is good rather than bad for their child's learning. Conversely, video games are considered mostly damaging for children. And whether or not using a computer is good for the young child is controversial. Parent's attitudes towards children's media use appear to influence their child's actual media use habits.

4.5. Media in the home

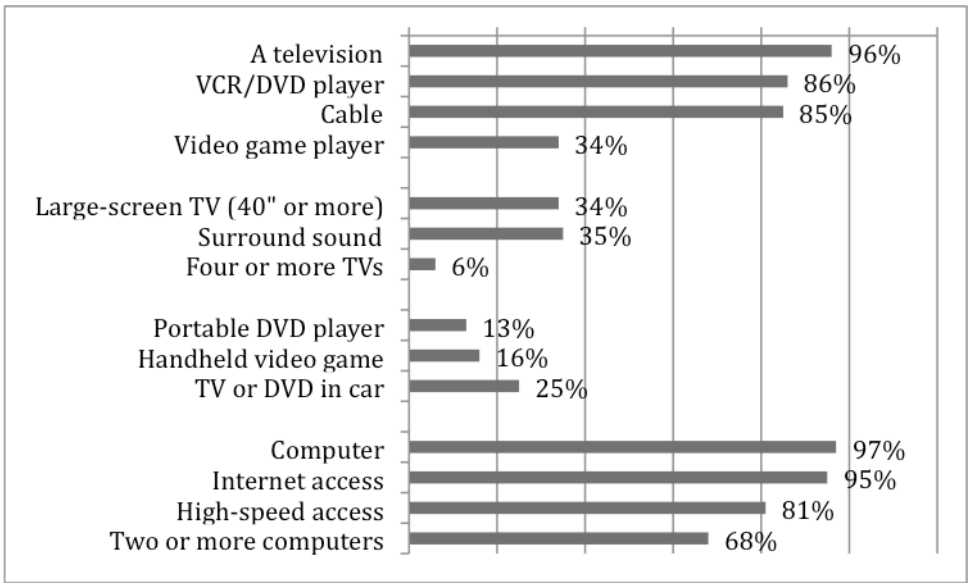


Figure 4.8: Percentage of children aged 6 months to 6 years old who live in a home with each media item (*n*=535)

In general, children aged 6 months to 6 years grow up in homes where media is an important, integral part of the environment. Television and computers seem to have become necessities in the home and many families have multiple televisions and computers (see Figure 4.8). Almost all (96%) children in this age group live in a home with at least one television set. Similarly, nearly all (97%) households have at least one computer, and 68% have two or more computers in the home. Again, almost all (95%) households have Internet access, including 81% who have high-speed access. It is interesting to note that the ownership of computers is similar to that of television (97% vs. 96%). The details about media in children's bedroom can be found in Appendix 12.

The level of computers ownership (97%) and Internet access (95%) is higher in Taiwan than the figures reported in *The Media Family* study (Rideout & Hamel, 2006) of US children (78% and 69%). This may be due to the fact that Taiwan is advanced in electronic technology and devices. Taiwanese children are also capable of using a computer at a younger age. The details of young children's computer use and access can be found in Appendix 13.

A survey of family income and expenditure of 2011 from the Taiwanese government (Directorate-General of budget, 2012) shows that 99.2% of households in Taiwan have at least one television set at home, 71.9% of households have at least one computer, and 69% have Internet access. The above results show that the sample in the present survey had a higher percentage of both computer (t=36.89, df=534, two-tailed p<0.001) and Internet access (t=26.11, df=534, two-tailed p<0.001) than the population. It might be due to the fact that the sample of the current study is skewed towards a higher level of education/household income in the participants.

4.6. Media rules

Amongst the 98% of children aged 6 months to 6 years who have ever watched television, the majority of their parent have rules about **what** (81%) children can or cannot watch on the television and **how much time** (79%) their children can spend doing it.

It is interesting to find that whether parents have media rules or not is also associated with child's age. Firstly, older children are more likely to have media rules than younger children. The mean age of children whose parents have rules about **what** they are allowed to watch on TV (M=43.63 months, SD=17.82 months) is significantly higher (t=4.65, df=42, two-tailed p<0.001) than those whose parents do not have rules on TV content (M=30.81 months, SD=15.79 months). Similarly, the mean age of children whose parents have rules about **how much time** they can spend watching TV (M=43.57 months, SD=17.89 months) is significantly higher (t=3.88, df=47, two-tailed p<0.001) than those whose parents do not have TV time rules (M=33.1 months, SD=16.25 months). The possible reason might be that when children are younger, they watch what their parents are in control of. Older children tend to have their own preferences for TV content and parents start to have regulations on what their child can watch and how much time they can spend watching TV.

4.7. TV and food

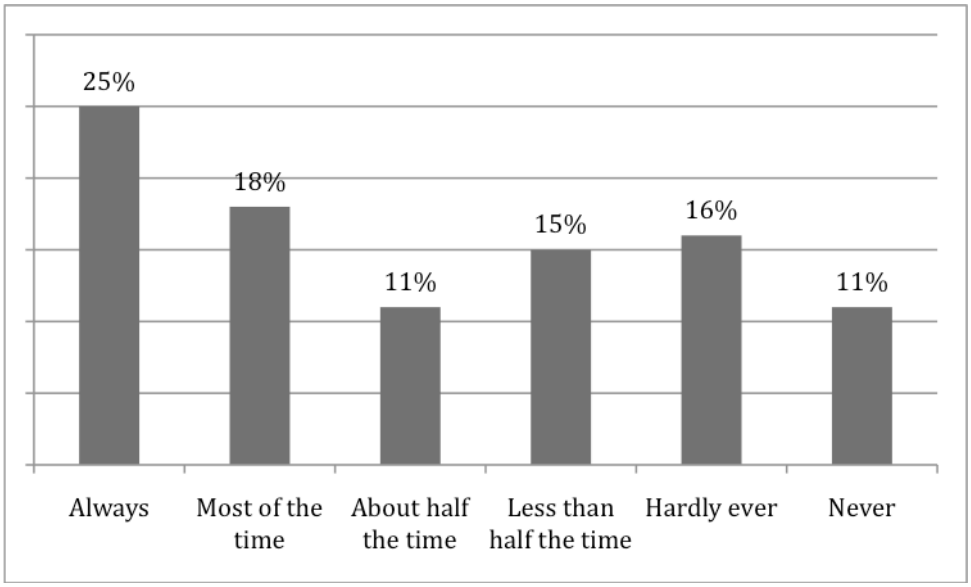


Figure 4.9: How often the TV is on during meals, amongst children aged 6 months to 6 years old (*n*=535). Note: 4% of households have no TV.

Watching television whilst eating meals is common amongst Taiwanese families. Nearly half (43%) of children aged 6 months to 6 years live in households where the television is on all (25%) or most (18%) of the time during the meals. Only 11% of parents say that television is never on when they are having meals (see Figure 4.9). The above figures are higher than those reported in *The Media Family* study (Rideout & Hamel, 2006) of US households. In *The Media Family* study, 16% of families have TV on all the time and 14% have it on most of the time when eating meals. The reason why families have TV on whilst having meals is unclear. Therefore this issue will be investigated in the interview of parents in Phase 2 and discussed in Chapter 6.

Perhaps not surprisingly, children who live in households where the TV is on all or most of the time when having meals are more likely to watch TV on a typical day (91% vs. 83%) (χ^2=6.42, *df*=1, *p*=0.011), watch TV every day (71% vs. 44%) (χ^2=38.48, *df*=1, *p*<0.001), and spend more time watching (1:39 vs. 1:03) (*t*=4.19, *df*=358, two-tailed *p*<0.001) than those who live in households where the TV is on half the time or less during meals. Children who live in households where the TV is on all or most of the time during meals are significantly less likely (χ^2=8.32, *df*=1,

p=0.004) than other children to read or be read to daily (42% s. 55%). A table that illustrates the above relationships and more details about TV and food/snacks can be found in Appendix 14.

4.8. Demographic differences in media use and the media environment at home

There are a number of significant differences in children's media use based on their parents' income and educational background. Overall, children whose parents have a lower income and/or are less educated are more *likely* to watch television on a typical day and daily, to have television in their bedrooms, to live in homes where the television is on during meals. Children whose parents have lower income and are less educated also tend to spend significantly more *time* watching television, using media, as do their parents. On the contrary, children whose parents have higher income and higher level of education are more likely to read and be read to every day (see Table 4.5).

For example, children from families with incomes under £10,000 per year spend an average of about one hour more (t=3.27, df=83, two-tailed p=0.002) watching television per day than do children from families with incomes £30,000 and more (1:53 vs. 0:54). In addition, 52% of children from the upper-income families read or being read to every day, compared to 36% of children from the lower-income group (χ^2=3.83, df=1, p=0.05). Similarly, 28% of children whose parents have a 'high school education or less' read or are read to daily, while 56% of children whose parents are 'university graduates or postgraduates' read or are read to that often (χ^2=11.67, df=1, p=0.001).

In terms of computer ownership, children from families with lower income (93%) are also less likely (χ^2=6.41, df=1, p=0.011) than those from high-income families (100%) to have a computer at home.

	Income		Education	
	Under £10,000	**£30,000 or more**	**High school or less**	**University graduate or higher**
Television				
Percentage who watch TV on a typical day	91%*	78%	90%	83%
Percentage who watch TV every day	70%**	47%	73%**	49%
Time spent watching TV on a typical day (amongst all kids)	1:53**	0:54	2:09*	1:08
TV in child's room	37%**	11%	30%*	16%
Watch TV when eating meals all or most of the time	68%**	39%	55%	42%
Parents' time spend on watching TV	1:25*	1:01	1:39*	0:57
Reading				
Percentage who read a book alone or with someone else every day	36%	52%^	28%	56%^
Time spent reading on a typical day (amongst all kids)	0:46	0:41	0:58	0:47
Computer				
Percentage who have a computer at home	93%	100%^	95%	98%
Time spent using a computer on a typical day (amongst all kids)	0:12	0:08	0:17	0:09
Screen media				
Total screen media time on a typical day (amongst all kids)	2:49**	1:40	3:32*	1:50
n	67	83	40	364

Table 4.5: Media use by household income and parents' educational background
**Significantly higher than '£30k or more' or 'University graduate or higher', $p<0.01$ (two-tailed). *Significantly higher than '£30k or more' or 'University graduate or higher', $p<0.05$ (two-tailed). ^Significantly higher than 'Under £10k' or 'High school or less', $p\leq0.05$ (two-tailed).

4.9. Children under age two

When it comes to using media, children under the age of two are an especial concern because the American Academy of Pediatrics (AAP), Australian and Canadian governments recommend no screen time at all for children under two (American Academy of Pediatrics, 2010; American Academy of Pediatrics Committee on Public Education, 1999; Australian Government, 2010; Mark S. Tremblay, et al., 2012). The results below show that the majority of Taiwanese families with children under two are not aware of this issue.

For children under the age of two, the favourite activities are music, books, watching TV or videos/DVDs. About seven out of ten (73%) children under two listen to music on a typical day and spend an average of 1 hour and 31 minutes on it, which is significantly higher than 2- to 3-year-olds (1:06) (t=1.78, df=103, two-tailed p=0.078) and 4- to 6-year-olds (0:41) (t=3.70, df=84, two-tailed p<0.001) those who engage in the same activity. However, on a typical day, more than seven in ten (71%) children in this age watch television, 43% watch videos or DVDs, 14% play mobile games, and 10% use a computer, including tablets, e.g. iPad.

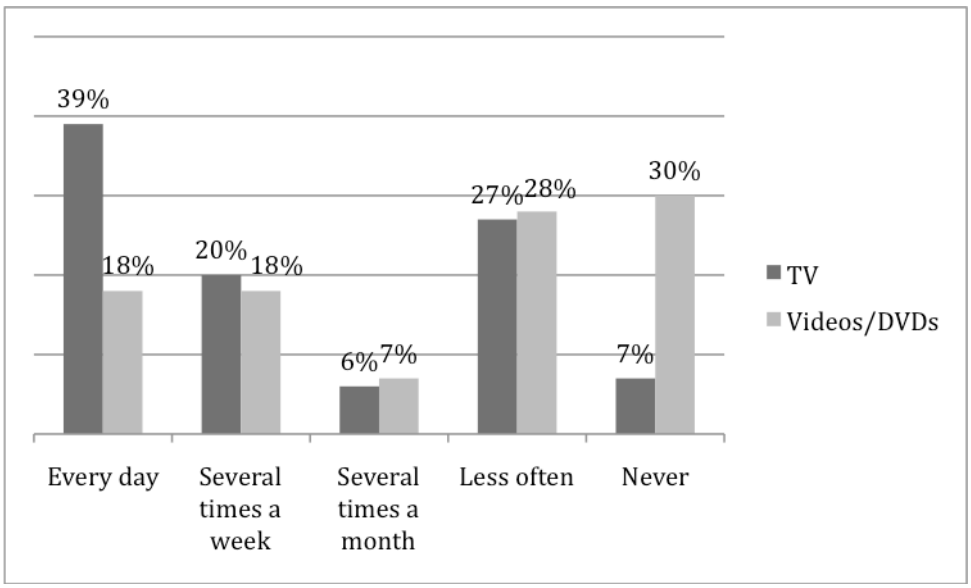


Figure 4.10: Frequency of children under age two who watch TV, videos/DVDs (n=108)

On a typical day, 76% of children of this age watch television, videos or DVDs, for an average of 2 hours and 9 minutes. The figures are higher than those in *The Media Family* study (Rideout & Hamel, 2006) of US children (61% and 1:19).

Amongst those who watch TV on a typical day, most parents say they are in the room when the child is watching television either all (51%) or most (22%) of the time. Nearly two-fifths (39%) of children this age watch TV every day and 18% watch videos/DVDs every day. Only 7% of children this age never watch TV (Figure 4.10).

Children younger than two have already learned many media skills. About half (44%) of them can turn on the television by themselves, 41% know how to change channels with a remote, 42% can switch the television off, 23% are able to put in a video/DVD by themselves, 21% can use a computer without sitting on a parent's lap, 19% know how to turn on a computer, and 24% can use a mouse to point or click.

In addition to watching the age appropriate shows, infants of this age are also exposed to background television. Amongst the parents who watch their own shows on a typical day, nearly six in ten (57%) say that their child was in the same room watching with them all (36%) or most (21%) of the time.

Comparing with 2011 US National Survey

In this section, the results of present study were compared with those of the 2011 US National Survey (Rideout & VJR Consulting, 2011). Due to the fact that the present survey is based on the design of the US 2005 survey (Rideout & Hamel, 2006), the only age group the current survey/US 2005 survey overlaps with the 2011 one is 6- to 23-months-old. Therefore, the following comparisons are only on children aged 6-23 month olds. The comparison aims to explore whether there are differences between the media use of children in the two countries with their associated different cultures. The comparison also helps increase the validity of the study and enhance the possibility of generalizing the results to the Taiwanese population.

Compared with the US data of the 6- to 23-month-olds, it seems that the situation in the two countries are fairly similar. The main difference being that TW children are more likely to have ever watched TV (92% vs. 75%) and videos/DVDs (70% vs.

62%) and less likely to read or be read to every day (39% vs. 47%) than US children. TW children also spend more time watching TV (1:06 vs. 0:42) and videos/DVDs (0:32 vs. 0:19) than the US children. In terms of television in the child's bedroom, nearly twice as many US children than TW children have a television in their bedrooms (see Table 4.6).

	TW	**USA**
Percentage who…		
Have ever watched TV	92%**	75%
Have ever watched videos/DVDs	70%†	62%
Have a TV in their bedroom	17%	29%**
Watch TV every day	39%	43%
Watch TV several times a week	20%	15%
Watch DVDs every day	18%	18%
Watch DVDs several times a week	18%	15%
Read or be read to every day	39%	47%†
Read or be read to several times a week	43%**	22%
Average time spend on a typical day		
Watching TV (amongst all)	1:06*	0:42
Watching videos/DVDs (amongst all)	0:32*	0:19
Watching TV (amongst those who watched)	1:32	1:30
Watching videos/DVDs (amongst those who watched)	1:16	1:16
Reading or being read to (amongst all)	0:40**	0:25
Reading or being read to (amongst those who read)	0:47	0:47

Table 4.6: Media use amongst children age 6-23 months old, the 2011 US national survey and TW data of the present study. Source of the US data: Rideout & VJR Consulting, 2011, p. 24. **Significantly higher than the other group, $p \leq 0.001$ (two-tailed). *Significantly higher than the other group, $p < 0.05$ (two-tailed). †Significantly higher than the other group, $p < 0.10$ (two-tailed).

Comparing the US 2005 (Rideout & Hamel, 2006) and 2011 (Rideout & VJR Consulting, 2011) surveys, the results reveal that the percentage of children under two who watch TV and videos/DVDs has slightly decreased. The reason behind this might be that US parents have taken into account the AAP's recommendations (American Academy of Pediatrics, 2010) of no screen time for children under two. There is no such policy or recommendation in Taiwan so far. So the idea of early television exposure being detrimental has not been widely recognised by Taiwanese parents. Therefore, the results of this study might suggest a picture of Taiwan as a picture of the US pre-AAP warning. Also, one of the characteristics of the sample in the current study is that most of the participants were recruited through the Internet, therefore it can be assumed that their families tend to be highly involved with the screen media.

To sum up, the above findings and comparisons suggest that TW children start to watch TV and videos/DVDs at a younger age than the US children and the former spend more time watching TV than the latter. It is clear that even though the AAP recommends no screen time for under twos, Taiwanese families appear either to not be aware of or not follow this advice.

Phase 1 Conclusion

The media clearly play an important and potentially influential role in Taiwanese children's lives. On a typical day, these 6 months to 6 years old children spend more time using screen media (2:04) than any other activity, e.g. reading or being read to (0:46) and listening to music (0:46). It is crucial to note that the patterns of children's media use are highly associated with parent's own media use, parents' attitudes towards media as well as parents' income and educational background. The media use of children under two particularly needs to be further investigated in Taiwan. The majority (79%) of children under 2 years use screen media on a typical day which is contrary the AAP's recommendation. The findings of Phase 1 suggest that media is a very important part of young children's lives. Given the fact that TV dominates young Taiwanese children's media use and two-thirds of parents are positive about TV being of value educationally to their children, in Phase 2, the researcher will further explore whether the time is well spent by investigating how parents and children watch TV together.

Chapter 5

Findings of Phase 2

Introduction

Phase 1 of the study found that TV is an integral part of young children's lives in Taiwan. Two- to three-year-olds are the heaviest users. TV programmes for young children that are designed to be educational usually encourage parents or other adults to watch along with children. Programme makers and researchers suggest that if parents co-view with their child they are in the position to support the child so that they learn more effectively from the programme (Calvert, et al., 2007; Christakis & Zimmerman, 2006). In Phase 1, 60% of parents, whose children watched television on a typical day, claimed to be in the same room all or most of the time while the child is viewing and 72% of parents say that they support the co-viewing all or most of the time by interacting with their child. However, little is known regarding how precisely parents watch with their child in Taiwan. Phase 2 of the study, thus, aims to explore the parent-child interactions during the co-viewing and how adults are best able to support children's engagement. First of all, this study assumes that in order to learn from the TV programmes, children need, firstly, to attend to and then to engage with the content. Prior studies indicate that children's active engagement with an activity/content is fundamental for any learning to take place or their intellectual growth to be enhanced (see for example Calvert, et al., 2007). Furthermore, it has been shown that positive learning outcomes, in terms of intellectual, social and dispositional outcomes, for children are linked to the quality and nature of adult-child interactions (Siraj-Blatchford, et al., 2002). Therefore, the researcher argues that in order to support the child, the adults themselves need to attend and engage with a programme. The importance of the new concept of co-engagement will be explored.

The second phase of the study replicated Calvert and her colleagues' study (2007) but in a natural home setting. Therefore, the same programme, *Dora, the Explorer,* was used. It was also of interest to explore how parents scaffold a very different

programme type, so *Charlie and Lola* was chosen as the other programme to co-view. This chapter outlines the findings of the mainly qualitative 2nd phase of the study which focuses on the parental behaviours whilst they co-view these two educational TV programmes with their children. The results which follow arise from the detailed analyses of the videos taken of the participating families whilst they watched the DVDs. Other sources of data, including the interviews with the parents, questionnaires from the survey in Phase 1 completed by the parents, children's psychological test results, and the researcher's field notes and diary, all of which serve as a supplement to help explain the particular behaviours or events. There is no measurement of learning. Attention is taken as the pre-requisite of engagement. A measure of engagement with the programme is taken as an indicator of comprehension of the televised content (Calvert, et al., 2007).

The chapter starts by describing the background characteristics of the thirteen families in order to offer an understanding of each family. And then the validity of child's engagement measure will be checked. The chapter will then describe the factors that appear to influence the nature of the parent-child co-viewing namely the environmental context. Examples will be given to show why some viewing contexts made the co-viewing less successful. Following the co-viewing context, issues connected with the engagement of children, patterns of scaffolding demonstrated by the parents, as well as the relationship between parental scaffolding behaviour and the children's engagement will be presented. The co-engagement of the parent and child will be used to further explore the 'Sustained Shared Thinking' incidents during the co-viewings as well as the differences between the two programmes. The chapter will, finally, give an in-depth analysis of all the factors, including co-viewing context, child's age, verbal IQ, parental scaffolding pattern, of each dyad.

5.1. Background of the families

Fourteen families participated in Phase 2 of this study. As stated in the Methodology, these families represent a range of socio-economic and professional status, they live in both urban and rural situations. The participating families were all recruited through mutual acquaintances, hence it is an opportunistic sample. All

children in the study were developing normally and were healthy with the exception of one case. This child was excluded after the ethical procedures were carried out as it was discovered that she had been diagnosed as autistic and had a language delay. Table 5.1 presents the details of each participating family. The table is arranged from the highest socio-economic status to the least, because the research on parent-child joint book-reading indicates that there is a positive association between social class and the levels of scaffolding parents provide (Heath, 1982; Ninio, 1980).

Each family owns their home and has an automobile. Regarding household composition, eight families consisted of two generations: husband, wife, and their children; five families consisted of three generations: husband, wife, their children, and the children's grandparents living together. Ten families live in Taichung City and three families live in the countryside of Taiwan. The families living in the rural areas all live in houses. Regarding the families living in the city, five families live in apartments and five live in houses. All houses have similar floor plans, which includes a living room, a dining area, a kitchen, two bathrooms, and three/four bedrooms. The size of the houses is from 230 to 400 square meters. As for the apartments, even those with similar floor plans, all include a living room, a dining area, a kitchen, one/two bathrooms, and two/three bedrooms, the size of the apartments varies from 100 to 230 square metres. In particular, Eye Doctor owns two floors of an apartment, including a penthouse.

Like most families in Taiwan, they speak Mandarin Chinese. Most of them also speak Taiwanese. The educational backgrounds of the fathers are diverse, ranging from vocational school to postgraduate (masters and PhD), similar to the mothers. The majority of the fathers have white-collar professions, such as doctor, architect, taxation officer, manager, and engineer, while some of the working class fathers are a painter and decorator, plumber, and sellers in the market. The majority of the mothers also have jobs as teachers, clerks, and one is a lecturer. Only two children have not yet attended either kindergarten or daycare. For those who attend kindergarten, four attend kindergartens with English classes, five attend bilingual ones, and two attend all-English ones.

Family code	Child's Age	Child's gender	5 classes of SES	Parents education level	Occupation	Household annual income	Parents' age	Location and House type	Kindergarten type
Eye Doctor	4 years 4 month	M	5	F: PhD M: Undergraduate	F: Ophthalmologist M: Homemaker	£25k-£30k	F: 40-49 M: 30-39	City, Apartment	All-English
Architect	3 years 8 month	F	5	F: Master M: PhD	F: Architect M: Lecturer (PT)	More than £35k	30-39	City, House	All-English
Poetry girl	4 years 7 month	F	5	F: Master M: Undergraduate	F: Director, Tax bureau of city government M: Human Resource, the judicial department of the City	£25k-£30k	30-39	City, House	Mandarin only, with English class
180	3 years 5 month	M	5	F: Undergraduate M: Junior college	F: Manager, air conditioner company M: Manager, insurance company	More than £35k	30-39	City, Apartment	Bilingual
Queen	3 years 11 month	F	5	Undergraduate	F: Factory manager, iron case company M: Freelancer (PT)	£15k-£20k	25-30	Country, House	N/A
Teacher Parents	4 years 3 month	M	5	Undergraduate	Senior high school teachers	£25k-£30k	30-39	Country, House	Bilingual
Smiling girl	3 years 10 month	F	4	F: Undergraduate M: Postgraduate	F: Engineer, computer company M: Research assistant, hospital	£15k-£20k	30-39	City, Apartment	Bilingual
Baseball Boy	5 years	M	4	Junior college	F: Computer engineer M: Clerk	£20k-£25k	30-39	City, Apartment	Bilingual
Talking Adults	3 years 10 month	F	3	Junior college	F: Salesman, digital company M: Homemaker	£20k-£25k	30-39	City, House	Bilingual
Warm Father	4 years 2 month	F	2	Junior college	F: Mechanic, mechanical electronics company M: Clerk	£10k-£15k	F: 40-49 M: 30-39	City, House	Mandarin only, with English class
Lion Head	3 years 3 month	M	2	F: Vocational school M: Undergraduate	F: Paint worker M: Homemaker	£15k-£20k	F: 30-39 M: 25-30	Country, House	N/A
Super Mum	3 years 10 month	M	2	Junior college	Family stall selling vegetable	£10k-£15k	30-39	City, House	Mandarin only, with English class
Totoro	4 years 4 month	M	2	F: Senior high school M: Junior college	F: Plumber (PT) M: Clerk (PT)	£5k-£10k	F: 40-49 M: 30-39	City, Apartment	Mandarin only, with English class

Table 5.1: Information about participants in Phase 2, sorted by family SES high to low. Note: The categorisation of SES was based on 黃毅志 (2008).

Information on the individual Families

Due to the fact that the situation in Taiwan is different from the UK, regarding the society stratification and society itself, it is necessary to describe each of the family in detail in order to have a greater understanding of the families. The following section will present the description of each of the participating family, including parent's educational background and occupation, family structure, characteristics of the child, family background, and the child's and family's TV viewing habits known from the questionnaire that the parents completed before the study and the interviews took place on the last day of the visit.

Eye Doctor

The father of this family is an ophthalmologist and which is where the child's pseudonym comes from. The focal child is a 4 years, 4 month old boy who has two older sisters (8- and 6-year-olds respectively). The family lives in a spacious two-floored apartment, including a penthouse, in Taichung City. The father is studying for his doctoral degree. The mother left her job as a clerk in a bank after marriage and is now a homemaker. The father was a visiting fellow at Stanford University, U.S.A. The couple had their 2nd and 3rd children in the USA, making those children USA citizens. The family goes abroad on holiday every summer. All of the three children are attending or have attended an all-English kindergarten. The eldest child is in Year Two now and she goes to complementary English school after school. The parents want the children to have the advantage of fluent English. The family has an Indonesian maid who lives with the family to help with the cooking, chores, and taking care of children and other family members.

The family has a large screen (50-59 inches) TV in their living room. The mother reports that the target child spends an average of one and a half hours watching TV/DVDs on a typical day. During the child's viewing, the mother was in the same room watching along with the child for about half of the time or less. The mother claims that she interacts with the boy on occasions during their co-viewing. The family has rules about what children can watch on TV and how much time they can spend watching it. In terms of the mother's own media use, she spends an hour watching TV and 3 hours using a computer at home every day. The mother claims

that the TV is usually off when the family is having meals. This is because she believes that watching TV whilst having meals makes the children slower eaters. Also on occasions, the children even say that they are no longer hungry when viewing. This parent thinks that watching TV/DVDs and using computer is mostly good for children's learning.

Architect

The focal child is a 3 years, 8 month old girl. The father and the mother both have a background in architecture. The father has a master's degree and the mother holds a PhD degree. The father is a practising architect and runs an architect's practice. The mother is a part-time lecturer in architecture. The family lives in a house with the maternal grandmother in Taichung City. The focal child has a younger brother of 2 years old. The grandmother of the children is retired. She takes care of the younger brother in the daytime. The parents and the two children usually watch TV in their bedroom. There is also a small play area, with a slide, in their bedroom. The girl is a very friendly and energetic child who attends a bilingual kindergarten.

This family is considered heavy TV/media users. The father reports that the child spends an average of 6 hours watching TV/DVDs every day. The parents say that one of them watches along with the child all or most of the time and he/she interacts with the child most of the time during her viewing. Even though the parents have rules about how much time the child can spend watching TV, they report that the rule is only enforced sometimes. The family always keeps the TV on during mealtimes in the living room. The father himself spends a great deal of time using his own media at home per day: 3 hours watching TV and 1 hour using a computer. The parents have a positive attitude towards the effects of TV viewing and computer use for children's learning.

Poetry Girl

The focal child is a 4 years, 7 month old girl who loves to recite poetry. The child has a 7-month-old younger brother. The family lives with the child's paternal grandmother and unmarried uncle, the three generations live together in a house in Taichung City. The father is the oldest son so traditionally he has more

responsibility to take care of his parent. Both of the parents have a full-time job. The father is the director of the tax bureau of city government and the mother works in the judicial department of the City. The grandmother looks after the younger brother in the daytime. The focal child goes to Mandarin-only kindergarten and the grandmother picks her up in the afternoon, at 4.30pm. The grandmother usually helps the child to have a shower before the mother gets home at around 6.30pm. The mother mentioned that it is usually the grandmother who watches TV with the child. The researcher was impressed by the focal child's language ability from the first day. She was reading Tang poetry when the researcher arrived. It is not uncommon for preschool children to read poetry as some kindergartens have poetry sessions. Many children just recite it for the purpose of recitation and memory building. However, the focal child not only recites it fluently and beautifully, but also wants to understand the meaning and uses the precise pronunciation. She kept asking her father the pronunciation of words and the meaning of a sentence or the whole poem. The father patiently explained it all to her. The result of the PPVT-R shows that the child has a high verbal ability.

The mother reports that the child watches TV/DVDs for an average of 2 hours every day. The mother claims that there is an adult watching with her for half of the time or more and she labels and describes characters or plays/sings with child whenever possible most of the time during the co-viewing. The TV is on about half of the time when the family is eating meals. The mother said that the focal child does not watch TV whilst having meals very often because her husband disapproves. The family has rules about what children can watch on TV. In terms of parent's use of media, the mother spends 20 minutes watching her own shows on TV and 10 minutes using a computer at home per day. The parents think that watching TV is not a very worthwhile activity. The reason that the mother sometimes puts the girl in front of the television is because the adults are busy. When she has time to be with the children, she usually encourages them to do other activities rather than watching TV. Although, the parents think using a computer is mostly good for children's learning.

180

180 is a 3 years, 5 month old boy. '180' (said in Taiwanese) is his nickname. The nickname comes from the child's conversation with his grandfather's friend. The friend asked the child how tall he is, he replied '180'. A hundred and eighty centimetres is regarded as 'tall' in Taiwan and the child was expressing his desire to grow up. The family lives in an apartment in Taichung City. The focal child has a newborn baby sister, who is 4 months old. The baby sister is currently living with and taken care of by her grandparents because the mother has been suffering from mastitis. Both of the parents have a full-time job. The father is the manager of a company making air conditioners and the mother is a manager at an insurance company. On the first co-viewing, the researcher asked the dyad to pick a programme to co-view. The parents say that they do not have any DVDs nor do they have cable TV because they rarely watch TV at home. They claim that this is because the mother does not want the children to watch too much TV. The mother seems to be aware of the warnings that too much screen exposure can hinder children's learning. The absence of the younger sister at home creates a positive co-viewing context for the dyad.

As mentioned, the child seldom watches TV/DVDs. The parents do not allow the child to watch at home, therefore, most of the child's TV viewing occurs at the grandparents' home because the parents are uncomfortable to ask the grandparents not to watch TV. The father reports that the child only watches TV for an average of 15 minutes per day and that the parent is in the same room with him most of the time during his viewing. The father claims that he provides various types of scaffold, including explaining the plot, linking content to child's own experience, labelling and describing characters, and explaining the vocabulary used, nearly all of the time during the child's viewing. Not surprisingly, the family has rules about what the child can or cannot watch on TV and how much time he can spend watching TV and the rules are always enforced. Also, the family seldom watches TV during mealtimes. The father says it is because the child would become absorbed and stop eating. However, the father spends 2 hours watching his own shows on TV and more than 3 hours using a computer at home per day. He explains that he always does those activities after the child is in bed.

Queen

The focal child is a 3 years, 11 month old girl who has a very strong personality. According to the observation of her interactions with other family members, the girl is rather domineering and other family members usually give way to her, hence the pseudonym. The girl has an older brother who is 6 years old. The family lives in a house in a township, which is 135 kilometres south to Taichung City. The township has a population of less than 30,000 people. Agriculture is important in the area. The focal child's paternal grandfather owns a family-run iron business. The father is the factory manager in the family business and the mother works as a part-time freelance writer. The family seems comparatively wealthy for the area. Their house is actually two units of houses which have been made into one larger house and is clearly noticeable in the area The three generations live in the house and each family has their own floor. The ground floor is used as a reception for friends and clients. The kitchen and dining room is at the back of the ground floor. The family lives on the first floor. There is a 20 square metre playground next to the living room. There is also the communal space for the entire family, where they chat and watch TV together.

According to the mother, the child spends about an hour watching TV/DVDs per day. The mother is always in the same room watching along with the child and she sometimes interacts during their co-viewing. The mother explains that the child is very close to her and always asks for them to watch together. The mother thinks that it might also be because the child is afraid of particular scenes. The family has rules about what the children can watch on TV and how much time they can spend watching it and these regulations are enforced most of the time. The mother reports that they never watch TV whilst having meals. In terms of the mother's own media use, she spends only 30 minutes watching TV and an hour using a computer at home per day. The mother is positive regarding the benefit of both TV viewing and computer use for children's learning.

Teacher Parents

The focal child is a 4 years, 3 month old boy. He has a 2-year-old brother. The family lives in a house in a village, which is 80 kilometres south of Taichung City. The village is the location of the previous Taiwanese government (1956-1998). The village was well designed for the purposes of the administration and residency. The village is now a popular place for tourists. Both of these parents are teachers in a senior high school in the village. The father is a physics teacher and the mother teaches home economics. The child is very friendly, polite, and hospitable. On the first day of the study, both the focal child and his brother have their own programmes they want to watch and neither will give way. It is impressive that the father uses the split screen to solve this problem. The two programmes play one on the left and one on the right side of the screen, so both children can watch their chosen programme. The parents say that they use this strategy when the children cannot agree which programme to watch. In addition, the parents always record the focal child's favourite programmes and play it when the time is more appropriate, e.g. Sunday night or Monday. The mother explains that another reason they record children's programmes is that they want to skip the commercials. They think the children can easily be influenced by advertisements, regarding toys and junk food. During her visit, the researcher saw the younger brother three times lying on the sofa with his milk bottle in his hands and watching TV at the same time. The mother says this is his favourite position when drinking milk.

The mother reports that the child spends an average of 2 hours watching TV/DVDs every day and she is usually in the same room watching with the child. The mother claims that she sometimes interacts with the child during their co-viewing of TV. This family does not have any rules about children's TV viewing. The TV is on for about half of the time when the family is eating meals. In terms of the mother's own media use, she spends 50 minutes using a computer at home per day. The mother thinks that watching TV, using a computer, and playing video games all have negative effects on children's development. However, the mother concedes that letting children watch TV makes her life easier. The mother does not

particularly select programmes for the children. She thinks that it is acceptable as long as they are watching programmes on children's channels.

Smiling Girl

Smiling Girl is a 3 years, 10 month old lovely girl who has a big smile on her face all the time, hence her pseudonym. She is an easy-going and cheerful child. She and her younger brother, who is 2 years old, gave the researcher a warm welcome at the door even on her very first visit. The family lives in an apartment in Taichung City. The couple both have full-time jobs. The father is an engineer in a computer company and the mother works in a hospital as a research assistant. The family is the neighbour of one of the other participants. The mother kindly agreed to participate in the study because she had just finished her master's degree and understands how difficult it can be to recruit participants. Her topic is about a health alert system for the elderly. The parent-child relationship between the mother and the child is more like friends. The way the mother talks and interacts with the children is relaxed, cheerful and friendly. The family is a 'modern' family in which the father shares the chores and the responsibility of taking care of the children. Also, the father has a very good understanding of his children's habits and daily lives. Whilst interviewing the mother on the last day, he added comments from time to time.

The mother reports that the child spends an hour watching TV/DVDs on a typical day and more at the weekends. The mother says that she only co-views with the child about half the time. She sometimes has to do the chores when the child is watching. The mother claims that she sometimes interacts with the child, e.g. to ask questions, during their co-viewing. The family does not have regulations about children's TV viewing. The family seldom watches TV when having meals. The mother says this is because her little girl is a slow-eater and watching TV would divert her attention and makes her eat even more slowly. According to the mother, she spends about 20 minutes watching her own shows and an hour using a computer at home per day. The mother has a positive attitude towards children's use of TV, computer, and video games.

Baseball Boy

The focal child is a 5-year-old, self-contained boy. The boy loves to play baseball, hence his pseudonym. The focal child has an 8-year-old brother. Every time the researcher visits, the focal child is playing throwing and catching with his brother or mother in the living room. The mother says the boy plays it everyday. Before he throws each ball, he would say which kind of ball he is throwing, e.g. a forkball, showing his knowledge about baseball. The family lives in an apartment in the city. The parents both work full-time. The father is a computer engineer and the mother is a clerk in a company. The mother describes their normal TV viewing habits. She says that she and the focal child usually arrive home by 6pm. After they arrive home, the child watches TV by himself in the living room and the mother usually prepares dinner for the family during this time. She says that she finishes cooking around 6.40pm and comes to the living room to watch the rest of the programme with the child. The father and the older brother usually come home around 7pm. The older brother is so late because he goes to the English complementary school after regular school.

The mother reports that the child spends about an hour watching TV every day and she watches along with him for about half the time. During the co-viewing, the mother says that she sometimes interacts with the child. The parents have regulations about what children can or cannot watch on TV and how much time they can spend watching it. The mother claims that the regulations are enforced most of the time. The TV is on most of the time when the family is having meals. The mother explains it is because the children usually start watching TV before the dinner is ready. It seems unfair to stop them watching in the middle the programme so they watch and eat at the same time. In terms of the parent's own use of media, the mother reported that she spends an hour watching her own shows on TV and 10 minutes using a computer at home per day. The mother, due to information she is aware of, considers that the media, including TV, computer, and video games, have negative effects on children's learning. She said that she has heard that the brain is in a relaxed state, i.e. not functioning, when children are watching TV, possibly meaning that it is a passive activity.

Talking Adults

The focal child is a 3 years, 10 month old girl, who has a 2 years, 9 month old brother. The focus child is a very kind sister. Her younger brother is often naughty but the girl usually yields to his demands/requests. The father works in a digital company, which develops online games. The mother is the homemaker. The family lives in the children's paternal grandparents' house in Taichung City. The grandparents spoil the children and love to play with them. However, the adults usually talk together when the children are watching TV and as the dyad are co-viewing in the same room, hence the pseudonym. The adults use the TV time as their family time sharing their daily life with other family members. The adults do not see children's TV time as a time that should not be disrupted. In the interview, the researcher asked the mother which children's programme she prefers. She said that she does not really look at the content. She says that the reason she would stay in the same room when the child is viewing is because she wants to make sure the two children are safe, i.e. not doing anything dangerous and not fighting.

This family is considered as heavy TV users. According to the mother, the child spends an average of 4 hours watching TV every day. And there are five TV sets in the household. The mother claims that she sometimes interacts with the child during their co-viewing of TV. One of the reasons that the mother puts the child in front of TV is that it stops fights between the brother and sister. The family has regulations about what the children can or cannot watch on TV. The TV is on for less than half the time when the family is eating meals. In terms of the parent's own use of media, the mother reports that she spends an average of 2 and a half hours watching TV and 30 minutes playing video games at home per day. The mother thinks that watching TV, using a computer, and playing video games are mostly good for children's learning.

Warm Father

The focal child is a 4 years, 2 month old girl who has a 2 years, 11 month old sister. The family lives in a house in the city. Both parents have a full-time job. The father is a technician and the mother is a clerk in a company. A Chinese saying goes that 'the daughter is the father's lover in a former life.' It describes well the relationship

between the father and the daughters in this family. The most special thing during the observation of this family is the closeness indicated through the non-verbal behaviour, between father and daughters, hence the pseudonym of this family. The girls were very shy at the beginning of the data collection. They did not even directly answer the researcher's questions or talk to her. They talked to the researcher or answered her questions via their parents. They clung to their father all the time during the visits. The parents told the researcher that the girls are shy with strangers, especially the focal child. It takes days for them to become more open. By the last visit, they finally were willing to play and talk to the researcher. The father usually reviews/reads what the children had been taught in school with the girls before dinner, when the mother is cooking in the kitchen. They also use the time to watch their favourite DVDs, which have stories about good habits, nursery rhymes, and basic concepts of numeracy.

The father reports that the child spends one and a half hours watching TV/DVDs on a typical day and there is a parent watching along with the child most of the time. The father claims that he sometimes interacts with the child during the co-viewing. The family has no rules about what and how much time children should spend watching TV. But the mother has a rule about no TV when eating meals. Thus, the TV is only on less than half the time when the family is eating meals. She explains it is because the children are so focused to the TV it can take them two hours to finish their meal if they watch TV at the same time. According to the father, he himself spends 2 and a half hours watching his own shows on TV at home per day. The father considers watching TV and using a computer as mostly good for children's learning as they can be educational; whereas playing video games is mostly bad.

<u>Lion Head</u>

The focal child is a 3 years, 3 month old boy, who, although initially shy, is energetic, warm and happy. The focal child has a 4-year-old sister. The family lives in a house in the countryside, which is 150km south to Taichung City. Agriculture and sugar are the two important industries of this county. There is a famous temple near where the family lives. The temple attracts thousands of Mazu

(goddess) worshippers every year. The pseudonym 'Lion Head' comes from the fact that the child likes to watch the 'Taiwan's Mazu Pilgrimage' (live or on video). In the Taiwanese pilgrimage, there are people lifting sedan chairs, playing instruments, and performers dressed as legendary Chinese folk heroes. The child loves to imitate the moves of those people and 'Lion Head' (direct translation) is one of their props. The child's father is a painter and decorator. The mother was a kindergarten teacher and is currently a homemaker. Queen and Lion Head are cousins. Their grandparents are brother and sister. The two families live close to each other. The focal child does not attend kindergarten. Therefore, he spends most of his time with his mother or playing outside with the children of the neighbours. The mother and the child are very close emotionally. It is a happy and comfortable relationship. The mother uses a cheerful way to talk to the child. It might relate to the mother's personality or her previous occupation as a kindergarten teacher. The mother says that she watches the child's favourite programme with him almost everyday because 'he does everything with me besides…he is very clingy', meaning that he follows her everywhere and would like her to be with him all the time.

The mother reports that the child spends 2 hours watching TV/DVDs every day and which she always watches along with him. The mother also claims that she interacts with the child all or most of the time during their co-viewing. The family has no rules about children's TV viewing. The family always has the TV on during their mealtimes. In terms of the mother's own media use, she spends 2 hours watching her own shows at home per day. The mother thinks that watching TV is mostly good as long as the children are watching educational programmes. She said that the focal child learns basic counting and language from his favourite programme. However, she thinks that using a computer and playing videos are mostly bad for children's development and learning.

<u>Super Mum</u>

The focal child is a 3 years, 10 month old energetic boy who has a two-year-old brother. The family lives in a house in Taichung City with the children's paternal grandparents and their uncle's family. The three families live together in a

household, sharing a kitchen and a living room. The uncle has two children, one girl (7 years) and one boy (6 years). The father, the mother, and the children's aunt work with the grandmother in the market. The grandmother owns a stall in the market selling fresh fruit, vegetables, and other cooking ingredients every day till noon. The grandmother has been running this stall for more than 20 years. The mother and the aunt take turns to cook for the big family. However, the family rarely has dinner together, according to the mother, as each family has their own routine. The mother has a very busy schedule everyday but she seems to handle all aspects well, hence her pseudonym. She says that she usually leaves the children in the living room watching TV when she is cooking in the kitchen. Whereas when she does not need to cook, she tends to take the children to the playground after school and before dinner. The mother arranged the researcher's visit on the week that she does not have to cook so that she can co-view with the children properly. The mother says that the focal child rarely sits in one place for more than 5 minutes when he is watching TV. He changes his seat frequently. When he feels like riding, he drives/rides his toy car/bicycle around in the living room and watch TV at the same time.

The mother reports that the child spends 3 hours watching TV/DVDs every day and the parent watches with him for about half of the time when she finishes her chores. The mother claims that she links the content with the child's experience and use the content to play and sing with the child most of the time during the co-viewing. There are four TV sets in the household. The family has no rules about children's viewing of TV. The TV is always on when the family is having meals. As for the parent's own media use, the mother spends 30 minutes watching her own TV shows and 20 minutes using a computer at home per day. The mother holds positive attitudes towards the use of TV and computer for children's learning.

Totoro

The focal child is a 4 years, 4 month old boy, who is shy and naughty. The child has a 7-year-old sister. The family lives in an apartment in the city. The family is a neighbour of the 'Smiling Girl''s family. The first impression of the family is that they do not seem to have a great deal of money, e.g. the state of the household

decoration, copied DVDs. The mother says that she rarely watches the child's programme with him because the programme has usually finished when she gets home at around 7pm. The family members usually watch the News together when they are having dinner. The father is a part-time plumber who works on request. Therefore, the household income is mainly from the mother's part-time job as a clerk in a construction company. The pseudonym of the family comes from the fact that once the focal child mentioned a famous Japanese animation film '*My Neighbour Totoro*'. He seems to likes it very much but because it was borrowed, he couldn't keep it for long but while he did have it he watched it over and over again.

The mother reports that the child spends about an hour watching TV every day and there is a parent watching with him half of the time. The mother claims that the parent who watches with the child sometimes links the programme content with the child's experience, explains the vocabulary used, and uses the content to play/sing with the child. The family has regulations about what the children can or cannot watch on TV. The TV is on most of the time when the family is having meals. But the parents turn the TV off if the children eat too slowly. In terms of the mother's own media use, she spends 30 minutes watching her own shows on TV. The mother considers watching TV is mostly good for children's learning.

5.2. The stimulus programmes used

As mentioned in the Methodology, two educational animated TV programmes were chosen for the present study. *Dora, the Explorer* was selected because it was used in Calvert et al.'s study (2007). The present study replicates the original study but in a natural home setting. Furthermore, in order to see how parents scaffold according to a different programme type, *Charlie and Lola* was also used. The two programmes are very different in style and in intent, the two programmes also offer different kinds of learning. The learning opportunities in *Dora, the Explorer* are more explicit, and as such, it allowed other researchers to develop numerical engagement measures (Calvert et al., 2007). This programme provides explicit learning opportunities including learning words and short phases in English, counting, learning of shapes, colours and problem-solving skills, etc. In addition, *Dora, the Explorer* is well-known for its interactive features. Namely, Dora and the

other characters in the programme invite children to answer questions, participate, or solve problems with them. On the other hand, *Charlie and Lola* is a narrative programme with richly imaginative stories. The programme embeds learning of concepts within in the storyline. The learning potential of *Charlie and Lola* is also linguistic as a wide vocabulary is used, also quite profound issues are dealt with which involve deep thinking on behalf of the viewer. The interview explored the parents' views about the two programmes, the details of which can be found in Appendix 15.

The dyads co-viewed four episodes of DVDs, including three episodes of *Charlie and Lola* and one episode of *Dora, the Explorer*, across the four days of data collection. Each episode of *Charlie and Lola* is 10 minutes and an episode of *Dora, the Explorer* is around 20 minutes.

5.3. The procedure

Phase 2 of the study aims to explore in detail both how parents watch children's programmes along with their child and the factors that influence the child's engagement with programme. A child's engagement with the programme is regarded as an indicator of and pre-requisite for children's learning from the televised content (Calvert, et al., 2007). In order to answer the research questions, as stated earlier, the researcher observed the co-viewing of thirteen dyads. The parent/child dyads watched together the programmes over four days in their homes. The time of day to visit or view depended entirely on the family's daily routine. This design aimed to capture the data in as close to the dyad's genuine viewing situation as possible and also examines the part played by the context for the co-viewing. The parents were asked to watch the DVD with their children as they would typically when they co-view television. Siblings or other family members are also permitted to watch, as this too would be representative of the child's normal viewing environment. The dyads were videotaped throughout their co-viewing with both adults and children's faces and eyes visible at all times.

As has mentioned in Methodology, on the first co-viewing, the researcher gained insight as to how the dyad co-view their favourite programme, i.e. the dyad's

chosen programme. Two still and one handheld camcorders were set up on Day 1 in order to video both the dyad's interactions and the programme they choose. This videoing on the first day of the co-viewing is used as a baseline measure of the dyad's most normal viewing behaviour. On Day 2, the dyad was asked to co-view one episode of *Charlie and Lola* (episode: *I'm just not Keen on Spiders)* and *Dora, the Explorer* (episode: *Baseball Boots)* without the presence of the researcher. The parents thus need to video themselves on Day 2 with a still camcorder. The purpose of the Day 2 co-viewing is to have a comparison of the situation both with and without the researcher's presence. On Day 3 and 4, the researcher was present to observe and to video the dyad/family. One still and one handheld camcorder were set. In order to have an in-depth knowledge of each child, the researcher also assessed the child's verbal IQ through the PPVT-R. In addition, the parents were asked to complete the questionnaire that was used in Phase 1, i.e. about the child's TV viewing habits and the media environment at home. After the last day of co-viewing, the researcher interviewed the parent in order to gain greater understanding of their behaviour.

5.4. The descriptive statistics of child's frequency and length of daily viewing

The thirteen parents completed the questionnaires so the data of the children's viewing habits and experience were collected. Nine of the thirteen children watch TV or DVDs everyday. The average TV/DVD consumption is 121 minutes per day (*SD*=92.56; range=15-360 minutes). All of the children had prior exposure to *Dora, the Explorer*. But none of the children are familiar with *Charlie and Lola*. In terms of the co-viewing habits, only two parents self-report in the questionnaire that they are always in the same room when their child is viewing TV. Nine parents claim that they interact with their child all or most of the time during the child's viewing.

5.5. The validity of child's engagement measure

One of the reasons that *Dora, the Explorer* was used as a part of the materials is that it could be used to establish the validity of the measures of child's engagement in the present study. Calvert et al. (2007) used the programme to examine the relationship between parent-child interactions during the co-viewing, the child's

engagement, and child's understanding of the televised content. Calvert and her colleagues developed a 4-point scale to rate children's enthusiasm and active engagement with the programme. These researchers found that children whose parents interacted with them during the co-viewing were more engaged with the content than those whose parents did not interact at all. The regression analysis also indicates that children who were more engaged with the programme had a better understanding of the content. Thus, in this study the child's engagement is taken as the key indicator that learning is able to occur. The present study uses the same measure to examine the children's engagement with *Dora, the Explorer*.

Amongst the thirteen families in the study, three of the dyads' co-viewing of *Dora, the Explorer* were unsuccessful, e.g. technical problems with self-videoing, so could not be used for the analysis. Therefore, this analysis is based on only ten dyads' co-viewing of one episode of *Dora, the Explorer*. In the episode used for this study, there are 36 programme points where Dora asks the audience to participate. In Calvert et al.'s study (2007), parents were pre-assigned to one of the conditions where parents were expected to provide different levels of interaction. A post hoc grouping was used in order to compare with Calvert et al.'s study because the present study did not take place in a laboratory setting. The inter-rater reliability for whether or not the parents interact with their child during the programme points is 100%. Using cluster analysis, the parents in the present study are grouped into two groups, 1] the high interaction group, and 2] the low interaction group. In the high interaction group (n=3), parents interacted frequently with their child at the programme points (M=90% of time, SD=9.76); while parents in the low interaction group (n=7) interacted little with their child (M=27% of time, SD=15.67). There is a significant difference between the high and low interaction groups (t=7.64, df=6, two-tailed p<0.001). The child's engagement scores were calculated and compared in the two groups. The result shows that children with parents who are in the high interaction group were significantly more engaged with the programme than those whose parents in the low interaction group, t=2.93, df=8, two-tailed p=0.019 (High interaction group: M child engagement=70, SD=20.07; Low interaction group: M child engagement=38.71, SD=13.61) (see Table 5.2).

	Calvert et al. (2007)	This study
Episode used	*Sticky Tape*	*Baseball Boots*
Number of programme points	21	36
Child's engagement in participation condition/high interaction group	*M*=20.406/21=0.97	*M*=70/36=1.94
Child's engagement in observation condition/low interaction group	*M*=0.594/21=0.03	*M*=38.71/36=1.08

Table 5.2: Comparison of the co-viewing of *Dora, the Explorer* between Calvert et al.'s (2007) and this study

The present study and Calvert et al.'s study yield similar results. Therefore, the researcher is expecting that the engagement definition of this study will be appropriate if used for another programme. As mentioned in the Methodology Chapter, the measure needed to be adapted because *Charlie and Lola* and *Dora, the Explorer* are very different in intent as well as in format, e.g. there are no programme points in *Charlie and Lola*. The definition of the 4-point rating scale of child's engagement measure was described in detail in section 3.3.4.2 and 3.3.4.3.

The findings in the following sections are based on the analyses of the two episodes of *Charlie and Lola_ I Really Wonder What Plant I'm Growing* (Plant) and *What if I Get Lost in the Middle of Nowhere* (Lost). There are 41 scenes in the 'Plant' episode and 42 scenes in the 'Lost' episode, making 83 scenes in total. The child's engagement level was rated across the 83 scenes using the 4-point rating scale adapted from Calvert et al.'s study (2007). The scores were then calculated for each child. In the following sections, factors that appear to influence children's engagement with the programme will be described.

5.6. The nature of the viewing context

This study, as stated, assumes that attending to the programme and the subsequent engagement with it is a pre-requisite for any learning that will take place for the child. Due to the fact that this study occurred in natural home settings, it was found some factors have made some co-viewings more successful than others, i.e. the factors that either support the child's engagement and

receptivity to the programme or diminish it. One factor is the nature of the context or the environment of the co-viewing which appears to be crucially important. In general, it was found that children tend to have lower engagement when the co-viewings take place under the following circumstances. The factors listed below are described with examples of the families.

5.6.1. Food/snacks

Due to the fact that this study aims to see the parental scaffolding behaviours during the co-viewings, and eating is believed to lower both parties' attention to the television and potentially influences the quality of the scaffolding, the researcher had suggested avoiding visiting and videoing co-viewing during the mealtimes. The researcher suggested to the parents that the best time to watch the programme is the child's usual viewing time and it should also be a time when the parent is free to sit down to co-view. Therefore, in this study the situation where children are eating meals whilst watching the programme was seldom seen.

However, there were still four children who ate food or snacks during one of the DVD presentations. In comparison with the day when the same children watched without food/snacks, the analysis shows that the children have significantly higher engagement when watching TV without eating, t=2.78, df=3, two-tailed p=0.07 (With food/snacks: M=0.98, SD=0.10; Without food/snacks: M=1.21, SD=0.11). The results reveal that food/snacks can decrease children's engagement with the programme. It would appear that children who eat food/snacks during the programme are less likely to pay full attention on the programme. In the observations, children sometimes ask for more snacks while or after eating, which not only interrupts their own viewing but also diverts the parent's attention from the screen.

Based on the observations, also having snacks 'at hand' usually has the same distracting effect. Some of the children in the study only held their snacks in their hands during the co-viewing instead of eating them. The reason that they were not allowed to eat the snacks was that it was usually very near to dinnertime. So no matter how much the child wants it, he/she was only allowed to hold the snack for

the time being and this proved to be an even greater distraction than being allowed to eat them.

The little boy shown below holds a packet of candies throughout the DVD presentation. At the beginning, the mother wants to keep the candies for him but he resists. The candies clearly distract the child's attention as he puts the packet close to his mouth or in his mouth frequently. The transcript also shows the negative effect of having toys around.

4:01		Target child smells the packet again and then looks at it.
4:06	Child (C): This is xxx.	Raises the packet close to M and then lowers it to his chest again.
4:08	Mother (M): Okay.	
…		
6:05		C raises the packet close to/in his mouth again.
6:22		C puts down the packet on his lap.
6:44		C gets down from M's lap to get a thing (a piece of black plastic) on the other chair.
6:50	C: I got one. It's a (plastic) chocolate.	M nods. C gets on M's lap again and licks the chocolate. And then holds it in his hand.
7:23		C puts the chocolate into his mouth. He stretches his neck to looks at M. After 5 seconds, M lowers her head to look at C and smiles (C obviously wants to get M's attention that he is putting the plastic into his mouth, naughty!). After got M's attention, C resumes.
…		
8:15		C puts the packet close to/in his mouth again.
8:33		C puts the packet down, but still holding it. He rubs the candies through the wrapping from time to time.

[Totoro, 4 years and 4 month old, Day 4 Transcript]

5.6.2. Toys

There were two children who played with toys whilst watching the DVDs. Based on the observations, it was found that toys have the potential to disrupt valuable co-viewing time. Playing with toys has a similar effect as having food/snacks (in their hands). Toys nearby tend to divert children's attention from the screen. And the extent of the influence of the toy depends not only on the child's interest in the toy but also the type of the toy, e.g. those which make a loud noise. The girl shown below gets a toy and plays with it in the middle of the DVD presentation. It appears that the toy interrupts her processing of the televised content and also reduces her mother's scaffolding behaviour.

> The toy by the girl's side since the beginning of the DVD presentation diverted her attention away from TV. The toy makes a loud noise which disturbs the viewing. Even though the child keeps her eyes on the TV when she was playing with the toy, her attention is decreased. Her request to view the episode again may support the fact that she hadn't understood the meaning of story. It's surprising that M allowed the girl to have the toy/make the noise for 5 minutes. During these 5 minutes, M only looked at C and the toy from time to time but didn't take further action.
>
> [Architect, 3 years and 8 month old, Day 4 Field note]

The mother above didn't take the toy away immediately. Therefore, the disturbance lasted for quite a long time. The mother shown below uses a different strategy. She takes the Rubik's cube away immediately when she found her child has part of her attention on the toy.

2:25		C is looking at the Rubik's cube in her hand.
2:26	M: Cookie tree. Is there a cookie tree?	M gently touches C's lap (the gesture comes with the question). C lifts her head and attention back to the screen. M notices C's holding a toy.

2:29	C: Yes [smile].	
2:31	M: Butterfly tree.	M quietly gets the toy away from C's hand.

[Smiling girl, 3 years and 10 month old, Day 3 Transcript]

5.6.3. Disturbance from younger siblings

Younger siblings can be supportive company when watching TV. However, it was observed that they sometimes distract the focal child and/or the parent's attention. It usually depends on the younger sibling's age and personality. From time to time, the younger sibling shows no interest to the programme but would like (or was asked) to stay in the same room with the dyad. In this case, they usually play with their toys in the room. One younger brother in the study chose to ride his toy car around in the living room when his older sister and the mother were co-viewing the programme. The car made a loud noise going around the room.

> Younger Brother (YB) is riding his car in the living room, which disturbs everyone and we were all concerned that he would knock the camcorder. So M also needs to have an eye on YB. And YB's car makes a noise…Also, I feel that the chaos in the living room influences M's mood and makes her stressed.
>
> [Talking Adults, 3 years and 10 month old, Day 4 Field note]

Even when the younger sibling is quietly playing, the parent tends to have an eye on the youngster at the same time, which inevitably lowers the parents' engagement to the programme and also the quality of the scaffolding, as will be shown later in Smiling Girl's case.

5.6.4. Adults talking

In the observations, two types of adult talk are found during the DVD presentation. One is the parent who is co-viewing with the focal child talking to other family member(s). And the other one is family members talking to each other while the

dyad is co-viewing in the same room. Both types appear to lower both the child's and the parent's engagement in the programme.

The parent who talks to other family members during the co-viewing with the child clearly isn't paying her/his full attention to the programme and this diminishes the potential of the learning opportunities of the programme. There is one parent of this type in the study and her level of scaffolding behaviours dropped on that day. In the same family, other family members used the time the dyad was co-viewing to have a chat about their day. The family members were sitting in the same room and talking across the room at a normal or even loud volume while the dyad is watching on the sofa.

> However, it seems to be the child's normal viewing environment. There is almost no interaction during this DVD presentation. Clearly, the mother doesn't pay much or indeed any attention to the programme. My feeling is that the environment doesn't allow her to have any quality viewing time with C. The grandmother talks with the mother, the father, and the younger brother quite frequently. The mother also mentions in the interview that she usually sits with them when they are watching but admits that she rarely notices the content of the programme they are viewing.
>
> [Talking Adults, 3 years and 10 month old, Day 4 Field note]

This section described the factors that appear to disrupt the parent-child co-viewing of television in the naturalistic settings, these include food/snacks, toys, disturbance from younger siblings, and adults talking. These factors were observed to not only influence the child's engagement but also sometimes the parent's quality of scaffolding. In the next section, individual child's engagement level will be examined with the engagement measure developed from Calvert et al.'s study (2007).

5.7. Factors that influence the child's engagement

In order to measure the child's engagement with *Charlie and Lola,* an engagement measure was developed which is slightly adapted from but based on Calvert et al.'s (2007) study. The adapted 4-point rating scale for child's engagement with measures that include a 'no engagement' (coded as 0), 'low-level engagement' (coded as 1), 'average engagement' (coded as 2), and 'enthusiastic engagement' (coded as 3) (see section 3.3.4.3. for the details of the measure). The children's engagement levels in the two episodes of *Charlie and Lola* were measured and the sum of the scores across 83 scenes was also calculated.

It should be noted that the data of two cases, Super Mum and Talking Adults, are based on only one co-viewing instead of two. This is because one co-viewing is considered as untypical compared to other three co-viewings and is thus excluded from the analysis. In the case of Super Mum, one co-viewing is excluded because a visitor arrived with food and the dyad's viewing was disrupted by the visitor. As for Talking Adults, even the mother is very supportive during their co-viewing of *Charlie and Lola*-'Plant' episode, it is excluded because the dyad behaved very differently from the other three co-viewings. The co-viewing data, e.g. child's engagement and parental scaffolding scores, of Super Mum and Talking Adults is thus weighted in Table 5.3 in order to compare with other cases.

Table 5.3 shows the children's engagement scores along with the child's gender and age in months. In the following analyses, the 'sum of child's engagement score of the two *Charlie and Lola* episodes' (Table 5.3, Row 7) is used to represent a child's engagement level. The row the 'sum of parental scaffolding score of the two *Charlie and Lola* episodes' will be discussed in the next section.

Correlations were also conducted to determine whether the child's age and verbal IQ were associated with his/her engagement. The result indicates that there is no significant association between a child's engagement and a child's age (r=-0.206, df=11, p=0.501) or verbal IQ (r=0.019, df=11, p=0.951). Also, the engagement of boys and girls are not significantly different, t=0.36, df=8, two-tailed p=0.73 (Boys: M=97.14, SD=10.43; Girls: M=94.33, SD=16.60). The results show that a child's

engagement score is not dependent upon his/her age, gender, or verbal IQ. In the following sections, it was found that the level to which the child engaged with the programme, and therefore could be receptive to the learning opportunities offered, depended upon the level to which the parent was engaged with the programme.

Episode \ Child	Poetry Girl	Lion Head	Smiling Girl	Super Mum	180	Totoro	Teacher Parents	Eye Doctor	Baseball Boy	Architect	Talking Adults	Warm Father	Queen
Age (in months)	55	39	46	46	41	52	51	52	60	44	46	50	47
Gender	F	M	F	M	M	M	M	M	M	F	F	F	F
PPVT-R	98%	63%	95%	91%	88%	82%	93%	86%	84%	71%	92%	81%	97%
Child's CL 'Plant' engagement score	59	65	55	55	51	50	49	44	46	54	N/A	34	42
Child's CL 'Lost' engagement score	59	49	58	N/A	47	42	41	45	42	32	43	50	38
Sum of child's engagement score of the two CL episodes	118	114	113	109	98	92	90	89	88	86	85	84	80
Sum of parental scaffolding score of the two CL episodes	110	112	69	114	82	94	32	29	12	32	-26	105	7

Table 5.3: Age, verbal IQ, child's engagement, and parental scaffolding score during co-viewing (CL-'Plant' and 'Lost'), sorted by sum of child's engagement, high to low

5.8. The scaffolding patterns of parents

This section will explore how exactly parents support their child's viewing and whether there are different patterns of parental scaffolding during co-viewing of television/DVDs. The categories of parental scaffolding were developed by drawing upon the literature of joint book reading but with an additional focus on the particularities of viewing TV (Barr, et al., 2008). From a close analysis of the videos, two more categories were identified in the data of this study. Unlike when sharing a book, an adult's silence is a feature of co-viewing a TV programme as the adult and child watch together. It appears that silence can be divided into two types, namely supportive and non-supportive silence. Supportive silence is non-verbal behaviour that guides or supports the child's engagement with the programme, e.g. smiling, holding the child's hand, holding the child closely on lap. On the other hand, non-supportive silence is one where there is no communication, either verbal or non-verbal, between a parent and child while viewing.

As has been mentioned in Methodology, the total frequencies of each of these categories of parental scaffolding behaviours were calculated across the 83 scenes. Then for each category, a proportion measure as a function of the total parental scaffolding behaviours was calculated.

Parental scaffolding categories (%)	Min	Max	Mean	SE	SD
Wh- questions	0	25.30	5.38	1.88	6.77
Closed questions	0	14.46	3.15	1.03	3.73
Total questions (Wh- + Yes-no questions)	1.20	26.51	8.53	2.29	8.27
Labels or descriptions	0	43.37	11.49	3.35	12.09
Abstractions and play	0	12.05	4.26	1.06	3.83
Supportive silence	0	78.31	21.69	6.71	24.19
Non-supportive silence	0	89.16	41.61	9.10	32.82
Total silence (supportive+ non-supportive silence)	28.92	90.36	63.30	5.74	20.70
Attentional vocative	0	9.64	2.22	0.90	3.26
Confirmations and corrections	0	3.61	0.93	0.39	1.40
Evaluations	0	8.43	2.69	0.81	2.92
Verbalisations unrelated to media content	0	38.55	6.12	2.83	10.22
Placeholders	0	2.41	0.46	0.22	0.78

Table 5.4: Range, mean, standard error, standard deviation for the parental scaffolding categories (*n*=13)

Preliminary examination of the data reveals a great deal of variation in the ways that parents interact with their child during the co-viewing. The descriptive statistic results of the parents' scaffolding behaviours are shown in Table 5.4. In Table 5.4, the most frequently used verbalisations by the parents are labels or descriptions (*M*=11.49, *SD*=12.09) and questions (*M*=8.53, *SD*=8.27). One interesting finding that is dissimilar to joint book reading is that the highest proportion of parental behaviour during the co-viewing is silence. The overall mean is 63.3% (*SD*=20.7, min=28.92, max=90.36). Amongst all co-viewings, an average of 41.61% of time is non-supportive silence and 21.69% is supportive co-engaged silence.

As mentioned in Methodology, studies on parent-child joint book-reading and TV co-viewing usually use cluster analysis to calculate patterns of scaffolding (see for example Haden et al., 1996 and Barr et al., 2008). However, due to the small sample size of this study, the researcher is unable to produce meaningful clusters with only thirteen dyads. So, the comparison was made between the results of this study and the literature. The researcher tried to find similarities within and differences across dyads. Haden and her colleagues (1996) studied parental styles in shared book-reading and they identified three types of parents: Describers, Collaborators, and Comprehenders. In their study, parents in the Describer group made proportionally more descriptions and naming the characters than parents in the other two groups. The researchers inferred that Describers may put their emphasis on vocabulary and expository language development. On the other hand, Comprehender parents seem to engage in more higher level comments, e.g. predictions, inferences, connections between story and children's real world experiences, than the other parents during storybook reading. The Comprehenders encourage their child to reflect beyond the story and pictures given in the book. Parents in the Collaborator group made significantly more confirmations than others. The confirmation was thought to encourage children's participation with the book. In the following analysis of parental scaffolding patterns, some of the categorical terms from Haden et al.'s work (1996) will be borrowed.

Table 5.5 shows the varying proportions of scaffolding categories in each case. The percentages that are higher than the mean of each category are highlighted in grey.

		Scaffolding categories (%)										
	Scaffolding pattern	Wh-Q	Closed Q	Label or description	Supportive Silence	Non-Supportive Silence	Abstraction and Play	Unrelated Verbalisation	Evaluation	Attentional vocative	Confirmation and correction	Placeholder
Poetry Girl	Comprehender	8.43	3.61	18.07	26.51	18.07	12.05	0	1.2	9.64	2.41	0
Lion Head	Comprehender	3.61	1.2	21.69	59.04	0	6.02	1.2	1.2	2.41	3.61	0
Smiling Girl	Comprehender	6.02	3.61	9.64	36.14	22.89	4.81	9.64	6.02	0	1.2	0
Super Mum	Comprehender	0	6.02	43.37	6.02	22.89	10.84	2.41	8.43	0	0	0
180	Describers	10.84	14.46	12.05	14.46	26.51	3.61	2.41	7.23	8.43	0	0
Totoro	Observer Type 3	2.41	2.4	3.61	78.31	0	4.82	1.2	0	2.41	3.61	1.2
Teacher Parents	Observer Type 2	2.41	0	4.82	13.25	63.86	6.02	8.43	1.2	0	0	0
Eye Doctor	Observer Type 1	1.2	1.2	2.41	15.66	68.67	2.41	2.41	4.82	1.2	0	0
Baseball Boy	Observer Type 1	4.82	2.41	0	2.41	87.95	0	1.2	0	0	0	1.2
Architect	Observer Type 1	2.41	1.2	8.43	1.2	74.7	2.41	1.2	2.41	3.61	0	2.41
Talking Adults	Observer Type 2	2.41	2.41	0	0	56.63	0	38.55	0	0	0	0
Warm Father	Describers	25.3	1.2	20.48	28.92	9.64	2.41	7.23	1.2	1.2	1.2	1.2
Queen	Observer Type 1	0	1.2	4.82	0	89.16	0	3.61	1.2	0	0	0

Table 5.5: Proportions of scaffolding categories for the individual parents, sorted by the child's engagement mean high to low. Note: Highlighted parts are the ones that are higher than the means of each category

Patterns of parental scaffolding during the co-viewing of TV

The focus, in what follows, is on key types of verbalization within parental scaffolding behaviour that are discussed in the book sharing and TV co-viewing literature as they are deemed the most supportive to children (Barr, et al., 2008; Haden, et al., 1996; Reese, et al., 2003). These are Wh- and Yes-no questions, labels or descriptions, abstractions and play, unrelated verbalisations, in addition either supportive or non-supportive silence that was identified in this study. It would appear that Table 5.5 shows three patterns of scaffolding in the interactions, namely, *Describer*, *Comprehender* and *Observer*. The patterns Comprehender and Describer are taken from the joint book-reading literature (Haden, et al., 1996) because it is relevant to TV viewing as well as book-reading. As explained, there is the issue of silence in TV co-viewing. Therefore, the term Observer was coined to describe its three sub-types which are newly identified in the present study.

In our data, both the parents of 180 and Warm Father can be categorised as *Describers*. Parents of this type focus on asking questions (both open and closed ones), on giving labels or descriptions and they tend to provide supportive silence, whilst watching. Describers engage mainly on viewing the content. On the other hand, the parents of Poetry Girl, Lion Head, Smiling Girl, and Super Mum are *Comprehenders*. The characteristics of Comprehenders are that, besides the strategies the Describers use, they also provide abstractions and play. Comprehenders focus on the meaning of the story, affective responses, and extend the content by linking it to the child's experience. They also use the televised content to play with their child when possible to make the best of the learning opportunities. The last type of scaffolding that is particular to TV co-viewing is the *Observer*. Observers seem to make few interactions during the co-viewing, and so, are mostly silent when co-viewing with their child. There appear to be three subtypes of the Observer category. Type 1 is that the silence is mostly non-supportive, e.g. the parents of Architect, Eye Doctor, Baseball Boy, and Queen. Observer Type 1 (n=4) parents tend to watch TV silently without any physical or verbal interactions. The parent and the child literally watch the TV programme together but in parallel. Type 2 Observers (n=2) use not only non-supportive silence but also talk unrelated to the programme during the co-viewing. This type

of parent appears to not only be unsupportive but to disturb their child's viewing. Talking Adults and Teacher Parents are examples of this type. In the Observer Type 3 (*n*=1), it appears that the silence is mostly supportive silence, e.g. Totoro. Whilst the parents talk little, they are offering warm emotional support during the co-viewing which enables the child to attend fully. In general, Comprehenders and Describers encourage their children to watch actively whereas children of Observers usually watch TV programmes passively. Later in section 5.9, the influence that the different types of scaffold appear to have on the level of the child's engagement will be explored.

5.9. Relationship between parental scaffolding and the child's engagement

Next, each scaffolding category was given a score. Table 5.6 shows the score defined for each category. Then the scores of the 83 scenes of two episodes of *Charlie and Lola* were added up to become the sum parental scaffolding score. In general, the higher the parental scaffolding score, the higher the parental scaffolding level.

Score	Parental scaffolding category
-1	Verbalisations unrelated to media content
0	Non-supportive silence
1	Closed questions, confirmations, corrections, attention getting, vocalisations, supportive silence, and placeholders
2	Open questions, descriptions or labels
3	Abstractions and Play

Table 5.6: Score of each parental scaffolding category

The parental scaffolding score of each parent is shown in Table 5.3. In the findings of Phase 1, it was found that parental scaffolding behaviour is related to child's age, media rules at home, parents' attitude towards TV, parent's educational background, and family income. However, none of the variables was found to relate statistically to the parental scaffolding score in this second phase of the study. This might be due to the small sample size of this phase. In addition, no link between parental scaffolding score and child's verbal IQ and gender was found.

The parents in this study provided different levels and types of scaffold for their child during the co-viewing. In addition, the children also show different levels of engagement with the programme. The parental scaffolding score in Table 5.3 will be used to explore whether the parental scaffolding behaviour is, in fact, related to the extent to which the child is engaged.

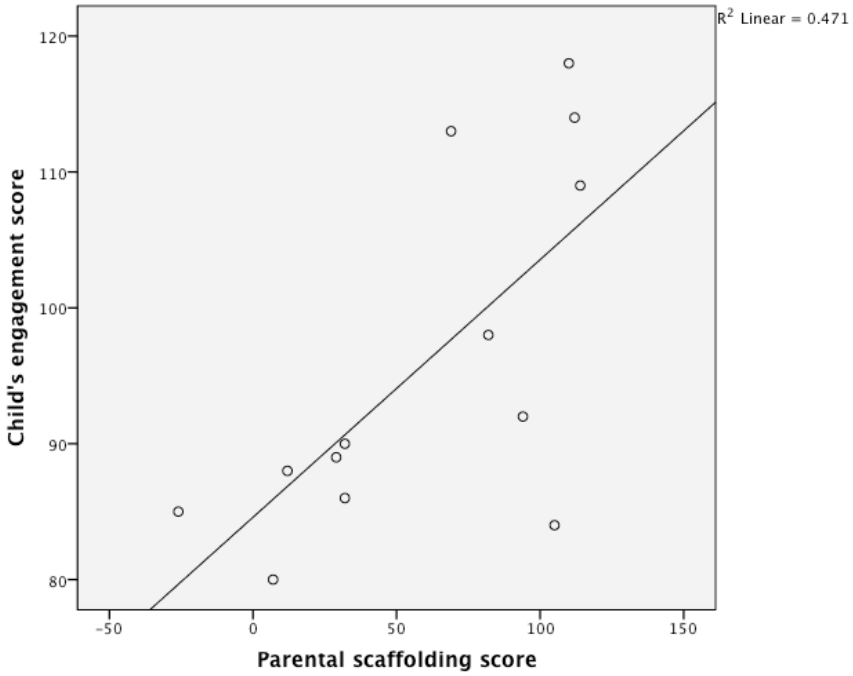


Figure 5.1: The scatterplot of the parental scaffolding score and the child's engagement

Correlation between parental scaffolding and child's engagement The correlation between the parental scaffolding score and child's engagement score was calculated. The result indicates that there is a significant positive relationship between parental scaffolding level and child's engagement level (r=0.686, df=11, p=0.01). Children tend to have higher engagement with the programme when parents provide a higher level of scaffolding. A scattergram of the relationship between parental scaffolding behaviour and child's engagement is shown in Figure 5.1. There is no evidence of a curvilinear relationship.

5.10. Parent's engagement, co-engagement and Sustained Shared Thinking

In this section, the correlation between parent's engagement score and child's engagement score was calculated. The details of the measure of parent's engagement can be found in Methodology. The result shows that there is a significant positive relationship between parent's engagement level and child's engagement level (r=0.590, df=11, p=0.034). Children tend to have higher engagement with the programme when their parents are more engaged with programme. A scattergram of the relationship between parent's engagement and child's engagement is shown in Figure 5.2. There is no evidence of a curvilinear relationship.

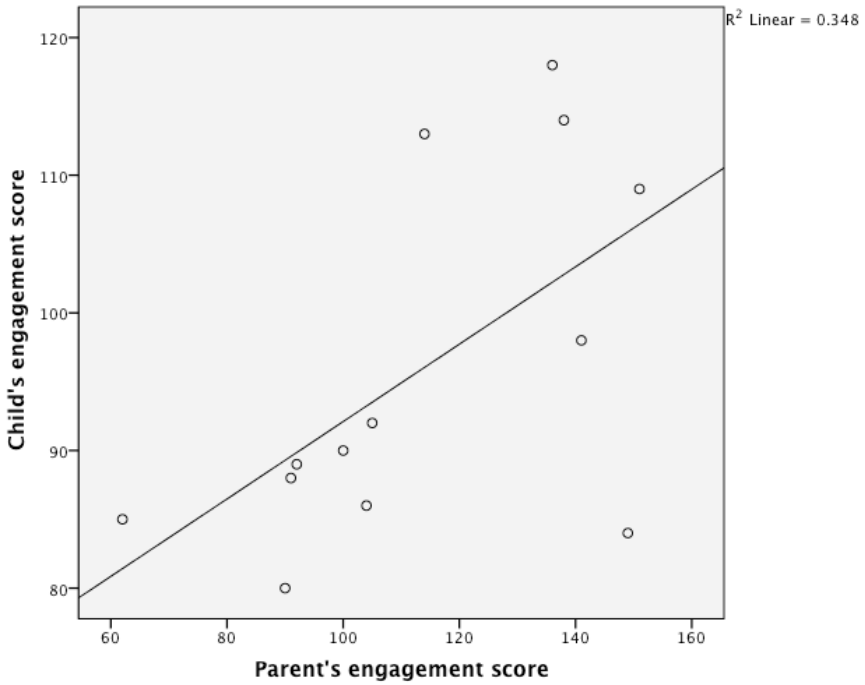


Figure 5.2: The scatterplot of parent's engagement score and child's engagement score

The figure appears to show that in order for the parent to scaffold the child successfully, he/she first needs to engage with the programme. This, in turn, affects the child's engagement. According to this finding, this study has coined the term co-engagement as a pre-requisite for successful scaffolding which supports deeper engagement of the child. Co-engagement is when both a parent and child engage with the programme and then each party interacts with each other regarding the content. Co-engagement is demonstrated by a conversation, a smile, or a non-verbal interaction related to the content, which signal mutual enjoyment.

Furthermore, the concept of Sustained Shared Thinking (SST) is used to further explore the relationship between the parental scaffolding behaviour and the level of the child's engagement. As described in Chapter 2, Sustained Shared Thinking (SST) is defined in the Effective Provision of Preschool Education (EPPE) and Researching Effective Pedagogy in the Early Years (REPEY) projects as 'an interaction where two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative' (Sylva, et al., 2004, p. vi). As mentioned in Methodology, the measures of co-engagement and SST were attained by event sampling. The following is an example of SST when co-viewing *Charlie and Lola*:

10:48	F: Oh, she (Lola) is smelling her flower. You smell it and see whether it has fragrance. You try it.	C is standing on the floor. F's hand is on the side of C's body. C takes a deep breath and looks at F.
10:53	F: Does it have fragrance? Does it [C looks at F and nods]? It has fragrance!	F looks at C and holds C up to the sofa. F puts his hand around C. C smells again happily.
11:01	F: Do you like it [smile] [C nods]? Yes, you do [smile].	F looks at C
11:06	F: It's finished. Do you want to grow one? To grow a plant that grows flowers?	F looks at C

[180, 3 years and 5 month old, Day 3 Transcript]

In the above incident, the father encourages the child to interact with the character in the programme, i.e. smell Lola's flower on the television. The child does what his father suggested and takes a deep breath (as smelling). After the child's interaction with the scene, the father further asks the child whether the flower has fragrance and the child nods! The child voluntarily smells again after answering the father's question. This incident is critical because the father uses imitation, symbolic pretend play (along with Lola) to scaffold the boy and have fun with it. This is the only incident when a parent encourages the child to interact physically with the televised content when viewing *Charlie and Lola*. The child appears to enjoy the

interaction/play. The interaction makes the DVD more meaningful and it also helps the child feel more involved in the DVD.

Co-engagement (SST)	Poetry Girl	Lion Head	Smiling Girl	Super Mum	180	Totoro	Teacher Parents	Eye Doctor	Baseball Boy	Architect	Talking Adults	Warm Father	Queen
CL 'Plant'	8 (1)	16 (3)	8 (0)	4 (1)	9 (2)	8 (0)	5 (1)	2 (0)	3 (0)	9 (0)	N/A	5 (1)	1 (0)
CL 'Lost'	9 (0)	5(0)	7 (1)	N/A	8 (0)	2 (0)	1 (0)	1 (0)	0 (0)	2 (0)	1 (0)	8 (0)	1 (0)
CL total	17 (1)	21 (3)	15 (1)	4 (1)	17 (2)	10 (0)	6 (1)	3 (0)	3 (0)	11 (0)	1 (0)	13 (1)	2 (0)
Dora	N/A	24 (0)	38 (0)	N/A	32 (0)	N/A	14 (0)	16 (0)	27 (2)	25 (0)	2 (0)	7 (0)	9 (0)

Table 5.7: Numbers of co-engagement and SST in the co-viewings of *Charlie and Lola* and *Dora, the Explorer,* sorted by child's engagement, high to low

Due to the fact that the duration of one episode of *Dora, the Explorer* is twice as long as *Charlie and Lola* (20 minutes vs 10 minutes), the number of co-engagement and SST in two episode of *Charlie and Lola* is used to compare with those in one episode of *Dora, the Explorer* for each child. Table 5.7 shows the number of co-engagement episodes found in the dyads' co-viewing of the two programmes, sorted by child's level of engagement, from high to low. The number of SST is also shown separately in the bracket in the same table. It is not surprising that more co-engagement episodes occurred when watching *Dora, the Explorer*, t=3.39, df=9, two-tailed p=0.008 (CL total: M=9.2, SD=7.13; Dora: M=19.4, SD=11.65). It is mainly because the parent and child's interactions are elicited by the programme's interactive points, where characters explicitly invite the audience to participate. The programme is designed so that Dora explicitly prompts the adults to scaffold the child. Some parents repeated the questions/requests and encouraged their child to answer and participate.

However, even though nearly all dyads demonstrate more co-engagement in *Dora, the Explorer*, only two SSTs amongst all cases occurred. It is argued that even though the children and the parents are both engaged with *Dora, the Explorer*, the nature of the content does not give them as many opportunities to achieve SST. This finding will be further discussed in Chapter 7.

The two SSTs in *Dora, the Explorer* occur with the oldest child, Baseball Boy, in the study. The child watches the programme in his own way, and he does not respond to most of the programme points. He thinks beyond the content and discusses his questions with his mother.

An example of the SST happens in the co-viewing of *Dora, the Explorer*:

9:57	C: Mummy, why the grumpy old troll lives under the bridge?
10:02	M: That's his home.
10:06	C: Why?
10:08	M: It's like we are living here.
10:11	C: And then?
10:12	M: His home is under the bridge.
10:14	C: Why?
10:15	M: That's his house.
10:16	C: But what if it rains?
10:18	M: He would hide in the hole.
10:21	C: That's right.
10:22	M: Hmm.

[Baseball Boy, 5 years old, Day 2 Transcript]

The programme might be too easy for the child. The child already has had the ability to think about things beyond the immediate content and questions the logic of the programme/story. Instead of accepting everything in the programme, he questions why the Grumpy Old Troll (a character) lives under the bridge. And what will happen if it rains and the water rises. Wouldn't it be dangerous? On the other hand, the mother does not seem to realize the boy's ability is beyond the content. She keeps asking him to answer Dora's questions and invitations. Part of the issue could be whilst the mother does not interact very well is she hasn't try to make a connection between something that every child in the UK knows about, which is trolls, fantasy creatures, and if that has been explained to the child that might have

made the scaffolding more successful. The disadvantage of using *Dora, the Explorer* and *Charlie and Lola* is that children are coming across concepts and characters that just do not exist in Taiwanese story culture. And parents who are finely tuned this issue can mediate for the child to have a deeper understanding of what the programme is about.

	Child's engagement score	Number of co-engagement	Number of SST
Child's engagement score	---		
Number of co-engagement	.644*	---	
Number of SST	.643*	.765**	---

Table 5.8: Correlations between child's engagement, number of co-engagement and SST in the two episodes co-viewed of *Charlie and Lola*. *p<0.05 (2-tailed). **p<0.01 (2-tailed).

The correlations between child's engagement, the number of co-engagement and SST in the two episodes of *Charlie and Lola* are shown in Table 5.8. It appears that those dyads in which children have higher engagement, there tends to be more co-engagement and SST than with the children who have lower engagement levels. The argument of this thesis is that for children to learn they need to engage with the programme, if parents also engage children's engagement is enhanced, this in turn, on occasions, leads to SST. Table 5.7 and 5.8 demonstrate these relationships.

5.11. In-depth interpretation of each dyad's interactions

Finally, parental scaffolding behaviour, the level of the child's engagement along with the child's age, PPVT-R score, and the co-viewing context are collated to explore further the individual dyad's interactions. The information of the parents' scaffolding behaviours presented in Table 5.5 will be broken down in order to examine it case by case. This section will also describe the features of each parent's scaffolding and examples of it. And the examples will be studied with Marsh and Millard's model (2004). In addition, the interview of the parent will be used to explain the reasons behind the parent's behaviours. The sequence below is sorted by child's engagement score, highest to lowest.

Poetry Girl

Parental scaffolding behaviour (%)			
Wh-Q	8.43	Unrelated verbalisation	0
Closed Q	3.61	Evaluation	1.2
Label or Description	18.07	Attentional vocative	9.64
Supportive Silence	26.51	Confirmation and correction	2.41
Non-Supportive Silence	18.07	Placeholder	0
Abstraction/Play	12.05		

The mother is categorised as a Comprehender because she supports the child's viewing with not only questions and descriptions, but also abstractions. The mother thinks Lola's personality is similar to her own child's so she made a few links between the child and Lola. In addition, the mother was described as supportive even when she co-views with the child silently. She puts the child on her lap or holds the child's hands as they watch.

The child has the highest verbal IQ (98%) and is also the oldest girl (4 years and 7 month) in the sample. These 'within the child' factors along with the mother's high level of scaffolding help the child to attend to and engage well with the programme, Poetry Girl is the most engaged child (child's engagement score: 118). At the same time, the mother is also highly engaged. In 30.11% of the scenes she verbally interacts with the child with questions and descriptions and has 12.05% of abstraction. And 26.51% of time she non-verbally supports the child's viewing. In short, the adult is actively engaged in nearly 70% of the co-viewing time. The adult's engagement obviously has a great impact on the child.

In the interview, when being asked what are the reasons that she sometimes interacts with the child during the co-viewing, the mother replied that sometimes she wants to know whether the child has understood the content.

Example:

7:46	C: How does Charlie know all this?
7:49	M: Yes, because he reads books. There is information in books.
7:59	C: She doesn't…Lola doesn't read? Charlie does.
8:03	M: Because Lola is younger but her brother teaches her the knowledge he learned from the books.

[Poetry girl, 4 years and 7 month old, Day 3 Transcript]

In the *Charlie and Lola* 'Plant' episode, the child thinks beyond the content and challenges it. She is wondering why it is always Charlie who tells Lola what to do and tells her new things. The mother answers that it is because Charlie is able to read. The child accepts the answer and extends it. Then Poetry Girl logically infers that Lola doesn't or cannot read because she does not know the information about growing a plant. The mother further explains that it is also because Lola is younger. In this example of a 'conversation', the mother provides a context for the child to think. The child, then, is able to build on her own thinking and to think one step further. The mother in the end links the child's question to the context processor- the social context that older people usually know more than younger people. The extension from the actual televised content to children's real lives helps them to understand and engage fully with the programme.

Lion Head

Parental scaffolding behaviour (%)			
Wh-Q	3.61	Unrelated verbalisation	1.2
Closed Q	1.2	Evaluation	1.2
Label or Description	21.69	Attentional vocative	2.41
Supportive Silence	59.04	Confirmation and correction	3.61
Non-Supportive Silence	0	Placeholder	0
Abstraction/Play	6.02		

First of all, the mother is very successful in creating a warm, conducive atmosphere for the child to view. The viewing environment is comfortable throughout the data collection. The mother places the child on her lap and circles

him with her arms all or most of time during the DVD presentation. The mother explains in the interview that this is their typical posture when watching TV together. During the DVD presentation, the mother usually holds the child's hand to point to the screen when explaining the plot or answering the child's questions. This behaviour appears not only to enhance the child's attention to the content but also encourages the child to participate and be more engaged with the programme and it makes the viewing process more enjoyable. The mother tends to ask questions, explain the plot, and link the content with the child's previous experiences, e.g. growing a plant. She is also very responsive to the child's questions and is sensitive to his non-verbal behaviours, e.g. pointing. The mother is thus grouped as a Comprehender.

The boy has the lowest verbal IQ (63%) and is the youngest (3 years and 3 month) in the study. The child's high engagement (child engagement score: 114) with the programme is largely due to the mother's verbal and non-verbal support. The mother actively interacted with the child for over 90% of the time, including 26.5% of questions and descriptions or labels, 6.02% of abstraction and 59.04% of supportive silence.

The child was actually expecting Dora and not Lola, but the mother successfully encourages the child's attention to the programme, i.e. the child gradually stops talking about Dora as the programme proceeds. The importance of the 59.04% of supportive silence in this case should be emphasized. The sitting on the mother's lap and enclosed within her arms is a way to emotionally support a child's viewing. Her behaviour reveals that TV is encouraged by the mother. The co-viewing context is conducive. There are no distractions. This perfect co-viewing context allows the mother to focus on directing the child's attention. The only thing that prevents the child from attending is his preference to Dora and his non-familiarity with *Charlie and Lola*. In fact, the programme might be too difficult to the child and that is why the mother explains, describes and repeats the plot frequently to him. The mother was a kindergarten teacher and her previous work experience and knowledge of young children enables her to find the ways to enhance her child's attention.

In the interview, the mother expressed her positive attitude towards co-viewing. She considers co-viewing is valuable because the child's queries can be answered immediately by an adult, therefore, the child can learn from the opportunities offered. She thinks that co-viewing may also benefit parent-child interactions. When asked why she actively explained the plot to the child, she said…

> When he was little I found that he didn't pay full attention when watching TV. It's alright if it is because he doesn't like watching TV. But I felt it's because of his personality. He is a bit restless. When his sister was watching, he couldn't sit for long to watch with her. He would come to have a look and then run away. I wanted him to sit for longer. So I started to talk to him and gradually guide him to understand things in the programme. Afterwards, he understands that he needs to sit down to pay attention to watch a programme…The situation is getting better. He can sit quietly to watch now.

The mother is using the opportunity of TV viewing to prolong the child's attention span. And she is conscious of the fact that parental scaffolding can enhance the child's engagement with the programme.

Example:

1:19	M: Did we grow a tomato (tree) before? Did grandpa grow a tomato (tree) before [smile]?	
1:23	C: Where [smile]?	
1:24	M: Tomato (tree). Did grandpa grow a tomato (tree) downstairs before?	Look at C and pointing
1:28	C: Yes.	Nod
1:29	M: Yes.	
1:33	M: And older sister went to pick it up, right?	
1:34	C: Yes.	Nod

1:34	M: Did you pick some (tomatoes)?	
1:35	C: Yes, I did.	Nod
1:36	M: You picked up the tomatoes, right?	C nods
1:39	M: He is growing a tomato tree now.	Pointing

[Lion Head, 3 years and 3 month old, Day 3 Transcript]

The child was talking about the episode that he watched yesterday before the programme. The above incident happens at the very beginning of the DVD presentation. The mother guides the child's attention to the current episode by linking the content with the boy's previous experience. The mother helps the child to recall that, like Charlie, he also has grown tomatoes before. She further provides the context, including the plant he grew, who helped him to grow it (Grandpa), what he did with it (pick the fruit), and how he and his sister did the activity. To link this clip with Marsh and Millard's model (2004), the mother is supporting the child's visual and context processors. She makes a link between the two-dimensional picture on the screen with the real object (tomato). What appears supportive is that she is not referring to the object only but to the whole event, growing tomatoes, because they happened to have grown tomatoes before. The mother helps the child to understand these two are the same thing and the characters are having the same experience as he did. This could also support the child to bond with the characters. This is thoughtful, appropriate, spontaneous scaffolding.

Smiling Girl

Parental scaffolding behaviour (%)			
Wh-Q	6.02	Unrelated verbalisation	9.64
Closed Q	3.61	Evaluation	6.02
Label or Description	9.64	Attentional vocative	0
Supportive Silence	36.14	Confirmation and correction	1.2
Non-Supportive Silence	22.89	Placeholder	0
Abstraction/Play	4.81		

The mother does not actively interact with the child (only 60.22% of the scenes) as much as the other parents who are in the Comprehender and Describer groups. This is mainly due to the fact that the younger brother is in the same room all the time during the co-viewing so the mother's attention goes to him from time to time, which is also the reason the verbalisation unrelated to media content is high, i.e. all the unrelated verbalisations were to the younger brother. So the co-viewing context to some extent is disturbed by the presence of the sibling. Even though the co-viewing context is not perfect, the mother enjoys the content with the child and uses it to play with the child to reinforce her learning from the programme whenever there is an opportunity. The mother is one of the two parents who use the content to 'play' with the child. It can be said that the amount of the mother's parental scaffolding is not high but when it does occur, the quality is good. The mother is thus grouped as a Comprehender.

The close relationship between the child and the mother can be easily seen in the videos. The child often sits in her mother's arms and holds her hand to watch. This non-verbal behaviour is different from Lion Head mother's attention-enhancing arm wrap, the Smiling Girl did it actively and the body language shows that she likes to watch with her mother. In addition, the child is very responsive to her mother's questions about the televised content. She answers almost every question asked by her mother.

Even though the mother did not scaffold as much as the other parents in the Comprehender/Describer group, the child is still highly engaged with the programme (child engagement score: 113). Apart from the mother's successful scaffolding, the other reason for the child's high engagement is that the programme moderately challenges her understanding. The girl (3 years and 10 month) is about the mean age of all children in this study but she has a high verbal IQ (95%) which appears to allow her to comprehend the content.

In the interview, the mother says that the co-viewing allows her to learn what's on TV and what does the child learn from it. She also explains the reason she asked the child questions during the DVD presentation…

I want to know whether she understands the content or not and to what extent does she understands it. And if the content is comprehensible for her then I can use it as a learning opportunity and extend from it. For example, in the episode of '*Getting Lost*', I told her that she can avoid getting lost by walking hand in hand with me. The interactions also allow me to know what she knows and what she is able to know. Next time, I can use what she has learned from TV to real life. For instance, she now understands that 'getting lost' means 'disappearing' so I can use the term to talk to her about it from now on.

Example:

5:24	(The programme is mentioning about children should go 'hand in hand' to avoid getting lost)	M puts her hand out and C smilingly puts hers on M's.
5:31	(TV is mentioning what if we accidentally 'let go'). M: Let go~	M lets go C's hand. M is playing with C. C looks at M smilingly.
5:33	M: Did you hold my hand tight?	M looks at C.
5:34	C: Yes [smile].	
5:35	M: Do we need to hold our hands tight when we go shopping?	C reaches her hand to hold M's hand again.
5:37	C: Yes [smile].	

[Smiling girl, 3 years and 10 month old, Day 4 Transcript]

In Marsh and Millard's model (2004), a clip like this is complex as it involves the visual, aural, and context processors. Instead of verbally explaining the meaning of the content, the mother is acting/role-playing/re-presenting the scenario on TV with the child simultaneously. The mother not only does the 'hand in hand' gesture which is shown (and referred to) in the programme but also does the 'let go' gesture which is not shown (only mentioned) in the programme. And then she adds that they should not only go hand in hand but also need to 'hold tight' on to each other in order not to get lost. Finally, the mother extends the conversation to the child's own life experience that she should hold on to her mother tightly when

they go shopping. The mother skillfully reinforces the message by role-playing it with the child. Although, some people might argue that the scaffolding during the programme may interrupt children's processing of televised content. This clip, however, shows the feasibility and effectiveness of capitalising on the learning opportunity. It shows that when an opportunity is used appropriately it can enhance children's enjoyment and probably their understanding of the content as well.

This case and another clip in 180's Case (as mentioned in section 5.10: the 'smelling fragrance' incident) seem to show that children enjoy parents playing/interacting with them during the co-viewing (with one exception in this study is Baseball Boy). It is argued that through this involvement children's understanding and learning is enhanced.

Super Mum

Parental scaffolding behaviour (%)			
Wh-Q	0	Unrelated verbalisation	2.41
Closed Q	6.02	Evaluation	8.43
Label or Description	43.37	Attentional vocative	0
Supportive Silence	6.02	Confirmation and correction	0
Non-Supportive Silence	22.89	Placeholder	0
Abstraction/Play	10.84		

This mother's scaffolding is characterized by her frequent use of labels, description, and explanation of the plot. The reason that the mother used labels or descriptions frequently may be that the 2-year-old younger brother is watching also with the dyad (as is usual with their everyday viewing). The mother naturally explains the plot as it will help the younger brother to comprehend the story. The high level of descriptions/explanations/labels also holds the target child's attention to keep him engaged with the programme. In addition, the mother uses abstractions (10.84%) to make the child feel the events are close to him. She recalls his own previous experience, which allows him to be engaged further with the programme. Hence, the mother is categorized as a Comprehender. The mother said before the study that the target child rarely sits in one place to watch for more

than 5 minutes. If the child's viewing habits is taken into account, the mother did successfully guide the target child's attention, i.e. the child attended to most of the programme and has a relatively high engagement score. There is little silence during this dyad's co-viewing as the mother explains the plot and describes the scenes most of the time. When there is a silence, however, it is usually non-supportive. This is because the mother has the younger brother on her lap all of the time during the DVD presentation. In this case, it might be difficult to have any supportive non-verbal interaction with the target child. So the context is not totally beneficial to the target child.

The mother actively engages for 66.25% of co-viewing time and has the highest parental behaviour score (refer to Table 5.3). The reason that her child is not the most engaged one might be due to his normal viewing habits and the co-viewing context, i.e. the presence of younger sibling.

In the interview, the mother said that she tends to take the co-viewing as an opportunity to teach and interact with her children, even though she does not have much time to do so. She would use TV content as material to teach children what is right and wrong and how they should behave under certain situations. She thinks that the co-viewing also allows the children's queries about the programme to be answered right away. It is interesting that the mother seems to do and understand more than she expressed verbally in the interview. It seems that she scaffolds intuitively.

Example:

6:15	M: Look! That's the story of *Candy House* (the story of *Hansel and Gretel* in Chinese)! We read this story before, right [smile]?	M looks at C. C looks at the screen. (M has successfully got his attention back to the programme).
6:22	M: They're afraid of getting lost so they drop shiny pebbles along the way.	M looks at C.
6:35	M: They managed to get back at the first time, right? But for the second time, they put bread and it got eaten by birds [gesturing 'none']. So they didn't come back. Then they get to the Candy House [pointing the screen].	M looks at C. C nods.

[Super Mum, 3 years and 10 months old, Day 4 Transcript]

This episode refers to the story of *Hansel and Gretel*. The story has a different name in Chinese (*Candy House*) but the programme still uses the English name 'Hansel and Gretel'. Therefore, children might easily think these are two different stories. The mother realizes the links between *Hansel and Gretel* and the *Candy House* right away and explains it to the children. This parent is the only one amongst the thirteen participating parents who mention the link between *Candy House* and *Hansel and Gretel* (or who realises that the story of '*Hansel and Gretel*' **is** the '*Candy House'*). In this scaffolding, the mother not only links the televised content with the children's previous experience with texts, but also links the two media: books and television. The sharing of a book differs from television. The DVD version has sound and motion, and also the characters might look different on the two media. Thus, children might still have difficulty to link the two. The mother then further summarises the story to help the children to recall the story.

<u>180</u>

Parental scaffolding behaviour (%)			
Wh-Q	10.84	Unrelated verbalisation	2.41
Closed Q	14.46	Evaluation	7.23
Label or Description	12.05	Attentional vocative	8.43
Supportive Silence	14.46	Confirmation and correction	0
Non-Supportive Silence	26.51	Placeholder	0
Abstraction/Play	3.61		

With this child, the highest proportion of parental verbalization was the adult asking questions (25.3%). This parental scaffolding behaviour was actually influenced by the child's viewing habits. The father expressed in the interview that he believes that the child gets too engrossed and interacts seldom with people around him once he starts to watch TV programmes/DVDs. The father considers this to be a negative thing. For instance, the child does not hear parents talking to him or telling him to come to have a meal while he is viewing a programme. Therefore, the parental behaviour during the co-viewing corresponds to this father's concern and it shows how the father tries to resolve what he sees as a problem. By asking questions frequently, the father expects to increase the child's

interaction with the world around him whilst viewing. Unlike descriptions or other verbalisations, a person asking a question expects the one he is speaking to answer the question or interact with him/her. However, the child is not very responsive to his father's questions and he seldom verbally answers the questions. The father usually needs to ask more than one time, or uses some body language, e.g. leaning closer, touching the child's hair or leg, to get 180's attention to his question. The child then nods to respond his father's questions. The father is grouped as a Describer as he focuses on the televised content only and does little extension. The co-viewing context is good because the child's younger sister is not at home during the data collection (as mentioned in the beginning of this chapter). It creates a conducive co-viewing situation for the father and the focal child.

In the interview, the father says that co-viewing with the child allows him to know the programmes the child is watching and the language the child learns and uses. Therefore, he will be able to use it also to communicate later with the child.

Example:

10:26	F: Has it grown out?	
10:28	F: Has it grown out?	F looks at C. C nods
10:30	F: What has grown out? What's that? What colour is it? What colour is it [leaning down to watch C]?	F looks at C
10:36	C: Green [smile].	C stretches on the sofa. Face up now. C is lying on F's lap.
10:37	F: Is that green [smile]? Is that a green flower?	
10:40	C: Yes.	
10:40	F: Or is it a white one?	F looks at C
10:44	C: A white flower.	Pointing
10:45	F: It's a white flower.	

[180, 3 years and 5 month old, Day 3 Transcript]

During the co-viewings, the father usually starts with an open question and if the child doesn't reply or gives him a wrong answer, he changes it to closed questions.

In the above incident, the father starts with the question: 'What colour is it (the flower)?' The child answers 'green' (which is not correct). The father double-checks the colour with the child but the latter retains his answer. The father then asks a yes/no question which contains the correct answer: 'Or is it a white one?' The child then changes his answer to white flower. The child may not yet know his colours. It appears that the father is testing the child's cognition level/understanding of the programme and adjusts his questions or strategy accordingly. By changing to closed questions, the father is making the question easier for the child to respond and at the same time gradually guiding the child to make sense of the content. This incident corresponds to the literature of book sharing (DeLoache, 1983) which mentions that parents are sensitive to children's developmental stages and are able to change their scaffolding strategies according to their child's level of cognitive development.

Totoro

Parental scaffolding behaviour (%)			
Wh-Q	2.41	Unrelated verbalisation	1.2
Closed Q	2.4	Evaluation	0
Label or Description	3.61	Attentional vocative	2.41
Supportive Silence	78.31	Confirmation and correction	3.61
Non-Supportive Silence	0	Placeholder	1.2
Abstraction/Play	4.82		

Totoro's mother said before the study that she rarely co-views with the child because she is too busy working and usually missed the children's TV time. The lack of experience might partly explain why the mother was unable to provide high quality of scaffolding. During the co-viewing, the child usually initiates a conversation when he finds something interesting. The child actively creates scaffolding opportunities for the mother but the adult did not make the best use of them, i.e. the mother didn't continue or extend from the child's verbalisations about the DVD. Nearly 5% of parental verbalisations are passive ones such as corrections, confirmations, and placeholders. Apart from passive verbalisations, the mother spent 8.42% of time on questions and labels or descriptions and 4.82% on abstractions (13.24% in total). Interestingly, the abstractions usually happen

after the child switches his attention to something else. This might be the parent's attention-holding strategy and if so it indeed works. The child always switches his attention back to TV after the mother's use of abstractions. Even though the verbal scaffolding is not high, the mother puts the child on her lap all the time to help to guide the child's attention and non-verbally support (78.31%) his viewing. The mother is grouped as Observer Type 3, which is characterised by few verbal interactions and a large amount of supportive silence.

It is interesting that even the total silence in this case is similar to other dyads in the Observer group. Supportive silence appears to have an impact. The child's engagement score (child engagement score: 92) is the highest amongst the children in the Observer group.

In the interview, the mother confirms what was observed, she says 'I rarely initiate a conversation during the co-viewing. It is usually he (the child) who comments or asks a question and I reply'.

Example:

		C sits on M's lap and M's arms are around the child throughout the whole co-viewing.
7:32	C: Bees fly to gather honey.	
7:34	M: That's right.	
7:35	C: And they give us the honey they gathered to drink.	
7:38	M: Yes.	M looks at C
7:44	C: Bees work very hard too.	
7:46	M: Ha, they work hard [smile].	C smiles.
7:51	C: Bees go gather honey everyday.	Stretch his upper body. M looks at C.
7:54	M: That's right.	
7:55	C: And they work hard. Don't they?	
7:58	M: Yes.	Nod

[Totoro, 4 years and 4 month old, Day 3 Transcript]

This example of a conversation was initiated by the child. The child is linking what he sees on the screen with what he has learned elsewhere, e.g. stories and picture books. Unfortunately, the mother does not extend the conversation. It might be that the mother does not think that what the child is talking about is relevant to the televised content or she considers the conversation will interrupt the processing of the occurring content. It would have been a very good opportunity for learning that might have been used to link back to the main plot. For example, the mother could have asked where does the honey come from? How do bees carry and store honey?

Teacher Parents

Parental scaffolding behaviour (%)			
Wh-Q	2.41	Unrelated verbalisation	8.43
Closed Q	0	Evaluation	1.2
Label or Description	4.82	Attentional vocative	0
Supportive Silence	13.25	Confirmation and correction	0
Non-Supportive Silence	63.86	Placeholder	0
Abstraction/Play	6.02		

Even though both of the parents are senior high school teachers, they do not seem to support their child's viewing. The majority of parental behaviour is non-supportive (63.86%), which means that the mother and the child watch individually in parallel. There is little interaction between the parent and the child. The highest parental verbalisation is abstraction in which the mother links the depicted object (sycamore seed) with their previous experience of playing with a real one. This can be valuable scaffolding, but this type of scaffolding only happened once during their co-viewing. The co-viewing context is conducive as the father deliberately takes the younger baby brother away during the dyad's co-viewing. The child engages with programme by himself. However, the mother disturbs the child by asking a series questions unrelated to the content, e.g. what dessert he had, during his viewing and persists until he answers. The parent is

categorised as Observer Type 2 because she not only did limited scaffolding but also disturbed the child's viewing.

In the interview, the mother says that 'co-viewing is only (a time for) having a rest'. The mother thinks that she talked more during my visit/DVD presentations than their usual co-viewing. She frankly admits that it might be because of the videoing. In reality, the level of the interaction depends on the programme. They talk less in the child's favourite programme, *The 119 Firemen,* because the pace of the programme is fast so there is little time for discussion. And they tend to interact more when the televised content can be related to the child's real life experience. The mother says that she would talk to the child when she sees a learning opportunity in the programme because she wants to know how much the child has understood the content.

Example (positive):

8:24	M: Sycamore's seeds. We have that in our school. I played that with you. Do you remember?	M looks at C.
8:42	M: It's a piece like this [gesturing the shape] and it rotates when we throw it in the air. xxx. Do you remember?	M looks at C and gesture the shape of the seed and the rotating. C looks at M.
8:52	C: But baby (the younger brother) damaged it.	Puts his hand on M's shoulder and touches her hair.
8:54	M: Yes. Next time when we see the seeds, we will get some back.	

[Teacher Parents, 4 years and 3 month old, Day 3 Transcript]

The mother reminds the child that they have seen sycamore's seeds before. He does not reply to the mother's first attempt (8:24). The mother then (8:42) describes the shape of the object and the game they have played with the seeds (throwing the seeds into the air and watching them fly). Her first and second attempts help the child to remember. After a short while, the boy successfully recalls the context of the previous experience and he even adds what happened to the seeds at the end of that experience. To link the incident with Marsh and Millard's model (2004), the mother is supporting the child's aural, visual, and

context processors. At first, she links the label (sycamore) with the object itself. However, the child does not seem to remember that the object he has played with is a sycamore seed. The mother seems to be aware of it, therefore, she then further explains the shape of the object and how it rotates in the air with the gestures. The mother's gestures of how the seed rotates in the air help the child to recall the object. The mother uses the child's previous experience with the object to link with the two-dimensional picture on the screen. The mother helps the child to understand that these two: the one shows on the screen and the one they played with in the real life, are the same. All these efforts are helping the child to recall his experience with the sycamore seed and link it with the aural and visual stimuli of the televised content.

Example (negative):

10:12	M: What did you have for dessert (in school) today?	Look at C.
10:16	C: Sticky rice balls.	
10:19	M: Wow, how many did you have? How many?	
10:22		C gestures three with fingers.
10:24	M: Three? Really.	
10:26	M: What colour were they?	Look at C.
10:30	M: What colour were they? Black? What colour were they?	Lean forward, head against C's head and uses elbow to touch C

[Teacher Parents, 4 years and 3 month old, Day 4 Transcript]

It seems strange to ask these questions when the child is watching TV, however, the child patiently answers his mother.

Eye Doctor

Parental scaffolding behaviour (%)			
Wh-Q	1.2	Unrelated verbalisation	2.41
Closed Q	1.2	Evaluation	4.82
Label or Description	2.41	Attentional vocative	1.2
Supportive Silence	15.66	Confirmation and correction	0
Non-Supportive Silence	68.67	Placeholder	0
Abstraction/Play	2.41		

Here the highest proportion of parental behaviour is non-supportive silence (68.67%). Hence, the mother is categorized as Observer Type 1. It is interesting that the prominent interactions of this dyad usually appear before or after the main programme. It does appear that one of the advantages of discussion after the programme is that the ideas can be fully developed. The dyad focuses on the conversation without missing any of the programme. The older siblings (two sisters) play an important role in their before-/after-programme conversations. The conversations are very rich and stimulate the child's learning.

In the interview, the mother expressed her views towards co-viewing:

> For general children's programmes, I think it's okay (not being there) because you can see that when they're watching, they just watch, they don't talk too much during the programme. On the contrary, I think parents' company will have a better effect when children are viewing news or difficult programmes like the *Discovery*. If they have any questions, they can ask parents.

It seems that the main reason why the mother did not interact with the child during the programme is that she does not think that it is a challenge. She assumes that the child is able to understand the content without her help. The mother explains that the reason she sometimes interacts with the child during the programme is that she wants to know whether the child understands the content or not and to find out what he has learned from the episode.

Example:

Time	Speech	Gaze	Gesture
11:06	M: Have you grown anything?	C	Touch his head.
11:09	C: Yes, chili.	M	
11:09	M: Where's your chili?	C	
11:13	Older sister 2 (OS2): His <was dead>[>].	Researcher (R)	Pointing C
11:13	Older sister 1 (OS1): <It's outside>[<].		M looks at me and laughs.
11:14	C: It's dead.		
11:16	R: Why?	C	
11:18	OS1: OS2's was dead too. Mine <is the best>[>].	R	Turn over to say
11:19	M: <No>[<], hers is not dead. Hers grows well too.	OS1	Pointing OS2
11:24	OS1: Mine is the best [smile].	M	
11:26	M: OS2's grows out afterwards.	OS2	Nodding. OS2's watching at M and OS1 while they are having the conversation
11:27	OS1: Mine grows well too. Is it still growing?	M	
11:30	M: You have to go to check it. I think so.	OS1	
11:33	OS1: I am going to check.		Leave the sofa, heading to the balcony. OS2 follows OS1.
…			
12:09	M: Hey, don't go out!	OS1&2	
12:17			C leaves the living room and join the sisters on the balcony
12:30	OS2: See, mine is the best.		The kids are having conversation on the balcony.
12:30	M: Oh, come in! Come in quickly!		(M is worried because it's windy and cold on the balcony)

12:48	M: Ok, go wash your hands! It's cold outside. Come in, C [calling the full name].		
12:58	OS2: Look, it's his, this is mine, and that's OS1's.	R	Showing R their chilies.
13:01			OS1 comes back to the living room.
13:06	M: C (full name), come in quickly. It's cold outside.		
13:14	R: So this is yours?	C	
13:16	M: Yes, his used to be the best, but he didn't water it so it's dead in the end.	M	OS2 comes back to the living room
13:20	M: Come in quickly.		
13:24	M: Ok, you stay outside and mosquitoes will bite you. Come in quickly!		C comes in.

[Eye Doctor, 4 years and 4 month old, Day 3 Transcript]

Right at the end of the programme, the mother initiates the question 'Have you grown anything?' The children and the mother have a conversation about the plants the children have grown some time ago. The mother successfully links the televised content with the children's own experience. By doing this, the mother combines the messages from the programme (abstract) and the children's recall of growing a plant (concrete). Children begin to understand that what the programme about is real life, e.g. that growing plants take time, water, and sunshine. For example, the mother mentions that the target child's plant died because he didn't water it. So she reinforces the understanding that plants need water. The mother causally replies to older sister 1 that 'You have to go to check it...' So the sister leads the two younger children to the balcony to check their plants. The mother does not seem to like the idea of 'checking the plants' at that time because it is windy outside. However, it would have been an opportunity to further extend or link with the programme.

Baseball Boy

Parental scaffolding behaviour (%)			
Wh-Q	4.82	Unrelated verbalisation	1.2
Closed Q	2.41	Evaluation	0
Label or Description	0	Attentional vocative	0
Supportive Silence	2.41	Confirmation and correction	0
Non-Supportive Silence	87.95	Placeholder	1.2
Abstraction/Play	0		

Baseball Boy's viewing context is conducive. Even on a day when the older brother watches with the dyad, he causes no distraction. The boy is the oldest of all the children in the study and the content appears to be comprehensible to him.

There is little verbal or non-verbal interaction. The main feature of this dyad is that the child seldom responds to his mother's questions during the co-viewing. The mother described in the interview that the child interacts much more when he is watching programmes about live animals. While watching a narrative programme like *Charlie and Lola*, he is self-contained and tends to be very focused and quiet. The mother is probably right about this. The child concentrates on the content and shows no interest in interacting with people during the viewing. It can be said that the child's viewing habit/personality influences his mother's scaffolding pattern. The majority (87.95%) of parental co-viewing behaviour is non-supportive silence. The mother, thus, is grouped as Observer Type 1.

In the interview, the mother says that she thinks co-viewing is valuable because she is able to know what the children learn from the programmes and she can apply this content and language to real life. When asked whether she enjoyed watching with the child. She said…

> Programmes like this, yes I like. However, he tends to pay his full attention to it, which makes me less likely to interact with him. He doesn't pay attention to me at all (laugh). It turns out that I only 'watch' with him…Because even if you talk to him, he doesn't answer or listen to you. He continues his viewing. He doesn't want

to interact with you. But if you watch other programmes, like animal programmes, with him, the situation is totally different. He keeps discussing it with you throughout the programme.

Example:

3:12	C&M: Wow!	M looks at C
3:14	M: What's that [smile]?	M looks at C
3:15	C: It's super! Just one day and they grow up like 'shuu~' [making the sound]!	
3:18	M: Really [smile]!	M looks at C

[Baseball Boy, 5 years old, Day 3 Transcript]

This is the only interaction of the dyad during their co-viewing of two episodes of *Charlie and Lola*. The dyad finds the scene of growing cress fascinating and both express the 'Wow' at the same time. The mother takes this opportunity to ask the child his feelings. The boy happily describes the scene and why he thinks it is interesting. The incident is intriguing when we link it with the child's age. The child is the oldest child in this study. Most of the children answer their parents' questions with one word or one sentence. On the contrary, Baseball Boy is articulate enough to describe what he sees on the screen and his opinions or feeling towards the content.

Architect

Parental scaffolding behaviour (%)			
Wh-Q	2.41	Unrelated verbalisation	1.2
Closed Q	1.2	Evaluation	2.41
Label or Description	8.43	Attentional vocative	3.61
Supportive Silence	1.2	Confirmation and correction	0
Non-Supportive Silence	74.7	Placeholder	2.41
Abstraction/Play	2.41		

This family has a high SES. The child shows great enthusiasm for *Charlie and Lola*. But the Day 3 and 4 co-viewing shows that the quality of the co-viewing seems to

depend largely on her attention. The mother asks some questions and descriptions/labels (12.04%). But the majority of parental behaviour is non-supportive (74.7%). The co-viewing context on Day 3 is not good: the child has a cold and she coughs from time to time during the DVD presentation. The mother pays some attention to looking after her and gets water for her. The viewing context of Day 4 is not ideal either: the child has a toy in her hand and makes a noise with it for quite a while; the mother is unreceptive and falls asleep several times during the DVD presentation. On Day 4, the child does not pay much attention to the programme. Her attention is diverted by the toy by her side right from the beginning of the DVD presentation. Even though she keeps her eyes on the TV when she is playing the toy, her attention is decreased. Also, the toy is a noisy one which disturbed the focus of both when viewing. The mother takes the toy away after 5 minutes. During these 5 minutes, the mother looks at the child and the toy from time to time but does nothing. The high proportion of non-supportive silence (74.7%) makes the mother an Observer Type 1.

In the interview, the mother explains that the reason that she sometimes asks the child questions is that she wants to know whether the child understands the content and also she gets a chance to discover the girl's own preference of the programme.

Example (negative):

4:42		C turns to look at F and then takes the toy besides her. She then presses some buttons and it makes loud sounds.
4:55		M turns to look at her and then turns over.
5:00	M: Ehh [imitating sounds Charlie produces].	After producing the sound, M turns to look at C again. C stops making the sounds, but she still has the toy in her hand and moves it backward and forward repeatedly while her eyes are watching TV. When the toy hits on her lap, it makes sounds. YB now starts to play the toy in his hand too.
5:44		M looks at C and YB.
5:49		C stops making sounds but YB is still playing his.
6:01		M nods (sleepy). C's making sounds again and M opens her eyes.

[Architect, 3 ears and 8 month old, Day 4 Transcript]

Talking Adults

Parental scaffolding behaviour (%)			
Wh-Q	2.41	Unrelated verbalisation	38.55
Closed Q	2.41	Evaluation	0
Label or Description	0	Attentional vocative	0
Supportive Silence	0	Confirmation and correction	0
Non-Supportive Silence	56.63	Placeholder	0
Abstraction/Play	0		

This target child usually watches a programme when there are a number of people (parents, grandparents, and younger brother) talking around her/in the same room. And even though the mother is sitting beside her child, the mother talks to other family members. And the younger brother also makes a lot of noise when his sister is watching. The co-viewing context is therefore very poor and distracting for the child. In short, the mother not only does not scaffold the child, the viewing environment also disturbs her viewing. The mother is thus categorized as Observer Type 2.

Apparently, even though the child has a high verbal IQ (92%), without the support of the adult she only passively watches the programme and thus has a low engagement score (child engagement score: 85) which might be due to the continual disruption she encounters.

In the interview, the mother says that she does not particularly 'watch with the children'. It is just that all the family members gather together in the living room in the evening, so they can watch TV all together too. When asked what does she think about the programmes, she answered that 'I don't watch it. I just sit there and look after them.' She is in the same room with the children mainly for safety reasons. The two children fight with each other from time to time so she needs to be there to avoid serious fighting. Also, she said the interactions during the co-viewing 'depends on the content and her mood'.

No matter what the mother thinks about her role in co-viewing, the untypical co-viewing on Day 3 shows that she is actually able to provide quality scaffolding when the situation allows, i.e. when she does not need to pay so much attention to the younger brother, and when she is in the mood. The example below shows a quality scaffolding by this mother.

Example (positive):

4:05	C: It hasn't grown.	Pointing.
4:07	M: It's not that fast. It needs water to grow, and sunshine from Grandpa Sun.	M looks at C. Pointing referring to the sun.
4:18	M: It's like a baby.	
4:29	M: She is waiting for it to sprout.	M looks at C. C eats her candy.

[Talking Adults, 3 years and 10 month old, Day 4 Transcript]

The child is waiting for the plant to grow as is Lola. The mother explains that it takes time for a plant to grow and that it also needs water and sunshine. She refers to the sun as 'Grandpa Sun', a term that Taiwanese young children are familiar with. And then the mother interprets growing a plant by analogy with the growth of a baby. She uses the concept that is easier for the child to understand or the concept that the child is familiar with to help her to make sense of the new concept, growing a plant. The analogy between growing a plant and a baby is clearly supporting the child's context processor through her own life experience (refer to Marsh and Millard's model, 2004). The child is around the age that children are able to pretend play. Girls usually like to role-play mother and taking care of their baby (doll). Therefore, the concept of taking care of a baby, e.g. giving food, should be understandable for the child. The link between growing plants and taking care of a baby helps to integrate all the information together: plants need food and growing takes time.

Example (negative):

7:06	Grandmother (GM) talks to M and F.	
7:40-8:00	GM asks M to order a chicken for the Chinese New Year.	M leaves the seat to make a phone call. C gradually becomes lying on the chair to watch.
7:50-8:10	F warns YB not to hit the camera again. YB, F, and GM talk to each other.	
8:10-8:55	GM, M, and F discuss when to get the chicken.	
8:55-9:35	GM and M continue the topic about chicken.	M hangs up the phone and gets back to the seat.
9:25	M: I ordered one chicken. Is that enough?	
9:30	C: Two chickens [smile]!	Gesturing two with fingers
9:35	M: YB (full name), stop it!	As YB is still riding in the living room and crashs/hits furniture.

[Talking Adults, 3 years and 10 month old, Day 4 Transcript]

The grandmother, father, and mother are talking about ordering a chicken for the Chinese New Year during the DVD presentation. The younger brother is riding his car around the living room. At the end of the conversation, it is interesting to see that even though the target child has her eyes on the television, but she is listening to the adults' conversation. She joins in their conversation. This shows that the adult's talking clearly does affect the child's engagement with the programme.

Warm Father

Parental scaffolding behaviour (%)			
Wh-Q	25.3	Unrelated verbalisation	7.23
Closed Q	1.2	Evaluation	1.2
Label or Description	20.48	Attentional vocative	1.2
Supportive Silence	28.92	Confirmation and correction	1.2
Non-Supportive Silence	9.64	Placeholder	1.2
Abstraction/Play	2.41		

The father has the child sitting between his legs, i.e. surrounding the child with his legs, and sometimes points with the child's foot to the screen. The behaviour is similar to Lion Head held in the mother's arms to support the child's attention, towards the TV in front of her. Also, the close physical proximity also indicates the strong parent-child emotional bond facilitating learning.

However, the researcher's presence influenced the child and, probably reduced her engagement with the programme as the same dyad behaved differently on Day 2- when the researcher was absent. The child had a higher engagement level on Day 2 and the father provided lower scaffolding than on Day 3 and 4. It could be that the parental scaffolding level increases when the child's engagement is low. On Day 3 and 4, even though the father asks questions frequently to try to help the child to attend to the programme, he fails. The possible reasons for that might be that 1) If the child's lower engagement is due to the presence of the researcher, no matter what the father does, it would not change the fact that the researcher and her camcorder are present. 2) The child maybe simply not be in the mood to watch.

The verbalizations unrelated to media content happen when the child switches her attention to drawing and the depicted objects on the DVD cover. The father tries to guide her attention back to the screen but fails so he joins in the activity she is engaging with, hence 7.23% of verbalisations unrelated to media content. The father uses a high proportion of questions (26.5%) and labels or descriptions (20.48%), thus is categorized as Describer.

This case is interesting as it shows a different relationship between the parental scaffolding pattern and child's engagement. The literature suggests that parental scaffolding levels affect child's engagement (Barr et al., 2008). That is, children with high scaffold parents have higher engagement and those with low scaffold parents have lower engagement. But in this study, another relationship between parental scaffolding and child engagement was also found. That is, the child's engagement level affects parent's scaffolding pattern. Children's lower engagement may elicit parents to provide a higher level of scaffolding than usual and this higher level of scaffolding may or may not eventually enhance the child's

engagement level. On the other hand, when the child is highly engaged in the programme, the parents might think there is no need to interfere with the viewing, therefore providing a lower level of scaffolding.

In the interview, the father says that he almost always watches with the children because he has no other things to do when he gets home in the evening and he wants to be with them. The father thinks that by watching together with the children he can help them to understand and learn from televised content. Being in the same room with the children also ensures their safety. The researcher asked what are the reasons that he sometimes asks questions and explains the plot, the father says that it is because he wants to know whether the children understand the content. If they don't understand, he would explain that to them. Sometimes he links the content with the child's experiences to help them to comprehend the content. As for the close physical contact between the father and the child, he explains that he is happy that the children are both very close to him. Sometimes the child is being affectionate. He cherishes this closeness now as he thinks that it will change when the girls get older.

Example:

	Speech	Gaze	Gesture
4:03	F: Ok. Look, what is Lola having now?	C	Pointing the TV
4:05	C: Eating noodles [smile].		
4:06	F: Is she having noodles?	C	
4:10	F: What are they doing?	C	Lower the head and put his chin on C's head.
4:14	F: What is she doing?	C	
4:17	F: She is growing a plant.	C	
4:28	F: What does she want to do?	C	Lower the head again.
4:29	F: Listen to the music.	C	C nods.
4:44	F: What's that?	C	Use legs directing her body towards the TV screen.
4:46	C: Tomato [smile].		
4:47	F: Hmm.		
4:49	F: Whose tomatoes are they?	C	
5:07	YS: It's raining.		
5:14	F: Woo.		
5:15	YS: Woo [imitating F].		
5:20	F: Do you know that?	C	Lower the head. C shakes her head as a no.
5:22	F: Don't know.	C	
5:29	F: Water is coming out. There is too much water.		Use leg to touch/direct C's attention (as a pointing).

[Warm Father, 4 years and 2 month old, Day 3 Transcript]

The father asks questions frequently to try to enhance the child's interest and engagement with the programme. The questions he asks are usually about visual stimuli on the screen. His behaviour is well explained in the interview. The father says that he wants to know whether children understand the content or not. It also

helps children to focus on the programme. One thing needs to be noticed is that while most of the parents usually face the screen whilst talking to their child during the DVD presentation, this father leans forward or/and lower to get close to the child when asking questions. It shows the closeness between the parent and the child. It may also indicate that the child is very shy so they talk quietly.

Queen

Parental scaffolding behaviour (%)			
Wh-Q	0	Unrelated verbalisation	3.61
Closed Q	1.2	Evaluation	1.2
Label or Description	4.82	Attentional vocative	0
Supportive Silence	0	Confirmation and correction	0
Non-Supportive Silence	89.16	Placeholder	0
Abstraction/Play	0		

This case has the highest proportion of non-supportive silence (89.16%), and is thus grouped as Observer Type 1. The dyad watches silently. The mother mentioned why she interacts little during the DVD presentation in the interview. She said that she 'doesn't want to disturb the child's viewing…unless she initiates the conversation. On occasions we talk after the programme. For example, if we have encountered similar situations I would link it with the programme.' The reason that the mother links the events that happen in real life, e.g. a balanced diet, with the programme the child watched is that she hopes her girl will imitate the good behaviours/manners of the characters she likes.

So the mother's parental behaviour during the co-viewing is according to her own philosophy. However, just like the child of Talking Adults, Queen has high verbal IQ (97%), she watches attentively but passively, and thus her engagement score is low (child engagement score:80).

Summary

Phase 2 of the study replicated Calvert et al.'s (2007) research but in a natural home setting. The same enthusiasm and active programme engagement measures were used to measure children's level of engagement in the programme *Dora, the*

Explorer. Similar results have been found in the present study: parent-child interaction during the co-viewing supports the child's level of engagement. In the analyses of *Charlie and Lola*, three patterns of parental scaffolding were found, namely, Describer, Comprehender, and Observer. Describer and Comprehender have been identified in parent-child joint book reading. The new findings of this study are a distinction between the three types of Observer parental scaffolding pattern and added 'silence' as a parental scaffolding category. In general, Observer parents talk little about the programme with their child during the co-viewing. The discovery of the 'silence' category is related to the Observer types. There are two types of silence: supportive and non-supportive silence. It was found that even though some parents do not talk, but they have close bodily contact with their child which also supports the child's engagement with the programme.

In terms of the relationship between child's engagement and parental scaffolding, it was found that there are varieties of scaffolding for different purposes. The typical one is that where there is high parental scaffolding that children are engaged more. Except on the occasions, when the child is already very engaged, and the parent leans back and scaffolds less. The parent's level of scaffolding tends to be responsive to the child's level of engagement. So on occasions, when the child is very unengaged, the parent responds with the higher level of scaffolding that draws the child's attention to the content, e.g. Warm Father pulls the child to him and point with the child's foot to the screen. That kind of bodily contact helps to direct the child's attention. Sometimes, there is another kind of scaffolding that the parent is actually going up a level and helping to extend the child's understanding, in a very obvious way, e.g. the father gives the instruction to encourage the child to go smell the fragrance of the flower on the screen. All these different kinds of scaffolding that occur, verbal and non-verbal, makes the viewing such a rewarding activity for the child. In addition, because the parent knows the child so well, they know what the child understands so their scaffolding is very responsive to the child's age, maturity and the level of difficulty of the programme. The best of the adults is completely tuned in with the programme, enjoying the programme and the co-viewing as well and also supporting their child to another level of understanding about the programme. It was found that the scaffolding pattern that

evokes higher levels of children's engagement include a combination of scaffolding behaviours, these are questions, descriptions/labels, supportive silence, and abstractions/play. The most effective and successful scaffolder is offering powerful support to the child.

Chapter 6

Discussion of Phase 1

The findings from the on-line survey into young children's media use in Taiwan provide important information for those people who work with young children. The survey shows that the media play an integral and influential role in Taiwanese young children's lives. In this chapter, issues that arose from the survey will be discussed. These issues are the fact that TV dominates children's media use, that parents' own use influences their child's use of media, that parents report that they both co-view with their child and interact whilst doing so. Also, discussion will be focused on watching TV at mealtimes, and the extent to which children under the age of two are using media.

6.1. The media is an important part of young children's lives

As indicated in Chapter 4, 92% of children aged six and under in the survey use screen media, including TV, videos/DVD, video games, mobile games, and computers, on a typical day and spend an average of more than two hours doing it. The survey shows that more children watch TV (85%) than listen to music (77%) or play outside (75%) on a typical day. And the time spend on TV is significantly greater than any other activity, e.g. playing outside, listening to music, and reading or being read to. Specifically, time spent watching TV and videos/DVDs (1:45) is twice as great as children listening to music (0:46) and reading or being read to (0:46). The findings suggest that Taiwanese young children spend a substantial proportion of time using screen media. In addition, the TW viewing figures here are likely to be an underestimate due to the sample being high SES. It raises the concern which has been expressed by the American Academy of Pediatrics (AAP) that time spent on screen media may be displacing other valuable activities which support children's overall development, such as face-to-face interaction with parents and joint reading of books (American Academy of Pediatrics, 2010), especially for those under two years old.

In consistency with the US survey (Rideout & Hamel, 2006) children aged 2-3 years are the most likely to watch videos/DVDs than children in the other age groups. In the survey, 2- to 3-year-olds also spend the greatest amount of time watching TV and using screen media. The possible reason might be that the time that 6- to 23-month-olds spend awake is relatively short compared with older children. And almost all (97%) 4-6 year-olds in the sample attend kindergarten, therefore they spend less time at home than 2-3 year-olds (only 36% of 2-3 years attend kindergarten/daycare centres). This finding suggests that the pattern of media use of infants, toddlers, or preschoolers can be very different due to a variety reasons.

Another interesting finding is about the new technology culture of Taiwanese families. The ownership of a computer is already similar to that of television. It seems that a computer is becoming more and more important in people's lives. It would appear that the researcher is able to say that Taiwan is immersed in a new technology. And parents appear to think that TV is this wonderfully convenient to entertain their child which also supports their learning.

6.2. TV is still the most popular media for young children

Amongst all the other screen media, television is still the most popular media. In the survey, children aged six and under spend triple the time watching TV (1:17) as they do watching videos/DVDs (0:28). And only an average of 9 minutes are spent using a computer, 6 minutes on mobile games, and 4 minutes on video games. This aspect of the findings is consistent with the latest US national survey: *Zero to Eight* (Rideout & VJR Consulting, 2011). The fact that TV is still the most popular medium might be the result of the nature of watching television. Watching television, compared with the use of other media, is less demanding intellectually for young children and requires fewer operating skills. And it is the least expensive medium and requires little or no contribution from parents. In addition, watching TV is probably more social than using other media because of the prominent position of TVs in Taiwanese living rooms and the nature of watching TV.

6.3. Parents influence young children's media habits

These findings from the survey indicate that parents play a crucial role in shaping their child's use of media. First of all, nearly all parents use media at home. This is consistent with prior studies (Rideout & Hamel, 2006; Rideout & VJR Consulting, 2011), it was found that the more time parents spend using their own media, the more time their children spend on watching television. For example, children whose parents spend more than 2 hours using media per day are more likely to watch TV every day than those whose parents spend less than an hour (57% vs. 42%), averaging 47 minutes more TV time per day. This might be because children are influenced by their parents and/or children imitate their parents behaviours. Chakroff & Nathanson (2008) suggests that parents' active mediation, in which parents talk to children about television, is related to critical viewing in children. It is argued here that parents' own media use behaviours also send a message to children about the value of television. It reveals the importance of a 'good example' or role model for children. It might not just be about the amount of time parents spend on media but also their attitudes about the benefit and function of media. That is, young children learn their first lessons on media literacy from their parents. For example, a child will become a critical viewer and watch TV actively and selectively by observing how his/her parents spending their time wisely with media, using media as a tool for information gathering and learning.

6.4. Co-viewing and parent-child interaction during the co-viewing

In the literature, what is more important than how much time children spend watching TV is *how* they watch it. Prior studies have found that parent's co-viewing has a positive effect on young children's learning from TV because parents can select appropriate programmes for their child, avoid any negative effects from programmes, talk to children about TV, and they have opportunity to reinforce the educational content (Chakroff & Nathanson, 2008). Furthermore, Salomon (1977) found that kindergartners who watched with their parents enjoyed the programme more than children who watched alone because the involvement and company of parents create an viewing environment that supports children's wellbeing.

This survey found that parents are more likely to be in the same room all of the time when their children are playing mobile games (82%) or using a computer (70%) than watching TV (60%). Perhaps this is because mobiles and computers are more complicated to operate so it is likely that children will need more help when using them. Another reason could be that the two media are expensive and often contain important personal or work data, so parents maybe cautious when children are using parents' mobiles or computers.

Furthermore, children who are the only child in the family are more likely to have parents who co-view with them all or most of the time than those who are the youngest child (70% vs. 52%). It is quite clear that only children receive more of their parents' attention; whereas when there is more than one child, parents' attention and time are reduced. In addition, younger children are more likely to be co-viewed by their parents than older children. It seems that parents are aware that younger children need monitoring for both safety reasons and support with their understanding of the televised content.

The valuable role of parents is becoming clear. Parent-child interaction during the co-viewing is reported to enhance children's understanding of media content (Calvert, et al., 2007). Specifically, children with high-scaffolding parents tend to have better understanding of the content than those with low-scaffold parents. Seven out of ten (72%) parents in the survey claimed that they interact all or most of the time during their children's viewing. And the parents reported in the survey that the most frequently used scaffolding type is to 'link the content with the child's experience'.

Interestingly, it was found that the likelihood parents interact with their child during the co-viewing is related to whether or not parents have media rules and their attitudes towards media. Firstly, the survey indicates that parents who have media rules are more likely to interact with their child during the co-viewing. Those parents seem to be more aware of children's use of television, and have a positive, interventionist attitude to it which might indicate that they have more understanding about children's potential learning from television. And thus they are more likely to see the value of parent-child interaction during children's

viewing and to practise it. Secondly, there is also a link between interactions and parents' attitudes towards media. In general, parents who think television viewing is 'mostly beneficial' are more likely to interact with their child during their viewing. It might be that parents who hold positive attitudes towards media are more likely to see its potential value for children's learning and thus tend to actively use the media as a learning tool rather than passively use TV as a babysitter.

Surprisingly, there is a finding that is contradictory to the literature of parental scaffolding. In the literature (Heath, 1982; Ninio, 1980), it was found that parents from high-SES background tend to provide higher levels of scaffolding during joint book reading than those from low-SES group. However, the findings of the survey in the present study indicate that the lower SES parents were more likely to self-report that they interact with their children whilst co-viewing. The relationship between family backgrounds and parent-child interactions was investigated in-depth in Phase 2.

6.5. Watching TV whilst having meals is commonplace in Taiwanese families

In the survey, the majority of parents reported that their children watch TV when having meals at least some time in a day. Nearly half of households watch TV whilst having meals all or most of the time. It appears that TV at the mealtime is a controversial issue. In the interview with parents in Phase 2, some parents said TV at mealtimes is very much a negative behaviour as it does not encourage children to eat well, while some do it as it makes feeding easier. Another reason that parents have the TV on at the mealtimes is just that it is their domestic living pattern: TV is on all or most of the time at home, they do not particularly feel a need to turn it off when having meals. Furthermore, consistent with prior study (Rideout & Hamel, 2006), children who live in households where the TV is on all or most of the time during meals, are more likely to watch TV on a typical day, to watch TV every day, and spend more time watching than those who live in households where the TV is on half the time or less during meals.

The concern over watching TV whilst having meals is that it might lead to over eating and mindless eating (Boulos, et al., 2012; Christakis & Zimmerman, 2006). In addition, it is argued here that mealtimes should be considered important as they offer opportunities to develop family and cultural values about food and offer children and family members opportunity to talk and to share their day with each other.

6.6. Children under two spend twice as much time watching TV and videos as being read to

According to the survey, the 6- to 23-month-olds spend less time on media than children aged 2-6 years. It may simply be that children under two are awake less, i.e. 4-7 hours less, which includes night-time and daytime sleeps, than older children (Christakis & Zimmerman, 2006). However, there are still 32% of 0-1 years olds who spend more than two hours using media per day. It is about one-fifth of their waking time for children of this age. This age group spends an average of 1 hour and 38 minutes per day watching TV and videos/DVDs, but only 40 minutes reading or being read to.

Comparing with the 6-23 month olds US data (Rideout & VJR Consulting, 2011), the comparisons show that TW children are more likely to have ever watched TV (92% vs. 75%) and videos/DVDs (70% vs. 62%) and less likely to read and be read to every day (39% vs. 47%) than US children. Perhaps not surprisingly, TW children also spend more time watching TV (1:06 vs. 0:42) and videos/DVDs (0:32 vs. 0:19) than the US children.

The issue of this 'very young watching a lot of TV' should be taken seriously for two main reasons. Firstly, excessive early TV exposure may delay children's language development and there are no studies indicating a benefit of early viewing (Anderson & Pempek, 2005; Chonchaiya & Pruksananonda, 2008; Christakis, et al., 2009; Linebarger & Walker, 2005; Schmidt, Rich, Rifas-Shiman, Oken, & Taveras, 2009; Zimmerman, Christakis, & Meltzoff, 2007). In addition, as has been stated, there is concern over whether or not the time sitting in front of the screen is well spent. Secondly, the reason that current US young children use less media than TW children may be that their AAP's warning is being attended to.

Since 1999, AAP asked pediatricians to inform parents that children younger than 2 years should avoid TV and video viewing (American Academy of Pediatrics, 2010; American Academy of Pediatrics Committee on Public Education, 1999). And because there is no such recommendation from the TW government or related association, it would appear that parents are not widely aware of this issue. Maybe the TW government and pediatricians need to work together to make parents aware of the issue of too early and excessive media exposure.

Summary

This chapter develops our understanding of young children's media use in Taiwan. The discussion reveals that young children's media use should be understood within its broader context. The context of parents and family viewing plays an important role in shaping how children spend their time and how they use media. In terms of parent-child interaction during the co-viewing, parent's understanding of the value of media for their child's learning appears to be a crucial factor for them to interact when watching with their child. Last, but not least, Taiwanese parents needs to be informed about the issue of too much and too early TV exposure. Educators, pediatricians, and policymakers have a role to play regarding the current situation in Taiwan in order to promote healthy child development. Phase 2 of the study explores in what situations and under what circumstances TV can potentially be beneficial to young children.

Chapter 7

Discussion of Phase 2

Introduction

The survey undertaken in Phase 1 of this study has found that in Taiwan viewing television is prevalent amongst children aged 6 months to 6 years. Television also is the most popular media amongst all the other screen media, e.g. computer and mobile phone. It is suggested that children watch TV more because it is easy to manipulate and they can operate it on their own. Eighty-five percent of the children watch TV on a typical day. The greatest extent of TV watching is done by the younger children (2-3 years old) probably because children at this age are awake for longer than younger toddlers and they are not yet in kindergarten. The 2- to 3-year-olds spent an average of one and a half hours watching TV per day. Even 71% of the children under two watch TV on a typical day and spend more than 1 hour (1:06) doing it. And this finding is contrary to the advice of the American Academy of Pediatrics (AAP) that TV viewing for the under twos is not recommended (American Academy of Pediatrics, 2010). But nevertheless, this occurs in Taiwan. This study therefore sought to explore in what circumstances TV viewing can be valuable for the child's learning. In the survey, six out of ten parents claimed that they co-view with their children all or most of the time. Also, 72% of the parents self-reported that they interact with their child all or most of the time whilst doing it.

Based on the evidence that co-viewing has the potential to enable children to maximize the benefit of TV content of an educational programme (Friedrich & Stein, 1975; Salomon, 1977; Watkins, Calvert, Huston-Stein, & Wright, 1980), Phase 2 of the study was designed to examine how parents co-view with their child. In Phase 2, the thirteen participating dyads were asked to watch together two educational programmes, *Charlie and Lola* and *Dora, the Explorer*, over four days. The co-viewings were videotaped. A measure of the child's engagement and thematic analysis were used to analyse the child's engagement and parental scaffolding behaviours in the videos. This study adopted and adapted Calvert,

Strong, Jacobs, & Conger's (2007) measure the level of enthusiasm and active programme engagement in order to assess the level of physical and verbal involvement that the children demonstrated when they watched the programmes. As for the parental scaffolding behaviours, the types of interaction parents provided were both allocated to a category and given a score. The scores of child's engagement and parental scaffolding behaviour in each scene (programme point in *Dora, the Explorer*) were calculated for analysis. The correlation between a child's engagement and a parent's scaffolding behaviour was also conducted.

In Phase 2 of the study, child engagement was argued as, and used as a pre-requisite, for learning to occur. This then was the major outcome measure in the analyses. The findings in Chapter 5 show that engagement and learning from TV is dependent on many factors, including the type of programme, the viewing context, the within the child factors, the type and level of parental support, amongst other variables. In this Chapter, the above factors as well as the issues about the differences between book reading and TV viewing, patterns of parental scaffolding, the relationship between a child's age and level of engagement with the programme, the parent's attitude towards the value of TV co-viewing, will be also discussed.

7.1. Social mediation of viewing

The findings reported in Chapter 5 are consistent with aspects of Vygotsky's theory. The findings suggest that individual parents display different patterns of scaffolding during TV co-viewing. Parents used the same types of verbalisations during TV co-viewing that are found in studies of parent-child shared book reading (Haden, et al., 1996; Lemish & Rice, 1986; Reese, et al., 2003). Furthermore, a child's engagement with a programme is associated with the parental scaffolding pattern. A higher proportion of DVD-relevant verbalization in the forms of questions, descriptions/labels, and abstractions provided by parents were associated with higher level of child's engagement (Barr, et al., 2008; Calvert, et al., 2007). These findings are consistent with a more general theory that children learn in the context of joint attention/engagement with a more knowledgeable social partner. Whilst acknowledging the similarities between book and television, this study also found crucial differences between the two media.

7.2. A difference between book reading and TV viewing: Silence

Marsh and Millard discuss the similarities and differences between reading a book and watching TV (Marsh & Millard, 2004, p. 223). In the analyses of the dyads' co-viewing of *Charlie and Lola*, the present study also met similar issues. The analysis of the videos adopted the coding scheme of parental scaffolding behaviour from Barr, et al. (2008), which was developed from the literature of joint book-reading. Barr and her colleagues added an additional category, namely verbalization unrelated to the media content, due to the particularity of television viewing. In their study, low-scaffold parents tend to have a high proportion of verbalisations unrelated to media content and a low proportion of DVD-related verbalisations. However, Barr et al.'s coding frame still is not appropriate for all of the features which were observed in the present study.

A scaffolding category that is not to be found in shared book-reading was observed: silence. This is a new finding that indicates a major distinction between shared book reading and TV co-viewing. Silence was evident in the observation. It is a major and important part of the scaffolding. A large proportion (M=63.3%, SD=20.7) of parental behaviour found in the observation was silence. This category is not observed in shared book-reading because children of this age are unable to access the content without an adult reading and talking about the illustrations to them. But when TV viewing, children and adults can watch silently. Also practically, it is also unlikely for an adult to talk and support relevantly through out the programme, there is usually silence between conversations. Furthermore, two types of silence were identified: supportive and non-supportive silence. Supportive silence, in this study is described, as one in which parents physically and emotionally encourage the child to engage with the programme. Supportive silence can be demonstrated with non-verbal communication such as a smile, a nod, a hug, holding hands, sitting on the parent's lap. Whereas non-supportive silence is when the parents use absolute no scaffolding, verbally or non-verbally, to support their child. It would appear that supportive silence indicates that the parent is engaged with the programme and with the child. In the next section, there will be discussion about how different kinds of silence lead to different types of viewing.

7.3. Patterns of parental scaffolding in TV co-viewing

There were large differences in the ways that parents interacted with their child during the co-viewing of television. The findings of parental scaffolding patterns are in general consistent with prior research on shared book reading (Haden, et al., 1996; Ninio, 1980; Reese, et al., 2003). Different researchers use different terms to describe the types of scaffolding that parents provide during book reading. For example, Haden, Reese, and Fivush (1996) named parents who focus on describing pictures and characters in a story as Describers and parents who put their emphasis on children's understanding of the story as Comprehenders. Comprehenders tend to use a high level of extra-textual comments to encourage their child to think beyond the given texts. The present study found similar parental scaffolding patterns and used these categorizations and terms because it is relevant to both TV viewing and joint book-reading. However, apart from Describers and Comprehenders, there is another type of scaffolding group identified in this study: the Observer. The Observer was called passive co-viewer parents in previous studies (Hong, 2008; Su, 2010; Valkenburg, et al., 1998). Generally speaking, Observers provide little DVD/TV-relevant information to their child. The new finding of this study is that three types of Observers were identified. The identification of the types of Observers is related to three scaffolding categories, namely, verbalisations unrelated to media content, supportive and non-supportive silence. There appears to be three types of Observers. They were named Type 1: as those adults who provide mostly non-supportive silence; Type 2: as those who offer mostly non-supportive silence and verbalisations unrelated to media content; Type 3: as those who provide mainly supportive silence. In this study, Observer Type 1 parents interact little, neither verbally nor non-verbally, with their child during the co-viewings. The parent and the child watch the programme in parallel. Observer Type 2 parents not only provide little scaffolding but also tend to interrupt their child's viewing with talk that is unrelated to the content. On the other hand, even though Observer Type 3 rarely verbally interact with their child, their physical behaviour provides a warm and encouraging atmosphere for the child's viewing, which supports the child's engagement with

the programme. The Observer Type 3 will be further discussed in section 7.7 in this chapter.

As for research on TV co-viewing, the findings of the current study are consistent with those of Barr et al.'s (2008). Parents provide different levels of DVD-related and non-related verbalisations. In particular, the Observer Type 2 category of adults in the present study is actually similar as Barr et al.'s (2008) Cluster 1 parents who use a high proportion of verbalisations unrelated to media content.

Comparing the results of Phase 1 and 2, 'linking the TV content with the child's experience' was self-reported in the survey as the most frequently used strategy during co-viewing by the parents. In the survey, over half of the parents (53%) claimed that they use this type of interaction all or most of the time during the co-viewing. The other four types of strategies are: 1) explain the plot, 2) labelling or a description of something, 3) explanation of the vocabulary used, and 4) sing and play when the programme invites viewers to. However, when this issue was explored in Phase 2 in-depth through direct observation, it was found that the most frequently used scaffolding verbalisation is labelling or describing rather than extending the content. That is, most parents in Phase 2 focused on the televised content itself rather than extending the content to the child's own experience. Only high-scaffold parents extend the given story to the child's own life experience. This discrepancy might be due to the fact that a questionnaire survey relies on self-report.

Apart from the identification of different patterns of parental scaffolding, this study also conducted a correlation between child's engagement and parental scaffolding level.

7.4. Correlations between a child's engagement and parental scaffolding

The present study found that there is a positive association between the parental scaffolding score and the child's engagement score. In other words, the children of parents who provided higher levels of scaffolding tend to be more engaged than

children of low-scaffold parents. This is consistent with Calvert et al.'s (2007) study.

A number of studies also indicate that there is a positive association between the level of parental scaffolding and children's attention (Barr, et al., 2008), comprehension (Calvert, et al., 2007), and literacy skills (Haden, et al., 1996). In addition, Calvert and her colleagues (2007) assessed the relationship between a child's engagement and comprehension of the TV content. They found that children who were more engaged with the programme were most likely to understand the content. Based on Calvert et al.'s (2007) study, it could be interpreted that children of high-scaffold parents are more likely to have better understanding of the programme than children of low-scaffold parents. And this finding and interpretation is also consistent with Valkenburg, Krcmar, & de Roos's (1998) study. They found that children in the mediation group, in which children co-viewed with an adult who provided additional comments about the programme, recalled significantly more media content than the children in the non-mediation group. It is clear that children's learning from TV can be facilitated through an active, mediating adult.

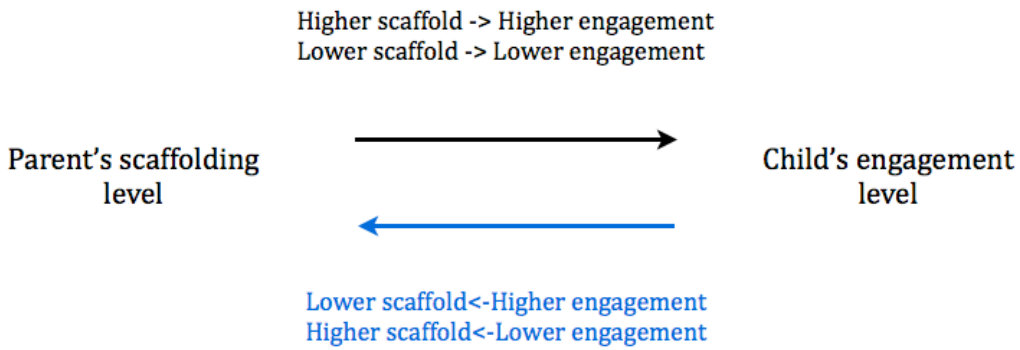


Figure 7.1: Relationships between parental scaffolding and child's engagement

Although the correlation between a child's engagement and a parent's scaffolding level is in general consistent with results from prior research of TV co-viewing or joint book-reading (Figure 7.1 black arrow), there is one surprising finding. One dyad displayed high-scaffold/low-engagement and low-scaffold/high-engagement during the co-viewing (Figure 7.1 blue arrow). One father provided a high-level of scaffolding when his little girl showed low engagement with the programme and

provided less scaffolding when the girl was highly engaged. It would appear that the father is sensitive to the child's engagement level and needs. He supports his little girl's engagement when she needs it and leaves her to watch more independently when her engagement is at the average level. In the next section, the relationship between the child's age and engagement with the programme will be further explored.

7.5. Children's age and engagement

The programme *Charlie and Lola* is a richly imaginative, narrative programme in which are embedded many concepts. The programme was chosen before the sample was selected. The Phase 2 study had a relatively wide spread of age in the children, ranging from 3 years 3 months to 5 years. These children vary in maturity, intellectual capacity, and language ability. Even though in Chapter 5, it was mentioned that there is no statistical difference between the child's age and his/her level of engagement with the programme, I would like to argue that there are different types of engagement. Some children enjoy the programme just for its language and attractive images (Lesser, 1977); whereas some become engaged because they are trying hard to comprehend the complicated concepts in the programme (Anderson, et al., 1981). The observations from the data show that *Charlie and Lola* is a programme which is most appropriate for 4 to 5 year olds because the ideas are sophisticated conceptually, e.g. '*Getting Lost in the Middle of Nowhere*', '*I'm just not Keen on Spiders'*. It would appear that the little 3-year-old child is probably just getting an overview of the story and is enjoying it at one level. These children are learning language, e.g. labels and how to follow a narrative, but they are not fully understanding the complicated and deep concepts. For instance, the notion of getting lost is a sophisticated concept. The little child is with his mother all the time and may not be aware what 'to be lost' is. On the other hand, the 4-year-olds are more able to understand the concept, perhaps they have even been lost at some point. Thus, the older children are enjoying the programme at quite a different level. And for the episode of growing a plant, the 3-year-olds may just enjoy the interesting process of growing. He/she may not have the level of intellectual capacity to understand the life cycle of a plant and what it needs to grow as the 4-year-olds do.

These different developmental levels of the children give the parents this wonderful opportunity for the researcher to see what the parent will do to help the child engage with the programme. The parents often respond with the appropriate scaffolding in a way that matches the programme to their child's level of intellectual capability and stage. For many children their parents are the best teachers. The parents know what their child knows, is able to know, and what he or she will not be able to understand as they support their learning.

In the present study, whilst some children appeared to be too young to fully understand the full meaning of the programme but through the scaffolding of their parents, they are able to enjoy the programme to a greater extent. Apart from a child's engagement with the programme, different aspects of understanding parents chose to support in their child, will be discussed in the next section.

7.6. Parents' support in processing TV content

Marsh and Millard (2004) developed a model, which is adapted from a theoretical model of reading a printed text (Adams, 1990), to explain the processes involved in 'reading' televisual texts. They suggest that the meaning of a televisual text is gained through decoding both the audio and images. In addition, the socio-cultural context as well as prior experience also affects the construction of meaning by the viewer. The model fits the observations of this study. The critical incidents in Phase 2 can all be explained through the model. The model helps the researcher to explore which aspects of comprehension are chosen by the parents to support in their child. The analysis of the critical incidents of individual families shows that the parents support mostly children's processing of visual images and audio. When the parent chose to support the child's context processor, it is more about the things that connect with the child's own experience of life, e.g. feeding the plant.

Another aspect of the parents' scaffolding is that they occasionally enhance the auditory links by speaking to the child about it, repeating the words or sentences on the screen. By doing this, the parents are not only directing their child's attention to the screen, but also emphasizing the auditory links between the sound (label) and the image or the motion while the child processes the information. This emphasis on the auditory link might have a different function for children at

different developmental stages. For children who have not known the object in the real world, the auditory message provided by the parent helps them to link the image on the screen to its label. As for children who know the object in the real world, the parent's auditory link is helping children gradually to understand that the two-dimensional images on the screen are the symbols of something in the real world. Thus, the auditory link is supporting children to gain insight into modes of representation (DeLoache, 1995). Another way to enhance insight into representation is to link the images with children's own experience.

In the current study, some high-scaffold parents also support the child's context processor. Marsh and Millard (2004) mention four aspects of context in their model: social and cultural context, own life experience, and previous experience of texts. In the data, the context processor that was involved in the co-viewing mostly is about linking content with the child's 'own life experience'. It would appear that for children of this age, it is easier for them to link what they are learning with the events and experience that is closely related to them rather than a wider social and cultural context. In terms of 'previous experience of texts', it is exciting to observe one significant incident that is related to it. On the Day 4 of the 'Super Mum' co-viewing, the mother simultaneously linked the story of *Hansel and Gretel* in the DVD with the child's previous experience of reading the print version of the same story. Marsh and Millard (2004) suggest that children can transfer their understanding of one form of a story to the other. Therefore, working with the print and film versions of the same texts enhances children's comprehension from one to the other. It is believed that the mother here is helping the child to have a greater insight into the character's actions and thoughts, and also the meaning of the story.

Apart from the semantic parts of the television, Marsh and Millard (2004) also mention the intricate conventions of making a TV programme. It is suggested that children need to understand the syntactic cues in order to access the meaning of the televisual texts. It is equivalent to children having to understand the conventions of a book, e.g. the way pages go, that print runs left to right and the gaps between words are ignored and that it is the words themselves represent a unit of meaning. For instance, children need to have explained and gradually understand that a zoom-in implies an emphasis of the part of an object or a person

instead of the growing of it. Interestingly, in the present study, it was observed that no parents try to scaffold children's understanding of the TV production technique. There are cuts, zooms, pans and trucks, and fades in the programme of *Charlie and Lola* and also dissolves in *Dora, the Explorer* but no parents talked about those formal features to their child. The reason might be that children are all experienced viewers and have no problem in understanding the grammar of television. However, it also could be that the parents just do not realize that formal features can be a challenge to children during the process of decoding the televised content.

7.7. Co-engagement

Attention is considered as a precursor for learning, as has been stated. Joint attention, which is defined as "looking where someone else is looking", between the child and the parent has been indicated to provide a platform for young child's learning (Butterworth, 2001). In addition, the concept of Sustained Shared Thinking (SST), 'an interaction where two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative', is suggested that it is accomplished through the process of co-construction (Siraj-Blatchford & Sylva, 2004). The researchers from EPPE argue that in order to achieve SST, there has to be the engagement of the adult and the engagement of the child (Siraj-Blatchford, et al., 2002; Siraj-Blatchford & Sylva, 2004). According to the findings of this study, it is argued here that they need also to be co-engaged on the event.

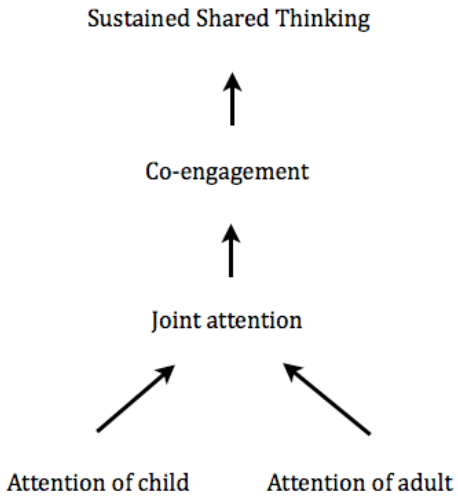


Figure 7.2: Relationship between joint attention, co-engagement, and SST

The notion of co-engagement of both adult and child is the new finding in this study. Co-engagement is suggested to be an important element that follows joint attention and before SST occurs (see Figure 7.2). It appears that the dyad needs to be fully co-engaged in order to achieve SST, and that co-engagement is the pre-requisite of SST.

It is argued that the "coincidence of separate lines of gaze" is not enough in the process of co-construction. Lauricella et al. (2011) indicate the importance of the emotional bond of the children for the characters in order for children to learn from a programme. Extending this further, I would like to argue that a deep emotional bond between child and parent is also an important feature of the co-viewing of the most effective scaffolding. Parents need to do more than merely watch but to be involved with the programme, along with the child. To some extent, parents need to appreciate and know the programme in order to recognise the potential learning opportunities for their child. And during the programme, parent and child mutually support each other with shared enjoyment and this is one of the key criteria of SST. For children to learn from the televised content supported by an adult (i.e. to achieve SST and thinking is developed), the child and the parent both need to engage with the programme, as has been suggested. It was found that children with parents who engage with the programme enjoyed it more than those with parents who just sit and watch passively.

In addition, the newly identified Observer Type 3, who non-verbally supports their child's viewing, gives us an important additional insight about co-viewing. It is found that if the parent is also engaged with the programme, they are able to support their child's engagement even when they are silent. This did not happen when a parent is sitting either half-asleep or gazing around the room or talking to other family members. And even though the Observer Type 3 parent is not verbally supporting her child, the child's engagement is higher than children of the other Observer parents. This significant finding is related to the notion of SST and which is described by the researchers as being the meeting of minds, the parent's and the child's (Siraj-Blatchford, et al., 2002). Sometimes this supportive silence is evidenced by merely enjoying TV together, and on occasions the parent's body

language supports the child's attention and engagement with the programme so that learning can occur. The close physical contact which shows that the parent is also engaged with the programme can be 'an energizer of learning' as mentioned in Salomon's work (1977). His work indicates that the affective influence enhances children's enjoyment and improves their learning from the programme (Salomon, 1977).

7.8. The nature of the parents' educational level

Prior studies from book reading have found that there is a positive relationship between a family's socio-economic status and parents' educational level and the level of scaffolding that they are able to provide (Heath, 1982; Ninio, 1980). That is, parents of middle-class families tend to provide higher levels of scaffolding than the low-SES parents. In the Phase 2 study, there was a range of educational and SES background in the sample, ranging from vocational school to PhD and from low to high SES. Surprisingly, in this admittedly very small sample, it was found that parents who provided the highest level of scaffolding are not necessarily those who were most highly educated, and parents who were highly educated are not necessarily the ones that actually provided the high quality scaffolding. It would appear that educational background does not fully explain parents' ability to scaffold their child's viewing. The parents' knowledge about child development did not seem to predict their ability to support their own child's understanding and learning from a TV programme. What seems to be more important are parent's attitudes towards co-viewing and children's learning from TV and, also, their receptivity to a particular programme. Specifically, the interaction between the child and parent is more about what adults say, not about how accurate their language is, their educational background, or their understanding of why they are doing it as some of the parents appear to successfully scaffold intuitively.

Some parents with less formal education usually underestimate how they support their child. In the interviews, they were unable to articulate what they do during the co-viewing and why they scaffold in a particular way. On the other hand, some highly educated parents in the interview were knowledgeable about child development and have a philosophy about rearing their child, but neither were reflected in their behaviour during the co-viewing.

7.9. The co-viewing context

Previous studies of parent-child TV co-viewing were conducted with an experimental design (see for example Calvert et al., 2007). The co-viewing context was controlled. The second phase of the current study was designed to take place in a naturalistic home setting. One of the disadvantages of naturalist studies are that some of the co-viewings did not happen in the most ideal situations. The child was hungry, or there were many people in the room, or the mother was tired or not feeling well. This made the co-viewing context less successful. However, the naturalistic design allowed understanding of what happens in the real world and exploration of how the viewing environment has an effect on the quality of the parent-child interactions during the co-viewing. Perhaps not surprisingly, it appears that child should not be distracted and should be fully able to attend to the TV programme. Small children cannot attend productively if they are hungry, when there are some sweeties they want to eat, when there is an adult talking about things that are irrelevant to the media content in the room, or when there is a sibling running around or riding a bicycle over their feet! It would appear that if the child is not in a conducive and quiet environment and a supporting adult who is interested in the programme, it makes it difficult for the child to first attend and then become engaged with the programme.

7.10. The different learning opportunities of the two programmes

The two educational programmes used in Phase 2 are different in intent and format. Firstly, the learning offering in the episodes of *Dora, the Explorer* are didactic and skills based, e.g. learning colours, shapes, and numbers, rather than exploratory and probing. In contrast to *Dora, the Explorer*, *Charlie and Lola* offers deep conceptual learning. Secondly, *Dora, the Explorer* is an interactive programme in which the programme points where Dora and other characters ask the audience questions are designed to enhance children's engagement with the programme (Calvert, et al., 2007). Therefore, the two programmes provide different types of learning for children and consequently elicit different types of parental scaffolding.

It was observed that the parents seemed to find it easier to participate in *Dora, the Explorer*. They are invited to be more active and to have more interactions with

their child during the co-viewing. Also, there is more physical interaction when the dyads are watching *Dora* because the characters sometimes invite the audience to participate physically, e.g. reach up to catch the stars. It would appear that the design of the programme points help the parents to interact or scaffold their child. Whereas in a narrative programme like *Charlie and Lola*, parents need to find their own opportunities and ways of scaffold their child.

However, the scaffolding parents provided in *Dora, the Explorer* are usually closed ones. The parents usually encourage the child to participate in the programme by repeating Dora's requests/invitations (at the designated programme points). Thus, the scaffolding is reactive and more mechanistic. Conversely, the scaffolding in *Charlie and Lola* is proactive, opportunistic and rich. The parents are more likely to provide high-level of scaffolding, in which links between the content and the child's own experience can be explored and ideas involve deeper thinking, in *Charlie and Lola* than *Dora, the Explorer*. It would appear that the programme's intent and format fundamentally influences the parental scaffolding and allows it to be tailored to their own child. It can be argued that it requires more from parents to respond to *Charlie and Lola*. Parents need to be really tuned into the programme in order to see the learning opportunity for their child. They need to know what their child knows and what might interest them. Therefore, the format and the richness of *Charlie and Lola* allow the opportunities to interact to be customized to each individual child's age, development, and need by the adult co-viewer.

7.11. The value of co-viewing and scaffolding

As mentioned above, while some parents (often intuitively) scaffold their children effectively, others actually are distracters to their child and disrupt the child's viewing. The interviews with the parents make it possible to perceive some reasons behind the parents' behaviour. According to the interviews of the thirteen parents, the main reason that the parents interact with their child during the co-viewing is that they would like to know to what extent their child is understanding and getting involved with the programme. And they assert that they would like to help their child to make greater sense of the content. Parents who provide high-levels of scaffolding during the co-viewing are usually the ones who see the

potential value of the parent-child co-viewing and think that their child's comprehension of the content can be enhanced through the interactions. On the contrary, some parents view passively with their child. They think all they should do is to answer the child's queries about the programme. These parents are not aware that they can have a more active role in their child's viewing of TV. They do not realize how they can make the co-viewing more successful and beneficial for the child. And because of this misunderstanding, their children may miss many learning opportunities created by themselves or the programme. I would argue that when young children initiate a relevant issue in conversation during the co-viewing, the adults should take this valuable opportunity to encourage the child to talk and think beyond the content in order to maximize the potential of the programme. Those parents who do not see the potential value of co-viewing and do not know how to co-view with their child appropriately, also tend to be those who disrupt their child's viewing and talk irrelevantly during the co-viewing. This finding agrees with Barr et al.'s study (2008), in which these researchers indicate that children in the low-scaffold group, where parents used a high proportion of verbalisations unrelated to media content and low proportion of questions and descriptions/labels, had lower attention than children of medium and high scaffold parents.

Summary

In Phase 2 of this study it is argued that the category 'silence' is a new finding and was identified in the data of the parents' co-viewing behaviour. This category is only possible in TV co-viewing. Two types of silence, supportive and non-supportive, were further identified. Consistent with the literature of shared book-reading and TV co-viewing, three patterns of parental scaffolding, namely, Comprehender, Describer, and Observer, also were found in Phase 2. Another new finding is that there are different types of Observer, which are related to three parental scaffolding categories: supportive and non-supportive silence and verbalization unrelated to media content. The child's engagement was found to be positively associated with the parent's level of scaffolding. In addition, the co-viewing context, parent's attitudes toward co-viewing and child's learning from TV are also related to the nature of the parent-child interaction during the co-viewing. Also, programme types seem to have an effect on the types of scaffolding parents

can provide. Finally, the concept of co-engagement is suggested and where both the child and the parent need to engage, appreciate, and enjoy the programme together in order to maximize the potential learning for the child.

Chapter 8

Conclusion and recommendations

The digital media are a hugely important aspect of both adult's and children's lives in Taiwan. In the present study, of those people who responded to the survey, 96% of households have at least one TV in the home, 97% have at least one computer, and 95% have Internet access. Home use of a range of technologies is prevalent and influential in Taiwan. The pattern of media use of Taiwanese children is characterised by two features: that children begin to use the media at a very young age and spend a large amount of their spare time using it (Child Welfare League Foundation, 2012). In the survey in Phase 1 of the study, children aged 6 months to 6 years spend an average of 2 hours and 4 minutes using screen media on a typical day, this includes watching television, watching videos/DVDs, using computers, and playing video or mobile games. As for parents, the average time spent using screen media at home is 2 hours and 51 minutes. It is clear that families enjoy using their technological equipment. However, it seems that the majority of parents are not aware of the American Academy of Pediatrics's (AAP) advice that children under two should not be using screen media and for older children the media time should be limited to 2 hours per day (American Academy of Pediatrics, 2010). In the present survey, 76% of children under two watch television, videos or DVDs on a typical day, for an average of 2 hours and 9 minutes. This is 50 minutes longer than the average time spent on screen by US children in *The Media Family* study (Rideout & Hamel, 2006).

As has been described, this study comprises two phases. The first phase aimed to provide an up-to-date and comprehensive statistics about the use of digital media of children aged 6 months to 6 years in Taiwan. The results of the survey showed that Taiwanese parents do not seem to be aware of the above advice of the AAP because their young children spend a great deal of time watching TV. The second phase of the study was conducted drawing upon the conceptual framework that children are very efficient learners, and that they learn from the environment and adults around them. It is recognised that young children need a variety of experiences to develop to their full potential, this includes actively playing indoors

and outside, interacting within a stimulating environment, and talking with the adults who care for them. However, given that TV is a part of this environment, this study aimed to explore the ways that educational TV programmes designed for young children, can be potentially more valuable.

Phase 1 of the study indicates that parents' own media use habits have an impact on those of their child, which reveals the crucial role parents and the home media environment play in shaping young children's media use. Another interesting finding that appears to differ from other countries is that watching and enjoying TV together sociably at mealtimes is commonplace in Taiwanese families. Also, the majority of parents claimed, in the survey, that they are in the same room with their children when they are viewing TV, so in Phase 2 the researcher looked in-depth at precisely what occurred when parents co-view with their child.

The findings from the second phase of the study seem to offer a more positive perspective on TV viewing than the AAP. Even with a small sample size (n=13), Phase 2 provides information that differs from the literature. The findings suggest that if certain pre-requisites are recognized, TV can be a powerful vehicle for learning. First of all, if the timing and the viewing environment are conducive, a positive viewing situation can be provided. This study indicates that both the child and the parent need to be able to attend fully in order to be receptive to the programme. In other words, that the presence of food/snacks, toys, other adults' talking usually disrupts the quality of the co-viewing.

When the dyad is alert, receptive and the co-viewing environment is conducive, it was found, in general, better quality scaffolding was provided to the child which enhanced engagement with the programme. An effective parental scaffolding pattern appears to include a combination of questioning, describing/labelling, and supportive silence, in addition to making abstractions including encouraging TV content related play. Furthermore, this study introduces the concept of co-engagement which emphasizes that parent and child need to, not only attend, but also to jointly engage with the programme, that is, to watch actively, in order to mutually support each other with enjoyment during the co-viewing. It appears that if parents engage and enjoy the TV programme along with their child and are

responsive to their young child's learning needs, the children tend to engage more with the programme and thus be capable of learning from educational TV. Successful scaffolding does not necessarily mean talking, as mutual enjoyment and co-engagement can be demonstrated when the dyad is watching silently.

Also, not surprisingly, for quality learning to take place, the programme content needs to be developmentally appropriate for the child. In addition, it is clear that a variety of educational programmes offer different types of learning. The programme *Dora, the Explorer* is more didactic and skills based than *Charlie and Lola* which offers, under the right conditions, learning of concepts. And the different types of learning opportunities evoke different parental scaffolding: the scaffolding of *Dora, the Explorer* tends to be responsive to the invitations of the programme. Conversely, the scaffolding in *Charlie and Lola* is more opportunistic, and potentially rich, and, on occasions, was customized by parents to match their individual child's developmental level.

It is important to note that, whilst *Charlie and Lola* was found to be very powerful, i.e. more instances of Sustained Shared Thinking (SST) than *Dora, the Explorer*, it might have been even more powerful as the children and parents became more familiar with the programme. As Lauricella et al. (2011) point out that familiarity with the programme as being key for children to bond with the characters, which takes time and multiple viewings. Children's interest is strengthened and children learn better when they have bonded with the characters. In Phase 2, some of the children were not very interested in *Charlie and Lola* initially, perhaps because the programme was new to them. Therefore, it maybe that the potential of *Charlie and Lola* programme was not fully exploited in this study because the children and the parents did not know it as well as they knew *Dora, the Explorer*. It is likely that with greater familiarity the response to *Charlie and Lola* would have been even more positive.

This study would like to offer recommendations to parents, educators, future researchers, and policy makers. Firstly, the issue of young children's media use needs to be raised. Parents need to have a clear understanding of the reasons for their young children to be in front of a TV screen. Are the media being used as a

vehicle for education, for leisure, or simply as a babysitter? And parents need to consider whether the time spent viewing is well spent?

Secondly, it has to be accepted that TV is here to stay as has been stated: parents watch it, children watch it, parents and children watch it together. In what circumstances can children have more opportunities to learn from TV? Here, the value of TV co-viewing could be addressed. Awareness raising needs to occur on the potential learning from TV programmes designed for the younger age groups, coupled also with understanding of the role of parents have in potentially supporting their child when watching TV. Co-viewing can, not only enhance children's enjoyment of the programme, but make it more comprehensible and so be beneficial for child's learning. In the current study, the parents scaffolded their child intuitively, without any kind of instruction or help of how to co-view. Some parents supported their child's viewing of the programme very successfully.

In this study, it was encouraging to find that quality scaffolding did not appear to be related to parental educational background. What seems to be more important is parent's understanding of the value of co-viewing. Parents are able to provide quality scaffolding for their child if the time and the viewing environment allow them to do so.

I would suggest that information arising from the findings of from this study is disseminated. Parental awareness raising through articles, and books, as well as the popular media, e.g. programmes, talks, parents and children's magazines, needs to take place. The results of this study can positively influence their children's development if parents are aware what they need to do to make the co-viewing as valuable as possible.

Parents need this information. Parents need to understand the importance of co-viewing. It was found that the co-engagement, which leads to powerful scaffolding and on occasions to SST, has a positive impact on children's viewing. I am suggesting that with this support from their parents, children will be enabled to maximise the learning potential of educational programmes. Educational TV can be as beneficial as joint book sharing. Parents interact with their child when they are looking at a book together. The same kind of learning opportunity that children are offered from picture books needs to be extended to TV. Perhaps this study

indicates that parents could look upon TV as a learning opportunity that shouldn't be wasted. Otherwise, the AAP's concern is correct, children shouldn't be watching TV if the programme is not high quality and adults are not supporting the child's viewing.

Recommendations for further research

A caveat of the findings of Phase 1 is that the sample was skewed towards the higher levels of parents' educational background and household income. As an individual researcher, it is difficult to conduct a representative sampling survey. Highly educated parents and high-income families may have greater understanding of children's development and how to use the media appropriately, and hence their children use less screen media and also the amount of time spent using media is less. I suggest that a national longitudinal and representative investigation is needed on the range and types of media Taiwanese preschool children use and how they use them. Similarly, it is important to note that the Phase 2 of the study was small-scale exploratory study with only 13 participating families. Therefore, the implications of the findings are offered tentatively. Future research with a larger sample size could usefully revisit some of these issues.

In conclusion, television has an important and influential role in Taiwanese young children's lives. I argue that high quality educational programmes have great potential value for young children's development and parents can support their child's learning through scaffolding, even though the data of the present study suggest that parents do not fully recognise the value of co-viewing. It is clear, however, that the potential learning opportunities of the educational programmes can be maximised by parents, suggesting the benefits of parents' questions, descriptions, labelling, making links between the programme content and the child's experience, and using non-verbal supportive behaviours during the co-viewing. The key to learning from TV involves the engagement of both adult and child. The implication is that as with shared book-reading (Whitehurst, et al., 1988), parents should be encouraged to co-view with their children and actively engage with programme content as it will increase their children's learning from educational TV programmes. And they will enjoy the experience too!

References

Abelman, R. (1985). Styles of parental disciplinary practices as a mediator of children's learning from prosocial television portrayals. *Child Study Journal, 15*, 131-145.

Abelman, R. (1989). From Here to Eternity Children's Acquisition of Understanding of Projective Size on Television. *Human Communication Research, 15*(3), 463-481.

Abelman, R. (2004). TV Literacy and academic/artistic giftedness: Understanding time leaps and time lags. *Roeper Review, 26*(2), 85-89.

Acker, S. R., & Tiemens, R. K. (1981). Children's perceptions of changes in size of televised images. *Human Communication Research, 7*(4), 340-346.

Adams, M. J. (1990). *Beginning to read : thinking and learning about print*. Cambridge, Massachusetts: MIT Press.

Alibali, M. W., Flevares, L., & Goldin-Meadow, S. (1997). Assessing knowledge conveyed in gesture: Do teachers have the upper hand? *Journal of Educational Psychology, 89*, 183-193.

Alibali, M. W., & Nathan, M. J. (2007). Teachers' gestures as a means of scaffolding students' understanding: Evidence from an early algebra lesson. In R. Goldman, R. Pea, B. J. Barron & S. Derry (Eds.), *Video Research in the Learning Science* (pp. 349-365). Mahwah, NJ: Erlbaum.

American Academy of Pediatrics. (2010). Policy Statement Media Education. *Pediatrics, 126*(5), 1-8.

American Academy of Pediatrics Committee on Public Education. (1999). Media education. *Pediatrics 104*(2), 341-343.

Anand, S., & Krosnick, J. A. (2005). Demographic Predictors of Media Use Among Infants, Toddlers, and Preschoolers. *American Behavioral Scientist, 48*(5), 539-561.

Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, R., Johnson, J. D., Linz, D., et al. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest, 4*(3), 81-106.

Anderson, D. M., Huston, A. C., Schmitt, K. L., Linebarger, D. L., & Wright, J. C. (2001). Early childhood television viewing and adolescent behavior. *Monogr Soc Res Child Dev, 66* (1), Serial No 264.

Anderson, D. R., & Pempek, T. A. (2005). Television and very young children. *American Behavioral Scientist, 48*(5), 505-522.

Anderson, D. R., & Pugzles Lorch, E. P. (1983). Looking at television: Action or reaction? In J. Bryant & D. Anderson (Eds.), *Children's understanding of television*. New York: Academic Press.

Anderson, D. R., Pugzles Lorch, E. P., Field, D. E., & Sanders, J. (1981). The effects of TV program comprehensibility on preschool children's visual attention to television. *Child Development, 52*(1), 151-157.

Australian Government. (2010). *Move and Play Every Day. National physical activity recommendations for children 0–5 years.* Commonwealth of Australia: Department of Health and Ageing.

Bandura, A. (2001). Social cognitive theory of mass communication. *Media Psychology, 3*, 265-299.

Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *The Journal of Abnormal and Social Psychology, 63*(3), 575-582.

Bandura, A., Ross, D., & Ross, S. A. (1963a). Imitation of film-mediated aggressive models. *The Journal of Abnormal and Social Psychology, 66*(1), 3-11.
Bandura, A., Ross, D., & Ross, S. A. (1963b). Vicarious reinforcement and imitative learning. *The Journal of Abnormal and Social Psychology, 67*(6), 601-607.
Barkovich, A. J., Kjos, B. O., Jackson, D. E. J., & Norman, D. (1988). Normal maturation of the neonatal and infant brain: MR imaging at 1.5 T. *Radiology, 166*, 173-180.
Barr, R., Muentener, P., Garcia, A., Fujimoto, M., & Chávez, V. (2007). The effect of repetition on imitation from television during infancy *Developmental Psychobiology, 49*(2), 196–207.
Barr, R., Zack, E., Muentener, P., & Garcia, A. (2008). Infants' attention and responsiveness to television increases with prior exposure and parental interaction. *Infancy, 13*, 30-56.
Beentjes, J. W. J., De Koning, E., & Huysmans, F. (2001). Children's comprehension of visual formal features in television programs. *Applied Developmental Psychology, 22*, 623–638.
Berk, L., E. (2009). *Child development (8th ed.)*. Boston, MA: Pearson Education.
Bezemer, J., & Mavers, D. (2011). Multimodal transcription as academic practice: a social semiotic perspective. *International Journal of Social Research Methodology, 14*(3), 191-206.
Bligh, C. (2011). Rights in early years settings and a young child's right to silence. In P. Jones & G. Walker (Eds.), *Children's rights in practice*. London: Sage.
Boulos, R., Vikre, E. K., Oppenheimer, S., Chang, H., & Kanarek, R. B. (2012). ObesiTV: How television is influencing the obesity epidemic. *Physiology & Behavior, 107*(1), 146-153.
Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.
British Educational Research Association. (2011). *Ethical guidelines for educational research*.
Britto, P. R., Brooks-Gunn, J., & Griffin, T. M. (2006). Maternal reading and teaching patterns: Associations with school readiness in low-income African American families. *Reading Research Quarterly, 41*(1), 68-89.
Britto, P. R., Fuligni, A., & Brooks-Gunn, J. (2002). Reading, rhymes, and routines: American parents and their children. In N. Halfon, K. McLearn & m. Schuster (Eds.), *The health and social conditions of young children in American families* (pp. 117-145). New York: Cambridge University Press.
Brooks-Gunn, J., & Markman, L. (2005). The contribution of parenting to ethnic and racial gaps in school readiness. *The Future of Children, 15*, 139-168.
Buckingham, D. (2007). *Beyond technology: Children's learning in the age of digital culture*. Cambridge Polity.
Bus, A. G., van IJzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*, 1-21.
Butterworth, G. (2001). Joint visual attention in infancy. In G. B. A. Fogel (Ed.), *Blackwell handbook of infant development*. Madden, MA: Blackwel Publishers.
Calvert, S. L. (1988). Television production feature effects on children's comprehension of time. *Journal of Applied Developmental Psychology, 9*, 263-273.
Calvert, S. L. (1999). The form of thought. In I. Sigel (Ed.), *Theoretical perspectives in the concept of representation*. Hillsdale, N.J.: Erlbaum.

Calvert, S. L., Huston, A. C., Watkins, B. A., & Wright, J. C. (1982). The relation between selective attention to television forms and children's comprehension of content. *Child Development, 53*, 601-610.
Calvert, S. L., Rideout, V., Woolard, J., Barr, R., & Strouse, G. (2005). Age, ethnicity, and socioeconomic patterns in early computer use: A national survey. *American Behavioral Scientist, 48*, 590-607.
Calvert, S. L., Strong, B. L., Jacobs, E. L., & Conger, E. E. (2007). Interaction and participation for young Hispanic and Caucasian children's learning of media content. *Media Psychology, 9*(2), 431-445.
Carver, L. J., Meltzoff, A. N., & Dawson, G. (2006). Event-related potential (ERP) indices of infants' recognition of familiar and unfamiliar objects in two and three dimensions *Developmental Science, 9*(1), 51–62.
Chakroff, J. L., & Nathanson, A. I. (2008). Parent and school Interventions: Mediation and media literacy. In S. L. Calvert & B. J. Wilson (Eds.), *The handbook of children, media, and development*. Chichester, U.K.; Malden, MA: Wiley-Blackwell.
Chien, P. (2002). *A study of the programming of a kids channel in Taiwan-YOYO TV.* Unpublished Master dissertation, Ming Chuan University, Taipei.
Child Welfare League Foundation, R. O. C. (2004). *台灣都會地區兒童家庭生活狀況調查報告*. 台北: 兒童福利聯盟文教基金會.
Child Welfare League Foundation, R. O. C. (2005). *TV 哪裡有問題？-2005年台灣兒童傳播權調查*. 台北: 兒童福利聯盟文教基金會。.
Child Welfare League Foundation, R. O. C. (2010). *TV viewing habits of Taiwanese preschoolers*. Taipei: Child Welfare League Foundation, R.O.C.
Chonchaiya, W., & Pruksananonda, C. (2008). Television viewing associates with delayed language development. *Acta Paediatrica, 97*(7), 977-982.
Christakis, D. A. (2008). The effects of infant media usage: What do we know and what should we learn? *Acta Pædiatrica, 98*(1), 8-16.
Christakis, D. A., Gilkerson, J., Richards, J. A., Zimmerman, F. J., Garrison, M. M., Xu, D., et al. (2009). Audible television and decreased adult words, infant vocalizations, and conversational turns. *Arch Pediatr Adolesc Med., 163*(6), 554-558.
Christakis, D. A., & Zimmerman, F. J. (2006). *The Elephant in the Living Room*. New York: Rodale Press.
Christakis, D. A., Zimmerman, F. J., DiGiuseppe, D. L., & McCarty, C. A. (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics, 113*, 708-713.
Clements, B., Coady, D., & Gupta, S. (Eds.). (2012). *The Economics of Public Health Care Reform in Advanced and Emerging Economies*. Washington, DC: International Monetary Fund, IMF Publications.
Comstock, G., & Scharrer, E. (2006). Media and popular culture. In K. A. Renninger & I. E. Sigel (Eds.), *Hanbook of Child Psychology: Vol. 4. Child psychology in practice (6th ed. 817-863)*. Hoboken, NJ: Wiley.
Coon, K. A., Goldberg, J., Rogers, B. L., & Tucker, K. L. (2001). Relationships Between Use of Television During Meals and Children's Food Consumption Patterns. *Pediatrics, 107*(1), E7.
Crawley, A. M., Anderson, D. R., Wilder, A., Williams, M., & Santomero, A. (1999). Effects of repeated exposures to a single episode of the television program Blue's Clues on the viewing behaviors and comprehension of preschooler children. *Journal of Educational Psychology, 91*, 630-637.

DeLoache, J. S. (1983). *Joint Picture Book Reading as Memory Training for Toddlers*. Paper presented at the Biennial Meeting of the Soc. Retrieved from http://eric.ed.gov/?id=ED234895

DeLoache, J. S. (1989). Young children's understanding of the correspondence between a scale model and a larger space. *Cognitive Development, 4*(2), 121-139

DeLoache, J. S. (1995). Early understanding and use of symbols: The model model. *Current Directions in Psychological Science, 4*(4), 109-113.

DeLoache, J. S. (2000). Dual representation and young children's use of scale models. *Child Development, 71*(2), 329-338.

DeLoache, J. S., & DeMendoza, O. A. P. (1987). Joint picture book interactions of mothers and 1-year-old children. *British Journal of Developmental Psychology, 5*, 111-123.

DeLoache, J. S., Pierroutsakos, S. L., Uttal, D. H., Rosengren, K. S., & Gottlieb, A. (1998). Grasping the nature of pictures. *Psychological Science, 9*(3), 205-210.

Department of Statistics, Ministry of the Interior, Republic of China (2012). Population of 15 Years and Over by Educational Attainment. from Department of Statistics, Ministry of the Interior of Taiwan: http://sowf.moi.gov.tw/stat/year/list.htm

Dimmock, I., & Magraw, L. (2007). *Silence and presence: How adult attitude affects the creativity of children*: National Teacher Research panel, DfES Innovation Unit.

Directorate-General of budget, Accounting and Statistics, Executive Yuan, Republic of China. (2012). *Report on the survey of family income and expenditure, 2011*

Dockett, S., & Perry, B. (2011). Researching with young children:Seeking assent. *Child Indicators Research, 4*(2), 231-247.

Dowling, M. (2006, 6 April). All about children's thinking. *Nursery World,* 17-24.

Ewers, C. A., & Brownson, S. M. (1999). Kindergarteners' vocabulary acquisition as a function of active vs. passive storybook reading, prior vocabulary, and working memory. *Reading Psychology, 20*, 11-20.

Fejes, F., & Petrich, K. (1993). Invisibility, homophobia and heterosexism - Lesbians, gays and the media. *Critical Studies in Mass Communication, 10*(4), 396-422.

Flewitt, R. (2006). Using video to investigate preschool classroom interaction: education research assumptions and methodological practices. *Visual Communication, 5*(1), 25-50.

Friedrich, L. K., & Stein, A. H. (1973). Aggressive and prosocial television programs and the natural behavior of preschool children. *Monogr Soc Res Child Dev, 38*, 1-63.

Friedrich, L. K., & Stein, A. H. (1975). Prosocial television and young children: The effects of verbal labeling and role playing on learning and behavior. *Child Development, 46*, 27-38.

Friedrich-Cofer, L. K., Huston-Stein, A., Kipnis, D. M., Susman, E. J., & Clewett, A. S. (1979). Environmental enhancement of prosocial television content: Effects on interpersonal behaviour, imaginative play, and self-regulation in a natural setting. *Environmental Psychology, 15*, 637-646.

FTTH Council. (2012). Canada Joins Global Ranking of FTTH Countries. Retrieved 9 March, 2014, from http://www.ftthcouncil.org/p/bl/et/blogid=3&blogaid=15

Goodwin, C. J. (2004). *Research in Psychology: Methods and Design*: Wiley.
Gorn, G., Goldberg, M., & Kanungo, R. (1976). The role of educational television in changing the intergroup attitudes of children. *Child Development, 47*, 277-280.
Greenberg, B. S., & Mastro, D., E. . (2008). Children, race, ethnicity, and media. In S. L. Calvert & B. J. Wilson (Eds.), *The Handbook of Children, Media, and Development*. Chichester, U.K.; Malden, MA Wiley-Blackwell.
Greenough, W., & Black, J. (1992). Induction of brain structure by experience: Substrate for cognitive development. In M. R. Gunnar & C. A. Nelson (Eds.), *Minnesota symposia on child psychology 24: Developmental behavioral neuroscience* (pp. 155-200). Hillsdale, NJ: Lawrence Erlbaum.
Greenough, W. T., Black, J. E., & Wallace, C. S. (1987). Experience and brain development. *Child Development, 58*, 539-559.
Gross, L. (2001). *Up from invisibility: Lesbians, gay men, and the media in America*. New York: Columbia University Press.
Haden, C. A., Reese, E., & Fivush, R. (1996). Mothers' extratextual comments during storybook reading: stylistic differences over time and across texts. *Discourse Processes, 21*, 135-169.
Hakka Affairs Council, R. O. C. (2011). *National survey of Hakka population report, 2010-2011*: Hakka Affairs Council, R.O.C.
Heath, S. B. (1982). What no bedtime story means: Narrative skills at home and school. *Language in Society, 11*, 49-76.
Hess, R., & Shipman, V. (1965). Early experience and the socialization of cognitive models in children. *Child Development, 34*, 869-886.
Hoff, E. (2003). Causes and consequences of SES-related differences in parent-to-child speech. In M. H. Bornstein & R. H. Bradley (Eds.), *Socioeconomic status, parenting, and child development* (pp. 145-160). Mahwah, NJ: Erlbaum.
Hong, L. (2008). *The attitude toward preschool parents' interaction process and their points of views on parent-children co-viewing television programs.* Unpublished Master thesis, National Chiayi University, Chiayi.
Hudson, J. A., & Sheffield, E. G. (1999). The role of reminders in young children's memory development. In C. S. Tamis-LeMonda & L. Balter (Eds.), *Child Psychology: A handbook of contemporary issues* (pp. 193-214). New York: Psychology Press.
Hust, S. J. T., & Brown, J. D. (2008). Gender, media use, and effects. In S. L. Calvert & B. J. Wilson (Eds.), *The handbook of children, media, and development* (pp. 98-120). Chichester, U.K.; Malden, MA: Wiley-Blackwell.
Huston, A. C., Wright, J. C., Marquis, J., & Green, S. (1999). How young children spend their time: Television and other activities. *Developmental Psychology, 35*, 912-925.
Huston, A. C., Wright, J. C., Rice, M. L., Kerkman, D., & St. Peters, M. (1990). Development of television viewing patterns in early childhood: A longitudinal investigation. *Developmental Psychology, 26*(3), 409-420.
Huston-Stein, A., Fox, S., Greer, D., Watkins, B. A., & Whitaker, J. (1981). The effects of TV action and violence on children's social behavior. *Journal of Genetic Psychology, 138*, 183-191.
Jewitt, C. (2012). *An introduction to using video for research*: National Centre for Research Methods.
Kandel, E., & Jessel, T. (1991). Early experience and the fine tuning of synaptic connections. In E. R. Kandel, J. H. Schwartz & T. M. Jessell (Eds.), *Principles of neural science* (pp. 945-958). New York: Elsevier.

Karmiloff-Smith, A. (2012). 'TV is bad for children' – less emotion, more science please! In P. Adey & J. Dillon (Eds.), *Bad Education* (pp. 231-244): Open University Press.
Kirkorian, H. L., & Anderson, D. R. (2008). Learning from educational media. In S. L. Calvert & B. J. Wilson (Eds.), *The Handbook of Children, Media, and Development*. Chichester, U.K. ; Malden, MA Wiley-Blackwell.
Krcmar, M., Grela, B., & Lin, K. (2007). Can Toddlers Learn Vocabulary from Television? An Experimental Approach. *Media Psychology, 10*(1), 41-63.
Lauricella, A. R., Gola, A. A., & Calvert, S. L. (2011). Toddlers' Learning From Socially Meaningful Video Characters. *Media Psychology, 14*, 216–232.
Lee, C. (2004). *The Exploratory Study on Media Literacy Education of Preschool Children-The Survey of Taipei Kindergarten Children'sTelevision Viewing Behavior* Unpublished Master dissertation, Chinese Culture University, Taipei.
Lee, C. (2006). *A study of mother's participation of children's TV viewing.* Unpublished Master dissertation, National Chiayi University, Chiayi.
Lemish, D., & Rice, M. L. (1986). Television as a talking picture book: A prop for language acquisition. *Journal of Child Language, 13*, 251-274.
Lesser, G. S. (1974). *Children and television*. New York: Random House.
Lesser, H. (1977). *Television and the Pre-school Child*. New York: Academic Press.
Liaw, F. (1995). *The relationships between viewing behaviour and parent-child interactions*. Taipei: Media Literacy Center.
Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American Behavioral Scientist, 48*, 624-625.
Lowe, P. J., & Durkin, K. (1999). The effect of flashback on children's understanding of television crime content. *Journal of Broadcasting & Electronic Media, 43*(1), 83-97.
Lu, L., & Liu, H. (1998). *Peabody picture vocabulary test-revised (Taiwan version)*. Taipei, Taiwan: Psychological.
Luecke-Aleska, D., Anderson, D. R., Collins, P., & Schmitt, K. (1995). Gender constancy and television viewing. *Developmental Psychology, 31*, 773-780.
Mares, M.-L., Palmer, E., & Sullivan, T. (2008). Prosocial effects of media exposure. In S. L. Calvert & B. J. Wilson (Eds.), *The handbook of children, media, and development*. Chichester, U.K. ; Malden, MA: Wiley-Blackwell.
Marsh, J., Brooks, G., Hughes, J., Ritchie, L., Roberts, S., & Wright, K. (2005). *Digital beginnings: Young children's use of popular culture, media and new technologies*. Sheffield: Literacy Research Centre, University of Sheffield.
Marsh, J., & Millard, E. (2004). Television and film. In T. Grainger (Ed.), *The RoutledgeFalmer Reader in Language and Literacy*: RoutledgeFalmer.
McNeill, D. (1992). *Hand and mind: What gestures reveal about thought*. Chicago, London: University of Chicago Press.
Miller, V., Drotar, D., & Kodish, E. (2004). Children's competence for assent and consent: A review of empirical findings. *Ethics & Behavior, 14*(3), 255-295.
Moll, H., & Tomasello, M. (2007). How 14- and 18-month-olds know what others have experienced. *Developmental Psychology, 43*(2), 309–317.
Munk, C., Rey, G. D., Diergarten, A. K., Nieding, G., Schneider, W., & Ohler, P. (2012). Cognitive Processing of Film Cuts Among 4- to 8-Year-Old Children: An Eye Tracker Experiment. *European Psychologist, 17*(4), 257-265.
Nelson, C. A., Thomas, K. M., & de Haan, M. (2006). Neural bases of cognitive development. In D. Kuhn & R. Siegler (Eds.), *Hanbook of child development:*

Vol. 2. Cognition, perception, and language (6th ed.) (pp. 3-57). Hoboken, NJ: Wiley.
Ninio, A. (1980). Picture-book reading in mother-infant dyads belonging to two subgroups in Israel. *Child Development, 51*(2), 587-590.
Ofcom. (2013a). *Adults' media use and attitudes report*. London.
Ofcom. (2013b). *Children and parents: Media use and attitudes report*. London.
Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
Pellegrini, A. D., & Brody, G. H. (1985). Parents' book-reading habits with their children. *Journal of Educational Psychology, 77*(3), 332-340.
Plowman, L., & Stephen, C. (2007). Guided interaction in pre-school settings. *Journal of Computer Assisted Learning, 23*, 14-26.
Plowman, L., Stephen, C., & McPake, J. (2010). *Growing Up With Technology-Young Children Learning in a Digital World*. London and New York: Routledge.
Pugzles Lorch, E. P., Anderson, D. R., & Levin, S. R. (1979). The Relationship of Visual Attention to Children's Comprehension of Television. *Child Development, 50*(3), 722-727.
Reese, E., Cox, A., Harte, D., & McAnally, H. (2003). Diversity in adults' styles of reading books to children. In A. v. Kleeck, S. A. Stahl & E. B. Bauer (Eds.), *On reading books to children* (pp. 37-57). Mahwah, NJ: Lawrence Erlbaum Associates.
Rice, M. L., Huston, A. C., Truglio, R., & Wright, J. C. (1990). Words from "Sesame Street": Learning vocabulary while viewing. *Developmental Psychology, 26*(3), 421-428.
Rice, M. L., Huston, A. C., & Wright, J. C. (1986). Replays as repetitions: Young children's interpretation of television forms. *Journal of Applied Developmental Psychology, 7*, 61-76.
Rideout, V., & Hamel, E. (2006). *The media family: Electronic media in the lives of infants, toddlers, preschoolers and their parents* Menlo Park, CA: Henry J. Kaiser Family Foundation.
Rideout, V., & VJR Consulting. (2011). *Zero to Eight: Children's Media Use in America*. San Francisco: Common Sense Media.
Rideout, V. J., Vandewater, E. A., & Wartella, E. A. (2003). *Zero to six: Electronic media in the lives of infants, toddlers, and preschoolers*. Menlo Park, CA: Henry J. Kaiser Family Foundation.
Riley, J. (1996). *The teaching of reading: the development of literacy in the early years of school*. London: Paul Chapman Publishing.
Roberts, D., Foehr, U. G., & Rideout, V. J. (2005). *Generation M: Media in the lives of 8-18-year-olds*. Menlo Park, CA: Henry J. Kaiser Family Foundation.
Robson, C. (2002). *Real world research* (2nd ed.). Oxford: Blackwell.
Salomon, G. (1977). Effects of encouraging Israeli mothers to co-observe Sesame Street with thier five-year-olds. *Child Development, 48*, 1146-1151.
Scantlin, R. (2008). Media use across childhood: Access, time, and content. In S. L. Calvert & B. J. Wilson (Eds.), *The handbook of children, media, and development.* (pp. 51-73). Chichester, U.K. ; Malden, MA: Wiley-Blackwell.
Schachter, F. F. (1979). *Everday mother talk to toddlers*. New York: Academic.
Schmidt, M. E., Rich, M., Rifas-Shiman, S. L., Oken, E., & Taveras, E. M. (2009). Television viewing in infancy and child cognition at 3 years of age in a US cohort. *Pediatrics, 123*(3).

Senechal, M., & Lefevre, J. (2001). Storybook reading and parent teaching: Links to language and literacy development. *New Directions for Child and Adolescent Development, 92*, 39-52.

Sesame Workshop. (2009). Sesame Workshop Annual Report 2009.

Sigel, I., & McGillicuddy-DeLisi, A. (1984). Parents as teachers of their children: A distancing behavior model. . In A. Pellegrini & T. Yawkey (Eds.), *The development of oral and written language in social contexts* (pp. 71-92). Norwood, NJ: Ablex.

Sigel, I. E. (1982). The relationship between parental distancing strategies and the child's cognitive behavior. In L. M. Laosa & I. E. Sigel (Eds.), *Families as learning environments for children* (pp. 47-86). New York: Plenum.

Singer, D. G., & Singer, J. L. (2008). Make-believe play, imagination, and creativity: Links to children's media exposure. In S. L. Calvert & B. J. Wilson (Eds.), *The handbook of children, media, and development*. Chichester, U.K. ;Malden, MA Wiley-Blackwell.

Singer, J. L., & Singer, D. G. (1976). Can TV stimulate imaginative play? *Journal of Communication, 26*, 74-80.

Siraj-Blatchford, I., Sylva, K., Muttock, S., Gilden, R., & Bell, D. (2002). *Researching Effective Pedagogy in the Early Years (REPEY): DfES Research Report 356.* London: DfES, HMSO.

Siraj-Blatchford, I., & Sylva, K. (2004). Researching pedagogy in English pre-schools. *British Educational Research Journal, 30*(5), 713-730.

Steuer, F. B., Applefield, J. M., & Smith, R. (1971). Televised aggression and the interpersonal aggression of preschool children. *Journal of experimental child psychology 11*, 442-447.

Su, S. (2010). *Five families, five patterns: A study of parents-young children co-viewing in the family.* Unpublished Master thesis, National Taipei University of Education, Taipei.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2004). *The Effective Provision of Pre-School Education (EPPE) Project: Final Report*: DfES/Institute of Education, University of London.

Thakker, R. R., Garrison, M., & Christakis, D. A. (2006). A systematic review for the effects of television viewing by infants and preschoolers. *Pediatrics, 118*, 2025-2031.

Tomasello, M. (1999). The cultural ecology of young chidlren's interactions with obejects and artifacts. In E. Winogard, R. Fivush & W. Hirst (Eds.), *Ecological approaches to cognition: Essays in honor of Ulric Neisser. Emory symposia in cognition* (pp. 153-170). Mahwah, NJ: Erlbaum.

Tomasello, M., & Farrar, J. (1986). Joint attention and early language. *Child Development, 57*, 1454-1463.

Tomasello, M., & Haberl, K. (2003). Understanding attention: 12- and 18-month-olds know what's new for other persons. *Developmental Psychology, 39*, 906-912.

Tower, R. B., Singer, D. G., Singer, J. L., & Biggs, A. (1979). Differential effects of television programming on preschoolers' cognition, imgination, and social play. *American Journal of Orthopsychiatry, 49*, 265-281.

Tremblay, M. S., LeBlanc, A. G., Carson, V., Choquette, L., Gorber, S. C., Dillman, C., et al. (2012). Canadian Sedentary Behaviour Guidelines for the Early Years (aged 0–4 years). *Appl. Physiol. Nutr. Metab., 37*, 370-380.

Tremblay, M. S., LeBlanc, A. G., Carson, V., Choquette, L., Gorber, S. C., Dillman, C., et al. (2012). *Canadian Sedentary Behaviour Guidelines for the Early Years (aged 0–4 years)*.

Troseth, G. L. (2003). TV guide: 2-year-olds learn to use video as a source of information. *Developmental Psychology, 39*(1), 140-150.

Troseth, G. L. (2010). Is it life or is it Memorez? Video as a representation of reality. *Developmental Review, 30*(2), 155-175.

Troseth, G. L., & DeLoache, J. S. (1998). The medium can obscure the message: Young children's understanding of video. *Child Development, 69*, 950-965.

Tsai, C. (2000). *The Relationships between Elementary Children's Television Literacy and Parental Mediation on Children's Television Viewing.* Unpublished Master dissertation, National Taichung University of Education, Taichung.

Turner, A. M., & Greenough, W. T. (1985). Differential rearing effects on rat visual cortex synapses. I. Synaptic and neuronal density and synapses per neuron. *Brain Research, 329*, 195-203.

UK Government. (2012). *Statutory Framework for the Early Years Foundation Stage 2012*. London: Department for Education, UK Government.

Valkenburg, P. M., Krcmar, M., & de Roos, S. (1998). The impact of a cultural children's program and adult mediation on children's knowledge of and attention towards opera. *Journal of Broadcasting and Electronic Media, 42*, 315-326.

Vandewater, E. A., Park, S. E., Huang, X., & Wartella, E. A. (2005). "No-You Can't Watch That": Parental rules and young children's media use. *American Behavioral Scientist, 48*, 608-623.

Vernon-Feagans, L., Hammer, C. S., Miccio, A., & Manlove, E. (2001). Early language and literacy skills in low-income African-American and Hispanic children. In S. Neuman & D. Dickinson (Eds.), *Handbook of Early Literacy* (pp. 192-210). New York: Guilford.

Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.

Wallace, C. S., Kilman, V. L., Withers, G. S., & Greenough, W. T. (1992). Increases in dendritic length in occipital cortex after 4 days of differential housing in weanling rats. *Behavioral and Neural Biology, 58*, 64-68.

Wang, M. H. (2007). *Exploring the Chinese parenting style: Five case studies in Taiwan.* Unpublished Master dissertation, London School of Economics and Political Science, London.

Wang, T. (1997). *Taipei elementary school students' motivation of watching TV, viewing habits and social interests.* Unpublished Master dissertation, Chinese Culture University, Taipei

Watkins, B., Calvert, S., Huston-Stein, A., & Wright, J. C. (1980). Children's recall of television material: Effects of presentation mode and adult labeling. *Developmental Psychology, 16,* 672-674.

Wheeler, P. (1983). Context-related age characteristics in mothers' speech: Joint book reading. *Journal of Child Language, 10*, 259-263.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., et al. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24*(4), 552-559.

Willig, C. (2001). *Introducing qualitative research in psychology : adventures in theory and method*. Buckingham: Open University Press.

Wilson, B. J. (1991). Children's Reactions to Dreams Conveyed in Mass Media Programming. *Communication Research, 18*(3), 283-305.

Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Child Psychiatry, 17*(2), 89-100.
Wright, J. C., & Huston, A. C. (1983). A matter of form: Potentials of television for young viewers. *American Psychologist 38*(7), 835-843.
Wright, J. C., Huston, A. C., Scantlin, R., & Kotler, J. (2001). The Early Window Project: Sesame Street prepares children for school. In S. M. Fisch & R. T. Truglio (Eds.), *"G" is for "growing:" Thirty years of research on children and "Sesame Street"* (pp. 97-114). Mahwah, NJ: Lawrence Erlbaum.
Yahoo online marketing Taiwan. (2013). 2013 Taiwan media use report. Retrieved 9 March, 2014, from http://marketing.tw.campaign.yahoo.net/emarketing/contentF4.php?main=A06&sub=B02&tri&literary=847
Yamada, H., Sadato, N., Konishi, Y., Muramoto, S., Kimura, K., Tanaka, M., et al. (2000). A milestone for normal development of the infantile brain detected by functional MRI. *Neurology, 55*, 218-223.
Yang, C. (2004). *A study on the correlation among children's TV viewing, parent-children co-viewing behavior and parent-children interaction.* Unpublished Master thesis, Chinese Culture University, Taipei.
Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.
Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2 years. *Journal of Pediatrics, 151*(4), 364-368.
吳知賢. (1998). 如何培養聰明的電視兒童-談兒童的媒體教育. *班級經營, 3*(3), 18-23.
吳翠珍. (1998). 兒童收看電視卡通行為研究-兼論媒體素養. *教育資料文摘, 42*(6), 48-75.
吳翠珍. (2008). *全國青少年媒體使用行為調查報告*. 台北: 富邦文教基金會.
吳翠珍. (2009). *2009 年全國兒童媒體使用行為調查報告*. 台北: 富邦文教基金會.
黃毅志. (2008). 如何精確測量職業地位？「改良版台灣地區新職業聲望與社經地位量表」之建構. *台東大學教育學報, 19*(1), 151-160.

Appendix 1: Report of findings of the pilot survey

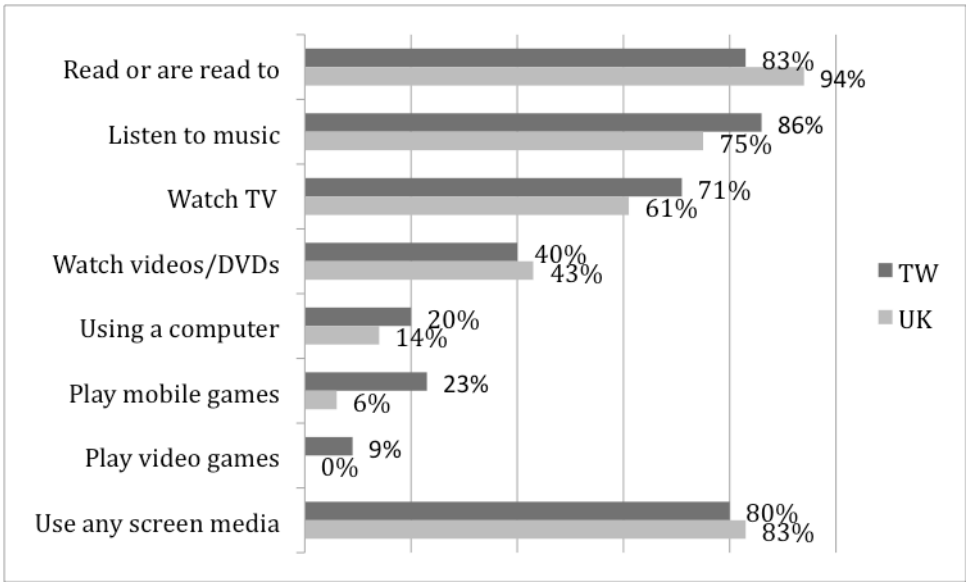
The online pilot survey was conducted over the period of 5th-12th October 2010. It includes 35 valid responses of Taiwanese (TW) parents and 36 valid responses of British (UK) parents with children aged 6 months to 6 years. All of the TW respondents were Taiwanese. As for the UK respondents, 47% of them were White other, 24% were Chinese and 9% were White British. The majority of parents (TW: 85%; UK: 74%) participated in the online survey were aged between 30-39. It should be noticed that over half of TW parents were university undergraduates and 21% were university postgraduates; whereas a majority (74%) of UK parents were university postgraduates and 24% were university undergraduates. It is therefore a highly educated sample and the characteristics of parents' educational backgrounds could very possibly influence their child's media use habits. The pilot results presented below focus on the differences between TW and UK families. And in this report, 'a typical day' refers to weekdays.

TW					
Child Age	Mean= 37.14 months	SD= 17.53 months	Median= 34.0 months		
Child Gender	Boys 51.4%	Girls 48.6%			
Parental Educational level	Senior/ vocational high school 9.1%	Junior college 12.1%	University 54.4%	Graduate school and above 21.1%	Others 3%
UK					
Child Age	Mean= 35.78 months	SD= 19.37 months	Median= 30.0 months		
Child Gender	Boys 50%	Girls 50%			
Parental Educational level	Junior college 2.9%	University 23.5%	Graduate school and above 73.5%		

TW and UK descriptive statistics of the pilot sample (TW: *n*=35; UK: *n*=36)

Amount and frequency of children's media use

The media occupy a central position in young children's lives. On a typical day, 80% of TW children (83%, UK) aged 6 months to 6 years in the pilot study use some form of screen media. The majority (71%) of children (61%, UK) watch television, 40% (43%, UK) watch videos or DVDs, 20% (14%, UK) use a computer, and 9% (0%, UK) play video games on a typical day.



On a typical weekday, percentage of children 6 and under who engage in each activity (TW: *n*=35, UK: *n*=36). Note: Screen media includes TV, videos/DVDs, video games, or computers.

The two tables below show that amongst *all* children aged 6 months to 6 years old, an average of 54 minutes (0:27, UK) is spent watching TV, 15 minutes (0:23, UK) on watching videos/DVDs; while an average of 45 minutes (0:42, UK) is spent on reading or being read to. Interestingly, UK children spend no time playing video games, while 9% of TW parents reported their child engage in the activity and spend an average of 50 minutes on it. On the whole, TW children spend significantly more time (t=2.559, df=60, two-tailed p=0.013) watching TV than UK children. In general, older children are more likely to use screen media than younger children. However, for videos and DVDs, children aged 2 to 3 year olds are more likely to watch and tend to spend more time doing it than other age groups. In terms of frequency of engaging in activities, TW children are more likely (χ^2=7.124, df=1, p=0.008) than UK children to watch TV every day (68%, TW; 35%, UK) and less likely (χ^2=10.35, df=1, p=0.001) to read or being read to every day (62%, TW; 94%, UK).

TW	**On typical weekday, percentage who did each activity (%)**				**Average time amongst those who did activity**				**Average time amongst *all* children**			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Reading or being read to	78	88	78	83	0:24	0:55*	1:10	0:50	0:21	0:52*	0:54	0:45
Listening to music	78	94	78	86	1:14	0:48	0:37	0:52	0:57	0:46	0:29	0:44
Watching TV	56	77	78	71	0:58	1:04	1:26	1:08	0:38	0:56	1:07	0:54
Playing outside	67	88*^	67	77	0:51	1:25	2:27	1:30	0:39	1:15	1:37	1:12
Watching a video or DVD	22	65*^	11	40	0:35	0:43	N/A	0:42	0:08	0:28*^	0:00	0:15
Using a computer	11	24	22	20	0:05	0:19	0:20	0:17	0:01	0:04	0:04	0:03
Playing video games	0	6	22	9	N/A	1:00	0:45	0:50	0:00	0:04	0:10	0:04

Playing mobile games	0	29*	33*	23	N/A	0:21	0:20	0:21	0:00	0:07*	0:07	0:05
Total used any screen media	56	88*	89*	80	1:10	1:34	1:31	1:29	0:47	1:29	1:21	1:16
n	9	17	9	35					9	17	9	35

TW Time spent using media and in other activities on a typical day, by age
*Significantly higher than 0-1; ^significantly higher than 4-6. All significances are at p<0.05 level.

UK	**On typical weekday, percentage who did each activity (%)**				**Average time amongst those who did activity**				**Average time amongst *all* children**			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Reading or being read to	78	100	100	94	0:39	0:39	0:54	0:44	0:31	0:39	0:54	0:42
Listening to music	100〒	63	73	75	1:17	0:42	0:50	0:55	1:17	0:34	0:36	0:45
Watching TV	33	75*	64	61	0:37	0:40	1:10	0:49	0:12	0:28	0:38	0:27
Playing outside	67	88*	91*	83	1:09	2:08*^	1:08	1:34	1:01	1:52*^	1:01	1:24
Watching a video or DVD	33	56	30	43	2:02	0:34	0:43	0:53	0:41	0:19	0:15	0:23
Using a computer	0	0	46	14	N/A	0:10	0:23	0:21	0:00	0:01	0:10*〒	0:03
Playing video games	0	0	0	0	N/A	N/A	N/A	N/A	0:00	0:00	0:00	0:00
Playing mobile games	0	6	9	6	N/A	0:10	0:18	0:15	0:00	0:01	0:03	0:01
Total used any screen media	63	100	73	83	1:19	0:51	1:28〒	1:07	0:53	0:48	1:04	0:54
n	9	16	11	35					9	16	11	36

UK Time spent using media and in other activities on a typical weekday, by age
*Significantly higher than 0-1; 〒 significantly higher than 2-3; ^significantly higher than 4-6. All significances are at p<0.05 level.

TW	**Percentage who engage in activity every day (%)**				**Percentage who engage in activity several times a week or more (%)**			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Listening to music	67	71	50	65	78	94	75	85
Reading or being read to	44	82	38	62	78	94	63	82
Watching TV	56	65	88	68	67	77	88	77
Watching a video or DVD	11	29	0	18	33	65	38	50
Using a computer	0	6	0	3	0	12	38	15
Playing console video games	0	0	0	0	0	0	13	3

Playing handheld video games	0	6	0	3	0	6	0	3
Going online	0	0	0	0	0	0	0	0
n	9	17	8	34	9	17	8	34

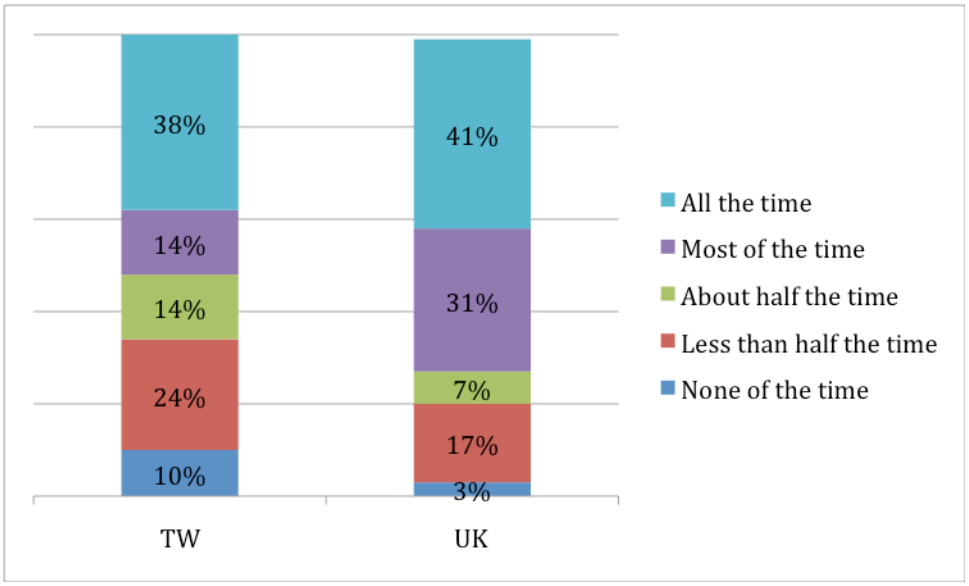
TW Frequency of media use, by age

UK	**Percentage who engage in activity every day (%)**				**Percentage who engage in activity several times a week or more (%)**			
	0-1	**2-3**	**4-6**	**Total**	**0-1**	**2-3**	**4-6**	**Total**
Listening to music	75	67	55	65	100	93	91	94
Reading or being read to	75	100	100	94	75	100	100	94
Watching TV	25	33	46	35	25	73	73	62
Watching a video or DVD	38	13	0	15	50	60	55	56
Using a computer	0	7	9	6	0	14	36	18
Playing console video games	0	0	0	0	0	0	0	0
Playing handheld video games	0	0	0	0	0	0	0	0
Going online	0	0	0	0	0	0	18	6
n	8	15	11	34	8	15	11	34

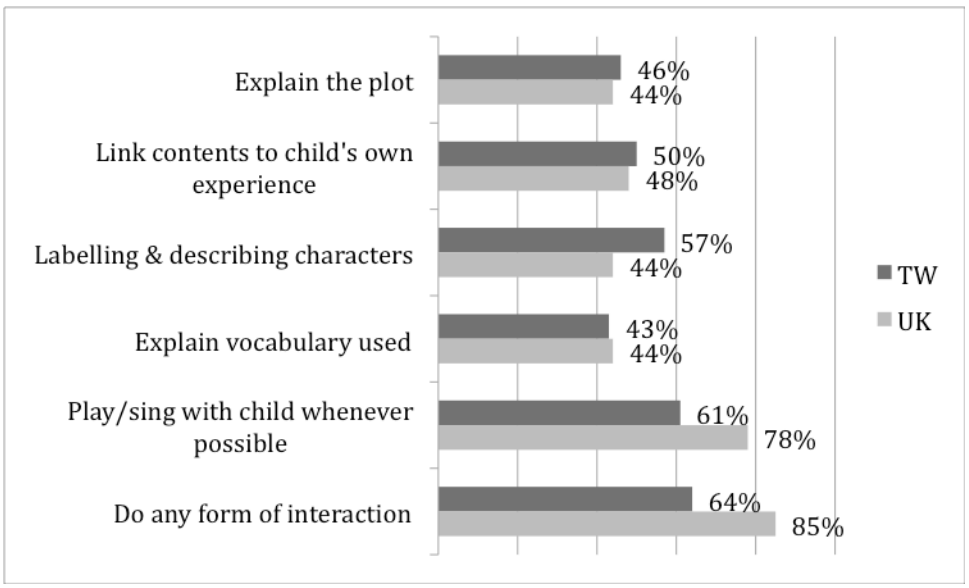
UK Frequency of media use, by age

Co-viewing with parents

About half (52%) (72%, UK) of parents whose children watch television, videos or DVDs on a typical day were in the room with their child all or most of the time. Conversely, 10% of TW parents (3%, UK) in the pilot say that they never watch with their child. Amongst children who watch TV, videos/DVDs on a typical day, UK parents are more likely (χ^2=3.164, *df*=1, *p*=0.075) than TW parents to interact in some way with their child all or most of the time during children's viewing (64%, TW; 85%, UK).



Amongst children who watch TV, videos/DVDs, percentage of parents who watch it with their child on a typical day (TW: *n*=29, UK: *n*=29)

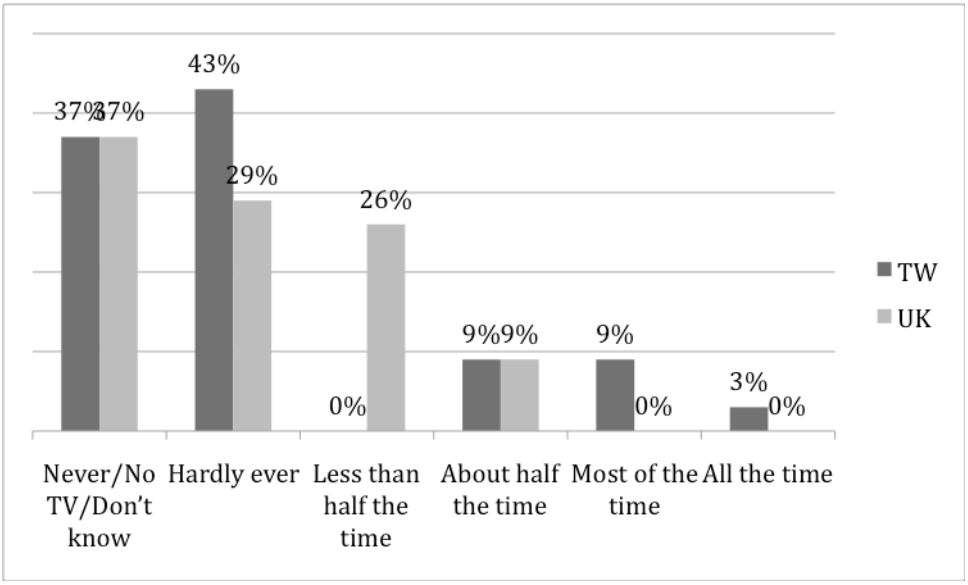


Amongst children who watch TV, videos/DVDs, percentage of parents who interact with their child all or most of the time (TW: *n*=28, UK: *n*=27)

Family's media use

The figure below shows that no UK household falls into a 'heavy user TV household' (those where the TV is on all or most of the time) category, while 12% of the TW (0%, UK) sample do. On the whole, the 77% (61%, UK) of parents who watched their own shows on television on the last typical day spent an average of 1 hour and 39 minutes (1:18, UK) on it.

In the beginning of this Appendix, it was indicated that the sample is not representative of the population because the participants are highly educated. It can be seen in this section as well. Only 12% of the TW families are heavy user TV households and none UK families are. This is very unlikely even in British homes. This situation can only be explained by the fact that the sample is skewed towards to parents who are highly educated.



Percentage of children 6 and under who lives in homes where the TV is left on, whether anyone is watching it or not (TW: *n*=35, UK: *n*=36)

	On a typical day, percentage who use each medium		Average time spent amongst those who used each medium	
	UK	TW	UK	TW
Watch TV	61%	77%	1:18	1:39
Use a computer	97%	86%	1:42	2:15
Play video games	3%	6%	0:30	0:45
Use any screen media	100%	91%	2:28	3:33
n	36	35		

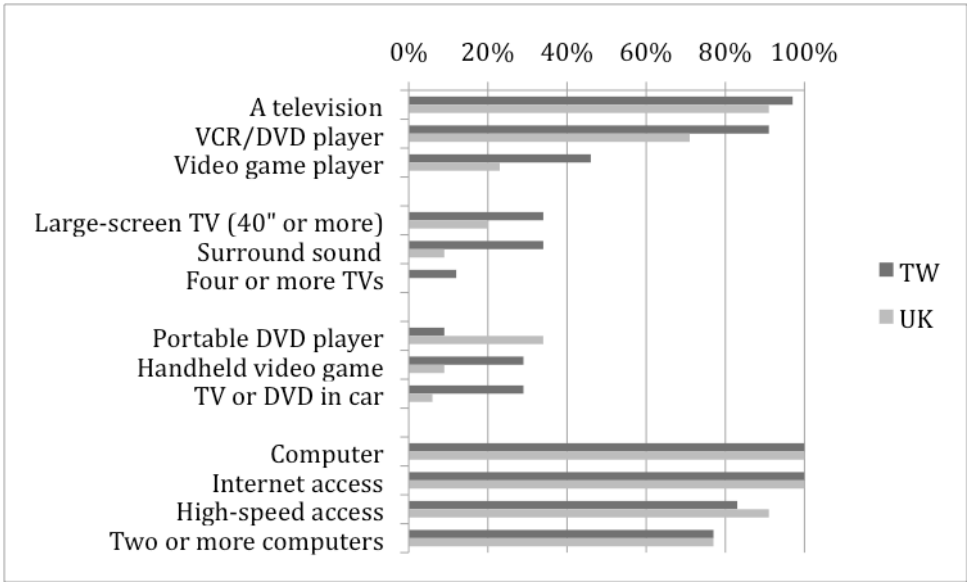
Parents' media use on a typical day

Media in the home

Both TW and UK children are growing up in a rich media environment. In general, TW households are more likely than UK households to have surround sound (34% vs. 9%) (t=6.87, df=1, two-tailed p=0.009), Tivo or digital recorder (69% vs. 17%) (t=18.9, df=1, two-tailed p<0.001), and TV or DVD in car (29% vs. 6%) (t=6.44, df=1, two-tailed p=0.011). The figure below shows that nearly all (97%, TW; 91%, UK) households have at least one television. Nine out of ten TW children (91%, TW; 71%, UK) live in a household with VCR/DVD player and about half (46%, TW; 23%, UK) have video games consoles at home. In both UK and TW samples, all households have at least one computer (100%, TW; 100%, UK) and Internet access (100%, TW; 100%, UK), and nearly eight in ten live in a household with two or more computers (77%, TW; 77%, UK).

There is no UK family that has more than four TVs in the household but 12% of the TW sample does (12%, TW; 0%, UK). The number of television sets and size of television may reveal the importance of television in TW households. The importance of television can also be detected by the location of where television sets are placed: In Taiwan, they are usually placed in the centre of the living room,

thus indicating TV's dominance in the lives of people.



Percentage of children age 6 and under who live in a home with each media item (TW: *n*=35, UK: *n*=35)

Media in the bedroom

Most TW and all UK children (79%, TW; 100%, UK) under 6 have no TV in their bedroom. In Taiwan, the reason that 21% have a TV in their bedroom is because the children share a bedroom with their parents. Two main reasons for having a television in a shared bedroom are that the parent and other family members can watch their own shows (63%, TW) in the living room also TV keeps the child occupied so that the parent can do things around the house (50%, TW).

Therefore, the cultural differences between the UK and Taiwan alters TV use as UK parents tend to put their child to sleep in their own room at a very much younger age. Indeed, there is no significant difference in children's time spent watching TV between children who have TV in their room or not.

Items in bedroom	Total (%)		0-1 year (%)		2-3 years (%)		4-6 years (%)	
	UK	TW	UK	TW	UK	TW	UK	TW
TV	0	21	0	11	0	24	0	25
VCR or DVD player	0	18	0	11	0	24	0	13
Cable/satellite TV	0	18	0	11	0	18	0	25
Video game player	0	6	0	0	0	6	0	13
Computer	6	27	0	11	0	35	18	25
Internet access	3	21	0	11	0	29	9	13
n	34	34	8	9	15	17	11	8

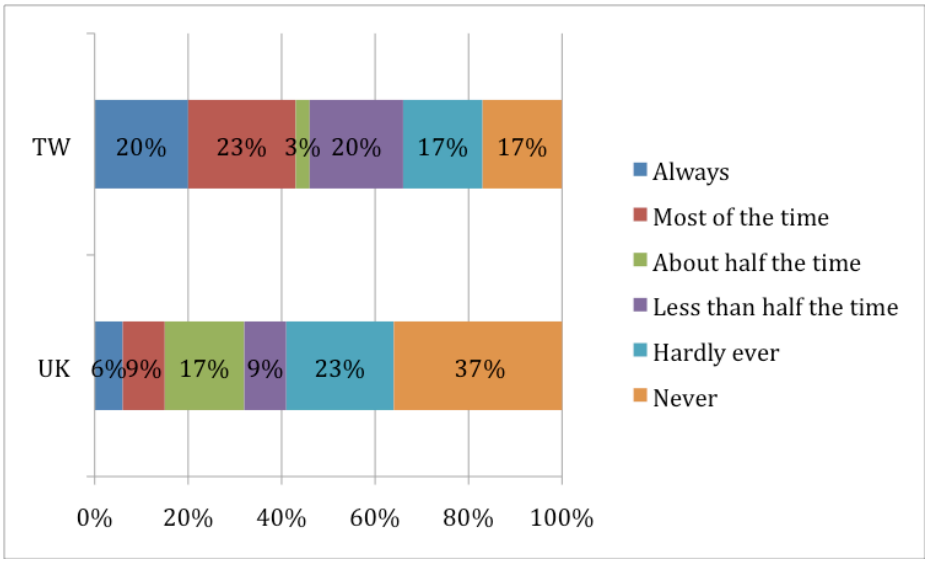
Percentage of children with media in the bedroom, by age

Rules about their children's media use

Amongst the children who watch TV on a typical day, the majority of parents say that they have rules about their child's media use. Sixty-six percent of parents claim that they have rules about what their child can watch (93%, UK). And 76% have rules about how much time the children may spend watching TV (85%, UK). Fifty-nine percent (78%, UK) of TW parents report that they enforce the rules about what their children can watch on television all of the time and 45% (67%, UK) say that the rules about how much time can be spent watching television are enforced all of the time.

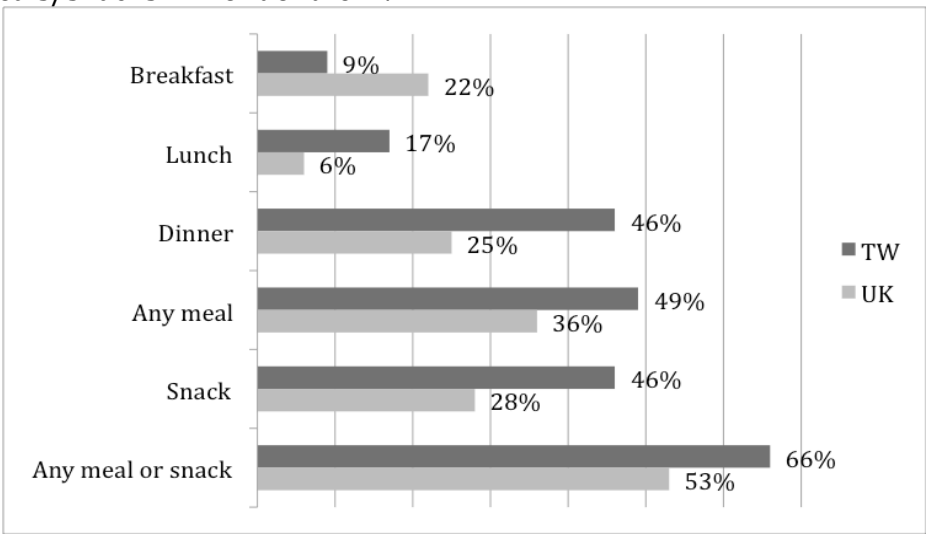
TV and food

Watching TV while having meals seems to be commonplace for young children in Taiwan. In general, TW households (43%) are more likely (χ^2=6.71, *df*=1, *p*=0.01) than the UK households (15%, UK) to have their meals with TV on all or most of the time.



How often the TV is on during meals, amongst children age 6 and under (TW: *n*=35, UK: *n*=35)

The figure below shows that on a typical day, 66% of TW (53%, UK) children eat their meals/snacks in front of the TV.



Amongst children who watched TV, videos, or DVDs on a typical day, percentage of children age 6 and under who eat snacks or meals in front of the TV (TW: *n*=35, UK: *n*=36)

Gender differences in media use

In general, there are no gender differences regarding most of the media use. Only that girls spend more time reading and watching TV than boys on a typical day.

	Ages 0-3 years				**Ages 4-6**				**All ages**			
	UK		TW		UK		TW		UK		TW	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Reading												
Percentage who read a book alone or with someone else every day	85%	100%	58%	79%	100%	100%	20%	67%	89%	100%	47%	77%
Time spent reading on a typical day (amongst all kids)	0:35	0:37	0:23	0:57*	1:12	0:38	1:07	0:30	0:46	0:38	0:37	0:52
Television												
Percentage who watch TV every day	15%	50%	58%	64%	20%	67%	80%	100%	17%	56%*	65%	71%
Time spent watching TV on a typical day (amongst all kids)	0:13	0:33	0:39	1:00	0:06	1:05*	1:10	1:00	0:11	0:43*	0:49	1:00
Computers												
Percentage who use a computer on a typical day	0%	0%	25%	14%	40%	50%	17%	33%	11%	18%	22%	18%
Time spent using a computer on a typical day (amongst all kids)	0:00	0:01	0:02	0:04	0:05	0:15	0:05	0:03	0:01	0:06	0:03	0:04
Screen media												
Total screen media on a typical day (amongst all kids)	0:52	0:47	1:05	1:22	0:35	1:28	1:25	1:13	0:47	1:01	1:11	1:22
n	13	10	12	14	5	6	5	3	18	16	17	17

Media use on a typical day by gender and age
*Significantly higher than boys, $p<0.05$

Summary

In general, because of the small sample size, it cannot be claimed that these results are reliable. However, there are many interesting issues arose from this pilot study, including that TW children seem to be more involved in media use than the UK children. For example, TW children are more likely (χ^2=7.124, *df*=1, *p*=0.008) than UK children to watch TV every day (68%, TW; 35%, UK) and less likely (χ^2=10.35, *df*=1, *p*=0.001) to read or be read to every day (62%, TW; 94%, UK). In addition, more than half (64%) of TW parents (85%, UK) claimed that they interact with their child all or most of the time during children's viewing. Finally, it seems common for TW households to watch TV when eating food. The above issues will be explored in-depth when more responses are collected in the main survey.

Appendix 2: Finalised questionnaire for the main survey

Title: Young children's media use in Taiwan (translated version)
Hello, this is a study from the Institute of Education, University of London. We are conducting an important national survey about what life is like for TW families today. We are inviting parents across the country to explore issues connected with media use and their young children between 6 months and 6 years old. In order to participate, you must have at least one child who is between 6 months to 6 years old and a TW resident. **If you have more than one child in this age range, please answer the questionnaire with the eldest in mind.** The responses of the survey are confidential and anonymous and will only be used for academic purposes. We appreciate your participation in this survey.

Q1. I agree to participant this survey and to the uses of the data.

Yes	
No	

Q2. Is this child a boy or a girl?

Boy	
Girl	

Q3. Please fill in the child's current age IN MONTHS. For example, DOB: 20/05/2010-> 15 (months old)

Q4. Does this child have any type of disability, including learning/educational or physical?

Yes	
No	

Q5. Is this child the youngest child, the oldest child, or a middle child?

Only child	
Youngest	
Oldest	
Middle	

Q6. Is your focus child in any kind of childcare, day care, school or preschool outside the home?

Yes	
No	

For the next series of questions, we'd like you to think back to the last day you and your child followed your typical routine.

Q7. How much time did you spend with your child on the last typical weekday and weekend?

	Weekday	Weekend
All or almost all of the day		
Most of the day		
Only part of the day		
None of the day		

TV/Videos/DVDs

Q8. Did your child watch TV on the last typical day, whether it was either a weekday or weekend?

Yes	
No	

Q9. How much time your child spent watching TV on the last typical *either* weekday and weekend? Please calculate in minutes.

Weekday	
Weekend	

Q10. When your child was watching TV on that day, was a parent in the room watching along with the child?

	Weekday	Weekend
All of the time		
Most of the time		
About half the time		
Less than half the time		
None of the time		
Don't know		

Q11. Next, we'd like to know if your child ate any meals while watching TV on that typical day?

	Yes	No	Don't know
a. Breakfast			
b. Lunch			
c. Dinner			
d. Any snacks			

Q12. How often does your child watch TV?

Every day	
Several times a week	
Several times a month	
Less often	
Never	
Don't know	

Q13. Did your child watch videos/DVDs, (including in the car) on the last typical weekday or weekend?

Yes	
No	

Q14. How much time did your child spend watching videos/DVDs on the last typical weekday or weekend? Please calculate in minutes.

Weekday	
Weekend	

Q15. When your child was watching videos or DVDs on that day, was a parent in the room watching along with the child?

	Weekday	Weekend
All of the time		
Most of the time		
About half the time		
Less than half the time		
None of the time		
Don't know		

Q16. Next, we'd like to know if your child ate any meals while watching videos or DVDs on that typical day?

	Yes	No	Don't know
a. Breakfast			
b. Lunch			
c. Dinner			
d. Any snacks			

Q17. How often does your child watch videos/DVDs?

Every day	
Several times a week	
Several times a month	
Less often	
Never	
Don't know	

Q18. How often does your child watch programmes designed for adults?

Child doesn't watch TV, videos, or DVDs	
Always	
Most of the time	
About half the time	
Less than half the time	
Hardly ever	
Never	
Don't know	

Q19. Which types of show does your child watch most often?

Watches mostly shows specifically for kids around his/her age	
Watches mostly shows for all ages, including adults	
Watches shows for kids and shows for all ages about equally	
Don't know	

Q20. And the shows specifically for kids around his/her age are…?

Mostly educational shows	
Mostly entertainment shows	
Both types of shows equally	

Q21. What is your child's favourite programme, including DVDs?

Q22. How often do you do each of the following things during your child's viewing?

	All of the time	Most of the time	Sometimes	Hardly ever
Explain the plot				
Link contents to child's own experience				
Labelling & describing characters				
Explain vocabulary used				
Play/sing with child whenever possible				

Q23. In general, what are some reasons that you might sit your child down in front of TV? Please tick all that apply.

a. Child is learning	
b. It keeps him/her occupied so you can do other things around the house	
c. It frees up other TVs so you and other family members can watch your own shows	
d. It stops fights between brothers and sisters	
e. As a reward for good behavior	
f. Others (please specify)	

Q24. Please tell us if you regulate your child watching television?

	Yes	No
What can your child watch on TV		
How much time can your child spend watching TV		

Q25. How often is the above regulation about watching TV enforced in your household? Regulation is enforced…

	All	Most	Sometimes	Hardly ever	No rules	Don't know
What your child is allowed to watch on TV						
Time your child spends watching TV						

Video games

Q26. Did your child play any video games, such as console video games like X-Box or PlayStation, or V. Smile or handheld video games like Gameboy or Playstation Portable, on the last typical weekday or weekend?

Yes	
No	

Q27. How much time did your child spend playing video games on the last typical weekday or weekend? Please calculate in minutes.

Weekday	
Weekend	

Q28. When your child was playing video games on that day, was a parent in the room playing video games with the child?

	Weekday	Weekend
All of the time		
Most of the time		
About half the time		
Less than half the time		
None of the time		
Don't know		

Q29. How often does your child play video games?

Every day	
Several times a week	
Several times a month	
Less often	
Never	
Don't know	

Q30. Please tell us do you regulate your child in playing video games?

	Yes	No
What video games can your child play		
How much time can your child spend playing video games		

Q31. How often is the above regulation about playing video games, enforced in your household? Regulation is enforced…

	All of the time	Most of the time	Sometimes	Hardly ever	No rules	Don't know
What video games your child is allowed to play						
Time your child is allowed to spend playing video games						

Games on mobiles

Q32. Did your child play mobile games, including iPhone, on the last typical weekday or weekend?

Yes	
No	

Q33. How much time did your child spend playing mobile games on the last typical weekday or weekend? Please calculate in minutes.

Weekday	
Weekend	

Q34. When your child was playing mobile games on that day, was a parent beside the child?

	Weekday	Weekend
All of the time		
Most of the time		
About half the time		
Less than half the time		
None of the time		
Don't know		

Q35. How often does your child play mobile games?

Every day	
Several times a week	
Several times a month	
Less often	
Never	
Don't know	

Q36. Please tell us do you regulate your child's playing with mobile games?

	Yes	No
What mobile games can your child play		
How much time can your child spend playing mobile games		

Q37. How often is the above regulation about playing mobile games enforced in your household? Regulation is enforced…

	All	Most	Sometimes	Hardly ever	No rules	Don't know
What mobile games your child is allowed to play						
Time your child is allowed to spend playing mobile games						

Computer

Q38. Did your child use a computer, including tablet or iPad, for games or other reasons on the last typical weekday or weekend?

Yes	
No	

Q39. How much time did your child spend using a computer on the last typical weekday or weekend? Please calculate in minutes.

Weekday	
Weekend	

Q40. When your child was using a computer on that day, was a parent in the room helping the child with the computer?

	Weekday	Weekend
All of the time		
Most of the time		
About half the time		
Less than half the time		
None of the time		
Don't know		

Q41. How often does your child use a computer?

Every day	
Several times a week	
Several times a month	
Less often	
Never	
Don't know	

Q42. Please tell us if you regulate your child in using a computer?

	Yes	No
What can your child do on the computer		
How much time can your child spend on the computer		

Q43. How often is the above regulation about using a computer enforced in your household? Regulation is enforced…

	All	Most	Sometimes	Hardly ever	No rules	Don't know
What your child is allowed to do on the computer						
Time your child is allowed to spend on the computer						

Other activities

We also are interested in any other activities that your child did on the last typical weekday or weekend. Please tell us which, if any, of the following activities your child did on that day.

Q44. How much time did your child spend doing these activities on the last typical weekday or weekend? Please calculate in minutes. If it's something that the child didn't do, just fill in 0.

	Weekday	Weekend
a. Listening to music, including while riding in the car		
b. Playing outside		
c. Reading or being read to		
d. Reading an electronic book, like LeapPad		

Q45. We'd like to know how often, if ever, your child does each of the following things?

	Every day	Several times a week	Several times a month	Less often	Never	Don't know
a. Listen to music						
b. Read a book alone or with someone else						
c. Reading an electronic book, like LeapPad						
d. Go online						

Parent's media use

Q46. We're also interested in how much time you personally spend using the following media. During the time you spent at home (that is, not including time at work or other activities outside the home), about how much time did you spend in a typical weekday and weekend? Please calculate in minutes.

	Weekday	Weekend
a. Watching your own shows on TV		
b. Using a computer		
c. Playing video games		

Q47. When you were watching your own shows on TV, how much of that time was the child in the room with you? Was he/she in the room…?

All of the time	
Most of the time	
About half the time	
Less than half the time	
None of the time	
Didn't watch own show on TV	

Give an example or reason for doing this…

Next, we have a few questions about the electronic items in your household, including any that are in your bedroom or a child's bedroom. In answering, please don't count anything that is put away in storage or isn't connected up.

Q48. How many televisions, if any, do you use regularly in your household?

None	
One	
Two	
Three	
Four	
Five	
Six or more	
Don't know	

Q49. Do you have cable or satellite TV?

Yes	
No	
Don't know	

Q50. Do any of the TVs in your home have digital video recorder or TiVo?

Yes	
No	
Don't know	

Q51. Do any of your TVs have surround sound?

Yes	
No	
Don't know	

Q52. How big is the largest TV in your household?

<20 inches	
20-29 inches	
30-39 inches	
40-49 inches	
50-59 inches	
60 inches or more	
Large screen, don't know specific size	
Don't know	

Q53. When someone is at home in your household, how often is the TV on in the living room, even if no one is actually watching it?

Always	
Most of the time	
About half of the time	
Less than half of the time	
Hardly ever	
Never	
Don't know	

Q54. How often is the TV on when your family is eating meals?

Always	
Most of the time	
About half of the time	
Less than half of the time	
Hardly ever	
Never	
Don't know	

Q55. Do you have a television or DVD player in your car?

Yes	
No	

Q56. How many of the following types of electronic equipment are there in your household? If it's something that you don't have in your household, just fill in 0.

a. Portable DVD players	
b. VCRs or DVD players hooked up to a TV	
c. Video game players like X-Box or Playstation	
d. Handheld video game players like Gameboy or Playstation Portable	
e. Computers (including laptops as well as desktop computers)	

Q57. Do you have Internet access on any of your home computers?

Yes	
No	
Don't know	

Q58. Do you have high-speed Internet access such as a cable or DSL hook-up, or is your Internet access through a dial-up telephone modem?

High-speed Internet access	
Dial-up Internet access	
Don't know what kind of access	

For our next questions, we'd like you to think again about your child.

Q59. Is there a TV in the child's bedroom– even it doesn't get any channels and is used only for videos or video games?

Yes	
No	

Q60. Next, we'd like to know about the child's bedroom arrangements. Does he/she have his/her own bedroom, does he/she share a bedroom with a brother or sister, or does he/she share a bedroom with a parent?

Own room	
Shares room with brother/sister	
Shares room with parent	
Other, please specify…	

Q61. Does the TV in your child's room…?

Get some cable or satellite channels	
Get only regular channels	
Is it just used for watching videos or playing games	
TV not currently used/not currently working	
Don't know	

Q62. Of the time your child spends watching TV/DVD on a typical day, how much of that time is spent watching in his/her bedroom?

	Weekday	Weekend
All of the time		
Most of the time		
About half of the time		
Less than half of the time		
None of the time		
Don't know		

Q63. If any of the following are reasons why your child has a TV in his/her bedroom? Please tick all that apply.

	Yes	No
a. It helps him/her fall asleep		
b. It keeps him/her occupied in their room so you can do other things around the house		
c. It frees up the other TVs so you and other family members can watch your own shows		
d. It stops fights between brothers and sisters		
e. To get him/her to agree to sleep in his/her own room		
f. As a reward for good behavior		
g. All of his/her friends have TVs in their rooms		
h. You had an extra TV set and didn't want to throw it out		

Q64. Tick if your child has any of the following items in his/her bedroom.

a. A VCR or DVD player	
b. A video game player like X-box or Playstation or V.Smile	
c. A computer	

Q65. Does the computer in your child's bedroom have Internet access?

Yes	
No	
Don't know	

Q66. Please tell us if the child has ever done each of the following things?

	Yes	No	Don't know
a. Turn on the TV by themselves			
b. Change the channels with a TV remote			
c. Ask to watch a particular TV show or channel			
d. Switch TV off			
e. Ask to watch a particular video or DVD			
f. Put in a video or DVD by themselves			
g. Use a computer without sitting on a parent's lap			
h. Turn on a computer by themselves			
i. Use a mouse to point and click			
j. Put a CD-ROM into the computer			
k. Look at websites for kids			
l. Ask to go to a particular website			
m. Go to a particular website on their own			
n. Gone to a movie in a movie theater			

Q67. In general, do you think each of the following activities mostly good or mostly bad for children's learning– or doesn't have much effect either way?

	Mostly good	Mostly bad	Not much effect
a. Watching TV/DVD			
b. Using a computer			
c. Playing video games			

Comments:

Demographics

Now I have a few questions so that we can describe the parents who took part in our survey.

Q68. Are you a male or female guardian of the child?

Male	
Female	

Q69. Employment status

Full-time	
Part-time	
Retired	
Not employed	
Homemaker	
Student	

Q70. Your age

Under 25	
25-30	
30-39	
40-49	
50 and older	

Q71. What is the last grade or class that you completed in school?

Primary school (up to 12)	
Junior high school (up to 16)	
Senior high school (18)	
Vocational high school	
Junior college	
Undergraduate university	
Postgraduate university	
Others	

Q72. Marital status

Married	
Living with partner	
Divorced	
Separated	
Widowed	
Never married/single	
Refused	

Q73. Partner's employment status

Full-time	
Part-time	
Retired	
Not employed	
Homemaker	
Student	

Q74. What is the last grade or class your (husband/wife/partner) completed in school?

Primary school (up to 12)	
Junior high school (up to 16)	
Senior high school (18)	
Vocational high school	
Junior college	
Undergraduate university	
Postgraduate university	
Others	

Q75. Partner's age

Under 25	
25-30	
30-39	
40-49	
50 and older	

Q76. Last year, in 2010, what was your total household income from all sources, before taxes and benefits?

Less than NTD$250,000	
NTD$250,000 to under NTD$500,000	
NTD$500,000 to under NTD$750,000	
NTD$750,000 to under NTD$1,000,000	
NTD$1,000,000 to under NTD$1,250,000	
NTD$1,250,000 to under NTD$1,500,000	
NTD$1,500,000 to under NTD$1,750,000	
NTD$1,750,000 or more	
Don't know/Refused	

Q77. What is your race?

Taiwanese	
Vietnamese	
Indonesian	
Chinese	
Refused	
Mixed or other, please specify	

Q78. Is any language other than Mandarin spoken in your household?

No	
Yes, please specify	

Q79. This is the first phase of the study, if you are interested in a more in-depth observation of phase 2 and your child is between 33 to 60 months, please leave you contact information.

Q80. Please leave your name and email/telephone if you wish to join the draw… This is the end of the questionnaire. Thank you very much for your time and participation.

Appendix 3: Phase 2 interview guide

A: Introductory questions

A1: Do you think TV is a valuable/worthwhile activity for your child? Why?
A2: Do you usually co-view with your child?
A3: Describe in what circumstances you co-view with your child. Why then?
A4: When is the 'best' time for you to co-view with your child?
A5: What is the programme that you usually co-view with your child? Is that the child's favourite programme? What's the programme about? How often, would you say, do you co-view this programme with the child?
A6: Where do your kids usually watch TV?

B: Co-viewing

B1: What's your think about co-viewing?
B2: Would you say what I have seen is typical?
B3: Is this how you usually watch TV with her? What would you say you usually do when co-viewing, e.g. label, description, questions, extend the content to the child's experience? Why?
B4: In general, do you enjoy co-viewing with the child/is it a relaxing time for you? Why?

C: Specific questions from the observation

C1: I notice that you used some of (insert scaffolding behaviours happened in the co-viewing). Do you think it's helpful?
C2: What is that (insert a specific behaviour happened in the co-viewing)?
C3: What's the meaning of that (insert a specific behaviour)?
C4: What do you think your child learned from these programmes? What was in your view too difficult for him/her?
C5: Do you read picture books to the child (name)? Which books? How often? Why?

D: Assigned programmes

D1: What do you think about this programme, *Charlie and Lola*? Is it new for your child? Did you enjoy viewing it with the child (name)?
D2: Do you think the child (name) enjoyed it? How did you know? Has s/he asked to see it/any more programmes again?
D3: What do you think about this programme, *Dora, the Explorer*? Did you enjoy viewing it with the child (name)?
D4: Do you think the child (name) enjoyed it? How did you know?
D5: What is your view about watching TV whilst having meals?

It's the end of the interview. Thank you very much to participate in this study.

Appendix 4: Phase 2 consent form

Information and consent form of the study-

Young children's viewing of the programmes in Taiwan

Researcher: Min-Hsuan Wang

This phase of the study aims to explore how Taiwanese young children attend and respond to the DVDs, including *Charlie and Lola* and *Dora, the Explorer*, which aim to both entertain and educate. This study will be conducted by Min-Hsuan Wang, doctoral student in the Department of Early Years and Primary Education at the Institute of Education, University of London, as her thesis topic. The study will take place in Taichung City in Taiwan from December, 2011 to January, 2012. Every participating family will be visited four times during the study. The study will take place in your homes and under naturalistic conditions. In the first visit, the researcher will explain the study. In the second visit, the researcher will assess the child, advise on the videoing procedures, and video parent and the child's viewing of any programme of their choice. The child will be presented three episodes of *Charlie and Lola* and one episode of *Dora, the Explorer* in the following days. Each session will be approximately 10-20 minutes in length. The dyad will be videotaped during the DVD presentation. We ask that parents interact with their child during the DVD presentation as is typical for them when viewing television. An interview, which will also be audio taped, with a parent will be conducted in the last visit.

Please remember that there are no 'right' or 'wrong' ways to interact with your child; every participant is expected to try to behave as naturally as possible. Natural interactions will make the study closer to reality, therefore just behave as you normally would while your child view programmes.

Taking part in this study is completely voluntary. You and you child are free to withdraw from the project at any time and without having to give a reason for withdrawing. All the information will be kept confidential and will be used only for academic purposes.

Subjects Agreement

'The information provided above has been explained to me. I voluntarily agree to participate in this project and the use of the data– knowing that I can refuse to answer any of the questions and stop participating without any adverse consequence.

Name of child _____

Name of parent _____

Signature of the child's guardian _____

Date _____

Appendix 5: Comparison between TW survey and *The Media Family* study

The survey-Young children's media use in Taiwan- of the present study is an online survey of 535 parents of children ages 6 months to 6 years old. It was conducted between 31 August 2011 and 31 January 2012. The survey of *The Media Family* (Rideout et al, 2006) is a US nationally representative survey of 1051 parents of the same age range. It was conducted from 12 September through 21 November, 2005. The following sections list the figures of the two surveys. The abbreviation 'TW' represents the survey of the present study and 'USA' represents the figures from *The Media Family*, 2006.

Media use amongst 6- to 72-month-olds between TW and USA

	TW	USA
Percentage who…		
Use some form of screen media on a typical day	92%**	83%
Watch TV on a typical day	85%**	75%
Watch videos/DVDs on a typical day	54%**	32%
Watch TV every day	54%	66%**
Watch TV several times a week or more	77%	85%**
Watch DVDs every day	16%	24%**
Watch DVDs several times a week or more	42%	65%**
Read or be read to every day	50%	69%**
Read or be read to several times a week or more	90%	90%
Average time spend on a typical day		
Total screen time (amongst all)	2:04**	1:36
Watching TV (amongst all)	1:17**	0:59
Watching videos/DVDs (amongst all)	0:28*	0:24
Total screen time (amongst those who engaged)	2:15*	1:57
Watching TV (amongst those who watched)	1:31*	1:19
Watching videos/DVDs (amongst those who watched)	0:53	1:18**
Reading or being read to (amongst all)	0:46*	0:40
Reading or being read to (amongst those who read)	0:49	0:48

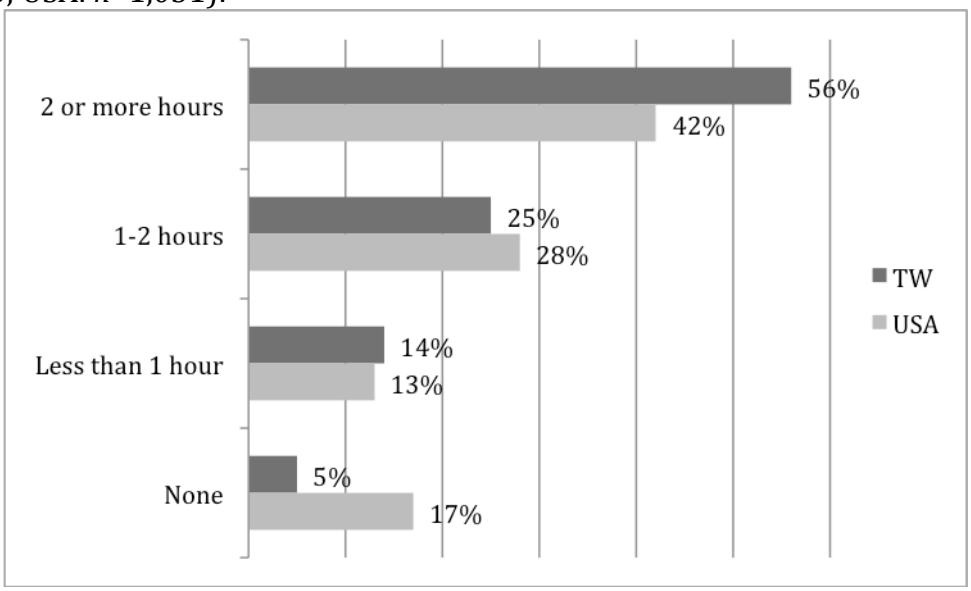
**Significantly higher than the other group, $p \leq 0.001$ (two-tailed). *Significantly higher than the other group, $p < 0.05$ (two-tailed).

Parent's media use

		On a typical day, percentage who use each medium (%)	Average time spend amongst those who use each medium	Average time spend amongst all parents
Watch TV	TW	79**	1:22	1:05
	USA	68	1:36**	1:06
Use a computer	TW	78**	2:06**	1:39**
	USA	45	1:31	0:41
Play video games	TW	15**	0:48	0:07*
	USA	6	†	0:04
Use any screen media	TW	95**	3:01**	2:51**
	USA	83	2:13	1:51
n	TW	535		535
	USA	1051		1051

**Significantly higher than the other group, $p \leq 0.001$ (two-tailed). *Significantly higher than the other group, $p < 0.05$ (two-tailed). †Sample size too small for reliable results.

On a typical day, amount of time parent spend using screen media at home (TW: *n*=535; USA: *n*=1,051):



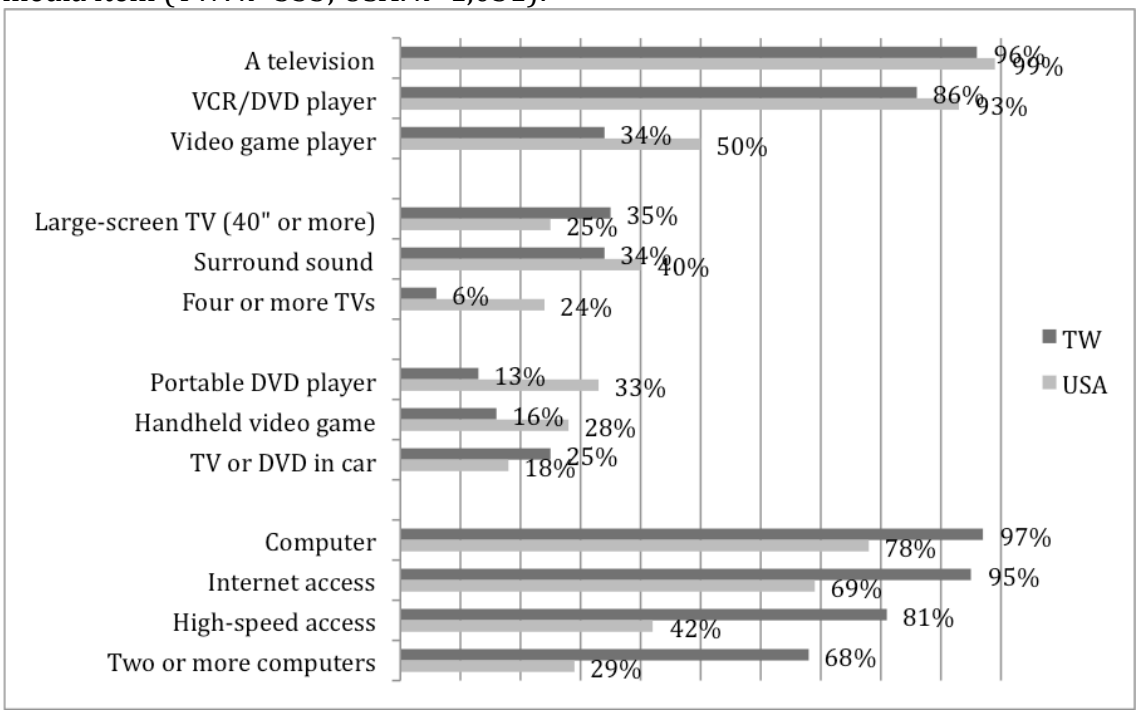
Parents attitudes about children's media use

Percentage of parents who say each medium mostly good or bad for children's learning (TW: *n*=535; USA: *n*=1,051):

	%	Computers	TV/DVD	Video games
Mostly good	TW	36	59	14
	USA	69	38	17
Mostly bad	TW	40	27	66
	USA	8	31	49
Not much effect	TW	24	14	20
	USA	15	22	22

Media in the home

Percentage of children aged 6 months to 6 years old who live in a home with each media item (TW: *n*=535; USA: *n*=1,051):



Media rules

Based on parents of children who ever watch TV (TW: *n*=526; USA: *n*=978):

	%	Yes, rules	No rules	Dk/ref
What your child can or can't watch on TV	TW	81	19	
	USA	85*	14	1
How much time your child can spend watching TV	TW	79**	21	
	USA	60	39	1

**Significantly higher than the other group, $p \leq 0.001$ (two-tailed).

Based on parents of children who ever use a compuer (TW: *n*=296; USA: *n*=471):

	%	Yes, rules	No rules	Dk/ref
What your child can or can't do on the computer	TW	82**	18	
	USA	74	23	2
How much time your child can spend on the computer	TW	81**	19	
	USA	49	48	2

**Significantly higher than USA, $p \leq 0.001$ (two-tailed).

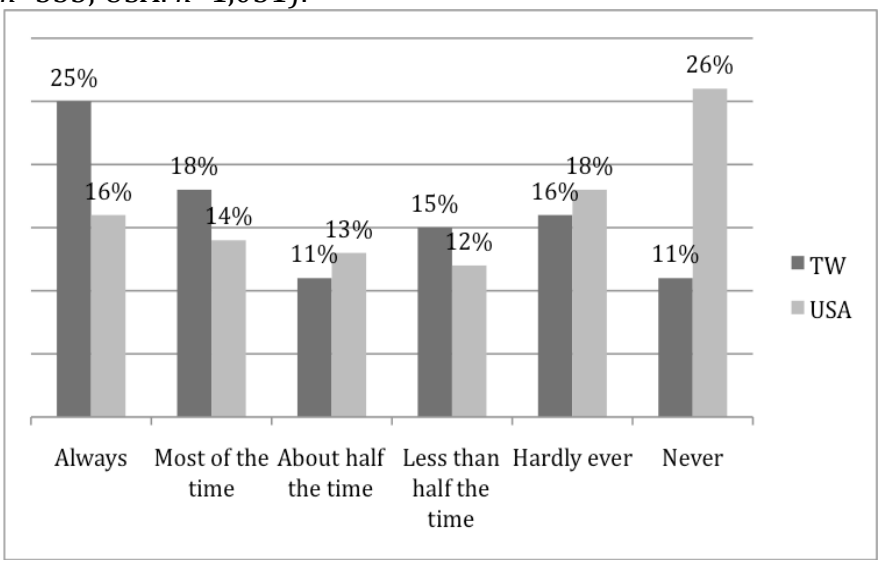
Based on parents of children who ever play video games (TW: *n*=215; USA: *n*=331):

	%	Yes, rules	No rules	Dk/ref
What video games your child can or can't play	TW	77	23	
	USA	79	21	1
How much time your child can spend playing video games	TW	81**	19	
	USA	62	36	2

**Significantly higher than USA, $p \leq 0.001$ (two-tailed).

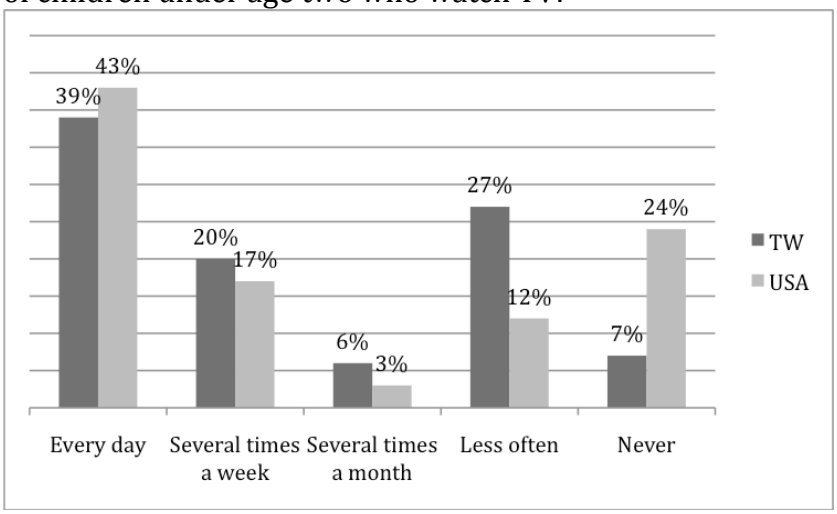
TV and food

How often the TV is on during meals, amongst children aged 6 months to 6 years old (TW: *n*=535; USA: *n*=1,051):



Children under age two

Frequency of children under age two who watch TV:



Media use amongst children age 6-23 months old:

	TW	USA
Percentage who…		
Have ever watched TV	92%**	79%
Have ever watched videos/DVDs	70%	65%
Watch TV every day	39%	43%
Watch TV several times a week or more	59%	70%*
Watch DVDs every day	18%	18%
Watch DVDs several times a week or more	35%	44%
Read or be read to every day	39%	58%**
Read or be read to several times a week or more	82%	83%
Average time spend on a typical day		
Watching TV (amongst all)	1:06*	0:34
Watching videos/DVDs (amongst all)	0:32*	0:13
Watching TV (amongst those who watched)	1:32*	1:02
Watching videos/DVDs (amongst those who watched)	1:16	†
Reading or being read to (amongst all)	0:40	0:33
Reading or being read to (amongst those who read)	0:47	0:44

**Significantly higher than the other group, $p \leq 0.001$ (two-tailed). *Significantly higher than the other group, $p < 0.05$ (two-tailed). †Sample size too small to report.

Appendix 6: Comparison between weekday and weekend

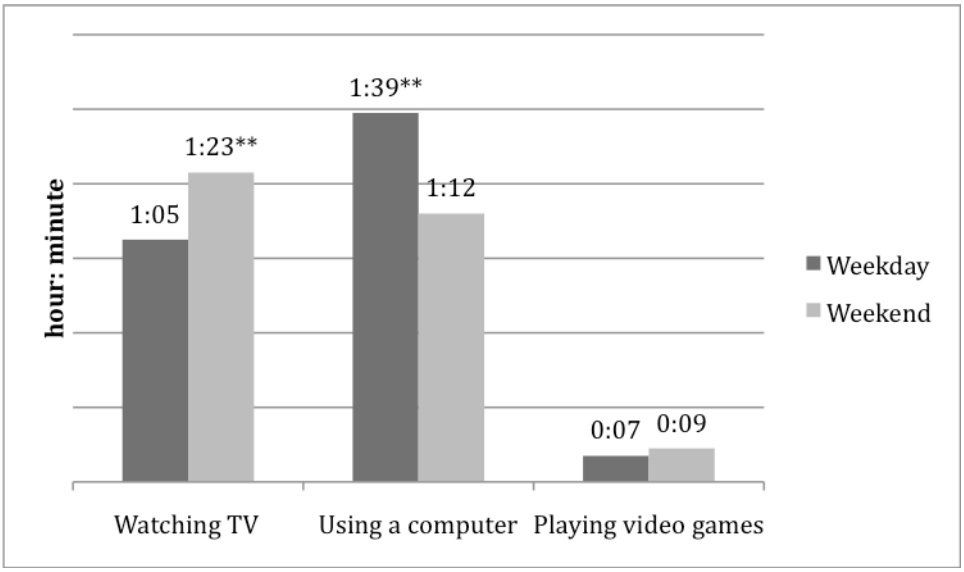
Some of the questions also asked about media use at the weekend. There are significant difference between weekday and weekend on the following activities: 1) children's time spent on media items, 2) parent in a room doing the activity with the child, and 3) parent time spend using screen media.

The table below shows that children spend significantly more time on every activity at the weekend than weekdays. In addition, parents are more likely to stay with the child in the same room in the weekend when their child is watching TV, videos/DVDs, playing mobile games, and using a computer.

	Using screen media	Watching TV	Playing outside	Listening to music	Reading or being read to	Watching videos/DVDs	Using a computer	Playing mobile games	Playing video games
Weekday	2:04	1:17	1:02	0:46	0:46	0:28	0:09	0:06	0:04
Weekend	2:54**	1:36**	2:24**	1:00**	0:50†	0:40**	0:16**	0:09**	0:14**

Amongst all children, average amount of time spent per weekday and weekend (n=535) **Significantly higher than 'Weekday', $p<0.001$ (two-tailed). †Significantly higher than 'Weekday', $p<0.10$ (two-tailed).

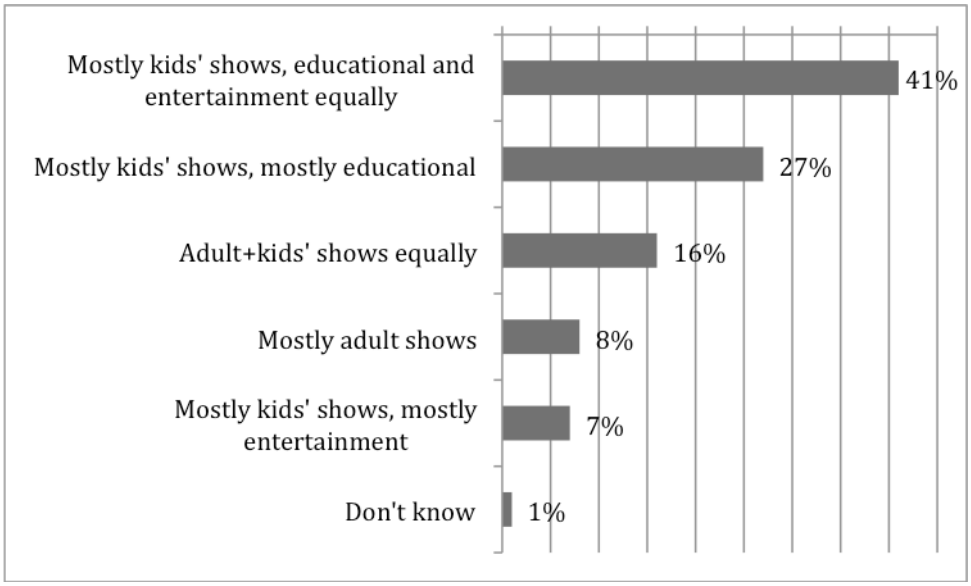
In terms of parents' time spent on using media, they spend significantly more time watching TV ($t=5.52$, $df=534$, two-tailed $p<0.001$) and less time using a computer ($t=4.024$, $df=534$, two-tailed $p<0.001$) at the weekend (see figure below). When comparing between media, it is found that parents spend significantly more time ($t=4.835$, $df=534$, two-tailed $p<0.001$) using a computer than watching TV **on the weekday**. And the time parents spend watching TV is significantly more ($t=2.635$, $df=534$, two-tailed $p=0.009$) than using a computer **at the weekend**. The possible reason might be that parents use a computer to work at home or for personal/social reasons on weekdays but they spend more time doing activities with families at the weekend.



Parent's time spent on each media…weekday and weekend ($n=535$).
**Significantly higher than 'Weekday' or 'Weekend', $p<0.001$ (two-tailed).

Appendix 7: The types of TV shows children watch

Amongst the children who watch television at least several times a month, three-quarters (75%) of parents say their child watches mostly shows designed specifically for children around their age. More parents say their child watches mostly educational programmes (27%) than those who say their child watches mostly entertainment kids' programmes (7%), but the most (41%) say their child watches both types of programmes equally. It should be noticed that 24% of children spend some time watching programmes designed for adults, including 8% watch mostly shows for all ages and 16% watch shows for children and shows for all ages about equally.



Amongst those who watch TV at least several times a month, percentage of children who watch…(*n*=434)

Appendix 8: Gender differences in media use

Boys are as likely as girls to use a computer and spend a similar amount of time on it. In terms of playing mobile games, boys are more involved than girls. However, when it comes to reading, 0-3 years old girls are more likely than boys to read every day. In addition, girls spend more time than boys watching TV, reading and using screen media.

	Ages 0-3 years		Ages 4-6 years		All ages	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Video Games						
Percentage who ever play video games	25%	22%	66%	57%	43%	36%
Percentage who play video games several times a week or more	6%	4%	10%	7%	8%	5%
Time spent playing video games in a typical day (amongst all kids)	0:04	0:03	0:06^	0:03	0:05	0:03
Mobile games						
Percentage who ever play mobile games	42%	37%	65%	57%	52%†	45%
Percentage who play mobile games several times a week or more	14%	11%	14%	10%	14%	10%
Time spent playing mobile games in a typical day (amongst all kids)	0:05	0:06	0:06	0:05	0:05	0:06
Reading						
Percentage who read a book alone or with someone else every day	45%	55%†	48%	50%	47%	53%
Time spent reading in a typical day (amongst all kids)	0:42	0:53†	0:43	0:46	0:42	0:50†
Television						
Percentage who watch TV every day	50%	54%	56%	57%	52%	55%
Time spent watching TV in a typical day (amongst all kids)	1:10	1:33†	1:10	1:14	1:10	1:25†
Computers						
Percentage who use a computer in a typical day	21%	23%	37%	36%	28%	28%
Time spent using a computer in a typical day (amongst all kids)	0:08	0:07	0:12	0:12	0:10	0:09
Screen Media						
Total screen media time in a typical day (amongst all kids)	1:58	2:30†	1:52	1:52	1:55	2:15†
n	159	148	126	102	285	250

Media use by gender and age.

†Significantly higher than 'boys/girls (the other gender)', $p<0.10$ (two-tailed).

Appendix 9: Children's TV and video skills

In general, children appear to be familiar and competent with the media in their homes. The majority of children know how to turn on the television by themselves (72%), change channels with a remote (66%), and two-thirds (60%) can put in a video or DVD by themselves. Over half (53%) of the children are able to use a computer alone, 55% know how to use a mouse to point and click, 35% can turn on a computer by themselves, and nearly one-fifth (18%) can go to a particular website on their own. The media related skills by age are shown in the table below.

Percentage of children who can…	**6-23 months**	**2-3 years**	**4-6 years**
Turn on the TV by themselves	44%	73%	86%
Change channels with the remote	41%	62%	81%
Put in a video or DVD by themselves	23%	65%	74%
n	108	199	228

TV and video skills, by age

Note: There were significant associations between age and the all three TV/video skills.

Appendix 10: Relationship of parental media use to children's media use

	Total parent media use on typical day		
Child's TV viewing	**<1 hr**	**1-2 hrs**	**>2 hrs**
Percentage who watch TV on typical day	84%	87%	86%
Mean hours watching TV for kids who watched	0:50	1:26**	1:45**†
Mean hours watching TV for all kids	0:43	1:14**	1:30**
Percentage who watch TV daily	42%	55%^	57%*
n	77	133	297

Relationship of parental media use to children's media use

**Significantly higher than <1 hour, $p<0.001$ (two-tailed). *Significantly higher than <1 hour, $p<0.05$ (two-tailed). ^Significantly higher than <1 hour, $p<0.10$ (two-tailed). †Significantly higher than 1-2 hour, $p<0.10$ (two-tailed).

Appendix 11: Relationship of parental attitudes to children's media use

	Parents attitude towards TV/DVD		
Child's media use	**Mostly good**	**Mostly bad**	**Not much effect**
Percentage who watch TV on typical day	89%**	75%	87%*
Mean hours watching TV for kids who watched	1:36†	1:18	1:32
Mean hours watching TV for all kids	1:25**	0:58	1:19†
Percentage who watch TV daily	62%**	37%	52%*
n	314	146	75

Relationship of parental attitudes to children's media use
**Significantly higher than 'Mostly bad', $p \leq 0.001$ (two-tailed). *Significantly higher than 'Mostly bad', $p < 0.05$ (two-tailed). †Significantly higher than 'Mostly bad', $p < 0.10$ (two-tailed).

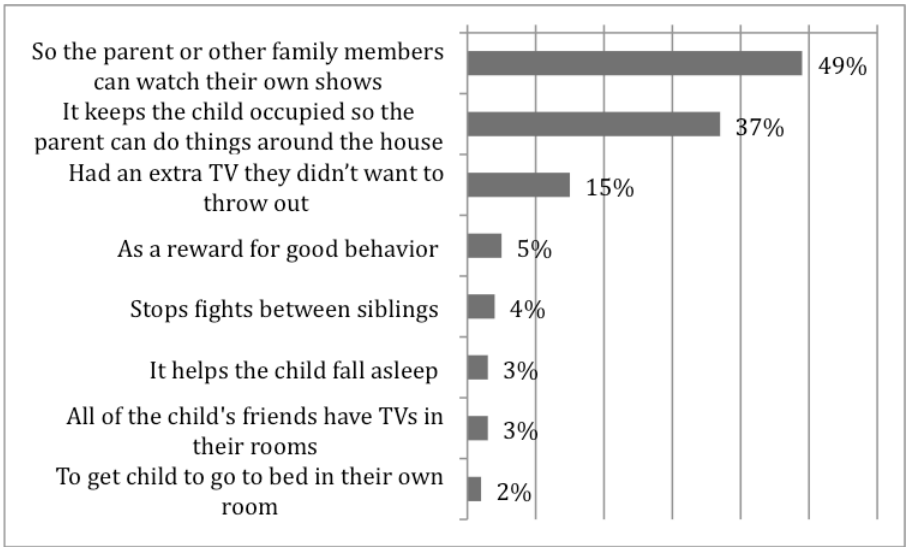
Appendix 12: Media in children's bedroom

One–fifth (21%) of children aged 6 months to 6 years have a television in their bedroom. Eight in ten (80%) of children with a television in their bedroom also get cable or satellite. Amongst those with a television in their bedroom, about a third (32%) spend half or more of their TV-viewing time watching in their bedroom. The majority (88%) of children with a television in their bedroom share the bedroom with their parents.

Items in bedroom (%)	**0-1 year**	**2-3 years**	**4-6 years**	**Total**
TV	17	22	22	21
VCR or DVD player	12	15	14	14
Cable/satellite TV	14	16	18	17
Video game player	2	1	<1	1
Computer	9	10	8	9
Internet access	8	10	7	8
n	108	199	228	535

Percentage of children with media in the bedroom, by age

The most common reason for having a television in child's bedroom is that it frees up other televisions in the house so other family members can watch their own shows (cited by 49% of parents whose kids have a television in the bedroom). The other commonly cited reason is that it keeps the child occupied so the parents can do things around the house (37%). That is, parents use television as a babysitter so they can get things done without children running under feet.



Reasons parents put a TV in their child's bedroom (multiple choices) (*n*=111)

Relationship of bedroom media to time spent using media

Generally, children with media in their bedroom are more likely to watch TV/DVDs on a typical day. For example, children who have a television in their bedroom are significantly more likely than those with no television in their bedroom to watch TV (92% vs. 83%) on a typical day; the former are also significantly more likely to watch television every day than the later (70% vs. 49%).

Television	**TV in bedroom**	**No TV in bedroom**
Percentage who watch TV on typical day	92%*	83%
Average time watching amongst those who watched	1:37	1:29
Average time watching TV (amongst all children)	1:29	1:14
Percentage who watch TV every day	70%**	49%
n	111	424
Videos	**VCR/DVD player in bedroom**	**No VCR/DVD player in bedroom**
Percentage who watch videos on typical day	67%*	52%
Average time watching videos (amongst all children)	0:33	0:27
Percentage who watch videos every day	19%	16%
n	73	462

Relationship between bedroom media and time spent with media

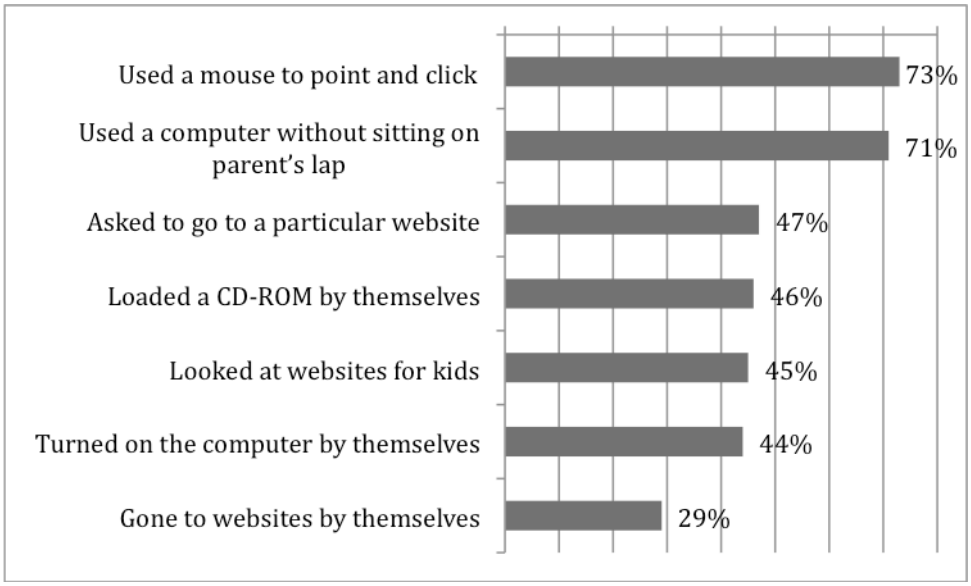
**Significantly higher than 'No TV in bedroom', $p<0.001$ (two-tailed). *Significantly higher than 'No TV in bedroom', $p<0.05$ (two-tailed).

Appendix 13: Young children's computer use and access

Amongst all children aged 6 months to 6 years, over half (55%) of them have used a computer. On a typical day, 28% use a computer for an average of 33 minutes. Nineteen percent of children in this age group use a computer several times a week or more. Nearly all (97%) children in this age group live in a home with at least one computer, and 68% of them have two or more computers at home. Ninety-five percent of households have Internet access and 81% have high-speed ones. The vast majority (93%) of parents whose children use a computer on a typical day have rules about what their child can or cannot do with a computer, and 91% of parents have rules about how much time their child can spend using a computer.

Not surprisingly, older children (4-6 years old) are more likely (χ^2=13.886, *df*=1, *p*<0.001) to use a computer than younger ones (0-3 years old) (37% vs. 22%). Amongst the 4-6 years who use a computer on a typical day, nearly seven in ten (69%) with their parents there helping them all (34%) or most (35%) of the time, only 6% did so without their parent in the room helping them at all.

4-6 year-olds also learn many skills about using a computer. Nearly three quarters (73%) know how to use a mouse to point and click, 71% are able to use a computer without sitting on a parent's lap, about half (46%) can put in a CD-ROM by themselves, and 29% can go to a particular website on their own.



Percentage of 4-6 year-olds who have ever done the following on the computer (*n*=228)

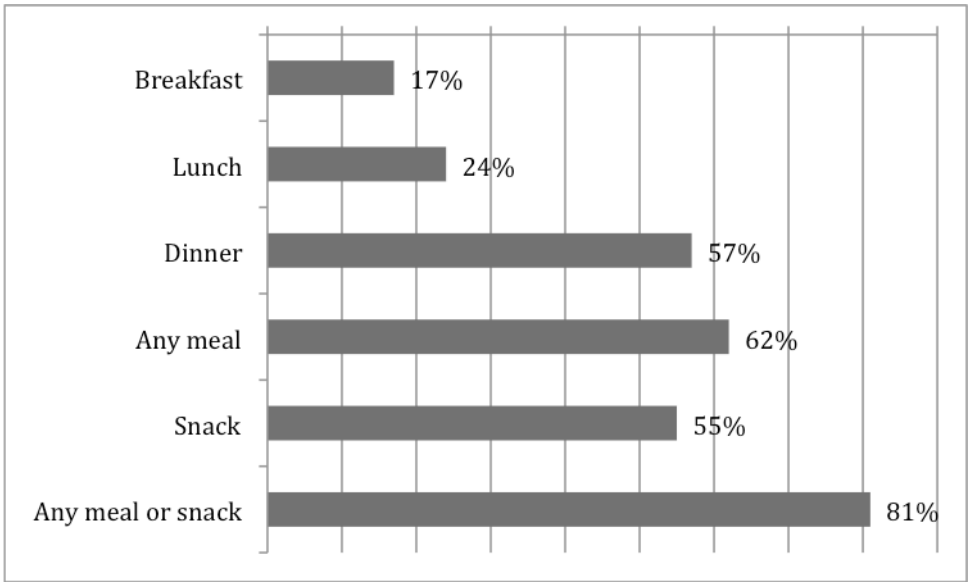
Appendix 14: More details about TV and food/snacks

	TV on during meals	
Child's TV viewing	**Always/most of the time**	**Half the time or less**
Percentage who watch TV on typical day	91%*	83%
Mean hours watching TV for kids who watched	1:49**	1:16
Mean hours watching TV for all kids	1:39**	1:03
Percentage who watch TV daily	71%**	44%
n	228	284

Relationship of household media patterns to children's media
*Significantly higher than "half the time or less", $p<0.05$ (two-tailed). **Significantly higher than "half the time or less", $p<0.001$ (two-tailed).

TV and food

On a typical day, a vast majority (81%) of children eat a snack or a meal in front of the television. Out of the three meals of a day, dinner time is the most likely meal that children watch television when eating. Over half (57%) of households watch television when having dinner. In the US survey (Rideout & Hamel, 2006), breakfast time is the mostly likely meal that children watch TV when eating. However, in Taiwan, breakfast time is the least likely meal for watching TV. The reason might be that children and parents are rushing to the school in the morning and some parents just buy breakfast on their way to school. And maybe that TW families take dinner time as a time for relaxation after a hard day and watching TV is calming.



Amongst children who watched TV, videos, or DVDs on a typical day, percentage of children who eat snacks or meals in front of the TV (*n*=481)

Appendix 15: Parents' views about the two programmes used in Phase 2

In the interviews with parents, they expressed their views about both programmes they co-viewed with their child. *Charlie and Lola* was unfamiliar to all families in our study. In contrast, all the families were familiar with Dora.

In general, all parents approved of both programmes as they are clearly educational. Some parents particularly appreciate the imaginativeness and richness in *Charlie and Lola.* For example:

> *I like Charlie and Lola because it's close to his real life experience. The content is quite nice….Dora…it's okay. I don't like it as much as Charlie and Lola because it only teaches English. Sometimes it teaches colours and shapes too. But that's it.*
>
> [Teacher Parents, boy, 4 years and 3 month old]

However, many parents are not sure whether their children will be able to fully understand the content:

> *I think it's (Charlie and Lola) quite interesting….creative and full of imagination. It has an unrestrained and vigorous style…But I'm worried that if Charlie and Lola is too difficult for her. It might not make sense to her sometimes. I think it might for older children. That's what I think, I don't know whether they target at older children or not.*
>
> [Smiling girl, girl, 3 years and 10 month old]

> *Mother: I think Dora, the Explorer is for younger children and Charlie and Lola is for older children.*
>
> *Father: Because Dora is more active. Charlie and Lola is more difficult for younger children to understand. It's descriptive. It looks at things from Charlie's position. Dora has themes and there are three parts in every episode. Children are familiar with its setting and it's easier for them to follow…I think children need to get older to understand Charlie and Lola.*
>
> [Poetry Girl, girl, 4 years and 7 month old]

> *I think it's better to watch when he gets older. Even it's cartoon, young children might not be able to watch it for a long time. It's almost impossible for them to finish it. And some plots are difficult for them to understand and less likely to be interested to them…Because he would lose his patience once he can't understand what is it talking about.*
>
> [180, boy, 3 years and 5 month old]

As for *Dora, the Explorer*, some parents think that the programme structure is clear, thus it can be easily understood by children. Parents also think it is good that

children can learn some of the English, numbers, colour, shape, and other concepts through the programme. For example:

> *I quite like it. I think it's good that children can also learn English when he is watching a cartoon.*
>
> [Baseball boy, boy, 5 years old]

A mother points out its interactive feature:

> *Children can learn form it. And it's interactive. It has spaces for children to interact with it.*
>
> [LionHead, boy, 3 years and 3 month old]

A mother further points out the role of adults in the interactive programme:

> *I think children can learn a few English words from it but if the family members don't practice with them, they might just take it as a cartoon. I think one of the parents should watch with the kids and learn with the kids because sometimes the kids don't know what they are watching. For example, yesterday the programme mentioned 'Rainbow rock' [in English]. The word is a bit too long and hard for them…They can do the counting now. And they could count ONE, TWO, THREE…[in English] recently. I think it's quite interesting because they learn it from Dora and Diego as the characters do counting in English very often in the programme.*
>
> [Supermum, boy, 3 years and 10 month old]