

**Oral Narrative Intervention with Children who are at Risk of, or who have  
Communication Impairment**

Kate Favot

Master of Speech and Language Pathology

Diploma of Education (English)

Bachelor of Arts

Macquarie University Special Education Centre

Faculty of Human Sciences

Macquarie University

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## REQUIREMENTS AND FORMAT OF A THESIS BY PUBLICATION

A thesis must form a distinct contribution to knowledge either by the discovery of new facts or by the exercise of independent critical power. The thesis as a whole should be focused on a single project or set of related questions and should present an integrated body of work, reflecting a coherent program of research.

The Master of Research degree provides the standard mode of entry to Doctoral programs at Macquarie University and offers the opportunity to evaluate the capacity of candidates for doctoral study. Students achieving a Distinction grade or above in their Master of Research program may be offered admission to a Doctoral program.

The Macquarie University Special Education Centre (MUSEC) adopts the thesis by publication model. The basic structure of a thesis by publication for the Master of Research at MUSEC would normally be as follows:

- A brief introduction providing a coherent overview of the background of the thesis, the research questions and the structure and organisation of the remaining chapters. The distinct contribution of the thesis should be clearly identified.
- Two chapters, each written in the format of a self-contained submission ready journal article. The first chapter would normally consist of a literature review and the second a pilot study, with the potential to lead into doctoral research. Each chapter should be prefaced by a brief introduction outlining how the chapter fits into the program of research and, in the case of jointly authored chapters, the student's contribution should be clearly specified. If

articles are published, they do not need to be reformatted for inclusion in the thesis.

- A brief final chapter providing an integrative conclusion, drawing together all the work described in the other parts of the thesis and relating this back to the issues raised in the Introduction.

The maximum length is 20,000 words.

For further details see information refer to the Higher Degree Research website.

## SYNOPSIS

This thesis by publication consists of two papers. The first paper is a systematic review of single case research that investigated oral narrative intervention with children who have communication impairment or who are at risk of communication impairment. Eight papers, published between 2000 and 2014 met criteria for inclusion in the review. Overall the literature supports the use of explicit oral narrative intervention to develop the macrostructure of oral narrative. It also supports the use of macrostructure icons, pictures, modelling and requiring the participants to tell a complete narrative as part of the intervention. Intervention has been conducted with participants who are at risk of or who have a diagnosed communication impairment, but the level of impairment was generally limited. Only one study has been conducted with participants who have a diagnosis of autism spectrum disorder and no studies have been completed with participants who have limited intellectual ability. The use of macrostructure icons is promising in developing oral narratives but there is a need for research with greater degrees of language and intellectual disability or limited intellectual ability.

The second paper is a pilot study that investigated the effect of explicit oral narrative intervention on the macrostructure of oral personal narratives in three school age children who have a diagnosis of autism spectrum disorder and limited intellectual ability. In the intervention study, the effects of the intervention on the personal oral narratives of the participants were examined using multiple baseline with probes across participants design. Intervention effects were measured using probes under a photo only condition and under an icons and photo condition. Maintenance and generalisation data across setting and people were collected. The preliminary results of this pilot study indicate that explicit oral narrative intervention

including macrostructure icons may be effective with children who have a comorbid diagnosis of ASD and limited intellectual ability.

## STATEMENT OF CANDIDATURE

I certify this thesis entitled “The Effects of Oral Narrative Intervention with Children who are at Risk of, or who have Communication Impairment” is an original piece of research and my own work. All assistance from others in conducting the research and preparing this thesis has been appropriately acknowledged.

I also certify that the work in this thesis has not been submitted for a higher degree to any university or institution other than Macquarie University. In addition, I certify that all sources of information and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Faculty of Human Sciences and Humanities Human Research Ethics Committee, on 1<sup>st</sup> July 2013 (referenced no. 5201300450; see Appendix 1).

## STATEMENT OF CONTRIBUTION

This is a statement of my contribution to this thesis and the papers included in it. The following is a list of papers written in conjunction with my Co-Supervisors Associate Professor Mark Carter and Associate Professor Jennifer Stephenson.

1. The Effects of Oral Narrative Intervention on the Narratives of Children who are at risk of, or who have Communication Impairment: A Literature Review

I wrote literature review with advice and input from Associate Professor Mark Carter and Associate Professor Jennifer Stephenson.

2. What is the Effect of an Oral Narrative Intervention on the Personal Narratives of Children with a comorbid Diagnosis of Autism Spectrum Disorder and limited intellectual ability: An Intervention Study

I conducted this pilot intervention study and wrote this paper with advice and with input from Associate Professor Mark Carter and Associate Professor Jennifer Stephenson.



## ACKNOWLEDGEMENTS

I would like to thank my supervisors Associate Professor Mark Carter and Associate Professor Jennifer Stephenson for providing an expert and rigorous introduction to the world of research. Their experience and attention to detail have encouraged and guided me over the last two years to write the thesis that I hoped I could. I would also like to thank Sally Huck, Sarah Kirkwood and Aviea Renouf for their flexibility and support, Betty Ho for conducting reliability measures and providing expert support with data management, Sally Howell for collecting generalisation data and all the staff at MUSEC school for creating a positive work and research environment.

I would like to extend a big thank you to the families of my participants for their commitment to the intervention. A special thank you is reserved for my three participants. Each of them has been a complete joy to work with.

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## CHAPTER 1: INTRODUCTION

### **Chapter Overview**

Chapter one introduces the purpose of, and the background to, the research that is reported in the two papers that comprise this thesis. This chapter also provides an outline of the structure of the thesis and chapter outlines for the systematic literature review and the intervention study.

### **Purpose of the Research**

The major purpose of the research reported in this thesis was to investigate the efficacy of oral narrative intervention on the personal narratives of school age children with who are at risk of, or who have communication impairment.

### **Structure of the thesis**

This thesis consists of two self-contained manuscripts, each presented in a journal submission ready format.

### **Background to the Research**

#### **Definition of Narrative**

Narratives are linguistic descriptions of events that are removed from the here and now (Peterson, Jesso, & McCabe, 1999), and are designed to entertain or inform (Schoenbrodt, Kerins, & Gesell, 2010). They are descriptions of events that can be real or fictional and can be original or retold. Narratives can be co-constructed, occur within conversation or exist as monologues (Hughes, McGillivray, & Schmidek, 1997; Kaderavek, 2015; Lahey, 1988; Lander, 2012; Schuler, 2003; Sperry & Sperry, 1996). Their presence is ubiquitous in our lives (Bloome, Katz, & Champion, 2003) and they have a broad importance.

Narratives are linked with social emotional success (Boudreau, 2008; Engel, 1995; Garnett, 1986; Johnston, 2008), language development and success (Bishop & Edmundson, 1987; Garnett, 1986) and to academic success (Feagans & Appelbaum, 1986; Hughes et al., 1997; Westby, 1991).

Story grammar conventions of narratives call for the inclusion of relevant content (Finestack, 2012; Klecan-Aker & Gill, 2005), and an overall organisation that is temporal, logical and cohesive (Brown, Garzarek, & Donegan, 2014; Engel, 1995; Labov, 1972; Peterson et al., 1999). Specific story grammar elements noted as essential for fictional stories (Stein & Glenn, 1978) include setting, which incorporates character, initiating event, internal response, internal plan, attempt, direct consequence and reaction.

### **Theory of Narrative Use**

The range of ways in which it is possible to define narrative and the required conventions of narrative are reflected in various theories of narrative use. Theories of narrative use attempt to give insight into the functions served by narrative (Liles, 1993). The following section is a summary of narrative use theory as discussed by Liles (1993).

Bruner, who writes about the social psychology theory of narrative use defines narrative as being based on real or imaginary events and on a series of reportable events that helps us to organise our experiences. Researchers into the social psychology theory of narrative use outline two basic functions of the structure of a narrative. Firstly that it references the *who*, *where*, *when*, and *what* or a *complication* of the events and secondly that it includes an emotional response.

Researchers into the cognitive structures theory of narrative use also consider narrative in terms of its structure and intent, but view narrative as a continuum,

relative to the number of structural, linguistic and psychological components. The construct of cognitive schemata is at the midpoint of the cognitive structures continuum. The cognitive schemata theory is a series of hierarchically and logically related story grammar components (setting, problem, action, resolution, emotional response) or episodes, acquired as the consequence of general cognitive development

The authors of the social psychology and cognitive structures theory of narrative use define narrative primarily in terms of its structure with some recognition of intent. Genre specific structure is explored by researchers who advocate the contextual influence and text coherence models of narrative use. Halliday and Hasan consider that context, or genre specific structural rules are determined by a text's function and that to communicate that function the speaker uses language in a specific way. This sphere of contextual influence is extended to include a shared culture and the listener recognising the genre.

The research in this thesis adheres to the social psychology and cognitive schemata theories of narrative use as it is concerned primarily with the structural aspects of narrative. The researchers of this paper do recognise however the link between social function and form as discussed in the contextual influence model of narrative use.

### **Personal Narrative**

Personal narratives describe events the narrator has experienced or observed personally (Preece, 1987) or vicariously (Johnston, 2008). Researchers have concluded that personal narratives can comprise as much as 70% of children's narrative talk (Preece, 1987). As with fictional narrative, personal narrative is constructed according to a set of established story grammar elements. Story grammar elements considered essential for personal narratives include who the participants

were, where they were, what happened and an evaluation (Nathanson, Crank, Saywitz, & Ruegg, 2007; Peterson, 1990; Rixon & Jaeger, 2011).

### **Narrative Production in Children with Communication Impairments**

Children with a range of communication impairments have been found to have difficulty generating conventional narratives and may produce narratives that are shorter, have impaired story structure and are less grammatically complex (Black, Reddington, Reiter, Tintarev, & Waller, 2010; Estigarribia et al., 2011; Green & Klecan-Aker, 2012; Nathanson et al., 2007; Norbury & Bishop, 2003; Pakulski & Kaderavek, 2012; Schoenbrodt et al., 2010; Swanson, Fey, Mills, & Hood, 2005; Westerveld & Gillon, 2008)

Researchers who have investigated the narratives of children with autism spectrum disorder (ASD) have concluded that their narratives may also be shorter and have impaired story structure and grammar (Banney, Harper-Hill, & Arnott, 2015; King, Dockrell, & Stuart, 2013; Tager-Flusberg, 1995). Researchers have also noted that narratives of children with ASD may specifically have fewer cognitive state verbs, fewer causal explanations (Banney et al., 2015; Baron-Cohen, Leslie, & Frith, 1986) and more irrelevant information (Tager-Flusberg, 1995).

### **Research on Narrative Interventions**

Narratives are important to social and academic success and evidence shows that problems do not necessarily resolve without specific instruction (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004) Oral narratives are therefore often cited as a necessary focus in language assessment and intervention (Bliss & McCabe, 2008; Botting, 2002; Kaderavek, 2015; McCabe & Bliss, 2005; Nelson, 2010; Owens, Jr., 2013; Sussman, 2006). Research to establish the efficacy of narrative intervention to

facilitate the narrative development of children who are at risk of, or who have communication impairment is a developing area and several studies have been conducted since a review by Petersen (2011).

This thesis includes an update of Petersen's review by providing a systematic review of the existing single case research that investigated oral narrative intervention. Systematic reviews shape research as they present all the relevant evidence, assess effect and provide an estimation of the level of confidence in results (Hassan Murad et al., 2015). Importantly systematic reviews also provide descriptions of the processes that underlie experimental effect and indicate gaps in the research (Eagly & Wood, 1994). Collecting large homogenous samples necessary for group intervention is difficult when attempting research with the diverse population of children who may benefit from narrative intervention. Single case research designs, however, allow researchers to focus on individuals and demonstrate control at the level of the individual (Horner et al., 2005). Given the established importance of narrative and the potential benefit and growth of narrative as an intervention area the following broad research questions will be addressed in this thesis:

1. What is the efficacy of oral narrative intervention with children who have or who are at risk of communication impairment and what is the quality of the research exploring these interventions?
2. What is the efficacy of oral narrative intervention on the story grammar of narratives with children who are at risk of or who have communication impairment as indicated by single case research studies.

## **Chapter Outline**

Chapter 2 provides a systematic review of the eight single case research designs selected for inclusion in the review. Papers were included in the review if

they met the following criteria: refereed journal article or thesis at Master's level or above, written in English, described an oral narrative intervention, the story grammar of oral narrative was a dependent variable and the participants included children with communication impairment or at risk of communication impairment. The following data were extracted and examined; participant details, dependent variable, independent variable, reliability, experimental effect, maintenance and generalisation, and social validity. The participants in studies selected for review were found to have mild disabilities and only one researcher investigated the efficacy of intervention with children with a diagnosis of ASD. A small range of common features were found to be present in studies in which researchers were able to claim effect: use of icons to represent story grammar elements, participants were required to say an entire narrative, prompt fading and use of specific pictures to support retell or generation of particular narratives. Few studies examined generalisation and those that did examined transfer of skills across different stimulus prompts rather than across genres, setting, or people.

The current review includes a more detailed examination of the quality of the studies than in previous reviews, using established quality criteria devised for single case designs (Preston & Carter, 2009; Reynhout & Carter, 2011). To establish study quality the following information was extracted and examined; research design, participant information, service delivery, dependent variable, independent variable, treatment fidelity, generalisation, maintenance, and social validity

This thesis contributes to the literature by updating Petersen's review. It is the first to exclusively examine the contribution of single case research and provide a detailed examination of the quality of the research.

Chapter 3 is an empirical pilot study examining the efficacy of an explicit oral narrative intervention with school age children with a diagnosis of ASD and limited intellectual ability. The research questions for the empirical paper followed directly from the findings of the literature review. Only one prior study was located that was conducted with children with ASD and none with children who have limited intellectual ability. The study was designed to assess the feasibility of intervention procedures documented in the existing research for children with significant social language impairments. A multiple baseline with probe design was used across three participants. The intervention addressed personal narrative and used icons, prompts for each component, modelling and scaffolding for participants to then produce a complete narrative. Intervention effects were measured under a photo only condition and under a probe with icons and photo condition. Maintenance and generalisation data were also collected. Results from the study showed that the intervention was effective for all three participants and that maintenance effects were shown for all three participants after two or three weeks. Researchers were also able to show generalisation across settings for two of the three participants. The third participant was absent for generalisation probes.

The study represents the first attempt to apply a narrative intervention to children with both ASD and limited intellectual ability. Further it is only the second study to address personal narratives as the primary dependent variable. The current pilot study contributes to the body of existing research as it demonstrates that intervention may be effective with this population.

### **Summary**

The main purpose of this research was to examine the efficacy of oral narrative intervention with children who are at risk of, or who have communication



impairment. The efficacy of oral narrative intervention was examined through a review of the current literature to establish common features of successful interventions. Little research has been conducted with students with a diagnosis of ASD and none with students with a diagnosis of ASD and limited intellectual ability. An intervention was conducted with school age children with ASD and limited intellectual ability and it was concluded that oral narrative intervention may be effective with that population.

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CHAPTER 2: The Effects of Oral Narrative Intervention on the Narratives of  
Children who are at Risk of, or who have Communication Impairment:

A Systematic Literature Review

**Chapter Overview**

The aim of this chapter is to provide a comprehensive literature review of the single case study research that investigates the effect of oral narrative intervention with children who are at risk of, or who have communication impairments. The literature review examined the efficacy and quality of oral narrative interventions and the common features of successful interventions. This systematic literature review updates and builds on Petersen's review (2011), including an in depth evaluation of study quality, and conduct of interrater reliability checks on study selection and data extraction coding

This chapter includes an introduction to narrative and the method for gathering and coding data from the extant literature. It also includes the results section, which provides a summary of data extracted, and a discussion section, which highlights that oral narrative intervention may be useful in developing the oral narratives of children with communication impairments. In conclusion the need is highlighted for further research with children who have more marked communication impairments and with personal narrative.

**The Effects of Oral Narrative Intervention on the Narratives of  
Children who are at Risk of, or who have Communication Impairment:  
A Systematic Literature Review**

Kate Favot

Macquarie University Special Education Centre

Faculty of Human Sciences

Macquarie University

### **Abstract**

This systematic review provides examination of the quality, efficacy and common features of oral narrative intervention with children who are at risk of, or who have communication impairment. Eight single case research studies, published between 2000 and 2014 were included in this review. A detailed evaluation of study quality was conducted and interrater reliability was determined for all data extracted. Apart from the participant descriptions, the studies were generally of a high quality and, results can be interpreted with a degree of confidence. Five of the eight studies in the review were able to show experimental effect and successful interventions used a small range of common teaching strategies and materials. There is a need for more research with children who have significant communication impairments.

*Keywords:* oral narrative, oral narrative intervention, children, communication impairment.

## CHAPTER TWO: LITERATURE REVIEW

Narratives are linguistic descriptions of events that are removed from the immediate context (Peterson, Jesso, & McCabe, 1999). They describe events that can be real or fictional, original or retold, and are designed with the purpose of entertaining or informing. Narratives can be co-constructed, occur within conversation, or exist as discrete monologues (Hughes, McGillivray, & Schmidek, 1997; Kaderavek, 2015; Lahey, 1988; Lander, 2012; Schuler, 2003; Sperry & Sperry, 1996). They are ubiquitous in our lives (Bloome, Katz, & Champion, 2003) and they have a broad importance. They are central to our culture and to the language fabric of home and school (Engel, 1995; Garnett, 1986). Narratives have been found to be linked with the development of self, communicating that self to others, building social relationships and with the development of social identities (Boudreau & Chapman, 2000; Crank, Schumaker, & Deahler, 1990; Johnston, 2008; Lever & Senechal, 2011). They have also been found to be linked with the development of language skills (Bishop & Edmundson, 1987) and with academic success (Feagans & Appelbaum, 1986; Hughes et al., 1997; Westby, 1991).

From childhood, narratives represent a large part of functional discourse. They play a key role in the development of friendships and other inter-personal relationships (Black, Reddington, Reiter, Tintarev, & Waller, 2010; Fivush, 1991; Pennebaker & Seagal, 1999; Preece, 1987). It has been argued that narratives told between friends play an important role in the socialisation and positioning that takes place in a peer group (Cheshire, 2000; Kyratzis, 1999; Rawlins, 2008) and that children who do not develop narrative structures typical for their age are at risk of compromised relationships with peers, adults and teachers (Bliss & McCabe, 2008).

In a study of children's friendships, it was reported that competent narrative skills contributed to a smooth flow of communication between children and that conflict behaviours occurred more frequently between children with less developed narrative skills (Dunn & Cutting, 1999).

Narratives represent a major milestone in language development. They enable children to make the crucial transition from early childhood language that is based in the "here and now" to the next stage of language that is based in the "there and then" (Brown, 1973). Parent-child co-constructed narratives begin to emerge around two years of age and in typically developing children individually produced narratives begin to emerge around the age of three, in concert with increased vocabulary and increasingly sophisticated sentence structures and morpheme use (Hoff, 2013; Peterson, 1990).

For children of school-age, narratives play a significant role in the school based academic culture, as they have been found to serve as a pathway to link oral and literate language (Westby, 1991). The capacity to generate narratives predicts successful adaptation to school literacy, and ultimately, academic success (Feagans & Appelbaum, 1986; Kaderavek, 2015; Scott & Windsor, 2000). Specifically, links have been found to exist between success in narrative with success in reading (Kaderavek & Sulzby, 2000), written language (Kaderavek, 2015; McCabe, Bliss, Barra, & Bennett, 2008), discussion and comprehension (Nathanson, Crank, Saywitz, & Ruegg, 2007). Importantly, narratives play a central role in student assessment, as the narrative format is frequently used in classroom assessment (Bloome et al., 2003).

Narratives adhere to conventions that clearly distinguish them from other genres of discourse (Liles, 1993). Within the school based academic culture, a high value is placed on narratives that are structured according to conventions (Petersen,

Gillam, Spencer, & Gillam, 2010). These conventions include both overall structure or story grammar and structure at the sentence and word level (microstructure). Conventions of the story grammar of narratives outline the regular structure of a basic story. Story grammar conventions call for the inclusion of relevant content (Finestack, 2012; Klecan-Aker & Gill, 2005), and an overall organisation that is temporal, logical and cohesive (Brown, Garzarek, & Donegan, 2014; Engel, 1995; Labov, 1972; Peterson et al., 1999). Specific story grammar elements noted as essential for fictional stories include setting, which incorporates character, initiating event, internal response, internal plan, attempt, direct consequence and reaction (Stein & Glenn, 1978). Story grammar elements considered essential for personal narratives include who the participants were, where they were, what happened and an evaluation (Nathanson et al., 2007; Peterson, 1990; Rixon & Jaeger, 2011).

Conventions of the microstructure of narratives include correct use of morphology, and grammar (Finestack, 2012). Elements of microstructure that may be assessed include measures of productivity (e.g., numbers of words), measures of lexical density (e.g., number of different words), and grammatical density (e.g., clause density)(Hall - Mills, 2010). Although microstructure might improve the clarity of narratives, the central features of narratives relate to the story grammar and that will be the primary focus of this review.

Most children learn to generate and understand this socially and academically important genre through incidental exposure (Pakulski & Kaderavek, 2012). This is not the case for all children, as the conventions of narratives place great cognitive and linguistic demands on the speaker. Children with a range of disabilities have been found to have difficulty generating conventional narratives and may produce narratives that are shorter, less descriptive, less grammatically complex and with

impaired story structure (Black et al., 2010; Estigarribia et al., 2011; Green & Klecan-Aker, 2012; Nathanson et al., 2007; Norbury & Bishop, 2003; Pakulski & Kaderavek, 2012; Schoenbrodt, Kerins, & Gesell, 2010; Swanson, Fey, Mills, & Hood, 2005; Westerveld & Gillon, 2008).

Oral narratives are important to social and academic success and evidence shows that problems do not necessarily resolve without specific instruction (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004). Oral narratives are therefore often identified as a necessary focus in language assessment and intervention (Bliss & McCabe, 2008; Botting, 2002; Kaderavek, 2015; McCabe & Bliss, 2005; Nelson, 2010; Owens, Jr., 2013; Sussman, 2006). Even though oral narrative has been repeatedly noted as an important intervention target, a recent systematic review included only nine intervention studies up to 2010 (Petersen, 2011).

Petersen (2011) conducted a systematic review of the research investigating the efficacy of oral narrative intervention with children who have communication impairment. Petersen included nine studies conducted between 1995 and 2010 with participants who had language impairment, comorbid learning and/or language disabilities, and comorbid neurological and language impairment. Three of the studies included were group pre-test/post-test designs with a comparison group, three were pre-test/post-test group designs without a comparison group and three studies were classified as single case designs. Petersen concluded that narrative intervention that includes repeated storytellings and the use of story grammar icons or cards to represent each story grammar element may facilitate improvement in narrative story grammar for these populations.

Research into the effects of oral narrative intervention on the oral narratives of children is a rapidly developing area and several studies, in particular studies using

single case research designs, have been conducted since Petersen's review in 2011. The present review extends the Petersen review with a specific focus on the growing contribution of single case research to the area. The present review also extends Petersen's review by including participants who are at risk of communication impairment. Single case research allows researchers to investigate behaviours in individuals rather than groups. Children who may benefit from narrative intervention are a diverse group and may have complex and idiosyncratic problems, which may make it difficult to recruit the homogenous samples necessary for group designs. Single case research designs demonstrate experimental control at the level of the individual, with each participant serving as their own control. In intervention research, it allows for in depth analysis of the behaviour of responders and non-responders, is practical to conduct in typical educational settings and is cost effective (Horner et al., 2005).

Given the established importance of narrative, the potential benefit of intervention and the growth of narrative intervention as a research area the following research questions will be addressed in this review:

1. What is the quality of single case research interventions conducted?
2. How effective are oral narrative interventions on story grammar of children who are at risk of, or who have communication impairment?
3. What are the common features of effective interventions?

### Method

The following electronic databases were searched: CINAHL, Education Research Complete, Eric Proquest, Eric Proquest Psychology, Medline, PsychINFO, Science Direct, Scopus, Web of Knowledge, Web of Science and Proquest Dissertation and Theses. Combinations of the following search terms were used:



narrative intervention OR narrative based language intervention OR oral narrative intervention AND language impairment OR at risk for language impairment, AND children. No restriction was placed on date of publication or language. A total of 267 article titles were initially identified, with 166 studies remaining after duplicates were removed.

Studies were included if they met the following initial inclusion criteria: refereed journal article or thesis at Master's level or above, written in English, described an oral narrative intervention, and the participants included children who were at risk of, or who had communication impairment. For the purposes of this review, participants were considered to be at risk of communication impairment if they were explicitly stated to be so in the article, if they had a disability that could affect language production and comprehension, such as pervasive developmental disorder, or if they were enrolled in a program for at risk children, such as a Head Start school. Where participants were considered to be at risk, the instruments used to determine risk were regarded as diagnostic for the purposes of quality rating. The titles and abstracts of all studies were independently examined to determine which were relevant for this review. Thirty-one studies were identified as meeting the initial inclusion criteria. In addition to those 31 studies, four studies were identified from database alerts using the search terms "narrative" and "narrative intervention", thus a total of 35 studies remained after round one screening. Interrater reliability for article selection, calculated by dividing agreements by agreements plus disagreements and multiplying by 100, was 93% with disagreements being resolved by consensus after examination of the full text of the studies.

The researcher and a trained research assistant independently examined the full text of each these 35 studies and studies were retained that (1) included oral

narrative as a dependent variable and (2) were single-case studies. Interrater reliability was 94%. Disagreements were resolved by consensus and eight studies were retained.

Information relevant to research design, participant information (number, age, diagnosis), service delivery (session length, number of sessions per week, total treatment time), dependent variable (story grammar, episode level, microstructure), scope of narrative (see Table 1), treatment fidelity, experimental effect, points of non-overlapping data, generalisation, maintenance (see Table 2) was extracted from the eight studies. Strategies and materials used were also extracted (see Table 3). For the purposes of this review, generalisation was coded as generation of a narrative with untaught people, places or story type (e.g., generation of a personal recount when only story retells were taught).

When group data were also presented in studies, only the single case research data were considered. When studies investigated areas other than story grammar, only the data that measured story grammar were considered in this review. The researcher and a second coder extracted data from each study and these were compared. Reliability on the data extraction (calculated by dividing agreements by agreements plus disagreements and multiplying by 100) was between 89% and 100% with a mean of 94%.

The percentage of non-overlapping data (PND) was calculated by the author for all studies even if it was reported by the researchers. PND was calculated by 1) establishing the highest data point in the baseline condition, 2) dividing the number of data points above the highest baseline data point by the total number of data points in intervention and maintenance phases. If researchers provided data for constituent parts of story grammar and overall story grammar then PND analysis was limited to

the overall measure (Miller, 2014). If researchers reported on constituent parts only, then PND was calculated on those constituent parts (see Petersen et al., 2014).

The eight studies were appraised for quality using criteria derived from those described by Preston and Carter (2009) and Reynhout and Carter (2011) and based on the guidelines of Horner et al. (2005). The following aspects were analysed for quality: description of participants and setting, description of dependent variable and independent variable, experimental control, baseline, external validity and social validity (see Table 4). Each element was given a numerical score with a maximum of ten points, except for external validity where the maximum score was five points. The total maximum score for article quality was 65 points, with higher scores indicating higher overall quality. The researcher and a second coder extracted data from each study and scores were compared. Reliability on the quality criteria for each article (calculated by dividing agreements by agreements plus disagreements and multiplying by 100) was between 83% and 100% with a mean of 90%. All quality criteria descriptors achieved were above 75% reliability.

## **Results**

### **Participants**

In total there were 37 participants, 19 males and 18 females with a mean 4.6 participants per study. The participants ranged in age from 4 years 3 months to 10 years 1 month, with a mean age of 6 years and 1 month. Twenty-three of the participants in four of the studies had a diagnosis of language impairment and 14 participants in the remaining four studies were identified as at risk of a communication impairment. Eight of the 14 who were at risk of communication impairment were stated by the authors to be at risk, the remaining six were classified

as being at risk due to comorbid diagnosis (Klecan-Aker & Gill, 2005) or enrolment in the Head Start program (Spencer, Kajian, Petersen, & Bilyk, 2013) (see Table 1).

Communication skills were documented by a battery of standardised language assessments or description of functional skills in four of the studies. Sixteen of the participants in two of the studies, were described by the authors as having a moderate to severe language impairment. Researchers in two studies described the participants as having language impairment or specific language impairment but did not specify the severity of impairment or how diagnoses were made.

Existing oral narrative skills were assessed using a standardised measure of narrative ability in four of the eight studies. The Renfrew Bus Story (Cowley & Glasgow, 1994) a norm referenced and standardised measure of story retell was used by researchers in two studies, nine of the ten participants in those studies scored one or more standard deviations below the mean (Spencer et al., 2013; Spencer & Slocum, 2010). The Test of Narrative Language a standardised assessment, was used by Gillam (2004), and the Test of Narrative Retell (Petersen & Spencer, 2010) by Petersen (Petersen & Spencer, 2010). Four of the six participants produced narratives below age expectations.

Five of the 37 participants were described as having a diagnosis of autism spectrum disorder (ASD), autism or pervasive developmental disorder. Cognitive functioning was only described in four of the studies. When described, 24 of the participants were reported to have intellectual functioning within normal limits (Hayward & Schneider, 2000; Miller, 2014; Petersen et al., 2010; Petersen et al., 2010; Spencer & Slocum, 2010).

### **Dependent Variable**

The narrative focus of the intervention program was fictional story retells in five of the studies, fictional story generation in two and personal narrative in one. In the study where the narrative focus was personal narrative, participants were asked to generate a personal story that was related to a model story.

Story grammar components were coded as a primary dependent variable in all eight studies. Microstructure was coded as a dependent variable in four of the studies. Combined story grammar and microstructure scores were measured as a single dependent variable in two studies. As the focus of this review is narrative story grammar discussion of data resulting from microstructure variables alone are beyond the scope of this review.

A range of schedules was used by researchers when collecting data. Data were collected immediately after each daily intervention session using probes in two of the studies (Petersen et al., 2010; Petersen et al., 2014), immediately before each intervention session using daily probes in two studies (Miller, 2014; Spencer & Slocum, 2010), at unspecified times, using a weekly probe (Hayward & Schneider, 2000), probes on a variable schedule (Spencer et al., 2013), at unspecified times using probes throughout the three study phases (Brown et al., 2014) and every fifth session using probes (Klecan-Aker & Gill, 2005).

### **Independent Variable**

A small range of common teaching approaches were identified across the studies. In all but one of the studies the participants were required to produce a complete narrative as part of the intervention and to identify story grammar elements. Concrete visual supports were used in all the studies. Story grammar icons, visuals to represent story grammar components, were used in all but one of the eight studies and either picture books or individual pictures to support the narratives were used in all

the studies. Frequently used intervention strategies included modelling of complete narratives, guided practice or co-telling the story. Other less frequently used strategies included story comprehension and role-play. The number of different retells trained within the intervention ranged between two and 24. This information could not be extracted for all studies.

### **Length and Duration of Intervention**

Intervention was delivered in a 1:1 setting in five of the eight studies, the remainder were in small groups of two, three or four students. Session length ranged between seven and 60 minutes. Participants received between 3 hr 5 min of total treatment time and 24 hr of intervention, with an overall average total treatment time of 8 hr 45 min.

### **Maintenance and Generalisation**

Researchers collected maintenance data in five of the eight studies for 15 of the 19 participants. The range of time from the end of intervention to maintenance data collection ranged between two weeks and eight months. A mean of 1.9 maintenance data points were collected for each participant. Participants in four of the five studies showed maintenance of skills at or above that of intervention.

Maintenance effects in one study were mixed (Petersen et al., 2014).

Although no researchers reported generalisation across people, places or story type, other generalisation data was presented in two of the eight studies (Petersen et al., 2010; Spencer et al., 2013). Authors in both of those studies defined generalisation as the generation of the same type of narratives in response to a verbal prompt, rather than a picture stimulus, as used during intervention. To investigate generalisation researchers collected one or two data points during baseline, two or three data points during intervention and one during the maintenance phase, not all

participants had generalisation data collected in the maintenance phase. The generalisation data points collected during intervention and maintenance were above the highest baseline data point for generalisation for each participant in both studies.

### **Social Validity**

Social validity was addressed in six of the eight studies. A range of methods was used to collect social validity data. In one study, independent observers who ranked narratives according to quality, identified baseline narratives as of the poorest quality between 67 -100% of the time (Petersen et al., 2010). In two studies (Spencer et al., 2013; Spencer & Slocum, 2010) teachers rated the appropriateness and feasibility of the interventions as above 4 out of a possible 5 points using a Likert-type scale. In one study parents rated perceptions of enjoyment as 3 out of a possible 5 points using a Likert-type scale (Spencer et al., 2013). Researchers solicited informal feedback in two studies and students reported enjoying the sessions (Brown et al., 2014) and parents and teachers perceived an increase in the participant's capacity to retell stories (Klecan-Aker & Gill, 2005).

### **Research Quality**

The eight studies included received quality scores between 26 and 57, with a mean of 49 out of a total of 65 (see Table 4). Six of the eight studies used a multiple baseline across participants design, one used multiple probe across participants, and one used an ABA design. Of the seven studies that had research designs with the potential to show three demonstrations of experimental control at different points in time (Horner et al., 2005), five were judged to do so.

Treatment fidelity was assessed in six of the eight studies. Treatment fidelity was conducted on between 19% and 78% of intervention sessions and was between 97% and 99% with a mean fidelity across the six studies of 98.2%, reflecting a high

level of treatment integrity (Heilemann et al., 2014). Researchers reported inter-observer reliability in all eight studies. In seven studies, authors reported that reliability was conducted on 20 – 30% of data. In one study the researchers did not report the percentage of data on which reliability was conducted. In four studies the rater was blind to conditions and participant, in three instances the rater was independent. Mean reliability across all studies was between 80% and 100%.

### **Magnitude of Intervention Effect**

Visual analysis of the data indicates that oral narrative intervention may be effective in developing the oral narratives of children who are at risk of or who have communication impairment. Researchers were able to show a clear effect of intervention in five of the seven studies that had a design robust enough to be able to show experimental effect. Researchers in four of the eight studies calculated PND. PND ranged between 72% and 100% (see Table 2).

### **Discussion**

The purpose of this review was to examine the study quality and efficacy of single case research that investigated the effect of oral narrative intervention on the oral narratives of children who were at risk of, or who had communication impairment and to establish common features of intervention. The overall mean score for study quality was 49 out of 65, and although one study was of low quality, the remainder of the studies included in this review were of high quality. By comparison, when similar criteria were applied to the quality of studies in a review of the efficacy of social stories the mean quality score was 46.1 (Reynhout & Carter, 2011) and when used in a review of the efficacy of the Picture Exchange Communication system the mean score of study quality was 45.1 (Preston & Carter, 2009). Given the general quality of the studies, the results can be interpreted with a degree of confidence.



Overall, participants in the included studies presented as being either at risk of language problems or had relatively mild communication difficulties, with intelligence being within normal limits. Participants with a diagnosis of autism spectrum disorder (ASD) were included in only one study. Given the success of narrative intervention to date with children who were at risk or had relatively mild levels of impairment, an obvious avenue for further research is to explore interventions for children with greater degrees of language disability and more global developmental impairments.

Despite the reasonable overall quality of the studies included for review, participant description was an area of relative weakness, with a mean score of 5.7 (range 2.9 to 8.6) out of ten on the quality instrument. Only half the studies reported diagnoses by documenting the instruments used for primary diagnosis or to profile communication skills. Descriptions that include specific disability diagnoses and instruments used to determine disability enable other researchers to recruit similar participants (Horner et al., 2005). Single case research is sometimes criticised for limited external validity, making it important to provide comprehensive participant descriptions (Sng, Carter, & Stephenson, 2014). This is clearly an area that requires further attention in future studies.

It was interesting that researchers included description of narrative skills in half of the studies using either the Renfrew Bus Story (Cowley & Glasgow, 1994), the Test of Narrative Language (Gillam & Pearson, 2004) or the Test of Narrative Retell (Petersen & Spencer, 2010). The American edition of The Renfrew Bus Story has been found to overidentify children with normal language development as having language impairment (Pankratz, Plante, Vance, & Insalaco, 2007), whereas researchers examining the sensitivity and specificity of the Test of Narrative

Language have supported its use for identification of language impairment (Spaulding, Plante, & Farinella, 2006). Thus, the Test of Narrative Retell may be a better assessment to assist in the identification of communication impairment.

Elements of story grammar were the primary dependent variables in all of the studies included in this review. Story grammar elements provide a framework for children to learn and practice oral language (Hayward, Gillam, & Lien, 2007). The story grammar elements measured in the studies included setting, character, initiating event, internal responses or feelings, plan, action, complication, consequence and ending. Story grammar is a measure of the quantity of information (Hayward & Schneider, 2000) and is therefore flexible. Not all studies included in this review measured all of the possible story grammar elements. Hayward and Schneider (2000) also measured episode level as a separate dependent variable. Episode level is a measure of the quality of a narrative. Hayward and Schneider scored narratives as descriptive, action, reactive, abbreviated or complete sequences. Petersen (2010) scored episode level as part of a combined outcome measure. Exact timing of data collection was not always specified. Two researchers, however, collected data immediately after the intervention session (Petersen et al., 2010; Petersen et al., 2014). This is potentially problematic since performance immediately after teaching may not reflect performance at other times and, ideally, data should be collected before intervention (Alberto & Troutman, 2009).

Seven of the eight studies measured story grammar of fictional narrative, either retells or fictional story generation as their primary dependent variable. Spencer et al. (Spencer et al., 2013) measured personal narrative as a secondary dependent variable but did not produce continuous data. Spencer and Slocum (Spencer & Slocum, 2010) also investigated personal narrative as a secondary dependent variable

and found that personal narrative skills improved for three of the five participants in their study. That the primary focus of seven of the eight studies is fictional narrative could reflect the fact that most of the clinical literature on narrative focuses on fictional narrative (Johnston, 2008). While authors of the reviewed studies presented strong arguments for narrative as an intervention choice, none rationalised their particular narrative focus. Despite the paucity of research surrounding teaching of personal narratives, they typically emerge before fictional narrative (Pesco & Gagne, 2015) and they are more common in children's talk than fictional narrative, accounting for up to 70% of the narrative talk of children (Preece, 1987). Personal narrative has been identified as a potential intervention target, particularly for young children, as individuals who have skills with personal narratives may be able to use those skills to generate positive peer interactions (Johnston, 2008). Spencer (2009) posited that researchers have focused on interventions to teach fictional narratives, rather than personal narrative because fictional narratives are easier to elicit. When working with fictional narrative the researcher is able to develop the narratives and the supporting materials. With the stimulus materials at hand the researcher is also able to verify accuracy. Given the comparative ease of eliciting and assessing fictional retells it is perhaps not surprising that only one study had a primary focus of personal narrative. Further, it is worthy of note that accuracy of the personal narratives was not assessed in that study. Research on personal narratives clearly stands as a priority. In particular strategies for eliciting and evaluating accuracy of personal narratives need to be developed.

Effective teaching strategies included modelling narratives and providing participants with the opportunity to practise narratives by telling an entire narrative as part of the intervention procedure. The single intervention that did not require the

participants to tell a complete narrative was not effective (Klecan-Aker & Gill, 2005). While data are limited, it would seem that practising complete narratives, as part of intervention procedures, in particular the opportunity to practise the entire narrative, may be important to the development of the skill.

Icon cards to represent story grammar elements and pictures were a common element in effective interventions. Petersen (2011) also found the use of icons and pictures to be a common element in studies that showed an experimental effect. The use of visual prompts to support individuals with delays may help overcome weaknesses in short-term memory and therefore reduce cognitive demands on the speaker (Finestack, 2012). Other common features of interventions that may be effective include, participants identifying story grammar elements, and systematic prompt fading.

Successful interventions included those with a small number of short sessions as well as those with a large number of longer sessions with total treatment time ranging from 3 hours and 4 minutes to 24 hours. Total treatment time did not appear to be related to outcomes in the studies included in this review although the diversity of participants should be considered in this regard. It should also be noted that examination of treatment intensity was not a dependent variable in any of studies included in this review. Conclusions regarding service delivery can therefore not be offered.

Researchers of five of the studies reported single subject research maintenance data, for at least some of their participants. Maintenance is considered an important aspect of functionality as it indicates that the skills taught in intervention are being reinforced once the intervention ceases (Carter, 2010). The researchers who reported maintenance data showed maintenance effects either above that of baseline level or at

intervention level. Maintenance effects were recorded for one participant above that of intervention. Future research should include measurement of maintenance after the intervention.

Narratives need to be used in daily discourse and researchers and clinicians need to ensure that skills are transferred from the clinic to natural contexts (Bliss & McCabe, 2012). The generalisation data collected in the included studies were limited. Authors of two studies (Petersen et al., 2010; Spencer et al., 2013) described generalisation from narratives produced in response to a picture prompt to narratives produced in response to a verbal prompt. The extent to which this degree of generalisation is functional is questionable. For behaviour change to be meaningful, generalisation should be demonstrated across a wide variety of possible environments, persons and behaviours (Baer, Wolf, & Risley, 1968). When evaluating generalisation, it is important that the degree of generalisation is practically meaningful and this should be a consideration in future studies.

Social validity measures the degree that the intervention impacts favourably on the participants and is an important aspect of single case design research (Carr, Austin, Britton, Kellum, & Bailey, 1999). Three of the six researchers that reported on social validity used a questionnaire or rating scale (Miller, 2014; Spencer et al., 2013; Spencer & Slocum, 2010). Although questionnaires or rating scales are the most frequently used method for measuring social validity they are problematic as they are informal, are developed for evaluating a specific program and do not provide any validation of the instrument (Carter, 2010). Petersen (2010) used a measure of performance criteria in asking independent observers to rate samples of narratives from highest to lowest. Performance criteria measures of social validity provide a

structured method for determining the social importance of treatment effects (Carter, 2010) and should be considered as an option in future studies.

### **Conclusion**

Interventions to investigate the efficacy of oral narrative interventions in children who are at risk of, or who have, communication impairments is a growing area and oral narrative intervention that includes modelling narratives, requiring participants to tell an entire narrative and the use of icon cards is likely to be effective in the specified populations. The quality of the research, although currently reasonable, could be enhanced by the inclusion of better participant descriptions, more robust generalisation data and use of measurement or probes before intervention. Research could be developed by investigating of the effects of narrative intervention with children who present with more significant disabilities, and with a wider range of narrative types, particularly personal narratives.

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Table 1

*Summary of Research Design, Participants, Dependent Variables and Scope of Narrative*

| Study                         | Research design   | Participants |            |  | Dependent variables                       | Scope of narrative                                 |
|-------------------------------|---|--------------|------------|--|---|--|
|                               |   | Number       | Age        | Participant details  |   |  |
| Hayward and Schneider (2000)  | Multiple baseline across participants                       | 13           | 4:8 - 6:4  | 13 language impairment, IQ normal limits   | Episode level, story information units    | Fictional story retell                             |
| Petersen et. al. (2010)       | Multiple baseline across participants and language features | 3            | 6:3 - 8:1  | 3 moderate - severe language impairment, IQ 2 normal limits, 1 "slightly below"                      | Story grammar, microstructure             | Fictional story retell, fictional story generation |
| Spencer and Kajian (2013)     | Multiple baseline across participants                       | 5            | 4:8 - 4:11 | 5 at risk of language impairment, unspecified developmental delay or severe delay, no IQ description | Combined story grammar and microstructure | Fictional story retell                             |
| Klecan - Aker and Gill (2005) | ABA time series design                                      | 1            | 7:08       | 1 PDD, at risk of language impairment, no IQ description   | Story grammar, microstructure             | Fictional story generation                         |

|                                     |   |   |            |   |                               |                        |
|-------------------------------------|---|---|------------|---|-------------------------------|------------------------|
| Miller (2014)                       | Multiple probe baseline across participants | 4 | 9:4 - 10:1 | 4 Specific Language Impairment                                  | Story grammar, microstructure | Fictional story retell |
| Spencer and Slocum (2010)           | Multiple baseline across participants       | 5 | 4:3 - 5:1  | 5 at risk based on enrolment in Head Start program              | Story grammar, microstructure | Fictional story retell |
| Petersen et al. (2014)              | Multiple baseline across participants       | 3 | 6:4 - 8:5  | 3 ASD and language impairment, no IQ description                | Story grammar, microstructure | Personal narrative     |
| Brown, Garzarek, and Donegan (2014) | Multiple baseline across participants       | 3 | 4:4 - 4:11 | 3 highest risk of language disorder based on language variation | Story grammar                 | Fictional story retell |

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Table 2

*Summary of Treatment, Treatment Fidelity, Experimental Effect, PND, Maintenance and Generalisation*

| Study                       | Treatment                  |             | Treatment Fidelity                  | Experimental Effect | PND  | Maintenance & Generalisation   |
|-----------------------------|----------------------------|-------------|-------------------------------------|---------------------|--|--|
|                             | Session length & frequency | Total time  |                                     |                     |  |  |
| Hayward & Schneider (2000)  | 20 min, 2 x week           | 3 hr 20 min | No                                  | No                  | Story Information units mean 76 %, episode levels PND mean 68% |  |
| Petersen et al. (2010)      | 60 min, 4 x week           | 10 hr       | 20% of sessions, 99% fidelity       | No                  | Overall 72%  | Maintenance on two, generalisation using verbal stimulus, above baseline                     |
| Spencer & Kajian (2013)     | 10 - 15 min, 2 x week      | 5 hr        | 19% of sessions mean 98.5% fidelity | Yes                 | Overall 95%  | Maintenance all showed after 2 - 3 weeks, generalisation via verbal stimulus, above baseline |
| Klecan - Aker & Gill (2005) | 60 min, 2 x week           | 24 hr       | No                                  | No                  | 100%   |  |
| Miller (2014)               | 30 min, 3 x week           | 9 hr 40 min | 20% of sessions, 97% fidelity       | Yes                 | Overall 86%  |  |

|                                   |                            |             |                                    |     |             |   |
|-----------------------------------|----------------------------|-------------|------------------------------------|-----|-------------|---|
| Spencer & Slocum (2010)           | 12 min (mean), daily       | 3 hr 4 min  | 38% of sessions, mean 98% fidelity | Yes | Overall 80% | Maintenance at 2 weeks post performed above baseline                      |
| Petersen et al. (2014)            | 36 min, 2 or 3 X week      | 7 hr 20 min | 78% of sessions, 98% fidelity      | Yes | 68%         | Maintenance at 2 and 7 weeks, mixed, 2 of 7 elements measured maintained  |
| Brown, Garzarek, & Donegan (2014) | 15 - 20 min, 2 or 3 x week | 4 hr 40 min | 33% of sessions, mean 99% fidelity | Yes | Overall 70% | Maintenance 2 weeks post intervention, performed at or above intervention |

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Table 3

*Summary of Independent variable - Materials and Strategies*

| Study                             | Independent Variable - Materials |               |          |         |                 | Independent Variable - Strategies |                  |                                 |                 |                         |                          |
|-----------------------------------|----------------------------------|---------------|----------|---------|-----------------|-----------------------------------|------------------|---------------------------------|-----------------|-------------------------|--------------------------|
|                                   | Story grammar icons              | Picture books | Pictures | Other   | Model narrative | Prompt fading                     | Close activities | Identify story grammar elements | Guided practice | Produce whole narrative | Other                    |
| Hayward & Schneider (2000)        | ✓                                | ✓             |          |         | ✓               |                                   |                  | ✓                               |                 |                         | Comprehension, role play |
| Petersen et al. (2010)            | ✓                                | ✓             | ✓        |         | ✓               | ✓                                 | ✓                | ✓                               | ✓               | ✓                       |                          |
| Spencer & Kajian (2013)           | ✓                                |               | ✓        |         | ✓               | ✓                                 |                  | ✓                               | ✓               | ✓                       |                          |
| Klecan - Aker & Gill (2005)       |                                  |               | ✓        |         |                 |                                   |                  | ✓                               |                 | ✓                       |                          |
| Miller (2014)                     | ✓                                | ✓             |          |         | ✓               | ✓                                 |                  | ✓                               | ✓               | ✓                       |                          |
| Spencer & Slocum (2010)           | ✓                                |               | ✓        |         | ✓               | ✓                                 | ✓                | ✓                               | ✓               | ✓                       | Games                    |
| Petersen et al. (2014)            | ✓                                |               | ✓        |         | ✓               | ✓                                 | ✓                |                                 | ✓               | ✓                       |                          |
| Brown, Garzarek, & Donegan (2014) | ✓                                |               | ✓        | Stories | ✓               | ✓                                 |                  | ✓                               |                 | ✓                       | Self monitoring          |

Table 4:

*Quality Appraisal*

|   | Hayward & Schneider (2000) | Spencer et al. (2014) | Petersen et al. (2010) | Klecan - Aker & Gill (2005) | Miller (2014) | Spencer & Slocum (2010) | Petersen et al. (2014) | Brown, et al. (2014) |
|---|----------------------------|-----------------------|------------------------|-----------------------------|---------------|-------------------------|------------------------|----------------------|
| Participants and setting  |                            |                       |                        |                             |               |                         |                        |                      |
| Statement of diagnosis such as autism, ASD, Asperger's syndrome, intellectual disability (with or without indicating diagnostic source), age and gender.  | ✓                          | ✓                     | ✓                      | ✓                           | ✓             | ✓                       | ✓                      | ✓                    |
| Diagnostic instrument specified (e.g., WISC, AAMR diagnostic criteria, DSM-IV criteria, and ADOS) (for primary diagnosis).  | ✓                          | ✗                     | ✗                      | ✗                           | ✗             | ✗                       | ✓                      | ✓                    |
| If ASD, degree to autism specified either with reference to symptoms (DSM-IV) or instrument like CARS. If not ASD, award point.   | ✗                          | ✓                     | ✓                      | ✗                           | ✓             | ✓                       | ✗                      | ✓                    |
| Standardised assessment data (e.g., IQ, developmental scale, and adaptive behaviour) OR detailed functional description of general ability. Disability range (e.g., moderate) acceptable for intellectual disability. | ✓                          | ✗                     | ✓                      | ✗                           | ✗             | ✗                       | ✗                      | ✗                    |
| Communication skills documented by means of standardised test results OR description of functional skills.  | ✓                          | ✓                     | ✓                      | ✗                           | ✗             | ✗                       | ✓                      | ✗                    |

|  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
| The process for selecting participants is described with replicable precision. MUST describe the process to select participants, not just describe the participant. This would generally include the criteria the participants must meet (e.g., 3–5 years, spoken words, diagnosis of autistic disorder) and or the process of selecting participants (e.g., the first 5 children on the waiting list). Essentially, authors must explicitly state HOW/WHY participants were selected. | ✓ | ✓ | ✗ | ✗ | ✗ | ✓ | ✓ | ✗ |
| Critical features of the physical setting are described with sufficient precision to allow replication.  | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Dependent variables  |   |   |   |   |   |   |   |   |
| Described with operational precision.  | ✓ | ✓ | ✓ |   | ✓ | ✓ | ✓ | ✓ |
| Measured with a procedure that generates a quantifiable index.   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Measurement process described with replicable precision.   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Measured repeatedly over time.   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Data are collected on the reliability or inter-observer agreement (IOA) associated with each dependent variable, and IOA levels meet minimal standards (e.g., IOA = 80%; Kappa = 60%). Must be on minimum of 20% of sessions to be acceptable.   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Independent variables  |   |   |   |   |   |   |   |   |
| Described with replicable precision.   | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Systematically manipulated and under control of the experimenter.  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Procedural reliability - MUST be measured on a minimum of 20% of sessions to be acceptable.  | ✗ | ✗ | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |

## Baseline

A baseline phase provides repeated measurement of a dependent variable and establishes a pattern of responding that can be used to predict the pattern of future performance, if introduction or manipulation of the independent variable did not occur. Should include a minimum of 5 stable data points. High variability is acceptable if intervention effects are unambiguous. Baseline optional for alternating treatments design. 2/3 of baselines must be acceptable.

x x ✓ x ✓ x ✓ ✓

Baseline conditions described operationally.

✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

## Experimental control/internal validity

The design controls for common threats to internal validity (e.g., permits elimination of rival hypotheses). Acceptable designs include concurrent multiple baseline, non-concurrent multiple baseline with a priori specification of both baseline durations and random assignment of participants to baseline durations, ABAB and alternating treatments with counterbalancing. Award half point: multiple baseline with probe. Award no points: AB, ABA, ABAC, non-concurrent multiple baseline without specified a priori random assignment and changing criterion.

✓ ✓ ✓ x ½ ✓ ✓ ✓



|  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
| Design must score above for point to be awarded. The design provides at least three demonstrations of experimental effect at different points in time. Experimental effects must be unequivocal in relation to baseline data and trends. Effects of alternating treatments may be added, as main comparison is not with baseline. When there are more than 3 possible demonstrations of experimental control, 75% or more must actually demonstrate control unequivocally. | x | ✓ | x | x | ✓ | ✓ | ✓ | ✓ |
| External validity  |   |   |   |   |   |   |   |   |
| Experimental effects are replicated across participants, settings, or materials to establish external validity. At least three participants, settings or materials must be apparent.   | ✓ | ✓ | ✓ |   | ✓ | ✓ | ✓ | ✓ |
| Social validity  |   |   |   |   |   |   |   |   |
| Dependent variable is socially important   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Independent variable is practical and cost effective. Code if acceptability, practicality or cost effectiveness is formally and directly measured (e.g., via a questionnaire such as the Intervention Rating Profile –15, estimation of treatment costs.   | x | ✓ | x | x | ✓ | ✓ | x | x |

|   |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|
| Social validity is enhanced by implementation of the independent variable over extended time periods, by typical intervention agents, in typical physical and social contexts. Extended time period would be several months. Extended follow-up is acceptable. Only need one characteristic | x    | ✓    | ✓    | ✓    | ✓    | ✓    | x    | ✓    |
| Impact of intervention is formally assessed (e.g., questionnaire to caregivers addressing perceived improvement in communication or quality of life)  | x    | ✓    | ✓    | x    | ✓    | ✓    | x    | x    |
| Total points awarded  | 42.7 | 52.4 | 54.6 | 26.2 | 56.8 | 53.7 | 53.2 | 55.7 |

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CHAPTER THREE: The effects of oral narrative intervention on the personal narratives of children with ASD and limited intellectual ability: An intervention

Chapter Overview

Chapter three is a single case design research paper that explores the effects of an oral narrative intervention on the personal narratives of three children with autism spectrum disorder (ASD) and limited intellectual ability. This paper provides a brief introduction to the importance of narrative and the problems that with children with ASD and limited intellectual ability may have. The story grammar (*where, who with, what, and feelings*) of a personal narrative was the dependent variable. Participants received training with two or three narratives each session and they received four intervention sessions each week. The intervention sessions were constructed so that the participants produced each element of the dependent variable of the narrative separately and then produced the whole narrative independently. The intervention study was effective with all three participants and maintenance effects and generalisation across settings were shown for two participants. Generalisation across people and intervention to teach high point personal narratives were suggested as areas for future research.

**The Effects of Oral Narrative Intervention on the Personal Narratives of  
Children with ASD and Limited Intellectual Ability**

Kate Favot

Macquarie University Special Education Centre

Faculty of Human Sciences

Macquarie University

### **Abstract**

A multiple baseline across participants design was used to investigate the effect of an oral narrative intervention on the story grammar of personal narratives in children with a diagnosis of autism spectrum disorder (ASD) and limited intellectual ability. Three five and six-year-old participants took part in the 1:1 intervention that targeted the *where*, *who with*, *what* and *feelings* of personal narrative. Intervention involved the use of story grammar icons, pictures to represent individual narratives, modelling and participants telling the entire narrative. Participants received training with two or three narratives each intervention sessions. The intervention was effective for all three participants. Two participants showed maintenance and generalisation across settings. Areas for future research include investigation of generalisation across people, and more sophisticated personal narratives

*Keywords:* oral narrative, personal narrative, narrative intervention, personal narrative intervention, children, communication impairment, autism spectrum disorder, intellectual disability

### CHAPTER THREE: INTERVENTION STUDY

Narratives are causally related descriptions of events presented in temporal order (Hughes, McGillivray, & Schmidek, 1997). They can be based on real or fictional events and be original or retold. They have a broad importance to social (Boudreau & Chapman, 2000; Crank, Schumaker, & Deahler, 1990; Johnston, 2008; Lever & Senechal, 2011), academic (Feagans & Appelbaum, 1986; Hughes et al., 1997; Westby, 1991) and language development (Bishop & Edmundson, 1987).

From childhood, narratives represent a large part of functional discourse. Narratives are key to the development of friendship and relationships (Black, Reddington, Reiter, Tintarev, & Waller, 2010; Fivush, 1991; Pennebaker & Seagal, 1999; Preece, 1987). They serve as a bridge between oral language and literacy and subsequently reading (Kaderavek & Sulzby, 2000), writing (Kaderavek, 2015), discussion and comprehension (Nathanson, Crank, Saywitz, & Ruegg, 2007).

Most children develop skills in this socially and academically important genre through incidental exposure (Pakulski & Kaderavek, 2012). This is not the case for all children however and researchers have documented deficits in the narratives of children with Down syndrome (Boudreau & Chapman, 2000), fragile X syndrome, both with and without autism spectrum disorder (Estigarribia et al., 2011), learning disability (Garnett, 1986), specific language impairment (Kaderavek & Sulzby, 2000), Williams syndrome (Marini, Martelli, Gagliardi, Fabbro, & Borgatti, 2010), hearing loss (Pakulski & Kaderavek, 2012) autism (Banney, Harper-Hill, & Arnott, 2015; Goldman, 2008; King, Dockrell, & Stuart, 2013; King, Dockrell, & Stuart, 2014; Losh & Gordon, 2014; Loveland, McEvoy, Tunali, & Kelley, 1990) and intellectual disability (Boudreau & Chapman, 2000; Finestack & Abbeduto, 2010)

Autism spectrum disorder (ASD) is a developmental disorder characterised by impairments in the core areas of social communication and social interaction as well as by restrictive or repetitive patterns of behaviour (American Psychiatric Association, 2013). Language and communication difficulties, including problems with narratives, present in essentially all individuals with ASD (Eigsti, de Marchena, Schuh, & Kelley, 2011). Narratives of children with ASD have generally been found to be shorter than those produced by typically developing children, be less descriptive and less grammatically complex (King et al., 2013; Tager-Flusberg, 1995). Children with ASD may produce narratives with impaired story structure (Banney et al., 2015), fewer cognitive mental state verbs, fewer causal explanations (Banney et al., 2015; Baron-Cohen, Leslie, & Frith, 1986) and more irrelevant information (Tager-Flusberg, 1995).

ASD and intellectual disability frequently co-occur. In a survey of ASD prevalence, Baird et al. (2006) reported that 55% of individuals with a diagnosis of ASD also had an IQ of 70 or below. As the severity of intellectual disability increases, the symptoms of ASD, particularly language impairments, also increase (Matson & Nebel-Schwalm, 2007). Despite the rate of co-occurrence of ASD and intellectual disability, much of the existing research with people with ASD has been with people without intellectual disability (Hurley & Levitas, 2007).

As with children with ASD, the narratives of children with intellectual disability typically do not meet chronological expectations for narrative language (Boudreau & Chapman, 2000; Finestack, 2012). Researchers have concluded that children with intellectual disability may produce narratives with impaired story structure (Tager-Flusberg, 1995) and coherence and they provide less information

than typically developing peers (Marini et al., 2010). Microstructural narrative elements are also a weakness (Finestack, 2012).

Investigations into the efficacy of oral narrative intervention with children who are at risk of, or who have communication impairments is a developing area. Authors of two systematic reviews, (Favot, Carter, & Stephenson, 2015; Petersen, 2011) concluded that explicit narrative intervention may be effective in developing oral narrative skills with children who have communication impairments. Interventions typically shared a small range of common features including use of story grammar icon cards to represent the story grammar of narrative and/or pictures to support individual stories, clinician modelling of narrative and the participant producing the entire narrative (Brown, Garzarek, & Donegan, 2014; Hayward & Schneider, 2000; Miller, 2014; Petersen et al., 2014; Petersen, Gillam, Spencer, & Gillam, 2010; Spencer, Kajian, Petersen, & Bilyk, 2013; Spencer & Slocum, 2010). Nevertheless, intervention studies to date have been conducted with children who present with relatively mild disabilities. Only one single case design study has been carried out with children who have a primary diagnosis of ASD (Petersen et al., 2014) and these children had normal intellectual ability. In fact, all children in all studies, except for one participant in one study (Petersen et al., 2010), considered in the two systematic reviews (Favot, Carter, & Stephenson, 2015; Petersen, 2011) presented with cognitive functioning within normal limits.

When people share personal narratives they are reporting events personally or vicariously experienced (Preece, 1987). The ability to talk about personal events is important in everyday conversation (Preece, 1987) and children are much more likely to share a story based in personal experience than relate a fictional story (Johnston, 2008; McCabe, Bliss, Barra, & Bennett, 2008). Up to 70% of children's narratives



between the ages of 5 and 7 have been found to be personal narratives (Preece, 1987). Despite the prevalence of personal narrative in children's talk the development of an intervention to develop personal narrative has been investigated in only one single case design study (Petersen et al., 2014) with children who have a diagnosis of ASD.

Thus, oral narratives are considered important to social and academic development and there is evidence that children with both ASD and intellectual disability are at increased risk of having deficits related to the production of oral narratives. Nevertheless, to date researchers have not conducted studies that investigate attempts to teach personal narrative skills to children with both ASD and limited intellectual ability. The present pilot study represents an attempt to address this gap in the research. Given that existing research has focused on children with relatively mild language deficits, the primary function of this pilot study was to explore the extent to which techniques identified as effective for children with less severe difficulties are applicable to children with ASD and limited intellectual ability. The specific research questions were:

1. Does individualized narrative intervention have an effect on the story grammar of personal narratives produced by school-aged children with a diagnosis of ASD and limited intellectual ability?
2. Do improvements in the story grammar of the personal narratives produced by school-aged children with comorbid ASD and limited intellectual ability maintain after intervention has been withdrawn?
3. Do improvements in the story grammar of the personal narratives produced by school-aged children with comorbid ASD and limited intellectual ability generalise to other settings and to other people?

## **Method**

## Participants

Three children with ASD and limited intellectual ability participated in the study. All participants attended the university - based special education demonstration program where the intervention was to take place. Research conducted in the program was approved by the university research ethics committee. Participants attended the program Monday to Friday and were provided with a comprehensive educational program. Children were eligible for the study if they (a) had a diagnosis of ASD according to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013; Losh & Gordon, 2014) or autistic disorder according to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) from a paediatrician or psychologist, (b) received a score of 70 or below on the verbal component of a full scale standardized IQ test or received a Peabody Picture Vocabulary Test 4<sup>th</sup> Ed. (PPVT – 4)(Dunn & Dunn, 2007) at or below the second percentile, (c) had a receptive and expressive language impairment, according to results from standardized language assessments, (d) had English as their primary language (e) had speech intelligible to non familiar listeners as judged by the researcher, (f) were able to sit and participate in instruction at a table for 10 to 15 minutes as reported by classroom teachers, (g) spoke using a minimum of two word utterances as reported by classroom teachers and (h) they did not include all of the following elements in their personal narratives, *where* information, *who with* information, *what* information, and *feelings* about the event. Prior to the research, for screening purposes, a personal narrative was collected from each participant by asking each child to “Tell me about your weekend.” The personal narrative was collected in a quiet room with the participant sitting next to the researcher.

The researcher established mean length of utterance (MLU) for each participant. MLU was calculated by collecting a language sample based on 10 picture descriptions. Each utterance was transcribed onto its own line and the number of morphemes per utterance was counted and then added together. The total number of morphemes was divided by the total number of utterances (Owens, Jr., 2013). MLU was gathered to add to the picture of the broad capabilities of each participant.

Nine children attending the school met the above criteria for inclusion. Timetabling restraints excluded five of those, and four children, two girls and two boys, were selected to participate in the study. One girl demonstrated mastery of the skills being targeted during early baseline probes and it was clear that she possessed the skills to be targeted. Three participants continued in the intervention.

Stephano was 5:1 at the outset of intervention. He received a diagnosis of ASD from a paediatrician, according to the DSM 5 (American Psychiatric Association, 2013). His adaptive behaviour scored in the mild range of disability using the Vineland – II (Sparrow, Balla, & Cicchetti, 2005), and his verbal IQ was rated in the mild range of disability using the Wechsler Preschool and Primary Scale of Intelligence (4th ed.) (Wechsler, 2012), although an overall IQ score was not reported due to a significant scatter of scores. Stephano's language skills were assessed using the Clinical Evaluation of Language Fundamentals – Preschool 2 (CELF – P2) (Wiig, Secord, & Semel, 2006). His expressive, receptive and core language skills scored in the severe range of disability. His MLU was 5.9 on the picture description task. He scored at the 12<sup>th</sup> percentile on the PPVT ( 4<sup>th</sup> ed.). He provided no response in initial screening when asked by the researcher to “tell me about your weekend”. Classroom teachers completed the Childhood Autism Rating Scale 2 (CARS 2) (Schopler, Van Bourgondien, & Love, 2010) and he was rated as

being in the mild to moderate range of ASD. Classroom teachers reported that at the beginning of the school year Stephano was not able to read any sight words, was able to provide the sound for two of the 26 letters, was able to read the numeral 1 and could rote count to 13.

Monica was 5:4 at the outset of intervention. A review conducted by a paediatrician and a clinical psychologist, prior to the study, confirmed a diagnosis of autistic disorder, according to the DSM – IV (American Psychiatric Association, 2000). Her adaptive behaviour was also assessed prior to the study using the Adaptive Behavior Assessment System (Harrison & Oakland, 2003) and she scored in the extremely low range. Her verbal IQ was reported as 70 using the Wechsler Preschool and Primary Scale of Intelligence, Australian edition (3rd ed.) (WPPSI – III) (Carstairs, 2004). Monica's language skills were assessed by the researcher using the CELF – P2. Her expressive language standard score was 55, receptive language standard score was 56 and core language skills standard score was 59. Overall she scored in the very low to severe delay range. Her MLU was 5.7 on the picture description task. She scored at the 4<sup>th</sup> percentile on the PPVT (4<sup>th</sup> ed.). She provided no response when asked by the researcher to “tell me about your weekend” in initial screening. Classroom teachers completed the CARS 2 and she was rated as being in the mild to moderate range of ASD. Classroom teachers reported that at the beginning of the school year Monica was able to read 13 beginning sight words, was able to provide the correct sound for 19 of the 26 letters, was able to write seven lower case letters, was able to count to 100, and was able to say how many items were in a group.

Franco was 6:7 at the outset of intervention. His diagnosis of ASD was confirmed as being in the autism range, by a clinical psychologist, prior to the study, using the Autism Diagnostic Observation Schedule (2nd ed.) (Rutter, DiLavore, Risi,

Gotham, & Bishop, 2012). His adaptive behaviour was also assessed prior to the study using the Adaptive Behavior Assessment System - II (Harrison & Oakland, 2003) and he scored in the borderline range. The results of a standardised IQ test were not available for Franco. He scored at the 1<sup>st</sup> percentile, with a standard score of 62, on the PPVT-4. Although the results of the PPVT are not interchangeable with results from standardized IQ tests, a correlation of .88 has been found between the verbal component of the Wechsler Intelligence Scale III and the Peabody Picture Vocabulary Test (3<sup>rd</sup> ed.). (Hodapp & Gerken, 1999). He provided no response when asked by the researcher to “tell me about your weekend” in initial screening.

Franco’s language skills were assessed prior to the study using the CELF – P2. His expressive, receptive and core language skills scored in severe delay range. His MLU was 5.5 on the picture description task. Classroom teachers completed the CARS 2 and he was rated at being in the severe range of ASD. Classroom teachers reported that at the beginning of the school year Franco was able to read 32 sight words, was able to provide the correct sound for eight single letters, was able to count to 55 and was able to orally solve simple addition problems.

### **Experimental Design**

A multiple baseline with probes design across participants was implemented to investigate the effects of an explicit personal narrative intervention on the story grammar of school-aged children’s narratives. Maintenance and generalisation across settings and people probes were collected for two participants.

### **Materials**

The researcher used a small whiteboard (40 x 30 cm) and icon cards (5 cm x 5 cm) in each session. Participants’ families were initially asked to prepare two different personal narratives each week that related to events during the previous

weekend and email them to the researcher on Monday of each week. A template was sent home to the families to assist in the weekly preparation. The information about the requirements was provided to parents through a phone call and a letter explaining the required structure and giving supporting examples. On Monday mornings, one of the narratives was randomly selected as the weekly probe stimulus and the other narrative was used for the intervention during that week. Both the probe and the intervention narratives contained information that would be appropriate to inform a response to the cue “Tell me about your weekend.” Families were asked to include in the two prepared narratives information about *where* the event happened (it could be that they stayed at home), *who* was present, *what* they did (this may be more than one piece of information) and finally the student’s *feelings* about the event(s). The families were also asked to provide a photograph, with the participant in the foreground that clearly represented the location, activity and others present. They were asked not to discuss the narratives or materials with the participants. If parents did not provide the materials ready for use each Monday morning, they were contacted and reminded to send their narratives. When the information was received, the photos were printed in colour. All photos were approximately 15cms X 10cms.

Picture Communication Symbols (Boardmaker ® (Version 6) [Computer software], 2008) representing *where*, *who with*, *what*, and *feelings* were used as story grammar icons (visual supports) to teach each of the story grammar components of personal narrative . The symbols were printed in colour onto cards approximately 5cm by 5cm, and were laminated.

### ***Dependent variables***

The dependent variable was the story grammar of personal narrative. Story grammar comprises the inclusion of content and organization (Finestack, 2012).

Information regarding, where, who with, what happened and a personal response have been identified as four key components of a personal narrative (Nathanson et al., 2007; Rixon & Jaeger, 2011). Definitions of each element of the personal narrative and examples are provided in Table 1. Utterances of any length, including single words were acceptable. The components were not required to be linked grammatically, or to be provided in a specific order.

Each personal narrative was scored out of a possible eight points. Each of the four components was scored according to whether the element was present (one point) and whether it was accurate (one point). Accuracy was determined by whether the narrative accorded with the information provided by parents beforehand or, if the information was not included in that provided by the parents, it could be verified with the parents after the session,

### **Procedures**

In both the baseline and probe, the participant interacted with the researcher at a table in a small room adjacent to their regular classroom. The researcher sat next to the participant.

### **Baseline**

Baseline sessions comprised two probes (without and then with the story grammar icons as described below). Daily baseline sessions were commenced with the first participant while weekly baseline probe sessions were conducted with the other two participants. When the first participant displayed a stable baseline across at least five data points in both baseline probe conditions, he entered intervention. Once an intervention effect was demonstrated, daily baseline was to commence with the next participant. Due to a procedural error, five daily baseline data points were not collected for the second participant. As parents sent in two narratives weekly, one of

the prepared personal narratives was chosen at random as the stimulus in baseline sessions.

All of the baseline sessions were video recorded on an iPhone 4 placed in a raised position on the desk, to allow for collection of interrater and procedural reliability. All participant responses were transcribed in situ if possible or from the video recording.

Two probes were conducted in each session. The first probe condition was conducted using only the stimulus photo. The photo was placed on a small magnetic whiteboard measuring 40cms by 30cms and secured with a magnet. The magnetic whiteboard was inclined to an angle of 45 degrees. The researcher obtained the participant's attention by placing the photo on the whiteboard, pointing to it and saying "Look at the photo". The researcher then said "Tell me about your weekend". When the participant stopped talking for three seconds, the session was terminated and the researcher said "Thank you." The researcher made no other comments on the narrative.

In the second probe condition, carried out immediately after the first, both the photo and story grammar icons were displayed. The same stimulus photo sent from home stayed on the magnetic white board. In addition to the photo, the story grammar icons to represent the information elements were placed across the top of the whiteboard above the photo, left to right in the following order, *where*, *who with*, *what*, and *feelings*. The researcher did not explain the story grammar icons. The same cues were used as in the first condition. When the participant stopped talking for 3 seconds, the session was terminated and the researcher said "Thank you". The researcher made no other comments on the narrative.

### **Intervention Probes**



Two assessment probes were conducted at the beginning of each intervention session (i.e., prior to any intervention) using the same procedures as in the baseline sessions. The first probe used the photo only and the second used both the photo and story grammar icons. The assessment probe data were collected using stimulus photos that were not used in the intervention

### **Intervention**

Intervention was implemented by the researcher, who is also the school speech and language pathologist. Participants received four 4-10 minute intervention sessions a week. Probe and intervention sessions were conducted individually in a small room next to the participants' classroom. All probes and intervention were conducted with the researcher sitting next to the participant at a school desk.

The intervention steps are detailed in Appendix 1. Wording was adapted for each participant's developmental level. Intervention occurred immediately after the probes. The intervention incorporated features of interventions used with other populations to develop the story grammar of narrative, the use of story grammar icons, use of pictures to represent specific narratives, modelling and requiring the participants to produce entire narratives. When providing feedback or models, the researcher always used language appropriate to the participants' developmental level. The researcher greeted the participant at the beginning of each session and asked them to keep their hands on the table. They were praised for quiet sitting or looking at the photo. Reminders to look or attend to the task were used if necessary and praise for being on task was used as needed.

The sequence of intervention steps was designed so the participants could produce each component of the personal narrative separately and then have an opportunity to tell the entire personal narrative independently by the end of each

session. The initial procedures for presenting the pictures and icons were the same as for the picture and icon probes. The photo was presented on the board with the four icons placed above. The researcher said “Tell me about your weekend”, and simultaneously pointed to the icon for *where* at the top of the board and asked, “Where did you go?” If the participant responded correctly the researcher provided confirming feedback (“Yes” and repeated the name of the place) and pointed to the story grammar icon for *where*, and stated “You told me where”. The researcher then moved the icon for *where* to the bottom of the board. Moving the icon indicated to the participant that that piece of information was included in the narrative and the session was moving on to the next piece of information. If the participant provided incorrect information to the *where* question the researcher stated the name of the place and then asked, “Where did you go?” and pointed to the story grammar icon for *where*. If the participant responded correctly after the correction, then it was treated as a correct response. If the participant did not respond within 3 seconds or made an error, the researcher modelled the correct response and moved the story grammar icon to the bottom of the board and moved to the next icon.

Similar procedures were used to elicit responses for *who with*, *what* and *feelings*. When each correct response was elicited, or after an error or no response to the corrective feedback, the story grammar icon for that component was moved to the bottom of the board. At the end of that stage of the intervention the photo was still on the board and all four story grammar icons were at the bottom of the board.

In the next stage of the intervention, after the participant had the opportunity to produce each element separately, the participant was asked to produce the whole narrative, the researcher pointed to the story grammar icon for *where* as a cue to begin. As the participant provided information for each component of the narrative

the researcher pointed to the next icon. If the participant provided incorrect information or made no response the researcher immediately provided the correct information for the whole of the component and then pointed to the next icon. The participant was not asked to repeat the information.

When the participant finished their narrative the researcher immediately provided a model for the whole narrative while pointing to the appropriate icons. The researcher used the language at the same developmental level as the participant did during individual component steps or at the whole narrative step. If any errors were made when the participant provided the first whole narrative then the researcher provided a second opportunity for the participant to state the whole narrative again, the researcher pointed to the story grammar icon for *where* as a cue to begin. The researcher provided immediate corrective feedback if the participant made an error or missed any information. At the end of the session the researcher stated, “You did a great job, you told me what you did on the weekend”.

After 11 intervention sessions the first participant, Stephano was making little progress on either the probe with icon or the probe with photo only condition. The first 11 intervention sessions make up intervention phase 1 (see Figures 1 and 2). The intervention was modified at that point to intervention phase 2, and the number of training narratives provided by the families was increased to three. The probe narrative was still randomly selected and the other narratives were available for intervention. The researcher made a decision in each session regarding how many narratives to teach based on the participant’s attention and behaviour. The remaining two participants received phase 2 training only with a maximum of three narratives each session. Details of the number of narratives taught per sessions are provided in the results.

After approximately 20 intervention sessions Franco began to persevere on the beginning of his narratives and state “I stayed at home with *name*”, regardless of where he went. At that time the researcher asked Franco’s family to provide narratives with a wider range of settings and people as stimulus materials.

### **Maintenance and Generalisation Procedures**

Maintenance and generalisation probes were collected for two of the three participants. Maintenance probes were collected after the intervention had terminated. The same procedure was used as in baseline. Three sets of generalisation data were collected. Two classroom generalisation probes were conducted each week, as part of the regular classroom personal narrative presentation session, with participants presenting to the students and teachers. The first probe was collected, using the same stimulus photo that was used to collect the maintenance data and the story grammar icons. The second probe was collected on a different day in the same week, using the same stimulus photo. The icons were not used in the second probe. The participant sat at the front of the class with the researcher, who was holding a whiteboard with either the photo and icons or the photo only attached to it. The researcher said to the participant “Tell me about your weekend.” For Stephano, in the photo only condition only, the researcher pointed to the space at the bottom of the board where the icons would have been. This was done on the first photo only occasion only as after that he produced the entire narrative. When the participant stopped talking the researcher said, “Thanks you told us all about your weekend.” Only general behavioural feedback was given (e.g., great sitting, good you’re looking at the photo) and no feedback regarding language was given. The session was recorded by one of the class teachers with an iPhone 4 and the narrative was transcribed after the session.

The third set of generalisation data was collected by the school principal, who teaches the participants but was not involved in the intervention, in a 1:1 setting. No photos or icons were provided as support. The session was recorded on an iPhone 4 that was mounted on the desk. The school principal said to the participant “Tell me about your weekend.” After the participant had stopped talking for 3 seconds she said “Thanks for telling me that” and stopped the recording. The recording was passed to the researcher for transcription. The generalisation data were scored according to the criteria set out for baseline and probe data.

### **Interrater Reliability**

A trained second observer independently scored 20% of the two daily probes and intervention sessions from the video recordings for interrater and procedural reliability. Interrater reliability was scored in two stages to achieve an interrater reliability score for the presence of the story grammar components and for the accuracy of the story grammar components that were agreed to be present. In the first stage the probes were scored for agreement as to the presence or absence of each of the elements of *where*, *who with*, *what* and *feelings*. The total number of story grammar elements agreed on to be present or absent was divided by the total number of story grammar elements and then multiplied by 100. In the second stage the elements that were agreed to be present were then scored for agreement on accuracy. Accuracy was determined by comparing the child’s narrative with information provided by the family. The total number of agreed accuracy components was divided by the total number of possible accuracy components and multiplied by 100. Mean reliability across participants and across photo only and icons conditions for presence of story grammar components was 94%. For Stephano and Franco mean reliability was 97% (range 75%-100%), and mean reliability for Monica was 88% (range 50%-

100%). Mean reliability across participants and across photo only and icons conditions for accuracy of story grammar components was 94%. For Stephano and Monica mean reliability was 93% (range 50%-100%), and mean reliability for Franco was 95% (range 50%-100%).

### **Procedural Reliability**

A research assistant conducted a procedural reliability check on 20% of all intervention sessions using a procedural reliability checklist (see Appendix 1). Each step was scored as either correctly or incorrectly completed. Omitted steps were scored as errors. Steps that were optional, for example error correction if no errors were made, were coded as not applicable and not included in calculations. The mean procedural reliability for Stephano was 91% (range 78% - 93%), for Monica 87.5% (range 81% - 93%) and for Franco the mean was 90% (range (80% - 94%). Steps in procedural reliability marked as incorrect were minor variations in wording in the vast majority of instances.

### **Social Validity**

An independent observer watched four sets of randomly selected narratives, each consisting of one from baseline and one after intervention for each participant. Narratives were presented in random order with regard to whether the baseline or intervention was presented first. The observer was asked to select the better narrative. No explanation of what constituted a better narrative was given.

## **Results**

Figure 1 shows the effects of narrative intervention on the story grammar of personal narrative for each participant in the photo only condition. Figure 2 shows the effects of narrative intervention on the story grammar of personal narrative for each participant in the photo with story grammar icons condition. A clear intervention

effect was obtained for all three participants in the photo only and the photo with icons conditions. Two participants showed maintenance effects and two showed generalisation across settings.

Stephano received 47 intervention sessions and approximately 200 minutes of intervention. Sessions ranged between 4 and 10 minutes each. In the photos with icons condition his baseline score ranged between 0 and 6 but stabilised at two. Little progress was made in the first 11 intervention sessions (Phase 1) and the number of training narratives was increased in phase 2 after 11 intervention sessions. Once the number of training narratives was increased, a mean of 2.25 narratives were trained in each session. Scores varied between two and eight over the next 15 probes before they stabilised at eight. In the photo only condition Stephano's baseline was stable at two. After 35 intervention sessions Stephano's probe score increased to eight and became stable.

Monica received training with three narratives as per phase 2 procedures from the beginning of intervention. She received 16 intervention sessions and approximately 85 minutes of intervention. Sessions ranged between 4 and 8 minutes. An average of 2.4 narratives were trained in each session. In the photos with icons condition Monica scored between four and zero over six weekly probes. Due to an administrative error a true baseline over five consecutive days was not taken in either condition. After two intervention sessions Monica's scores were mostly eight with a few variations at seven or six. Monica's baseline in the photo only condition was generally low and stable at two. She received two intervention sessions before her score increased to six or eight.

Franco received training with three narratives from the beginning of intervention. He received 43 sessions and approximately 220 minutes of intervention.

Sessions ranged between 3 and 10 minutes. An average of 2.4 narratives were trained in each session. In the photos with icons condition Franco's weekly probe and true baseline scores varied between zero and four. He received six intervention sessions before his score rose to eight where it remained stable. In the photos only condition Franco's weekly probes and true baseline were either zero or two. Once intervention began he scored zero or two over ten sessions and then increased to six or eight. A three-week break, due to school holidays, occurred after six sessions. When intervention was resumed after the break he scored two and then zero. His scores then increased to six and then to eight, where it remained stable. At the end of intervention however Franco's scores dropped to seven. He began all narratives with "I stayed at home", regardless of where the narrative was.

### **Maintenance and Generalisation**

Stephano and Monica entered maintenance after a three-week break due to school holidays. They both scored between six and eight in both conditions. Three sets of generalisation data were taken. The first two sets were taken in the participants' regular classroom as part of the personal narrative presentation session led by the researcher. Stephano scored either seven or eight in both the photos with icons condition and the photo only condition. Monica scored between four and eight in both conditions. Although she did score four on one occasion, Monica scored eight in six of the nine data points in the photo only condition. Data for generalisation across people are included in Table 2. On one occasion Stephano scored 8 but on the following two narratives he scored 4. Each of the elements was present but he repeated previously used narratives so was not able to score for accuracy.

### **Social Validity**



Social validity was assessed by asking an independent rater to compare pre and post narratives that were presented in random order. The observer selected the post intervention narrative as the better narrative in 11 out of 12 instances.

### **Discussion**

The purpose of this pilot study was to investigate the effects of oral narrative intervention on the personal narratives of children with a diagnosis of ASD and limited intellectual ability. This extends the research as participants in this study had lower levels of intellectual capacity than those in research previously conducted with children with ASD (Petersen et al., 2014). Participants' narratives were elicited under probe conditions, with photo only and with photo and icons, during baseline and immediately before each intervention session. The oral narrative intervention was effective in teaching all three participants to include elements of story grammar (where, who with, what, feelings) in personal narratives. For two of the participants the intervention effects were maintained after three weeks and generalised to other settings.

The results of this study are consistent with previously reported interventions that have also included the use of story grammar icons, pictures to represent specific narratives, modelling, and the participant saying an entire narrative independently (Brown et al., 2014; Miller, 2014; Petersen et al., 2014; Spencer et al., 2013; Spencer & Slocum, 2010). It has shown that the basic intervention techniques used with children who have less significant communication disabilities can be used, and be effective, with children who have more significant communication disabilities. These common materials and strategies have been used by previous researchers to teach fictional narrative. This study demonstrates that these materials and strategies can be used to teach a different narrative genre, specifically personal narratives.

The original intervention was to teach one narrative each session. This was not of sufficient intensity however to have an effect with the first participant. Intervention intensity was increased to between two and three narratives per session once it became apparent that the first participant was not making progress. This level of intensity proved adequate for all three participants.

For both Monica and Franco treatment effects in both photo only and photo plus icon conditions occurred quickly and simultaneously. For Stephano treatment effect in the photo plus icon condition was also rapid. It took 34 sessions however for him to produce the entire narrative with the photo only. It appeared Stephano was not linking the icon and the photo only condition. The link appeared to be established in the generalisation probe when the teacher pointed to the empty space where the icons would be. This could be incorporated into the teaching by adding in a photo only step into the teaching procedure but pointing to where the icons would be a more structured fading of procedure.

At the end of the intervention period Franco began introducing all narratives with “I stayed at home” regardless of where the narrative took place. It seemed that he had rote learned this phrase as a way to introduce all narratives regardless of the setting. Once it became apparent he was perseverating the researchers requested that the parents provide a greater variation in the settings for the narratives they provided, but they were only able to provide limited variation. Perseveration was also evident in Franco’s generalisation across people narratives. These results highlight the need for sufficient variation in the critical elements of personal narrative to allow ongoing flexibility. Behavioural inflexibility is a core characteristic associated with ASD and intervention programs may need to be systematically designed to enhance response flexibility.

Generalisation was assessed across a wider range of conditions than in previous research. Generalisation of skills learned in the intervention session occurred across settings with Stephano and Monica. Generalisation across people was less successful. Although Stephano scored 8 on one occasion he then repeated the same narrative in subsequent weeks so although he was able to score on presence of elements he was not able to score on accuracy. Monica's performance when giving a narrative to different people was also variable. She included some information some of the time when responding to the prompt to talk about her weekend, but on three occasions, like Stephano, she also included information from narratives that didn't relate to the weekend that had just passed, and on two occasions she stated that she wanted to get back to the "work" of the lesson. Strategies to improve generalisation across people, such as having multiple persons delivering the intervention, could be examined in future research.

The authors of one previous study (Petersen et al., 2014) examined the effects of a narrative intervention on individual story grammar components of personal narrative in children with ASD who did not have intellectual disability. The dependent variables in Petersen's study were more sophisticated than those in the present study in that they assessed participant's abilities to generate high point narratives, including a statement of setting, problem, action, ending and emotions (Hughes et al., 1997) Participants in this study had a diagnosis of ASD, limited intellectual ability, language in the very low to severe disorder range, and they were not able to display any skills at all with personal narrative prior to the intervention. High point narratives were not appropriate for participants in this study. This study shows that personal narrative can be introduced with participants who have more significant communication impairments and more limited intellectual ability.

Learning to state who does what, with whom represents an important first step toward recounting events (Goldman, 2008) or an approximation of storytelling. Future research could incorporate examination of high point personal narratives with students who have significant communication impairments.

Data on the accuracy of personal narratives were collected. No other studies have been located where accuracy was evaluated, including Petersen et al. (2014). A difficulty with personal narrative is establishing accuracy and this study demonstrates a protocol for both teaching narratives and evaluating their accuracy.

Ease of adaptation to the classroom is important in the research - to - practice framework (Brown et al., 2014). The intervention in this study required one to one intervention and withdrawal from the regular classroom. This may not always be a practical option for teachers and clinicians. Researchers in two previous studies that have been able to show experimental effect have implemented intervention in small groups (Brown et al., 2014; Spencer & Slocum, 2010) and group intervention should therefore be an avenue for future research. The intervention approach used in this study could be adapted and implemented as a group intervention within the context of a typical class setting. The intervention sessions are short and the innovative semi-scripted intervention style for narrative elicitation provides structure for the teacher or clinician.

This intervention also required a commitment from families to provide weekly narratives. This also may not always be a practical option for clinicians. This limitation could be addressed by sourcing personal narratives from events within the class and school. It is also important to note that a procedural error was made in collecting the baseline with Monica. A true baseline across five consecutive sessions

should have been taken to ensure that exposure to the task alone as was not responsible for effect.

Finally, it should be acknowledged that single case research has inherently limited external validity given that a small number of participants are included. Thus, replications of this study are needed to evaluate the generalisability of findings.

### **Conclusion**

In this paper the effects of an oral narrative intervention addressing the story grammar of personal narratives in three participants with ASD and limited intellectual ability are described. Key features of the intervention included: the use of story grammar icons to represent the *where*, *who with*, *what* and *feelings* of an early developing personal narrative, pictures to represent each specific narrative, modelling and the participant producing the entire narrative. The skills taught in intervention were maintained after a three-week break and generalised across settings for two of the three participants. Apart from replication of the present pilot study, areas for future research include further examination of group delivery of intervention and development of more sophisticated high point personal narrative.

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Table 1

*Definitions for Dependent Variables*

| Element  | Criteria for element                  | Acceptable  | Unacceptable           |
|--|---------------------------------------|---|------------------------|
| Where the event happened<br>( <i>where</i> )         | Naming a specific place               | To the beach.<br>Stayed at home.                              | There.<br>That place.  |
| Who was present<br>( <i>who with</i> )               | Naming people by name or relationship | My mum.<br>My sister.<br>Graham.                              | Her.<br>The people.    |
| What the participant did there<br>( <i>what</i> )    | Names an activity                     | <i>Jumped</i> in the waves.<br><i>Played</i> with my friends. | Did that.              |
| Feelings or personal reaction<br>( <i>feelings</i> ) | Description of emotion or reaction    | It was fun.   | The end.<br>That’s it. |

Table 2

*Generalisation scores out of 8, across people*

| Stephano | Monica |
|----------|--------|
| 2        | 2      |
| 8        | 2      |
|          | 1      |
|          | 1      |
|          | 3      |
|          | 0      |
| 4        | 6      |
| 4        | 0      |
|          | 0      |

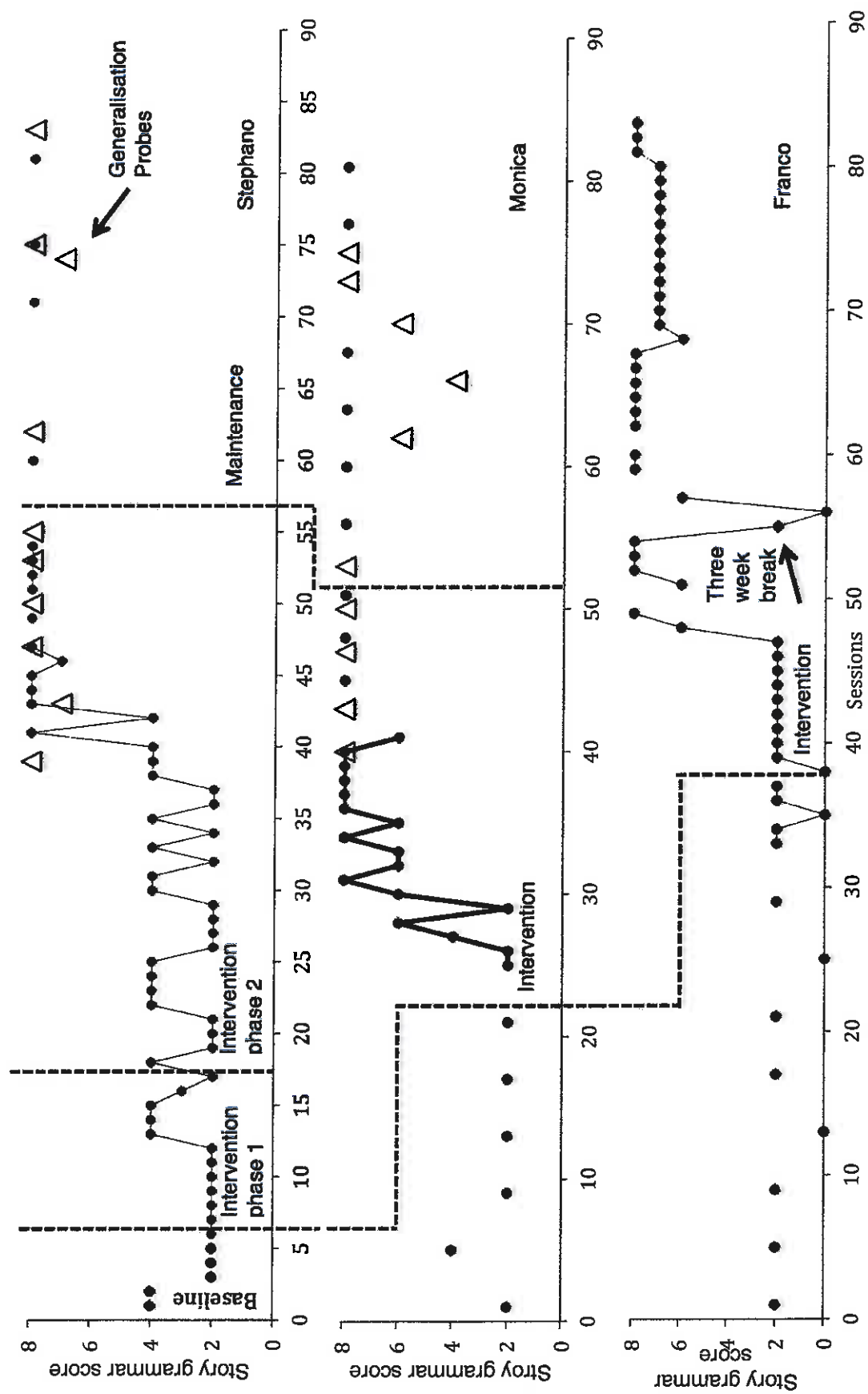


Figure 1. Story grammar score in the photo only condition.



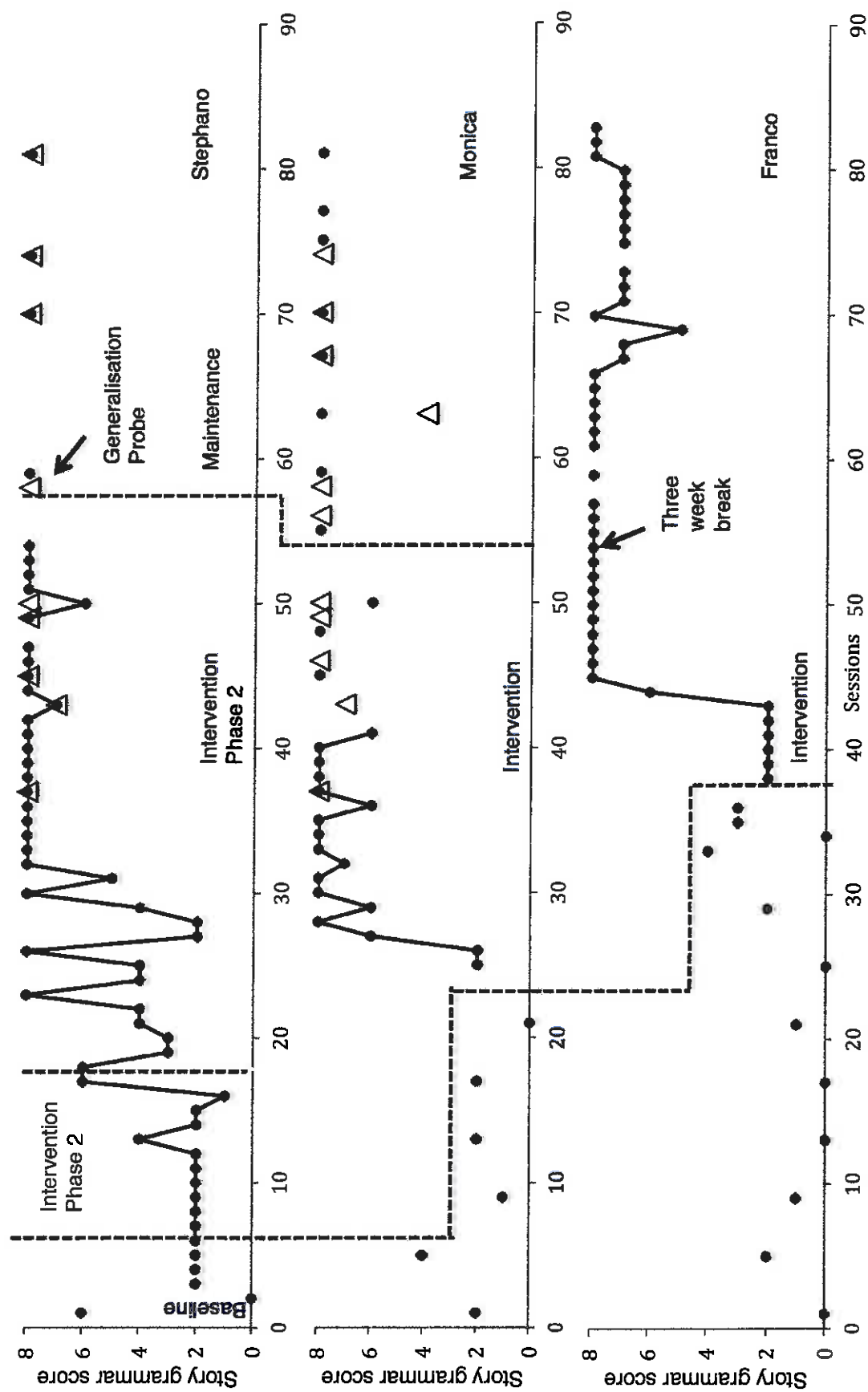


Figure 2. Story grammar score in photo with icons condition.

## CHAPTER FOUR: CONCLUSION

### Chapter Overview

This Chapter provides a brief summary of the research included in this thesis and summarises the overall findings. The chapter concludes by highlighting the unique contribution that this paper makes to the language development of children with significant communication difficulties.

### Summary of Research

The primary objective of this research was to investigate the efficacy of oral narrative intervention with children who are at risk of or who have communication impairments. Firstly, a review of the literature that updated Petersen's literature review (2011) was reported (Chapter 2). Data were extracted from the extant eight single case research studies to establish the quality, efficacy and common features of the interventions. The eight studies were evaluated for quality using a more detailed criteria than was used in the previous review, and high levels of interrater reliability were obtained for the ratings of quality. Except for one study, the studies included in the review were of high quality and the results can be interpreted with confidence.

Extensive data were extracted from the studies to establish efficacy and common features of effective treatments and high levels of interrater reliability were obtained for all data extracted

Researchers were able to show intervention effect in five of the seven studies that had a design robust to be able to allow strong inferences about experimental control. Common features of effective interventions included use of icons to represent macrostructure elements, use of pictures or books to represent key elements of individual narratives, clinician modelling and the participant saying the entire

narrative as part of the intervention. Interrater reliability, was completed for all articles, in keeping with recommendations for conducting a methodologically rigorous literature review (Schlosser, Wendt, & Sigafoos, 2007)

Chapter Three provided a report of a pilot multiple baseline study with three participants in which researchers investigated the efficacy of oral narrative intervention on the personal narratives of children with autism spectrum disorder (ASD) and limited intellectual ability. This is the first intervention study to examine oral narrative intervention with this population and only the second to examine the effects of oral narrative intervention on personal narratives of children as the primary dependent variable. It is also the first to examine the accuracy of personal narratives. Personal narrative was addressed at an earlier developmental level than the previous study (see Petersen et al., 2014) but this was appropriate to the language level of the participants in the study. The intervention was delivered 1:1 and included the use of macrostructure icons, photographs to represent specific narratives, modelling and children saying the entire narrative at the end of the intervention.

The results of this study were consistent with the results of previously reported interventions which included the use of macrostructure icons, pictures, modelling and participants saying the entire narrative to teach oral narrative. Intervention and maintenance effects were demonstrated for all three participants. Generalisation effects were shown across settings but participants were not able to consistently tell complete narratives to a different person.

In this pilot study modifications were necessary to the originally planned intervention protocols. The number of intervention narratives taught per session was increased from one to between two and three when it became apparent that the first

participant was not making progress. This level of intervention intensity was adequate for all participants.

### Conclusion

This study contributes to the existing body of research in the area by showing that existing single case research studies are generally of a high quality but could be enhanced by better participant descriptions, more robust generalisation data and the use of measurement probes before intervention. The authors of this study are also able to show that successful interventions share common features. The common features are the use of macrostructure icons, pictures to represent specific narratives, modelling and participants being required to state an entire narrative as part of the intervention.

The intervention study shows that existing effective oral narrative intervention strategies were effective with three children who have more significant communication disabilities, albeit with a more basic level of narrative. The study contributes to the limited data on interventions to teach personal narrative, as it is the first to teach personal narrative to children with ASD and limited intellectual ability. Participants in the study showed that they were able to generalise taught skills across settings but not across people. Generalisation across people could be an area for future research. Others areas for future research include examination of group delivery and development of more complex personal narratives.

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# Appendix 1

Each intervention session consists of the following steps. The procedure for “where” is included. The other elements were dealt with in the same way.

## Intervention Procedure and procedural reliability Checklist

Student name:

Date of intervention:

| Intervention Procedure and Procedural Reliability Checklist  | Yes | No | N/A |
|--|-----|----|-----|
| Place the magnetic whiteboard directly in front of the participant, propped up in landscape orientation at an incline of 45 degrees. The macrostructure icons across the top left to right, where, who with, what, how did you feel.   |     |    |     |
| Get the participant’s attention by placing the photo on the whiteboard, pointing to it, direct them to look at the photo.  |     |    |     |
| If participant provides whole narrative before teaching state “you told me ‘where’ you went, ‘to the ( <i>place</i> )’”, and move icon under the photo, “you told me ‘who with’, ‘with ( <i>person</i> )’”, and move icon under the photo, “you told me ‘what’ you did, ‘( <i>action</i> )’”, and move icon under the photo, and “you told me ‘how you felt’, ‘( <i>feeling</i> )’”, and move icon under the photo. Point to icon for “where” as a cue to begin and ask the participant to say the entire narrative. Then proceed to researcher modeling whole narrative step. |     |    |     |
| <p><b><u>Elicit each component of the narrative</u></b></p> <p>State “tell me about your weekend,” then <b><u>ask straight away,</u></b> <b><u>“where did you go”</u></b> wait max 3 seconds for participant response.</p>   |     |    |     |

|   |  |  |  |
|---|--|--|--|
| <p><b><u>Correct Response procedure</u></b></p> <p>If participant answers correctly, state “yes, the (<i>place</i>)” point to macrostructure icon for “where”, and state “you told me where”, and move the macrostructure icon for “where” to bottom of the board.</p>  |  |  |  |
| <p><b><u>No Response or Error response procedure</u></b></p> <p>If participant provides no response or incorrect information state, “the (<i>place</i>), where did you go?” point to macrostructure icon for “where”, if they respond correctly treat as correct response, if no response or error, model the correct response move the macrostructure icon to the bottom of the board and move on to the next macrostructure component.</p>                    |  |  |  |
| <p><b><u>Ask “Who did you go with?”</u></b> point to macrostructure icon for “who with”, wait max 3 seconds for participant response.</p>   |  |  |  |
| <p><b><u>Correct response procedure</u></b></p> <p>If participant answers correctly, say, e.g. “yes, with (<i>person</i>)” point to macrostructure icon for “who with”, and state “you told me who with”, move the macrostructure icon to the bottom of the board.</p>  |  |  |  |
| <p><b><u>No Response or Error response procedure</u></b></p> <p>If participant provides no information or incorrect information, state “with (<i>person</i>), who did you go with?” and point to the macrostructure icon for “who with”, if they respond correctly treat as correct response, if no response or error, model the correct response move the macrostructure icon to the bottom of the board and move on to the next macrostructure component.</p> |  |  |  |
| <p><b><u>Ask “What did you do?”</u></b> point to macrostructure icon for “what” wait max 3 seconds for participant’s response.</p>  |  |  |  |
| <p><b><u>Correct response procedure</u></b></p>   |  |  |  |

|   |  |  |  |
|---|--|--|--|
| <p>If participant answers correctly, say “yes, (<i>action</i>)” and point to “what” macrostructure icon and state “you told me what”, move the macrostructure icon to the bottom of the board.</p>  |  |  |  |
| <p><b>No Response or Error response procedure</b></p> <p>If participant provides no information or incorrect information, state “(<i>action</i>)” and ask “what did you do?” point to the macrostructure icon for “what”. If participant provides correct response, treat as correct, if no response or error, model the correct response, move the macrostructure icon to the bottom of the board and move to the next macrostructure component.</p> |  |  |  |
| <p><b><u>Ask “How did you feel?”</u></b> point to macrostructure icon for “how did you feel” wait max 3 seconds for participant response.</p>   |  |  |  |
| <p><b><u>Correct response procedure</u></b></p> <p>If participant answers with correct response, say “yes, (<i>feelings</i>)”, and state “you told me how you felt”. Point to macrostructure icon for “how did you feel?” move the macrostructure icon to the bottom of the board.</p>  |  |  |  |
| <p><b>No Response or Error response procedure</b></p> <p>If participant provides no information or incorrect response, state, “(<i>feelings</i>)”, and ask “how did you feel?” point to the macrostructure icon for “how did you feel”, if they respond correctly treat as correct response, if no response or error, model the correct response and move the macrostructure icon to the bottom of the board</p>                                      |  |  |  |
| <p><b><u>First opportunity for participant to state whole personal narrative, macrostructure icons stay at the bottom of the whiteboard</u></b></p> <p>Ask the participant to say the entire narrative. Point to the macrostructure icon for “where” as a cue to begin.</p>   |  |  |  |



|  |  |  |  |
|--|--|--|--|
| As participant provides each component of the personal narrative, point to the next component.   |  |  |  |
| If participant provides wrong information or no response, immediately provide the correct information for the whole of the component, then point to the next macrostructure icon.  |  |  |  |
| When the participant has finished the researcher provides a model for the whole narrative while pointing to the icons, use the language at the same developmental level that the participant did at the individual component stage.  |  |  |  |
| <p>If the participant made errors at the “first opportunity” stage provide a second opportunity for the participant to state whole personal narrative.</p> <p>Ask the participant to say the entire narrative again, point to macrostructure icon for “where” as cue to begin. If they make a mistake provide a correct model and move on.</p> |  |  |  |
| For intervention narratives two and three - “You did a great job “x”, tell me what else you did on the weekend”. Put photo for next intervention narrative on the white board and secure with a magnet. (complete on different sheet)  |  |  |  |
| <b>To conclude session</b> “you did a great job, you told me what you did on the weekend.”   |  |  |  |

|                          |  |
|--------------------------|--|
| total “yes”              |  |
| total “no”               |  |
| total “yes” + “no”       |  |
| % of total that is “yes” |  |

## APPENDIX 2

Ethics approval for students under the supervision of Dr Jennifer Stephenson and Dr Mark Carter of Macquarie University Special Education Centre (MUSEC) who conduct research on-site at MUSEC School.

From: "Ethics Secretariat" <ethics.secretariat@mq.edu.au>  
Subject: Approved- Ethics application- Carter (Ref No: 5201300450)  
Date: 1 July 2013 3:24:32 PM AEST  
To: "Associate Professor Mark Carter" <mark.carter@mq.edu.au>

Dear Associate Professor Carter

Re: "Macquarie University Special Education Centre School" (Ethics Ref: 5201300450)

The above application was reviewed by the Human Research Ethics Committee (Human Sciences and Humanities) at its meeting on 28/06/2013. Approval of the above application is granted, effective 01/07/2013. This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

[http://www.nhmrc.gov.au/\\_files\\_nhmrc/publications/attachments/e72.pdf](http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf).

The following personnel are authorised to conduct this research:

A/Prof Jennifer Stephenson  
Associate Professor Mark Carter  
Dr Alison Madelaine

**NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.**

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 01 July 2014  
Progress Report 2 Due: 01 July 2015  
Progress Report 3 Due: 01 July 2016  
Progress Report 4 Due: 01 July 2017  
Final Report Due: 01 July 2018