School of Psychology and Speech Pathology

A Study to Measure the Efficacy of a Manualised Oral Narrative Intervention Programme for School-age Children with Narrative Delay

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number # HR4539.

Signature:……………………………………….

Date: 30/06/2017

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Abstract

Oral narrative difficulties have been well-documented in school-aged populations such as children with Developmental Language Disorder (DLD), and children from low socio-economic and linguistically diverse backgrounds, including English as an Additional Language/Dialect (EAL/D; Bishop & Adams, 1992; 2016; Bliss & McCabe, 2008; Colozzo, Gillam, Wood, Schnell, & Johnston, 2011; Fey et al., 2004; Peterson & Spencer, 2016; Spencer, Petersen, Slocum, & Allen, 2014; Squires et al., 2014). Despite the broad literature on the development of oral narrative, it is only in recent years that evidence has begun to emerge on the effectiveness and efficacy of oral narrative intervention programmes (Peterson, 2010).

The purpose of this study was to design, develop and then evaluate the efficacy of the Oral Narrative Intervention Programme (ONIP), a manualised intervention programme aimed at improving oral narrative skills in pre-primary aged children with narrative delay. The pilot study involved designing and manualising the programme, and trialling it with eight pre-primary children, aged 5;1 to 5;7, in two groups of four. Minor modifications to the programme and assessment protocol were made based on researcher reflections and participant performance, following which the efficacy of the ONIP was evaluated, using a single-subject across multiple baselines research design. The programme was delivered by a speech pathologist (the primary researcher) to 11 pre-primary children aged 5;0-5;11 years, in small groups of three to four, three times a week for a period of six weeks (total of 18 sessions). The intervention focused on the explicit teaching of narrative macrostructure elements using icons, gestures, and graphic organisers, and facilitated the telling and retelling of fictional narratives. Microstructure skills (including vocabulary and morpho-syntax targets) were not targeted explicitly, but the intervention included carefully designed implicit intervention procedures, including modelling, recasting, expansion and vertical structuring. The prediction was that the intervention programme would result in significant improvements in both macrostructure and microstructure for children with narrative delay.

The results of the study showed that most participants made clinically significant improvements in performance in generalised narrative skills, as measured by the Test of Narrative Language, following the ONIP. Results also showed that the ONIP led to significant changes with moderate to large effect size for inclusion of

narrative macrostructure elements: Total Number of Conjunctions and Number of Different Words. Improvement in Number of Total Words, Mean Length of Utterance in Morphemes and Total Number of Adverbials was supported to a lesser degree, and no changes were noted in Total Number of Adjectives and Total Number of Complex C-units. These findings add to the research base regarding small group oral narrative intervention for children with narrative difficulties.

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Chapter 1: Introduction

The literature review below summarises oral narrative theory and development, narrative difficulties experienced by children from a range of clinical populations, including Developmental Language Disorder (DLD), followed by a review of intervention research.

1.1 Oral Narrative in School-Aged Children

1.1.1 Oral narrative. Oral narrative is defined as the ability to tell and retell a series of causally related events in sequence, and has long been considered a key milestone in the development of oral language and literacy skills (Westby, 1985). Narratives are a type of monologic discourse used, for example, to entertain, inform, explain and reflect on personal experiences (Westby, 1985). Oral narratives are both an integral part of everyday interactions for children and a critical component of the school curriculum, as school-aged children draw on narrative discourse skills to engage in school and social tasks on a regular basis (Hayward & Schneider, 2000). Consequently, competency with narrative discourse is integral for communicative success (Peterson, 2010; Peterson, Gillam, & Gillam, 2010; Snow, 2009; Westby, 1985).

1.1.2 Development of oral narrative. Two influential models of oral narrative development are those of Applebee (1978) and Stein and Glenn (1979). Applebee's (1978) Stages Model summarises the development of oral narratives between the ages of two and five years. Once children reach the age of five, and their stories include a clear beginning and character, the development of plot and a main theme begin to emerge (Westby, 1985). Stein and Glenn's (1979) Story Grammar Model can be used to describe oral narrative development beyond this age and stage. As competence with narrative organisation and overall structure increases, children also begin to use more complex literate language features, such as causal and temporal conjunctions to link thoughts and events together, elaborated noun phrases and expanded verb phrases to describe events in the story (Applebee, 1978; Stein & Glenn, 1979; Vygotsky 1978, Ukrainetz et al., 2005).

1.1.3 Narrative structure. The Stein and Glenn (1979) Story Grammar Model proposes that stories have an internal structure, which joins them together in a rule governed and predictable way. This internal structure is said to make up a "story grammar". Story grammar refers to the overarching structure of a narrative, and includes the setting, initiating event, character response, series of events and story

ending. In this thesis, this overarching text structure will be termed 'macrostructure' (Stein & Glenn, 1979). Macrostructure characterises a child's internal representation (or schema) of what constitutes a story. Children have been shown to be sensitive to narrative macrostructure, and organise incoming information into patterns that follow this structure when listening to, or reading a story (Greenhalgh & Strong, 2001; Hayward & Schneider, 2000; Stein & Glenn, 1979; Westerveld & Gillon, 2008). In Western cultures, the overall macrostructure of a mature narrative includes a setting (character, time, and place), an initiating event (often a causal event or problem), the character response (emotions and plan), a series of attempts, actions and/or events and an ending (resolution and consequence; Cortazzi & Jin, 2007; Hayward & Schneider, 2000; Peterson, 2010; Westby, 1985). Oral narrative macrostructure elements are outlined in Figure 1 below.

Each text genre also requires the use of specific linguistic elements, including vocabulary and morpho-syntax, which forms the text 'microstructure'. Both the macrostructure and microstructure of a text are influenced by the purpose of the text genre (Westby, 1985). The purpose of a narrative is primarily to entertain and include adequate detail for the listener (or reader) to understand the characters' actions, emotions and motivations that are central to the plot and events within the story (Westby, 1985). Therefore, when producing oral narratives, children are required to use microstructure elements to communicate the thoughts, ideas and motivations of the character, and provide adequate detail to support listener understanding (Cortazzi & Jin, 2007; Hayward & Schneider, 2000; McFadden & Gillam, 2009; Peterson, 2010; Westby, 1985). This requires competency with complex morpho-syntax, including the use of complex and compound sentences, subordinating and coordinating conjunctions, adverbial phrases, past tense, pronouns and referencing, elaborated noun phrases, and both cognitive (e.g., thought, wanted, felt) and linguistic verbs (e.g., said, whispered, shouted; Carrow-Woolfolk, 1988; Cortazzi & Jin, 2007; Hayward & Schneider, 2000; Greenhalgh & Strong, 2001; Peterson, 2010; Westby, 1985; Stein & Glenn, 1979). The use of these microstructure elements helps to add emphasis and give depth to the story, crucial for competent narrative discourse (Greenhalgh & Strong, 2001; Kernan, 1977; Labov, 1972). Oral narrative microstructure features are also shown in Figure 1 below.
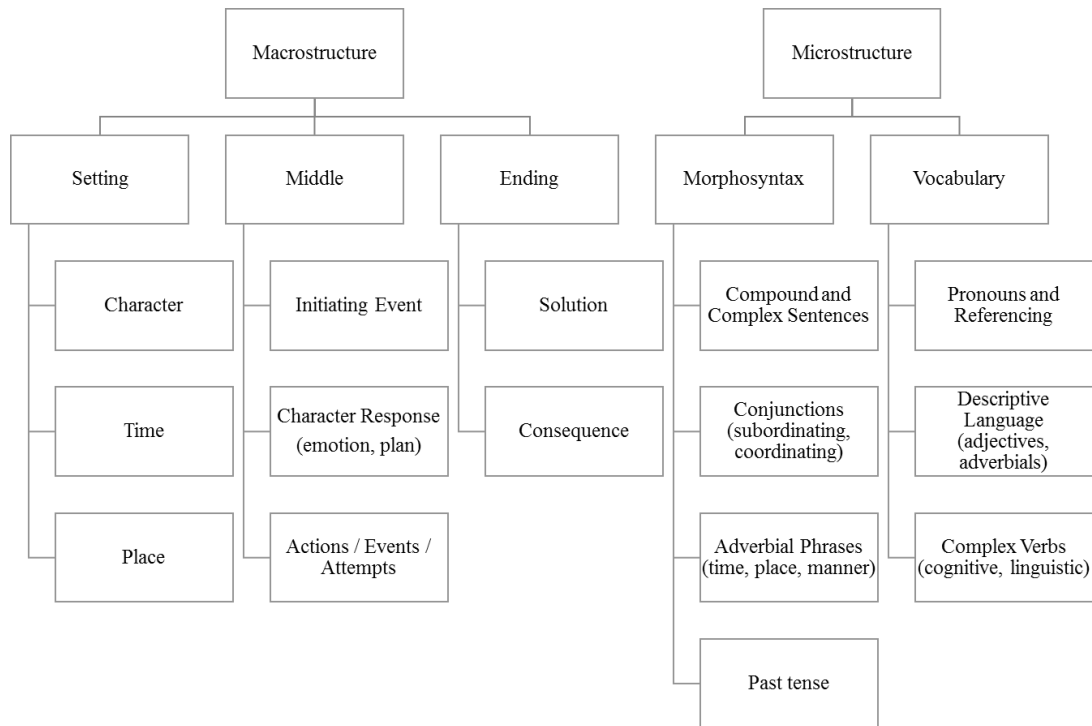
Figure 1

Complete Narrative Structure Illustrating Macrostructure and Microstructure Elements

1.1.4 Theoretical underpinnings of narrative production. A theoretical model such as Levelt's (1989) Model of Language Processing can be used to frame a discussion of the macro- and microstructural aspects of narrative discourse. Levelt's (1989) model describes language processing in five stages; 1) Conceptualiser, 2) Formulator, 3) Articulator, 4) Parser (speech comprehension) and 5) Acoustic Phonetic Processing (auditory processing; see Figure 2 over page).
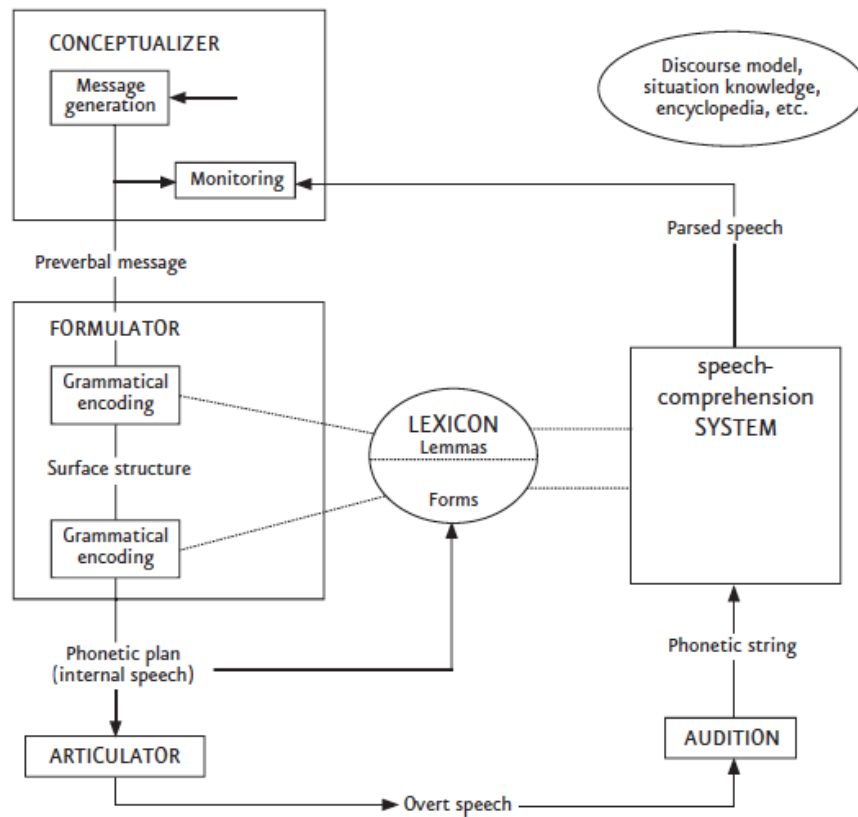
Figure 2

Levelt's (1989) Model of Language Processing

The Conceptualiser and Formulator levels of Levelt's (1989) model can be related directly to macrostructure and microstructure planning in oral narrative production. At the Conceptualiser level, the speaker generates, plans and sequences the elements of a message (Levelt, 1989). For a narrative, this planning relies on adequate knowledge of the theme or topic, and knowledge of the discourse type, purpose and macrostructure. Processing at the Conceptualiser level also requires adequate working memory for sequencing and ordering relevant information to generate the intended message (Levelt, 1989). The Formulator is responsible for the grammatical and phonological encoding of the message (Levelt, 1989). At this level, the child will be selecting vocabulary from their internal lexicon and generating appropriate morpho-syntactic structures that suit the purpose and audience of a narrative (Colozzo et al., 2011; Greenhalgh & Strong, 2001; Levelt, 1989).

1.1.5 The importance of oral narrative. Oral narrative skills allow children to successfully participate in everyday interactions with peers and adults, and are important for fostering relationships, and social and academic success (Greenhalgh &Strong, 2001; World Health Organisation, 2001). Children use storytelling in

everyday interactions including play and conversation (e.g., when sharing what happened in a favourite movie or acting out a story with toys), and in academic contexts (i.e., recounting an experience in 'news telling'; Colozzo et al., 2011; Fey, Catts, Proctor-Williams et al.,2004; Greenhalgh & Strong, 2001).

Oral narrative performance has been shown to predict children's later academic and linguistic success and is often referred to as the "bridge to literacy" (Catts, Fey, Tomblin et al.,2002; Hedberg,& Westby, 1993; Paul, 1995; Westby, 1985). Fiction stories require an individual to use a range of complex linguistic devices to describe character thoughts, motivations and actions effectively (Peterson, 2010; Peterson,Greenhalgh,& Strong, 2001; Snow, 2009; Westby, 1985). Literate language features that can be developed through narrative production include elaborated noun phrases, conjunctions, cognitive and linguistic verbs, and adverbs (Paul, 1995; Westby, 1999). Westby (1985) reported that the development of this literate language style could be defined as "talking to learn" and could support children to begin using language to monitor, reflect on experiences, and reason about, plan, and predict experiences (Westby, 1985 in Greenhalgh & Strong, 2001). Engaging in regular story-telling, therefore allows children to develop more complex vocabulary and morpho-syntactic structures, in turn supporting the development of a more literate style of language, and setting the oral language foundations for reading and writing success (Carrow-Woolfolk, 1988; Cortazzi & Jin, 2007; Hayward & Schneider, 2000; Peterson, 2010; Westby, 1985, Ukrainetz et al., 2005).

Narrative comprehension is a complex process, requiring many interrelated language and cognitive processes, including auditory processing, short term memory, working memory, sequencing, inferencing, predicting, and understanding of vocabulary and syntax (Oakhill & Cain, 2012; Perfetti, Landi, & Oakhill, 2005; Vellutino, Tunmer, Jaccard et al., 2007 in Silva, & Cain, 2015). Oral narrative comprehension requires children to activate prior knowledge related to the central plot or theme within a story, activate knowledge of typical story structure/s, and make connections with what they hear drawing on this knowledge (Cain & Oakhill, 2007; Hayward, Schneider, & Gillam, 2009; Lynch et al., 2008; Paris & Paris, 2003). Oral narrative comprehension can be supported by an expectation of how a narrative is structured, allowing the listener to make sense of what they hear and thus make predictions about what might happen next. Research shows that oral narrative comprehension is negatively impacted when the listener has poor knowledge of story

structure, highlighting the importance of competence with narrative macrostructure (Cain & Oakhill, 1996; Cain, 2003; Cain & Oakhill, 2007).

Success in reading comprehension has also been linked to proficiency in oral narrative (Beck & McKeown, 2001; Cain & Oakhill, 2007; Catts & Kamhi, 2005; Dymock, 2007; Florit, Roch & Levorato, 2011; Lynch et al., 2008). Good comprehenders are known to make predictions, create inferences, and identify the text structure when reading to support their understanding (Beck & McKeown, 2001; Cain & Oakhill, 2007; Catts & Kamhi, 2005; Dymock, 2007; Lynch et al., 2008; Silva & Cain, 2015). Reading comprehension relies on the reader being able to make inferences and make connections within the text to understand cause and effect relationships, and the emotional and internal responses of characters, that may not be stated in the story, but are vital to understanding the narrative (Cain & Oakhill, 2007; Florit, Roch,& Levorato, 2011). Therefore, supporting the development and understanding of oral and written narrative macrostructure and microstructure skills (e.g. the central plot and causal relationships), can support the development of reading comprehension (Cain & Oakhill, 2007; Catts et al., 2002; Dymock, 2007; Griffin, Hemphill, Campet al.,2004; McKenna & Stahl, 2009; Nation, 2005).

The West Australian Curriculum has recently been reviewed with changes made to reading and writing expectations across the primary school years (School Curriculum and Standards Authority, 2016). This has resulted in an increased focus on the teaching of text structures for a wide range of genres in the early years of schooling, including narrative, recount, procedure, reports and persuasion, all of which require an explicit understanding of macrostructure. Children who experience difficulties in progressing through the stages of narrative development are at risk of not accessing the curriculum and developing sound literacy skills. Access to evidence-based intervention approaches and programmes is therefore highly relevant for the West Australian education context.

In summary, proficiency in the oral narrative skills of young children is important for both everyday communicative success and literacy development. Development of oral narratives is a complex process involving both comprehension and expression which requires children to have a solid understanding of the macrostructure and microstructure of texts. Therefore, early and systematic oral narrative instruction (and intervention) for school-age children is necessary (Cain & Oakhill, 2007; Dymock, 2007, Nation, 2005; McKenna & Stahl, 2009).

1.2 Oral Narrative Disorder, Delay and Difference

Oral narrative difficulties have been well-documented in school-aged populations such as children with Developmental Language Disorder (DLD), and children from low socio-economic and linguistically diverse backgrounds, including English as an Additional Language/Dialect (EAL/D; Bishop & Adams, 1992;Bliss & McCabe, 2008; Colozzo, Gillam, Wood et al.,2011; Fey et al., 2004; Peterson & Spencer, 2016; Spencer, Petersen, Slocum et al.,2014; Squires et al., 2014). Difficulties with narrative expression can be evident at both the macro and microstructure levels and can be considered in relation to Levelt's (1993) Model of Language Processing (see Figure 2). Macrostructure errors, including incorrect or illogical ordering or sequencing of events, leaving out elements of the story, and reduced length of narratives, could indicate a breakdown at the Conceptualiser level, in generating, planning and/or sequencing the text (Levelt, 1993). Microstructure errors such as in morpho-syntax, reduced sentence complexity, incorrect word selection and reduced lexical diversity could indicate difficulties with grammatical encoding and lexical retrieval at the Formulator level (Dodwell & Bavin, 2007; Hayward & Schneider, 2000, Justice et al., 2006; Levelt, 1993).To varying degrees, the above-mentioned groups of children present with difficulties in narrative comprehension and/or expression, which will now be described.

1.2.1 Oral narrative disorder. Developmental Language Disorders (DLD) is the current consensus term used for conditions previously known as Language Impairment, Specific Language Impairment, and Language Delay (Bishop, Snowling, Thompson et al., 2016). It has been well documented that school-aged children with DLD have more difficulty in narrative comprehension and generation than their typically developing peers, and have been found to produce narratives that are less developed in story grammar, with a reduced range of vocabulary and less complex syntax (Bishop & Adams, 1992; Colozzo et al., 2011; Fey et al., 2004; Peterson & Spencer, 2016).

1.2.2 Oral narrative delay. Some children with adequate or delayed oral vocabulary and syntactic skills may present with difficulties in narrative comprehension and expression (Fey et al., 2004; Greenhalgh & Strong, 2001). This is thought to be because the production of cohesive and complete oral narratives requires an increase in cognitive load to organise the story structure, and organise and plan utterances during production of the story (Bishop & Adams, 1992; Gillam

& Johnston, 1992). Therefore, there is potential for children in mainstream schooling to experience narrative difficulties (Hedberg & Westby, 1993; Peterson & Spencer, 2016). These difficulties may be due to a range of factors including: lack of experience engaging in storybook reading at home, lack of exposure to explicit teaching in school, mild difficulties in understanding narrative structure, or learning English as an additional language or dialect (Bliss et al., 2008; Peterson & Spencer, 2016; Spencer et al., 2014). This highlights a growing need for intervention programmes suitable for a range of clinical and non-clinical contexts and populations, including children with DLD, as well as preventative programmes that promote the development of narrative skills in children who may be at-risk of later language and/or literacy difficulties.

      1.2.3 Oral narrative difference. Children from linguistically diverse backgrounds, including multilingual and EAL/D children, can also experience differences in knowledge of narrative form and content (Bliss et al., 2008; Peterson & Spencer, 2016; Spencer et al., 2014). This can be, in part, because narrative structures and linguistic conventions are influenced heavily by culture. For example, narratives in Aboriginal languages tend to be non-linear and movement focused, and may lack key elements such as complication and resolution (Armstrong, McKay, & Hersh, 2017) while Western-style narratives typically include specific macrostructure elements in time order (Bliss & McCabe, 2008; Cortazzi & Jin, 2007). Although it is important to recognise these differences in oral narrative conventions, culturally and linguistically diverse children are still required to apply knowledge of Western Style narrative structures within the West Australian academic and social context (Bliss & McCabe, 2008; School Curriculum and Standards Authority, 2016; Spencer & Slocum, 2010).

1.3 Evidence-based Oral Language Intervention Practices for School-aged Children

      Cirrin and Gillam (2008) systematically reviewed language intervention practices for school-age children with language disorders. The author identified general intervention strategies and procedures that were effective for children with language disorders including

    a) clear and explicit goals,

    b) repeated models and demonstrations,

    c) questions of varying complexity,

    d) contingent facilitation and recasting,

    e) the use of graphic organisers,

    f) providing multiple opportunities to respond, generate or repeat,

    g) providing instructions on strategies, and

    h) summarising- both by the therapist and the child (Cirrin & Gillam, 2008).

The review also recommended that intervention activities should require children to listen carefully, respond often and reward active participation (Cirrin & Gillam, 2008).

        To ensure fidelity of intervention approaches, research papers and programme/intervention manuals should provide adequate details. To be replicable, detail should be provided regarding

    a) broad and specific goals,

    b) goal attack approaches – i.e., cyclical, horizontal and vertical,

    c) intervention approaches,

    d) resources and stimulus items, and

    e) therapeutic and teaching procedures, such as task instructions, cueing hierarchies, scaffolding and feedback (Cirrin & Gillam, 2008; Peterson, 2010).

        Additionally, programmes should provide information about the dosage and intensity required to achieve clinically significant improvements (Warren, Fey, & Yoder, 2007). Dosage and intensity includes:

    a) the length and frequency of intervention sessions,

    b) the length of the treatment block,

    c) the total number of intervention sessions, and

    d) within-treatment dosage and intensity (Warren, Fey, & Yoder, 2007). Within-treatment dosage and intensity can be defined as the number of "treatment episodes" within a session, required for each participant to achieve clinically significant improvements (Cirrin & Gillam, 2008; Hoffman, 2009; Warren, Fey, & Yoder, 2007).

        Despite concluding that clinicians can have some confidence in the intervention practices available, Cirrin and Gillam (2008) highlighted the lack of strong empirical evidence available to support language intervention practices for school-aged children, in particular, for narrative programmes. These principles and practices can be drawn on in the development of narrative intervention programmes

for language disorder, delay and children at-risk who are experiencing difficulties mastering narrative level discourse.

1.4 Evidence-based Oral Narrative Intervention for School-aged Children

Due to the importance of narrative skills and the significant impact that narrative difficulties can have on a child's academic and social development, narrative intervention is frequently used in speech pathology practice, and in the classroom. For effective management of narrative difficulties, clinicians and educators need access to theoretically sound and evidence-based intervention programmes. Despite the broad literature on the development of oral narrative, it is only in recent years that evidence has begun to emerge on the effectiveness and efficacy of oral narrative intervention programmes(Peterson, 2010). Peterson's (2010) systematic review included nine research articles evaluating narrative-based language intervention for preschool and school-age children with language impairment (Davies, Shanks, & Davies, 2004; Gillam, McFadden, & van Kleek, 1995; Hayward & Schneider, 2000; Klecan-Aker, Flahive, & Fleming, 1997; Pena et al., 2006; Peterson et al., 2008; Peterson, Gillam, Spencer et al., 2010; Swanson et al., 2005; Tyler & Sandoval, 1994). Peterson's (2010) criteria for inclusion in the review systematic included:

a) articles published from 1980 to 2010,

b) intervention procedures that used oral narratives as a context to target language-related features, and

c) studies that used narrative-based language intervention programmes for preschool and school-aged children between the ages of three and 21 with language or learning disabilities (Peterson, 2010).

Peterson's (2010) summary reported moderate to large effect sizes for narrative intervention programmes. Common procedures across the studies included:

a) participants retelling and/or generating narratives,

b) focused stimulation (Leanord, Camarata, Rowan et al., 1982),

c) vertical structuring (Schwartz, Chapman, Terrell et al., 1985), and

d) incidental teaching techniques (Hart & Risley, 1975 in Peterson, 2010).

Common procedures in these programmes included use of single pictures/photos, wordless picture books and/or picture drawings to elicit narratives (Peterson, 2010). Other common strategies included the use of icons or cue cards and role-playing to facilitate narrative comprehension and expression (Peterson, 2010).

For improvements in narrative macrostructure, the effect sizes for studies included in the review were moderate to large (*d* =.73 – 1.57). The reviewers reported that there was "no clear connection between the extent of positive macrostructure outcomes, and the different intervention procedures and materials used" (Peterson, 2010, p. 11). Peterson (2010) identified that "emphasis in repeated narrative retelling and narrative generation was the only common procedure among the narrative intervention studies" (Peterson, 2010, p.11). The review also reported that all nine studies included limited information about the degree and type of scaffolding and support provided by the clinician, making it difficult for clinicians to replicate the intervention procedures to target improvements in narrative macrostructure (Peterson, 2010).

In discussing the effect of narrative-based language intervention on narrative *microstructure* skills, Peterson (2010) reported that all but one of the studies (Davies et al., 2004) "reportedly focused on aspects of narrative microstructure" (Peterson, 2010, p. 11), but that there was a lack of detail in the descriptions of therapeutic procedures. Peterson (2010) concluded that, "narrative intervention with repeated retellings and a focus on narrative macrostructure may be sufficient to facilitate significant improvements in both narrative macrostructure and some aspects of narrative microstructure" (Peterson, 2010, p. 13), but that further investigation was warranted. He also concluded that clinicians could "continue to treat narratives as a functional language target and as a medium whereby language features are modelled and practiced" (Peterson, 2010, p.13). This can be achieved through providing multiple opportunities for participants to practice telling and retelling narratives, and strategically modelling and eliciting correct language forms with considerable intensity, when targeting narrative microstructure (Peterson, 2010).

1.4.1 Narrative intervention studies for school-aged children which informed the Oral Narrative Intervention Programme (ONIP)

The following section aims to summarise eight intervention studies which most informed the design and development of the intervention programme used in this study (the ONIP). A summary of the narrative intervention studies can be found in Appendix A. The studies were published between 2000 and 2012,andevaluated oral narrative intervention programmes for school-aged children with language disorder, language delay and/or children at risk of language delay (including children from linguistically and culturally diverse backgrounds).Since the completion of the

experimental phase of this study, additional research on narrative intervention has been published (Gillam, Gillam, Squires et al., 2016; Gillam, Hartzheim, Studenka et al., 2015; Gillam, Olszewski, Fargo et al., 2014; Peterson, Spencer, Slocum et al., 2015; Spencer, Kajian, Peterson et al., 2014; Spencer, Peterson & Adams, 2015;). These later studies will therefore be included in the discussion chapter.

As in Peterson's (2010) review, the nine studies summarised in this section, will interpret outcome measures (dependent variables) in relation to narrative macrostructure (expressive and receptive) and narrative microstructure. Narrative macrostructure is defined according to story grammar analysis or episodic complexity analysis (Peterson & McCabe, 1983; Stein & Glenn, 1983). Narrative microstructure includes causal and temporal subordinate conjunctions, coordinating conjunctions, adverbs, elaborated noun phrases, cognitive and linguistic verbs, dialogue, length (e.g., total number of clauses, number of total words [NTW] and number of C-units), and complexity (e.g., syntax, morpho-syntax, mean length of utterance [MLU], and number of different words [NDW]; Greenhalgh & Strong, 2001; Westby, 1999 in Peterson, 2010). These studies are now discussed in order of publication.

Hayward and Schneider (2000) investigated the outcomes of an intervention that focused on explicit teaching of story grammar during the context of narrative production. The study included 13 pre-primary children aged between 4;8 and 6;4 diagnosed with moderate-severe language disorder, already receiving specialised language intervention. Children continued to receive their classroom intervention programme, and were included in an additional twice-weekly small group story grammar intervention programme for a total of 12 sessions. The programme focused on explicit teaching of story grammar using cue cards for identifying, sorting and sequencing story components, as well as multiple opportunities to practice story generation and retelling with picture stimulus. Group data analysis revealed a significant effect with a large effect size for story information units (p=.001; $d = 1.0$),and structural complexity (p=.001; $d = 1.96$). Individual analysis of the data using the 2SD-band method, revealed that only half of the participants showed significant change in story information units and structural complexity, but there were noticeable qualitative improvements in the narratives produced. As there was no control group, and all children still received narrative intervention as part of their daily intervention programme, it is difficult to separate the effect of providing

explicit instruction on story grammar from the other intervention strategies (Hayward & Schneider, 2000).

Davies et al. (2004) evaluated the explicit teaching of narrative macrostructure using coloured icons, repeated retells of well-known stories (including fairytales), and story generation, with 34 children (aged 5 to 7 years) in small groups within three classrooms in areas of high social need. A speech pathologist and a teacher/education assistant delivered the intervention three times a week for eight weeks, for 40 minutes. The programme targeted understanding and use of the narrative macrostructure elements. The participants demonstrated significant improvement with a large effect size for episodic structure in a narrative retell (p=.005; $d = 0.92$). The results for microstructure indicated mixed results however, with significant improvement with a moderate effect size in information provided (p=.008; $d = 0.75$), and C-units in a narrative retell (p=.005; $d = 0.69$), but non-significant results for inclusion of conjunction, types of conjunctions and grammar score. This provides some support for the use of narrative intervention to target narrative macrostructure and microstructure; however, with no control group it is again difficult to discriminate the effect of the intervention from other variables (Davies et al., 2004).

Swanson et al. (2005) implemented a moderately intensive six-week narrative based language intervention programme for a group of 10 children with DLD (6;11 to 8;9). Intervention was provided individually three times a week. This programme included repeated storytelling and retelling, modelling, questioning, cloze activities, repetition and recasting While the results showed improvement in narrative quality, and increased confidence in participants was reported, gains in microstructure measures (number of different words, recalling sentences and non-word repetition) were non-significant. The researchers hypothesised that this was due to the use of measures that were not sensitive to change, a treatment period that was not long enough to lead to significant improvement in syntax, and issues with sampling (variable lengths of language sampling, narrative retell task was too difficult), that did not allow for a reliable measure of the participants' skills. In contrast to microstructure, overall, significant improvement in macrostructure, with moderate to large effect sizes, were found (Swanson et al., 2005).

In 2008, Westerveld and Gillon investigated the effect of an oral narrative intervention programme delivered to small groups of five children with mixed

reading disability, aged 7;11 to 9;2, in two sixty-minute sessions per week, for six weeks. The intervention focused on exposure to high quality literature with a well-defined macrostructure, developing meta-awareness of narrative macrostructure, the repeated telling and retelling of stories, story mapping and scaffolding techniques (Westerveld & Gillon, 2008). Results revealed significant effects with large effect sizes for oral narrative comprehension (p=<.05; *d* = 1.55), Test of Narrative Language (TNL) Comprehension score (TNL-Comp; p=<.05; *d* = 1.89), and NDW (p=<.05; *d* = 1.65). Analysis of pre-post data for reading, narrative quality in narrative retells, C-units, verbal fluency, Mean Length of Utterance in Morphemes (MLUm) and grammatical accuracy, were non-significant. This study provides support for targeting narrative macrostructure to support oral narrative comprehension, however demonstrated little generalisation of this intervention on improving reading comprehension or improving narrative microstructure skills, beyond semantic diversity (NDW).

Peterson and colleagues (2008) evaluated an oral narrative intervention provided to 12 children aged 6;4 to 9;1 with language disorder, attending a language intervention programme in schools. The intervention was provided by a clinician in small groups of three-four children, for four 90-minute sessions per week for four weeks. The programme focused on explicit teaching of narrative macrostructure elements using graphic organisers, explicit teaching of story grammar instruction, causal relationships, temporal concepts and dialogue, repeated retelling and generations of stories from picture prompts (Peterson, Gillam, & Gillam, 2008). Analysis of pre-post data revealed a significant improvement with moderate to large effect sizes for Index of Narrative Complexity (INC) scores (p=<.05; *d* = 1.58, 1.02, 1.34, 0.49 and 1.53), TNL-Exp scores (p=<.05; *d* = 1.55),TNL-Comp scores (p=<.05; *d* = 1.55), and TNL-Narrative Language Ability Index (TNL-NLAI) scores (p=<.05; *d* = 1.31), The study did not describe the specific therapy strategies or procedures that lead to the significant change, or address issues of treatment fidelity in reporting cumulative intervention intensity, making it difficult for clinicians to replicate.

Peterson, Gillam, Spencer and Gillam (2010), investigated the effect of individual narrative intervention for three children aged 6;1, 6;3 and 8;1with neuromuscular impairment and co-morbid language impairment attending mainstream schooling and receiving special education services, including speech

pathology intervention. The Functional Language Intervention Program for Narratives (FLIP-N; Gillam, Gillam, Peterson, & Bingham, 2008) was delivered over ten 90-minute sessions. The FLIP-N focused on explicit teaching of narrative macrostructure, used icons to represent story grammar elements, story board creation, repeated telling and retelling of stories, and a gradual reduction of scaffolding and support across the programme (Peterson et al., 2010). The researchers provided a clear summary of the intervention procedures, including modelling, questioning, cloze activities, repetition and recasting. Results of this single-subject across multiple baselines research study, revealed significant improvement in macrostructure, with moderate to large effect sizes reported for all explicit targets of intervention (see Appendix A for full description of study). Furthermore, the authors reported improvements in some microstructure elements *not* explicitly targeted in intervention (Peterson et al., 2010). The authors also analysed the within the treatment session intensity by reporting on the amount of time spent within each session completing specific treatment procedures and the rate at which the clinician provided support to the participants. This, coupled with the details included of the cueing and scaffolding used within the treatment sessions, was an important addition to the literature, as previous studies had provided very limited information on these aspects of narrative intervention.

Spencer and Slocum (2010) completed a single-subject research study, investigating the effect of a narrative intervention program delivered in small mixed ability groups within the classroom to children from culturally and linguistically diverse backgrounds, attending a Head Start program in America. Pre-post-treatment and repeated measures data was collected on five children aged 4;6 to 5;1 with narrative difficulties attending the programme. The intervention programme was delivered by a speech pathologist in ten 7-18-minute intervention sessions. Intervention focused on explicit teaching of narrative macrostructure using colourful story grammar icons and explicit teaching scripts, narrative games to encourage active participation, repeated telling and retelling stories, and creation of parallel personal stories using picture prompts (Spencer & Slocum, 2010). Results revealed that all participants made statistically significant gains in their narrative retell as measured in the INC in repeated narrative retell sampling (see Appendix A for full description of study; Spencer & Slocum, 2010). However, changes in probed personal narratives and pre-post- personal experience narrative generations were

non-significant (Spencer & Slocum, 2010). This study provided further support that narrative intervention, delivered in small groups using visual supports, involving active engagement and clinician support, is effective in improving narrative skills (Spencer & Slocum, 2010). Of significant importance, was the implication for the use of narrative-based language intervention programmes with pre-school children from culturally and linguistically diverse backgrounds, at risk of later language difficulties.

In 2012, Gillam, Gillam and Reece, completed a group comparison study, investigating the effects of small group Contextualised Language Intervention (CLI) and Decontextualized Language Intervention (DLI) for16 randomly assigned participants aged 6;0 to 9;0, and eight age matched controls in a no treatment phase. The CLI was based around four theme-related story books and included intervention tasks such as listening to stories, answering comprehension questions, generating inferences, comparing and contrasting characters and actions across stories, discussing and defining the meanings of Tier Two vocabulary words from the text, brainstorming solutions to problems in the story; working on specific grammatical targets and creating parallel stories (Gillam et al., 2012). Various language facilitation techniques, such as focused stimulation, recasts and vertical structures were used in all activities (Gillam et al., 2012). The DLI included separate activities each focusing on sentence complexity, vocabulary and social language using commercially packaged grammar games and situational drill cards (Gillam et al., 2012). Participants in the CLI group made statistically significant gains with small to large effect sizes for Recalling Sentences (p=.004; $d = 3.08$), Formulating Sentences (p=.013; $d = 0.99$), TNL-NLAI (p=.021; $d = 0.43$), TNL-Comp scores (p=.015; $d = 0.93$), and Monitoring Indicators of Scholarly Language (MISL: Gillam & Gillam, 2013) microstructure scores (p=.003; $d = 1.19$). Children in the DLI group only made significant gains in formulating sentences (p=.042; $d = 0.76$) and MISL microstructure scores (p=.012; $d = 0.97$). The authors concluded that children would benefit from targeted narrative macrostructure and microstructure targets in contextualised language interventions, as they fit more easily with the flow of ongoing academic instruction. This study added to the evidence-base for targeting grammar and vocabulary in the context of narratives to support the development of literate language. The non-significant result for the MISL macrostructure scores for

the CLI group, however, indicated that more explicit teaching of narrative macrostructure elements was needed.

1.4.2 Oral narrative intervention summary. The literature reviewed from 2000 to 2012above has revealed an emerging body of evidence for oral narrative interventions to support the development of narrative macrostructure skills, but a lack of strong empirical evidence for the impact of these interventions on microstructure skills. This lack of evidence lends support to further investigation into the effects of narrative intervention on both macrostructure and microstructure skills for children from a range of population groups (Peterson, 2010). This includes children with language disorder, language delay and those considered at risk.

Clinicians traditionally target vocabulary and morpho-syntax skills at the word and sentence level, and narrative skills at the narrative level of discourse. With the research suggesting that intervention focusing on explicit teaching of narrative macrostructure can also have a significant impact on the development of complex linguistic features (microstructure) not explicitly targeted during intervention, further investigation is needed. Such an approach would be theoretically driven, and could be a cost-effective and time efficient way to target both macrostructure and microstructure goals in the context of narratives. If intervention that focused on improving discourse level macrostructure skills could also lead to improvements in discourse, and morpho-syntax and vocabulary, such a programme would be considered efficient.

1.4.3 Oral narrative intervention and macrostructure. The literature review revealed evidence to support significant changes with moderate to large effect sizes for oral narrative intervention for *macrostructure* skills, using graphic organisers to explicitly teach story grammar, and repeated telling, retelling and generating of narratives using visual scaffolds, such as story boards and planners (Gillam et al., 2012; Hayward & Schneider, 2000; Swanson et al., 2005).

1.4.4 Oral narrative intervention and microstructure. A review of the evidence for the effect of narrative intervention on *microstructure* (measures of syntax and expressive vocabulary) yielded mixed results. Peterson's (2010) systematic review concluded "repeated story retelling and a focus on narrative macrostructure might be sufficient to facilitate a significant improvement in both narrative macrostructure and some elements of microstructure" (Peterson, 2010, p 13). It is unclear from the literature, however, which narrative microstructure

elements 'might' improve significantly when intervention is focused on narrative macrostructure. It appears likely that intensive exposure to narratives that model literate language features (e.g., adverbs, elaborated noun phrases, mental and linguistic verbs, references), combined with the use of language facilitation techniques such as focused stimulation (concentrated exposure to specific linguistic target), vertical structuring (questioning techniques to facilitate production of extended utterances) and recasting (adult and child interact in a naturally occurring context), with considerable intensity within a narrative context may be sufficient to improve microstructural features of narrative without explicit teaching (Peterson, 2010).

1.5 Summary and Research Questions

The current study aimed to improve literate oral narrative language development, by providing an intervention with an explicit focus on macrostructure and embedding implicit microstructure intervention, to allow children to practice language targets in a meaningful context. The current study tested the following hypotheses:

1) Narrative intervention focusing on the explicit teaching of macrostructure, and repeated opportunity for story retells, will lead to significant improvement in narrative comprehension and expression, as measured by pre- and post-treatment scores on the TNL (Gillam & Pearson, 2004).

2) Narrative intervention focusing on the explicit teaching of macrostructure, and repeated opportunity for story retells, will lead to significant improvement in the inclusion of macrostructure elements as measured by a Total Macrostructure Score (composite score of individually coded macrostructure elements – orientation of setting, [time and place], orientation of character, initiating event, internal response, plan, actions/attempts, solution, consequence, formulaic markers and speech) in repeated single-picture narrative generation samples, coded using Systematic Analysis of Language Sampling software (SALT; Miller & Iglesias, 2008).

3) Narrative intervention focusing on the explicit teaching of macrostructure, and repeated opportunity for story retells, will lead to significant improvement in the inclusion of narrative microstructure features as measured by Total Number of Conjunctions [temporal, causal, adversative, additive, conditional], Total Number of Adverbial phrases, Total Number of

Adjectives, Total Number of Complex C-units, MLUm, NDW and NTW, in repeated single-picture narrative generation samples, coded using SALT (Miller & Iglesias, 2008).

These hypotheses were tested using a programme designed and developed for this study – the Oral Narrative Intervention Programme (ONIP), which drew on the findings of the research summarised in this chapter. The ONIP was evaluated using participants attending mainstream schools, identified as having weak oral narrative skills.

Chapter 2: Method

The present study was therefore designed to evaluate a small group intervention programme designed and developed for the purpose of this study, The ONIP, using a single-subject across multiple baselines research design. Outcome measures included pre- post- standardised oral narrative assessment (TNL; Gillam & Pearson, 2004) and researcher-designed measures of repeated narrative generation samples, coded for inclusion of macrostructure and microstructure narrative elements. This chapter describes the method and procedures used for the research, which comprised two studies – the Pilot Study and the Efficacy Trial. The Pilot Study involved designing and manualising the treatment programme (The ONIP), and piloting it with eight pre-primary children, aged 5;1 to 5;7, in two groups of four. Following the Pilot Study, minor modifications to the ONIP and assessment protocol were made based on researcher reflections and participant performance, following which it was evaluated in the full Efficacy Trial. During the Efficacy Trial, the ONIP was implemented with 11 pre-primary children aged 5;0 to 5;11 in small groups. Statistical analysis of the dependent variables was conducted to evaluate the efficacy of the program. Below is a detailed description of the method used for both the Pilot Study and the Efficacy Trial.

2.1 Pilot Study: Designing, Manualising and Piloting the ONIP

The Pilot Study involved designing, manualising and piloting the ONIP with eight participants in two groups of four. The stages of the Pilot Study included:

1) Designing the overall narrative programme structure and developing the manual to include a scope and sequence of the intervention targets.

2) Developing the programme structure of the sessions and the goals/targets for each session.

3) Developing explicit teaching scripts for each narrative macrostructure element, which included a student friendly definition, model and examples.

4) Developing scripted contingent responses for macrostructure elements - including explicit feedback for correct and incorrect responses; and implicit teaching techniques such as expansions, recasts, increase and decrease steps, models.

5) Developing scripted contingent responses for microstructure elements - including implicit teaching techniques such as expansions, recasts, vertical structuring, increase and decrease steps, and models.

6) Designing a single picture narrative generation task for the collection of the repeated measures samples for use within the data analysis stage of the study.

7) Piloting the methodology for the assessment and intervention procedures and making modifications based on the researcher's reflections and participant outcomes in the Pilot Study.

2.1.1 Participants. Participants were drawn from a mainstream, middle range socio-economic school within the North East Metropolitan Education District (NEMLDC; Index of Community Socio-Educational Advantage - ICSEA - value of 869). Mainstream government schools within this area are serviced by the NEMLDC Outreach Service, a team of speech pathologists and teachers (Support Officers, Speech and Language), employed by the Department of Education to provide support to build capacity of education staff in the areas of speech, language and literacy. The school selected to participate in the Pilot Study was one that was actively engaged with the NEMLDC Outreach Service, but which had been focusing on the teaching of phonological awareness in the early years while implementing typical classroom practice for oral narrative, without input from a speech pathologist. This typical classroom practice did not include the explicit teaching of narrative structure beyond the basic 'beginning', 'middle' and 'end' structure.

A total of eight pre-primary participants (five female and three male), aged 5;0 to 5;7, with a mean age of 5;2 participated in the Pilot Study. Participants attended a mainstream school with a large culturally and linguistically diverse population, were at risk of language difficulties and presented with narrative difficulties upon assessment. Due to the high levels of multilingual and EAL/D participants at the selected school, it was not possible to select only monolingual English speaking children for the study. All participants however, had been exposed to English for a minimum of six months.

2.1.2 Experimental design. A single-subject research design was used in the Pilot Study (see Figure 3). Eight participants each completed three phases of the study (pre-intervention baseline, treatment and post-intervention baseline). Participants were randomly divided into two groups of four for the intervention phase. Both groups received the same intervention programme.

Pilot Study: 12 Weeks

Participant Selection and Assessment (Week 1)	Group 1 A: Baseline (Week 5)	Group 1 B: Intervention (Weeks 6-11)	Group 1 AB: Baseline and Assessment (Week 12)
Pre/Post Experimental Measures Test of Narrative Language	*Repeated Measures 1-3:* Single picture narrative generation task	Oral Narrative Intervention Program Sessions 1-18 *Repeated Measures 4-22*	*Pre/Post Experimental Measures* Test of Narrative Language *Repeated Measures 23-25*
	Group 2 A: Baseline (Week 5)	Group 2 B: Intervention (Weeks 6-11)	Group 2 AB: Baseline and Assessment (Week 12)
	Repeated Measures 1-3: Single picture narrative generation task	Oral Narrative Intervention Program Sessions 1-18 *Repeated Measures 4-22*	*Pre/Post Experimental Measures* Test of Narrative Language *Repeated Measures 23-25*

Figure 3

Pilot Study Experimental Design

2.1.3 Procedure.

2.1.3.1 Informed consent. Following approval from Curtin University's Human Research Ethics Committee and the West Australian Department of Education, the Principal of the selected school was approached and the school was invited to participate in the Pilot Study. Upon verbal agreement to engage in the study, the Principal was provided with a written summary of the research project, outlining the processes and procedures involved, and the roles and responsibilities for the study were defined. The Principal signed a consent form to confirm the school's participation in the Pilot Study. Following the meeting with the Principal, the three pre-primary teachers attended a meeting with the researcher to discuss the purpose of the Pilot Study and outline the processes and procedures involved. The three pre-primary teachers identified 12 participants for consideration for the intervention, based on their concerns about the participants' oral narrative skills. Information regarding the research project and consent forms were sent home to the 12 identified pre-primary participants. Parents/guardians signed consent forms and returned these to the classroom teacher to indicate consent, along with a brief case history form. Consent was received for all 12 of the participants. Additionally, each student provided written informed consent by circling 'yes' on a consent form, once their participation was explained to them by a parent/guardian. Following this, prior to administration of assessments, the participants were provided with a brief explanation of the assessment procedures and were invited to circle 'yes' on an additional consent form, as per the Western Australian Department of Education guidelines.

2.1.3.2 Assessment. A researcher generated parent/teacher questionnaire was used to gather case history information on the 12 assessment participants, including any history of hearing, vision, behavioural, language and educational or medical issues. The participants were then assessed by the primary researcher, using the Test of Narrative Language (TNL; Gillam & Pearson, 2004) to evaluate their oral narrative abilities. The eight participants with the lowest Narrative Language Ability Index (NLAI) on the TNL, who were not receiving additional Speech Pathology services, were selected to take part in the intervention phase of the Pilot Study. The pre-intervention NLAI scores and relevant background information for the eight pilot participants can be found in Table 1. For those children not included in the

intervention phase of the Pilot Study, assessment data were provided to the parents and, with consent, teachers.

Table 1

Participant Background and Pre-Intervention Data –TNL Narrative Language Ability Index (Composite Score), Percentile Rank and Clinical Description

P	Age	Sex	Background Information	NLAI	Percentile Rank	Clinical Description
1	5;4	M	Multilingual; exposed to English since birth; grommets inserted 12 months prior to pilot	73	3	Poor
2	5;7	M	Monolingual English	76	5	Poor
3	5;0	F	EAL/D; exposed to English since age 3	79	8	Poor
4	5;1	F	Multilingual; exposed to English since birth	73	3	Poor
5	5;3	F	Multilingual; exposed to English since birth	85	16	Below Average
6	5;7	F	EAL/D; exposed to English for 4 months	67	1	Very poor
7	5;1	F	EAL/D	79	8	Poor
8	5;3	M	Multilingual; exposed to English for 3 years	91	27	Average

Note: P = Participant; NLAI = Narrative Language Ability Index; NLAI Clinical Descriptions = >130 = very superior, 121-130 = superior, 111-120 = above average, 90-110 = average; 80-89 = below average, 70-79 = poor, <70 = very poor; EAL/D = English and an Additional Language/Dialect.

Individual narrative generation samples were also collected for each participant during all phases of the Pilot Study, as part of the repeated measure assessment procedure. For the Pilot Study, these samples were not analysed, however the

samples were collected to trial the assessment procedure and monitor the possibility of treatment effects for repeatedly generating narrative samples.

Following the intervention phase, participants were re-assessed on the TNL by the primary researcher.

2.1.4 Intervention. The eight selected participants attended 30-45-minute intervention sessions in two groups of four, three times a week for six weeks (18 sessions in total). Intervention sessions occurred in a designated room at the school and were delivered by the primary researcher. With consent from the parents/caregivers, all intervention sessions were audio recorded for later data checking and analysis.

2.1.4.1 ONIP structure. The intervention structure for the ONIP in the Pilot Study involved two phases. Phase One focused on explicit teaching of macrostructure elements (individual elements and overall text structure) using icons, gestures and explicit teaching scripts. Phase Two focused on applying knowledge of text structure to three children's books, using comprehension questions before, during and after reading, creating story boards and engaging in oral retells of the story. The ONIP intervention phases are summarised in Table 2 below.

Table 2

ONIP Pilot Study Intervention Structure Phase One and Two

Phase	Week	Session 1	Session 2	Session 3
1	1	Introduction to overall narrative macrostructure.	Explicit teaching of setting element – 'Who'.	Explicit teaching of setting element 'Where'.
1	2	Explicit teaching of setting element - 'When'.	Explicit teaching of 'Story Spiral' - initiating event, internal response and plan.	Explicit teaching of 'Actions/attempts' in the middle of the story.
1	3	Explicit teaching of 'Story Spiral' - initiating event, internal response and plan.	Explicit teaching of 'Solution/Resolution' and 'Consequence'.	Consolidation of overall narrative macrostructure.
2	4	Text comprehension and sequencing, modelled and joint retell.	Revision of text comprehension and sequencing, joint retell, joint text innovation using storyboard.	Revision of text comprehension and sequencing, revision of joint text innovation and storyboard, modelled telling of innovated text, individual telling of innovated text.
2	5	Text comprehension and sequencing, modelled and individual creation of storyboard, modelled and joint retell.	Revision of text comprehension and sequencing, joint retell, joint text innovation using storyboard.	Revision of text comprehension and sequencing, revision of joint text innovation and storyboard, modelled telling of innovated text, individual telling of innovated text.
2	6	Text comprehension and sequencing, modelled and individual creation of storyboard, modelled and joint retell.	Revision of text comprehension and sequencing, joint retell, joint text innovation using storyboard.	Revision of text comprehension and sequencing, revision of joint text innovation and storyboard, modelled telling of innovated text, individual telling of innovated text.

2.1.4.2 ONIP therapeutic procedures and strategies. The key intervention procedures and strategies used within the ONIP in the Pilot Study, based on the literature reviewed in the previous chapter, are outlined below.

a) Group therapy – All intervention sessions were conducted in small groups of four. Group therapy allows for additional teaching and learning, as each student is able to observe and give feedback on another's performance.

b) Gradual release of responsibility – For all goals targeted throughout the ONIP -whether answering comprehension questions, retelling a story, or generating a story - the participants were supported in completing these tasks using a model of gradual release of responsibility (Fisher & Fey, 2008). This involved the provision of a clear model by the researcher, joint completion of the task by the participant and the researcher, and eventually independent completion by each individual student. The steps involved in this process can be found in Appendix B.

c) Metalinguistic and metacognitive instruction – Narrative macrostructure was taught explicitly using a range of graphic organisers, including storybook templates for teaching overall text structure and storyboards for supporting text comprehension, as well as individual narrative icons to represent each narrative macrostructure element. Explicit teaching scripts for the introduction and revision of each narrative element were used throughout the ONIP. Phase One of the ONIP, which consisted of nine intervention sessions, focused on explicitly teaching each narrative macrostructure element individually, using a range of storybooks that provided a clear example of the targeted element. For example, using the story, "The Very Hungry Caterpillar" by Eric Carle, to teach the narrative element of 'when'. See Appendix C for explicit teaching scripts.

d) Text comprehension prior to narrative expression – To support participants in their understanding of stories read to them in the intervention sessions in the ONIP, the researcher implemented a book share protocol designed to support participants' understanding of the text structure and content. This protocol was administered at the beginning of each session. The key steps in the book share protocol included*:*

1) Activating prior knowledge of the theme or plot in the text using questioning and shared discussion.

2) Identifying narrative macrostructure elements by placing palm-sized narrative icons onto the pages of the book as they were mentioned in the story.

3) Answering discourse comprehension questions based on narrative macrostructure elements after the shared book reading (e.g., "Who was the story about?").

4) Modelled and independent completion of a storyboard involving sticking photocopied pictures or drawing symbols for each narrative macrostructure element within the story (see Appendix D for complete book share protocol).

e) Multiple opportunities to engage in storytelling – Throughout the ONIP, participants were provided with multiple opportunities to engage in storytelling. These opportunities included encouragement to join in during repeated storybook reading when the participants were familiar with the story, opportunity to jointly retell each story in Phase Two of the ONIP, and to independently retell each story at least twice, using pictures and icons for support.

f) Implicit morpho-syntax intervention using language facilitation techniques – During Phase Two of the ONIP, participants were required to retell each story using a modified script of the story. The adjusted scripts were written by reducing some of the content of the story to include only the key macrostructure elements, making it easier for the participants to retell the text. Consistent conjunctions and transition phases (e.g., "…so they decided to go and look for some food", "…so he decided to find someone to help.") were used across all adjusted retell scripts, to provide repeated models of the morpho-syntactic targets and support the participants in their ability to use those targets effectively. See Appendix E for example adjusted retell scripts. Additionally, the following implicit language facilitation techniques were used throughout all intervention sessions to target microstructure skills: recasting, rephrasing, expanding/extending and adding language, vertical structuring and modelling.

g) Contingent responses and cueing hierarchies – Throughout all intervention tasks, the researcher used consistent contingent responses and cueing hierarchies. These cueing hierarchies and contingent responses were carefully designed and manualised for both macrostructure and microstructure targets. See Appendix F for contingent responses and cueing hierarchies.

h) Multimodal intervention strategies – Throughout each intervention session, multimodal strategies such as visual supports and scaffolds, gestures, stepping narrative retells, drawing parts of a story and using active engagement charts while listening to others tell their stories were used. This facilitated active engagement from all participants.

2.1.5 Pre- post intervention results. Following the completion of the ONIP, participants were reassessed on the TNL (see Table 3 over page for details).

Descriptive analysis of the pre- and post-treatment TNL data revealed that six of the eight participants made clinically significant change, as indicated by a shift in clinical category post-intervention. Three participants (P2, P3, & P7) moved across two clinical boundaries from "Poor" to "Average" post intervention, P6 crossed two clinical boundaries from "Very Poor" to "Below Average", and P4 crossed three clinical boundaries from "Very Poor" to "Average" post intervention. These results provided preliminary evidence for the effectiveness of the ONIP in improving oral narrative skills and provided support for the feasibility of the Efficacy Trial.

Table 3

Pre-Post Intervention TNL Data – Narrative Language Ability Index composite

score, percentile range and clinical category

P	Age		NLAI		Percentile Rank		Clinical Category	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	5;4	5;7	73	73	3	3	Poor	Poor
2	5;7	5;10	76	103	5	58	Poor	Average **
3	5;0	5;3	79	100	8	50	Poor	Average **
4	6;1	6;3	67	94	1	35	Very Poor	Average ***
5	5;3	5;6	85	91	16	27	Below Average	Average *
6	5;7	5;9	67	88	1	21	Very poor	Below Average **
7	5;1	5;4	79	94	8	35	Poor	Average **
8	5;3	5;3	91	91	27	27	Average	Average

*Note: P = Participant; NLAI = Narrative Language Ability Index; NLAI descriptions = >130 = very superior, 121-130 = superior, 111-120 = above average, 90-110 = average; 80-89 = below average, 70-79 = poor, <70 = very poor; * = shift across one clinical boundary; ** = shift across two clinical boundaries; *** shift across three clinical boundaries.*

2.1.6 Modifications to the assessment and ONIP protocol. Prior to the commencement of the Efficacy Trial, the researcher made the following minor modifications to the assessment and intervention protocols.

a) Repeated narrative generation assessment task - A slight adjustment to the task instruction was made following the Pilot Study, to elicit a clearer narrative

related to the kick-off picture, as opposed to a picture description (see Appendix G for Pilot Study and Efficacy Trial task instructions).

b) Revision of narrative macrostructure – A plan for additional revision of the narrative macrostructure elements and icons was included at the beginning of every intervention session. During these revision activities, the researcher and participants engaged in discussion of each narrative macrostructure element, and the participants labelled or identified each narrative icon and provided examples for each element using a story that they knew. The researcher used explicit teaching scripts for each narrative macrostructure element (see Appendix C) during the revision tasks. The participants revised the icons again during the book share protocol, where the researcher either stuck the icon into the picture book or pointed to the icon already in the picture book, as the narrative element was revealed in the story.

c) Additional active participation strategies added to the ONIP - During Phase Two of the intervention program, during the modelled narrative retells and while listening to other group members retelling the story, all participants were given a task that promoted active listening to the story. These tasks included either a narrative icon checklist or a chart with moveable narrative icons. This ensured that the participants had to actively listen to the oral retells and identify each narrative element, as it was included in the retell.

d) Simplification of narrative retell scripts - In Phase Two of the intervention program, participants were required to retell three different narratives from well-known picture books. After the initial shared book reading, the researcher modelled a retell with a simplified story script and each participant was required to retell the story using the simplified script. Following the Pilot Study, the narrative retell scripts were further simplified to include only the key narrative macrostructure elements, and carefully designed simple and compound sentences. Consistent temporal and causal connectors and consistent sentence frames for the inclusion of the initiating event, internal response and plan were included across the three different stories, to provide repeated practice and modelling of these syntax targets.

e) Adjustment of Phase Two lesson plans - The three sessions linked to each narrative in Phase Two were adjusted to allow more opportunity for each participant to practice retelling the narrative and less focus on text innovation using the text. Each session in Phase Two also included a modelled narrative generation using a kick-off picture and the narrative macrostructure checklist. This shift in focus

allowed more opportunity to practice retelling the stories and the morpho-syntactic targets, and allowed the researcher to provide focused implicit intervention on morpho-syntax during the retells. Following this adjustment, the focus of each lesson in Phase Two for each of the three narratives was as follows:

- Session 1: Story comprehension, sequencing, storyboard creation and modelled retell.
- Session 2: Story comprehension, sequencing, modelled retell and individual retell.
- Session 3: Story comprehension, sequencing, modelled retell and individual retell

2. 2 Efficacy Trial: Evaluating the Efficacy of the ONIP

Based on the promising preliminary findings of the Pilot Study, the efficacy of the ONIP was evaluated with eleven participants using a single-subject across multiple baselines research design**.**

2.2.1 Participants. A total of 11 pre-primary participants (five girls and seven boys) aged 5;0 to 5;11, with a mean age of 5;7, participated in the Efficacy Trial. Participants were drawn from a different mainstream, middle range socio-economic school (ICSEA value of 1034) within the North East Metropolitan Education District using the same procedures as in the Pilot Study. As per the Pilot Study, typical oral narrative classroom practice in the two pre-primary classes did not include explicit teaching of narrative structure beyond the basic 'beginning', 'middle' and 'end' structure.

In the Efficacy Trial, information regarding the research project and consent forms were sent home to all pre-primary participantsat the school. Parents/guardians signed consent forms and returned these to the classroom teacher, along with a researcher generated case history form. Consent and case history forms for 21 pre-primary participantsbetween the ages of 5;0 and 6;0 were received. All 21 participants were assessed using the TNL (Gillam & Pearson, 2004) to evaluate their oral narrative abilities.

Twelve participants with the lowest TNL-NLAI scores (Gillam & Pearson, 2004), who were not currently receiving additional Speech Pathology services, were selected to take part in the Trial. The TNL-NLAI scores for the twelve Efficacy Trial participants can be found in Table 4. It should be noted that Participant 12 left the

school after the completion of the baseline phase and therefore was not included in the intervention phase of the study. Of the remaining 11 participants, 10 had low narrative skills on the TNL and teacher report, while P6 was low average on the TNL, but was included due to teacher concerns.

Assessment data for those children not included in the study were provided to the parents and teachers, with consent. Due to the high levels of multilingual and EAL/D participants at the school, it was not possible to select only monolingual English speaking children for inclusion in study, however all participants had been exposed to English for a minimum of six months. Pre-intervention participant information is summarised in Table 4 below.

Table 4

Participant Background and Pre-Intervention Data –TNL Narrative Language Ability Index (Composite Score), Percentile Rank and Clinical Description

P	Age	Sex	Background Information	NLAI	Percentile Rank	Clinical Description
1	5;6	M	Monolingual	85	16	Below Average
2	5;1	F	History of language delay/ impairment	46	<1	Very Poor
3	5;0	F	Monolingual	73	3	Poor
4	5;6	M	Monolingual	82	12	Below Average
5	5;1	M	Monolingual	85	16	Below Average
6	5;3	F	Monolingual	91	27	Average
7	5;4	M	Monolingual	73	3	Poor
8	5;8	F	EAL/D, 3 months of exposure to English	55	5	Very Poor
9	5;3	M	Multilingual, exposed to English since birth	70	2	Poor
10	5;3	M	Multilingual	70	2	Poor
11	5;11	M	Monolingual	21	21	Below Average
12	5;10	F	Monolingual	16	16	Below Average

Note: P = Participant; NLAI = Narrative Language Ability Index; NLAI Clinical Descriptions = >130 = very superior, 121-130 = superior, 111-120 = above average, 90-110 = average; 80-89 = below average, 70-79 = poor, <70 = very poor; EAL/D = English and an Additional Language/Dialect.

2.2.2 Experimental design. A single-subject research design across multiple baselines with 11 participants was used in the Efficacy Trial. This research design allowed for detailed individual data analysis. The 11 participants each completed three phases of the study (pre- treatment baseline, treatment and post intervention baseline). Participants were randomly divided into three groups of four, four and three participants respectively for the intervention phase and each group was assigned to one of the baseline conditions prior to treatment commencing (Group 1 = 3 baselines, Group 2 = 6 baselines, Group 3 = 9 baselines). Single-subject research designs allow analysis of the effectiveness of the intervention for the specific participants in the study (Portney & Watkins, 2009). To demonstrate external validity, the single-subject design was replicated across 11 participants in total, using three staggered baselines. Multiple baselines provide additional evidence for improvements in the dependent variables to be due to the onset of treatment, as opposed to natural progression.

The first baseline phase (A1) was administered prior to the commencement of intervention, with the three groups having a staggered baseline. Group 1 had a one-week baseline, with data collected three times a week for one week (3 sessions), Group 2 had a two-week baseline, with data collected three times a week for two weeks (6 sessions) and Group 3 had a three-week baseline, with data collected three times a week for three weeks (9 sessions). During the treatment phase (B) intervention was provided three times a week for six weeks (18 sessions), followed by the second baseline phase (A2) for three times a week for one week (3 sessions). The efficacy of the intervention program was then evaluated using statistical analyses of data including changes in the repeated measures of the dependent variables (the primary measures of narrative macrostructure and microstructure) and changes in the pre- and post-treatment scores on the standardised TNL assessment (Gillam & Pearson, 2004).

Efficacy Trial: 16 Weeks

Participant Selection and Assessment

(Week 1-6)

Pre/Post Experimental Measures

Test of Narrative Language

Pre Experimental Language Measures

Wechsler Preschool and Primary Scale of Intelligence, Expressive Vocabulary Test-2, Peabody Picture Vocabulary Test-IV

Group 1

A: Baseline

(Week 7)

Repeated Measures 1-3:

Single picture narrative generation task

Group 1

B: Intervention (Weeks 8-13)

Repeated Measures 4-22

Oral Narrative Intervention Program

Sessions 1-18

Group 1

AB: Baseline and Assessment (Week 14)

Repeated Measures 23-25

Pre/Post Experimental Measures

Test of Narrative Language

Group 2

A: Baseline

(Week 7-8)

Repeated Measures 1-6:

Single picture narrative generation task

Group 2

B: Intervention (Weeks 9-14)

Repeated Measures 7-25

Oral Narrative Intervention Program

Sessions 1-18

Group 2

AB: Baseline and Assessment (Week 15)

Repeated Measures 25-27

Pre/Post Experimental Measures

Test of Narrative Language

Group 3

A: Baseline

(Week 7-9)

Repeated Measures 1-9:

Single picture narrative generation task

Group 3

B: Intervention (Weeks 10-15)

Repeated Measures 10-28

Oral Narrative Intervention Program

Sessions 1-18

Group 3

AB: Baseline and Assessment (Week 16)

Repeated Measures 29-31

Pre/Post Experimental Measures

Test of Narrative Language

Figure 4

Efficacy Trial Experimental Design

2.2.3 Procedure.

2.2.2.1. Informed consent. The same procedure for obtaining informed consent was used in the Efficacy Trial as in the Pilot Study.

2.2.2.2 Assessment. Each participant was assessed prior to the intervention phase (see Figure 4). The primary researcher administered all the assessments (TNL, WPPSI, EVT-2 and PPVT-IV), as per the test administration guidelines.

2.2.3.1 Background Assessment Measures. Each of the 11 participants were further tested prior to the intervention phase to gather additional information about language and cognitive skills. Details of each test are outlined below. A researcher generated parent/teacher case history form was used to further information about the participants, including significant hearing, vision, behavioural, language, educational and./or medical history.

2.2.3.1.1 Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 1989). The core subtests from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) (Wechsler, 1989) were administered to assess non-verbal IQ. The reliability coefficients for the WPPSI range from .89 to .95 (Wechsler, 1989). The researcher was trained and supported by a Registered Psychologist to ensure reliability of test administration.

2.2.3.1.2 Peabody Picture Vocabulary Test, fourth edition (PPVT-IV; Dunn & Dunn, 2007) and Expressive Vocabulary Test, second edition (EVT-2; Williams, 2007). All participants were assessed using the Peabody Picture Vocabulary Test, fourth edition (PPVT-IV; Dunn & Dunn, 2007) and Expressive Vocabulary Test, second edition (EVT-2) (Williams, 2007). Results can be found in Table 6 below. The PPVT-IV measures receptive vocabulary and involves a picture-pointing task. It has high split-half (.93 - .96) and test-retest (.94) reliabilities for Pre-Primary children (Dunn & Dunn, 2007). The EVT-2 is a norm-referenced test of expressive vocabulary and word retrieval, and involves a picture-naming task. The EVT-2 has a strong degree of test reliability, with split-half reliabilities range from .83 to .97 with a median of .91 (Williams, 2007).

Table 5

Background Assessment Results – Non-verbal IQ, Receptive Vocabulary and

Expressive Vocabulary Scores

P	WPPSI PIQ Standard Score	PPVT-IV Standard Score	EVT-2 Standard Score
1 (JJW)	98	106	100
2 (RH)	86	30*	19*
3 (MS)	93	110	99
4 (JN)	105	112	109
5 (JG)	102	105	94
6 (JSG)	95	104	103
7 (SS)	72*	99	101
8 (AB)	79*	99	79*
9 (TSRS)	84*	99	79*
10 (JZ)	84*	98	107
11 (IY)	81*	99	99

*Note. P = Participant; * = Below normal limits; WPPSI = Wechsler Preschool and Primary Scale of Intelligence; PIQ = Performance IQ; PPVT-IV = Peabody Picture Vocabulary Test, fourth edition; EVT-2 = Expressive Vocabulary Test, second edition.*

    2.2.3.1.3 Background assessment data summary. The 11 participants included in the intervention phase of the Efficacy Trial were all attending mainstream school and were not receiving extra support for narrative abilities. None of the participants were currently accessing Speech Pathology services. Background testing showed that five of the 11 participants had nonverbal IQ scores below one standard deviation below the mean, but within two standard deviations of the mean (P7, P8, P9, P10 & P11). Participant Two had scores in the severe range for expressive and receptive vocabulary, however non-verbal IQ in the normal range. Participant Eight had expressive vocabulary and-non-verbal IQ within one standard deviation below the

mean, however receptive vocabulary within the normal range. These results demonstrated a wide range of abilities within the intervention group. All participants were included in the intervention phase of the Efficacy Trial as they were felt to be representative of the range of children in a mainstream classroom, with difficulties in narrative level discourse. The background assessment data will be further considered when the results of the study are presented and interpreted.

2.2.3.2 Experimental measures.

2.2.3.2.1 Test of Narrative Language (Gillam & Pearson, 2004). Pre- and post-treatment data were collected using the TNL (Gillam & Pearson, 2004). The narrative samples were scored as per test guidelines. The scores included standard scores for TNL-Comp and TNL-Exp, and the NLAI – a composite score of overall narrative ability (Gillam & Pearson, 2004). The TNL has been widely used in clinical practice and research studies investigating the effect of narrative-based intervention and is considered to a reliable and valid measures of narrative abilities (alpha reliabilities were .76, .87 and .88 for the three subtests) (Gillam & Pearson, 2004).

2.2.3.2.2 Repeated narrative generation task. The researcher designed a single picture narrative generation task, piloted in the Pilot Study and slightly modified as explained in section 2.1.7.4. This task was used to elicit narrative samples throughout the Efficacy Trial. The 'kick-off' pictures were the same as used in the Pilot Study, designed by the researcher and an illustrator from Black Sheep Press (www.blacksheeppress.co.uk). These pictures depicted a causal event (such as a jug of milk being knocked off a table) and were designed to elicit a narrative. The samples were collected throughout the baseline and treatment phases of the Efficacy Trial. At the beginning of each treatment session, each participant was individually asked to generate a story from a picture, prior to joining the group. All participants used the same stimulus pictures, with a different kick-off picture used per session. A total of 30 different kick-off pictures were used across the pre-treatment baseline, intervention and post-treatment baseline phases. Narrative generations typically took 1-3 minutes per child, and participants indicated that they were finished by finishing off their story with a statement such as, "Finished", "The End", or "I'm done". If participants did not say an ending statement but stopped telling a story, the researcher provided a non-verbal prompt, such as, "Mhmm" and if no further speech was produced, she would ask, "Are you finished?", before switching off the recording. See Appendix G for Efficacy Trial assessment procedure. Each sample

was audio-recorded, transcribed and analysed using the Systematic Analysis of Language Transcripts - Research Version (SALT; Miller et al., 2015). SALT is a software tool that can be used to calculate language measures such as MLU and NDW. SALT codes can also be created to analyse a child's use of linguistic features, such as story grammar components in narrative retell tasks (Peterson et al., 2008). Using SALT in the current research project allowed the detailed coding and analysis of repeated measures of both narrative macrostructure and microstructure elements. Two macrostructure, four microstructure, and three standard SALT scores were calculated for each of the repeated measures to evaluate oral narrative abilities for each participant. These measures are summarised in Table 6 over page.

Table 6

Repeated Measures – Narrative Macrostructure Measures, Microstructure Measures and Standard SALT Measures.

SALT Measure	Description and Rationale
Total macrostructure score	Composite score of all individually coded macrostructure elements – Orientation of Setting, Orientation of Character, Initiating Event, Internal Response, Plan, Actions/Attempts, Complication, Solution, Consequence, Formulaic Markers, Character Speech (see Table 9 for details).
Total number of conjunctions	Composite score of conjunctions included in the narrative – Temporal Conjunctions, Additive Conjunctions, Conditional Conjunctions, Adversative Conjunctions, Causal Conjunctions (see Table 10 for details). Syntax measure - indication of sentence length and complexity. Children with language difficulties use less complex syntax (Fey et al., 2004).
Total number of adverbials	Composite score of all adverbials including adverbials of place, time and manner. Syntax and semantic measure - measure for sentence length and complexity and information. Children with language difficulties use less complex syntax (Fey et al., 2004).
Total number of Adjectives (ADJ)	Total number of adjectives included, providing a measure of descriptive vocabulary. Semantic measure - Children with language difficulties have a less diverse vocabulary (Fey et al., 2004).
Total number of Complex C-units	Total number of C-units containing an independent clause and at least one dependent clause. Measure of complex syntax. Children with language difficulties use less complex syntax (Fey et al., 2004). Complex sentences are cohesive devices used in narrative production that demonstrate developmental effects as children mature linguistically (Justice et al., 2006).
MLU in morphemes (MLUm)	Measure of expressive language.
Number of different words (NDW)	Semantic measure - Measure of expressive vocabulary. Children with language difficulties have a less diverse vocabulary (Fey et al., 2004).
Number of total words (NTW)	Semantic measure - Measure of expressive language.

2.2.4 Intervention. Sessions occurred in a designated room at the school with the 11 participants attending in small groups of three to four, for 30-45-minute sessions, three times a week for a period of six weeks (total of 18 sessions). The primary researcher conducted the programme sessions. With consent, all sessions were video and audio recorded for later data scoring and analysis. Table 7 below summarises session attendance for each participant during the intervention phase.

Table 7

Participant Attendance

Participant	Number of Sessions Attended Out of 18
1	16
2	13
3	17
4	15
5	16
6	15
7	17
8	17
9	16
10	16
11	16

2.2.4.1 ONIP structure. The intervention structure for the ONIP in the Efficacy Trial involved two phases as summarised in Table 8 below.

Table 8

ONIP Efficacy Trial Intervention Structure Phase One and Phase Two

Phase	Week	Session 1	Session 2	Session 3
1	1	Introduction to overall narrative macrostructure.	Explicit teaching of setting element – 'Who'.	Explicit teaching of setting element 'Where'.
1	2	Explicit teaching of setting element - 'When'.	Explicit teaching of 'Story Spiral' - initiating event, internal response and plan.	Explicit teaching of 'Actions/attempts' in the middle of the story.
1	3	Explicit teaching of 'Story Spiral' - initiating event, internal response and plan.	Explicit teaching of 'Solution/Resolution' and 'Consequence'.	Consolidation of overall narrative macrostructure.
2	4	Text comprehension and sequencing, modelled and joint retell.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.
2	5	Text comprehension and sequencing, modelled and individual creation of storyboard, modelled and joint retell.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.
2	6	Text comprehension and sequencing, modelled and individual creation of storyboard, modelled and joint retell.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.	Revision of text comprehension and sequencing; modelled and individual retell using story board; modelled single picture narrative generation using icon checklist.

2.2.4.1 ONIP therapeutic procedures and strategies. The key intervention procedures and strategies used within the ONIP in the Efficacy Trial are summarised below.

a) **Group therapy** – All intervention sessions were conducted in small groups of four. Group therapy allows for additional teaching and learning, as each student can observe and give feedback on another's performance.

b) **Gradual release of responsibility** – For all goals targeted throughout the ONIP -whether answering comprehension questions, retelling a story, or generating a story - the participants were supported in completing these tasks using a model of gradual release of responsibility (Fisher & Fey, 2008). This involved the provision of a clear model by the researcher, joint completion of the task by the participant and the researcher, and eventually independent completion by each individual participant. The steps involved in this process can be found in Appendix B.

c) **Metalinguistic and metacognitive instruction** – Narrative macrostructure was taught explicitly using a range of graphic organisers, including storybook templates for teaching overall text structure and storyboards for supporting text comprehension, as well as individual narrative icons to represent each narrative macrostructure element. Explicit teaching scripts for the introduction and revision of each narrative element were used throughout the ONIP. Phase One, which consisted of nine sessions, focused on explicitly teaching each narrative macrostructure element individually, using a range of storybooks that provided a clear example of the targeted element. For example, the story "The Very Hungry Caterpillar" by Eric Carle, was used to teach the narrative element of 'when'. See Appendix C for explicit teaching scripts and corresponding books. The narrative macrostructure elements and icons were revised at the beginning of each session. During these revision activities, the researcher and participants engaged in discussion of each narrative macrostructure element, and the participants labelled or identified each narrative icon and provided examples for each element using a story that they knew. The researcher used explicit teaching scripts for each narrative macrostructure element (see Appendix C) during the revision tasks. The participant revised the icons again during the book share protocol, where the researcher either stuck the icon into the picture book or pointed to the icon already in the picture book, as the narrative element was revealed in the story.

d) Text comprehension prior to narrative expression – To support participants in their understanding of stories read to them, the researcher implemented a book share protocol designed to support participants' understanding of the text structure and content. This protocol was administered at the beginning of each session. The key steps in the book share protocol included*:*

1) Activating prior knowledge of the theme or plot in the text using questioning and shared discussion.

2) Identifying narrative macrostructure elements by placing palm-sized narrative icons onto the pages of the book as they were mentioned in the story.

3) Answering discourse comprehension questions based on narrative macrostructure elements after the shared book reading (e.g., "Who was the story about?").

4) Modelled and independent completion of a storyboard involving sticking photocopied pictures or drawing symbols for each narrative macrostructure element within the story (see Appendix D for complete book share protocol).

e) Multiple opportunities to engage in storytelling – Throughout the ONIP, participants were provided with multiple opportunities to engage in storytelling. These opportunities included encouragement to join in during repeated storybook reading when the participants were familiar with the story, opportunity to jointly retell each story in Phase Two of the ONIP and to independently retell each story at least twice, using pictures and icons for support.

f) Active listening strategies. In Phase Two of the program, during the modelled narrative retells and while listening to other group members retelling the story, all participants were given a task that ensured active listening to the story. These tasks included either a narrative icon checklist or a chart with moveable narrative icons. This strategy ensured that the participants had to actively listen to the oral retells and identify each narrative element, as it was included in the retell.

g) Implicit morpho-syntax intervention using language facilitation techniques – During Phase Two, participants were required to retell each story using a modified script of the story. The adjusted scripts were written by reducing some of the content of the story to include only the key macrostructure elements, making it easier for the participants to retell the text. Consistent conjunctions and transition

phases (e.g., "…so they decided to go and look for some food", "…so he decided to find someone to help.") were used across all adjusted retell scripts, to provide repeated models of the syntax targets and support the participants in their ability to use those targets effectively. See Appendix E for example adjusted retell scripts, and Appendix H for a summary of the microstructure features included within each script. Additionally, the following implicit language facilitation techniques were used throughout all intervention sessions to target microstructure skills: recasting, rephrasing, expanding/extending and adding language, vertical structuring and modelling.

h) **Contingent responses and cueing hierarchies –** Throughout all intervention tasks, the researcher used consistent contingent responses and cueing hierarchies. These cueing hierarchies and contingent responses were carefully designed and manualised for both macrostructure and microstructure targets. See Appendix F for contingent responses and cueing hierarchies.

i) **Multimodal strategies –** Throughout each session, multimodal strategies such as visual supports and scaffolds, gestures, stepping narrative retells, drawing parts of a story and using active engagement charts while listening to others tell their stories were used. This facilitated active engagement from all participants.

2.2.5 Data preparation for analysis. The narrative generation samples were transcribed and analysed using SALT (Miller & Iglesias, 2008). The samples were transcribed according to SALT conventions, and segmented into Communication Units (C-units). Prior to coding all of the samples, the researcher met with an experienced SALT coder and confirmed and discussed SALT coding conventions. The narrative samples were further analysed in SALT using research designed codes (See Table 9 below). These codes were used to identify the presence of narrative macrostructure and microstucture elements in order to gain information about the children's inclusion of narrative macrostructure elements, and use of morpho-syntax and vocabulary. The measures were based closely on those created for the Curtin University Discourse Protocol (Whitworth, Claessen & Leitao, 2013), and with reference to similar published narrative analysis procedures, including the Index of Narrative Microstructure (INMAS; Justice et al., 2006), INC (Peterson, Gillam & Gillam, 2008) and MISL (Gillam & Gillam, 2010). A summary of the researcher generated SALT codes used in the Efficacy Trial are summarised in Table 9 and 10 below.

Table 9

Narrative Macrostructure Elements, Descriptions and SALT Codes and Conventions

Macrostructure Elements	Description and Rationale	SALT Code and Coding Conventions
Orientation - Character	This information usually occurs at the beginning of a narrative. Stories can have multiple characters throughout the narrative. Present in a true narrative structure. Encourages inclusion of specific vocabulary, referencing and adjectives.	[OC] Code applied to any character introduced at the beginning of the narrative. Pronouns were not coded. Examples: 'the man', 'a boy', 'Sam'.
Orientation – Setting	The time and place that a story takes place. Present in a true narrative structure. Encourages inclusion of specific vocabulary, adjectives and adverbial phrases.	[OS] Code only applied to first orientation of setting – place and/or time. Time and place introduced later in the story were coded as adverbials. Included stereotypical 'Once upon a time' and 'One time'. Examples: 'One night', 'On Monday', 'Yesterday'.
Initiating Event	A causally related event that starts the story off, typically a problem. Present in a true narrative structure. Encourages inclusion of causal conjunctions.	[IE] Code an event or problem that elicits an active response from the character/s. Examples: 'Grandma Poss couldn't remember the spell to make her visible again'.
Internal Response	Explains the character's internal thoughts and feelings in response to the problem. Usually explained using cognitive verbs and words to describe emotions. Present in a true narrative structure. Encourages inclusion of complex verb types and causal conjunctions.	[IR] Example: "She felt miserable".
Plan	Character's internal thoughts, emotions and ideas are described - indicating a plan of action - in response to the initiating event.	[P] Example: "So they decided to look for some food".

	Present in a true narrative structure. Encourages inclusion of complex verb types and causal conjunctions.	
Actions/events/ attempts	A series of actions or attempts completed by the character/s, often in response to the initiating event. Can encourage inclusion of adverbial phrases.	[A] Example: "First, they ate minties in Melbourne"
Complication	A second problem that causes a change in plan or action for the character. Indicates a second episode.	[Comp] *Not an explicit target of the ONIP*
Solution/resolution	The final action of the character/event in the story that resolves the initiating event. Encourages inclusion of complex verb types, causal conjunctions and words to describe emotions.	[S] Example: "Finally, she ate a vegemite sandwich and her whole body appeared".
Consequence (moral)	The consequence following the resolution, usually linked back to the initiating event. The consequence could be a moral, an emotional response or statement made by the character or narrator/author. Often present in a true narrative.	[C] Examples: 'Then they lived happily ever after", "From that day on they always packed their raincoats before going camping".

Table 10

Narrative Microstructure Elements, Descriptions and SALT Codes and Conventions

Microstructure Elements	SALT Code	Description and Examples
Temporal conjunctions	[TC]	Examples – and, then, and then, first, next, last, when, now, until, while
Causal conjunctions	[CC]	Examples – because, so
Adversative conjunctions	[AC]	Examples – but, except, however, or, rather, than
Additive conjunctions	[AdC]	Examples – and
Conditional / consequential conjunctions	[CondC]	Examples – therefore, whether, although, if, which, unless, whereas
Adjectives	[ADJ]	True adjectives (describing words) E.g., "mummy bird", "tall boy", "big, round ball"
Adverbial of place	[AP]	Adverbial phrase indicating where an action occurs. E.g., "He kicked the ball into the water".
Adverbial of time	[AT]	Adverbial phrase indicating when an action occurs. E.g., "In the morning, they woke up"
Adverbial of manner	[AM]	Adverbial phrase indicating how an action occurs. E.g., "She shouted loudly"
Complex C-units	[COMPLEX]	Complex C-unit including at least one dependent clause Example: "And then the spider made a web so that the fairy couldn't get away".

Following SALT coding, data were extracted using Rectangular Data Files as per procedures outlined in the research version of SALT, and the final combined measures described in Table 6 were calculated for each participant for further statistical analysis.

2.2.5.1 Inter-rater reliability. Inter-rater reliability of the researcher generated macrostructure and microstructure coding was calculated using a sample of 20 of the

264 narrative samples (7.5% of the samples). Inter-rater agreement between the researcher and an experienced SALT coder, using the coding guidelines in Table 13 and 14, was 94.4%.

2.2.5.2 Statistical analysis. The efficacy of the intervention program was evaluated using statistical analyses of data including:

2) changes in pre- and post- intervention scores for standardised measures of narrative - TNL-Exp, TNL-Comp, and TNL-NLAI scores (Gillam & Pearson, 2004).

2) changes in the repeated measures (dependent variables) for macrostructure and microstructure scores - Total Macrostructure Score, Total Number of Conjunctions, Total Number of Adjectives, Total Number of Adverbs, Total Number of Complex C-units, MLUm, NDW and NTW.

For the pre- and post-treatment measure of TNL (Gillam & Pearson, 2004) the standard scores, percentile rank and clinical category (as defined in the TNL test manual) were examined to determine clinical significance.

The repeated measures collected during baseline and treatment, were analysed and calculated using SALT coding to determine change, and determine if the observed changes were related to the onset of treatment. Visual and statistical methods were used to evaluate both clinical and statistical significance. A trend analysis was carried out on the dependent measures collected during the baseline phases and at the start of each intervention session. The data are displayed visually on a graph for visual analysis of stability and trend across adjacent phases in Chapters Three and Four. These data were further analysed using the 2SD-Band Method (Portney & Watkins, 2009). First, the variability during the baseline phase was established using the mean and standard deviation of data points within that phase. The 2SD-band drawn on the baseline phase was extended into the intervention phase. If at least two consecutive data points in the intervention phase fell outside the 2SD-band, changes from baseline were considered significant (Portney & Watkins, 2009). In addition, effect size was calculated using a variation of Cohen's *d* statistic for single subject research designs (Beeson & Robey, 2006). This calculation quantifies the magnitude of change in the level of performance by calculating the mean and standard deviation of the pre- and post-treatment baseline data and calculating the *d* statistic.

Chapter 3: Results – Question One

3.1 Research Question and Statistical Analyses

The first research question investigated the effect of the ONIP on a standardised measure of narrative comprehension, expression and overall narrative performance: The Test of Narrative Language (TNL; Gillam & Pearson, 2004). The ONIP aimed to improve participants' receptive and expressive narrative skills as measured by the TNL-NLAI composite score, and the TNL-Exp and TNL-Comp scores. A clinically significant gain was judged to occur if a participant's standardised score crossed at least one clinical boundary, as defined by the test manual. Examples of clinically significant change would be a move of at least one category, such as from "Very Poor" to "Poor", "Poor" to "Below Average" or "Below Average" to "Average" on the TNL (Gillam & Pearson, 2004).

3.2 Results and Analysis of Standardised Measures

In this section, the data for all participants will be presented in summary tables, as follows:

- Table 11: Pre- post intervention TNL-NLAI composite scores, Percentile Rank and Clinical Category

- Table 12: Pre- post intervention TNL-Expression Performance– Subtest Scores (McDonald's Retell, Late for School Sequenced Generation, Alien Story Single Picture Generation), Total Raw Score, Standard Score and Clinical Category

- Table 13: Pre- post intervention TNL-Comprehension Performance– Subtest Scores (McDonald's Story, Shipwreck Story, Dragon Story), Total Raw Score, Standard Score and Clinical Category

Table 11

Pre- post intervention TNL - NLAI composite scores, Percentile Rank and Clinical Category

P	Age (years;months)		NLAI		Percentile Rank		Clinical Category	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	5;6	5;9	85	106	16	65	Below Ave	Ave*
2	5;1	5;5	46	61	<1	<1	Very Poor	Very Poor
3	5;0	5;2	73	103	3	58	Poor	Ave**
4	5;6	5;10	82	94	12	35	Below Ave	Ave*
5	5;1	5;5	85	91	16	27	Below Ave	Ave*
6	5;3	5;6	91	97	27	27	Ave	Ave
7	5;4	5;7	73	91	3	27	Poor	Ave**
8	5;8	6;1	55	73	<1	3	Very Poor	Poor *
9	5;3	5;6	70	85	2	16	Poor	Below Ave*
10	5;3	5;6	70	106	2	65	Poor	Ave**
11	5;11	6;1	88	106	21	65	Below Ave	Ave*

Note: P = Participant; TNL = Test of Narrative Language; NLAI = Narrative Language Ability Index; NLAI descriptions = >130 = very superior, 121-130 = superior, 111-120 = above average, 90-110 = average; 80-89 = below average, 70-79 = poor, <70 = very poor; Ave = Average; * = shift in one clinical boundary; ** = shift in two clinical boundaries.

Table 12

Pre- post intervention TNL-Expression Performance - Subtest Scores (McDonald's Retell, Late for School Sequenced Generation, Alien Story Single Picture Generation), Total Raw Score, Standard Score and Clinical Category

P	McDonald's Retell		Late for School Generation		Alien Story Generation		Total Raw Score		Standard Score		Clinical Description	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	3	5	6	9	8	13	17	27	6	12	Below Ave	Ave *
2	0	0	0	3	1	3	1	6	1	2	Very Poor	Very Poor
3	4	6	8	8	10	11	12	25	5	9	Poor	Ave **
4	2	3	6	13	9	13	17	26	6	8	Below Ave	Ave *
5	4	5	4	9	8	11	16	25	6	8	Below Ave	Ave *
6	5	11	11	11	11	7	27	29	9	9	Ave	Ave
7	3	4	7	10	6	13	16	27	5	9	Poor	Ave **
8	1	1	2	7	6	6	9	14	3	4	Very Poor	Poor *
9	0	5	7	8	3	5	10	18	4	6	Poor	Below Ave *
10	5	9	5	8	11	17	21	34	4	11	Poor	Ave **
11	3	6	10	11	13	12	26	29	8	9	Ave	Ave

*Note: P = participant; TNL = Test of Narrative Language; Standard Score descriptions = 17-20 = very superior, 15-16 = superior, 13-14 = above average, 8-12 = average; 6-7 = below average, 4-5 = poor, 1-3 = very poor; Ave = Average; * = shift in one clinical boundary; ** = shift in two clinical boundaries; *** = shift in three clinical boundaries*

Table 13

Pre- post intervention TNL-Comprehension Performance – Subtest Scores (McDonald's Story, Shipwreck Story, Dragon Story), Total Raw Score, Standard Score and Clinical Category

P	McDonald's Story		Shipwreck Story		Dragon Story		Total Raw Score		Standard Score		Clinical Description	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	5	4	7	11	8	8	20	23	9	10	Ave	Ave
2	0	1	1	6	2	1	3	8	1	5	Very Poor	Poor *
3	7	8	4	10	2	7	13	25	6	12	Below Ave	Ave *
4	5	7	4	7	9	8	18	22	8	10	Ave	Ave
5	5	5	8	7	8	6	21	18	9	9	Ave	Ave
6	5	6	5	9	6	7	16	22	8	10	Ave	Ave
7	3	4	5	8	2	6	10	18	6	8	Below Ave	Ave *
8	0	4	1	8	0	5	1	17	2	7	Very Poor	Below Ave **
9	5	8	3	9	5	4	13	21	6	9	Below Ave	Ave *
10	6	6	8	10	6	8	20	24	6	11	Below Ave	Ave *
11	5	11	8	10	5	8	18	29	8	13	Ave	Above Ave *

*Note: P = participant; TNL = Test of Narrative Language; Standard Score descriptions = 17-20 = very superior, 15-16 = superior, 13-14 = above average, 8-12 = average; 6-7 = below average, 4-5 = poor, 1-3 = very poor; Ave = Average; * = shift in one clinical boundary; ** = shift in two clinical boundaries; *** = shift in three clinical boundaries*

3.2.1 Pre- post intervention TNL– NLAI data analysis. The pre- and post-intervention results on the TNL (Gillam & Pearson, 2004) for each participant are summarised in Table 11. The NLAI provides a composite score of overall narrative ability, considering both narrative comprehension and expression, and is considered the most reliable score in the TNL (Gillam & Pearson, 2004).

Analysis of the NLAI scores reveals that nine of the 11 participants made clinically significant improvements, as demonstrated by the change across clinical boundaries, with a total of seven participants (P1, P3, P4, P5, P7, P10 & P11) moving into the "Average" range. Additionally, three of these participants (P3, P7 & P10) crossed two clinical boundaries, from "Poor" to "Average", demonstrating a clinically significant impact of the ONIP on overall narrative abilities, as measured by the TNL for these participants (Gillam & Pearson, 2004).

Participant Two (P2) did not make clinically significant improvements on the NLAI post intervention, remaining at "Very Poor". P2 presented with severe receptive and expressive vocabulary difficulties (PPVT-IV Standard Score = 30, EVT-2 Standard Score = 19), and narrative difficulties in the severe range (NLAI = 46) before the onset of the programme. This indicates that the current design and intensity of delivery of the ONIP may not be sufficient for a child with such severe difficulties. P2 may have benefited from a more intensive version of the ONIP, delivered as an individual intervention, focusing on a wider range of language goals.

Participant Six (P6) remained within the "Average" range on the NLAI post intervention. P6 was included in the intervention group because his scores fell in the lowest 12 of the participants originally tested for the study, and because his teachers identified him as having narrative delay based on classroom performance. This result indicates that the ONIP may not be effective, in its present form/dosage, for improving the performance of participants already scoring in the "Average" NLAI range.

In summary, pre- and post-treatment NLAI scores, indicate that the ONIP was effective for improving the narrative abilities of Pre-Primary aged children with narrative difficulties in the "Very Poor" to "Below Average" range on the TNL, and who presented with mild to within normal limits scores for expressive and receptive vocabulary. In contrast, the findings indicate that children who achieve "Severe" NLAI scores, with severe expressive and receptive vocabulary difficulties, are unlikely to make clinically significant improvement following inclusion in the ONIP, in its current form. These children are likely to need a more

intensive narrative intervention programme, supplemented with additional intervention to target underlying language impairments. In its present form and dosage, the ONIP did not add value to, or promote the narrative skills of the child who already fell in the "Average" range in NLAI.

3.2.2 Pre- post intervention TNL-Expression data analysis. The raw scores for each of the three TNL-Expression subtests (retell, five-part picture sequence generation and single picture generation), the Standard Scores for TNL-Expression, and the clinical description, for each participant are summarised in Table 12. These results provide information about each participant's expressive narrative skills according to the TNL (Gillam & Pearson, 2004).

For most of the subtests, participants showed an improvement in their oral narrative skills. Consideration of the Standard Scores and corresponding clinical categories reveals that eight out of 11 participants (P1, P3, P4, P5, P7, P8, P9 & P10) made clinically significant improvements, shifting across clinical boundaries, with P3, P7 and P10 shifting two clinical boundaries into the "Average" range. Three participants (P2, P6 & P11) did not make clinically significant change, despite improvements in their overall raw scores and Standard Scores for the TNL-Expression subtest. Results revealed that P2 remained in the "Very Poor" clinical descriptor range and P6 and P11 remained in the "Average" range for Narrative Expression, following intervention.

These findings are consistent with those in section 3.2.2 above, indicating that the ONIP may be effective for improving children's expressive oral narrative skills, as measured in the TNL, for children with mild-moderate narrative difficulties. However, these results suggest that the ONIP may be less effective for those children already in the "Average" range, or for children who have severe narrative difficulties in conjunction with severe expressive and receptive vocabulary impairment. These children may need additional intervention and/or modifications made to the ONIP.

3.2.3 Pre- post intervention TNL-Comprehension data analysis. The raw scores for each of the three Narrative Comprehension subtests and the Standard Scores for TNL-Comprehension, and the clinical category, for each participant are summarised in Table 13. These results provide information about each participant's receptive narrative skills according to a standardised measure (TNL; Gillam & Pearson, 2004).

For most of the subtests, participants showed an improvement in their narrative comprehension skills. Consideration of the Standard Scores and corresponding clinical

description reveals that seven out of 11 participants (P2, P3, P7, P8, P9 & P10) made clinically significant improvements and shifted clinical boundaries - with P8 shifting two clinical boundaries from "Very Poor" to "Average". Interestingly, P2, who presented with the most severe language skills pre-intervention, made clinically significant change on the TNL-Comprehension subtest. Four participants (P1, P4, P5 & P6) did not make clinically significant change, however all four of these participants already fell in the "Average" range for the TNL-Comprehension subtest pre-intervention.

These findings are consistent with those in section 3.2.1 and 3.2.2 above, indicating that the ONIP may be effective for improving children's receptive oral narrative skills, as measured in the TNL, for children with mild-moderate narrative difficulties, but that it may be less effective for improving narrative comprehension skills in children who already perform within the "Average" range.

3.2.4 Summary of pre-post intervention TNL analysis. In summary, the results of the present study indicate that the ONIP was effective for improving children's overall narrative abilities, as measured on the TNL, for children with mild-moderate narrative difficulties. Specifically, the ONIP seems to be effective for improving these children's expressive narrative skills and narrative comprehension skills, despite the lack of direct explicit focus on narrative comprehension.

The results do indicate however, that the ONIP may be less effective for improving narrative comprehension and oral narrative for children already falling in the "Average" range for TNL-Comprehension, TNL-Expression or NLAI scores. Additionally, children with severe narrative difficulties and concurrent severe expressive and receptive vocabulary impairments, are likely to need modifications of the programme to suit their specific needs, such as increased dosage/intensity and a more direct focus on specific language targets based on their profile of difficulties.

The summary of the broad outcomes for hypothesis one is summarised in Table 14 below, indicating whether it was confirmed or unconfirmed for each measure and each participant.

Table 14

Summary of Hypothesis One - Confirmed or Unconfirmed for Standardised Narrative Measures (TNL-NLAI, TNL-Exp, TNL-Comp)

Participant	TNL – NLAI	TNL-Exp	TNL-Comp

1	✓	✓	✗
2	✗	✗	✓
3	✓	✓	✓
4	✓	✓	✗
5	✓	✓	✗
6	✗	✗	✗
7	✓	✓	✓
8	✓	✓	✓
9	✓	✓	✓
10	✓	✓	✓
11	✓	✗	✓
Total	9/11	8/11	7/11

Note. TNL = Test of Narrative Language; NLAI = Narrative Language Ability Index; TNL-Exp = TN: Expression Subtest; TNL-Comp = TNL Narrative Comprehension Subtest; ✓ = hypothesis confirmed = moved clinical boundary/ies, significance using 2SD-band method or PND >70%; ✗ hypothesis unconfirmed = did not move a clinical boundary, non-significance using 2SD-band method or PND <70%.

Chapter 4: Results – Question Two

4.1 Research Questions and Statistical Analyses

The second research question investigated the effectiveness of the ONIP on the dependent variable: Total Macrostructure Score. This was achieved though coding the inclusion of narrative macrostructure elements in single picture narrative generation samples, collected by the researcher at the beginning of each baseline and treatment session. Each oral narrative sample was transcribed and then analysed using SALT (Miller & Iglesias, 2008).

Coding was carried out using researcher-designed codes for narrative macrostructure elements, and a composite Total Macrostructure Score was calculated (see Table 9) for details of coding method). This Total Macrostructure score combined all the macrostructure elements included in each of the single picture narrative generation samples (i.e., setting, character, initiating event, internal response, plan, actions, solution and consequence).

For each participant, Total Macrostructure Score was first examined using visual inspection of graphed responses, followed by analysis using the 2SD-band method (Portney & Watkins, 2009), and calculation of effect size using a variation of Cohen's *d* (Beeson & Robey, 2006). For measures where the pre-treatment baseline standard deviation was zero, the 2SD band method and effect size calculations using Cohen's *d* could not be used. For these measures, the less robust Percentage of Non-Overlapping Data (PND) was used to evaluate effectives of the ONIP (Morgan & Morgan, 2009; Scruggs & Mastropieri, 2001),

Visual inspection of graphed responses is considered a valid method for interpreting treatment effects (Portney & Watkins, 2009). Visual inspection of the graphs involved examination of within-phase characteristics of stability (or variability) and trend (direction of change), and between phase changes in level, trend and slope.

The 2SD-band method allowed calculation of statistical significance through determining if there was a statistically significant difference between pre-treatment baseline and treatment. First, Statistical Process Control (SPC) was used to determine if a stable baseline was achieved. SPC uses the mean and standard deviation of data points within the pre-treatment baseline phase to determine if all data points during this phase fell within 3SD of the mean (Portney & Watkins, 2009). Statistical significance using the 2SD-band method was then determined by

examining the data points during treatment. If at least two consecutive data points fell outside of the 2SD band, then changes from baseline to treatment are considered significant (Portney & Watkins, 2009).

Effect sizes were also calculated to provide a standardised measure of the amount of change in the dependent variable from pre- to post- intervention (Beeson & Robey, 2006). In the current study, effect size was calculated by comparing performance in baseline (A) with post-intervention baseline (AB) using a variation of Cohen's *d* (small effect = .2-.5; medium effect = .5- .8; large effect = >.8; Beeson & Robey, 2006). For some participants, some of the repeated measures mean and standard deviation equalled zero, which did not allow use of the 2SD-band method, nor calculation of effect size.

For those participant measures, the Percentage of Non-Overlapping Data (PND) was calculated to measure change. The PND value indicated the percentage of data points during treatment that exceed the most extreme data point in the baseline phase (Scruggs, Mastropieri, & Casto, 1987). Higher PNDs indicate stronger effects (90% = very effective treatments; 70%–90% = effective treatments; 50%–70% = questionable; <50% = ineffective) (Scruggs & Mastropieri, 2001). PND has been used in published research that evaluated the efficacy of oral narrative interventions (Peterson et al., 2010), however is considered less robust than the 2SD-band method.

4.2 Results

In this section, the data for the repeated measures Total Macrostructure Score will be presented in a summary table for all participants. Following this, the data will be discussed for each participant in turn (P1 to P11), with detailed discussion of the visual analysis, the 2SD-band method, and effect size in turn. The chapter then ends with a summary in relation to the second research question.

Table 15

Total Macrostructure Score Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD Band Method, and Effect Size (Cohen's d or Percentage of Non-Overlapping Data)

P	Baseline Phase Mean (SD)	Significance (2SD-Band)	Effect Size Cohen's *d*	Effect Size PND (%)
1	4.46 (2.31)	S	1.73	
2	6.67 (3.36)	NS	1.59	
3	13.0 (6.2)	NS	-0.60	
4	6.0 (2.8)			40
5	4.3 (2.2)	S	1.41	
6	10.17 (5.49)	S	0.39	
7	5.83 (3.03)	S	0.71	
8	2.5 (1.56)	S	1.41	
9	4.56 (1.42)	NS	0.58	
10	15.44 (4.4)	S	3.82	
11	11.22 (3.3)	S	2.42	

Note. P = Participant; S = Significant; NS = Non-significant; shaded section = not applicable; Cohen's *d =.2-.5 = small effect; .5- .8 = medium effect; >.8 = large effect; PND = Percentage of Non-Overlapping Data = PND, 90% = very effective; 70%–90% = effective; 50%–70% = questionable; <50% = ineffective.*

4.4 Individual Analysis of Each Participant

4.4.1 Participant 1. Three pre-intervention baseline measures (A) were collected for participant one (P1), followed by 16 group intervention sessions (B; P1 was absent for two intervention sessions), and three post-intervention baseline measures (AB). Figure 5below depicts the Total Macrostructure Scores for P1 across all phases of the study.

Figure 5

Graphed P1 Total Macrostructure Scores

4.4.1.1 Visual inspection, statistical analysis and effect size. A stable pre-treatment baseline (A) was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. During the treatment phase (B), the Total Macrostructure Scores indicate an overall positive trend from baseline to treatment with scores consistently falling above the mean, and data points B6, B8, B9, B14, B17 and B18 all falling above the 2SD band. Scores during phase AB (post treatment) remain stable and above the mean, despite a slight negative trend following the treatment phase.

A significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points fell above the 2SD band during the treatment phase (B8 and B9). Table 15 indicates that the effect size for P1 from A to AB was 1.73 for Total Macrostructure Scores, indicating a large effect following intervention.

4.4.1.2 Participant 1 summary and interpretation. Visual analysis, calculation of statistical significant using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvements with a large effect size for Total Macrostructure Score for P1.

4.4.2 Participant 2. Three pre-intervention baseline measures (A) were collected for participant two (P2), followed by 13 group intervention sessions (B; P2 was absent for five), and three post-intervention baseline measures (AB). Figure 6 below depicts the Total Macrostructure Scores for P2 across all phases of the study.

Figure 6

Graphed P2 Total Macrostructure Scores

4.4.2.1 *Visual inspection, statistical analysis and effect size.* A stable pre-treatment baseline (A) was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight overall positive trend was evident during baseline. During the treatment phase, the Total Macrostructure Scores indicated slight variability in performance from B1 to B16, followed by a sharp incline in performance at B18, to just below the 2SD-band. Scores during phase AB also showed slight variability, but an overall positive trend, from pre-treatment baseline.

A non-significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points did not fall above the 2SD band during the treatment phase. Table 15 indicates that the effect size for P2 from A to AB was 1.59 for Total Macrostructure Scores, indicating a large effect following intervention.

4.4.2.2 *Participant 2 summary and interpretation.* Visual analysis, calculation of statistical significance using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in a statistically non-significant, yet large effect for Total Macrostructure Scores for P2.

4.4.3 Participant 3. Three pre-intervention baseline measures (A) were collected for participant three (P3), followed by 17 group intervention sessions (B; P3 was absent for one) and three post-intervention baseline measures (AB). Figure 7 below depicts the Total Macrostructure Scores for P3 across all phases of the study.
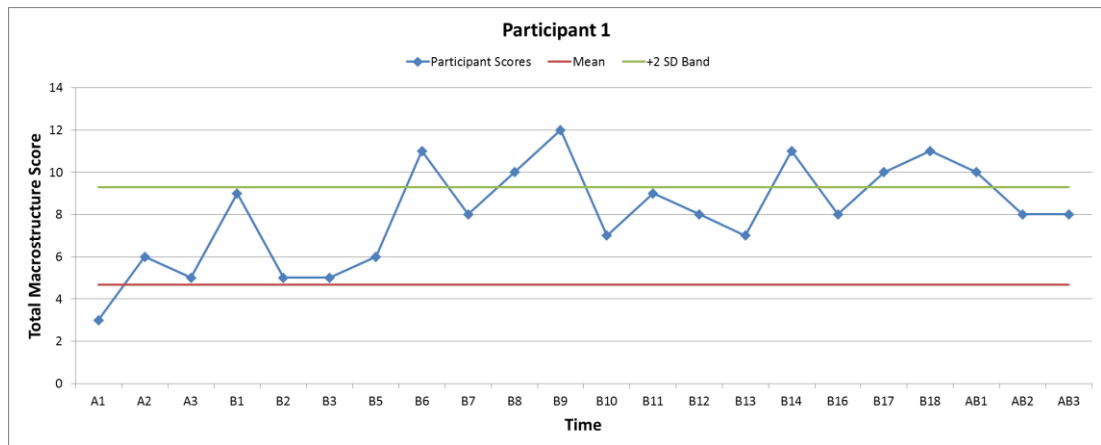
Figure 7

Graphed P3 Total Macrostructure Scores

4.4.3.1 Visual inspection, statistical analysis and effect size. A stable pre-treatment baseline was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. During the treatment phase, the Total Macrostructure Scores indicated an overall slight negative trend from baseline to treatment, with scores consistent falling below the mean line, however remaining within the lower 2SD-band. Scores during phase AB remain stable, with all data points falling at or below the pre-treatment mean line.

A non-significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points did not fall above the 2SD-band during treatment phase. Table 15 indicates that the effect size for P3 from A to AB was -0.6 for Total Macrostructure Scores, indicating a moderate negative effect following intervention.

4.4.3.2 Participant 3 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD band method and effect size using a variation of Cohen's *d*, revealed that the ONIP had a statistically non-significant effect and a moderate negative effect for Total Macrostructure Scores following intervention for P3.

4.4.4 Participant 4. Three pre-intervention baseline measures (A) were collected for participant four (P4), followed by 15 group intervention sessions (B; P4 was absent for three sessions) and three post-intervention baseline measures (AB). Figure 8 below depicts the Total Macrostructure Scores for P4 across all phases of the study.
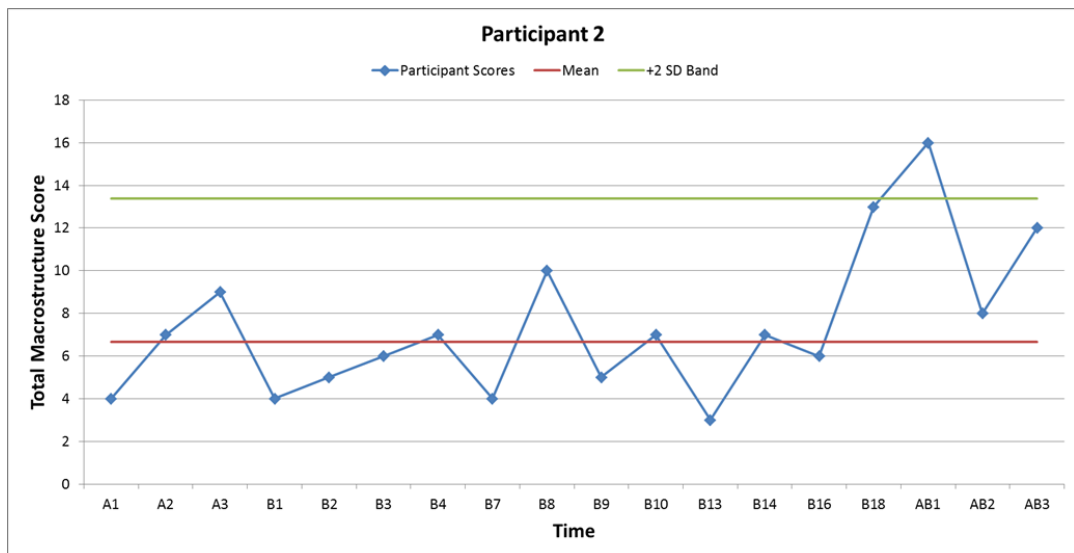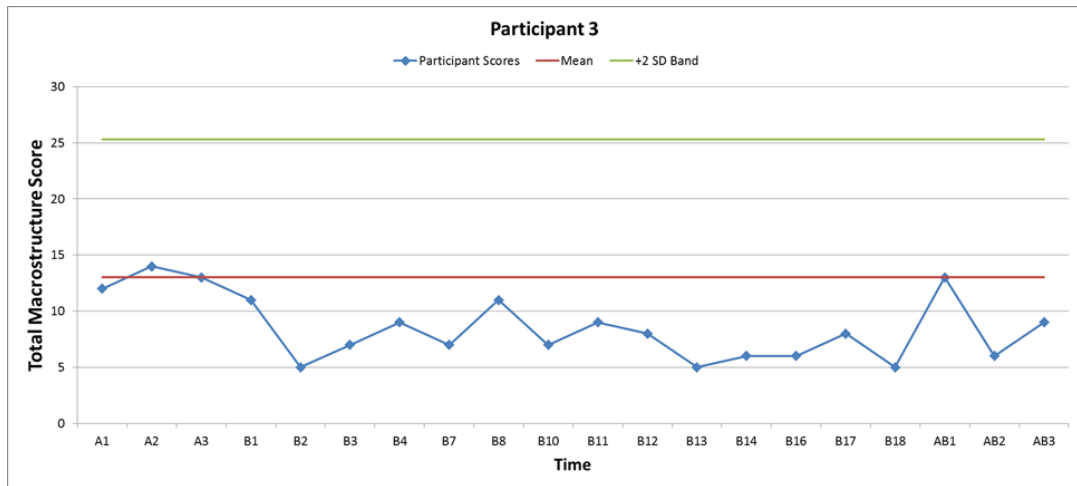
Figure 8

Graphed P4 Total Macrostructure Scores

4.4.4.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores and no trend is evident during baseline, with all data points falling at a score of six. During the treatment phase, the Total Macrostructure Scores indicate an overall positive trend from baseline to treatment, with nine data points (B4, B6, B9, B10, B13, B14, B16, B17 & B18) falling above the pre-treatment baseline mean. Scores during phase AB remained stable, despite a slight negative trend from phase B to AB.

The 2SD-band method and effect size was unable to be used for Total Macrostructure Scores for P4, as the standard deviation for the baseline was zero. Calculation of the PND revealed a score of 40%, indicating that the treatment was ineffective for improving the Total Macrostructure Scores in single picture narrative generations.

4.4.4.2 Participant 4 Summary and Interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in a positive but ineffective outcome for Total Macrostructure Scores for P4.

4.4.5 Participant 5. Four pre-intervention baseline measures (A) were collected for participant five (P5), followed by 17 group intervention sessions (B; P5 was absent for 1) and three post intervention baseline measures (AB). (Participant data for baseline sessions A5 and A6 were lost following data collection). Figure 9 below depicts the Total Macrostructure Scores for P5 across all phases of the study.

Figure 9

Graphed P5 Total Macrostructure Scores

4.4.5.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. During the treatment phase, the Total Macrostructure Scores indicate an overall positive trend from baseline to treatment, with 15 data points falling above the mean line and five of these falling above the 2SD-band (B6, B7, B13, B14, B15). Scores during phase AB remained stable with no trend evident, however all data points fell above the pre-treatment baseline mean.

A significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points fell above the 2SD-band during the treatment phase (B6 and B7; B13, B14 and B15). Table 15 indicates that the effect size for P5 from A to AB was 1.41 for Total Macrostructure Scores, indicating a large effect following intervention.

4.4.5.2 Participant 5 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method, and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvements with a large effect for Total Macrostructure Scores for P5.

4.4.6 Participant 6. Six pre-intervention baseline measures (A) were collected for participant six (P6), followed by 15 group intervention sessions (B; P6 was absent for three) and three post-intervention baseline measures (AB). Figure 10 below depicts the Total Macrostructure Scores for P6 across all phases of the study.
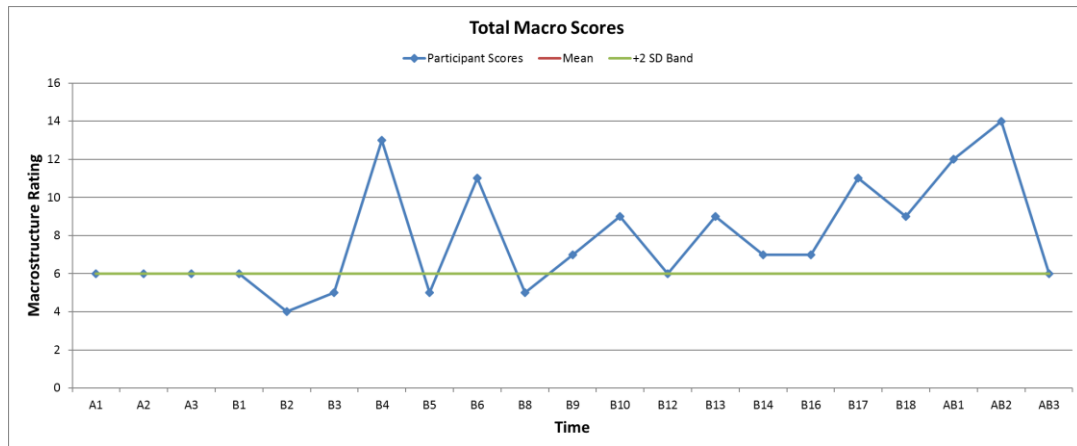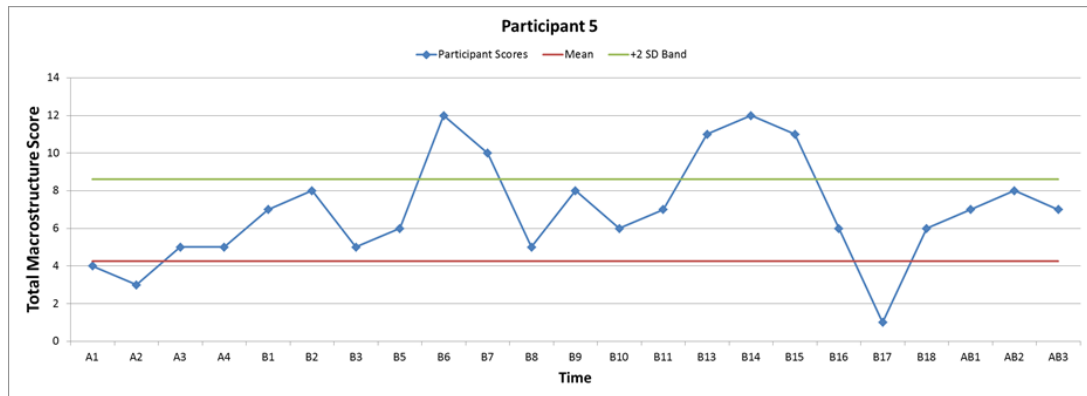
Figure 10

Graphed P6 Total Macrostructure Scores

4.4.6.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. During the treatment phase the Total Macrostructure Scores show an overall positive trend, as 11 data points fell above the mean, however no data points fell above the 2SD-band during treatment. Scores during phase AB remained stable. Despite a slight negative trend following the cessation of treatment, all data points remained above the pre-treatment baseline mean.

A non-significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points did not fall above the 2SD-band during the treatment phase. Table 15 indicates that the effect size for P6 from A to AB was 0.39 for Total Macrostructure Scores, indicating a small effect following intervention.

4.4.6.2 Participant 6 summary and interpretation. Visual analysis, calculation of statistical significant using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that narrative intervention focusing on explicit teaching of macrostructure elements resulted in a generally positive, but non-significant result for Total Macrostructure Scores for P6.

4.4.7 Participant 7. Six pre-intervention baseline measures (A) were collected for participant seven (P7), followed by 17 group intervention sessions (B; P7 was absent for one) and three post-intervention baseline measures. Figure 11 below depicts the Total Macrostructure Scores for P7 across all phases of the study.

Figure 11

Graphed P7 Total Macrostructure Scores

4.4.7.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. During the treatment phase, the Total Macrostructure Scores remained stable up until data point B12 where the scores suddenly increased to well-above the 2SD-band. Data points B14 and B16 also fell above the 2SD-band after this point. Scores during phase AB remained stable, despite a slight negative trend from data point AB3.

A significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points fell above the 2SD band during the treatment phase (B14 and B16). Table 15 indicates that the effect size for P7 from A to AB was 0.71 for Total Macrostructure Scores, indicating a moderate effect following intervention.

4.4.7.2 Participant 7 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvement for Total Macrostructure Scores, with a moderate effect size. for P7.

4.4.8 Participant 8. Six pre-intervention baseline measures (A) were collected for participant 8 (P8), followed by 17 group intervention sessions (B; P8 was absent for one) and three post-intervention baseline measures (AB). Figure 12 below depicts the Total Macrostructure Scores for P8 across all phases of the study.
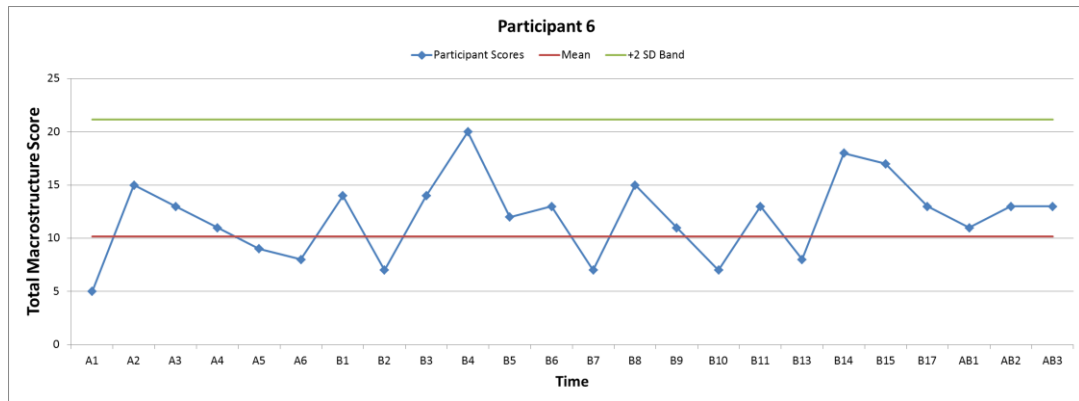
Figure 12

Graphed P8 Total Macrostructure Scores

4.4.8.1 Visual inspection. A stable baseline was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight overall positive trend is evident during baseline. During the treatment phase, the Total Macrostructure Scores indicate an overall positive trend from baseline to treatment with six scores (B4, B6, B13, B14, B16 and B17) falling above the 2SD-band, and an additional eight scores falling above the pre-treatment mean. Scores during phase AB remain stable, and above the baseline mean.

A significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points fell above the 2SD-band during the treatment phase (B13 and B14; and B16 and B17). Table 15 indicates that the effect size for P5 from A to AB was 0.58 for Total Macrostructure, indicating a moderate effect following intervention.

4.4.8.2 Participant 8 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method, and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvements with a moderate effect for Total Macrostructure Scores for P8.

4.4.9 Participant 9. Nine pre-intervention baseline measures (A) were collected for participant nine (P9), followed by 16 group intervention sessions (B; P9 was absent for two) and three post-intervention baseline measures (AB). Figure 13 below depicts the Total Macrostructure Scores for P9 across all phases of the study.
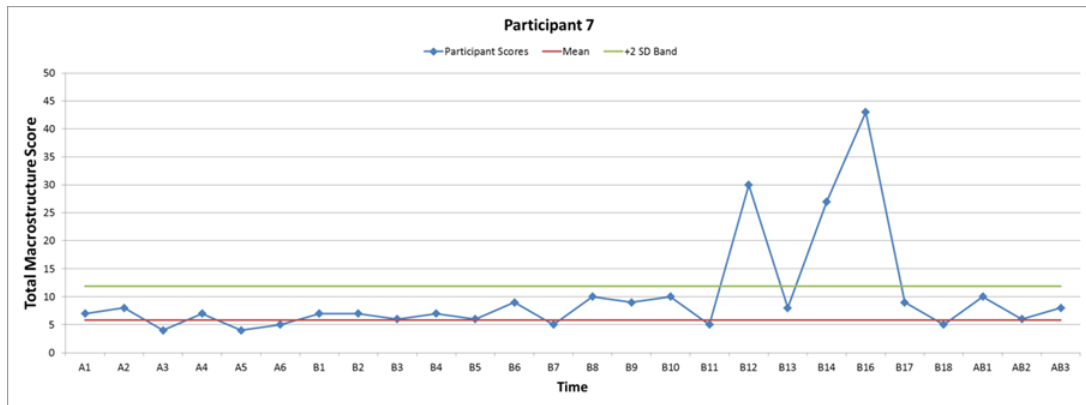
Figure 13

Graphed P9 Total Macrostructure Scores

4.4.9.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline, with data points A6, A7, A8 and A9 falling below the mean line. During the treatment phase, the Total Macrostructure Scores indicate a slight negative trend from baseline to treatment, with 10 out of 16 data points falling below the mean. Scores following treatment remained stable during phase AB.

A significant effect of intervention was not demonstrated for Total Macrostructure Scores as two consecutive data points did not fall above the 2SD band until B17 and AB1, the first post treatment measure. Table 15 indicates that the effect size for P9 from A to AB was 3.82 for Total Macrostructure Scores, indicating a large effect following intervention.

4.4.9.2 Participant 9 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method, and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvement with a large effect for Total Macrostructure Scores for P9.

4.4.10 Participant 10. Nine pre-intervention baseline measures (A) were collected for participant ten (P10), followed by 16 group intervention sessions (B; P10 was absent for two) and three post-intervention baseline measures (AB). Figure 14 below depicts the Total Macrostructure Scores for P10 across all phases of the study.
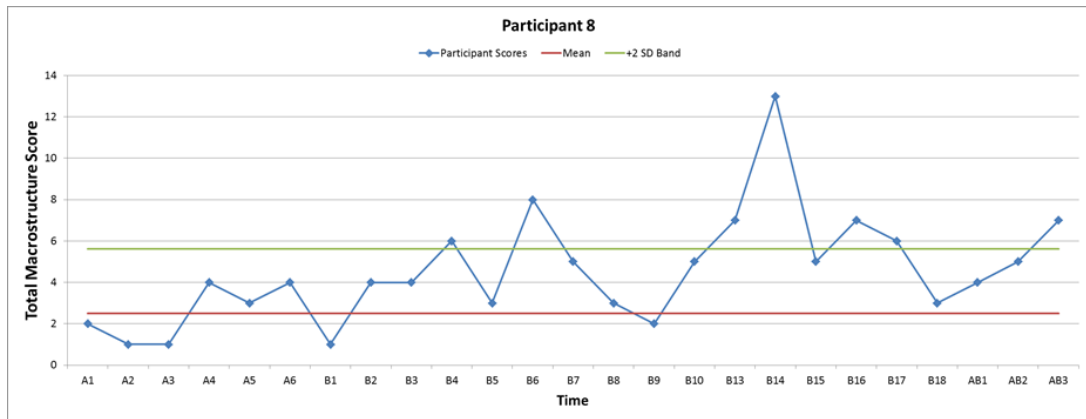
Figure 14

Graphed P10 Total Macrostructure Scores

4.4.10.1 Visual inspection, statistical analysis and effect size. A stable
baseline was achieved for Total Macrostructure Scores, as all data points fell within
three standard deviations of the mean, which is consistent with SPC definition of
variability. An overall positive trend was evident during baseline, with data points
A7, A8, and A9 falling above the mean. During the treatment phase, the Total
Macrostructure Scores were stable with no trend. Scores during phase AB show
slight variability, but continued to fall within the 2SD-band.

A non-significant effect of intervention was demonstrated for Total
Macrostructure Scores, as two consecutive data points did not fall above the 2SD
band during treatment phase. Table 15 indicates that the effect size for P10 from A to
AB was 3.82 for Total Macrostructure Scores, indicating a large effect following
intervention.

4.4.10.2 Participant 10 summary and interpretation. Visual analysis,
calculation of statistical significance using the 2SD-band method, and effect size
using a variation of Cohen's *d*, revealed that the ONIP resulted in a clinically non-
significant yet large effect for Total Macrostructure Scores for P10.

4.4.11 Participant 11. Nine pre-intervention baseline measures (A) were
collected for participant 11 (P11), followed by 16 group intervention sessions (B;
P11 was absent for two) and three post-intervention baseline measures (AB). Figure
15 below depicts the Total Macrostructure Scores for P11 across all phases of the
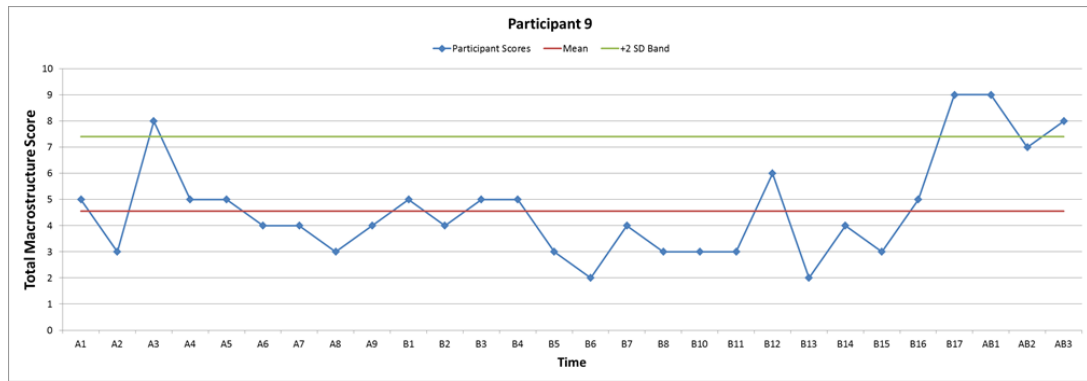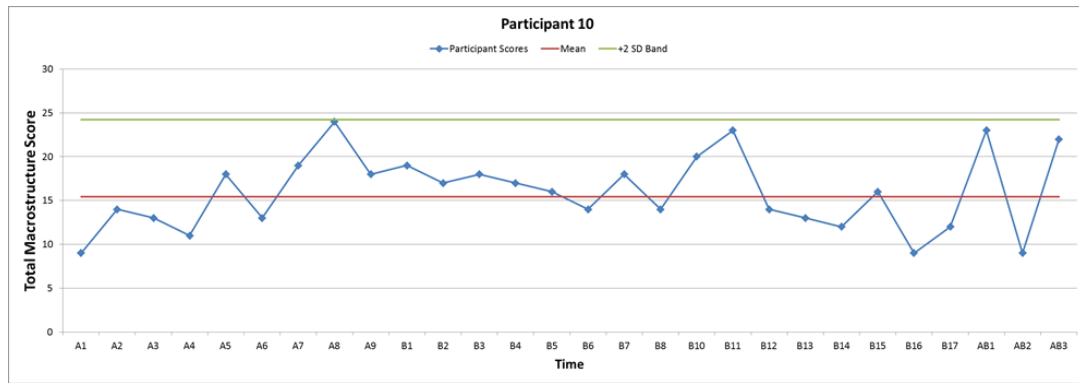study.
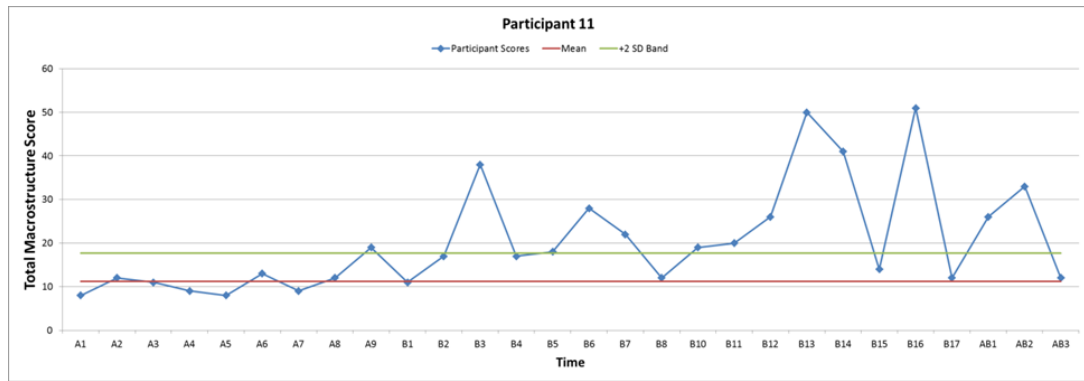
Figure 15

Graphed P11 Total Macrostructure Scores

4.4.11.1 Visual inspection, statistical analysis and effect size. A stable baseline was achieved for Total Macrostructure Scores, as all data points fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight overall positive trend was evident during baseline, with data points A6 and A8 falling above the mean line, and data point A9 falling above the 2SD-band. During the treatment phase, the Total Macrostructure Scores indicate an overall positive trend from baseline to treatment, with 10 scores (B3, 5, 6, 7, 10, 11, 12, 13, 14 and 16) falling above the 2SD-band. Scores during phase AB remained stable.

A significant effect of intervention was demonstrated for Total Macrostructure Scores, as two consecutive data points fell above the 2SD-band during the treatment phase (B5 and B6). This significant change was mostly sustained throughout phase B and AB, indicating that the effect of intervention on Total Macrostructure Scores was maintained after treatment. Table 15 indicates that the effect size for P11 from A to AB was 2.42 for Total Macrostructure Scores, indicating a large effect following intervention.

4.4.11.2 Participant 11 summary and interpretation. Visual analysis, calculation of statistical significance using the 2SD-band method, and effect size using a variation of Cohen's *d*, revealed that the ONIP resulted in significant improvements with a large effect for Total Macrostructure Scores for P11.

4.5 Summary of Results – Question Two

In summary, following the ONIP, the dependent measure - Total Macrostructure Scores - for eight of the 11 participants showed statistically significant changes with effect sizes ranging from moderate to large. This was reflected in a steady increase in the inclusion of macrostructure elements in the

repeated story tellings of most the participants following a narrative programme focusing on explicit teaching of macrostructure and repeated story retells.

The summary of the broad outcomes for hypothesis two is summarised in Table 16 below, indicating whether it was confirmed or unconfirmed for each measure and each participant.

Table 16

Summary of Hypothesis Two - Confirmed or Unconfirmed Macrostructure Repeated Measure (Total Macrostructure Score)

Participant	Total Macrostructure Score
1	✔
2	✘
3	✘
4	✔
5	✔
6	✔
7	✔
8	✔
9	✘
10	✔
11	✔
Total	8/11

Note. ✔ *= hypothesis confirmed = moved clinical boundary/ies, significance using 2SD-band method or PND >70%;* ✘ *hypothesis unconfirmed = did not move a clinical boundary, non-significance using 2SD-band method or PND <70%.*

Chapter 5: Results – Question Three

5.1 Research Questions and Statistical Analyses

The third research questions investigated the effectiveness of the ONIP on the dependent variables related to narrative microstructure. This was achieved though coding the inclusion of narrative microstructure elements in single picture narrative generation samples, collected by the researcher at the beginning of each baseline and treatment session. Each oral narrative sample was transcribed and analysed using SALT (Miller & Iglesias, 2008). Coding was carried out using researcher-designed codes for narrative microstructure elements and the following scores were calculated: a) Total Number of Conjunctions, b) Total Number of Adverbials, c) Total Number of Adjectives and d) Total Number of Complex C-units (see Table 10 for details on coding method). Standard SALT measures were also obtained from these samples including: a) MLUm, b) NDW and c) NTW.

Statistical analysis, following the procedures outlined in Chapter 4 (section 4.1), were used to evaluate the significance and effect of the ONIP on these measures of microstructure. Statistical analyses included visual inspection, calculation of the 2SD-band statistic and effect size using Cohen's *d*, or Percentage of Non-Overlapping Data.

5.2 Results

In this section, the data for each of the repeated measures scores for Total Number of Conjunctions, Total Number of Adverbials, Total Number of Adjectives, Total Number of Complex C-units, MLUm, NDW, and NTW will be presented in a series of summary Tables 15-21) for all the participants. Each table includes the following: Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-Band Statistic, and Effect Size (Cohen's *d* or Percentage of Non-Overlapping Data). Following this, the data will be discussed for each participant in turn (P1 to P11), with detailed discussion of the visual inspection, the 2SD-band statistic, and effect size for each measure. The chapter then ends with a summary in relation to the third research question.

Table 17

Total Number of Conjunctions Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*
1	3.0 (0.82)	S	4.49
2	3.67 (2.05)	NS	1.30
3	1.33 (0.94)	S	6.01
4	3.67 (0.94)	S	4.95
5	2.25 (0.83)	S	2.91
6	4.83 (1.46)	S	-0.34
7	2.33 (1.49)	S	1.57
8	0.83 (0.90)	S	0.55
9	2.11 (1.20)	NS	-0.09
10	12 (5.14)	NS	0.39
11	8.67 (3.06)	S	2.40

Note. P = Participant; S = Significant; NS = Non-significant; Cohen's *d =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect.*

Table 18

Total Number of Adverbials Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d or Percentage of Non- Overlapping Data)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*	Effect Size PND (%)
1	1.00 (0.82)	S	2.45	
2	1.33 (1.25)	NS	0.82	
3	0.00 (0.00)			92.86
4	2.00 (1.41)	S	1.41	
5	1.00 (0.71)	NS	0.94	
6	1.33 (1.37)	S	1.21	
7	0.83 (0.90)	S	0.19	
8	0.00 (0.00)			50
9	1.00 (1.05)	NS	0.00	
10	3.56 (2.41)	NS	-0.65	
11	1.33 (0.82)	S	2.04	

Note. P = Participant; S = Significant; NS = Non-significant; shaded section = not applicable; Cohen's *d =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect; PND = Percentage of Non-Overlapping Data = PND, 90% = very effective; 70%–90% = effective; 50%–70% = questionable; <50% = ineffective; shaded areas = not applicable.*

Table 19

Total Number of Adjectives Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d or Percentage of Non- Overlapping Data)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*	Effect Size PND (%)
1	0.67 (0.94)	S	1.41	
2	0.00 (0.00)			41.67
3	0.00 (0.00)			42.9
4	0.00 (0.00)			26.67
5	0.00 (0.00)			18.75
6	1.17 (1.34)	S	2.11	
7	0.67 (0.75)	NS	2.68	
8	0.00 (0.00)			6.25
9	0.33 (0.47)	NS	0.00	
10	3.89 (3.84)	NS	0.29	
11	1.89 (1.73)	S	1.61	

Note. P = Participant; S = Significant; NS = Non-significant; shaded section = not applicable; Cohen's *d =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect; PND = Percentage of Non-Overlapping Data = PND, 90% = very effective; 70%–90% = effective; 50%–70% = questionable; <50% = ineffective; shaded areas = not applicable.*

Table 20

Total Number of Complex C-units Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d or Percentage of Non- Overlapping Data)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*	Effect Size PND (%)
1	0.00 (0.00)			43.75
2	0.00 (0.00)			0
3	0.00 (0.00)			50
4	0.67 (0.47)	NS	0.00	
5	0.25 (0.43)			0
6	0.33 (0.75)			6.67
7	0.00 (0.00)			41.18
8	0.00 (0.00)			12.5
9	0.00 (0.00)			0
10	0.11 (0.31)			0
11	0.00 (0.00)			0

Note. P = Participant; S = Significant; NS = Non-significant; shaded section = not applicable; Cohen's *d* =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect; PND = Percentage of Non-Overlapping Data = PND, 90% = very effective; 70%–90% = effective; 50%–70% = questionable; <50% = ineffective; shaded areas = not applicable.

Table 21

Mean Length of Utterance in Morphemes (MLUm) Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*
1	5.78 (1.84)	NS	1.67
2	4.86 (0.39)	S	2.56
3	6.79 (0.87)	S	2.08
4	7.42 (0.66)	S	0.04
5	5.42 (0.69)	NS	1.42
6	6.99 (0.29)	S	4.61
7	6.09 (0.76)	S	3.01
8	6.23 (1.39)	NS	1.17
9	4.12 1.43)	NS	0.43
10	6.97 0.87)	S	1.77
11	6.34 0.68)	NS	0.72

Note. P = Participant; S = Significant; NS = Non-significant; Cohen's *d =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect.*

Table 22

Number of Different Words (NDW) Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*
1	14.33 (3.68)	S	4.07
2	23.67 (3.09)	S	2.91
3	20.67 (11.12)	NS	0.48
4	20.33 (1.70)	S	8.04
5	14 (3.16)	S	3.58
6	31.17 (6.80)	S	1.65
7	18 (6.27)	NS	1.49
8	12 (3.37)	S	3.18
9	15.56 (3.06)	S	0.69
10	47.78 (13.57)	NS	-0.03
11	35.11 (7.88)	S	3.45

Note. P = Participant; S = Significant; NS = Non-significant; Cohen's *d =.2-.5 = small effect; .5- .8 = moderate effect; >.8 = large effect.*

Table 23

Number of Total Words (NTW) Statistical Analysis – Mean and Standard Deviation of Pre-Treatment Baseline, Statistical Significance Using 2SD-band Method, and Effect Size (Cohen's d)

P	Baseline Phase Mean (SD)	Significance (2SD-band)	Effect Size Cohen's *d*
1	23.7	S	3.97
2	39.33 (2.36)	S	8.20
3	34.67 (18.08)	NS	0.72
4	31 (2.83)	S	13.91
5	15.75 (4.44)	NS	4.86
6	49.17 (12.42)	S	2.08
7	24.5 (10.40)	S	1.97
8	18.67 (6.29)	NS	0.16
9	22.33 (7.02)	NS	0.33
10	91.78 (32.14)	NS	0.01
11	58.78 (18.09)	S	0.88

Note. P = Participant; S = Significant; NS = Non-significant; Cohen's *d* =.2-.5 = *small effect; .5- .8 = moderate effect; >.8 = large effect.*

5.2 Individual Analysis for Participant 1

Three pre-intervention baseline measures (A) were collected for participant 1 (P1), followed by 16 group intervention sessions (B; P1 was absent for two) and three post intervention baseline measures (AB). The graphed results for P1's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex Sentences, MLUm, NDW and NWT in repeated measures are depicted in Figures 16 to 23 below.

5.3.1 Total Number of Conjunctions.

Figure 16

Graphed P1 Conjunction Scores

5.3.1.1 Visual inspection, statistical analysis and effect size. Figure 16 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Conjunctions showed an overall positive trend with three data points falling at or above the baseline mean from data point B5, followed by 13 data points falling above the 2SD-band. Scores during phase AB (post treatment) remain stable and above the 2SD-band, indicating that gains were maintained following treatment.

A significant effect of intervention was demonstrated for inclusion of Conjunctions, as two consecutive data points fell above the 2SD-band during the treatment phase (B5 and B6). This significant change was sustained throughout phase B and AB, as all remaining data points fell above the 2SD-band, indicating that the effect of intervention on inclusion of Conjunctions was maintained after

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treatment. Table 17 indicates that the effect size for P1 from A to AB was 4.49 for Conjunctions, showing a large effect size.

5.3.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant large (4.49) positive effect for the inclusion of Conjunctions during single picture narrative generation tasks.

5.3.2 Total Number of Adverbials.
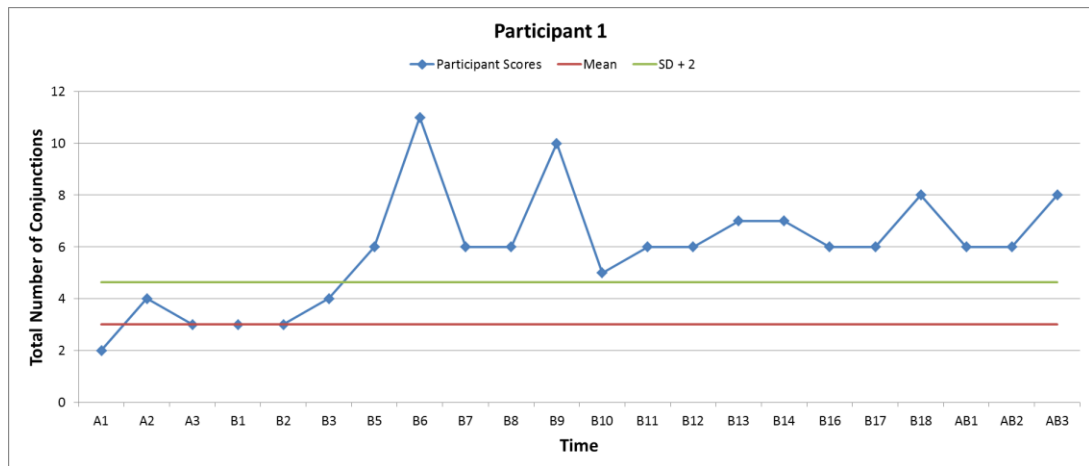

Figure 17

Graphed P1 Adverbial Scores

5.3.2.1 Visual inspection, statistical analysis and effect size. Figure 17 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Adverbials indicated an overall positive trend from baseline to treatment with nine data points falling above the 2SD-band, and five additional data points falling at or above the mean during treatment. Examination of the treatment phase reveals that there was a decrease in scores for B7, B8 and B9 to at or below the mean, but the remainder of the scores remained above the mean and represent an overall positive trend. Phase AB: Scores during phase AB remain relatively stable, with some variability but an overall stable trend from Phase B to AB.

A significant effect of intervention was demonstrated for inclusion of Adverbials, as two consecutive data points fell above the 2SD-band during the

treatment phase (initially B2 and B3). This significant change was generally sustained throughout phase B and AB, with seven data points falling above the 2SD-band (B10, B11, B14, B17, B18, AB1, AB3), indicating that the effect of intervention on inclusion of Adverbials was maintained after treatment. Table 18 indicates that the effect size for P3 from A to AB was 2.45 for Adverbials, indicating a large effect size.

5.3.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, all indicate that the treatment had a significant large (2.45) positive effect on the inclusion of Adverbials during single picture narrative generation tasks.

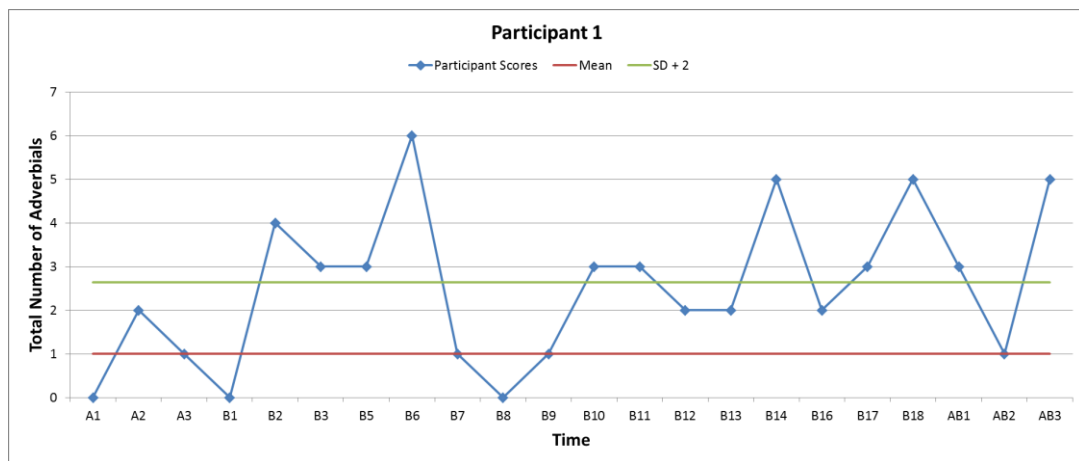### 5.3.3 Total Number of Adjectives.

Figure 18

Graphed P1 Adjective Scores

5.3.3.1 Visual inspection, statistical analysis and effect size. Figure 18 above depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline from data point A1 to A2. Phase B: During the treatment phase the inclusion of Adjectives indicated an overall positive trend from baseline to treatment with 10 data points falling above the baseline mean, five of these falling above the 2SD-band during treatment. Examination of Phase B reveals that there is some variability in scores and that inclusion of Adjectives decreased between B9 and B14, towards the mean line, before increasing again to above the 2SD-band. Phase AB: Scores during phase AB indicate a negative trend during the post treatment phase.

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A significant effect of intervention was demonstrated for inclusion of Adjectives, as two consecutive data points fell above the 2SD-band during the treatment phase (B16 and B17). This significant change occurred late in the treatment phase. Table 19 indicates that the effect size for P1 from A to AB was 1.41 for Adjectives, indicating a large effect size.

5.3.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicate that, despite some variability during the treatment phase, the treatment had a statistically significant large positive effect (1.41) on the inclusion of Adjectives during single picture narrative generation tasks.

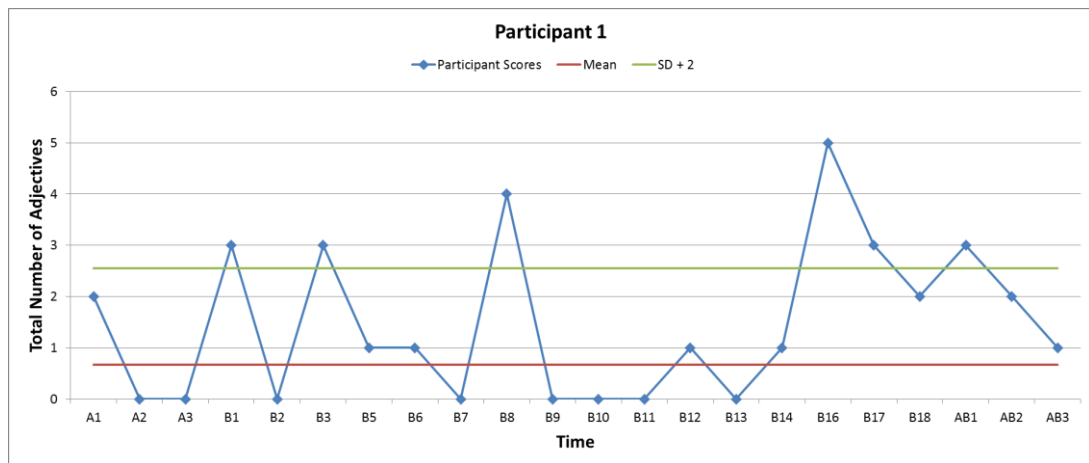### 5.3.4 Total Number of Complex C-units.
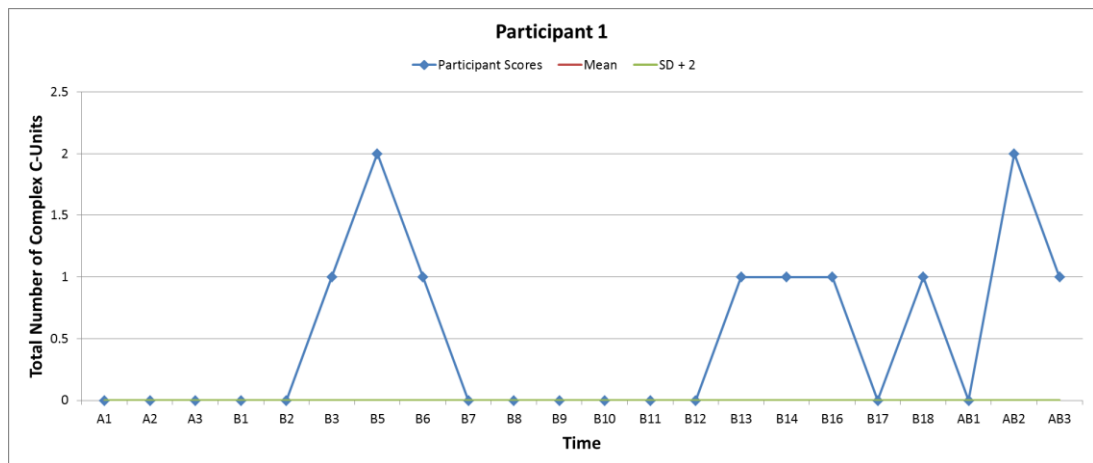
Figure 19

Graphed P1 Complex C-unit Scores

5.3.4.1 Visual inspection, statistical analysis and effect size. Figure 19 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the scores for Complex Sentences remained at zero with no trend evident during baseline. Phase B: During the treatment phase the inclusion of Complex C-units indicates variable performance. The highest data point during treatment was B5, with two examples of Complex C-units included in the narrative sample. Nine data points indicate zero inclusions of Complex C-units (B1, B2, B7, B8, B9, B10, B11, B12 & B17) and a very slight positive trend is seen late in the treatment phase from B12 to B18. Phase AB: Scores during phase AB indicate variability, but an increase from Phase A.

The 2SD-band method and effect size using Cohen's *d,* was unable to be calculated for Complex C-units as the mean and standard deviation for the baseline

was zero. Calculation of the PND statistic revealed a score of 43.75%, indicating that the treatment was not effective.

5.3.4.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate variability during treatment and that the treatment was ineffective in improving inclusion of Complex C-units in single picture narrative generation tasks.

5.3.5 MLUm.
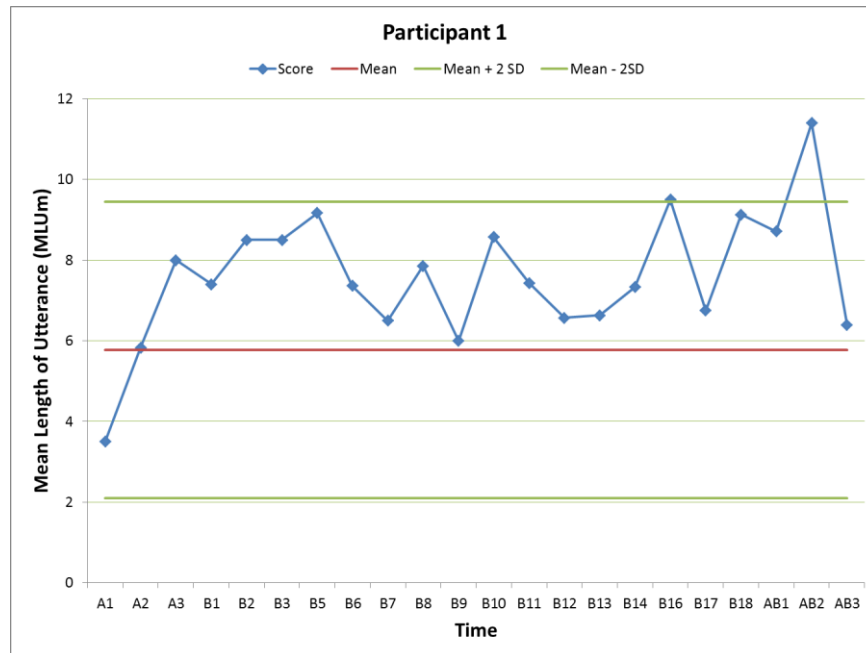
Figure 20

Graphed P1 MLUm Scores

5.3.5.1 Visual inspection, statistical analysis and effect size. Figure 20 depicts MLUm (mean length of utterances in morphemes) during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend was evident during baseline. Phase B: During the treatment phase MLUm data points indicate variability in performance with an overall positive trend from baseline to treatment with scores consistently falling above the mean of phase A during treatment, but only one data point (B16) falling at or above the 2SD-band. Phase AB: Scores during phase AB indicate some variability, while remaining above the mean of A, and data point AB2 falling above the 2SD-band.

A significant effect of intervention was not demonstrated for MLUm, as only one data point (B16) fell above the 2SD-band during treatment. Table 21 indicates that the effect size for P1 from A to AB was 1.67 for MLUm, indicating a large effect.

5.3.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a slight overall positive trend during treatment, and a non-significant but large (1.67) clinical effect, during single picture narrative generation tasks.

5.3.6 NDW.

Figure 21

Graphed P1 Number of Different Words Scores

5.3.6.1 Visual inspection, statistical analysis and effect size. Figure 21 depicts NDW (number of different words) during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline, from data point A1 to A2 and A3. Phase B: During the treatment phase NDW data points indicate a relatively stable positive trend from the onset of treatment, with data points steadily increasing to above the 2SD-band, and all data points falling above the baseline mean. Close examination of the data reveals that 14 of the 16 data points fell above the 2SD-band, with data points B17 and B18 being the highest scores. Phase AB: Scores during

phase AB indicate a slight negative trend from the end of treatment, whilst remaining above the 2SD-band and maintaining the effect of treatment.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points fell above the 2SD-band during the treatment phase (B2 and B3). This significant change was sustained throughout phase B and AB, as all except one data point (B9) fell above the 2SD-band. Table 22 indicates that the effect size for P3 from A to AB was 4.07 for NDW, indicating a large effect.

5.3.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (4.07) effect of intervention on NDW during single picture narrative generation tasks.
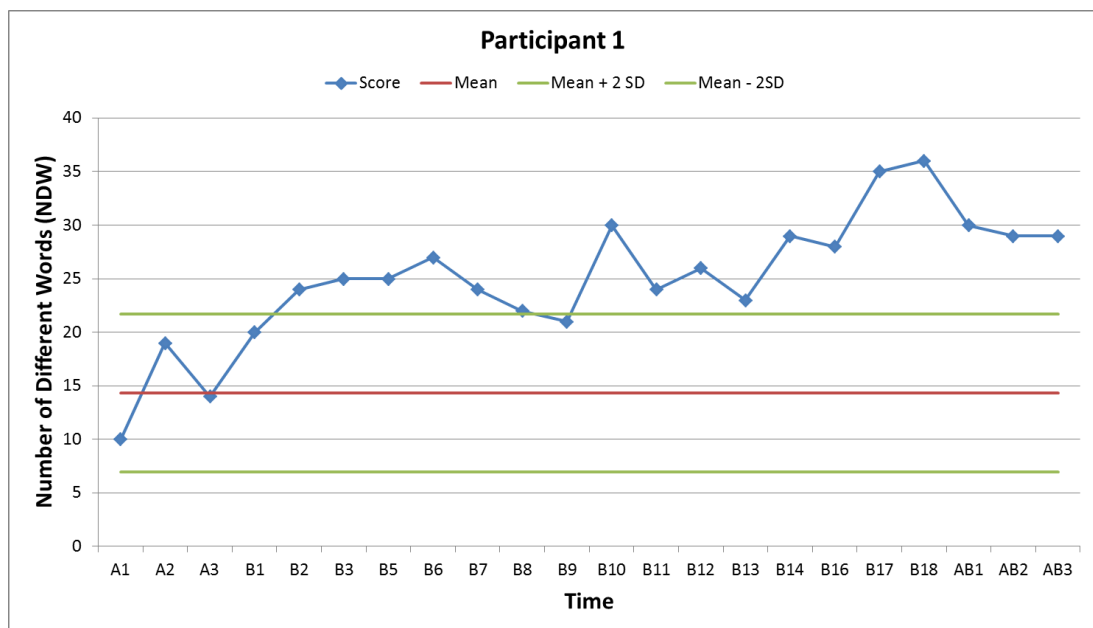
5.3.7 NTW.
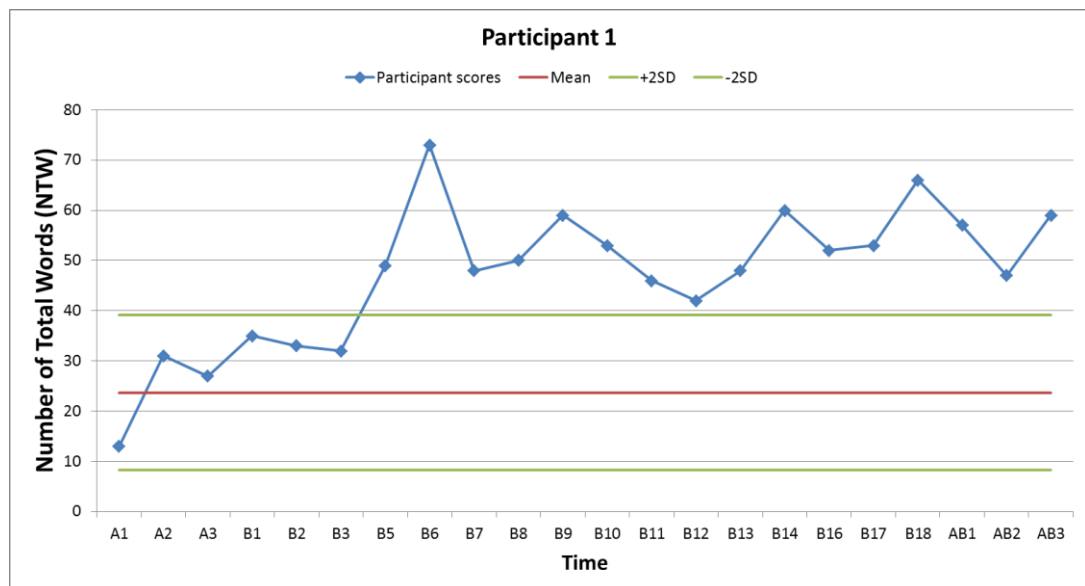
Figure 22

Graphed P1 Number of Total Words Scores

5.3.7.1 Visual inspection, statistical analysis and effect size. Figure 22 depicts NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend was evident during baseline, with data point A2 and A3 falling above the mean line. Phase B: During the treatment phase NTW data points indicate an overall positive trend from the onset of treatment, with data points steadily increasing to above the 2SD-band. Slight variability in performance is evident

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throughout. Close inspection of the data reveals that 13 of the 16 data points, from B5 onwards, fell above the 2SD-band during treatment. Phase AB: Scores during phase AB indicate stable performance above the 2SD-band, consistent with the end of treatment, demonstrating the maintenance of gains made during treatment.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points fell above the 2SD-band during the treatment phase (B5 and B6). This significant change was sustained throughout phase B and AB, as all remaining data points fell above the 2SD-band. Table 23 indicates that the effect size for P1 from A to AB was 3.97 for NTW, indicating a large effect.

5.3.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (3.97) effect of intervention on NTW during single picture narrative generation tasks.

5.3.8 Participant 1 summary. Analysis of the data for P1, revealed that the ONIP resulted in significant improvements with large effect sizes, for total number of Conjunctions and Adverbials and increases in MLUm, NDW and NTW during single picture narrative generation samples. A non-significant result for Total Number of Adjectives and Complex C--Units was revealed. Four of the significant improvements were maintained during post-treatment baseline.

5.4 Individual Analysis for Participant 2

Three pre-intervention baseline measures (A) were collected for participant two (P2), followed by 13 group intervention sessions (B; P2 was absent for five) and three post-intervention baseline measures (AB). The graphed results for P2's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 23 to 29.

5.4.1 Total Number of Conjunctions.
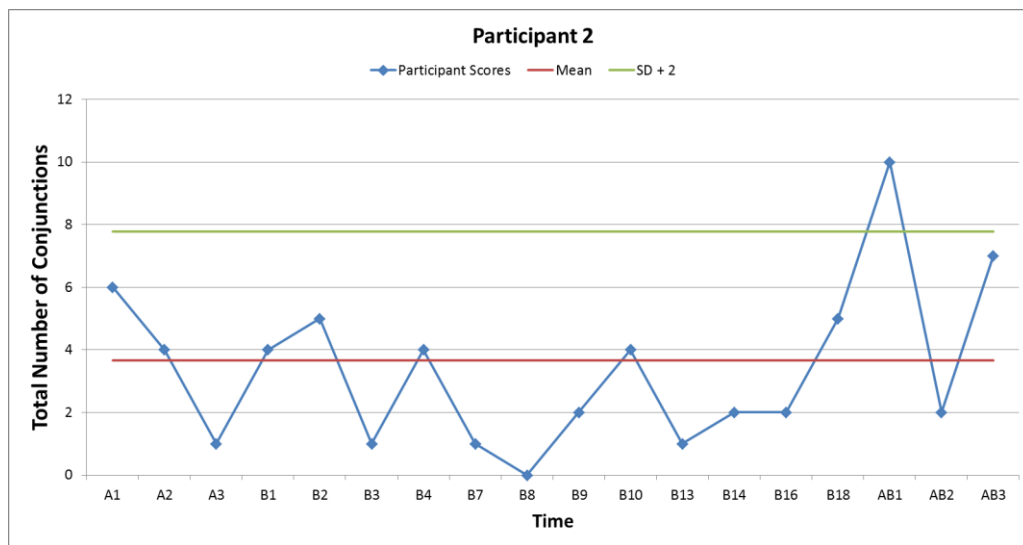
Figure 23

Graphed P2 Conjunction Scores

5.4.1.1 Visual inspection, statistical analysis and effect size. Figure 23 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline, with data point A3 falling below the baseline mean. Phase B: During the treatment phase, the inclusion of Conjunctions indicated an overall negative trend with seven data points falling below the baseline mean, five data points falling above the mean and none falling above the 2SD-band throughout treatment. Phase AB: Scores during phase AB shows some variability in performance, with an increase to above the 2SD-band at data point AB1, but a decrease back to below the 2SD-band for AB2 and AB3.

A significant effect of intervention was not demonstrated for Conjunctions, as two consecutive data points did not fall above the 2SD-band during treatment phase. Table 17 indicates that the effect size for P2 from A to AB was 1.30 for Conjunctions, indicating a large effect size.

5.4.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a non-significant yet large effect

(1.30) for the inclusion of Conjunctions during single picture narrative generation tasks.

5.4.2 Total Number of Adverbials.

Figure 24

Graphed P2 Adverbial Scores

5.4.2.1 Visual inspection, statistical analysis and effect size. Figure 24 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend was evident during baseline, with data point A2 falling above the 2SD-band and data point A3 falling below the 2SD-band, but above the mean line. Phase B: During the treatment phase the inclusion of Adverbials indicated an overall positive trend from baseline to treatment with three data points falling above the mean during the second half of treatment (B9, B10 and B16). Phase AB: Scores during phase AB remain relatively stable, with some variability but an overall positive trend from Phase B to AB, with data point AB3 falling just above the 2SD-band.

A significant effect of intervention was not demonstrated for Adverbials, as two consecutive data points did not fall above the 2SD-band during treatment phase. Table 18 indicates that the effect size for P2 from A to AB was 0.82 for Adverbials, indicating a large effect size.

5.4.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a non-significant yet large effect

(0.82) for the inclusion of Adverbials during single picture narrative generation tasks.
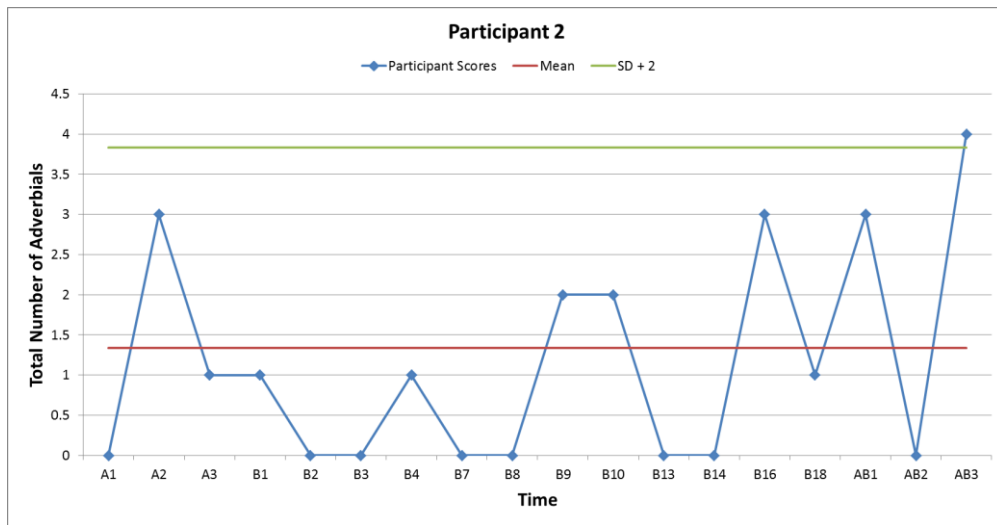
5.4.3 Total Number of Adjectives.

Figure 25

Graphed P2 Adjective Scores

   5.4.3.1 Visual inspection, statistical analysis and effect size. Figure 25 above depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: During baseline, the score for Adjectives remained at zero, indicating no trend in performance. Phase B: During the treatment phase the inclusion of Adverbials indicated an overall positive trend from baseline to treatment with data points B3 and B18 being the highest. Phase AB: Scores during phase AB indicate a negative trend during the post treatment phase.

   The 2SD-band method and effect size was unable to be used for Adjectives as the mean and standard deviation for the baseline was zero. Calculation of PND revealed a score of 41.67%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations for P2.

   5.4.3.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate a slight overall positive trend during treatment but that the treatment was ineffective in improving the inclusion of Adjectives in single picture narrative generation tasks.
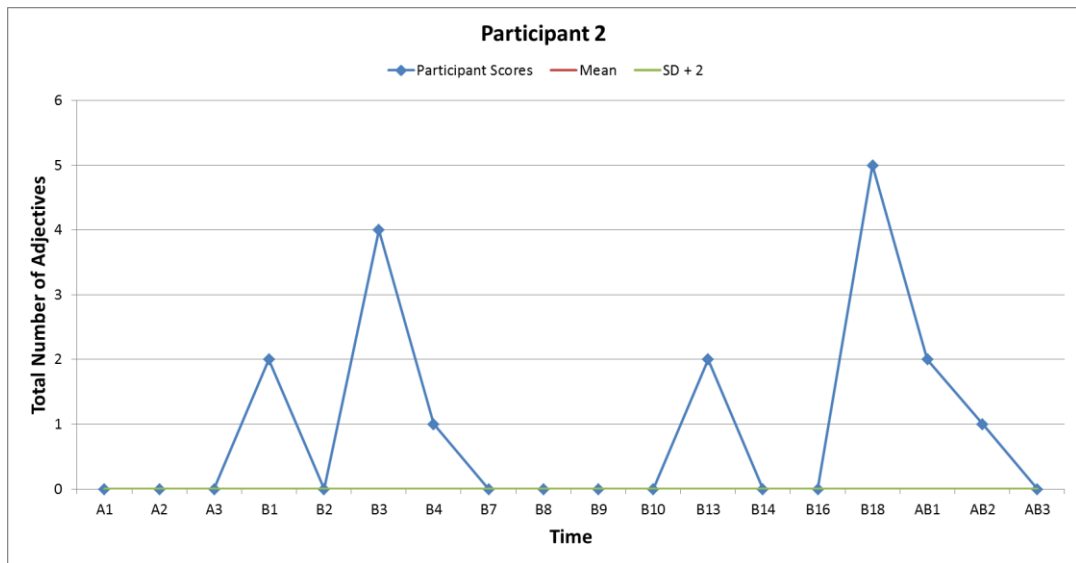
5.4.4 Total Number of Complex C-units.

Figure 26

Graphed P2 Complex C-units Scores

5.4.4.1 Visual inspection, statistical analysis and effect size. Figure 26 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Complex C-units remained at zero, therefore no trend was evident. Phase B: During the treatment phase the inclusion of Complex C-units remained at zero except for data point B13, which increased to one complex sentence. Phase AB: Scores during phase AB fall back to zero and indicate no positive trend.

The 2SD-band method and effect size was unable to be used for Complex C-units as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 0.0%, indicating that the treatment was ineffective for improving the use of Complex Sentences in single picture narrative generations.

5.4.4.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was ineffective in improving the inclusion of Complex C-units in single picture narrative generation tasks.

5.4.5 MLUm.
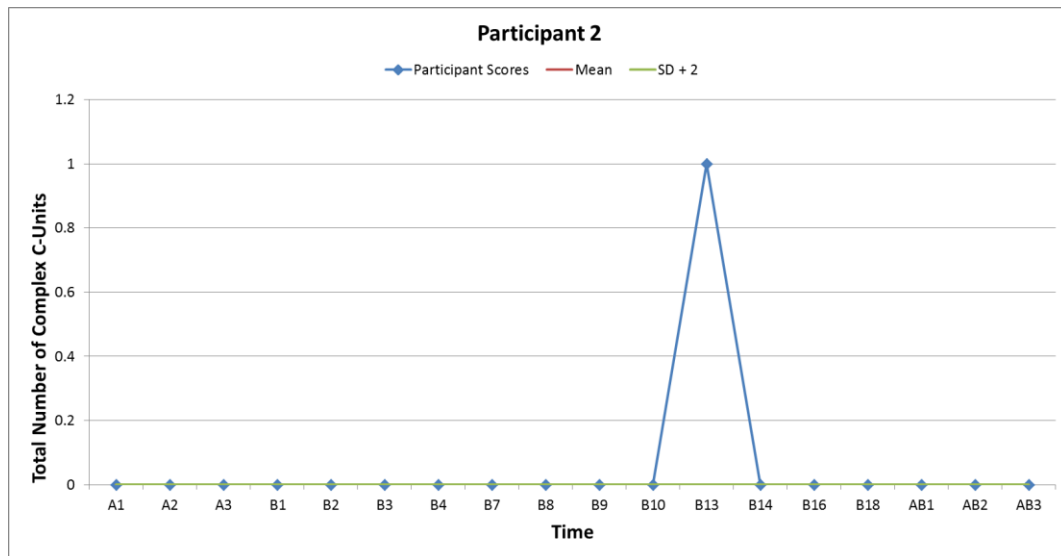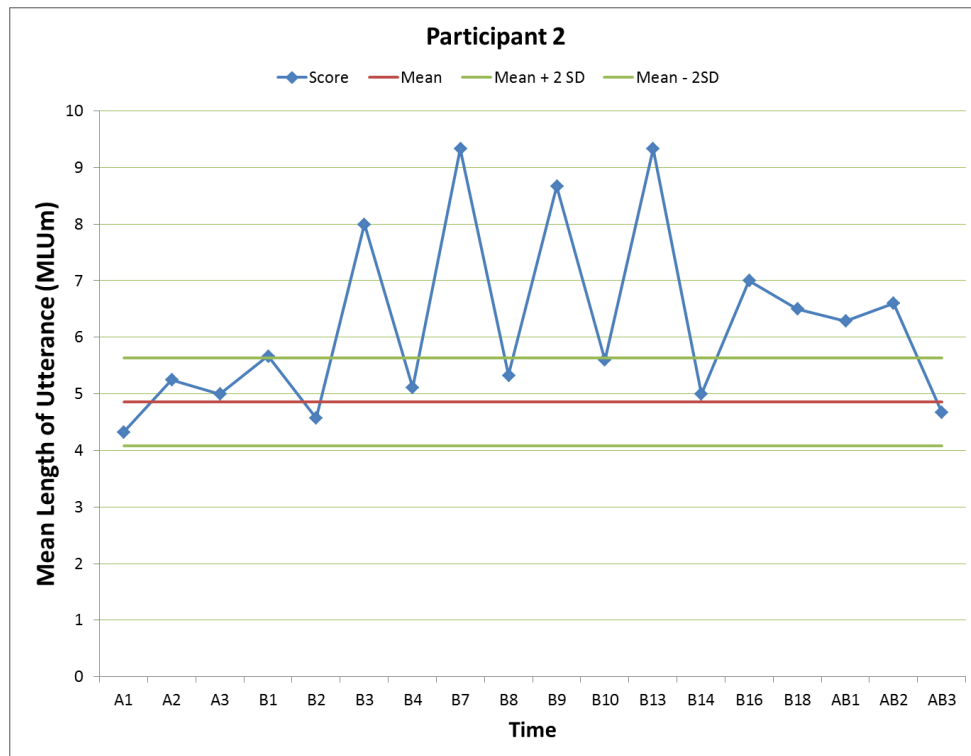

Figure 27

Graphed P2MLUmScores

    5.4.5.1 Visual inspection, statistical analysis and effect size. Figure 27 depicts the MLUm (mean length of utterances in morphemes) during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase MLUm data points indicated variability in performance but an overall positive trend from baseline to treatment with six data points falling above the 2SD-band during treatment (B3, B7, B9, B13, B16 and B18). Phase AB: Scores during phase AB indicate a slight negative trend, however data points AB1 and AB2 fell above the 2SD-band, maintaining the effects of treatment.

    A significant effect of intervention was demonstrated for MLUm, as two consecutive data points fell above the 2SD-band during the treatment phase (B16 and B18). This significant change occurred late in the treatment phase. Table 21 indicates that the effect size for P2 from A to AB was 2.56 for MLUm, indicating a large effect size.

5.4.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and effect size using a variation of Cohen's *d*, reveal that the intervention had a statistically significantly, positive, large (2.56) effect on increasing MLUm in single picture narrative generation tasks.

5.4.6 NDW.

Figure 28

Graphed P2 Number of Different Words Scores

5.4.6.1 Visual inspection, statistical analysis and effect size. Figure 28 depicts the NDW (number of different words) during single picture narrative generation.

Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase NDW data points indicate a slight negative trend from the onset of treatment, with scores consistently sitting between the mean and lower 2SD-band except for data point B18, which fell just above the higher 2SD-band. Phase AB: Scores during phase AB indicate a slight variability with data point AB2 falling above the 2SD-band and data points AB2 and AB3 falling to below the 2SD-band.

A significant effect of intervention was not demonstrated for NDW, as two consecutive data points did not fall above the 2SD-band during the treatment phase. Table 22 indicates that the effect size for P2 from A to AB was 2.91 for NDW, a large effect size.

5.4.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and effect size using a variation of Cohen's *d*, reveal that the intervention had a non-significant yet large (2.91) positive effect on increasing NDW in single picture narrative generation tasks.
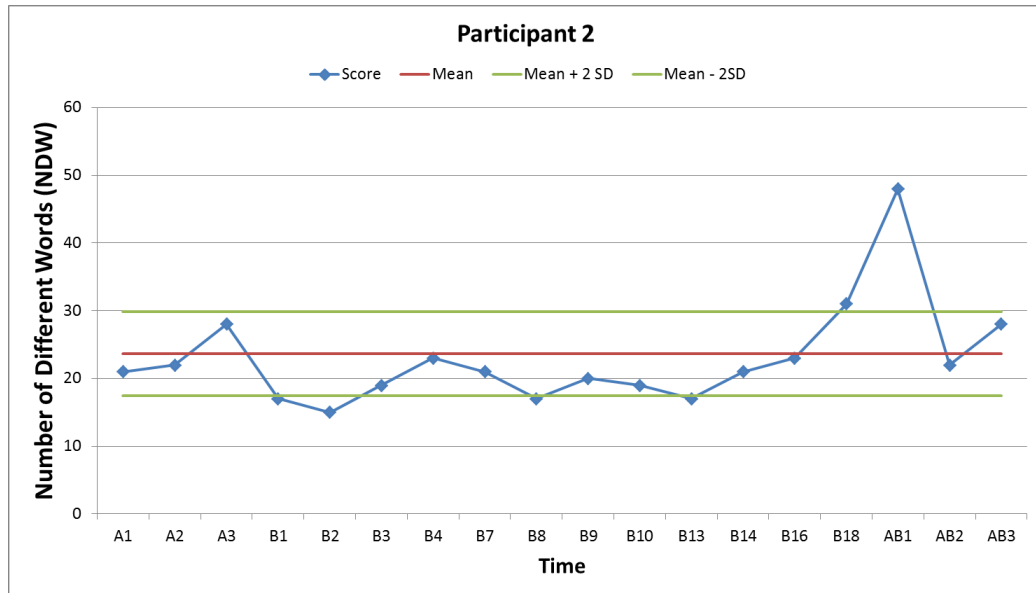
5.4.7 NTW.
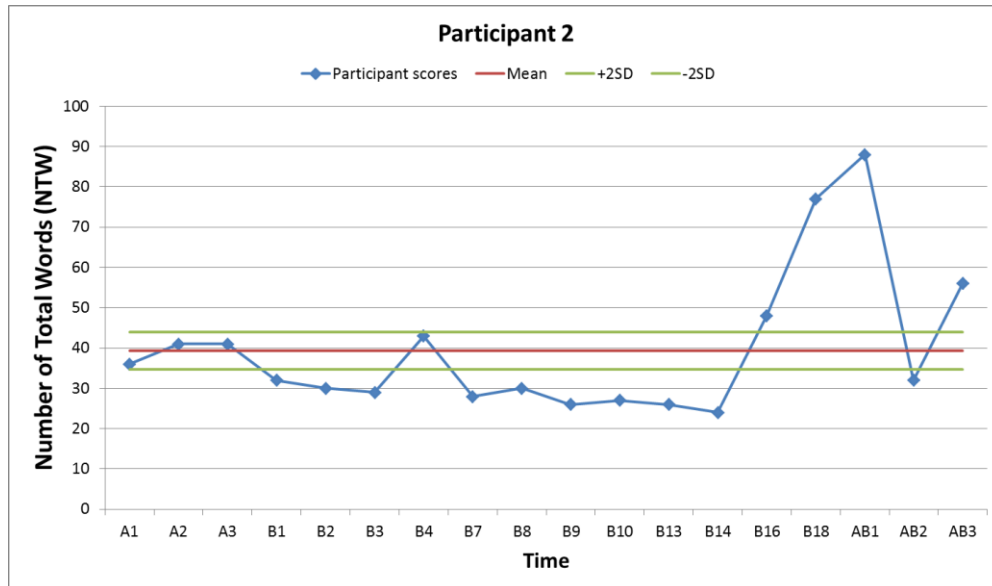
Figure 29

Graphed P2 Number of Total Words Scores

5.4.7.1 Visual inspection, statistical analysis and effect size. Figure 29 depicts the NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase NTW data points indicates an overall negative trend from the onset of treatment up to data point B14, with data points steadily decreasing to fall below the lower 2SD-band. The final two data points (B16 and B18) increased considerably to fall above the higher 2SD-band. Phase AB: Scores during phase AB indicate relatively stable performance, with data points AB1 and AB3 falling above the higher 2SD-band, demonstrating the maintenance of gains made towards the end of treatment.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points fell above the 2SD-band towards the end of the treatment phase (B16 and B18). This significant change was sustained into phase AB, as two

additional data points fell above the 2SD-band (AB1 and AB3). Table 23 indicates that the effect size for P2 from A to AB was 8.20 for NTW, indicating a large effect.

5.4.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (8.20) effect of intervention on NTW during single picture narrative generation tasks.

5.4.8 Participant 2 summary. Visual inspection, calculation of statistical significant using the 2SD-band method and effect size using a variation of Cohen's *d*, revealed that narrative intervention focusing on explicit teaching of macrostructure elements resulted in significant improvements with a large effect size for increasing MLUm, NTW, NDW for P2.

5.5 Individual Analysis for Participant 3

Three pre-intervention baseline measures (A) were collected for participant three (P3), followed by 17 group intervention sessions (B; P3 was absent for one) and three post intervention baseline measures (AB). The graphed results for P3's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units and MLUm, NDW and NWT in repeated measures are depicted in Figures 30 to 36.

5.5.1 Total Number of Conjunctions.
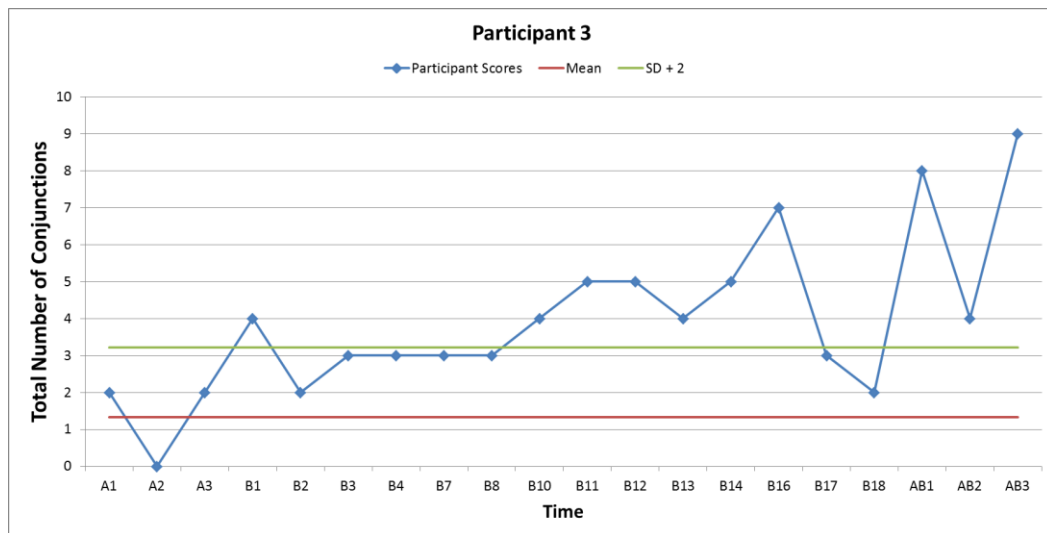
Figure 30

Graphed P3 Conjunction Scores

5.5.1.1 Visual inspection, statistical analysis and effect size. Figure 30 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional)

during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Conjunctions indicates an overall positive trend from baseline to treatment as all data points fell above the baseline mean, and six above the 2SD-band. Examination of Phase B reveals that the highest score occurred at treatment session B16, lowering slightly for data points B17 and B18 to below the 2SD-band. Phase AB: Scores during phase AB remain above the 2SD-band, consistent with the end of B, indicating that gains were maintained following treatment.

A significant effect of intervention was demonstrated for inclusion of Conjunctions, as two consecutive data points fell above the 2SD-band during the treatment phase (B10 and B11). This significant change was sustained throughout phase B and AB, with most of the remaining data points (except B17 and B18) falling above the 2SD-band, demonstrating that the effect of intervention on inclusion of Conjunctions was maintained after treatment. Table 15 indicates that the effect size for P3 from A to AB was 6.01 for Conjunctions, indicating a large effect size.

5.5.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant large (6.01) positive effect on the inclusion of Conjunctions during single picture narrative generation tasks.

5.5.2 Total Number of Adverbials.

Figure 31

Graphed P3 Adverbial Scores

5.5.2.1 Visual inspection, statistical analysis and effect size. Figure 31 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: During baseline, the score for Adverbials remained at zero. No trend was evident during baseline. No trend was evident during baseline, as all data points were at zero. Phase B: During the treatment phase the inclusion of Adverbials indicated a slight positive trend from baseline. Examination of Phase B reveals that data point B17 was the highest score (four adverbials). Phase AB: Scores during phase AB remain relatively stable, with some variability but an overall stable trend from the end of Phase B to AB.

The 2SD-band method and effect size was unable to be calculated for Adverbials, as the mean and standard deviation of the baseline Phase A was zero. Calculation of the PND statistic revealed a score of 92.86%, indicating that the treatment was effective for improving the use of Adverbials in single picture narrative generations.

5.5.2.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was effective in improving the inclusion of Adverbials in single picture narrative generation tasks.
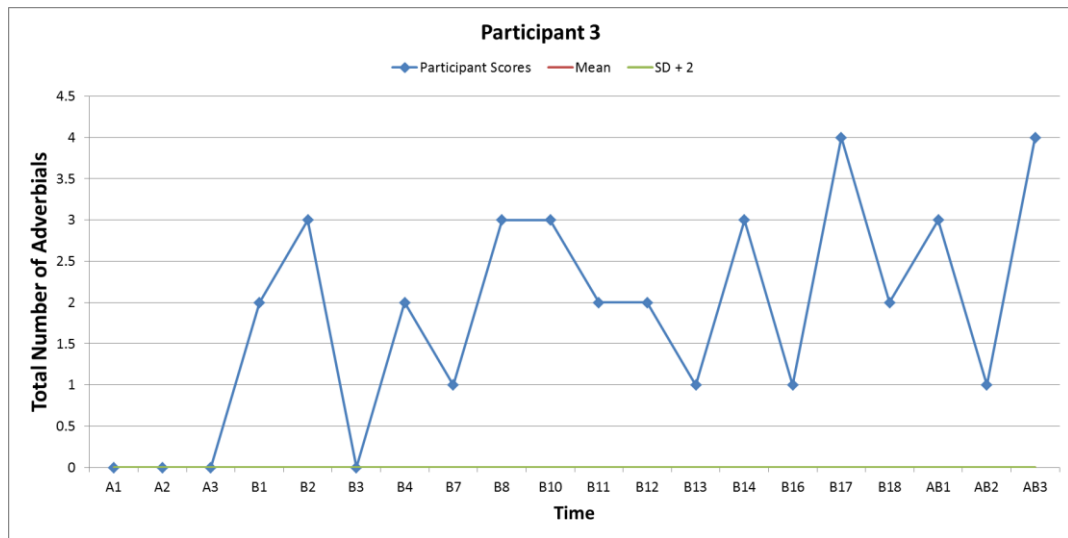
98

5.5.3 Total Number of Adjectives.

Figure 32

Graphed P3 Adjective Scores

5.5.3.1 Visual inspection, statistical analysis and effect size. Figure 32 above depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: During baseline, the score for Adjectives remained at zero and therefore no trend evident. Phase B: During the treatment phase the inclusion of Adjectives revealed an initial increase from baseline and then a slight negative trend in performance from data point B1 to B10, remaining at zero for data points B11 to B16. Examination of Phase B reveals that the highest data point was at B1 (4), with the remaining data points falling between one and zero. Phase AB: Scores during phase AB reveal no real trend from treatment to post-treatment.

The 2SD-band method and effect size using a variation of Cohen's *d,* was unable to be used for Adjectives as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 42.9%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations.

5.5.3.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was ineffective in improving the inclusion of Adjectives in single picture narrative generation tasks.
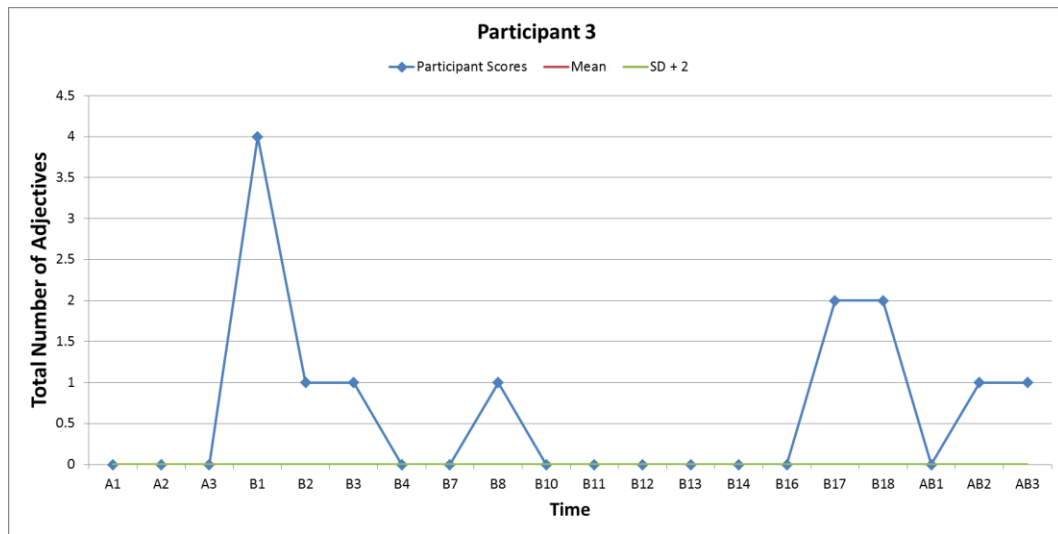
5.5.4 Total Number of Complex C-units.

Figure 33

Graphed P3 Complex C-units Scores

5.5.4.1 Visual inspection, statistical analysis and effect size. Figure 33 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Complex C-units remained at zero. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Complex C-units indicates variable performance, with scores falling between zero and one. Phase AB: Scores during phase AB follow the same pattern as in Phase B, with scores falling between zero and one.

The 2SD-band method and effect size using a variation of Cohen's *d* was unable to be used for Complex C-units, as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 50%, indicating that the treatment was questionable for improving the use of Complex C-units in single picture narrative generations.

5.5.4.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was questionable in improving the inclusion of Complex C-units in single picture narrative generation tasks.

5.5.5 MLUm.
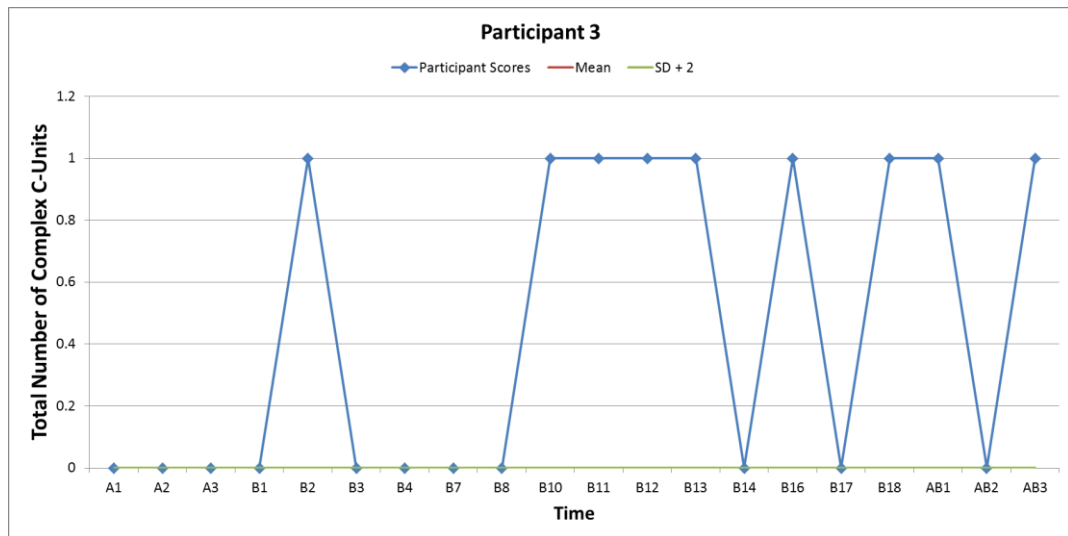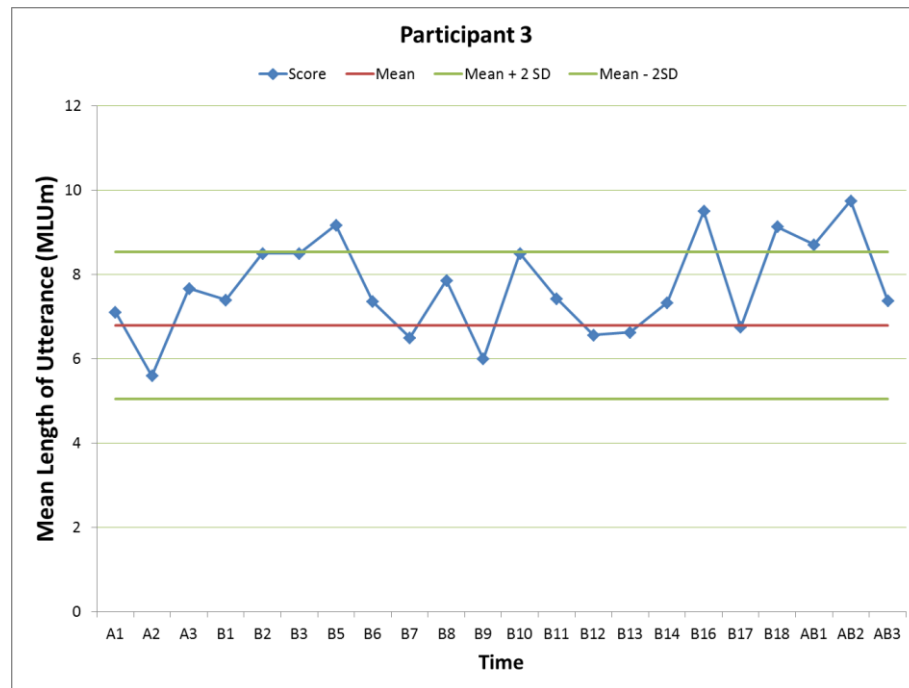

Figure 34

Graphed P3MLUm Scores

5.5.5.1 Visual inspection, statistical analysis and effect size. Figure 34 depicts the MLUm (mean length of utterances in morphemes) during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase MLUm data points indicate variability in performance, but an overall positive trend from baseline to treatment towards the end of the treatment phase, with 11 data points falling above the baseline mean. Closer inspection of Phase B reveals three data points fell above the 2SD-band (B5, B16 and B18)..Phase AB: Scores during phase AB indicate some variability, while remaining above the mean of A, and two data points falling above the 2SD-band (AB1 and AB2).

Despite three instances of scores above the 2SD-band during treatment, a significant effect of intervention was not demonstrated for MLUm during phase B as these data points were not consecutive, but 2 consecutive data points fell above the 2SD Band post-treatment. Table 21 indicates that the effect size for P3 from A to AB was 2.08 for MLUm, indicating a large effect.

5.5.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, revealed a

statistically significant pre-post treatment change (A to AB), with a large effect size (2.08) on MLUm during single picture narrative generation tasks.

5.5.6 NDW.

Figure 35

Graphed P3 Number of Different Words Scores

5.5.6.1 Visual inspection, statistical analysis and effect size. Figure 35 depicts the NDW (number of different words) during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A negative trend was evident during baseline, with data points A2 and A3 falling below the mean line. Phase B: During the treatment phase, data points indicate a positive trend from the onset of treatment, with data points B17 and B18 being the highest. Inspection of the data during treatment reveals that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate a slight negative trend from the end of treatment, whilst remaining above the mean.

A significant effect of intervention was not demonstrated for NDW, as two consecutive data points did not fall above the 2SD-band during treatment phase. Table 22 indicates that the effect size for P3 from A to AB was 0.48 for NDW, indicating a small effect.

5.5.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band analysis and calculation of treatment effect using Cohen's *d*, indicate a

non-significant and small effect (0.48) of intervention on NTW during single picture narrative generation tasks.

5.5.7 NTW.
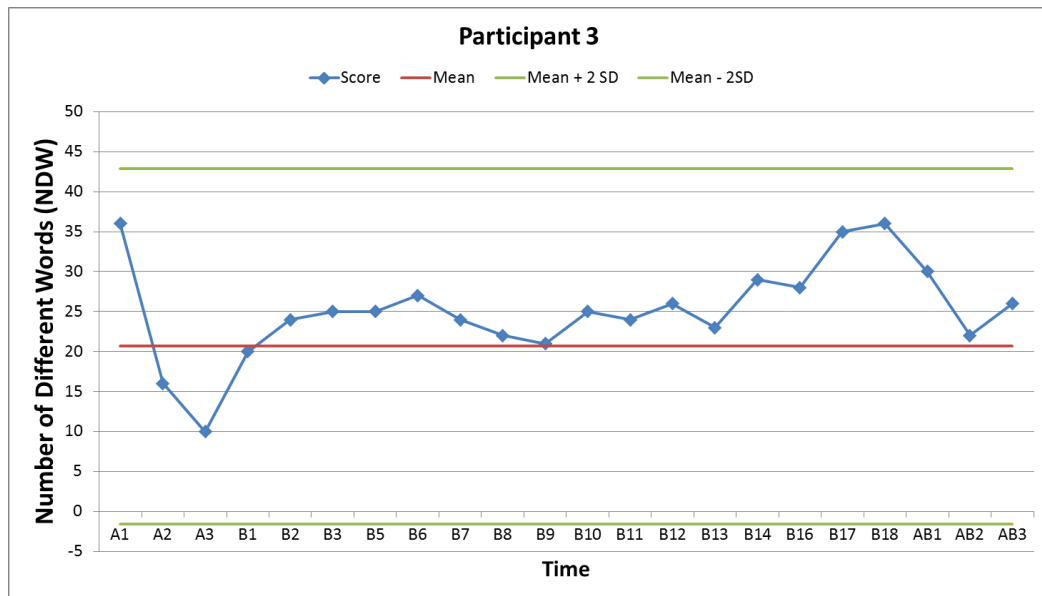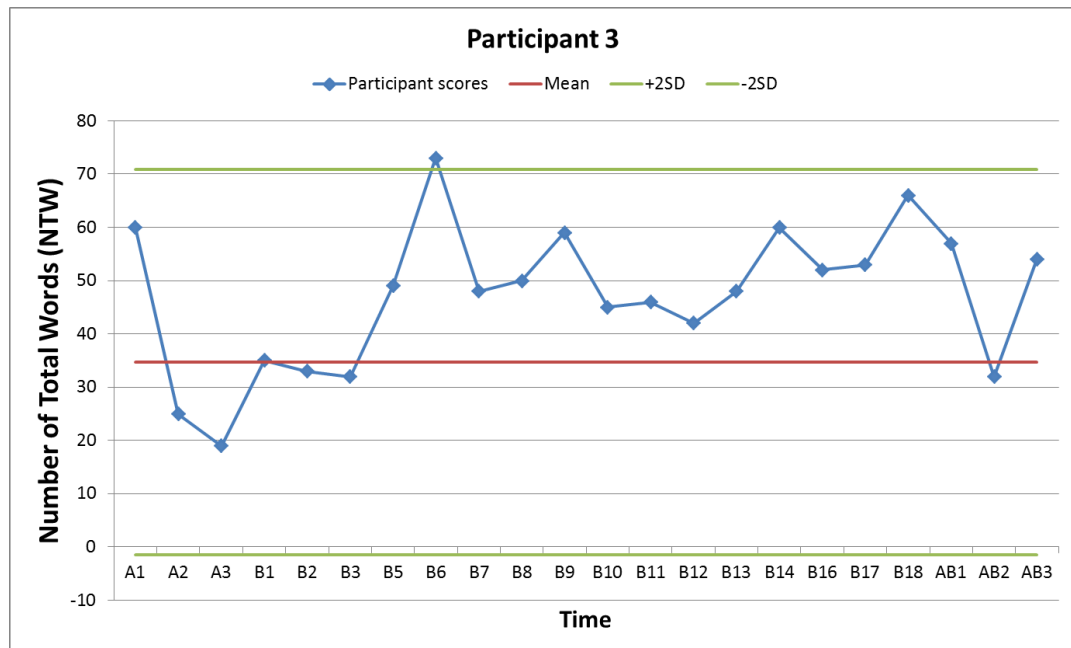

Figure 36

Graphed P3 Number of Total Words Scores

5.5.7.1 Visual inspection, statistical analysis and effect size. Figure 36 depicts the NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase, data indicate an overall positive trend from the onset of treatment, with 12 data points falling above the baseline mean and five data points falling above the 2SD-band. Phase AB: Scores during phase AB indicate an overall negative trend from the end of treatment, with data point AB2 falling below the baseline mean.

A significant effect of intervention was not demonstrated for NTW, as two consecutive data points did not fall above the 2SD-band during treatment phase. Table 23 indicates that the effect size for P3 from A to AB was 0.72 for NTW, indicating a moderate effect.

5.5.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band analysis and calculation of treatment effect using Cohen's *d*, indicate a

non-significant moderate (0.72) effect of intervention on NTW during single picture narrative generation tasks.

5.5.8 Summary participant 3. Data analysis for Participant 3, revealed that the ONIP resulted in significant improvements with a large effect size for inclusion of Conjunctions and Adverbials. The ONIP had a non-significant, yet large effect for NDW, a non-significant and moderate effect for NTW, and was not effective for increasing the Total Number of Adjectives or MLUm for P3.

5.6 Participant 4

Three pre-intervention baseline measures (A) were collected for participant four (P4), followed by 15 group intervention sessions (B; P4 was absent for three) and three post-intervention baseline measures (AB). The graphed results for P4's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 37 to 43.

5.6.1 Total Number of Conjunctions.
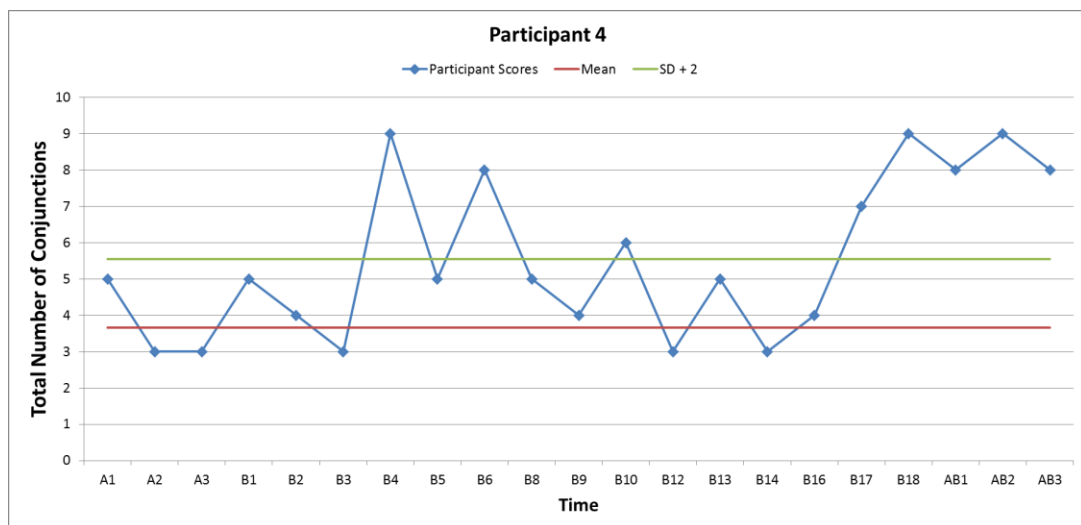
Figure 37

Graphed P4 Conjunction Scores

5.6.1.1 Visual inspection, statistical analysis and effect size. Figure 37 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase, the data indicates a slight positive trend from baseline to treatment with 12 data points falling above the baseline mean

and five data points (B4, 6, 10, 17 and 18) falling above the 2SD-band. Phase AB: Scores during phase AB remain above the 2SD-band, consistent with the end of phase B, indicating that gains were maintained following treatment.

A significant effect of intervention was demonstrated for inclusion of Conjunctions, as two consecutive data points fell above the 2SD-band during the treatment phase (B17 and B18). This significant change was sustained into phase AB, with all remaining data points falling above the 2SD-band, indicating that the effect of intervention on inclusion of Conjunctions was maintained. Table 17 indicates that the effect size for P4 from A to AB was 4.95 for Conjunctions, indicating a large effect size.

5.6.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant large (4.95) positive effect on the inclusion of Conjunctions during single picture narrative generation tasks.

5.6.2 Total Number of Adverbials.
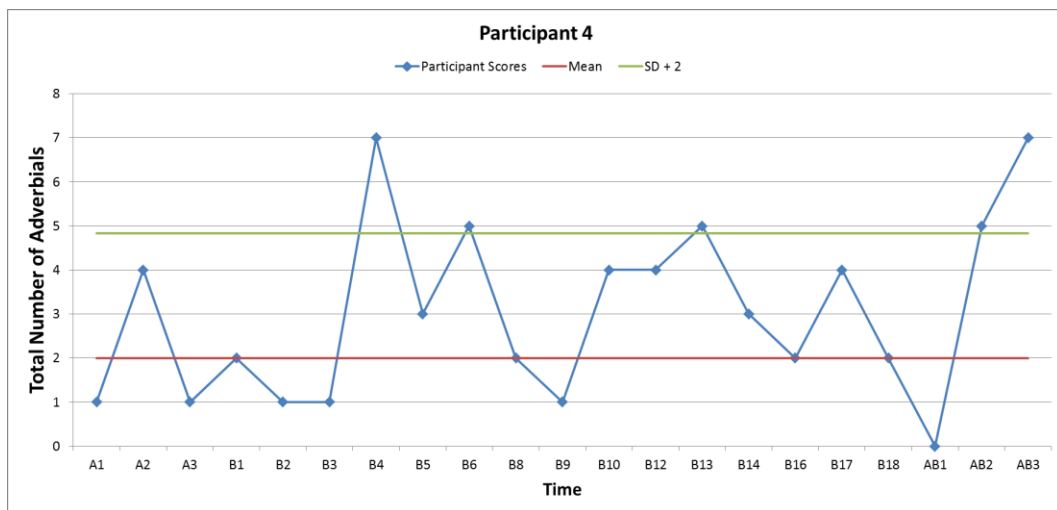
Figure 38

Graphed P4 Adverbial Scores

5.6.2.1 Visual inspection, statistical analysis and effect size. Figure 38 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the data reveals a slight negative trend in performance.

Examination of Phase B reveals that data points B4, B6 and B13 fell above the 2SD-band, while most of the data points fell below the 2SD-band, with six falling at or below the baseline mean. Phase AB: Scores during phase AB remain relatively stable, with AB2 and AB3 falling above the 2SD-band, and a positive trend from B to AB evident in the data.

A significant effect of intervention was demonstrated for inclusion of Adverbials, as while two consecutive data points did not fall above the 2SD-band during the treatment phase, this occurred during post intervention (Phase AB). Table 18 indicates that the effect size for P4 from A to AB was 1.41 for Adverbials, indicating a large effect size.

5.6.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant large (1.41) positive effect on the inclusion of Adverbials during single picture narrative generation tasks.

5.6.3 Total Number of Adjectives.
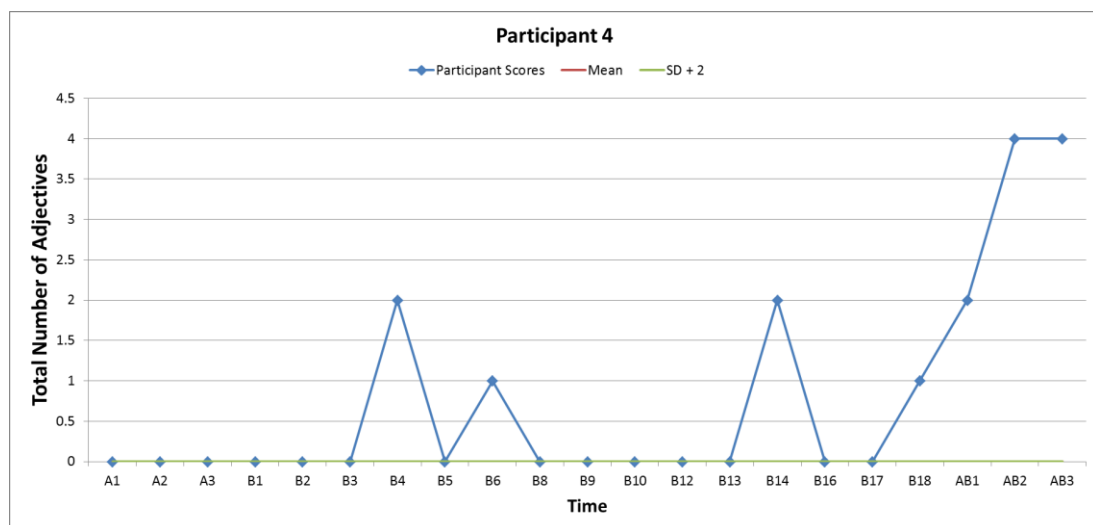
Figure 39

Graphed P4 Adjective Scores

5.6.3.1 Visual inspection, statistical analysis and effect size. Figure 39 above depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: During baseline, the score for Adjectives remained at zero. No trend was evident during baseline, as all scores fell at zero. Phase B: During the treatment phase the inclusion of Adjectives revealed no trend in performance. Phase

AB: Scores during phase AB reveal a slight positive trend from the end of treatment to phase AB.

The 2SD-band method and effect size using a variation of Cohen's *d* was unable to be used for Adjectives as the mean and standard deviation for the baseline was zero. Calculation of the PND statistic revealed a score of 42.9%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations. Close inspection of the graph, does reveal improvement in performance at the end of treatment and in phase AB. This could indicate a positive effect of the intervention.

5.6.3.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was ineffective in improving the inclusion of Adjectives in single picture narrative generation tasks.

5.6.4 Total Number of Complex C-units.
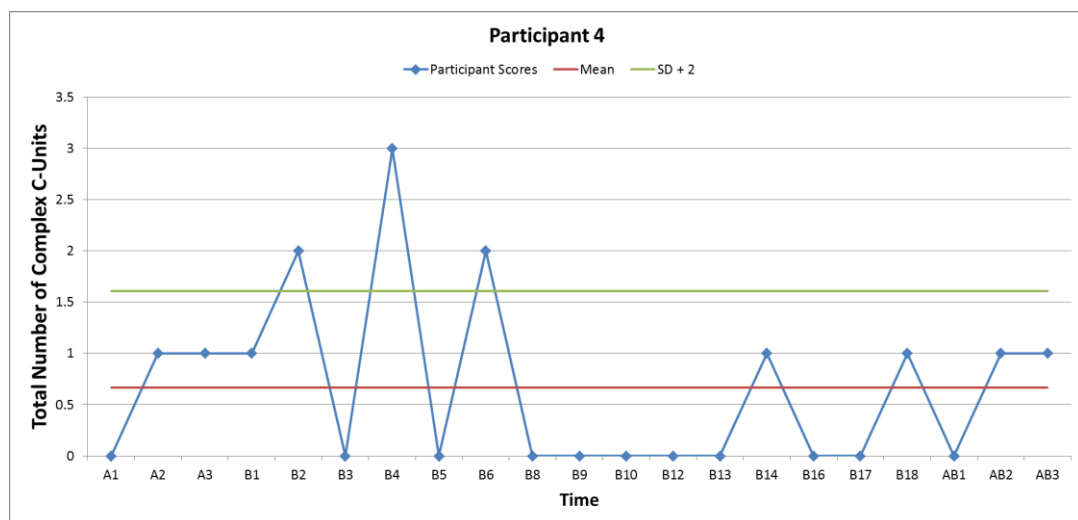
Figure 40

Graphed P4 Complex C-units Scores

5.6.4.1 Visual inspection, statistical analysis and effect size. Figure 40 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: A stable baseline was achieved for Complex C-units, as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the data reveals a slight negative trend in performance, with nine of the 18 data points falling below the baseline mean. Examination of the data reveals that data points B2, B4 and B6 fell above the 2SD-band, while all remaining

data points fell below the 2SD-band. Phase AB: Scores during phase AB reveal no trend in performance from treatment.

A non-significant effect of intervention was demonstrated for inclusion of Complex C-units, as two consecutive data points did not fall above the 2SD-band during the treatment phase. Table 20 indicates that the effect size for P4 from A to AB was 0.00 for Complex C-units, indicating a negligible effect size.

5.6.4.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a non-significant negligible effect (0.00) on the inclusion of Complex C-units during single picture narrative generation tasks.

5.6.5 MLUm.
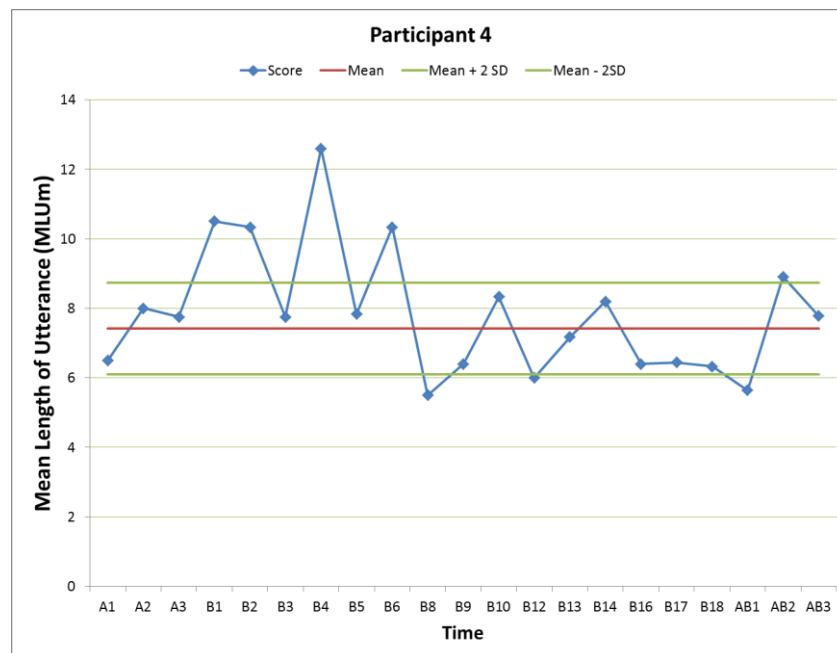
Figure 41

Graphed P4 MLUm Scores

5.6.5.1 Visual inspection, statistical analysis and effect size. Figure 41 depicts the MLUm (mean length of utterances in morphemes) during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline, with data points A2 and A3 falling above the mean line. Phase B: During the treatment phase, data points indicate an initial positive trend from data points B1 to B4, followed by a

negative trend, with data points B16, B17 and B18 falling below the baseline mean. Examination of the data reveals that data points B1, B2, B4 and B6 fell above the 2SD-band, with all other data points falling below the 2SD-band. Phase AB: Scores during phase AB indicate no overall trend from the treatment phase.

A significant effect of intervention was initially demonstrated for MLUm, as two consecutive data points fell above the 2SD-band early in the treatment phase (B1 and B2), however this was not sustained throughout the treatment phase, nor beyond. Table 19 indicates that the effect size for P4 from A to AB was 0.04 for MLUm, indicating a negligible effect.

5.6.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, reveal an overall non-significant and negligible effect (0.04) on MLUm during single picture narrative generation tasks.

5.6.6 NDW.

Figure 42

Graphed P4 Number of Different Words Scores

5.6.6.1 Visual inspection, statistical analysis and effect size. Figure 42 depicts the NDW (number of different words) during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase, data points indicate a positive trend in performance, with only four of the data points during treatment, falling below the baseline mean. Examination of the data

reveals that data points B4, B5, B6, B10, B13, B14, B17 and B18 all fell above the 2SD-band. Phase AB: Scores during phase AB reveal no trend following treatment, indicating stable performance post intervention. All three scores in AB fell above the 2SD-band, indicating a positive trend from before treatment (Phase A).

A significant effect of intervention was demonstrated for NDW, as two consecutive data points fell above the 2SD-band during treatment phase, B4 and B5, with further data points also falling above the 2SD-band (B6, B10, B13, B14, B17 and B18). Table 22 indicates that the effect size for P4 from A to AB was 8.04 for NDW, indicating a large effect.

5.6.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a significant large effect (8.08) of intervention on NTW during single picture narrative generation tasks.

5.6.7 NTW.
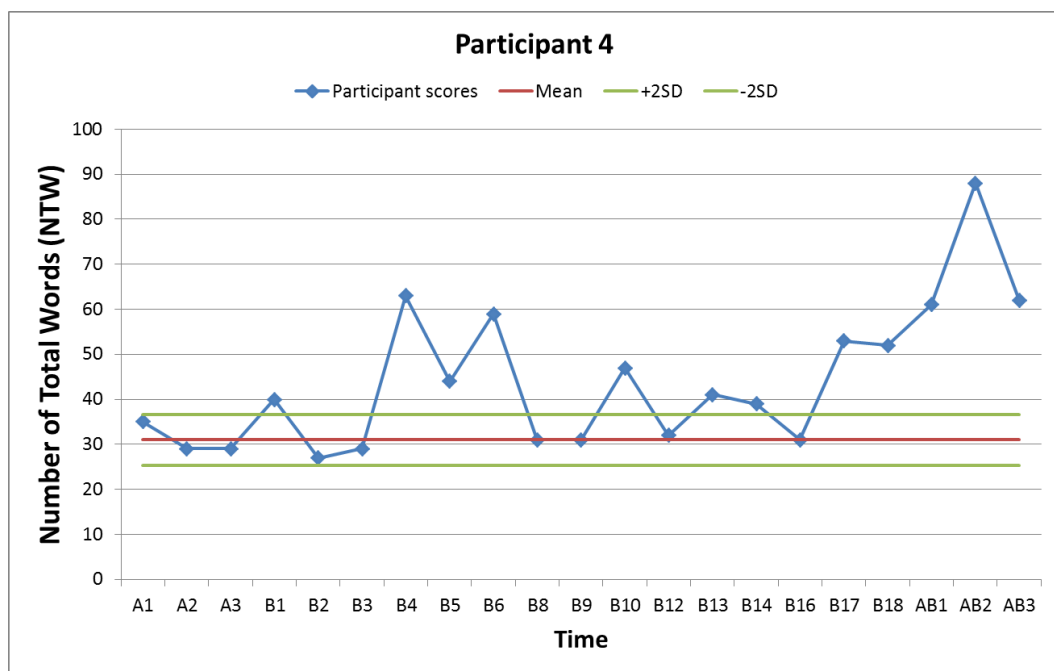
Figure 43

Graphed P4 Number of Total Words Scores

5.6.7.1 Visual inspection, statistical analysis and effect size. Figure 43 depicts the NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase, data indicate

an overall positive trend from the onset of treatment, with only five data points falling at or below the baseline mean, and data points steadily increasing to above the 2SD-band, with data points B4, B5, B6, B10, B13, B14, B17 and B18 all above the 2SD-band. Phase AB: Scores during phase AB indicate an overall positive trend from Phase B to AB, with all three data points falling above the 2SD-band, indicating that the effects of the intervention were maintained.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points fell above the 2SD-band during treatment phase (B4 and B5), with B6, B10, B13, B14, B17 and B18 also falling above the 2SD-band. Table 23 indicates that the effect size for P3 from A to AB was 13.91 for NTW, indicating a large effect.

5.6.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a significantly large effect (13.91) of intervention on NTW during single picture narrative generation tasks.

5.6.8 Participant 4 summary. Data analysis for Participant 4, revealed that the ONIP resulted in significant improvements with a large effect size for inclusion of Conjunctions, Adverbials, NDW and NTW. The ONIP resulted in non-significant and negligible effects for Total Number of Adverbials and Complex C-units, and increasing MLUm.

5.7 Participant 5

Four pre-intervention baseline measures (A) were collected for participant five (P5), followed by 17 group intervention sessions (B; P5 was absent for 1) and three post-intervention baseline measures (AB). Participant data for baseline sessions 5 and 6 were lost following data collection. The graphed results for P5's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 44 to 50.

5.7.1 Total Number of Conjunctions.
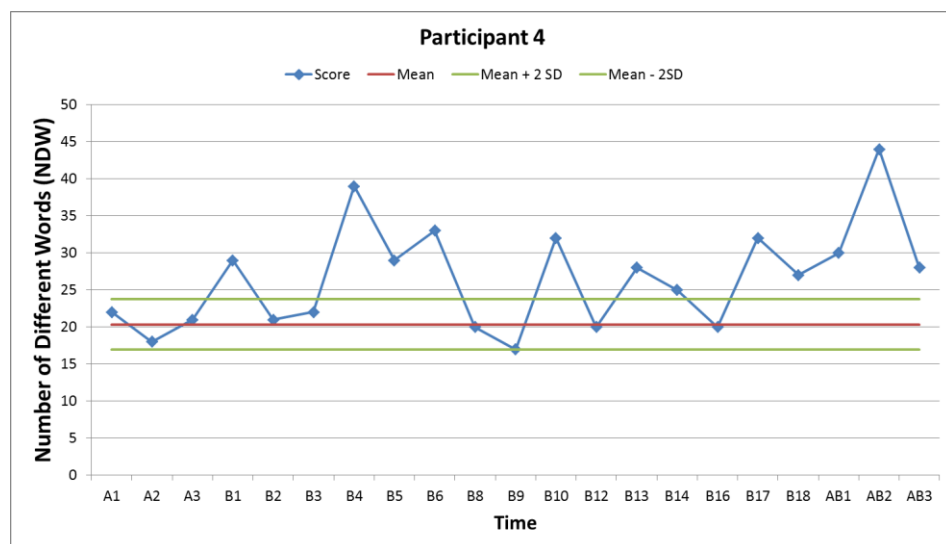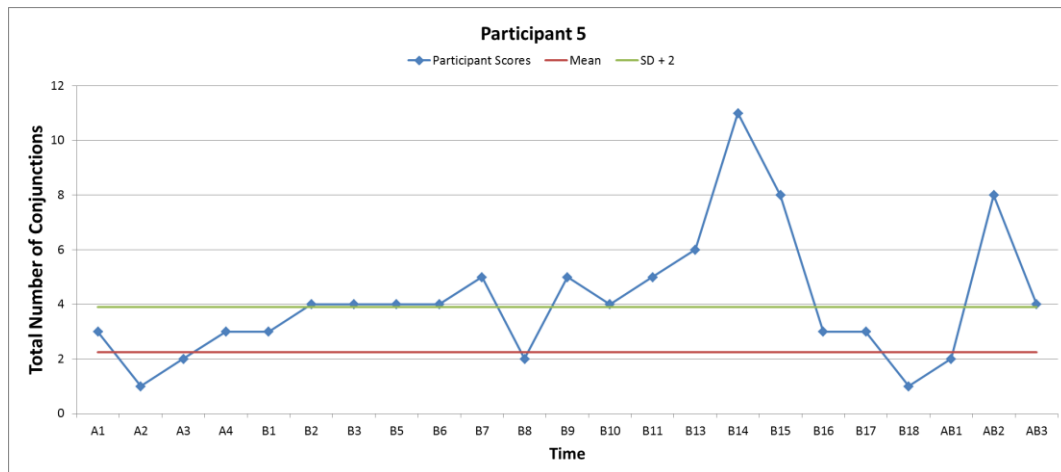

Figure 44

Graphed P5 Conjunction Scores

5.7.1.1 Visual inspection, statistical analysis and effect size. Figure 44 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions, as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. Phase B: During the treatment phase the data indicate an overall positive trend from baseline to treatment, with all but two data points falling above the baseline mean. Examination of Phase B reveals that six data points (B7, B9, B11, B13, B14 and B16) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data, although data points AB2 and AB3 both remained above the 2SD-band, indicating that the improvements made in treatment were maintained.

A significant effect of intervention was demonstrated for inclusion of Conjunctions, as two consecutive data points fell above the 2SD-band during the treatment phase (B11 and B13). Table 17 indicates that the effect size for P5 from A to AB was 2.91 for Conjunctions, indicating a large effect.

5.7.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant large effect (2.91) on the Total Number of Conjunctions used during single picture narrative generation tasks.

5.7.2 Total Number of Adverbials.
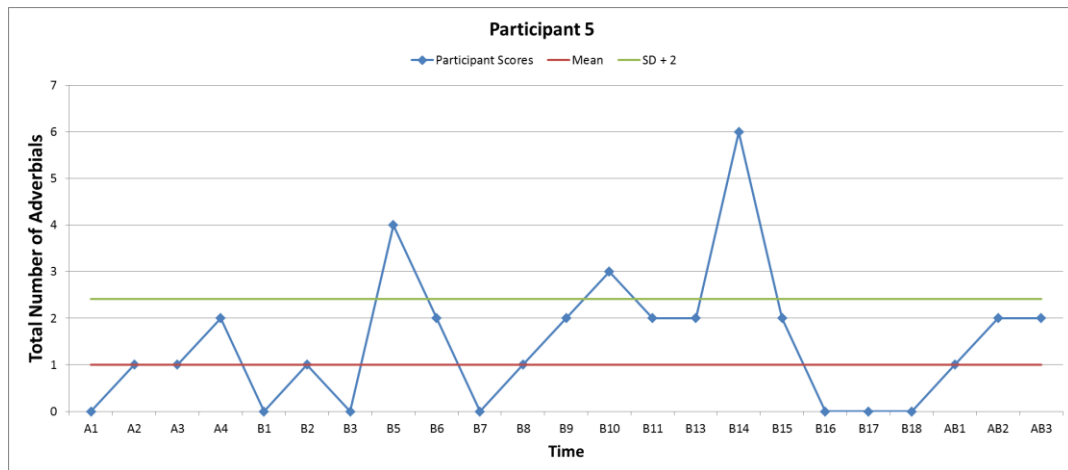
Figure 45

Graphed P5 Adverbial Scores

5.7.2.1 Visual inspection, statistical analysis and effect size. Figure 45 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline, with data point A2 and A3 falling at mean, and data point A4 falling above the mean. Phase B: During the treatment phase, data indicates variable performance, with eight data points falling at or below the mean, and seven falling above the mean. Data points B5, B10 and B14 fell above the 2SD-band. Phase AB: Scores during phase AB remain relatively stable, with no trend evident in the data.

A non-significant effect of intervention was demonstrated for inclusion of Adverbials, as two consecutive data points did not fall above the 2SD-band during the treatment phase. Table 18 indicates that the effect size for P5 from A to AB was 0.94 for Adverbials, indicating a large effect size.

5.7.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, all indicate that the treatment had a statistically non-significant, yet large (0.94) effect on the Total Number of Adverbials score during single picture narrative generation tasks.

5.7.3 Total Number of Adjectives.

Figure 46

Graphed P5 Adjective Scores

    5.7.3.1 Visual inspection, statistical analysis and effect size. Figure 46 above depicts the score for the Total Number of Adjectives during single picture narrative generations. Phase A: During baseline, the score for Adjectives remained at zero. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Adjectives reveals no overall trend in data, with most of the data points revealing zero examples of Adjectives. Phase AB: Scores during phase AB reveal no overall trend in data.

    The 2SD-band method and effect size using a variation of Cohen's *d,* were unable to be calculated for Adjectives as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 18.75%, indicating that the treatment was ineffective.

    5.7.3.2 Interpretation. Visual inspection of the graph and calculation of treatment effect using PND, indicate that the treatment was ineffective in improving Total Number of Adjectives in single picture narrative generation tasks.

5.7.4 Total Number of Complex C-units.
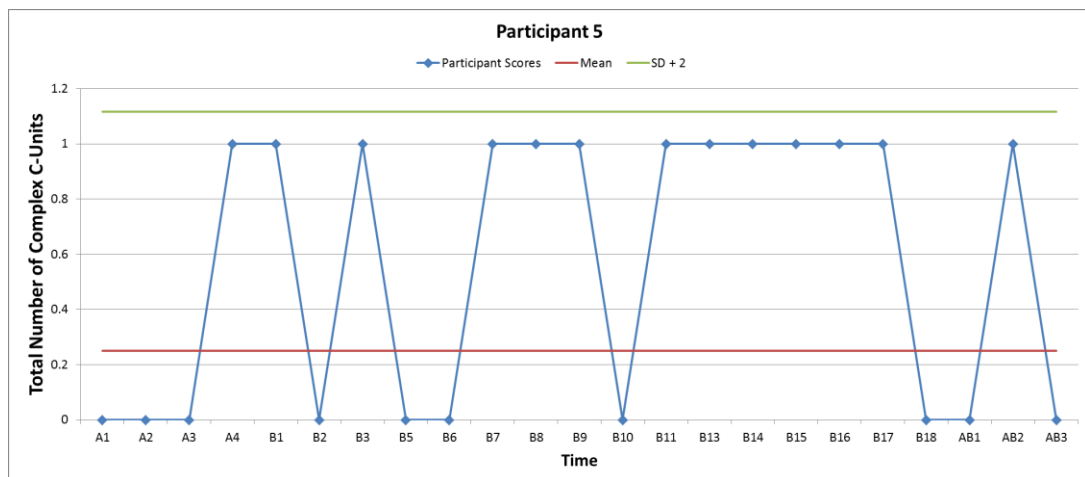
Figure 47

Graphed P5 Complex C-units Scores

5.7.4.1 Visual inspection, statistical analysis and effect size. Figure 47 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Complex C-units remained at zero for the first three data points, increasing to a score of one at data point A4. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Complex C-units reveals no trend in performance, with scores falling at either zero or one for instance of Complex C-units in each narrative sample. Phase AB: Scores during phase AB reveal no trend in performance.

The 2SD-band method and effect size using a variation of Cohen's *d* was not used for Complex C-units as only one data point during baseline was above zero. Calculation of the PND statistic revealed a score of 0%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations.

5.7.4.2 Interpretation. Visual inspection of the graph, statistical analysis using PND, indicated that the treatment was ineffective for increasing Complex C-units during single picture narrative generation tasks.

5.7.5 MLUm.
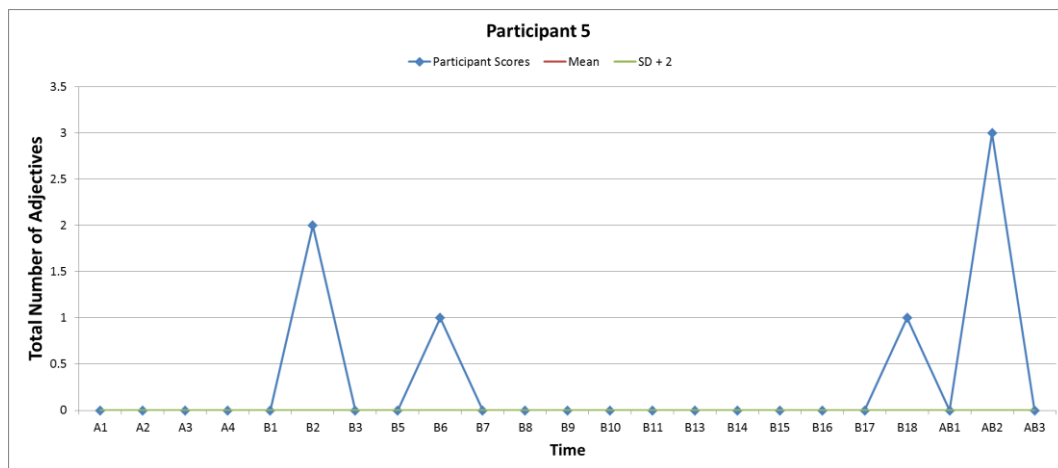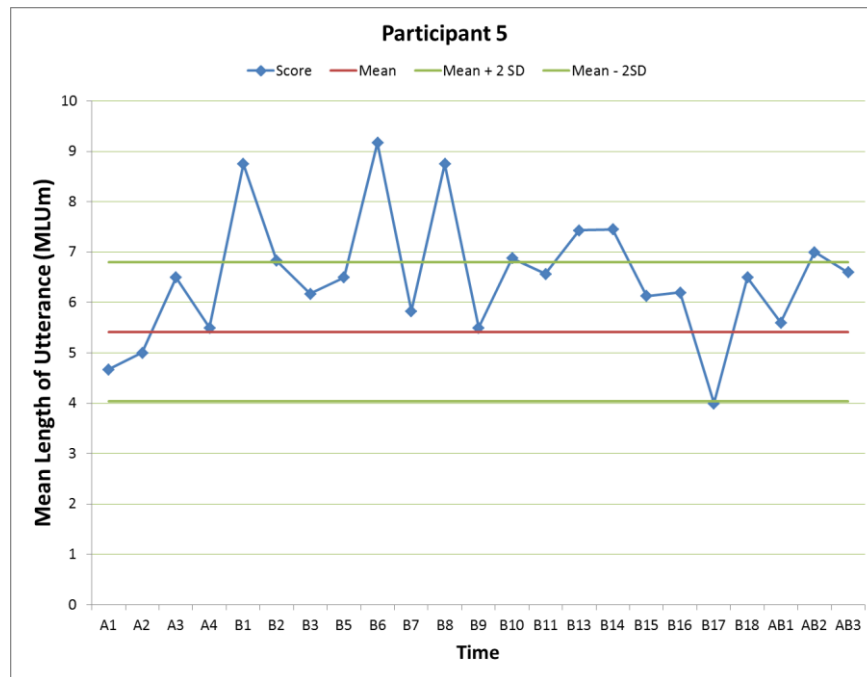

Figure 48

Graphed P5 MLUm Scores

   5.7.5.1 Visual inspection, statistical analysis and effect size. Figure 48 depicts
the MLUm (mean length of utterances in morphemes) during single picture narrative
generation. Phase A: A stable baseline was achieved for MLUm as all scores fell
within three standard deviations of the mean, which is consistent with SPC definition
of variability. A slight positive trend was evident during baseline, with data points
A3 and A4 falling above the mean line. Phase B: During the treatment phase, data
indicate slight variability in performance but an overall positive trend from baseline
to treatment with all scores except B17 falling above the baseline mean during
treatment. Examination of the data reveals that data points B1, B2, B6, B8, B10, B13
and B14 fell above the 2SD-band. Phase AB: Scores during phase AB indicates
consistent performance with phase B, with all three data points falling above the
mean.

   A significant effect of intervention was demonstrated for MLUm, as two
consecutive data points (B1 and B2) fell above the 2SD-band during treatment. This
effect was repeated at data points B14 and B15. Table 21 indicates that the effect size
for P5 from A to AB was 1.42 for MLUm, indicating a large effect.

   5.7.5.2 Interpretation. Visual inspection of the graph, statistical analysis using
the 2SD-band method and calculation of treatment effect using a variation of

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Cohen's *d*, indicate that the treatment had a statistically significant, large effect (1.42) on MLUm during single picture narrative generation tasks.

5.7.6 NDW.
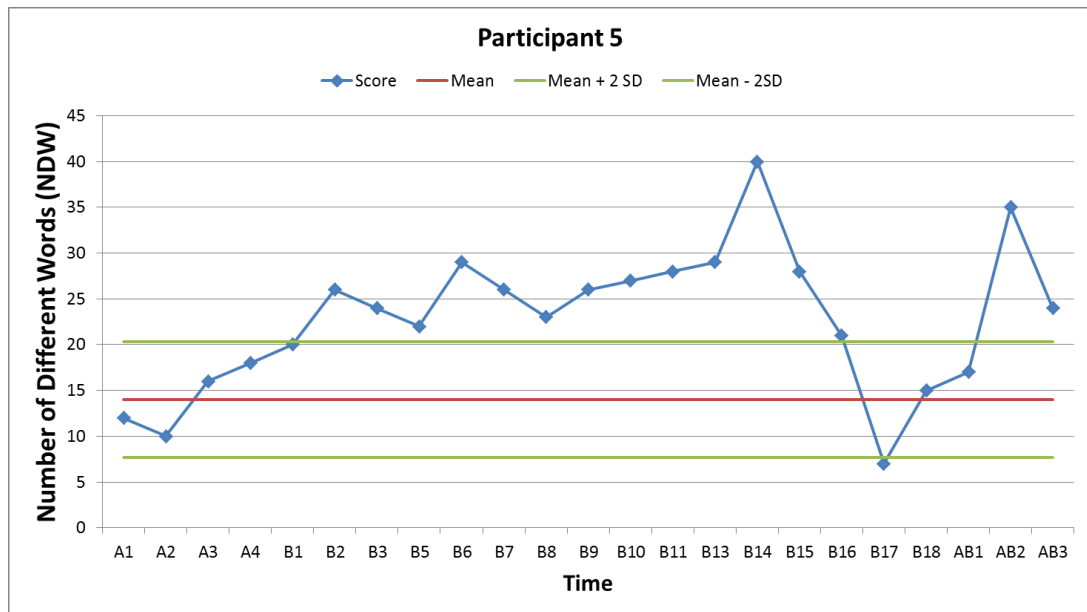
Figure 49

Graphed P5 Number of Different Words Scores

5.7.6.1 Visual inspection, statistical analysis and effect size. Figure 49 depicts the NDW (number of different words) during single picture narrative generation. Phase A: A stable baseline was achieved for NDW, as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline, with data points A3 and A4 falling above the baseline mean. Phase B: During the treatment phase, data indicate a positive trend from the onset of treatment, with data points steadily increasing to above the 2SD-band. Close examination of the data reveals that all data points except B1, B17 and B18 fell above the 2SD-band. Phase AB: Scores during phase AB remain relatively stable with performance in phase AB, with data points AB2 and AB3 falling above the 2SD-band, indicating that gains made during treatment were maintained.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points fell above the 2SD-band during the treatment phase (B2 and B3). This significant change was sustained throughout phase B and AB, as all except two data points (B17 and B18) fell above the 2SD-band from that point. Table 22

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indicates that the effect size for P5 from A to AB was 3.58 for NDW, indicating a large effect.

5.7.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, all indicate that the treatment had a statistically significant large effect (3.58) on NDW during single picture narrative generation tasks.

5.7.7 NTW.
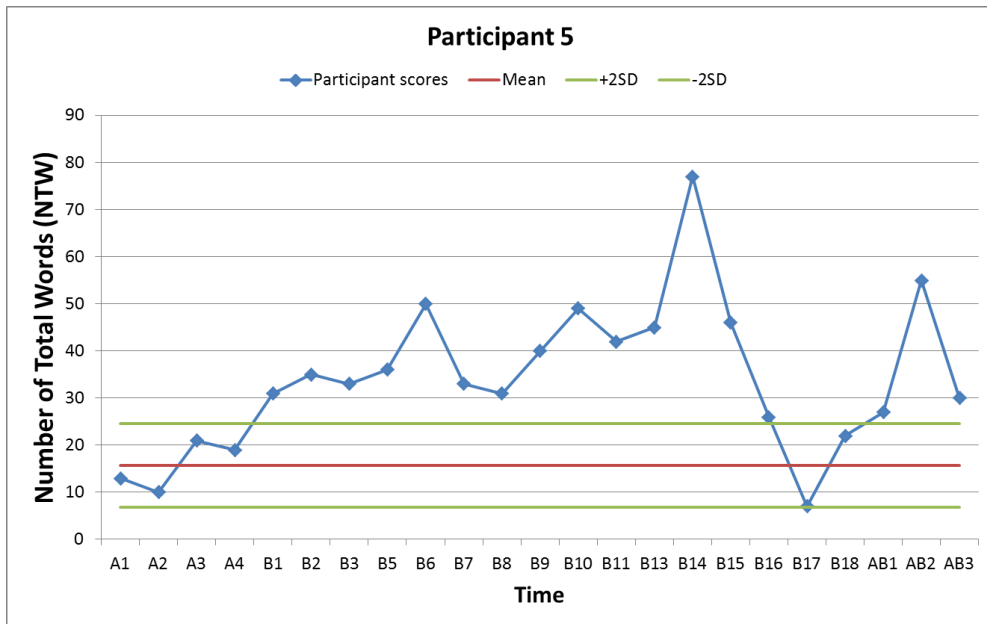
Figure 50

Graphed P5 Number of Total Words Scores

5.7.7.1 Visual inspection, statistical analysis and effect size. Figure 50 depicts the NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend was evident during baseline, with data pointsA3 and A4 falling above the baseline mean. Phase B: During the treatment phase, data indicate a positive trend from the onset of treatment, with the first 14 data points increasing to fall above the 2SD-band. Phase AB: Scores during phase AB indicate stable performance above the 2SD-band, consistent with the end of treatment, demonstrating the maintenance of gains made during treatment.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points fell above the 2SD-band during the treatment phase (B1 and B2). This significant change was sustained throughout phase B and AB, as all

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remaining data points (except B17 and B18) fell above the 2SD-band. Table 23 indicates that the effect size for P5 from A to AB was 4.86 for NTW, indicating a large effect.

5.7.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (4.86) effect of intervention on NTW during single picture narrative generation tasks.

5.7.8 Participant 5 summary. Data analysis for Participant 5, revealed that the ONIP resulted in significant improvements with a large effect sizes for Total Number of Conjunctions and MLUm, NDW and NTW during single picture narrative generation samples. Data revealed the ONIP resulted in non-significant results for Total Number of Adjectives, Adverbials and Complex C-units for P5.

5.8 Participant 6

Six pre-intervention baseline measures (A) were collected for participant six (P6), followed by 15 group intervention sessions (B; P6 was absent for three) and three post-intervention baseline measures (AB). The graphed results for P6's inclusion of microstructure measures of Total Number of Conjunctions, Total Number of Adverbials, Total Number of Adjectives, Total Number of Complex Sentences, MLUm, NDW and NWT in repeated measures are depicted in Figures 51 to 57.

5.8.1 Total Number of Conjunctions.

Figure 51

Graphed P6 Conjunction Scores

5.8.1.1 Visual inspection, statistical analysis and effect size. Figure 51 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional)

during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions, as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. Phase B: During the treatment phase the data indicate an overall positive trend from baseline to treatment, with all data points falling above the baseline mean. Examination of Phase B reveals that nine data points (B1, B3. B4, B5, B6, B8, B14, B15 & B17) fell above the 2SD-band. Phase AB: Scores during phase AB indicate a drop to below the mean line at AB1 and then an increase again to above the mean line for AB2 and BA3.

A significant effect of intervention was demonstrated for inclusion of Conjunctions, as two consecutive data points fell above the 2SD-band during the treatment phase (B3 & B4). Table 17 indicates that the effect size for P6 from A to AB was -0.34 for Conjunctions, indicating a small negative effect.

5.8.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicated that the treatment resulted in a statistically significant, yet small negative effect (-0.34) on the Total Number of Conjunctions during single picture narrative generation tasks.

5.8.2 Total Number of Adverbials.
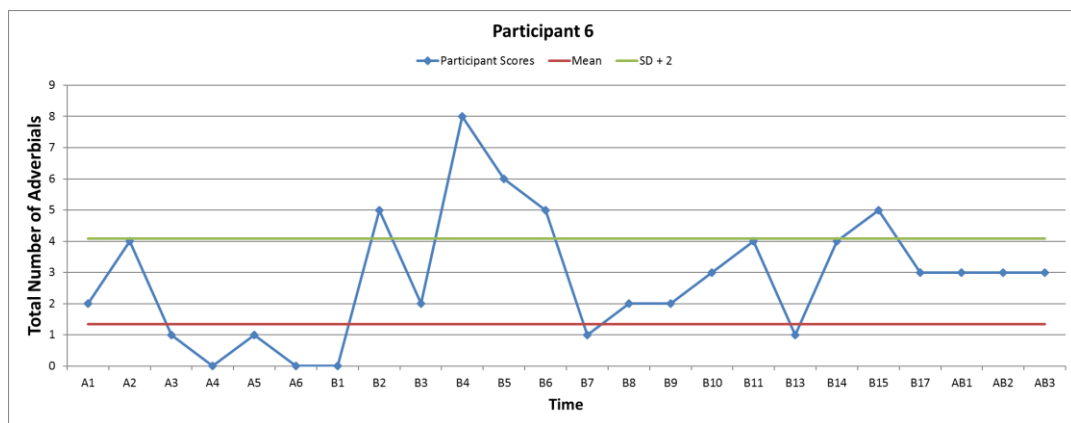
Figure 52

Graphed P6 Adverbial Scores

5.8.2.1 Visual inspection, statistical analysis and effect size. Figure 52 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A negative trend was evident during baseline, with data

point A3 to A6 falling below the mean line. Phase B: During the treatment phase, data indicates an overall positive trend, with 12 data points falling above the mean, and five of these, above the 2SD-band. Phase AB: Scores during phase AB remain stable, with no trend evident in the data.

A significant effect of intervention was demonstrated for inclusion of Adverbials, as two consecutive data points (B4 & B5) fell above the 2SD-band during the treatment phase. Table 18 indicates that the effect size for P6 from A to AB was 1.21 for Adverbials, indicating a large effect size.

5.8.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, all indicate that the treatment had a statistically significant, yet large (1.21) effect on the Total Number of Adverbials score during single picture narrative generation tasks.

5.8.3 Total Number of Adjectives.
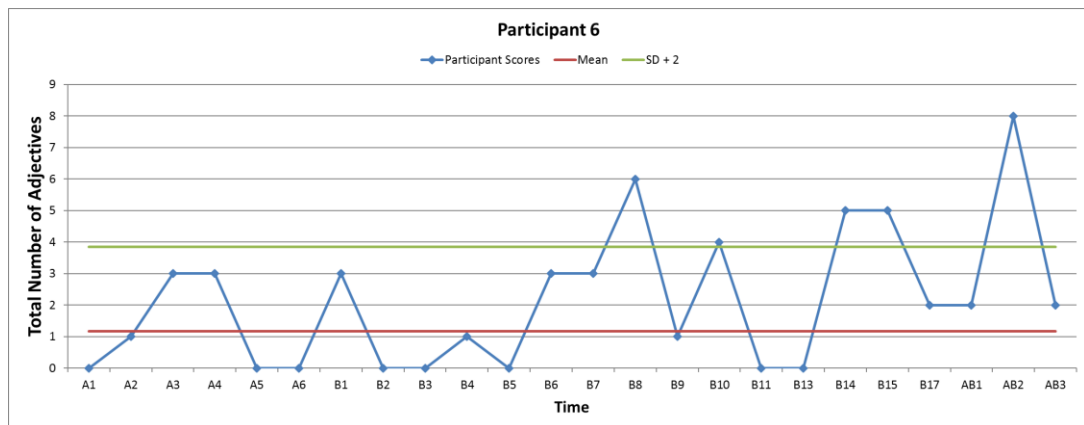
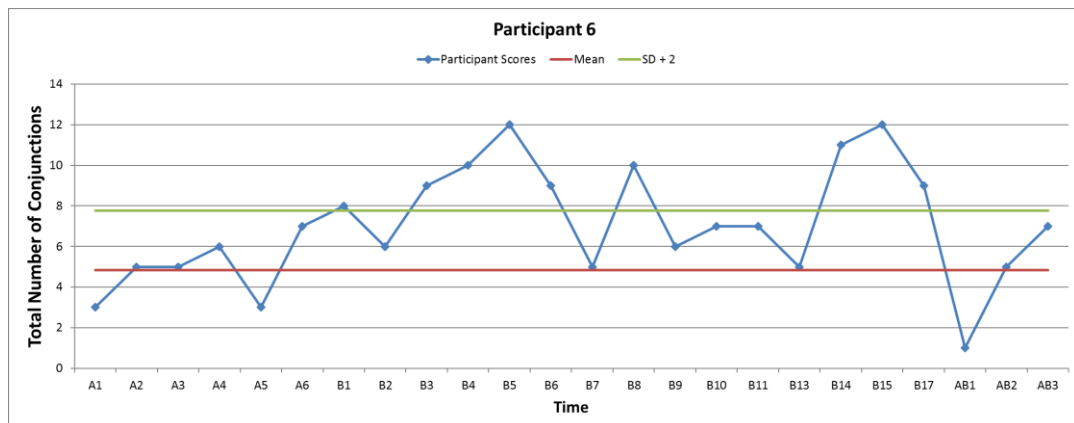Figure 53

Graphed P6 Adjective Scores

5.8.3.1 Visual inspection, statistical analysis and effect size. Figure 53 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the data indicate a very slight positive trend in performance with eight data points falling above and seven falling below the mean. Examination of Phase B reveals that four data points (B8, B10, B14 & B15) fell above the 2SD-band. Phase

AB: Scores during phase AB indicate a slight positive trend in performance from Phase A, with all data points falling at or above the pre-treatment mean.

A significant effect of intervention was demonstrated for Total Number of Adjectives, as two consecutive data points (B14 & B15) fell above the 2SD-band during treatment. Table 19 indicates that the effect size for P6 from A to AB was 2.11 for Adjectives, indicating a large effect.

5.8.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large effect (2.11) of intervention on Total Number of Adjectives during single picture narrative generation tasks.

### 5.8.4 Total Number of Complex C-units.
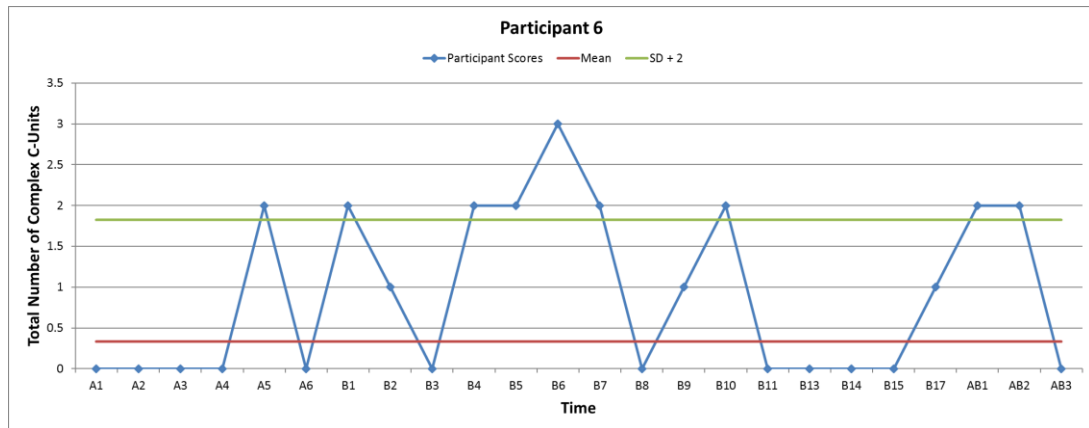
Figure 54

Graphed P6 Complex C-units Scores

5.8.4.1 Visual inspection, statistical analysis and effect size. Figure 54 above depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Complex C-units remained at zero for the first four data points, increasing to a score of two at data point A5. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Complex C-units reveals variable performance, with seven scores falling above the 2SD-band. Phase AB: Scores during phase AB reveal no trend in performance.

The 2SD-band method and effect size using a variation of Cohen's *d* was not used for Complex C-units as only one data point during baseline was above zero. Calculation of the PND statistic revealed a score of 6.67%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations.

5.8.4.2 Interpretation. Visual inspection of the graph, statistical analysis using PND, indicated that the treatment was ineffective for increasing Complex C-units during single picture narrative generation tasks.

5.8.5 MLUm.
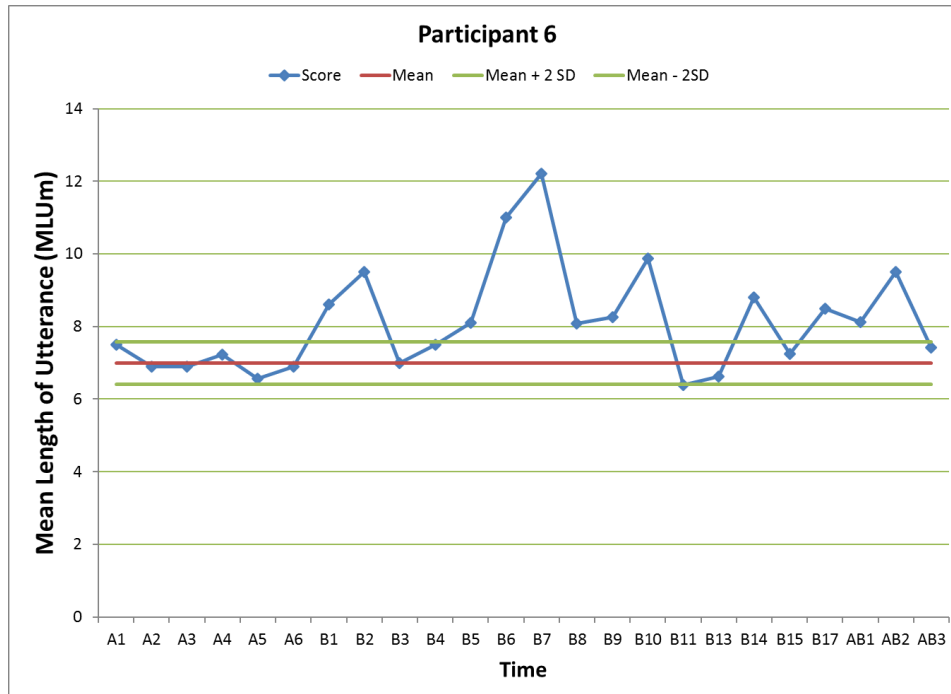
Figure 55

Graphed P6 MLUm Scores

5.8.5.1 Visual inspection, statistical analysis and effect size. Figure 55 depicts the MLUm (mean length of utterances in morphemes) during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline. Phase B: During the treatment phase, data indicate an overall positive trend in performance 10 data points falling above the baseline mean during treatment. Examination of the data reveals that data points B1, B2, B5, B6, B7, B8, B9, B10, B14 and B17, fell above the 2SD-band. Phase AB: Scores during phase AB indicates consistent performance with phase B, with all three data points falling above the mean.

A significant effect of intervention was demonstrated for MLUm, as two consecutive data points (B1 and B2) fell above the 2SD-band during treatment. This effect was repeated throughout the data set. Table 21 indicates that the effect size for P6 from A to AB was 4.61 for MLUm, indicating a large effect.

5.8.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's *d*, indicate that the treatment had a statistically significant, large effect (4.61) for MLUm during single picture narrative generation tasks.

5.8.6 NDW.
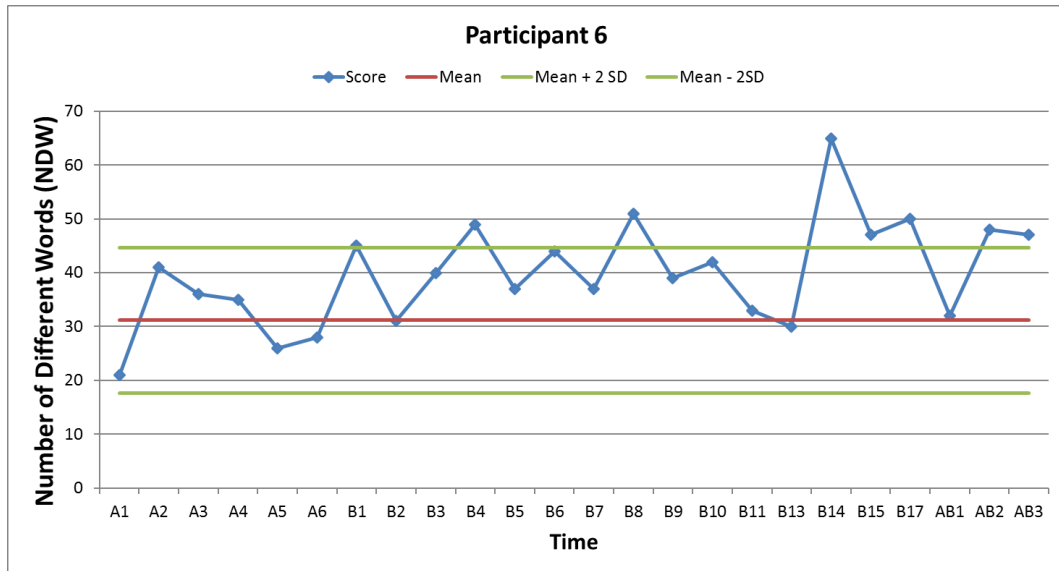
Figure 56

Graphed P6 Number of Different Words Scores

5.8.6.1 Visual inspection, statistical analysis and effect size. Figure 56 depicts the NDW (number of different words) during single picture narrative generation. Phase A: A stable baseline was achieved for NDW, as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline, with data points A5 and A6 falling below the baseline mean. Phase B: During the treatment phase, data indicate a positive trend from the onset of treatment, with 13 data points falling above the mean line, and six (B1, B4, B8, B14, B15 & B17) of these falling above the 2SD-band. Phase AB: Scores during phase AB remain relatively stable with performance in phase AB, with data points AB2 and AB3 falling above the 2SD-band, indicating that gains made during treatment were maintained.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points fell above the 2SD-band during the treatment phase (B14 and B15). Table 22 indicates that the effect size for P6 from A to AB was 1.65 for NDW, indicating a large effect.

5.8.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using a variation of Cohen's d, all indicate that the treatment had a statistically significant large effect (1.65) on NDW during single picture narrative generation tasks.

5.8.7 NTW.
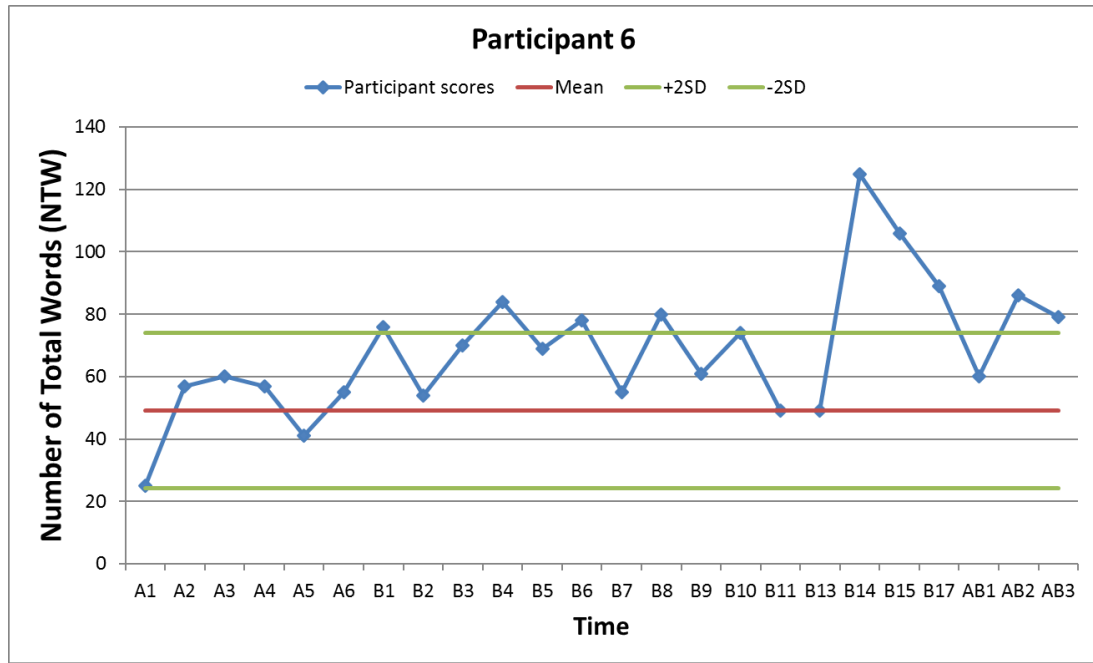
Figure 57

Graphed P6 Number of Total Words Scores

5.8.7.1 Visual inspection, statistical analysis and effect size. Figure 57 depicts the NTW (number of total words) during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend was evident during baseline, with data points A2, A3, A4 and A6 falling above the baseline mean. Phase B: During the treatment phase, data indicate a positive trend from the onset of treatment, with the first 13 data points falling above the mean line, and seven of these above the 2SD-band (B1, B4, B6, B8, B14, B15, B16). Phase AB: Scores during phase AB indicate stable performance above the 2SD-band, consistent with the end of treatment, demonstrating the maintenance of gains made during treatment.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points fell above the 2SD-band during the treatment phase (B14 and

B15). Table 23 indicates that the effect size for P6 from A to AB was 2.08 for NTW, indicating a large effect.

5.8.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large (2.08) effect of intervention on NTW during single picture narrative generation tasks.

5.8.8 Participant 6 Summary. Data analysis for Participant 6, revealed that the ONIP resulted in significant improvements with a large effect sizes for Total Number of Adverbials, Total Number of Adjectives, MLUm, NDW and NTW during single picture narrative generation samples. Data revealed the ONIP resulted in significant small effect for Total Number of Conjunctions and was ineffective for increasing Complex C-units.

5.9 Participant 7

Six pre-intervention baseline measures (A) were collected for participant seven (P7), followed by 17 group intervention sessions (B; P7 was absent for one) and three post-intervention baseline measures (AB). The graphed results for P7's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex Sentences, MLUm, NDW and NWT in repeated measures are depicted in Figures 58 to 64.

5.9.1 Total Number of Conjunctions.
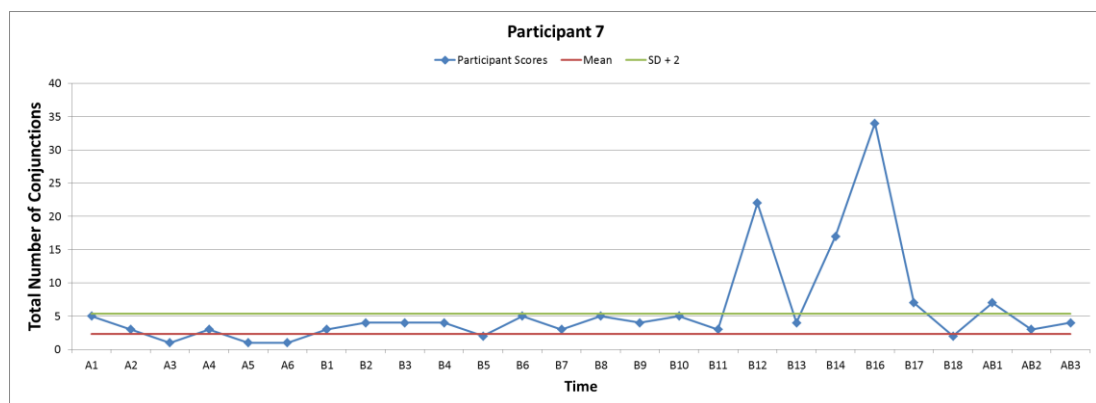
Figure 58

Graphed P7 Conjunction Scores

5.9.1.1 Visual inspection, statistical analysis and effect size. Figure 58 depicts the score for Total Number of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions, as all scores fell within three standard deviations of

the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline, with data points A3, A5 and A6 falling below the baseline mean. Phase B: During the treatment phase, the data reveals an overall positive trend from baseline to treatment with 15 data points falling above the mean line. Examination of Phase B reveals that eight data points (B3, B4, B5, B6, B8, B14, B15 and B17) fell above the 2SD-band. Phase AB: Scores during phase AB indicates a slight negative trend in performance, as data points AB2 and AB3 fell to below the 2SD-band, indicating that the improvements made in treatment were not maintained.

A significant effect of intervention was demonstrated for Conjunctions, as two consecutive data points (B14 and B16) fell above the 2SD-band during treatment. Table 17 indicates that the effect size for P7 from A to AB was 2.08 for Conjunctions, indicating a large effect.

5.9.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large effect in the Total Number of Conjunctions during single picture narrative generation tasks, although this was not maintained after treatment.

5.9.2 Total Number of Adverbials.

Figure 59

Graphed P7 Adverbial Scores

5.9.2.1 Visual inspection, statistical analysis and effect size. Figure 59 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline, with data points A4, A5 and A6 falling below the mean. Phase B: During the treatment

phase the data indicate a positive trend during treatment, with 12 data points falling above the baseline mean, and three of the falling above the 2SD-band (B12, B14 and B16) Phase AB: Scores during phase AB indicate no trend in performance, although all data points fell below the 2SD-band, indicating that the improvements made in treatment were not maintained.

A significant effect of intervention was demonstrated for Total Number of Adverbials, as two consecutive data points (B4 and B5) fell above the 2SD-band during treatment. Table 18 indicates that the effect size for P7 from A to AB was 0.19 for Adverbials, indicating a small effect.

5.9.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant small effect (0.19) effect of intervention on Total Number of Adverbials during single picture narrative generation tasks.

5.9.3 Total Number of Adjectives.

Figure 60

Graphed P7 Adjective Scores

5.9.3.1 Visual inspection, statistical analysis and effect size. Figure 60 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the data indicate an overall negative trend in performance with 12 of the 17 data points falling below the baseline mean. Examination of Phase B reveals that four data points (B4, B12, B16, B17 and B18) fell above the mean, with B12 and B16 falling above the 2SD-band. Phase AB: Scores during phase AB indicate a slight positive trend in performance, with all data points falling at or above the 2SD-band.

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A non-significant effect of intervention was demonstrated for Total Number of Adjectives, as two consecutive data points did not fall above the 2SD-band during treatment. Table 19 indicates that the effect size for P7 from A to AB was 2.68 for Adjectives, indicating a large effect.

5.9.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant, yet large effect (2.68) of intervention on Total Number of Adjectives during single picture narrative generation tasks.

5.9.4 Total Number of Complex C-units.

Figure 61

Graphed P7 Complex C-units Scores

5.9.4.1 Visual inspection, statistical analysis and effect size. Figure 61 depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Complex C-units remained at zero. No trend was evident during baseline, as all scores fell at zero. Phase B: During the treatment phase the inclusion of Complex C-units indicated a slight positive trend in performance from data point B10 onwards. Examination of Phase B reveals that data points B19 was the highest for inclusion of Complex C-units. Phase AB: Scores during phase AB indicate no trend in performance.

The 2SD-band statistical and effect size calculation using a variation of Cohen's *d* was not able to be calculated, as the mean and standard deviation of the baseline was zero. Calculation of the PND statistic, revealed a score of 41.18%, indicating an ineffective result for Total Number of Complex C-units or P7.

5.9.4.2 Interpretation. Visual inspection of the graph and statistical analysis using the PND statistic, revealed an ineffective impact on Complex C-units during single picture narrative generation tasks.
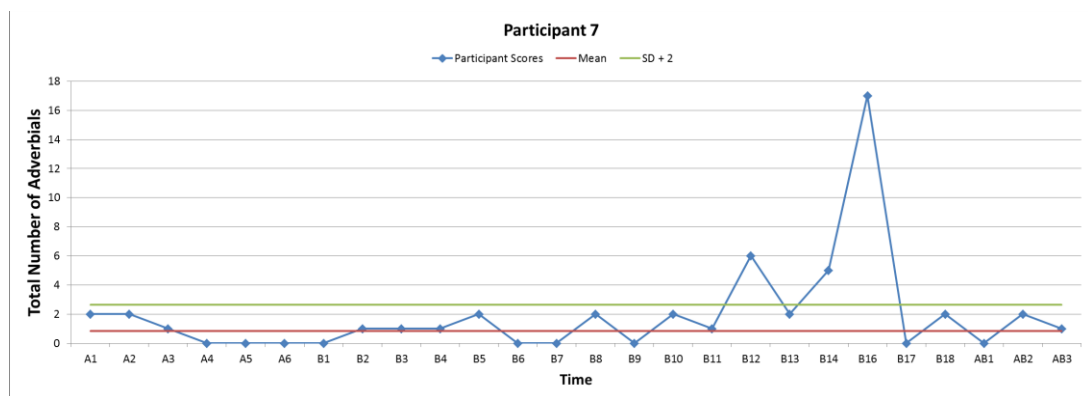
5.9.5 MLUm.
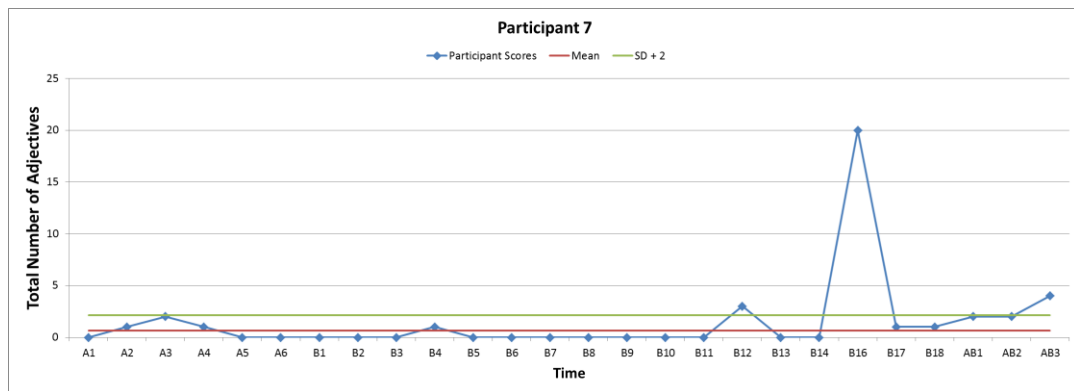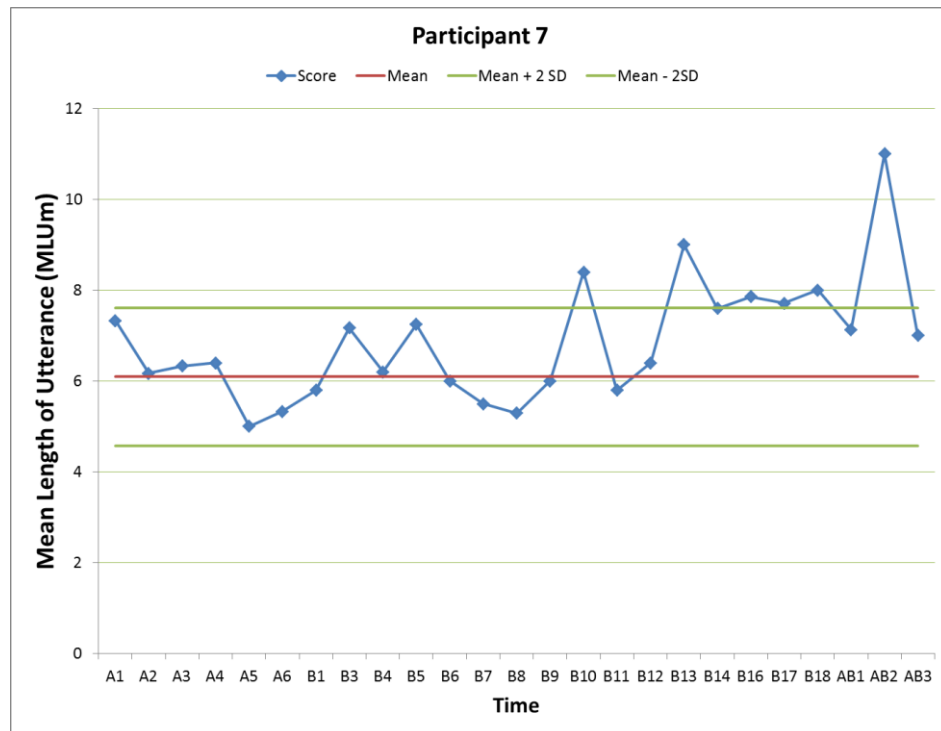

Figure 62

Graphed P7 MLUm Scores

    5.9.5.1 Visual inspection, statistical analysis and effect size. Figure 62 depicts the score for MLUm during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: Examination of Phase B reveals that five data points (B10, B13, B16. B17 and B18) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

    A significant effect of intervention was demonstrated for MLUm, as two consecutive data points (B16 and B17) fell above the 2SD-band during treatment. Table 21 indicates that the effect size for P7 from A to AB was 3.01 for MLUm, indicating a large effect.

    5.9.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large (3.01) effect of intervention on MLUm during single picture narrative generation tasks.

5.9.6 NDW.
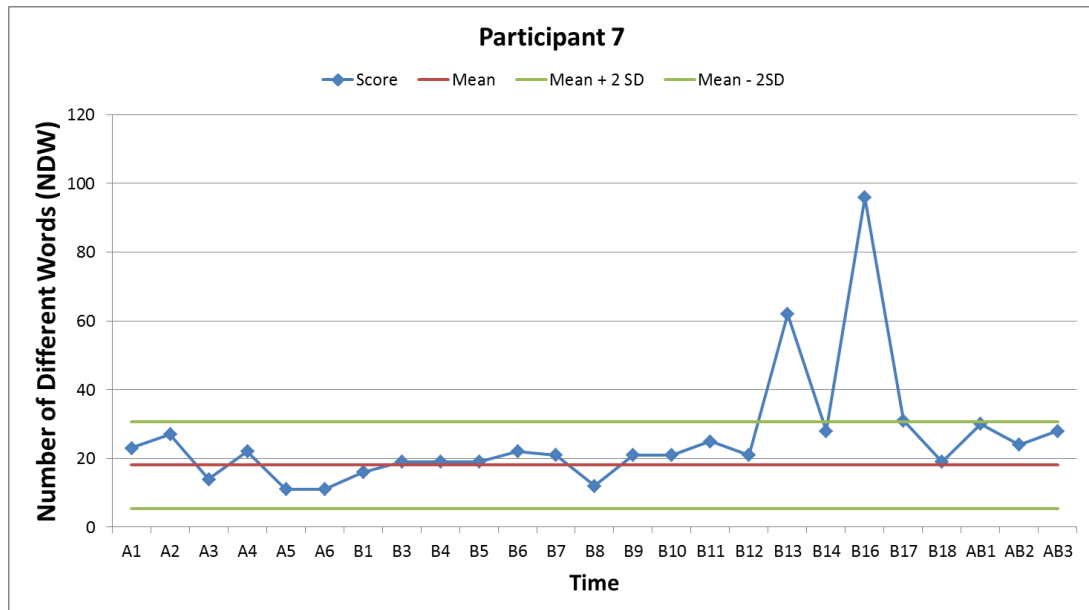
Figure 63

Graphed P7 Number of Different Words Scores

5.9.6.1 Visual inspection, statistical analysis and effect size. Figure 63 depicts the score for NDW during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of NDW indicated an overall positive trend in performance. Examination of Phase B reveals that three data points (B13, B16 and B17 fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance, although all scores fell above the pre-treatment mean.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points (B616 and B17) fell above the 2SD-band during treatment. Table 22 indicates that the effect size for P7 from A to AB was 1.49 for NDW, indicating a large effect.

5.9.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (1.49) effect of intervention on NDW during single picture narrative generation tasks.
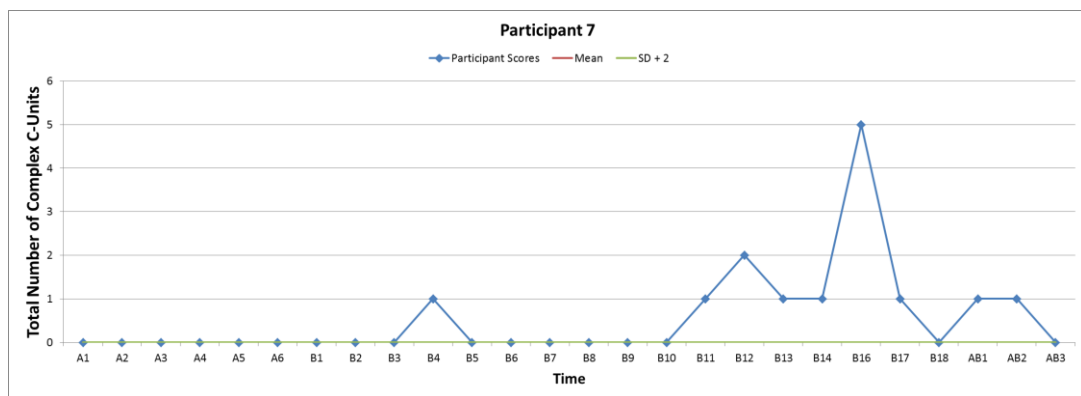
5.9.7 NTW.

Figure 64

Graphed P7 Number of Total Words Scores

5.9.7.1 Visual inspection, statistical analysis and effect size. Figure 64 depicts
the score for NTW during single picture narrative generation. Phase A: A stable
baseline was achieved for NTW as all scores fell within three standard deviations of
the mean, which is consistent with SPC definition of variability. No trend was
evident during baseline. Phase B: During the treatment phase the inclusion of NTW
indicated an overall positive trend in performance. Examination of Phase B reveals
that four data points (B12, B14, B16 & B17) fell above the 2SD-band. Phase AB:
Scores during phase AB indicate no trend in performance, while maintaining the
gains achieved during treatment, as data points AB2 and AB3 both fell above the
2SD-band.

A significant effect of intervention was demonstrated for NTW, as two
consecutive data points (B14 and B15) fell above the 2SD-band during treatment.
Table 23 indicates that the effect size for P7 from A to AB was 1.97 for NTW,
indicating a large effect.

5.9.7.2 Interpretation. Visual inspection of the graph, statistical analysis using
the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a
positive, statistically significant large (1.97) effect of intervention on NTW during
single picture narrative generation tasks.

5.9.8 Participant 7 summary. Data analysis for P7, revealed that the ONIP resulted in significant improvements with a large effect size for Total Number of Conjunctions, NDW, NTW and MLUm, and significant small effect on Total Number of Adjectives. Results indicated a non-significant effect on Total Number of Adjectives and Complex C-units.

5.10 Participant 8

Six pre-intervention baseline measures (A) were collected for participant 8 (P8), followed by 17 group intervention sessions (B; P8 was absent for one) and three post-intervention baseline measures (AB). The graphed results for P8'sinclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 65 to 71.

5.10.1 Total Number of Conjunctions.

Figure 65

Graphed P8 Conjunction Scores

5.10.1.1 Visual inspection, statistical analysis and effect size. Figure 65 depicts the score for inclusion of Total Number of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline. Phase B: During the treatment phase the data indicate a positive trend from baseline to treatment with all scores falling above the baseline mean and nine data points (B4, B5, B6, B10, B13, B14, B15, B16 and B17) falling above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data, although all data points fell below the 2SD-band, indicating that the improvements made in treatment were not maintained into baseline.

A significant effect of intervention was demonstrated for Conjunctions, as two consecutive data points (B4 and B5) fell above the 2SD-band during treatment. Table 17 indicates that the effect size for P8 from A to AB was 0.55 for Conjunctions, indicating a moderate effect.

5.10.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant moderate (0.55) effect of intervention on Total Number of Conjunctions during single picture narrative generation tasks.

5.10.2 Total Number of Adverbials.
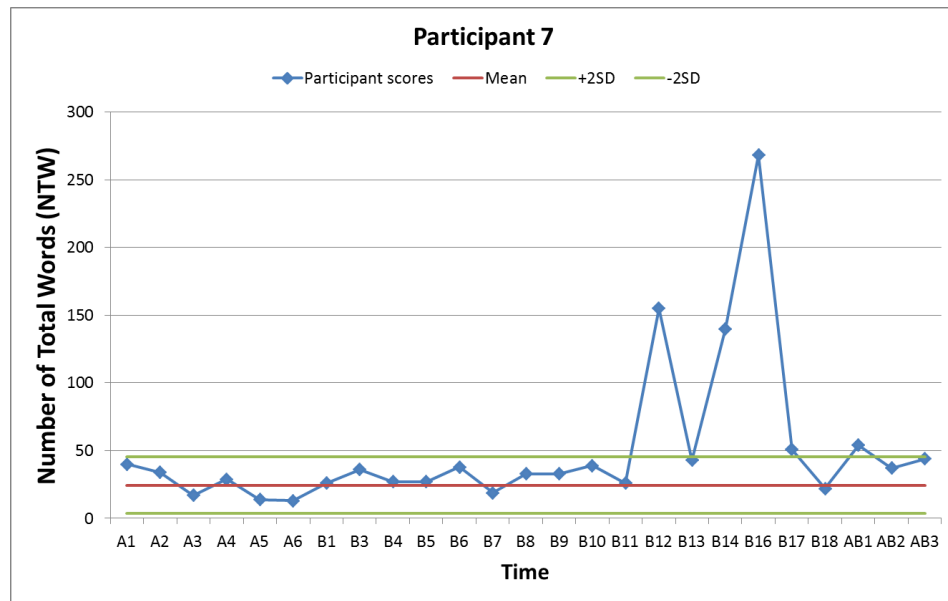

Figure 66

Graphed P8 Adverbial Scores

5.10.2.1 Visual inspection, statistical analysis and effect size. Figure 66 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: Scores of zero are revealed during baseline. Phase B: During the treatment phase the data indicate an overall positive trend in performance, from data point B5 onwards, with the highest data points being towards the end of the treatment phase (B13 & B17). Phase AB: Scores during phase AB indicate no trend in performance, remaining at one instance of Adverbials in each sample.

The 2SD-band method and effect size using a variation of Cohen's *d* was unable to be calculated for Adverbials as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 50%, indicating that the treatment was questionable for improving the use of Adverbials in single picture narrative generations.

5.10.2.2 Interpretation. Visual inspection of the graph and statistical analysis using PND indicates a questionable effect of intervention on Adverbials during single picture narrative generation tasks.

5.10.3 Total Number of Adjectives.
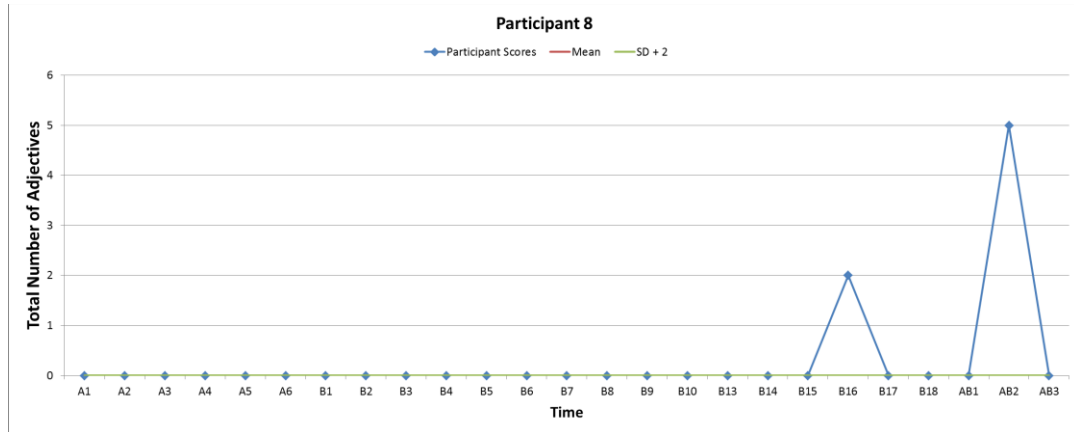
Figure 67

Graphed P8 Adjective Scores

5.10.3.1 Visual inspection, statistical analysis and effect size. Figure 67 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: During baseline, the score for Adjectives remained at zero. No trend was evident during baseline, as all scores fell at zero. Phase B: During the treatment phase the data reveals no trend in performance. Phase AB: Scores during phase AB indicate no trend in performance.

The 2SD-band method and effect size using a variation of Cohen's *d* was unable to be calculated for Adjectives as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 6.25%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations.

5.10.3.2 Interpretation. Visual inspection of the graph and statistical analysis using PND, indicates an ineffective impact of intervention on Adjectives during single picture narrative generation tasks.
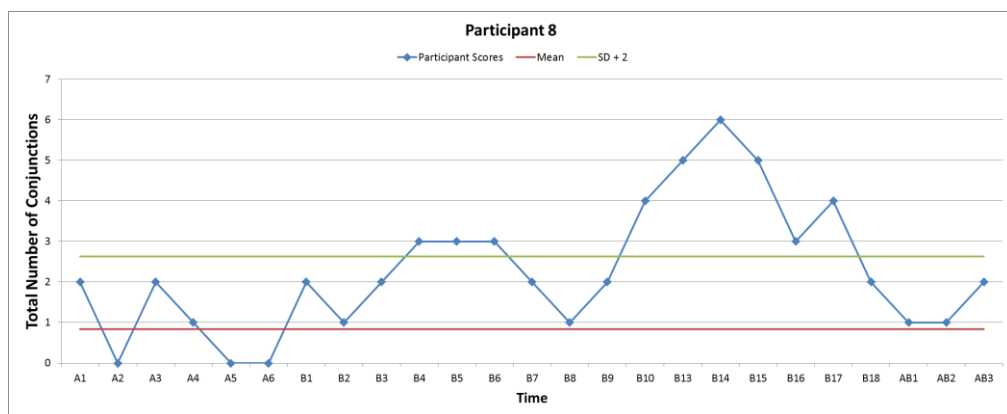
5.10.4 Total Number of Complex C-units.

Figure 68

Graphed P8 Complex C-units Scores

5.10.4.1 Visual inspection, statistical analysis and effect size. Figure 68 depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: During baseline, the score for Adjectives remained at zero. No trend was evident during baseline, as all scores fell at zero. Phase B: During the treatment phase the inclusion of Complex C-units revealed no trend in performance. Phase AB: Scores during phase AB indicate no trend in performance.

The 2SD-band method and effect size was unable to be calculated for Complex C-units as the mean and standard deviation for the baseline was zero. Calculation of the PND revealed a score of 12.5%, indicating that the treatment was ineffective for improving the use of Complex C-units in single picture narrative generations.

5.10.4.2 Interpretation. Visual inspection of the graph and statistical analysis using PND, indicates an ineffective impact of intervention on Complex Sentences during single picture narrative generation tasks.

5.10.5 MLUm.
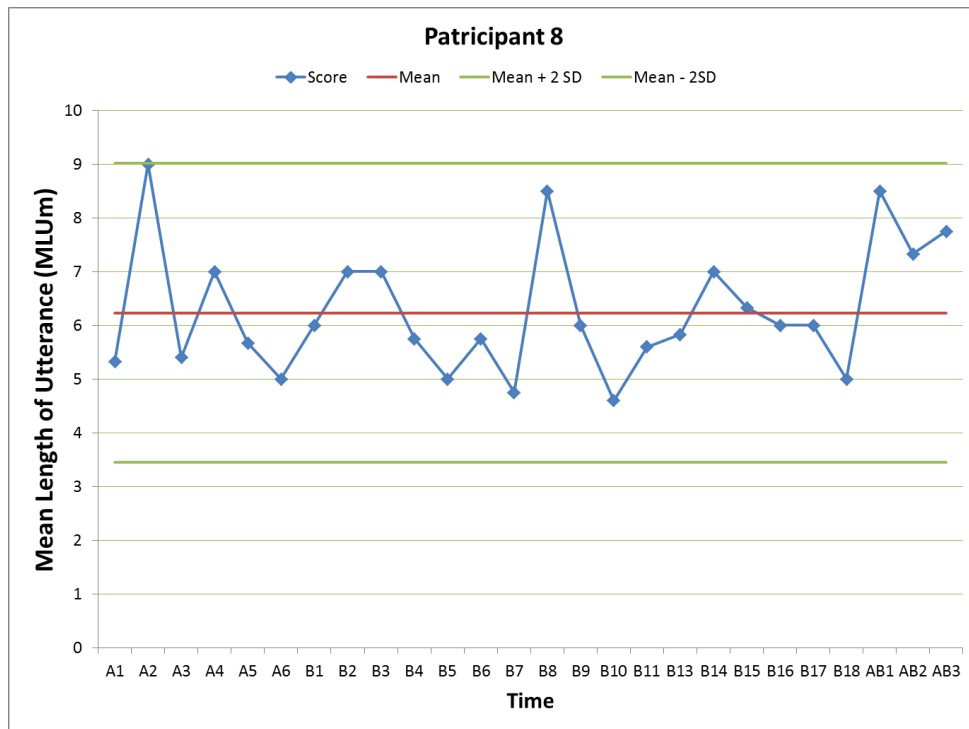
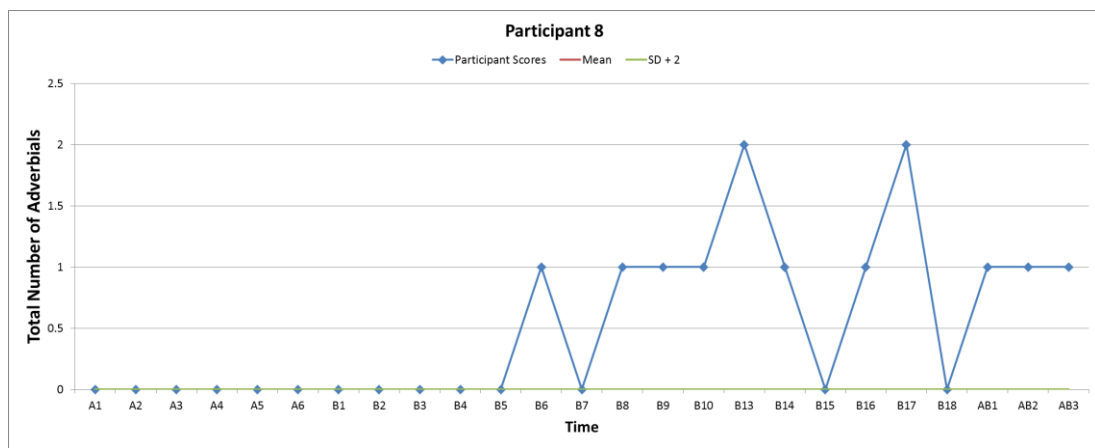Figure 69

Graphed P8 MLUm Scores

      5.10.5.1 Visual inspection, statistical analysis and effect size. Figure 69 depicts the score for MLUm during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline. Phase B: During the treatment phase the data indicate an overall negative trend in performance with only five data points falling above the mean line, and no data points falling above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance, although they all fell above the pre-treatment baseline mean.

      A non-significant effect of intervention was demonstrated for MLUm, as two consecutive data points did not fall above the 2SD-band during treatment. Table 21 indicates that the effect size for P8 from A to AB was 1.17 for MLUm, indicating a large effect.

      5.10.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant, yet large (1.17) effect of intervention on MLUm during single picture narrative generation tasks.

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5.10.6 NDW.
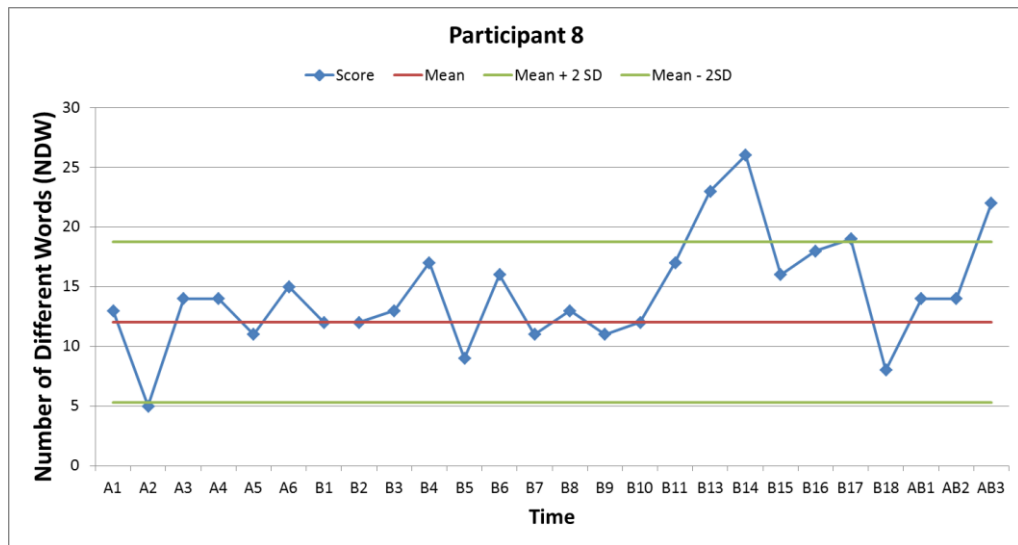
Figure 70

Graphed P8 Number of Different Words Scores

5.10.6.1 Visual inspection, statistical analysis and effect size. Figure 70 depicts the score for NDW during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase, the data indicate an overall positive trend in performance, with 10 data points falling above the baseline mean, and three of these falling above the 2SD-band (B13, B14 and B17). Phase AB: Scores during phase AB indicate no trend in performance, although data point AB3 did fall above the 2SD-band.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points (B13 and B14) fell above the 2SD-band during treatment. Table 22 indicates that the effect size for P8 from A to AB was 3.18 for NDW, indicating a large effect.

5.10.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (3.18) effect of intervention on NDW during single picture narrative generation tasks.
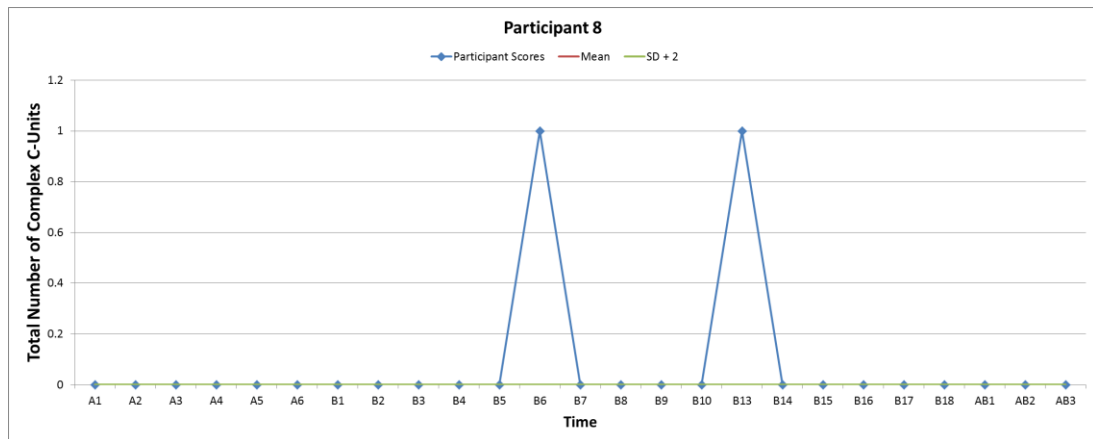
5.10.7 NTW.

Figure 71

Graphed P8 Number of Total Words Scores

  5.10.7.1 Visual inspection, statistical analysis and effect size. Figure 71 depicts the score for NTW during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. Phase B: During the treatment phase the data indicate a positive trend in performance, with 10 data points falling above the baseline mean, but only one of these (B14) falling above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

  A non-significant effect of intervention was not demonstrated for NTW, as two consecutive data points did not fall above the 2SD-band during treatment. Table 23 indicates that the effect size for P8 from A to AB was 0.16 for NTW, indicating a negligible effect.

  5.10.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant negligible (0.16) effect of intervention on NTW during single picture narrative generation tasks.

  5.10.8 Participant 8 summary. Data analysis for P8, revealed that the ONIP resulted in significant improvements with moderate-large effects for Total Number

of Conjunctions and NDW. Non-significant change was found for Total Number of Adjectives, Adverbials, Complex C-units, MLUm and NTW.

5.11 Participant 9

Nine pre-intervention baseline measures (A) were collected for participant nine (P9), followed by 16 group intervention sessions (B; P9 was absent for two) and three post-intervention baseline measures (AB). The graphed results for P9's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 72 to 78.

5.11.1 Total Number of Conjunctions.

Figure 72

Graphed P9 Conjunction Scores

5.11.1.1 Visual inspection, statistical analysis and effect size. Figure 72 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline. Phase B: During the treatment phase the data indicate an overall positive trend from baseline to treatment with 10 of the 15 scores falling above the mean line, and five of these data points (B3, B6, B8, B11 and B12) falling above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data, and all of the data points fell below the 2SD-band, indicating that the improvements made in treatment were not maintained into baseline.

A significant effect of intervention was demonstrated for Conjunctions, as two consecutive data points (B11 and B12) fell above the 2SD-band during treatment.

Table 17 indicates that the effect size for P9 from A to AB was -0.09 for Total Number of Conjunctions, indicating a negligible effect.

  5.11.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant yet negligible (-0.09) effect of intervention on Conjunctions during single picture narrative generation tasks.

  5.11.2 Total Number of Adverbials.

Figure 73

Graphed P9 Adverbial Scores

  5.11.2.1 Visual inspection, statistical analysis and effect size. Figure 73 depicts the score for inclusion of Total Number of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A negative trend is evident during baseline, with data points A4, 5, 6, 8, and 9 falling at or below the mean. Phase B: During the treatment phase the data indicate a slight positive trend in performance, with five data points falling above the baseline mean, eight at mean and three below. Examination of Phase B reveals that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data.

  A significant effect of intervention was not demonstrated for Adverbials, as two consecutive data points did not fall above the 2SD-band during treatment. Table 18 indicates that the effect size for P9 from A to AB was 0.00 for Adverbials, indicating a negligible effect.

  5.11.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*,

indicate a non-significant, negligible (0.00) effect of intervention on Adverbials during single picture narrative generation tasks.

5.11.3 Total Number of Adjectives.
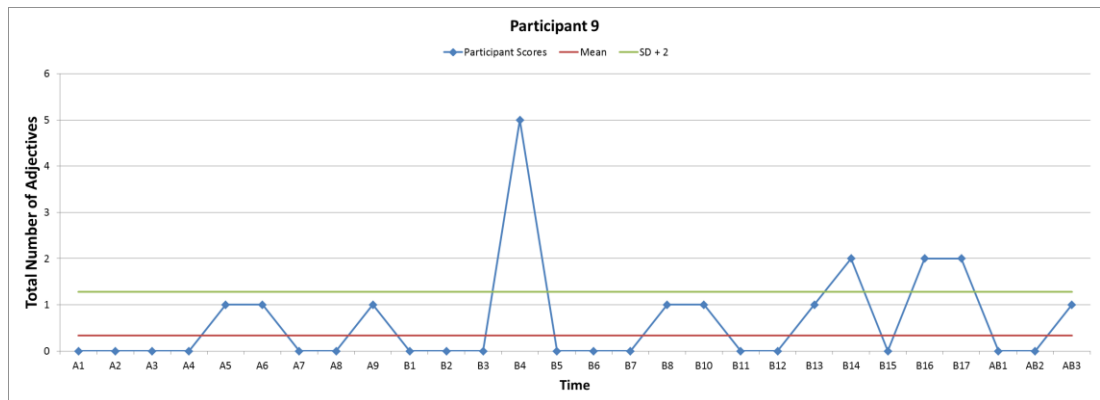
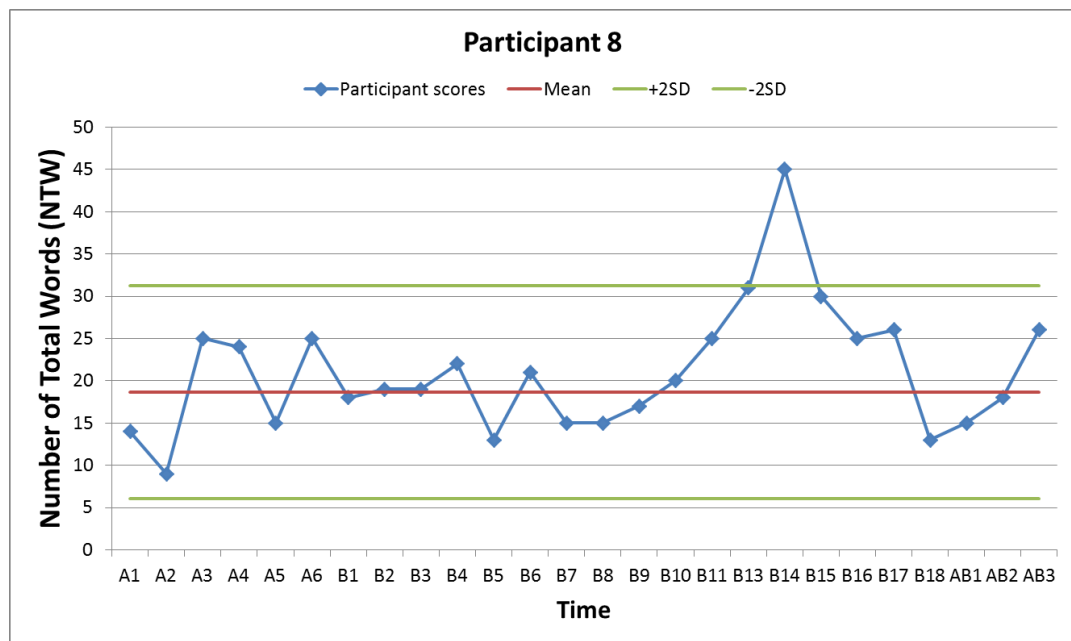
Figure 74

Graphed P9 Adjective Scores

5.11.3.1 Visual inspection, statistical analysis and effect size. Figure 74 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during the second half of the baseline. Phase B: During the treatment phase the data indicate a slight positive trend in performance, towards the end of the treatment phase. Examination of Phase B reveals that four data points (B4, B14, B16 and B17) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data.

A significant effect of intervention was demonstrated for Adjectives at the end of the treatment phase, as data points (B16 and B17) fell above the 2SD-band during treatment. Table 19 indicates that the effect size for P9 from A to AB was 0.00 for Adjectives, indicating a negligible effect.

5.11.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant yet negligible (0.00) effect of intervention on Total Number of Adjectives during single picture narrative generation tasks.

5.11.4 Total Number of Complex C-units.
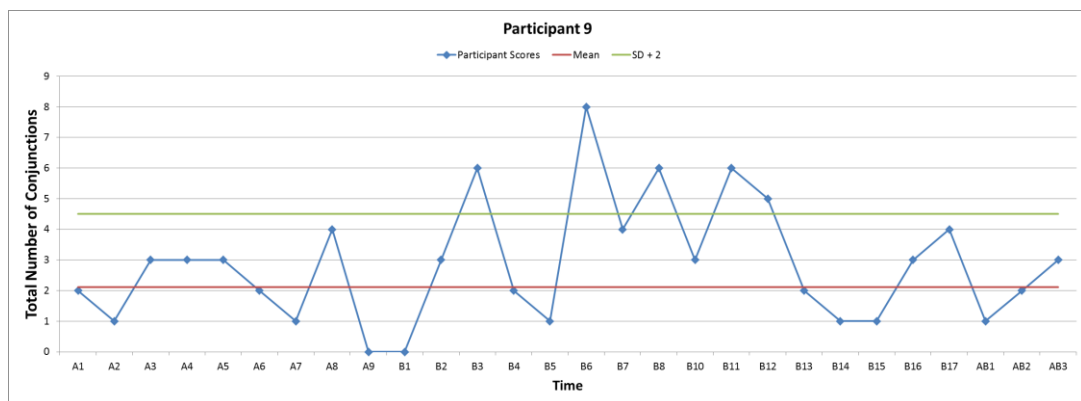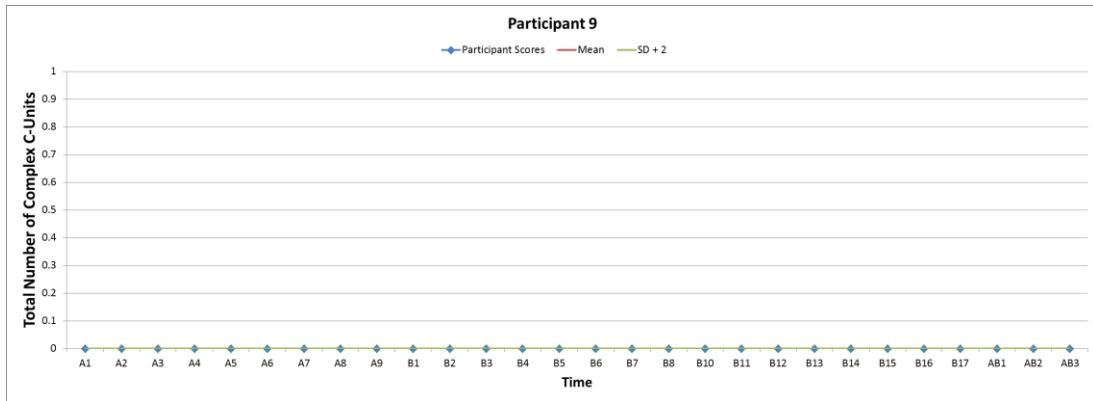

Figure 75

Graphed P9 Complex C-units Scores

5.11.4.1 Visual inspection, statistical analysis and effect size. Figure 75 depicts the microstructure score for Total Number of Complex C-units during single picture narrative generation. Scores of zero were recorded for all data points across all phases of the study, for inclusion of Complex C-units for P9. No further statistical analysis has been completed for this measure.

5.11.4.2 Interpretation. The data demonstrated that the intervention had no effect on inclusion of Complex C-units during single picture narrative generation tasks.

5.11.5 MLUm.
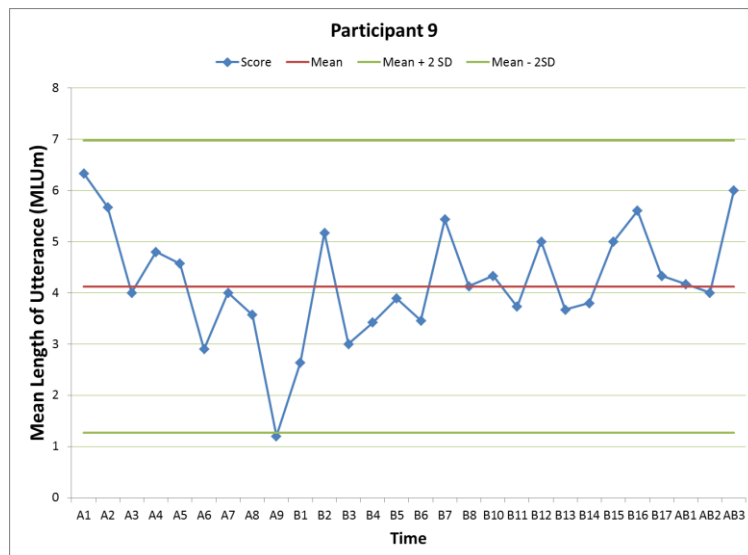
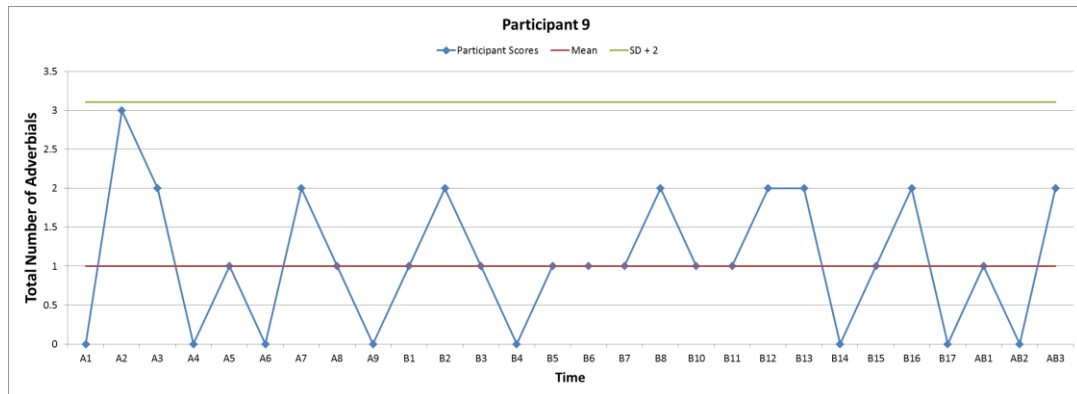

Figure 76

Graphed P9 MLUm Scores

5.11.5.1 Visual inspection, statistical analysis and effect size. Figure 86 depicts the score for MLUm during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. An overall negative trend was evident during baseline. Phase B: During the treatment phase the data indicate a slight positive trend in performance, with seven data points falling above the mean line, however no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was not demonstrated for MLUm, as two consecutive data points did not fall above the 2SD-band during treatment.

Table 21 indicates that the effect size for P6 from A to AB was 0.43 for MLUm, indicating a small effect.

5.11.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant small (0.431) effect of intervention on MLUm during single picture narrative generation tasks.

5.11.6 NDW.
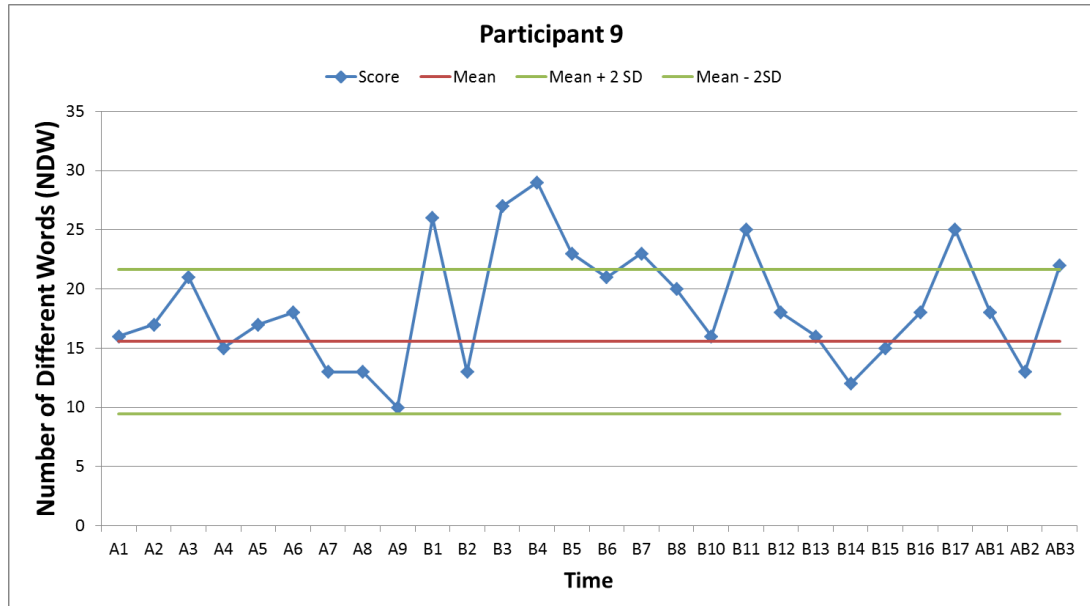
Figure 77

Graphed P9 Number of Different Words Scores

5.11.6.1 Visual inspection, statistical analysis and effect size. Figure 77 depicts the score for NDW during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores were within three standard

deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline. Phase B: During the treatment phase the data indicate an overall positive trend in performance from baseline, with only three data points falling below the baseline mean. Examination of Phase B reveals that seven data points (B1, B3, B4, B5, B7, B11 and B17) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was demonstrated for NDW, as two consecutive data points (B3 and B4) fell above the 2SD-band during treatment.

Table 22 indicates that the effect size for P6 from A to AB was 0.69 for NDW, indicating a moderate effect.

5.11.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant moderate (0.69) effect of intervention on NDW during single picture narrative generation tasks.

5.11.7 NTW.
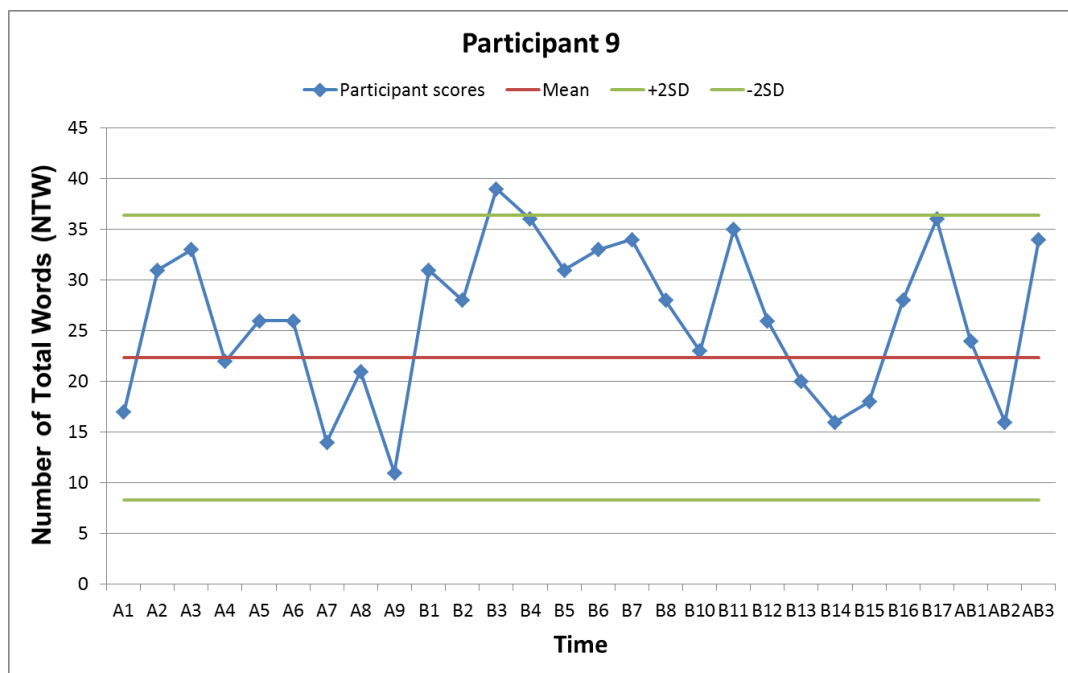
Figure 78

Graphed P9 Number of Total Words Scores

5.11.7.1 Visual inspection, statistical analysis and effect size. Figure 78 depicts the score for NTW during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A

slight negative trend was evident during baseline. Phase B: During the treatment phase the data indicate a positive trend in performance, with 13 data points falling above the baseline mean, but only one data point (B3) falling above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was not demonstrated for NTW, as two consecutive data points did not fall above the 2SD-band during treatment.

Table 23 indicates that the effect size for P6 from A to AB 0.33 for NTW, indicating a small effect.

5.11.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant small (0.33) effect of intervention on NTW during single picture narrative generation tasks.

5.11.8 Participant 9 summary. Data analysis revealed that ONIP did not lead to significant improvements in any measures, except for NDW (with a moderate effect) for P9.

5.12 Participant 10

Nine pre-intervention baseline measures (A) were collected for participant ten (P10), followed by 16 group intervention sessions (B; P10 was absent for two) and three post-intervention baseline measures (AB). The graphed results for P10's inclusion of measures of Conjunctions, Adverbials, Adjectives, Complex Sentences, MLUm, NDW and NWT in repeated measures are depicted in Figures 89 to 95.

5.12.1 Total Number of Conjunctions.

Figure 79

Graphed P10 Conjunction Scores

5.12.1.1 Visual inspection, statistical analysis and effect size. Figure 79 depicts the score for inclusion of Total Number of Conjunctions (temporal, additive,

causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores were fell within three standard deviations of the mean, which is consistent with SPC definition of variability. However, a positive trend is evident during baseline, with data point A8 falling above the 2SD-band. Phase B: During the treatment phase the data indicate a positive trend with the first 10 data points falling above the mean line, but then a negative trend in the second half of the treatment phase, with five data points falling to below the mean. Examination of Phase B reveals that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was not demonstrated for Conjunctions, as two consecutive data points did not fall above the 2SD-band during treatment. Table 17 indicates that the effect size for P9 from A to AB was 0.39 for Conjunctions, indicating a small effect.

5.12.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant small (0.39) effect of intervention on Conjunctions during single picture narrative generation tasks.

5.12.2 Total Number of Adverbials.

Figure 80

Graphed P10 Adverbial Scores

5.12.2.1 Visual inspection, statistical analysis and effect size. Figure 80 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend is evident during baseline. Phase B: During the treatment phase the inclusion of Adverbial indicated a positive

trend in performance, with 11 of the 16 data points falling above the baseline mean. Examination of Phase B reveals, however, that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A non-significant effect of intervention was demonstrated for Adverbials, as two consecutive data points did not fall above the 2SD-band during treatment. Table 18 indicates that the effect size for P6 from A to AB was -0.65 for Adverbials, indicating a moderate negative effect following intervention.

5.12.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a negative, statistically non-significant moderate (-0.65) effect of intervention on Adverbials during single picture narrative generation tasks.

5.12.3 Total Number of Adjectives.
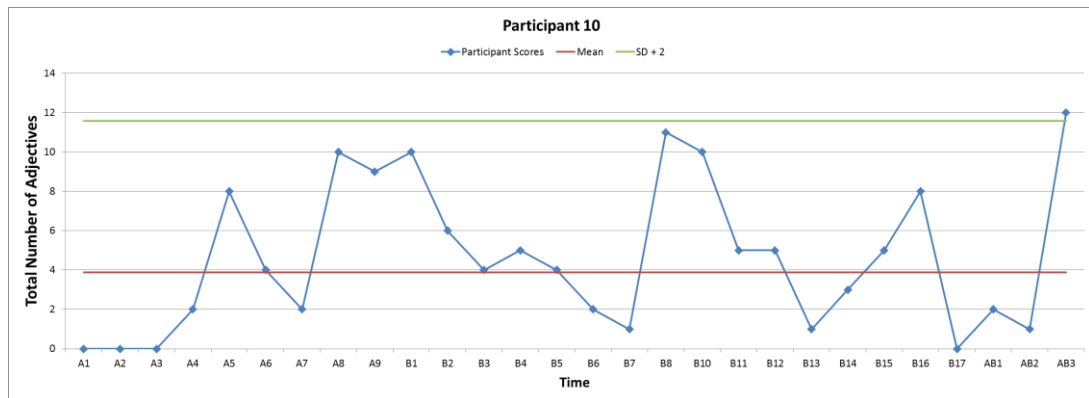
Figure 81

Graphed P10 Adjective Scores

5.12.3.1 Visual inspection, statistical analysis and effect size. Figure 81 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A positive trend during baseline was evident, with data points A5, A6, A8 and A9 increasing to above the mean. Phase B: During the treatment phase the inclusion of Adjectives indicated no trend in performance. Examination of Phase B reveals variability, with no data points falling above the 2SD-band. Phase AB: Scores during phase AB indicate a slight positive trend in data, with one data point AB3 falling above the 2SD-band.

A non-significant effect of intervention was demonstrated for Adjectives, as two consecutive data points did not fall above the 2SD-band during treatment. Table

19 indicates that the effect size for P10 from A to AB was 0.29 for Adjectives, indicating a small effect.

5.12.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant small (0.29) effect of intervention on Adjectives during single picture narrative generation tasks.

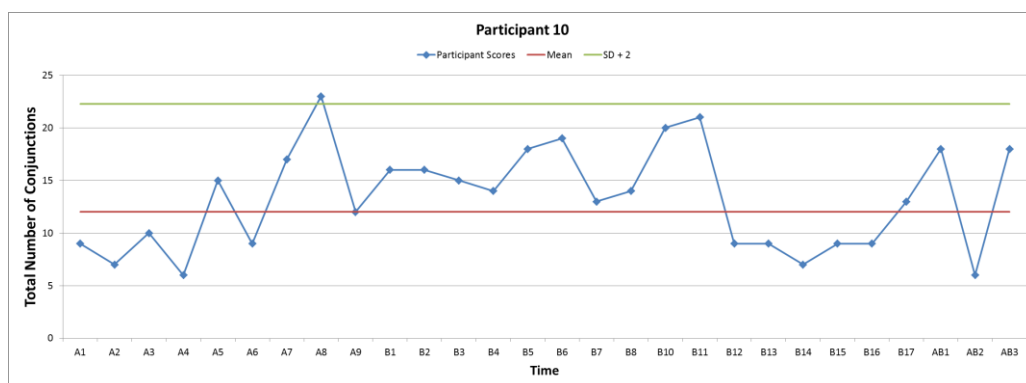### 5.12.4 Total Number of Complex C-units.

Figure 82

Graphed P10 Complex C-units Scores

5.12.4.1 Visual inspection, statistical analysis and effect size. Figure 82 depicts the score for inclusion of Complex C-units during single picture narrative generation. Phase A: A stable baseline was achieved for Complex Sentences as all scores were within three standard deviations of the mean, which is consistent with SPC definition of variability. No trend was evident during baseline. Phase B: During the treatment phase the inclusion of Complex C-units reveals no trend in performance, with all except one data point (B16) sitting at zero. Examination of Phase B reveals that only one data point (B16) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

The 2SD-band method and effect size using a variation of Cohen's *d* was not used for Complex C-units as only one data point during baseline was above zero. Calculation of the PND statistic revealed a score of 6.25%, indicating that the treatment was ineffective for improving the use of Adjectives in single picture narrative generations.

5.12.4.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*,

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indicate an ineffective impact for Complex C-units during single picture narrative generation tasks.
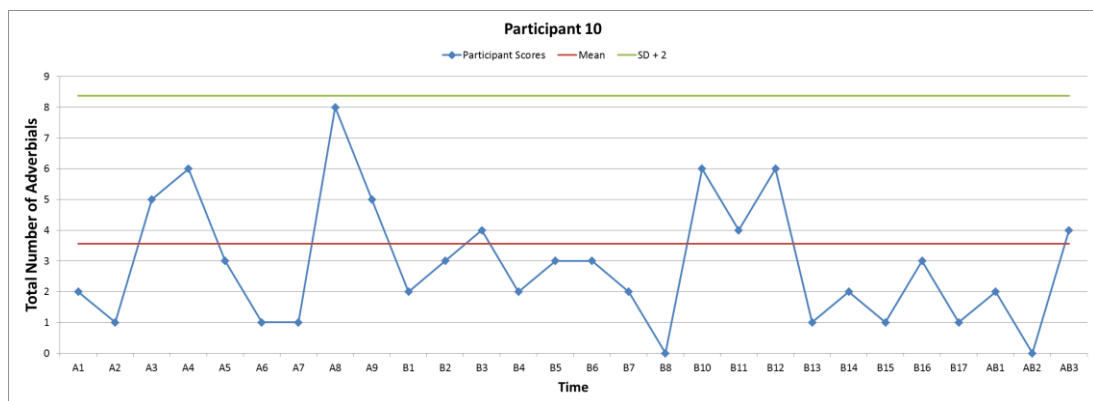
5.12.5 MLUm.

Figure 83

Graphed P10 MLUm Scores

5.12.5.1 Visual inspection, statistical analysis and effect size. Figure 83 depicts the score for MLUm during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. Phase B: During the treatment phase the inclusion of MLUm indicated an overall positive trend in performance, with all but three data points (B1, 2 & 5) falling above the baseline mean. Examination of Phase B reveals that three data points (B14, B15 and B16) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was demonstrated for MLUm, as two consecutive data points (B14 and B15) fell above the 2SD-band during treatment. Table 21 indicates that the effect size for P10 from A to AB was 1.77 for MLUm, indicating a large effect.

5.12.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*,

indicate a statistically significant large (1.77) effect of intervention on MLUm during single picture narrative generation tasks.

5.12.6 NDW.
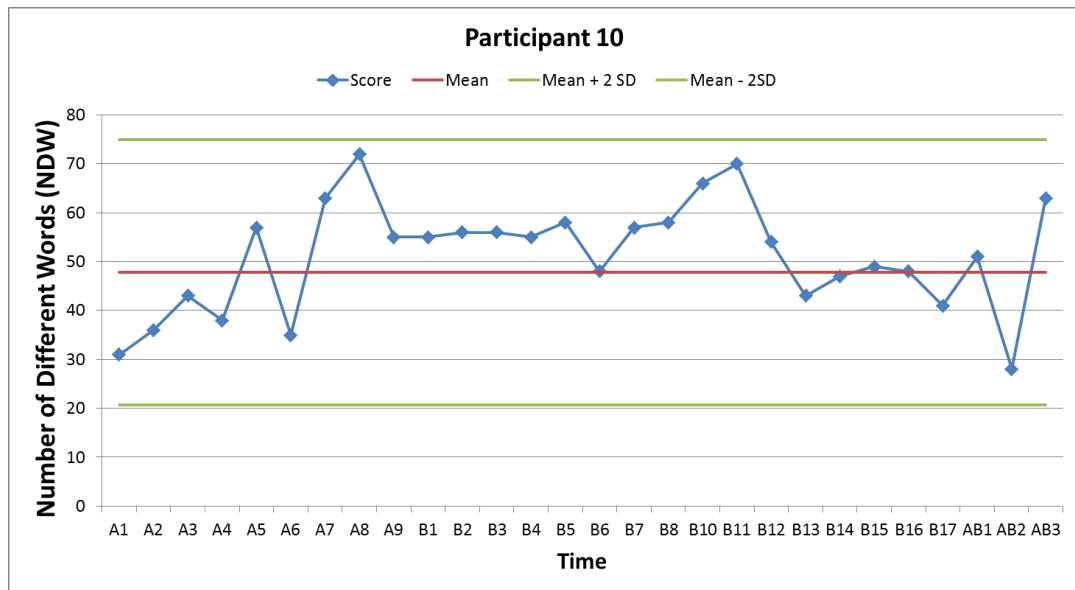
Figure 84

Graphed P10 Number of Different Words Scores

5.12.6.1 Visual inspection, statistical analysis and effect size. Figure 84 depicts the score for NDW during single picture narrative generation. Phase A: A stable baseline was achieved for NDW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. Phase B: During the treatment phase the inclusion of NDW indicated an overall negative trend in performance, with data points B13 to B17 falling at or below the baseline mean. Examination of Phase B reveals that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was not demonstrated for NDW, as two consecutive data points did not fall above the 2SD-band during treatment. Table 22 indicates that the effect size for P10 from A to AB was -0.03 for NDW, indicating a negligible effect.

5.12.6.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant negligible (-0.03) effect of intervention on NDW during single picture narrative generation tasks.
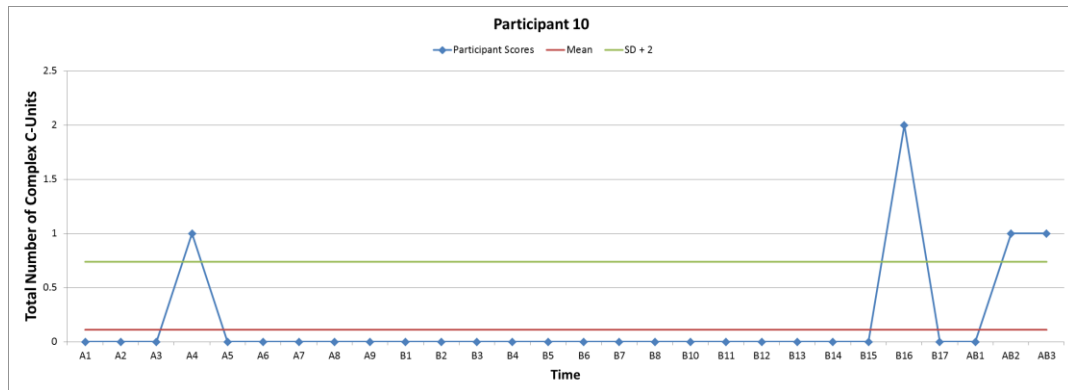
5.12.7 NTW.

Figure 85

Graphed P10 Number of Total Words Scores

    5.12.7.1 Visual inspection, statistical analysis and effect size. Figure 85 depicts the score for NTW during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. An overall positive trend was evident during baseline, with data point A8 falling above the 2SD-band. Phase B: During the treatment phase the data indicate an overall negative trend in performance, with data points B13 to B17 falling below the baseline mean. Examination of Phase B reveals that no data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance, with all scores falling below the 2SD-band.

    A non-significant effect of intervention was demonstrated for NTW, as two consecutive data points did not fall above the 2SD-band during treatment. Table 23 indicates that the effect size for P10 from A to AB was 0.01 for NTW, indicating a negligible effect.

    5.12.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a non-significant negligible (0.01) effect of intervention on NTW during single picture narrative generation tasks.

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5.12.8 Participant 10 summary. Data analysis, revealed that the ONIP resulted in minimal significant change for P10 across the microstructure measures, with only MLUm having a significant and large effect following intervention.

5.13 Participant 11

Nine pre-intervention baseline measures (A) were collected for participant 11 (P11), followed by 16 group intervention sessions (B; P11 was absent for two) and three post-intervention baseline measures (AB). The graphed results for P11's inclusion of microstructure measures of Conjunctions, Adverbials, Adjectives, Complex C-units, MLUm, NDW and NWT in repeated measures are depicted in Figures 86 to 92.

5.13.1 Total Number of Conjunctions.
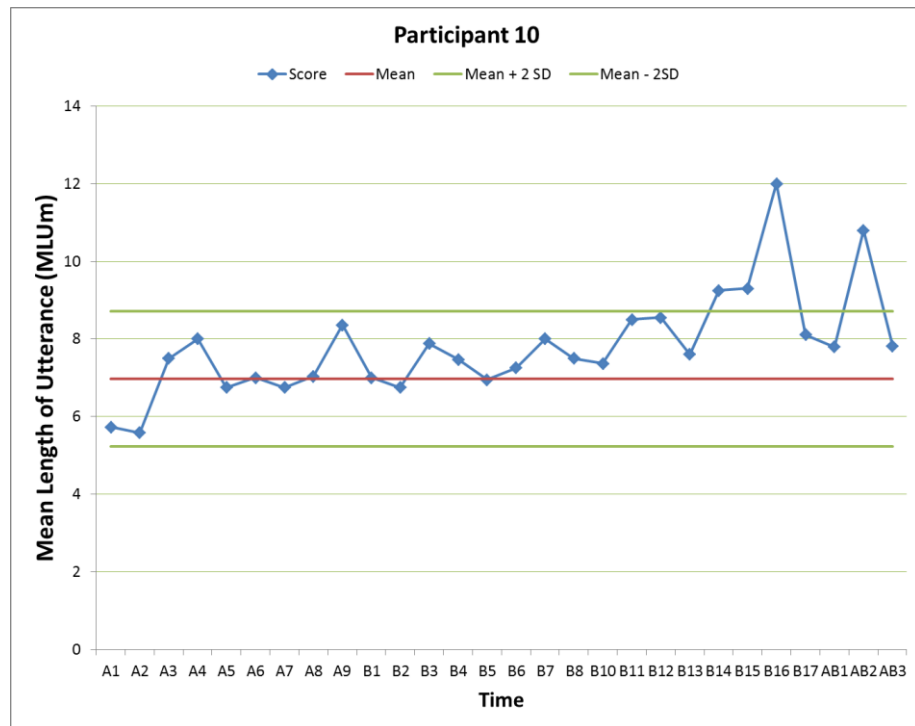

Figure 86

Graphed P11 Conjunction Scores

5.13.1.1 Visual inspection, statistical analysis and effect size. Figure 86 depicts the score for inclusion of Conjunctions (temporal, additive, causal and conditional) during single picture narrative generation. Phase A: A stable baseline was achieved for Conjunctions as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend is evident during baseline. Phase B: During the treatment phase the data indicate an overall positive trend from baseline to treatment with all data points except B15 and B17 falling above the mean. Examination of Phase B reveals that nine data points (B3, B6, B7, B10, B11, B12, B13, B14 and B16) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data, and data points AB 1 and AB2 fell above the 2SD-band, indicating that the improvements made in treatment were maintained following intervention.

A significant effect of intervention was demonstrated for Conjunctions, as two consecutive data points (B6 and B7) fell above the 2SD-band during treatment. Table 17 indicates that the effect size for P10 from A to AB was 0.39 for Conjunctions, indicating a small effect.

5.13.1.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant small (0.39) effect of intervention on Conjunctions during single picture narrative generation tasks.

5.13.2 Total Number of Adverbials.
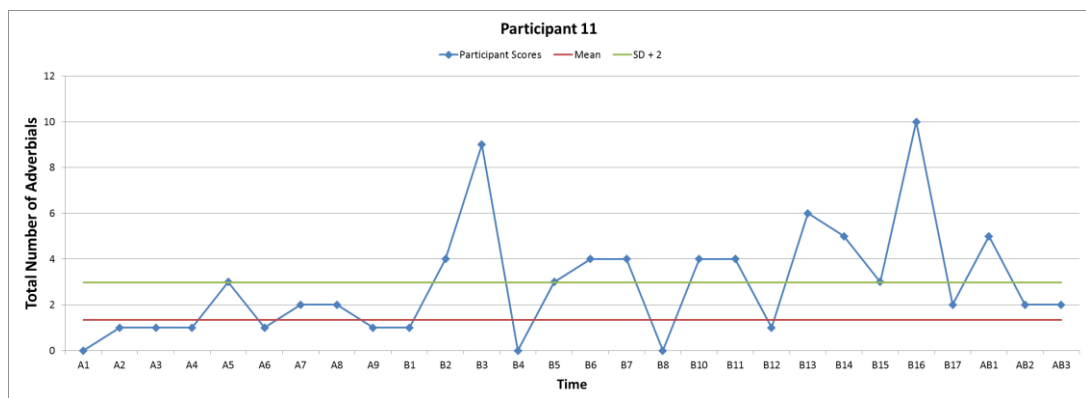
Figure 87

Graphed P11 Adverbial Scores

5.13.2.1 Visual inspection, statistical analysis and effect size. Figure 87 depicts the score for inclusion of Adverbials (time, place and manner) during single picture narrative generation. Phase A: A stable baseline was achieved for Adverbials as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend is evident during baseline. Phase B: During the treatment phase the data indicate a positive trend, with 12 data points falling at or above the pre-treatment mean. Examination of Phase B reveals that 11 data points fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data, and data points AB2 and AB3 fell below the 2SD-band, indicating that the improvements made in treatment were not maintained into baseline.

A significant effect of intervention was demonstrated for Adverbials, as two consecutive data points (B6 and B7) fell above the 2SD-band during treatment. Table 18 indicates that the effect size for P11 from A to AB was 2.04 for Adverbials, indicating a large effect.

5.13.2.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a positive, statistically significant large (2.04) effect of intervention on Adverbials during single picture narrative generation tasks.

5.13.3 Total Number of Adjectives.
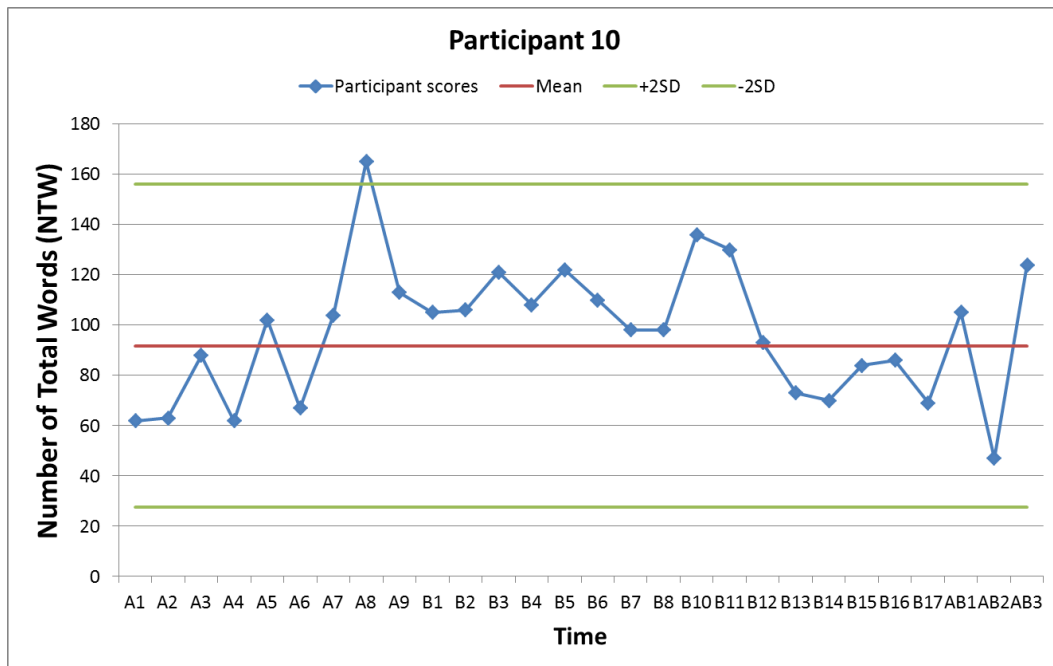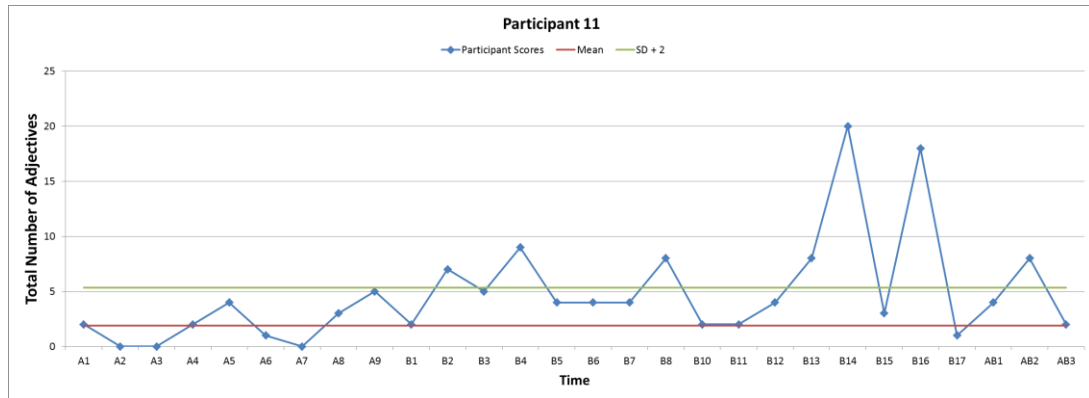

Figure 88

Graphed P11 Adjective Scores

5.13.3.1 Visual inspection, statistical analysis and effect size. Figure 88 depicts the score for inclusion of Adjectives during single picture narrative generation. Phase A: A stable baseline was achieved for Adjectives as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. Phase B: During the treatment phase the inclusion of Adverbials indicated an overall positive trend in performance. Examination of Phase B reveals that 6 data points (B2, B3, B4, B8, B13, B14 & B16) fell at or above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in data.

A significant effect of intervention was demonstrated for Adjectives, as two consecutive data points (B2 and B3) fell above the 2SD-band during treatment. Table 29 indicates that the effect size for P11 from A to AB was 1.61 for Adjectives, indicating a large effect.

5.13.3.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large (1.61) effect of intervention on Adjectives during single picture narrative generation tasks.

5.13.4 Total Number of Complex C-units.
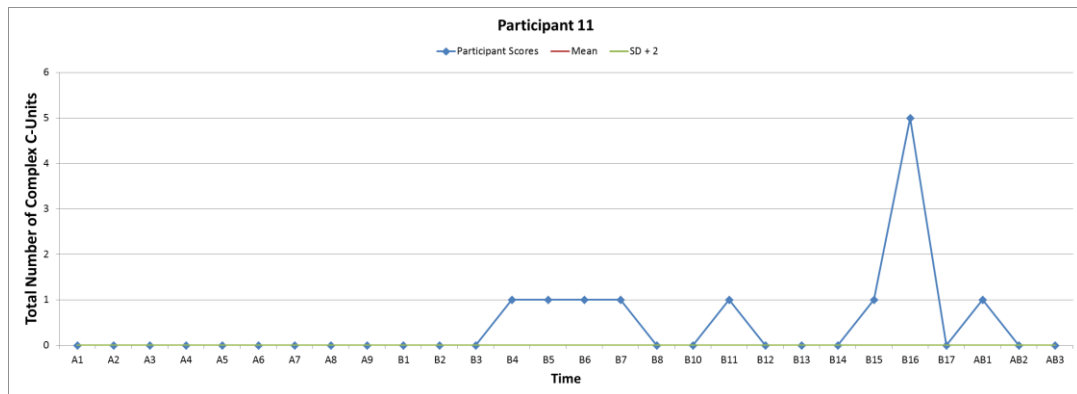
Figure 89

Graphed P11 Complex C-units Scores

> ***5.13.4.1 Visual inspection, statistical analysis and effect size.*** Figure 89
depicts the score for inclusion of Complex C-units during single picture narrative
generation. Phase A: During baseline, the score for Complex C-units remained at
zero. No trend was evident during baseline, as all scores fell at zero. Phase B: During
the treatment phase the inclusion of Complex C-units indicated a slight positive trend
in performance from data point B4 onwards. Phase AB: Scores during phase AB
indicate no trend in performance.

> The 2SD-band method and effect size was unable to be calculated for Complex
C-units as the mean and standard deviation for the baseline was zero. Calculation of
the PND revealed a score of 0%, indicating that the treatment was ineffective for
improving the use of Adjectives in single picture narrative generations.

> ***5.13.4.2 Interpretation.*** Visual inspection of the graph and statistical analysis
using PND, indicated an ineffective impact of intervention on Complex Sentences
during single picture narrative generation tasks.

5.13.5 MLUm.
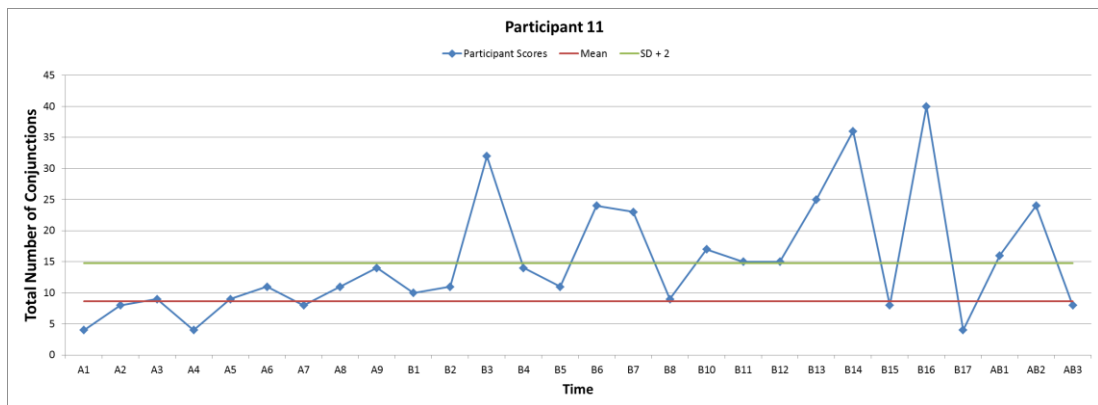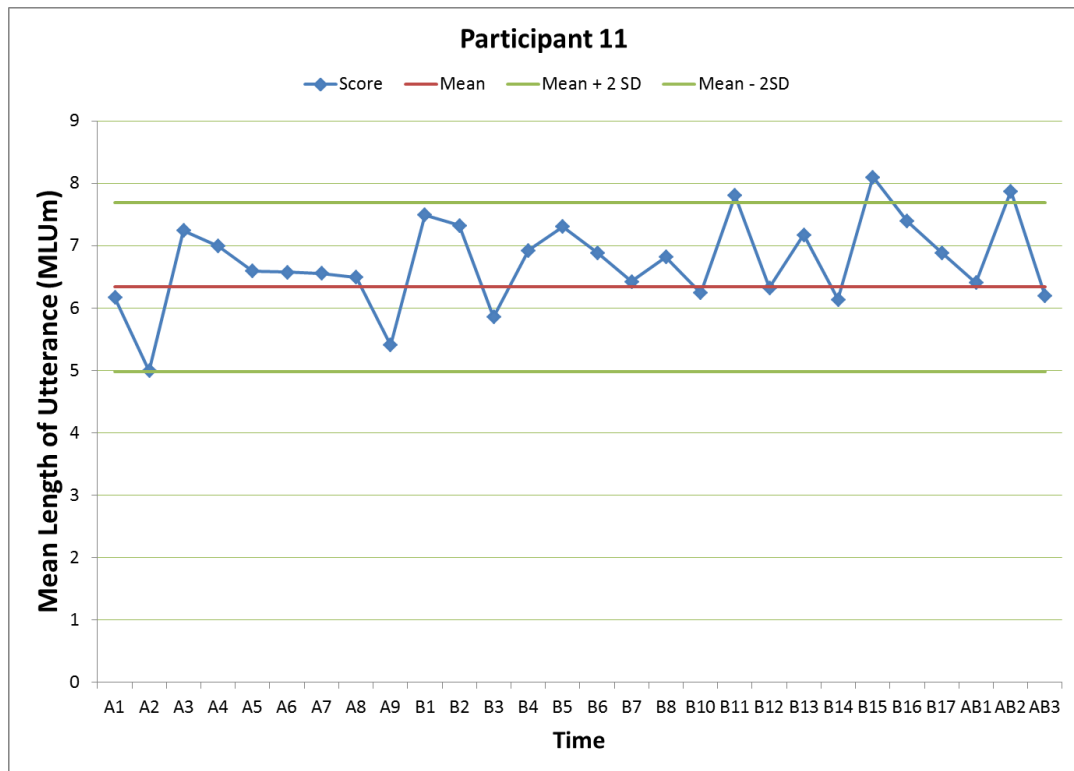

Figure 90

Graphed P11 MLUm Scores

5.13.5.1 Visual inspection, statistical analysis and effect size. Figure 90 depicts the score for MLUm during single picture narrative generation. Phase A: A stable baseline was achieved for MLUm as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight negative trend was evident during baseline. Phase B: During the treatment phase the inclusion of MLUm indicated a slight positive trend in performance. Examination of Phase B reveals that two data points (B11 and B15) fell above the 2SD-band. Phase AB: Scores during phase AB indicate no trend in performance.

A significant effect of intervention was not demonstrated for MLUm, as two consecutive data points did not fall above the 2SD-band during treatment. Table 21 indicates that the effect size for P6 from A to AB was 0.72 for MLUm, indicating a moderate effect.

5.13.5.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically non-significant moderate (0.72) effect of intervention on MLUm during single picture narrative generation tasks.

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5.13.6 NDW.
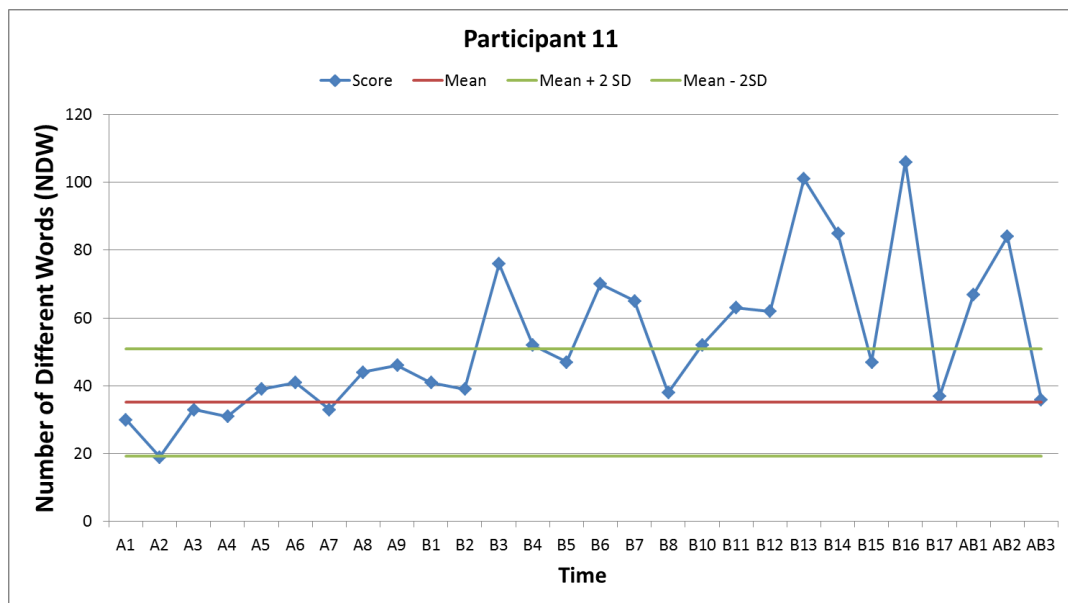
Figure 91

Graphed P11 Number of Different Words Scores

5.13.6.1 Visual inspection, statistical analysis and effect size. Figure 91
depicts the score for NDW during single picture narrative generation. Phase A: A
stable baseline was achieved for NDW as all scores fell within three standard
deviations of the mean, which is consistent with SPC definition of variability. A
slight positive trend was evident during baseline. Phase B: During the treatment
phase the inclusion of NDW indicated an overall positive trend in performance.
Examination of Phase B reveals that 10 data points (B3, B4, B6, B7, B10, B11, B12,
B13, B14 and B16) fell above the 2SD-band. Phase AB: Scores during phase AB
indicate a slight negative trend in performance from AB.

A significant effect of intervention was demonstrated for NDW, as two
consecutive data points (B3 and B4) fell above the 2SD-band during treatment. Table
22 indicates that the effect size for P11 from A to AB was 3.45 for NDW, indicating
a large effect.

5.13.6.2 Interpretation. Visual inspection of the graph, statistical analysis
using the 2SD-band method and calculation of treatment effect using Cohen's *d*,
indicate a statistically significant large (3.45) effect of intervention on NDW during
single picture narrative generation tasks.

5.13.7 NTW.
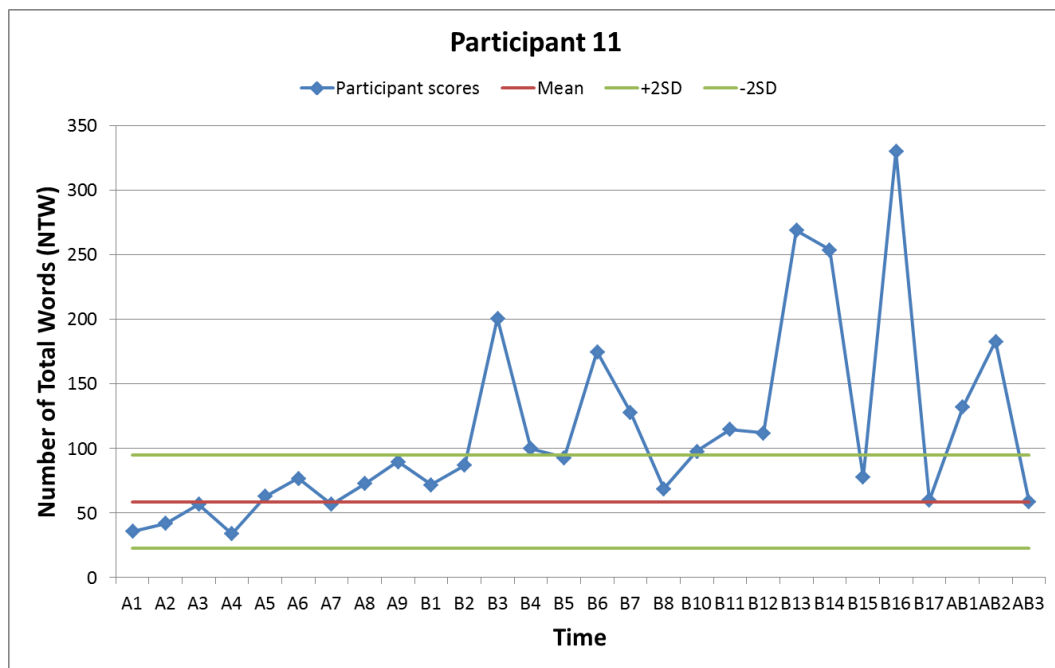
Figure 92

Graphed P11 Number of Total Words Scores

5.13.7.1 Visual inspection, statistical analysis and effect size. Figure 92 depicts the score for NTW during single picture narrative generation. Phase A: A stable baseline was achieved for NTW as all scores fell within three standard deviations of the mean, which is consistent with SPC definition of variability. A slight positive trend was evident during baseline. Phase B: During the treatment phase the inclusion of NTW indicated an overall positive trend in performance. Examination of Phase B reveals that 10 data points (B3, B4, B6, B7, B10, B11, B12, B13, B14 and B16) fell above the 2SD-band. Phase AB: Scores during phase AB indicate a slight negative trend in performance, following treatment, with data points AB1 and AB2 both still falling above the 2SD-band.

A significant effect of intervention was demonstrated for NTW, as two consecutive data points (B3 and B4) fell above the 2SD-band during treatment. Table 23 indicates that the effect size for P11 from A to AB was 0.88 for NTW, indicating a large effect.

5.13.7.2 Interpretation. Visual inspection of the graph, statistical analysis using the 2SD-band method and calculation of treatment effect using Cohen's *d*, indicate a statistically significant large (0.88) effect of intervention on NTW during single picture narrative generation tasks.

5.13.8 Participant 11 summary. Data analysis revealed that the ONIP resulted in significant improvements with a small effect size for Total Number of Conjunctions, significant improvement with large effect size for Total Number of Adverbials and Total Number of Adjectives, and a significant increase with large effect size for NDW and NTW for P11.

5.5 Summary of Results – Question Three

A summary of the number of participants who achieved statistically significant gains following treatment, and a large effect size are shown in Table 24 below.

Table 24

Summary of Statistical Significance and Large Effect Size for P1 to P11

Microstructure Measure	Significant Change (Out of 11)	Large Effect Size (Out of 11)
Conjunctions	9	7
Adverbials	5	6
Adjectives	3	4
Complex C-units	1	2
MLUm	7	5
NDW	8	7
NTW	7	6

Note. MLUm = Mean Length of Utterance in Morphemes; NDW = Number of Different Words; NTW = Number of Total Words.

The summary of the broad outcomes for hypothesis two is summarised in Table 25 below, indicating whether it was confirmed or unconfirmed for each measure and each participant.

Table 25

Summary of Hypothesis Three - Confirmed or Unconfirmed for Microstructure

Repeated Measure (Total Number of Conjunctions, Total Number of Adverbs, Total

Number of Adjectives, Total Number of Complex C-units MLUm, NDW, NTW)

Participant	Conjunctions	Adverbs	Adjectives	Complex C-units	MLUm	NDW	NTW
1	✓	✓	✓	✗	✗	✓	✓
2	✗	✗	✗	✗	✓	✓	✓
3	✓	✓	✗	✗	✓	✗	✗
4	✓	✓	✗	✗	✓	✓	✓
5	✓	✗	✗	✗	✗	✓	✗
6	✓	✓	✓	✓	✓	✓	✓
7	✓	✓	✗	✗	✓	✗	✓
8	✓	✗	✗	✗	✗	✓	✗
9	✗	✗	✗	✗	✗	✓	✗
10	✗	✗	✗	✗	✓	✗	✗
11	✓	✓	✓	✗	✗	✓	✓
Total	8/11	6/11	3/11	1/11	6/11	8/11	6/11

Note. MLUm = Mean Length of Utterance in Morphemes; NDW = Number of

Different Words; NTW = Number of Total Words; ✓ = hypothesis confirmed =

moved clinical boundary/ies, significance using 2SD-band method or PND >70%; ✗

hypothesis unconfirmed = did not move a clinical boundary, non-significance using

2SD-band method or PND <70%

Chapter 6: Discussion

6.1 Summary

The purpose of the study reported in this thesis was to design, develop and then evaluate the efficacy of the Oral Narrative Intervention Programme (ONIP), a manualised intervention programme aimed at improving oral narrative skills in pre-primary aged children with narrative delay. Following an initial trial, the intervention was delivered by a speech pathologist (the primary researcher) to 11 pre-primary children aged 5;0-5;11, in small groups of three to four, three times a week for a period of six weeks (total of 18 sessions). Ten of the 11 participants had narrative difficulty determined by both standardised measures and teacher report, while one participant (P6) had narrative skills within the normal range on the TNL, but was included based on teacher report. The intervention focused on the explicit teaching of narrative macrostructure elements using icons, gestures, and graphic organisers, and facilitated the telling and retelling of fictional narratives. Microstructure skills (including vocabulary and morpho-syntax targets) were not targeted explicitly, but the intervention included carefully designed implicit intervention procedures, including modelling, recasting, expansion and vertical structuring. The prediction was that the intervention programme would result in significant improvements in both macrostructure and microstructure for children with narrative delay. A single-subject across multiple baselines research design was used and the research project included two phases – the Pilot Study and the Efficacy Trial.

The Pilot Study included eight mainstream pre-primary participants with low narrative skills, as identified by their classroom teachers and confirmed by low performance on a standardised narrative assessment (TNL, Gillam & Pearson, 2004). The Pilot Study provided preliminary support for the utility of the ONIP and the feasibility of the Efficacy Trial, with six of the eight participants demonstrating clinically significant change, post intervention.

The summary of the broad outcomes for each hypothesis is summarised in Table 26 below, followed by a summary discussion for each hypothesis in sections 6.1.1, 6.1.2 and 6.1.3 below.

Table 26

Summary of Hypotheses - Confirmed or Unconfirmed for Standardised Narrative Measures (TNL-NLAI, TNL-Exp, TNL-Comp), Macrostructure Repeated Measure (Total Macrostructure Score) and Microstructure Repeated Measure (Total Number of Conjunctions, Total Number of Adverbs, Total Number of Adjectives, Total Number of Complex C-units MLUm, NDW, NTW)

Participant	Standardised Measures				Repeated Measures						
	(H1)			(H2)	(H3)						
	TNL – NLAI	TNL-Exp	TNL-Comp	Total Macro Score	Conjunctions	Adverbs	Adjectives	Complex C-units	MLUm	NDW	NTW
1	✓	✓	✗	✓	✓	✓	✓	✗	✗	✓	✓
2	✗	✗	✓	✗	✗	✗	✗	✗	✓	✓	✓
3	✓	✓	✓	✗	✓	✓	✗	✗	✓	✗	✗
4	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✓
5	✓	✓	✗	✓	✓	✗	✗	✗	✗	✓	✗
6	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
7	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	✓
8	✓	✓	✓	✓	✓	✗	✗	✗	✗	✓	✗
9	✓	✓	✓	✗	✗	✗	✗	✗	✗	✓	✗
10	✓	✓	✓	✓	✗	✗	✗	✗	✓	✗	✗
11	✓	✗	✓	✓	✓	✓	✓	✗	✗	✓	✓
Total	9/11	8/11	7/11	8/11	8/11	6/11	3/11	1/11	6/11	8/11	6/11

Note. H1 = Hypothesis One; H2 = Hypothesis Two; H3 = Hypothesis Three; TNL = Test of Narrative Language; NLAI = Narrative Language Ability Index; TNL-Exp = TN: Expression Subtest; TNL-Comp = TNL Narrative Comprehension Subtest; Macro = Macrostructure; MLUm = Mean Length of Utterance in Morphemes; NDW = Number of Different Words; NTW = Number of Total Words; ✓ = hypothesis confirmed = moved clinical boundary/ies, significance using 2SD-band method or PND >70%; ✗ hypothesis unconfirmed = did not move a clinical boundary, non-significance using 2SD-band method or PND <70%.

6.1.1 Hypothesis One. Hypothesis one predicted that participation in the ONIP would lead to significant improvement in narrative comprehension and expression, as measured by pre-post-treatment scores on a *standardised measure of narrative* –Test of Narrative Language (TNL; Gillam & Pearson, 2004), for pre-primary participants with narrative delay (10 based on standardised measures and teacher report, one on teacher report only; participant age range: 5;00-5;11). Analysis of the data revealed that most participants in the Efficacy Trial made clinically significant improvements in performance in generalised narrative skills (Narrative Language Ability Index – NLAI), narrative expression (TNL-Exp), and narrative comprehension (TNL-Comp) following the ONIP, providing support for hypothesis one.

6.1.2 Hypothesis Two. Hypothesis two predicted that participation in the ONIP would lead to significant improvement in *repeated measures of narrative macrostructure* elements, Total Macrostructure Scores (composite score of individually coded macrostructure elements – orientation of setting, [time and place], orientation of character, initiating event, internal response, plan, actions/attempts, solution, consequence, formulaic markers and speech) in single-picture narrative generation samples. Analysis of the repeated measures samples, using the 2-Standard Deviation band method and effect size analysis using a variation of Cohen's *d* (or the PND where required), revealed that the ONIP contributed significantly to most of the participants' Total Macrostructure Score (8/11). Therefore, this hypothesis was supported in the Efficacy Trial.

6.1.3 Hypothesis Three. Hypothesis three predicted that participation in the ONIP would lead to significant improvement in the inclusion of narrative *microstructure* features, as measured by Total Number of Conjunctions [temporal, causal, adversative, additive, conditional], Total Number of Adverbial phrases, Total Number of Adjectives, Total Number of Complex Sentences, Mean Length of Utterance in Morphemes (MLUm), Number of Different Words (NDW) and Number of Total Words (NTW), in repeated single-picture narrative generation samples. This hypothesis was supported to a lesser degree, with the outcome of the study revealing significant change for Total Number of Conjunctions, , NDW for the majority of the participants (8/11), in NTW, MLUm and Total Number of Adverbials for 6/11 of the participants, but not for Total Number of Adjectives (3/11) or Total Number of Complex C-units (1/11; see Table 26 above for details).

The patterns of outcomes for individual participants will now be discussed in more detail, followed by a detailed discussion of each hypothesis, with references to theoretical models and recent research literature. The chapter will conclude with consideration of practical implications, limitations of the study and future directions.

6.2 Individual Participant and Narrative Measures Discussion.

Following slight adjustments to the ONIP (as described in section 2.1.6), 11 mainstream pre-primary participants with low narrative skills were included in the Efficacy Trial. Again, participants were identified through referrals by the classroom teacher and confirmed by below average performance on the TNL (Gillam & Pearson, 2004).

The eleven participants in the Efficacy Trial were also assessed on the PPVT-IV (Dunn & Dunn, 2007), EVT-2 (Williams, 2007), and the core subtests of the WPPSI, to evaluate nonverbal IQ (Wechsler, 1989). Close examination of the data reveals some interesting patterns of performance that can be interpreted with reference to pre-treatment performance on these standardised measures.

6.2.1. Participant 1, 4, 5 and 11 (mild narrative difficulties).

Participants One, Four, Five and 11 presented with mild narrative difficulties and age-appropriate receptive and expressive vocabulary skills, prior to the treatment phase. These participants made clinically significant improvements in pre-post-treatment results on the TNL-NLAI scores, and statistically significant improvements in Total Macrostructure Scores, Total Number of Conjunctions and NDW repeated measures. Three out of four (P1, P4, & P11) made statistically significant improvements in Total Number of Adverb and NTW. From this early efficacy data, it seems that the ONIP was effective for improving overall narrative abilities, narrative macrostructure skills and some aspects of syntax and semantics (Conjunctions and NDW), for children with mild narrative difficulties. However, replication of this effect with a larger sample size is needed to confirm these findings.

6.2.2. Participant 3, 7, 9 and 10 (moderate narrative difficulties).

Participants Three, Seven, Nine and 10 presented with moderate narrative difficulties and age-appropriate receptive vocabulary skills, as measured by the PPVT-IV. P9 and P10 were also EAL/D speakers. P9 demonstrated mild expressive vocabulary difficulties, while the other three demonstrated age-appropriate expressive vocabulary skills. These participants all made clinically significant

improvements in pre-post-treatment results in all three standardised narrative scores (TNL-NLA, TNL-Exp and TNL-Comp). The repeated measures data for narrative macrostructure and microstructure elements in narrative generation samples was more variable for these participants. Only two demonstrated significant improvements in Total Macrostructure Scores (P7 & P10), two for Conjunctions (P3 & P7), two for Adverbs (P3 & P11), three for MLUm (P3, P7 & P10) and one for NDW (P9). Participant Nine, made the least amount of improvement in the repeated measures, with a significant increase seen only for NDW. This could suggest that a child with expressive vocabulary difficulties and narrative delay, may require additional intervention beyond the ONIP in its current form.

From this data, it is difficult to draw conclusions about the efficacy of the ONIP for children with moderate narrative difficulties. It is encouraging that all improved significantly on all scores of the TNL – demonstrating a positive response to the intervention. The more variable outcomes for the repeated measures illustrate that children with moderate narrative difficulties may require higher dosage or more explicit teaching of certain targets, to lead to significant changes in the repeated measures of both macrostructure and microstructure. Future research could test this hypothesis, by varying dosage and making modifications to the explicit teaching of narrative targets with a larger group of participants.

6.2.3. Participant 2 and 8 (severe narrative difficulties).

Participant two (P2) made the least improvement in her narrative abilities following completion of the ONIP, with the only significant improvements being in her TNL-Comp score on the TNL (Gillam & Pearson, 2004), and MLUm, NDW and NTW repeated measures (see Table 26 for details) P2 presented with the lowest performance on the TNL (NLAI = 46; Gillam & Pearson, 2004) prior to the treatment phase and her PPVT-IV (Dunn & Dunn, 2007) and EVT-2 (Williams, 2007) standard scores fell within the severe range (PPVT = 30; EVT = 19). Additionally, P2's case history revealed a history of language disorder, a lack of language experience prior to starting school and P2 was an EAL/D learner. P2's non-verbal IQ - as measured by the WPPSI PIQ score (Wechsler, 1989) fell within the normal range (PIQ = 86). Further, P2 only attended 13 of the 18 intervention sessions. This suggests that the overall amount of the intervention, and perhaps the type of intervention (small group), may not have been appropriate for her more

severe overall level of language difficulty. Children who present with a more severe profile overall (more typical of developmental language disorder) may require increased dosage, more explicit teaching of both macro- and miscrostructure targets, and the inclusion of intervention targets more tailored to their language profile. This should be investigated in any future efficacy studies using the ONIP with this population.

Participant 8 was also an EAL/D learner and fell within the severe range on the TNL (NLAI = 55; Gillam & Pearson, 2004), however her performance on the PPVT-IV (Dunn & Dunn, 2007) was in the average range (PPVT = 99). Her performance on the EVT-2 (Williams, 2007) and PIQ scores on the WPPSI-IV were borderline (EVT = 79; PIQ = 79). Despite this, and in comparison to P2, P8 responded well to the intervention and demonstrated clinically significant improvement in the TNL (Gillam & Pearson, 2004) measures and statistically significant improvement for the following repeated measures - Total Macrostrcture Score, Total Number of Conjunctions, NDW and MLUm (see Table 26 for details). P8 therefore performed more like the participants above, with moderate narrative difficulties, and may reflect the fact that her vocabulary skills and performance IQ were in the borderline to average range, unlike P2.

These results suggest that the ONIP, in its current form, may not be effective for children with severe narrative difficulties in conjunction with severe expressive and receptive vocabulary deficits. It is possible that a higher dosage of intervention is required for children with more severe narrative and overall language difficulties (delay or disorder), and perhaps individual intervention with additional targets for vocabulary, would have led to significant change for P2.

6.2.4. Participant Six (age-appropriate narrative abilities).

Participant Six (P6) was the only participant who made statistically significant change on all repeated measures. In contrast, P6 did not demonstrate clinically significant change on the standardised narrative measures (TNL-NLAI, TNL-Exp and TNL-Comp; Gillam & Pearson, 2004), however his scores were already in the average range. It seems that the ONIP may lead to significant improvements in repeated measures of narrative macrostructure and microstructure, including complex syntax measures, such as Adverbials and Complex C-units, for a child with age-

appropriate narrative abilities. However, this effect needs to be replicated with a larger sample size.

6.2.5 Participant 8, 9 & 10 (EAL/D learners)

Participants 8. 9 and 10 are all EAL/D learners. P8 had PPVT-IV (Dunn & Dunn, 2007) scores within the normal limits, but all other pre-intervention measures were below the normal range (WPPSI and EVT-2; (Wechsler, 1989; Williams, 2007). P9 was within normal limits on the PPVT-IV (Dunn & Dunn, 2007), below normal limits in the EVT-2 (Williams, 2007) and just below the normal range on the WPPSI-IV. P10 had normal performance on the WPPSI-IV (Wechsler, 1989) and EVT-2 (Williams, 2007) before treatment, and was in the mild range for the PPVT-IV (Dunn & Dunn, 2007). All three participants made clinically significant improvements in the TNL (Gillam & Pearson, 2004), statistically significant improvements in their Total Macrostructure scores, and statistically significant improvements in only one or two of them microstructure measures each (Concjunctions and NDW for P8; NDW for P9; MLUm for P10). Even though it couldn be hypothesised that children who are EAL/D learners without language difficulties might respond better than English speakers, the resulst did not support this. P8, P9 and P10 responded in a similare manner to the other participants, in fact, they made less improvement across the microstructure measures than the others. Further investigation into the effect of the ONIP on EAL/D learners is needed.

6.3 The ONIP and Narrative Comprehension

Narrative comprehension was not a focus of the ONIP, however seven of the 11 participants (P2, P3, P7, P8, P9, P10, P11) showed clinically significant change on their TNL-Comp scores. The remaining four participants were all in the "*average*" range for narrative comprehension before the treatment phase and remained in the "*average*" range following treatment. Interestingly, P2, who did not make clinically significant change in her NLAI or TNL-Exp scores, shifted across clinical boundaries from "*very poor*" to "*poor*" in TNL-Comp (pre-treatment standard score = 1; post-treatment standard score = 5).

The impact of the ONIP on narrative comprehension is encouraging and may be explained by the explicit focus on macrostructure. It is known that narrative comprehension can be supported by an expectation of how a narrative is structured (Bishop, 1996; Cain & Oakhill, 1996; Cain, 2003; Cain & Oakhill, 2007). Familiarity

with narrative macrostructure underpins top down processing during the comprehension of narrative discourse, allowing the listener to make sense of what they hear and make predictions about what might happen next, supporting ongoing understanding (Bishop, 1996; van Dijk & Kintsch, 1983). As such, by targeting knowledge of macrostructure explicitly, the ONIP may have also developed participants' ability to draw on this knowledge when asked questions about the stories in the TNL.

6.4 The Impact of the ONIP on Narrative Macrostructure

We predicted that the ONIP would improve participants' inclusion of macrostructure elements (setting, character, initiating event, internal response, plan, actions/attempts, resolution and conclusion) during single picture narrative generations, as coded in SALT (Miller & Iglesias, 2008). The theoretical underpinning of the intervention was based on Levelt's (1993) Model of Language Processing. It is hypothesised that by targeting knowledge and use of macrostructure elements, through explicit teaching, we are supporting processing at the level of the Conceptualiser (Levelt, 1993). Nine of the 11 participants made statistically significant improvements in their Total Macrostructure Score with effect sizes ranging from small ($d = 0.39$ for P6) to large ($d = 3.82$ for P10). This finding adds to the growing body of research evidence indicating that narrative intervention focusing on explicit teaching of macrostructure elements, the use of icons and graphic organisers, and multiple opportunities for children to listen to, retell and generate stories, will lead to significant improvement in narrative production, particularly, narrative structure (Peterson, 2010).

6.5 The Impact of the ONIP on Narrative Microstructure

We predicted that the ONIP would result in improved linguistic complexity (microstructure) as measured by Total Number of Conjunctions, Total Number of Adverbials, Total Number of Adjectives and Total Number of Complex Sentences, Mean Length of Utterance in morphemes (MLUm), Number of Total Words (NTW) and Number of Different Words (NDW) produced by the child during single picture narrative generations. These linguistic targets were not taught explicitly in the ONIP, but it was hypothesised that the repeated retelling of carefully scripted narratives during intervention would support processing at the level of the Formulator (Levelt, 1993), and result in improvements in participants' use of complex vocabulary and

syntax in the context of narrative discourse. Research has long demonstrated that storytelling is a useful setting for children to develop mastery of more complex vocabulary and morpho-syntax, as stories require the use of more complex language to create a context for the listener (Carrow-Woolfolk, 1988; Cortazzi & Jin, 2007; Hayward & Schneider, 2000; Peterson, 2010; Westby, 1985, Ukrainetz et al., 2005; Peterson, 2010; Peterson, Gillam, & Gillam, 2010; Snow, 2009; Westby, 1985). It was hypothesised that the use of carefully planned implicit intervention procedures, including modelling, recasting, extension and vertical structuring while the participants engaged in story retells, would provide targeted input and increase the frequency of target forms thus facilitating processing at the Formulator level. The findings showed the ONIP led to significant improvement in MLUm, NDW and NTW, measures of overall utterance and story length, and linguistic diversity, for most of the participants. Six of the 11 participants showed significantly increased MLUm and NDW, and seven of the 11 participants increased in NTW from pre-intervention baseline to post-intervention baseline. This provides some support for the effect of the ONIP on key measures of expressive language, including lexical diversity, in narrative discourse.

In contrast, for the three measures of complex syntax (Total Number of Conjunctions, Total Number of Adverbs, Total Number of Adjectives and Total Number of Complex C-units), only the Total Number of Conjunctions (8/11) and Total Number of Adverbs (6/11) showed significant change for most participants. This finding could be considered an artefact of the design of the narrative scripts, which included many examples of Conjunctions and Adverbs to link the events and actions, but less of Adjectives and Complex C-units. As such, this may have impacted on the frequency of these features being modelled to the participants, in turn impacting on the effectiveness of learning these targets. However, the repeated measures were elicited in generation samples, which should have controlled somewhat for this effect. Additional intervention contexts were used throughout treatment, including text innovation and generation, as well as language facilitation strategies (e.g. recasting, expansion), where the researcher responded to the participants' utterances. This should again reduce the effect of the scripts. Alternatively, it may be that these more complex aspects of syntax need more time to

develop, and the length of the intervention programme may not have been long enough for this to occur for these participants.

6.5 Summary of the ONIP in Relation to Recent Research Publications

The findings of this single-subject research design, provide further evidence for the growing body of research supporting oral narrative interventions that focus on the explicit teaching of macrostructure using graphic organisers and icons, and repeated telling and retelling of stories (Peterson, 2010). One of the aims of this study was to investigate the effect of an intervention programme that included *explicit* narrative macrostructure intervention procedures and *implicit* microstructure intervention procedures (including recasting, expansion and vertical structures) on the inclusion of complex syntax and vocabulary in stories. Additionally, the study investigated the effect of an intervention that focused on narrative retells, on the inclusion of these microstructure features in narrative *generations*, which is a more difficult discourse task (Peterson, Gillam, & Gillam, 2008). The findings of the study supported this hypothesis for some measures of syntax (MLUm, Total Numbers of Conjunctions) and vocabulary (NTW, NDW), as these increased significantly following intervention. More complex measures of syntax and semantic skills – Total Number of Adverbs, Total Number of Adjectives, and Total Number of Complex C-units did not improve significantly for all participants following intervention. The only participant that demonstrated significant improvements across all repeated measures was Participant Six, who performed in the average range on the TNL at the beginning of intervention. This suggests that these more complex microstructure skills may need explicit teaching with school-aged children with moderate-severe narrative difficulties, while children with age-appropriate narrative skills, may respond to this implicit approach to facilitating syntax development.

Since the commencement of the study in early 2013, additional research has been published that provides further evidence for the efficacy of oral narrative intervention and the impact on narrative macrostructure and microstructure skills. Specifically, six research papers recently published are of significant relevance in interpreting and considering the findings of this study (Gillam, Gillam, Squires, Snyder & Slocum, 2016; Gillam, Hartzheim, Studenka, Simonsmeier & Gillam, 2015; Gillam, Olszewski, Fargo & Gillam, 2014; Spencer, Kajian, Peterson & Bilyk, 2014; Spencer, Peterson & Adams, 2015; Peterson, Spencer, Slocum & Allen, 2015).

6.5.1 Story Champs and SKILL.

Two recently published papers (Gillam & Gillam, 2016; Peterson & Spencer, 2016), provide an overview of the research findings for each of the respective programmes and studies – Story Champs (Spencer & Peterson, 2012) and Supporting Knowledge in and Language and Literacy (SKILL; Gillam & Gillam, 2015). These summary papers will be discussed below, with reference to the ONIP and implications for practice.

Story Champs is an oral narrative intervention programme, designed for preschool children with DLD and children from culturally and linguistically diverse children (Peterson & Spencer, 2016). The efficacy of this programme has been evaluated in a range of research studies, including a single-subject multiple baseline research design (Spencer et al., 2014), a small group quasi-experimental control group design (Peterson et al., 2014) and a large group pre-test/post-test randomised control trial (Spencer et al., 2015). Each study investigated the effect of the intervention programme (described in Table 27 below), on four-year-old children attending a Head Start intervention centre in America, on their narrative macrostructure and complex language skills (Peterson & Spencer, 2016). Spencer, Kajian, Peterson and Bilyk (2014) investigated Story Champs, with five four-year-old children with language impairment (Spencer et al., 2014). The intervention was delivered in 10-15-minute individual intervention sessions, twice a week for six weeks, and consisted of an eight-step process that included a story model and a carefully designed systematic approach to scaffolding and reducing support to participants during narrative production tasks (Spencer et al., 2014). The results of this multiple baseline, multiple probe study, revealed that all participants made statistically significant gains in narrative generation, as measured by the Narrative Language Measures Primary (NLM:P; Peterson & Spencer, 2012). Peterson, Spencer, Slocum and Allen (2014) conducted a quasi-experimental control group intervention study with four classrooms of four-year-old children. The same intervention, Story Champs, was delivered by an educator for 15-20 minute sessions, three times per week to large groups of 20 children. Results of the study revealed that participants retold stores with significantly more complex macrostructure and microstructure skills than the control group, but not on personal narrative generations (Peterson & Spencer, 2016).In 2015, Spencer, Peterson and Adams conducted a

pretest/posttest randomised control group design study, administering the above intervention to 12 culturally and linguistically diverse four-year-old children with language delay in the experimental group and 10 participants in a control group. Intervention was provided in small groups of four, in the classroom, for 15-20 minutes, twice a week for nine weeks (Spencer et al., 2015).

The intervention programme in the research studies discussed above (Spencer et al., 2014; Spencer et al., 2014 and Spencer et al., 2015) focused on the explicit teaching of narrative macrostructure elements and the retelling of stories with complex language in individual, small and large group sessions with four-year-old children with language delays and disorder from culturally and linguistically diverse backgrounds. The results of these studies showed that participants made statistically significant gains in narrative generation, as measured by the Narrative Language Measures Primary (NLM:P) and NLM (Peterson & Spencer, 2012; Spencer et al., 2014). While these studies provided detail on the therapeutic procedures related to the story grammar targets, little detail was provided regarding intervention for microstructure goals other than modelling in the context of the retell scripts. Additionally, the researcher generated NLM:P (Peterson & Spencer, 2012) did not provide detail of outcomes on linguistic measures such as total number of words, number of different words, mean length of utterance or complex sentences, beyond the inclusion of temporal and causal connectors. Furthermore, the authors also reported that it was difficult to determine how much each microstructure target was prompted or corrected during intervention for those targets that did improve for each participant (Spencer at al., 2015).

A comparison of the ONIP with Story Champs reveals some common approaches to narrative intervention, including explicit teaching of narrative macrostructure elements using icons and gestures, the repeated telling and retelling of stories with visual supports and carefully planned scaffolding. There are some significant differences, however. The ONIP explicitly teaches eight macrostructure elements (setting, character, problem, feelings, plan, actions, solution and consequence), while Story Champs only teaches five (character, problem, feeling, action and ending). Another key difference is that Story Champs is designed for preschool children (aged 4 years) and focuses on retelling and generating personal narratives, while the ONIP is designed for early school-aged children (aged 5-6

years), and uses children's literature in the context of retelling fiction narratives. Both interventions resulted in significant improvements in narrative abilities for the target populations in overall narrative abilities, and had positive effects on the development of complex language skills. A final key difference between these intervention programs is that Story Champs explicitly teaches microstructure skills, including Causal and Temporal conjunctions using icons, while the ONIP does not.

A series of studies conducted by a group of researchers from 2008 to 2016, led to the development and evaluation of a narrative-based language intervention, called Supporting Knowledge in and Language and Literacy (SKILL; Gillam & Gillam, 2015). SKILL focuses on explicit teaching of macrostructure elements, narrative comprehension, and the development of microstructure skills including vocabulary, causal and temporal connectors and complex sentences (for an overview of the intervention approaches and procedures used in SKILL, see Table 27). The research studies evaluating the efficacy of the intervention (Gillam et al., 2014; Gillam et al., 2015; Gillam et al., 2016) revealed that the intervention programme was effective for improving both narrative microstructure skills for school-aged children with DLD and school-aged children with Autism Spectrum disorder (ASD). A key point of difference between this intervention programme and the ONIP is that microstructure skills are targeted explicitly in SKILL through the context of the narrative, in Phase II and Phase III of the intervention programme, while microstructure elements were only targeted implicitly in the ONIP. The results of the work by this group of researchers revealed that explicit teaching of microstructure skills in the context of narrative, led to significant improvements for children with DLD and ASD. The authors also found that some other microstructure skills improved significantly, despite not being targeting explicitly, similar to the findings for the ONIP in the present study (Gillam & Gillam, 2016).

All the above studies, in addition to the present research investigating the efficacy of the ONIP, add to the growing evidence that narrative-based interventions have significant effect on narrative comprehension, narrative production, and can improve narrative microstructure skills (including expanded noun phrases and use of conjunctions, for example), when targeted implicitly and explicitly. Further investigation comparing these intervention procedures (i.e., a direct comparison of

the impact of implicit and explicit procedures on microstructure), would be the logical next step.

Table 27

Summary of the Intervention Procedures and Approaches for the ONIP, Story Champs and SKILL

Intervention	Intervention Approach and Procedures
The ONIP (Glisson, Leitão & Claessen, 2013) Pre-primary children with narrative delay	Discourse-based intervention to target narrative microstructure and macrostructure skills using well-known children's story book, and repeated telling and retelling of stories. Two phases of the programme: Phase 1 = Explicit teaching of macrostructure in the context of storybooks (9 lessons); Phase 2 = application of narrative macrostructure knowledge and use of implicit microstructure intervention procedures in the context of shared book reading and repeated retellings of stories (9 lessons; 3 lessons per text).
Small group intervention (3-4 participants) 30-45-minute sessions, 3 per week, for 6 weeks. Total of 18 sessions.	**Macrostructure:** • Explicit teaching of narrative macrostructure elements using icons, gestures and explicit teaching scripts. Focused on When, Where, Who, Problem, Feeling, Plan, Actions, Solution and Consequence. • Oral narrative games and activities related to narrative macrostructure elements, from Black Sheep Press • Sequencing events from story books, according to macrostructure elements • Modelled, joint and individual construction of 8-part story boards using icons, pictures and drawings • Repeated listening, modelled and individual retelling of narrative stories • Modelled single picture narrative generations using macrostructure checklist for support • Macrostructure checklists for active listening during peer retells **Microstructure**: • Planned implicit intervention strategies – repeated modelling, recasting, vertical structuring and expanding during narrative retell tasks, to target conjunctions, adverbs, adjectives and complex sentences. **Comprehension**: • Before, during and after reading book-share protocol focusing on understanding and applying knowledge of macrostructure

SKILL (Gillam & Gillam, 2015) School-aged children (5-11 years old) with DLD, ASD or from culturally and linguistically diverse backgrounds. Small groups of 3-4 children. 30-45-minute sessions, 18 sessions phase 1; 16 sessions phase 2; 9 sessions phase 3. 6-8 weeks.	Discourse-based intervention to target improved narrative, improved listening and reading comprehension, and narrative creation, using wordless picture books, storybooks and single pictures. Oral intervention only. Three phases of the intervention programme – Phase 1 = Explicit teaching of macrostructure and causal connections (18 lessons); Phase 2 = Elaboration (literate language and complex episodic structure; 16 lessons); Phase 3 = Independent storytelling (9 lessons). **Macrostructure:** • Explicit teaching of macrostructure elements using icons and explicit teaching scripts. Focused on Character, Setting, Take Off (Initiating Event), Internal Response (Feeling), Plan, Actions, and Consequence. • Elaboration of stories by adding in a complication sequence • Shared telling and retelling of narratives with icons, picture supports and pictography. • Development and telling of parallel stories (text innovations). • Literature-based units – application of narrative skills to a storybook. **Microstructure**: • Explicit teaching and mini-lesson on causal connection and conjunctions (before, after, because, so, if, then), adverbs, setting descriptions, feelings, dialogue **Comprehension**: • Before, during and after reading book-share protocol focusing on understanding and applying knowledge of macrostructure • Focus on understanding causal relations (Gillam & Gillam, 2016).

Story Champs (Spencer & Peterson, 2012)	Manualised intervention programme, including an 8 step process to teaching narrative macrostructure, narrative retell and personal narrative generations. Program includes systematic approach to scaffolding during narrative production (Spencer et al, 2014). Programme based on 12 stories linked to preschool appropriate themes (e.g., getting hurt, fighting with a sibling), includes 5 picture sequence narratives with an accompanying narrative.
Preschool children aged (4;00-4;11), at risk of language difficulties, including children from culturally and linguistically diverse, and low socio-economic backgrounds.	Variations of the following eight step approach for individual, small group or large group intervention. 1. Model story with picture prompts 2. Individual and/or group retell of story with picture prompts and icons 3. Individual and/or group retell of story with icons 4. Individual and/or group retell of story without pictures or icons 5. Individual and/or group personal story using icons and prompting (questions) and pictography 6. Individual and/or group production of personal narrative using pictography for support
Individual, small group and large group intervention.	7. Individual and/or group production of personal narrative with icons 8. Individual and/or group production of personal narrative without pictures or icons **Macrostructure**
10-20 minute sessions; 3-4 times per week; for 12-24 sessions (depending on setting).	• Explicit teaching of narrative macrostructure elements using icons and gestures for character, problem, feeling, action, and ending. • Sequencing 5 part narratives according to macrostructure elements • Modelled, joint and individual retelling of the story using pictures and icons for support **Microstructure**: • Reported individualised intervention for linguistic features of openings, causal and temporal connectors, character speech, adverbs and adjectives. • Explicit teaching (definitions) of Tier Two vocabulary words in the context of each story (Peterson & Spencer, 2016).

6.6 Limitations and Future Directions

It is important to acknowledge a number of limitations of the present study. The first limitation relates to the research design. A small scale, SSRD provided preliminary evidence for the ONIP, building on a pilot study, was appropriate for the purpose of this study. The SSRD for the efficacy study involved more than the minimum of three participants, and a stable baseline was established for each participant with at least three data points. However, post-intervention assessment was not completed by a blind assessor, and inter-rater reliability measures were only calculated for 7.5% of the data (Risk of Bias in N-of-1 Trials; Tate et al., 2013). To improve the quality of this early efficacy study, blinded post-treatment for administration of the standardised assessment, and coding of the repeated measures is recommended, in addition to calculation of inter-reliability for 20% of the data in future studies. However, as the data for the standardised measure was interpreted in combination with the repeated measures, there can be an added level of confidence in the findings, as there was general agreement across both sets of data. Additionally, inter-rater reliability was calculated for the SALT coding of the repeated measures, revealing high agreement between raters (94.4%).

A further limitation of this study was the use of an elicitation procedure that has not been validated. At the time that the research was designed, there was no assessment procedure that elicited oral narrative generations from single pictures, allowing repeated measures to be taken. Therefore, the researcher designed her own 33 pictures to elicit narrative samples, in a narrative generation task, rather than a retell which would have involved the creation of many similarly constructed story models and picture sequences/books. However, it may be that the format of the assessment task was not sensitive enough to change following the intervention. Some measures created for the scoring using in the present study scored a mean and standard deviation of zero, meaning that the 2SD-band statistic could not be calculated, requiring use of the less robust measure of Percentage of Non-Overlapping Data (Dallery & Raiff; 2014; Tate et al., 2013). Future studies should consider the sensitivity of these codes and their utility in a repeated measures design. Recent advances in assessment procedures and performance monitoring have resulted in additional assessment resources available to the clinician and researcher. In particular, the Narrative Language Measure used in the work by Peterson and

Spencer (2012), may have been a more reliable measure of repeated narrative production, and should be considered in future research

It is also hypothesised that some adjustments to the ONIP, including more opportunity for children to retell stories, whole group choral retells and increasing the duration of Phase Two (beyond nine sessions), may have resulted in improved outcomes related to more complex measures of morpho-syntax (including Complex C-units, Adverbials and Adjectives).

These limitations mean that the preliminary data from this single-subject research design should be interpreted with caution. However, the study provides early efficacy data for the ONIP, and replication with a larger group of participants, blinding of the assessments and inclusion of the longer baseline, would improve the quality of the study.

In the evaluation of clinical outcomes, Portney and Watkins (2009) suggest that in addition to demonstrating effectiveness during an experimental study, evidence of external validity is also required. External validity includes evidence that the effects of intervention can be generalised to other individuals with similar characteristics and other conditions that differ from the experimental conditions, and that the effects are sustained after the intervention has ended. To further the external validity of this study, systematic replication is recommended, using a larger sample size, and including a control group for comparison. Future studies should also include children with developmental language disorder to evaluate the efficacy of the ONIP or a modified version of the ONIP with this population.

6.7 Summary and Conclusions

The present study provided support for the use of a narrative intervention that focuses on the explicit teaching of narrative macrostructure elements, using icons, gestures and graphic organisers and the repeated telling and retelling of stories. These results were similar to those found by studies both prior to the commencement of this study, which informed the design of the ONIP (see Appendix A), and those published more recently, since data collection was completed. Additionally, this study investigated the impact of the ONIP on the development of microstructure skills (vocabulary and syntax) using carefully designed implicit therapeutic procedures, including modelling, recasting, expansion and vertical structuring. (This level of detail in the ONIP manual makes replication of the intervention easier for

clinicians). The results indicate that the ONIP was effective in improving general language measures, including NDW, NTW, MLUm, and in some measures of syntax complexity (Total Number of Conjunctions), but not in others (complex sentences and adverbs). This suggests that these more complex syntax skills may need to be targeted in a more explicit manner. Importantly, the ONIP resulted in a generalised improvement for most of the participants on a standardised assessment (TNL; Gillam & Pearson, 2004), on expressive narrative, and in narrative comprehension, despite this not being a direct focus of the intervention.

In summary, the present study has evaluated the ONIP, a narrative intervention designed for this study which focused on the explicit teaching of narrative macrostructure elements and repeated opportunities to tell and retell stories for children with narrative difficulties. The findings of this study are in parallel with the recent body or work from the two research groups described above that has taken place over a similar time frame. Unique to this study, however, is the detailed explicit descriptions of intervention procedures and parameters used that make the intervention effective.

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Appendix A: Summary of Narrative Intervention Studies Used to Inform Development of the ONIP

Table 1.

Summary of Narrative Intervention Studies with Preschool and School-Age Children with Developmental Language Disorder, Narrative Delay or at Risk-of Language Difficulties Used to Inform Development of the ONIP

Study	n	Participants	Design	Setting	Duration	Mnt	Gen	DV	Sig	ES
Hayward & Schneider (2000) *	13 t	Pre-school children aged 4;8-6;4 with moderate-severe language impairment	Mixed group and single-subject; multiple baselines Pre-post	Small groups of 2-3 children	Two 20-minute sessions/ week for 8-12 weeks 1080 total minutes Group 1: 12weeks of intervention Group 2: 8 weeks of intervention	No	No	a) Story grammar (story information units) b) Episode level	a) .001 (Y) b) .001 (Y)	a) 1.0 (Lrg) b) 1.96 (Lrg)
Davies, Shanks, & Davies (2004)	31t	Kindergarten children aged 5 to 7 (average age = 5;11), with narrative delay., attending 6 UK Primary Schools in areas with high social need.	Pre-post; no control group	Small group & classroom	Three 40-minute sessions/ week for 8 weeks 960 total minutes	No	No	a) RAPT Info score b) RAPT Grammar score c) Bus Story Info d) Bus Story C-units e) episode f) number of conjunctions	a) >.01 b) >.01 c) .008 d) .005 e) .005 f) > .01	a) 1.32 (1.1) b) 0.94 (0.74) c) 0.68 (0.44) d) 0.75 e) 0.69 f) 0.92

								g) type of conjunctions	g) >.01	g) 0.66
								h) story type	h) .01	h) 0.67
Swanson, Fey, Mills, & Hood (2005) *	10 t	School-age children, aged 6;11 – 8;9 years with DLD Monolingual English; 6 participants in school-based SLP services; 3 participants break from school-based SLP services; 1 participant not receiving services	Single-subject Pre-post	Individual	Three 50-min. sessions/ week for 6 weeks 900 total minutes	No	Yes	a) NQ b) Generalisation c) NDW d) recalling sentences e) Non-word repetition	Gain scores: a) Y b) N c) N d) N e) N	n/a (not reported)
Westerveld & Gillon (2008)	10 t 10 c	School-age children aged 7:11-9:2 with mixed reading disability New Zealand English as only language	Non-equivalent waitlist control group design Pre-post	2x Small groups of 5	Two 60-minute sessions/ week for 6 weeks 720 total minutes	No	Yes	a) NARA (Reading Ability) a. Reading accuracy b. Reading Comp b) NQ c) Oral narrative comp (macro) d) TNL- Comp– e) # of C&I utterances f) % maze words	a) .571 (N) b) .286 (N) c) <.05 (Y) d) <.05 (Y) e) .925 (N) f) .938 (N)	a) n/a b) n/a c) 1.55 (Lrg) d) 1.89 (Lrg) e) n/a f) n/a

									g) MLCU-M	g) .186 (N)	g) n/a
									h) % grammatical CUs	h) .175 (N)	h) n/a
									i) NDW	i) <.05 (Y)	i) 1.65 (Lrg)
Peterson, Gillam, & Gillam (2008) *	12 t	School-age children aged 6;4 to 9;1 with language impairment, receiving language intervention in schools	Alternate treatment; Pre-post	Small group	Four 90-minute sessions/ week for 4 weeks 1440 total minutes	No	No	a) INC	a) <.05 (Y)	a) 1.58 (Lrg), 1.02 (Lrg), 1.34 (Lrg), 0.49 (Mod). 1.53 (Lrg)
								b) TNL-Exp	b) <.05 (Y)	b) 1.57 (Lrg)
								c) TNL-Rec	c) <.05 (Y)	c) 0.81 (Lrg)
								d) TNL-NLAI	d) <.05 (Y)	d) 1.31 (Lrg)
Peterson, Gillam, Spencer, & Gillam (2010) *	3 t	6-8 years; EA; English	Single-subject multiple baseline across participant	Individual	10x 90-minute sessions 1090 total minutes	Yes	Yes	a) Story grammar episode structure	a) n/a	a) 80%, 70%, 70% (PNDs)
								b) Causality	b) n/a	b) 60%, 60%, 50% (PNDs)
								c) Temporal adverbial clauses	c) n/a	

Study	N	Participants	Design	Grouping	Sessions			Outcomes		
								d) Adverbs		c) 0.67, -0.59, 0.46
								e) Elaborated noun phrases	d) n/a	d) 0.88, 1.5, 1.25
									e) n/a	e) 0.87, 0.89, 1.29
								f) Mental and linguistic verbs	f) n/a	f) -0.88, 0.70, 1.15
								g) Reference cohesion		
								h) MLU	g) n/a	g) n/a
									h) n/a	h) 0.62, 1.22, 0.10
								i) TNW		
								j) NDW	i) n/a	i) 0.02, 1.52, 1.3
									j) n/a	j) 0.16, 1.36, 1.53
Spencer & Slocum (2010)	5 t	Pre-school children aged 4;6 to 5;1 at risk of language impairment; culturally and linguistically diverse; with narrative difficulties.	Single-subject design; repeated measures; pre-post	Mixed ability grouping; 3x groups of 4 5 participants monitored over treatment period.	10x 7-18-minute sessions (Ave. 12 minutes per session) 840 -2160 total minutes	Yes	Yes	INC Scores for: a) Narrative retells (repeated measure) b) Probed personal narratives (repeated measure)	a) n/a b) n/a c) n/a	a) 53%, 100%, 58%, 94%, 72% (PND) b) Not reported

								c) Pre- and post-personal experience generations		c) Not reported
Gillam, Gillam, & Reece (2012)	16 t 8 c	School-age children aged 6;0 to 9;0 with language impairment; attending schools in Alabama	Randomized control trial, group design; pre-post Group 1: CLI Group 2: DLI Group 3: Control – No Rx	Groups of 8	3x 50-minute sessions/week for 6 weeks; 900 total minutes	No	No	a) Recalling sentences b) Formulating sentences c) TNL-NLAI d) TNL-Comp e) MISL macro f) MISL micro	Group 1: a) .004 (Y) b) .013 (Y) c) .021 (Y) d) .015 (Y) e) .270 (No) f) .003 (Y) Group 2: a) .054 (N) b) .042 (Y) c) .257 (N) d) .265 (N) e) .525 (N) f) .012 (Y)	Group 1: a) 3.08 (Lrg) b) 0.99 (Lrg) c) 0.43 (Sml) d) 0.93 (Lrg) e) 0.45 (Mod) f) 1.19 (Lrg) Group 2: a) 1.48 (Lrg) b) 0.76 (Mod) c) -0.04 (Sml) d) 0.30 (Sml) e) -0.24 (Sml) f) 0.97 (Lrg)

Note: * in Peterson 2010 Systematic Review; Effect size (ES) calculated using Cohen's d; N = no; Y = yes; Macro = macrostructure; Micro – microstructure; Comp = comprehension; Mnt = maintenance; Gen = Generalisation; Sig. = statistical significance; DV = dependent variable(s); NARA = Neale Analysis of Reading Ability – 3rd Edition; # = number; C&I utterances = complete and intelligible utterances; MLY = mean length of utterance; TDW = total number of different words; TNW = total number of words; TNL-Pr = Tracking Narrative Language Progress; MLCU-M = mean length of communication units in morphemes; NDW = number of different words; MISL = Monitoring Indicators of Scholarly Language; SLP = Speech Language Pathologist; CELF = Clinical Evaluation of Language Fundamentals; NQ = Narrative Quality; TNL = Test of Narrative Language; NLI – Narrative Language Ability Index; PND = Percentage of Non-overlapping Data; 90% = very effective; 70%–90% = effective; 50%–70% = questionable; <50% = ineffective; Rx = therapy; Lrg = large; Sml = small; Mod = moderate.

Appendix B: Gradual Release of Responsibility Framework
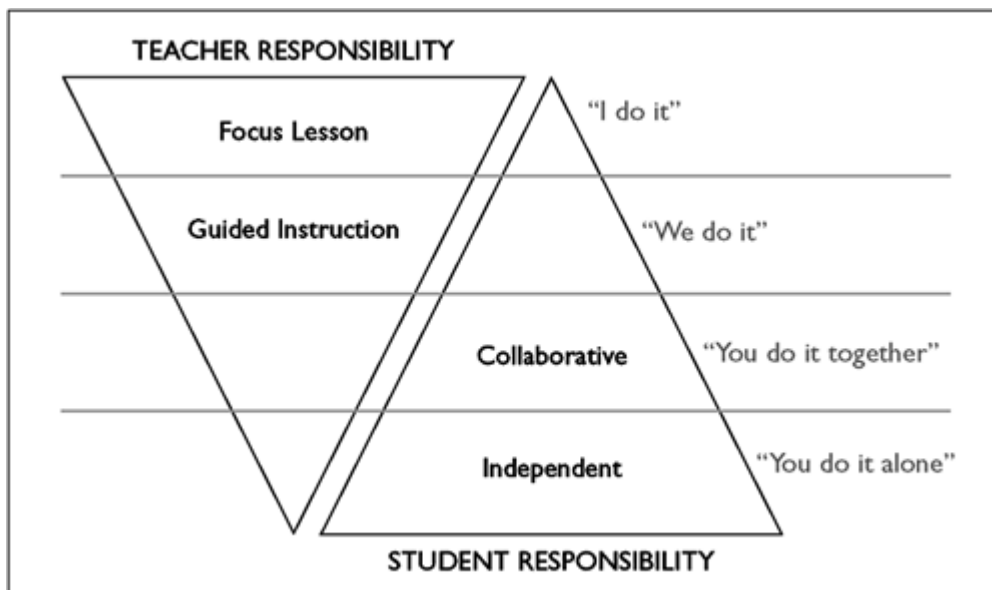
Gradual Release of Responsibility Framework (Fisher & Frey, 2008).

Appendix C: Explicit Teaching Scripts

CONCEPT	EXPLANATION
STORY STRUCTURE	*"When we tell stories the have lots of important parts. All the parts of a story are shown here on this picture of a book.* *We have the **beginning** of the story – here we say **who** was in the story, **where** the story happened and **when** the story happened. The beginning of the story is called the **setting**.* *After the setting, we have the middle of the story. In the middle of the story there is usually a **problem**. The problem makes our character (the "who" in the story), come up with a **plan** to fix the problem. Then the character does lots of different things and goes on an **adventure** to try and fix the problem.* *At the **end**, the character finds a **solution** to the problem and fixes it.* *When we tell a story, we must make sure that we include all of the parts, so that people can understand what happened in the story."* ALTERNATIVESCRIPT WITH EXAMPLES *"When we tell stories, they have lots of important parts. All the parts of a story are shown here on this picture of a book.* *We have the **beginning** of the story – here we say **who** was in the story, **where** the story happened and **when** the story happened. The beginning of the story is called the **setting**.* *In this story, our **who** is X ...*show picture and name) *And **where** are they? – they are Y...* (show picture and name) *And **when** is it? It is Z ...*show picture and name) *So X, Y and Z – are the setting.* *After the setting, we have the middle of the story. In the middle of the story there is usually a **problem**. The problem makes our character (the "who" in the story), come up with a **plan** to fix the problem.* *In our story, the problems is XX...*show picture and name) *And the plan is XX...*show picture and name)

	*Then the character does lots of different things and goes on an **adventure** to try and fix the problem.*
	*At the **end**, the character finds a **solution** to the problem and fixes it.*
	*In our story the character does XX…*show picture and name)
	*And at the end he finds a solution to the problem when he XX…*show picture and name)
	When we tell a story, we must make sure that we include all of the parts, so that people can understand what happened in the story."
LISTENING	*"When we play our games, we need to make sure that we follow our group rules and show whole body listening.*
	Whole body listening means, we keep our hands and body still, eyes looking, ears listening, mouth closed and our brain switched on. This means we are ready to listen and ready to learn."
SETTING	*"At the beginning of a story – we need to say **who** is in our story, **where** the story happens, **when** the story happens and **what** the character is doing.*
	*The beginning of the story is called the **setting**."*
	The setting in the story "XXX" is…" (show picture and name)
WHEN	*"At the beginning of the story we need to say **when** the story happened. Here we have a picture of a clock to remind us to say **when** the story happened.*
	***When** the story happened is what **time or day** that the story happened.*
	*We can have **big whens**, like the time of year or a special time of year or a season. So, we could say, "At Christmas time", or "On my birthday", or "In winter". They are all different types of whens.*
	*We can also have **medium whens** – the month of the year, the day of the week. So, we could say "yesterday, today or tomorrow", or we could say "on Monday", or "Last week". They are also different types of whens.*
	*And we can also have **little whens** – the time of day. So, we can say, "This morning" or "At night time".*
	*These are all different types of **whens**, that tell us the **time or day** that the story happened. This is part of our story setting.*
	*The **when** in the story "XXX" is…*(show picture and name)

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	*What **whens** do you know about?"*
WHO	*"At the beginning of the story we need to say **who** was in the story. Here we have a picture of a face to remind us to say **who** was in the story.* *The **who** in the story tells us the **character** – **who** the story is about.* *The **character** can be a person, an animal or sometimes a thing.* *Some **characters** that you may know from different stories are Thomas the Tank, Ben 10, Maisy and Dora the Explorer. These are all **characters** that are in different stories.* *We find out the **character** is, **who** the story is about, at the beginning of the story, in the setting.* *The **who** in the story "XXX" is…*(show picture and name) *What **whos** do you know about?"*
WHERE	*"At the beginning of the story we need to say **where** the story happened. Here we have a picture of a sign to remind us to say **where** the story happened.* *The **where** in the story tells us the place where the story begins.* *The **where** can be lots of different places, like in the back yard, at the beach, on the moon, at the zoo or at school.These are all different **wheres** that a story can start.* *We find out **where** the story starts at the beginning of the story, in the setting.* *The **where** in the story "XXX" is…*(show picture and name) *What **wheres** do you know about?"*
WHAT	*"At the beginning of the story we need to say **what** the character was doing. Here we have a picture of a man with his arms out like this (demonstrate action) to remind us to say **what was happening**.* *The **what** in the story tells us the what the character was doing– the **action**.* *The **what** can be lots o different actions – like going swimming, watching a movie, building a sandcastle.*

	*These are all different **actions** – different whats.* *We find out **what** the character is doing, at the beginning of the story, in the setting.* *The **what** in the story "XXX" is…(show picture and name)* *What **actions** do you know?"*
MIDDLE	The middle of the story includes the initiating event, internal response and plan. This is followed by a series of actions completed by the main character.
STORY SPIRAL	*"The story spiral is a very important part of the story. In the story spiral, there is a problem, a reaction or feeling and then a plan. Every good story must have a story spiral in it."*
INITIATING EVENT	*"In the middle of the story we have a **problem**. This **problem** starts the story. To help us remember the problem in the story, we have a picture of a thumbs down.* *The **problem** is very important because it starts the story, it makes the character come up with a plan to do something.* *The **problem** in the story XX is…* (show picture and name) *Can you think of any other **problems** that happened in stories?"*
INTERNAL RESPONSE **(Feelings)**	*"Usually after the problem, we find out about the characters' **feelings** – we find out if they are happy or sad or scared.* *This picture of a heart reminds us to include the character's feelings.* *A character can have lots of different feelings – they can feel sad, angry, happy, excited, nervous, tired. The character has these feelings because ofthe problem. The problem causes these feelings.* *In the story XX the character felt…* (show picture and name) *Can you think of any other feelings?"*
PLAN	*"After the problem, the character comes up with a **plan**. This **plan** will help them fix the problem. This picture of a person thinking helps us remember to include the **plan**.* *The **plan** in the story XX is…(show picture and name)*

	*Can you think of any other **plans** to try to fix that problem?"*
ACTIONS/ ATTEMPTS	*"In the middle of the story, the character goes on an adventure to try and fix the problem. In the middle of the story there are lots of **actions**, the character **does** lots of different things.* *This picture of a question mark helps us to remember to include all of the actions in the story –WHAT the character does in the story.* *In the story XX, lots of things happen in the middle of the story…"* (show pictures, sequence and name)
ENDING	Contains a resolution and an ending or conclusion.
SOLUTION	*"At the end of the story, there is action/event that happens that **solves the problem**. This is called the **solution**.* *To help us to remember to include the **solution** in our story – we use a picture of a thumbs up.* *The **solution** in the story XX is…"* (show pictures, sequence and name)
CONSEQUENCE/ CONCLUSION	*"Also at the end of the story we include the **consequence**. The consequence is what happens after the resolution that fixes the problem. This is the WRAP-UP picture that helps us remember to include the **consequence**.* *The **WRAP-UP** tells us what happens after all the events in the story and it usually comes at the end of the story.* *The **wrap-up** in the story XX is……"* (show pictures, sequence and name)
ENDING	*"At the very end of the story, when we have finished telling our story we say, "The end", or "That's the end of the story"*

Appendix D: Book Share Protocol

Book Share Protocol 1: First Read Through (20 minutes)

Before Reading: Activate Prior Knowledge and Make Predictions (5 minutes)

- Read title and link to self.

  "This story is called "The Very Cranky Bear" by Nick Bland. Who has heard this story before? Does anybody know what Cranky means?"

- Describe what you can see and make an inference.

  *"I can see a big black bear – a bear is a really big animal that lives in the woods. This bear looks angry (*imitate action*). I wonder what he is angry about?"*

- Explain who the story is about, the place that the story takes place and the main plot of the story.

  "The story tells us about a group of animals who live in a jungle with a very cranky bear.

- Picture share, label and comment on what you are seeing.

  "Let's look at the pictures in the story."

During Reading: Identification of Narrative Macrostructure Elements (5 minutes)

- Read story and stick narrative icons into the book as each macrostructure element is revealed.

- As each element is revealed during the reading, place the palm-sized icon onto the page. Use non-verbal gestures to draw the students' attention to the icon as you stick it in.

  "Now we are going to read the story. I want you to turn your listening ears on and listen carefully to the story. While I read the story I want you to listen out for our special parts of the story – who is in the story, where the story happened and when the story happened. I will stick our special icons into the book to help us remember."

After Reading: Recalling Narrative Macrostructure Elements (10 minutes)

- Ask Discourse Comprehension Questions and complete story planner as each question is answered.

- Students take turns at selecting the picture from the centre of the group and sticking it up on the storyboard.

- Provide clear model of each element/event as they are identified, using the modified script.

- *"Great job everyone. You all listened so well to the story. Now we are going to make our storyboard and stick pictures into the boxes where they belong. You can all help me."*

  - *Who* was the story about? (Character/Who)

  - *Where* did the story take place? (Where/Place)

  - *When* did the story happen? (When/Time)

  - *What* happened first in the story? (Initiating Event/Problem)

  - *What* was the problem? (Initiating Event/Problem)

  - *How* did this make him *feel*? (Internal response)

  - *What* was the character thinking? (Internal response/Goal)

  - *What* did he *do*? (Actions/Attempts)

  - *How* did he *fix* the problem? (Resolution)

  - *What happened* when the character did that? (Consequence)

CONTINGENT RESPONSES

EXPLICIT FEEDBACK– DURING AND AFTER BOOK SHARE TARGETTING NARRATIVE MACROSTRUCTURE ELEMENTS
Recast Answer with clarification/expansion E.g. *"Good job, the character in our story is Edwina. That's who is in the story."*
Positive and Explicit Praise E.g. *"Great listening!"*

CUEING HIERARCHIES

ANSWERING QUESTIONS
Refocus student to visual and auditory input and repeat question. E.g. gesture/point to picture E.g. use student's name to call to attention. E.g. *"Listen carefully"*.
Repeat question.
Rephrase question.
Repeat question with forced choice alternative.
Repeat question with yes/no question.
Model the answer.
Model the answer and request repetition from the student.

Book Share Protocol 2: Second Read Through

Before Reading: Activate Prior Knowledge and Make Predictions (5 minutes)

▪ Read title and link to self.

"This story is called "The Very Cranky Bear" by Nick Bland. Can everyone remember hearing this story?

▪ Discuss who the story is about, the place that the story takes place and the main plot of the story.

"Who can remember what happened in the story? The story was about a group of animals who live in a jungle with a very cranky bear."

▪ Picture share, label and comment on what you are seeing.

"Let's look at the pictures in the story, to help us remember what happened."

During Reading: Identification of Narrative Macrostructure Elements (5 minutes)

▪ Read story and point to narrative icons stuck in the book from first read through.

▪ As each element is revealed during the reading, point to the palm-sized stuck onto the page.

▪ Provide positive praise and feedback if students join in during shared book reading.

"Now we are going to read the story again. I want you to turn your listening ears on and listen carefully to the story. You can join in if you know what comes next."

After Reading: Recalling Narrative Macrostructure Elements (5 minutes)

▪ Ask Discourse Comprehension Questions and revise story planner.

▪ Elicit student responses and active engagement throughout questions.

▪ Provide clear model of each element/event as they are identified, using the modified script.

"Great job everyone. You all listened so well to the story. Now we are going to have a look at our storyboard with all the pictures from the story. Can you remember all the parts of the story?"

    ▪ *Who* was the story about? (Character/Who)

    ▪ *Where* did the story take place? (Where/Place)

    ▪ *When* did the story happen? (When/Time)

    ▪ *What* happened first in the story? (Initiating Event/Problem)

- *What* was the problem? (Initiating Event/Problem)
- *How* did this make him *feel*? (Internal response)
- *What* was the character thinking? (Internal response/Goal)
- *What* did he *do*? (Actions/Attempts)
- *How* did he *fix* the problem? (Resolution)
- *What happened* when the character did that? (Consequence)

CONTINGENT RESPONSES

EXPLICIT FEEDBACK– DURING AND AFTER BOOK SHARE TARGETTING NARRATIVE MACROSTRUCTURE ELEMENTS
Recast Answer with clarification/expansion   E.g. *"Good job, the character in our story is Edwina. That's who is in the story."*
Positive and Explicit Praise   E.g. *"Great listening!"*

CUEING HIERARCHIES

ANSWERING QUESTIONS
Refocus student to visual and auditory input and repeat question.   E.g. gesture/point to picture   E.g. use student's name to call to attention. E.g. *"Listen carefully"*.
Repeat question.
Rephrase question.
Repeat question with forced choice alternative.
Repeat question with yes/no question.
Model the answer.
Model the answer and request repetition from the student.

<u>**Book Share Protocol 3: Third Read Through**</u>

Before Reading: Activate Prior Knowledge (2 minutes)

▪ Read title and link to self.

"This story is called "The Very Cranky Bear" by Nick Bland. Can everyone remember hearing this story?

▪ Discuss who the story is about, the place that the story takes place and the main plot of the story.

"Who can remember what happened in the story? The story was about a group of animals who live in a jungle with a very cranky bear."

▪ Picture share, label and comment on what you are seeing.

"Let's look at the pictures in the story, to help us remember what happened."

During Reading: Identification of Narrative Macrostructure Elements (5 minutes)

▪ Read story and point to narrative icons stuck in the book from first read through.

▪ As each element is revealed during the reading, point to the palm-sized stuck onto the page.

▪ Provide positive praise and feedback if students join in during shared book reading.

"Now we are going to read the story again. I want you to turn your listening ears on and listen carefully to the story. You can join in if you know what comes next."

After Reading: Recalling Narrative Macrostructure Elements (5 minutes)

▪ Ask Discourse Comprehension Questions and revise story planner.

▪ Elicit student responses and active engagement throughout questions.

▪ Provide clear model of each element/event as they are identified, using the modified script.

▪ *"Great job everyone. You all listened so well to the story. Let's look at our storyboard with all the pictures from the story. Can you remember all the parts of the story?"*

 ▪ *Who* was the story about? (Character/Who)

 ▪ *Where* did the story take place? (Where/Place)

 ▪ *When* did the story happen? (When/Time)

 ▪ *What* happened first in the story? (Initiating Event/Problem)

- *What* was the problem? (Initiating Event/Problem)
- *How* did this make him *feel*? (Internal response)
- *What* was the character thinking? (Internal response/Goal)
- *What* did he *do*? (Actions/Attempts)
- *How* did he *fix* the problem? (Resolution)
- *What happened* when the character did that? (Consequence)

CONTINGENT RESPONSES

EXPLICIT FEEDBACK– DURING AND AFTER BOOK SHARE TARGETTING NARRATIVE MACROSTRUCTURE ELEMENTS
Recast Answer with clarification/expansion   E.g. *"Good job, the character in our story is Edwina. That's who is in the story."*
Positive and Explicit Praise   E.g. *"Great listening!"*

CUEING HIERARCHIES

ANSWERING QUESTIONS
Refocus student to visual and auditory input and repeat question.   E.g. gesture/point to picture   E.g. use student's name to call to attention. E.g. *"Listen carefully"*.
Repeat question.
Rephrase question.
Repeat question with forced choice alternative.
Repeat question with yes/no question.
Model the answer.
Model the answer and request repetition from the student.

Appendix E: Adapted Retell Script

Page Number	Text	Narrative Element
Cover Page	The story is called Edwina the Emu by Sheena Knowles and Rod Clement.	Title & Author
1 & 2	Once upon a time, There were two emus – Edwina and Edward, Who lived at the zoo.	When Where Who Initiating Event
3 & 4	One day, Edwina announced, "I've laid 10 eggs!" "Yeek!" shouted Edward, "10 eggs! You've got to be joking." He felt worried. "Don't worry," said Edwina, "I've got a plan. I'll go and find a job".	Internal Response Plan
5 & 6	First, Edwina tried to be a ballerina, but that didn't work. "Yeek!" said the man, "An emu dance ballet? You've got to be joking!"	Event 1
7 & 8	Next, Edwina tried to be a chimney sweep. "Yeek!" said the lady, "An emu sweep chimney's? You've got to be joking!"	Event 2
9 & 10	After that, Edwina tried to be a waiter. She served tea to a man. But then, the man asked for eggs for breakfast. "Yeek!" said Edwina, "Eggs for breakfast? You've got to be joking!".	Event 3
11 & 12	So, Edwina rushed home to Edward. When she got home she said "From now on, we will look after the eggs together."	Resolution
27 & 28	At the end, there were twelve emus who lived at the zoo - Edwina and Edward and their ten little chicks. The End.	Ending

Appendix F: Contingent Responses

CONTINGENT RESPONSES

EXPLICIT FEEDBACK– DURING AND AFTER BOOK SHARE TARGETTING NARRATIVE MACROSTRUCTURE ELEMENTS
Recast Answer with clarification/expansion   E.g. *"Good job, the character in our story is Edwina. That's who is in the story."*
Positive and Explicit Praise   E.g. *"Great listening!"*

CUEING HIERARCHIES

ANSWERING QUESTIONS
Refocus student to visual and auditory input and repeat question.   E.g. gesture/point to picture   E.g. use student's name to call to attention. E.g. *"Listen carefully"*.
Repeat question.
Rephrase question.
Repeat question with forced choice alternative.
Repeat question with yes/no question.
Model the answer.
Model the answer and request repetition from the student.

Appendix G: Repeated Narrative Generation Sample Task Instruction

Repeated Narrative Generation Task – Pilot Study

 "Look at that picture and think of a story to tell me. When you're ready, tell me a story about what's going on in the picture."

Verbal prompts allowed:

"Yeah?"

"Mhmm"

"Anything else?" / "Is that it?"

Non-verbal prompts allowed:

Nodding

Smiling and waiting expectantly

Repeated Narrative Generation Task – Efficacy Trial

 "Look at the picture and think of a story to tell me. Oh, something's happening. Can you tell me a story about what's happening in the picture?"

Verbal prompts allowed:

"Yeah?"

"Mhmm"

"Anything else?" / "Is that it?"

Non-verbal prompts allowed:

Nodding

Smiling and waiting expectantly

Appendix H: Instances of Microstructure Features in Model Texts

Retell Script	Number of Conjunctions	Number of Adjectives	Number of Adverbials	Number of Complex C-Units
Rhino's Great Big Itch by Natalie Chivers – adjusted script	13	9	1	0
Wombat Stew by Marcia Vaughan – adjusted script	13	42	8	1
The Very Cranky Bear by Nick Bland – adjusted script	10	29	11	3
Possum Magic by Mem Fox – adjusted script	13	9	3	4
Edwina the Emu by Sheena Knowles – adjusted script	6	4	4	2