THE IMPACT OF EXPRESSIVENESS ON THE LISTENING COMPREHENSION OF STORYBOOKS BY PREKINDERGARTEN CHILDREN

by

WILLIAM A. MIRA

(Under the Direction of PAULA J. SCHWANENFLUGEL)

ABSTRACT

The purpose of the study was to determine the effect of expressiveness on the comprehension of storybooks by four and five year old pre-kindergarten children. Ninety-two prekindergarten children ($M_{age}$ = 57.26 months, $SD_{age}$ = 3.89) listened to expressive or inexpressive recordings of two similar stories. Story comprehension was tested by a free recall as well as a cued recall assessment consisting of three sub-scores and a total score. ANOVAs examined the effects of reading expressiveness, story type, and prosody comparison type, on comprehension scores. Children's total cued recall scores were significantly higher ($F(1, 88) = 6.127$, $p = .015$, $\eta^2 = .070$) following expressive readings than inexpressive readings. The present study provides preliminary evidence that prosodic readings improve listening comprehension. Results support common recommendations to read expressively to young children as they may benefit the most from this practice due to limited working memory and enhanced sensitivity to prosody.

INDEX WORDS: Prosody, Comprehension, Prekindergarteners

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# DEDICATION

To my family for their unwavering support and inspiration.

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# CHAPTER 1

## INTRODUCTION AND LITERATURE REVIEW

The comprehension of a text, whether written or spoken, is a complex process in which information from a variety of sources is utilized. Both reading and listening comprehension are vital for academic success and consequently these processes have been important subjects of study as we continually strive to better educate our children. Because they cannot yet read, young children are read storybooks aloud by adults and the extent to which these stories are comprehended is an area of interest. In fact, the preschool years have received increased attention over the last 20 years as a crucial time for the development of early skills that impact the successful transition to school and reading (Wasik, Bond, Hindman, 2006). During this time ample research has been done linking quality read-alouds with a host of benefits for children including: improved vocabulary, language, print concepts, comprehension, and attitudes about reading (Hall & Williams, 2010; Kindle, 2009; Mol, Bus, de Jong, Smeets, 2008; Morrison & Wlodarczyk, 2009; Wasik et al, 2006). Specifically parent-child book sharing has been researched as an important part of children's development of literacy skills.

In their meta-analysis of empirical studies on parental reading to preschoolers, Bus, van IJzendoorn, and Pellegrini (1995) found moderate effect sizes for the relationship between the amount of parental book reading to children and children's reading achievement. According to Bus (2003), the effectiveness of parental read-alouds is in part related to the unique social-emotional relationship between the parent and the child. Strong attachment security between parent and child leads to increases in the quality and quantity of book sharing in the home.

Parents with secure attachments to their children are able to tailor a story to their child using their intimate knowledge of their child's interests (Bus, 2003). This practice makes read-alouds more attractive to children who may not have been interested in the original story. Nevertheless, while studies show that reading aloud to children can have positive effects, these same studies also show that there are better and worse ways of carrying out book reading with young children.

Research into what makes read-alouds effective for parents and for teachers has often focused on reading strategies like co-constructive reading, didactic-interactive reading, performance-oriented reading, dialogic reading, and text talk (Dickinson & Smith 1994; Kindle, 2009; Lane & Wright, 2007; Mol et al, 2008; Zevenbergen & Whitehurst, 2003). This line of inquiry deals with the amount and type of interaction between the reader and the listener before, during, and after the reading. For instance we know that parents who engage in elaboration and clarification statements during reading can promote greater levels of abstract thought which leads to increased literacy achievement (Lynch, Anderson, Anderson, & Shapiro, 2008). To date, this research has looked more at the talk and activities surrounding the reading rather than the actual reading itself. In general the belief is that stories should be read in a lively, expressive way and it is taken for granted that read-alouds should be performed thusly. In fact, Morrison and Wlodarczyk (2009) define read-alouds as an instructional practice where "the reader incorporates variations in pitch, tone, pace, volume, [and] pauses…"; the same set of characteristics that comprise reading prosody (Benjamin & Schwanenflugel, 2010). Researchers in the field of adult-child read-alouds have thus far only speculated as to its potential for positive contributions in areas such as listening comprehension and student engagement (Teale, 2003).

Prosody has received increased attention in the field of psycholinguistics in recent years (Eckstein & Friederici, 2006). To our knowledge, experimental research identifying an explicit

causal connection between prosodic reading and listening comprehension has yet to be carried out, however. The present study seeks to contribute to our scientific knowledge by filling this gap in the read-aloud literature for prekindergarten age children. The purpose of this study is to provide some preliminary knowledge regarding the effect that prosodic reading by itself can have on comprehension of storybooks in young children.

Because there may be an effect of prosody on directing comprehension in general, we will review previous research on prosody and its effect on comprehension. We will then discuss the possibly unique effect of prosody on children and their listening comprehension.

**Prosody**

Prosody, regarded as the music or melody of language, is a term that refers to the suprasegmental acoustic features of speech. Prosody is what differentiates choppy, word by word reading from fluent, expressive reading or synthesized speech from natural speech. It describes the patterns associated with changes in rhythm and intonation, pausing, and the shortening or lengthening of words (Speer et al, 1996; Hirschberg, 2002). More specifically prosody consists of variations in pitch as well as word stress and duration (Wingfield & Tun, 2007). Taken together prosody and its constituent units carry an enormous amount of information in the auditory stream.

Pitch is a basic feature of prosody that relates to the frequency of vibration of the vocal chords and makes up the fundamental frequency, or $F_0$, of the acoustic signal. In terms of its measurement there can be no definite levels of comparison with pitch because it varies from person to person. For instance male voices are generally distinguished by a lower average pitch than female voices. Therefore in experimental situations pitch must be considered in relation to the speakers own vocal range.

Pitch communicates meaning in several ways for the listener. One of the most well studied features of pitch is its tendency to decline over the course of an utterance, a phenomenon called pitch declination that is commonly associated with declarative sentences (Ladd, 1984; Wichmann, 1994). Moreover the presence of yes-no questions in speech are accompanied by rising pitch however Miller & Schwanenflugel (2006) indicate that this is not the case for every question type. Additionally speakers use a drop in pitch at the beginning of relative clauses and parentheticals followed by a return to the original pitch level at the end of said clause (Local, 1992; Mazeland, 2007).

Stress is generally thought of as loudness or the intensity of the auditory signal. This definition can be problematic however as two sounds with the same intensity can be perceived as different in terms of loudness based on differences in pitch and duration (Himmelmann & Ladd, 2008). Therefore Himmelmann & Ladd (2008) suggest describing stress as the "force of articulation" which speaks not just to intensity but the distribution of that intensity in the spectrum of a given sound. Nevertheless, for the purposes of this paper, I will use the term stress as it is generally the accepted term in the literature.

Stress can convey important information in its own right. For instance stress is the only thing that distinguishes homographic nouns and verbs such as *cónvert* and *convért* or *cómpound* and *compóund*; the same pattern of stress, strong to weak for nouns and the opposite for verbs, governs the differentiation of these words in speech (Kelly & Bock, 1988). Stress is used to emphasize important segments or words in a sentence and it allows a listener to sentences with similar forms but different meanings (Dowhower, 1991). Moreover, the combination of stress and timing is used in English is used to separate words in the speech stream with stressed syllables generally appearing at the beginning of nouns and verbs (Whalley & Hansen, 2006).

Duration is a feature of prosody which amounts to the lengths of phonetic segments in speech contributing to pacing or rhythm. Like pitch, duration is a relative measure depending on the average speed of a speaker or reader where faster readers will have shorter durations of speech segments than slower readers. Often tied to stress, duration is a prosodic element that is affected by a host of factors.

Almost universally vowels tend to be longer before voiced consonants as opposed to voiceless consonants and vowels are more amenable to shortening and lengthening (Himmelmann & Ladd, 2008). Similarly vowels are longer in stressed words than in unstressed words (Temperley, 2009). Consonants, however, tend to be longest at the beginning of words, somewhat shorter at the end of words, and shortest in the middle of words (Cutler et al, 1997). Another common feature of duration is known as phrase-final lengthening, pre-pausal lengthening, or final syllable lengthening, and it occurs at syntactic boundaries. Phrase-final lengthening describes the process in which the last syllable of a major phrase is lengthened, often corresponding with pitch declination (Snow, 1994).

Finally pausing is also a relevant piece of prosody. Pausing is an interruption or brief silence in the auditory stream that happens both within and between sentences. Overall pauses are longer when they occur at the ends of sentences than when they occur in the middle of sentences (Grosjean et al., 1979). The duration of pauses can signal discourse information as speakers use longer pauses preceding topic shifts than they do at other discourse boundaries (Krivokapi, 2007). Pauses are longer after sections of text that contain higher level discourse information (den Ouden, Noordman, & Terken, 2009) and between the major syntactic elements of a sentence (Speer et al, 1996). In addition, pauses are more likely to occur at syntactic boundaries with more complex syntactic constituents (Grosjean et al., 1979).

**Prosody and children**

Young children are especially influenced by prosody. Although they do not become proficient in the production of prosodic intonation until the age of 12 or 13 (Wells & Pepe, 2003) young children are more reliant on prosodic language than adults with regards to meaning making (Schreiber, 1987). One line of research which gives us insight into this phenomenon is that of infant directed speech or motherese. Infant directed speech, compared with adult directed speech, consists of a higher and more variable pitch contour, a slower tempo, and longer pauses in between utterances (Kitamura & Burnham, 1998). It has been shown conclusively that infants can not only recognize, but prefer, infant directed speech to less expressive forms (Cooper & Aslin, 1990; Fernald, 1991, 1993; Santarcangelo & Dyer, 1988; Pegg, Werker, & McLeod, 1992). What's more, this highly expressive speech can benefit children in their basic development of language.

Research has found that infant directed speech can facilitate language acquisition in important ways (Fernald & Mazzie, 1991; Werker et al, 2007). Through listening to motherese young pre-literate children are able to learn basic phonetic categories such as vowels (Werker et al, 2007), and detect phrase boundaries (Hirsh-Pasek et al., 1987; Nelson, Hirsh-Pasek, Jusczyk, & Cassidy, 1989). In the absence of written language prosodic information is likely a child's only window into the structural aspects of language. If prosody helps children to internalize language at such a young age then the claim that young children are more sensitive to prosodic elements in speech is reasonable.

It bears mentioning that read speech and spontaneous speech, while similar in some ways, are not equivalent. Read speech is distinguishable from spontaneous speech partly based on the distribution and realization of prosodic boundaries. A large discrepancy between the two

comes from prosodic boundaries in minor phrases which are rare in read speech but common in spontaneous speech (Blaauw, 1994). Furthermore fewer pauses and smaller variability in pitch make read speech faster and generally less expressive than spontaneous speech (Blaauw, 1994; Kadi-Hanifi, 1991).

## Prosody and comprehension

For some time scholars have suspected a link between prosody and comprehension. Research has suggested that prosody can influence comprehension through various aspects of language including discourse and pragmatic information, syntactic information and lexical information. The abundance of evidence leads us to believe that the effect of prosody on listening comprehension is salient; however we have yet to effectively test this phenomenon at the story level.

### Discourse level effects and pragmatics.

One of the major ways that prosody could influence comprehension is through discourse level effects that serve to draw attention to the salient features in text. Prosody can focus cognitive resources on important words or ideas that make the overall message easier to understand. They can also give the listener insight into emotions or intentions that are not explicit on paper. Specifically, prosody draws a listener's attention to new information, contrastive information, and to emotion and irony.

In English, prosody is the primary indicator of focus; the most informationally important element of a sentence (Carlson, Dickey, Frazier, & Clifton, 2009). Focus can either introduce completely new information, informational focus, or it can distinguish information from previously stated information, contrastive focus. Prosody, as well syntactic information, makes the comprehension of text easier by helping the reader to identify the focus of a sentence.

As a listener processes an incoming auditory signal informational focus is indicated via stress and pitch accents that highlight the new information in the discourse. Carlson et al. (2009) provide a good example of this:

1. Jim introduced PAM.

A higher pitch and/or stress on the word PAM indicates that she is the focus of the sentence, not Jim (Warren, 1996). This prosodic cue also communicates that Jim's introduction of someone is given information but the fact that it was Pam who was introduced was not previously known (Carlson et al., 2009). By better attending to the focus of a sentence the listener should more readily comprehend the most important parts of the sentence and avoid utilizing cognitive resources on given information.

Alternatively, contrastive focus uses prosody to clearly differentiate two pieces of information (Carlson et al., 2009; Hirschberg, 2002). Ito and Speer (2008) illustrate contrastive prosody with their experiment in which participants were given instructions on hanging Christmas ornaments on a tree. The experiment found that pitch accents on color adjectives increased early looks to relevant objects when the color contrasted with the previous instruction (i.e. hang the red ornament followed by hang the GREEN ornament). In other words the experiment showed that prosodic information facilitated the capacity to differentiate between two contrasting, but related, objects. This ability could be important to the comprehension of a story by assisting in the avoidance of misinterpretations that could change the meaning of conversations or events.

The use of direct quotations is another example of prosody and its effect on focus. When an author chooses to use direct quotations they bring special attention to that information as opposed to if that author had quoted that information indirectly. This is achieved through a

greater pitch range for direct quotations when compared with the surrounding text (Schwanenflugel & Benjamin, 2011).

Focus can also be identified through interaction of prosody and syntax in the use of clefting structure. For instance the prosody of the it-clef can serve to highlight specific information in a sentence (Schwanenflugel & Benjamin, 2011). The following example shows the difference between the it-clef and a normally structured sentence:

2. It was JIM who was fired.
3. Jim was fired.

In sentence (2) the syntax and stress on JIM emphasizes the fact that it was he, and no one else, was fired. Cleft constructions are yet another example of how prosody can serve to guide us to concentrate on the most salient information.

Prosody can also communicate hierarchical information in discourse indicating levels of significance in text. Key information is distinguished by elongated pauses preceding and following it as well as by the presence of higher pitch peaks (den Ouden, Noordman, & Terken, 2009; Noordman, Dassen, Swerts & Terken, 1999). In comparison, speech segments with lower level, supporting information are marked by lower pitch peaks. Discourse hierarchy provides yet another example of prosodic information helping to inform the reader about where to spend limited cognitive resources in order to comprehend a text better.

Other examples of the discourse level effects of prosody are demonstrated by the differences between causally related statements and topic shifts in speech. den Ouden, Noordman, and Terken (2009) studied the prosody of read aloud news reports and found that causally related segments are read faster, and have shorter pauses between them, than segments that were not causally related. The faster pace and shorter pausing directs the listener to connect the content of both segments. Conversely, when a speaker shifts topics they generally move to a

slower pace accompanied by greater sentence-final lengthening (Smith, 2004). These prosodic cues give the listener insight into the nature of the information that they are receiving.

In terms of pragmatics, prosody plays a crucial role in indicating a speaker's emotions; a skill that can be important for inference making. Emotion can be revealed through lexical choices but in a sentence like "Jack is late" prosody is the primary vehicle that communicates how the speaker feels about Jack being late (Wilson & Wharton, 2006). Emotional speech is often accompanied by a raised mean pitch and amplitude (Cowie, Douglas-Cowie, & Wichmann, 2002) but specific emotions are characterized by their own prosodic profiles. For instance uncertainty is typified by a sustained rise in pitch (Hirschberg, 2002). Rapid tempo and high mean pitch, as well as highly variable pitch, are indicative of happiness whereas the opposite is true for sadness (Scherer, 1986). For a more comprehensive look at prosody and emotion see Pittam & Scherer (1993). In a narrative emotional language can indicate a character's attitudes towards another character or situation which can in turn lead to more accurate inference making concerning their motivations. It is possible that this process could lead to better comprehension of stories.

Like emotion, irony is also conveyed by prosody and can communicate information that is not explicit in the text. Much of the research into verbal irony has included dissimilar subcategories of irony such as rhetorical questions, hyperbole, understatement, and sarcasm (Bryant, 2010). This may be problematic as these subcategories are associated with different intentions such that they may not result in similar prosodic contours. Rockwell (2000) focused solely on sarcastic speech and determined that sarcasm is characterized by a slower tempo with greater intensity and a lower pitch. Even so, a different brand of sarcasm could show a different intonational pattern as is the case in a sarcastic display of anger. In this scenario the prosodic

contour of anger (high intensity, ascending pitch, and fast articulation rate) is mapped onto a positive statement resulting in the communication of anger (Bryant, 2010). In both cases prosodic cues help the listener to determine that the explicit language is not indicative of the intended message.

**Syntactic effects and sentence level prosody.**

While discourse level effects are generally related to the importance of some words or ideas over others, sentence level prosody is thought to either communicate syntactic structure or to avoid ambiguity in speech. The following will describe prosody's role in both domains; ultimately showing how sentence level prosodic effects could have a positive impact on comprehension.

Prosody can mark grammatical structure in a sentence through variations in pitch and pausing. In fact, many of these effects were introduced through our discussion of the features of prosody. For instance declarative sentences, yes-no questions, and parentheticals can all be identified in speech through their specific pitch contours. With regards to pausing, the duration of pauses can indicate the location of syntactic boundaries and the complexity of the corresponding syntactic constituents. Also intra-sentential pauses are generally shorter than inter-sentential pauses giving sentences a characteristic rhythm. Pausing also hints at grammatical structure as complex phrases feature longer pauses than simple ones (Krivokapic, 2007). These features show that prosody can mark grammatical structures for the reader but the resolution of sentence ambiguities may be the most important, and frequently studied, aspect of sentence level prosody.

Prosody plays a role in the successful parsing of sentences when syntactic information leads to ambiguities. Ideally, in terms of the parsing of a sentence, there should be a match

between syntactic and prosodic information that results in improved comprehension (Carrol & Slowiaczek, 1987). This was illustrated in Kleinman's (1971) seminal study which tested the ability of fourth graders to properly parse written sentences. Kleinman found that below average readers were significantly better at parsing when prosodic information was provided. More recently Steinhauer, Alter, & Friederici (1999) found that prosodic cues have an immediate impact on the parsing decisions of adults as well. In fact, substantial research supports the finding that prosody influences early syntactic interpretation (Eckstein & Friederici, 2006; Kjelgaard & Speer, 1999; Snedeker & Trueswell, 2003; Steinhauer et al., 1999). Although the disambiguation of sentences using prosody seems limited to situations in which syntax and context is not sufficient, research has shown that this is not the case (Snedeker & Trueswell, 2003). Even children can use prosodic cues to disambiguate structural ambiguities in sentences albeit at a slower rate than adults (Snedeker and Yuan, 2008).

Syntax and prosody also affect comprehension through their established influence on memory. For more than 40 years we have known that a string of numbers is easier to remember when it is spoken in a prosodic pattern; prosody enhances recall of linguistic information in the same way. O'Connell, Turner, & Onuska (1968) showed that a string of nonsense syllables were more easily remembered when those syllables carried syntactic information and were spoken with prosodic intonation; structural information in the absence of prosodic intonation did not facilitate recall. Leonard (1974) confirmed the effect of prosody on recall using anomalous sentences. Moreover previously heard sentences are recalled more accurately when the sentence is reproduced with the same prosodic contour as it was the first time it was heard (Speer, Crowder, & Thomas, 1993). These findings suggest that the prosodic structure of speech is an important part of its representation in memory.

Prosody's capacity to improve our memory of speech may lie in its ability to break up a sentence into segments that are easier for a listener to retain in working memory. These segments are identified by the listener most clearly via pausing however they can also be recognized in other ways. Changes in voice quality or intensity, pitch changes preceding a boundary and across it, as well as changes in segment duration, are all ways of creating divisions in speech. The chunking of language allows a listener to hold an auditory sequence in working memory by indexing linguistic information across phonological, syntactic, and semantic modes of representation (Frazier et al., 2006). This effect may improve comprehension by giving the brain extra time to fully process the incoming information (Koriat, Greenberg, & Kreiner, 2002).

Prosody could also affect comprehension through its ability to give the listener a means to predict upcoming information in speech. Snedeker & Trueswell (2003) found that prosodic information influenced the listener's interpretation of an ambiguous phrase, before the phrase was even uttered. They concluded that prosody can be used to predict future information in speech. This finding was confirmed by Isel, Alter & Friederici (2005) in a study that used event-related brain potentials to explore the interaction of prosodic, lexical, and syntactic information in German. Sentences with prosodically manipulated complex German verbs containing, or not containing, a split particle were used such that participants should or should not expect a split particle. Analysis of ERPs provided strong evidence that prosody enhanced listener's ability to predict upcoming information. Listeners that can better predict future information have an advantage in comprehending that information; prosody gives listeners a better chance to make these predictions successfully.

**Lexical effects and word level prosody.**

At its most basic level the comprehension of an utterance relies on the intelligibility of said utterance. In turn, intelligibility relies on prosody at the lexical level, particularly lexical stress. For example, Field (2005) showed that when the stress on a disyllabic word such as *TURbine* is switched from left to right intelligibility suffers. He went on to demonstrate that this effect is magnified considerably when the shift in stress also results in a change in vowel quality as would happen when going from *WAllet to waLLET*. Obviously lexical prosody directly affects comprehension when it compromises intelligibility but it also plays a more indirect role.

One example is prosody's role in the disambiguation of matching compound words and single nouns. For example the words *greenhouse* and *green house* could be difficult to tell apart in the flow of speech if not for the prosodic cues that differentiate them. In their third experiment, Koester, Gunter, Wagner, & Friederici (2004) determined that compound constituents are generally shorter in duration and have a higher, more stable pitch contour than their counterparts in single nouns. Furthermore, the first constituent of a compound noun or a noun-noun phrase is generally denoted by greater lexical stress as shown by the stress on *GREENhouse* as opposed to *green HOUSE* (Geigerich, 2004). More broadly, prosody distinguishes between words that belong to lexical categories (nouns, verbs, and adjectives) and words that belong to functional categories (determiners, prepositions, auxiliaries, conjunctions, etc.) (Selkirk, 1996). Lexical words are highlighted by increased lexical stress whereas function words remain unstressed. In this way prosody draws a reader's attention to the words that carry meaning.

Sentence level prosody also serves to disambiguate noun-verb and noun-adjective homographs such as *preSENT and PREsent*. Lexical stress patterns for these homographs are

determined by context and a mismatch between the two can result in a cognitive penalty. For instance, Breen and Clifton (2011) found that a mismatch between context clues and lexical stress resulted in longer fixation times when the stress indicated a verb but the context indicated a noun. This is an example of semantics and prosody working together to clarify otherwise ambiguous language in text.

Finally, a few other examples of prosody's effect on comprehension can be gleaned from other sources. Frazier, Carlson, & Clifton (2007) provide one simple example of the connection between prosody and comprehension in their assertion that the cognitive load associated with the comprehension of normal prosodic speech is not noticeable. Conversely, when each syllable is uttered with equal stress and in a monotone the speech becomes much more difficult to understand. Appropriate prosody can lower the cognitive resources necessary for comprehension but we are unsure of the exact mechanism by which this occurs.

One final insight into the effect of prosody on comprehension comes from past research into synthetic speech. Previous studies have shown that the key to improving the perceived quality of synthetic speech is improving prosody (Terken, 1993; Terken & Lemeer, 1988). These findings indicate that prosody supports the intelligibility of synthetic speech which should result in differences in comprehension. In fact, Paris et al (2000) studied the difference between natural and synthetic speech with regards to subjects' recollection of sentences. They found that natural speech yielded better performance on recall tasks and concluded that inappropriate prosodic modeling in synthetic speech was the major cause for the discrepancy. If prosody is ultimately what separates synthetic and natural speech, and natural speech is better comprehended than synthetic speech, it stands to reason that the same may be true for highly prosodic and less prosodic natural speech.

The various aspects of prosody, working in concert, can have robust communicative effects for a listener; often providing support or redundancy for other processes of language. The preceding discussion on prosody has considered these effects in turn, revealing that a link exists between prosody and comprehension in the literature. While the different components of prosody each serve a purpose it is pitch which is the hallmark of expressive language. However, as different speakers have different average pitch levels, the degree of variability in $F_0$ is primarily associated with expression in reading (Cowie et al. 2002). Therefore the present study, which focuses primarily on expressiveness in stories that are read aloud, uses pitch variation as the determinant of expressive reading. Furthermore, while studies have been conducted that explore the effect of prosody on comprehension at the sentence level, the present study seeks to determine the effect of prosody at the story level.

Prosody's influence on the comprehension of stories is of practical significance in the field of education as parents and teachers of pre-literate children in America are encouraged to read expressively to their children. This advice is ubiquitous, appearing on numerous websites such as readingrockets.org, litartlearning.com, ehow.com, and others. Anecdotal evidence as to the benefits of this practice has fueled the spread of this type of advice but previous studies have not directly tested the impact of prosody on the child listener's comprehension. Given the fact that they are especially dependant on prosody for meaning making, young children are a logical population to begin the search for explicit effects of prosody on comprehension. Therefore the purpose of this study is to determine the effect of expressiveness on the comprehension of storybooks by four and five year old pre-kindergarten children. We hypothesize that highly expressive readings will result in better comprehension of storybooks based on the literature linking prosody and comprehension.

# CHAPTER 2

# METHODS

## Participants

The sample consisted of ninety-two children attending a public Lottery-funded prekindergarten program; all of which received parental consent. Children's mean age was 57.26 months (*SD* = 3.89) with a range of 50.96 months to 66.83 months. Children were generally middle-class as indicated by their mother's level of education: 1.1% did not finish high school, 10.1% had a high school diploma, 1.1% had a technical degree, 5.6% had attended some college, 31.5% had a bachelor's degree, 24.7% had advanced degrees, and 25.8% failed to provide education data. Approximately, 71% were European-American, 2% were African-American, 2% were Asian-American, and the remaining 25% did not provide demographic data. Each participating classroom was given two children's books in appreciation of their collaboration. Three participants refused to continue their participation in the middle of the protocol, leaving 89 children in the final analysis.

## Materials

The two books that were used were chosen based on thematic similarity; *Forget-Me-Not* (Broad, 2009) and *The Magic Rabbit* (Cate, 2009) were both stories in which the protagonist loses his mother/friend and is eventually reunited. Furthermore, these stories were modified slightly so that they were similar in Flesch-Kincaid reading level, Flesch reading ease, overall word length, words per sentence, syllables per word, and type token ratio as determined by an analysis using the online text analysis tool, Coh-metrix (Graesser, McNamara, Louwerse, & Cai,

2004). The use of two stories allowed us to examine whether the effect of expressiveness was a story specific effect.

Once the books were chosen, both expressive and inexpressive recordings were made for each story. Prior to creating the recordings, we listened to two experienced and highly effective preschool teachers at the local university preschool carry out storybook readings with their students to determine the level of expressiveness that you might hear in a good preschool setting. Our observations were that these teachers were highly expressive in their readings with children, so we aimed at that level of expressiveness in our own expressive recordings. All oral readings were carried out by a graduate student with an extensive research background in prosody. Multiple recordings for each condition were made and these recordings were analyzed for mean and standard deviation of pitch using the Praat speech analysis software. Pitch and intensity floor and ceilings were set at the Praat default settings based on a review of previous studies (Traunmüller & Eriksson, 1994; Hincks, 2004; Frid & Ambrazaitis, 2010) and a visual inspection of pitch range in selections from the recordings in question. Recordings were chosen as the target recordings for the study such that expressive readings of each book were equally expressive and inexpressive readings of each book were equally inexpressive. Further, for the inexpressive versions, we tried to avoid the "sad" or "bored" segment of the spectrum by having the mean pitch be similar for both versions. Both expressive versions and inexpressive versions of the stories were similar in mean and standard deviation of pitch and intensity as seen in Table 1; however, expressive stories had a more variable pitch but not necessarily greater variation in intensity than their inexpressive counterparts, so the primary difference between versions was in the variability of the pitch contours as indicated by $F_0$. Counterbalancing was employed so that both stories and both expressive conditions were equally represented among the participants.

Additionally, there were two versions of the recordings. For the first 47 children, the two expressive recordings were an average of 86 seconds longer than their inexpressive counterparts. This expressive condition was considered the *natural* prosody condition, as expressive readings generally take longer in authentic reading situations. However, this could also be considered a potential confound for the study because children receiving the expressive reading might also have extra time to process the story as it was being read. Thus, we determined it necessary to also create a second condition that controlled for the amount of time that the story recording lasted across condition. For the last 42 children, we equated the story length for the expressive and inexpressive recordings by inserting pauses into the inexpressive and shortening pauses in the expressive. We have deemed this the *time-controlled* prosody condition. Although this

Table 1
*Pitch Data from All Story Recordings*

| | Mean Pitch[a] | | *SD* of Pitch[a] | | Total Time[b] | | Min Pitch[a] | | Max Pitch[a] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Expressive Condition | FMN | TMR | FMR | TMR | FMR | TMR | FMR | TMR | FMR | TMR |
| Expressive (TC) | 227.73 | 227.24 | 74.82 | 72.96 | 275.91 | 259.93 | 66.75 | 66.15 | 600.65 | 596.24 |
| Inexpressive (TC) | 224.17 | 243.63 | 29.43 | 35.73 | 275.05 | 259.07 | 77.62 | 75.14 | 562.11 | 595.44 |
| Expressive (Nat) | 227.47 | 226.69 | 75.73 | 74.23 | 296.95 | 310.70 | 66.91 | 68.92 | 602.69 | 596.70 |
| Inexpressive (Nat) | 223.98 | 243.87 | 29.33 | 36.29 | 222.45 | 214.02 | 77.97 | 75.14 | 591.71 | 596.70 |

*Note.* FMN = *Forget me not*, TMR = *The magic rabbit*; TC = time-controlled prosody condition, Nat = natural prosody condition.
[a]Measured in Hz. [b]Measured in seconds.

manipulation resulted in a somewhat less authentic reading, it controlled for the amount of time children had to process each version of the story.

**Apparatus**

A third and fourth generation iPod Nano was used in combination with a JBL On Stage Micro II iPod dock to play story recordings for all children and an Olympus WS-110/WS-210S Digital Voice Recorder was used to record all participant interviews. Both afforded excellent sound quality for comprehension of story recordings and interview playback during transcription.

**Procedure**

To determine the effect of expressiveness on comprehension, children listened to a story recording read either expressively or inexpressively during an interview that lasted about 30 minutes. Participants were interviewed either by the first author or another interviewer trained in the procedure. Interviews took place in a quiet room in the school. Children were seated across the table approximately three feet in front of the interviewer, and next to the iPod speaker, which was approximately one foot away. Subjects were informed that their participation would involve listening carefully to a story while the interviewer turned the pages and then answering some questions about it. They were then told the name of the book, shown the cover, and asked if they would like to continue their participation. Children were allowed to discontinue their participation at any time, for any reason. Children then sat and listened to the story while the interviewer sat in front of them and turned the pages of the book to match the narration.

Children received either the expressive or inexpressive version of a storybook. They either received the Forget-me-not or The Magic Rabbit story. Condition and story were counterbalanced across subjects.

Recall, both free and cued recall, was the primary dependent variable for the study and this was used as a general measure of comprehension. After listening to the story, the children were asked first to recall what they remembered from the story. Three additional prompts were used to elicit further information from the children: (a) what else happened to the little bunny/elephant; (b), what else can you remember from the story; (c), and can you remember anything else that happened in the story? Next they were asked a series of twelve cued recall questions: four pertaining to the plot, four pertaining to inferences, and four pertaining to difficult story vocabulary. All methods were piloted on nine additional four and five year old children at the prior to the collection of data presented in this study to determine that procedures were appropriate for children of this age.

Children's free recall was rated according to the proportion of idea units that were present in their retelling of the story. To determine the idea units for each story the first author and a doctoral student familiar with both books compiled a comprehensive list of idea units for each story; matching components on both lists were kept in the final list. In the scoring procedure, credit was given if an idea unit in the child's recall conveyed the same meaning or contained the same key words as an idea unit in the story.

Cued recall questions were scored on a three-point scale with two points being awarded for a completely correct answer, one point for a partially correct answer, and zero points for a completely incorrect answer. Children's scores were summed to reflect the total points for expressive and inexpressive conditions. For example if out of the 12 possible questions for an expressive reading 2 of the child's answers were completely correct, 3 were partially correct, and the remaining 7 were completely incorrect, the child would receive a score of 7 for the expressive condition. Reliability for the scoring procedure was established with a second rater

scoring responses for 20 of 89 participants; Pearson correlation between raters was .953, Krippendorff's Alpha was .95, and raters had exact agreement or were one off 75% of the time.

We also wished to assess, in a general way, children's basic engagement in the stories, although this was a secondary question. Eye gaze was used as a simple proxy for children's engagement in the stories. It was assumed that children who were not looking at the interviewer or the storybook were not actively attending to the story. This type of measure has been used in other studies examining focused attention in preschoolers in naturalistic settings (Lawson & Ruff, 2004). Thus, for approximately one-third of the children, an observer sitting next to the interviewer measured the amount of time using a stopwatch that the child was not looking at either the book or the interviewer holding the storybook by determining the direction of child eye gaze. Half of these children had received the expressive version of the story and, the other half, the inexpressive version. Reliability for the eye gaze measure was determined using a second observer for 9 of 34 participants. A Pearson correlation of .998 between the two raters was calculated showing excellent reliability for the procedure.

# CHAPTER 3

# RESULTS

Data were analyzed using ANOVAs examining main effects of Reading Expressiveness (expressive versus inexpressive), Story (*The Magic Rabbit* versus *Forget-Me-Not*), and Prosody Comparison Type on three types of recall: 1) total cued recall scores, 2) cued recall sub-scores, and 3) free recall scores; as well as potential interactions between these factors.

## Total cued recall scores

A Reading Expressiveness (Expressive versus Inexpressive) by Prosody Comparison Type (Natural versus Time-Controlled) by Story (*Forget me Not* versus *The Magic Rabbit)* ANOVA was carried out on cued recall comprehension data. A statistically significant main effect of reading expressiveness was found, $F(1, 88) = 6.127$, $p = .015$, $\eta^2 = .070$, such that children answered significantly more cued recall comprehension questions correctly following an expressive reading than an inexpressive reading. Children received a mean score of 7.80 in the expressive condition ($SD = 4.39$) and a mean of 5.59 in the inexpressive condition ($SD = 3.71$). The main effect of prosody comparison type was not significant, $F(1, 88) = 1.224$, $p = .272$, $\eta^2 = .015$; nor was the interaction between prosody comparison type and reading expressiveness, $F(1, 88) = 1.607$, $p = .209$, $\eta^2 = .019$. The main effect of story failed to reach significance at the $\alpha = 0.05$ level however it was significant at the $\alpha = 0.10$ level: $F(1, 88) = 3.851$, $p = .053$, $\eta^2 = .045$. There was no significant interaction between story and reading expressiveness, $F(1, 88) = 0.093$, $p = .761$, $\eta^2 = .001$, or story and prosody comparison type, $F(1, 88) = 0.368$, $p =$

.546, $\eta^2 = .005$. Figure 1 summarizes the affect of reading expressiveness and story on listening comprehension as measured by total cued recall.

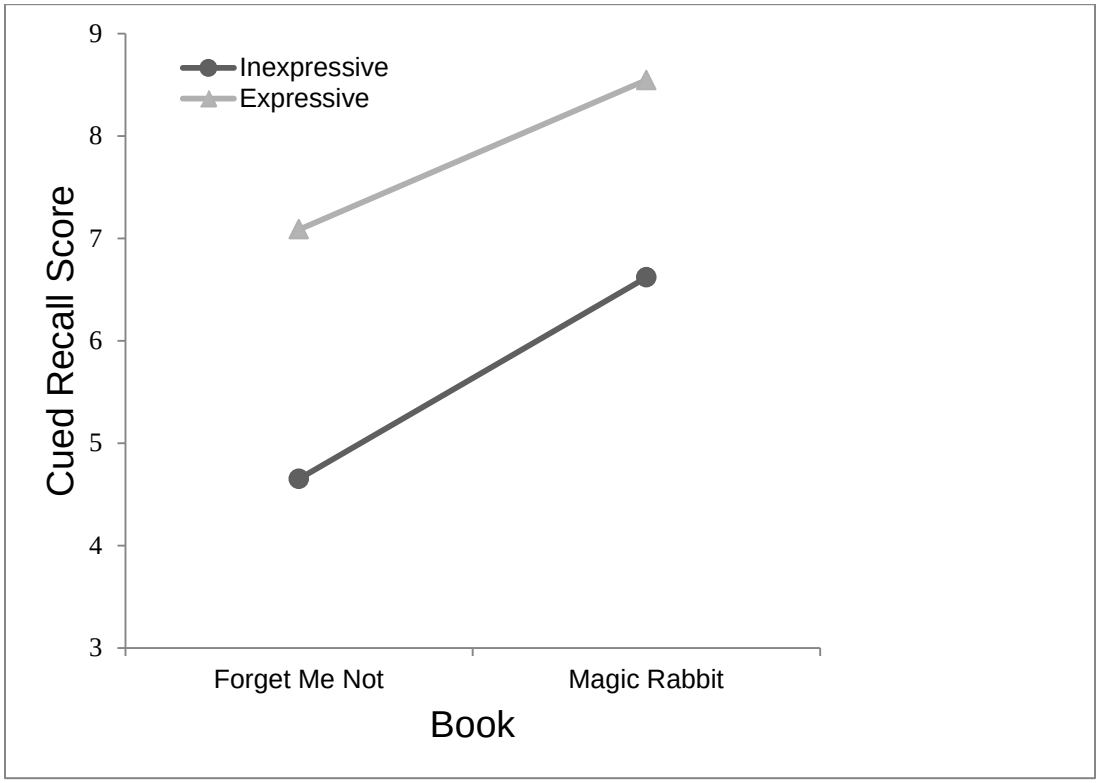


*Figure 1*. The effect of reading expressiveness and story on total cued recall scores.

**Cued recall sub-scores**

In order to better understand the effect of reading expressiveness and story on comprehension, cued recall questions were broken down into plot, inference, and vocabulary sub-scores. These three sub-scores were analyzed independently using three Reading Expressiveness by Prosody Comparison Type by Story ANOVA's. Analysis of plot sub-scores

yielded a significant main effect of reading expressiveness, $F(1, 88) = 5.624$, $p = .020$, $\eta^2 = .065$, and story, $F(1, 88) = 11.062$, $p = .001$, $\eta^2 = .120$. The main effect of prosody comparison type was not significant, $F(1, 88) = 0.260$, $p = .612$, $\eta^2 = .003$, as were all two and three-way interactions: story by reading expressiveness, $F(1, 88) = 0.001$, $p = .977$, $\eta^2 = .000$; story by prosody comparison type, $F(1, 88) = 0.509$, $p = .478$, $\eta^2 = .006$; reading expressiveness by prosody comparison type, $F(1, 88) = 0.497$, $p = .483$, $\eta^2 = .006$; story by reading expressiveness by prosody comparison type, $F(1, 88) = 0.198$, $p = .658$, $\eta^2 = .002$.

A significant main effect of reading expressiveness was also found for vocabulary sub-scores, $F(1, 88) = 5.533$, $p = .021$, $\eta^2 = .064$, however the main effects of story, $F(1, 88) = 0.228$, $p = .634$, $\eta^2 = .003$, and prosody comparison type, $F(1, 88) = .026$, $p = .873$, $\eta^2 = .000$, were not significant. Similarly all two and three-way interactions for vocabulary sub-scores were not significant: story by reading expressiveness, $F(1, 88) = .313$, $p = .578$, $\eta^2 = .004$, story by prosody comparison type, $F(1, 88) = 1.163$, $p = .284$, $\eta^2 = .014$, reading expressiveness by prosody comparison type, $F(1, 88) = 1.047$, $p = .309$, $\eta^2 = .013$, story by reading expressiveness by prosody comparison type, $F(1, 88) = 0.246$, $p = .621$, $\eta^2 = .003$.

There were no significant effects associated with inference sub-scores where the main effects of reading expressiveness, $F(1, 88) = 0.598$, $p = .441$, $\eta^2 = .007$, story, $F(1, 88) = 0.016$, $p = .901$, $\eta^2 = .000$, and prosody comparison type, $F(1, 88) = 2.701$, $p = .104$, $\eta^2 = .032$, were not significant. Likewise all two and three-way interactions were not significant: story by reading expressiveness, $F(1, 88) = 1.187$, $p = .279$, $\eta^2 = .014$, story by prosody comparison type, $F(1, 88) = 0.108$, $p = .743$, $\eta^2 = .001$, reading expressiveness by prosody comparison type, $F(1, 88) =$

1.292, $p$ = .259, $\eta^2$ = .016, story by reading expressiveness by prosody comparison type, $F$(1, 88) = 0.909, $p$ = .343, $\eta^2$ = .011.

In sum, following an expressive reading, children performed significantly better on comprehension questions related to plot scoring 4.11 points (*SD*=2.55) as opposed to 2.93 (*SD*=2.12) points following inexpressive readings. Similarly children scored significantly better on vocabulary comprehension questions after an expressive reading than they did after an inexpressive reading, scoring 1.51 points (*SD*=1.60) and 0.82 points (*SD*=0.97) respectively. In contrast there was no significant effect of reading expressiveness on inference making where children who heard expressive readings scored 2.18 points (*SD*=1.96) while children who heard inexpressive readings scored 1.84 points (*SD*=1.82); nevertheless the trend was in the same direction.

**Free recall scores**

Free recall data was analyzed similarly via a Reading Expressiveness by Prosody Comparison Type by Story ANOVA. The main effect of reading expressiveness just failed to reach significance at the α=.05 level but was significant at the α = 0.10 level: $F$(1, 88) = 2.977, $p$ = .088, $\eta^2$ = .036. No significant main effect of story, $F$(1, 88) = 0.191, $p$ = .663, $\eta^2$ = .036, or prosody comparison type, $F$(1, 88) = 0.006, $p$ = .938, $\eta^2$ = .000, was found. No significant interactions between reading expressiveness and story ($F$(1, 88) = 2.472, $p$ = .120, $\eta^2$ = .030), reading expressiveness and prosody comparison type ($F$(1, 88) = 0.085, $p$ = .772, $\eta^2$ = .001), or story and prosody comparison type ($F$(1, 88) = 1.113, $p$ = .295, $\eta^2$ = .014) were found.

**Story Engagement**

A 2 Reading Expressiveness X 2 Story X 2 Prosody Comparison Type ANOVA was carried out using the proportion of time that children were not engaged with the story as the

dependent variable. There were statistically nonsignificant main effects of reading expressiveness, $F(1, 33) = 1.36$, $p = .253$, $\eta^2 = .050$; story, $F(1, 33) = .01$, $p = .932$, $\eta^2 < .001$; and prosody comparison type, $F(1, 33) = .33$, $p = .571$, $\eta^2 = .013$. None of the interactions approached significance either.

# CHAPTER 4

# DISCUSSION

The purpose of the present study was to determine the impact of expressiveness on the comprehension of storybooks by four and five year old pre-kindergarten children. We also explored the effect of story and prosody comparison type. Overall analysis of the data confirmed our hypothesis that highly expressive readings would result in significantly better comprehension of storybooks.

**Evidence of the effect of expressiveness on cued and free recall**

Our findings showed that children scored significantly better on cued recall questions following an expressive reading than they did following an inexpressive reading. In fact, using Cohen (1992) as a guide, our effect size indicators indicated that this difference in cued recall between expressive and inexpressive readings constituted a "moderate" effect size. Although the main effect of reading expressiveness on free recall scores failed to reach statistical significance at the $\alpha$=.05 level given a non-directional hypothesis, it would have been significant under a directional hypothesis and the lack of significance was probably attributable to the presence of a floor effect in children's free recall of the story. Other studies have also found limited free recall for stories among preschoolers compared to older children (Lynch et al, 2008; Toppino, Fearnow-Kenny, Kiepert, & Teremula, 2009). Nevertheless, we feel that the data clearly trend towards a positive relationship between reading expressiveness and the free recall measure of comprehension. Overall, we can conclude that an expressive reading has a positive effect on the listening comprehension of young children.

Story and prosody comparison type were added to the analysis to give us richer information as to the impact that our methods had on the effect of reading expressiveness. Although we choose books that were equivalent in a number of ways, we felt it was necessary to ensure that the effects of expressiveness generalized across stories. Story had no significant main effect, or interactional effects, for any of our three question types with the exception of a main effect for comprehension sub-scores. *The Magic Rabbit* (2009) appeared to be more memorable than *Forget-Me-Not* (2009) for some of these comparisons, but the difference between the stories was consistent across expressive and inexpressive conditions. Therefore the overall effect of reading expressiveness appeared to generalize across stories.

For some children, we had controlled for the story length in time across expressive and inexpressive stories. This was accomplished, essentially, by editing out some of the pauses inherently present in the expressive versions and adding pauses into the inexpressive versions. Note that this, in some ways, controls for one of the many of the prosodic influences present in an expressive reading. Indeed, when our narrator read the stories expressively, she tended to include pauses in the readings. Even though we had made this manipulation to these audio files for the *time-controlled* condition, the audio files for the expressive condition remained more expressive because they were still more variable in pitch intonation contours. Despite our removing one of these indicators of expressiveness for the time-controlled condition, prosody comparison type had no significant main effects or interactional effects on any of our dependent variables. The lack of interaction effects indicates that the effect of expressiveness was similar regardless of the amount of time they had to attend to the story, so the effectiveness of expressiveness could not be attributable to the amount of time that children had to attend to the stories. Thus, we can conclude that the effect of expressiveness on children's recall might be

attributable to the variation in pitch contours that our narrator used to read the stories, which was the main manipulation that differentiated expressive from inexpressive versions.

We also considered the possibility that expressiveness might operate by increasing children's engagement in the stories. However, our observations of a random subset children's behavior during storybook listening suggested that this was not the case. Children were as attentive during the expressive as inexpressive stories. Thus, expressiveness must have operated by having a more direct impact on comprehension per se.

The findings of this study are consistent with the only other study we know of that explored the effect of prosody at the global level; research by Goldman, et al. (2006) which found some evidence that the use of poetic language increased the comprehension of goals and science content in a science related children's story. This study used a quasi-experimental design in which fifth grade children listened to more or less poetic versions of a story presented as a video on a computer. The children then created summaries of the story and these summaries were compared. It should be noted that the Goldman et al. study contained some serious methodological flaws including the conflation of repetitive language with prosody; nevertheless children's recall of the more poetic story, which contained some prosodic elements such as the tone and rhythm associated with the poetic language, was superior.

**Evidence of the effect of expressiveness on cued recall sub-scores**

Our analysis of total cued and free recall scores has shown that reading expressiveness has a general positive impact on comprehension; analysis of cued recall sub-scores gives us more specific insight into the nature of this impact. Therefore, to better understand the effect of reading expressiveness and story on comprehension, cued recall questions were broken down

into plot, inference, and vocabulary sub-scores. Analyses revealed that both plot and vocabulary sub-scores showed a statistically significant impact of reading expressiveness on comprehension but the same did not hold for inference sub-scores; although these were higher in the expressive condition than in the inexpressive condition, the difference was not reliable. Consequently vocabulary and plot questions accounted for the majority of the variance associated with the positive relationship between reading expressiveness and total cued recall scores.

In exploring the underlying causes of the positive impact of expressiveness on comprehension, the finding that expressiveness specifically improved performance on plot and vocabulary questions, but not inference questions, is noteworthy. A likely cause of this effect, or lack thereof, is that four to five year old children may simply not be proficient in making accurate inferences even under ideal conditions. Paris and Lindauer (1977) found that young children do not spontaneously draw inferences and although subsequent research has found that they can if provided with an altered, age appropriate task (Riley & Trabasso, 1973), the present study provided no such extra support or perhaps not the kind of support needed to improve inference making in children of this age. Inference making is constrained by working memory, background knowledge, and semantic development (Lynch et al., 2008; Trabasso & Nicholas, 1980); therefore it is possible that the inconsistent effect of expression on inference making was a result of the general inability of participants to accurately make inferences in either condition.

Conversely, it is likely that the significant effect of expressiveness on children's performance on plot questions might be partially traced to the facilitation of parsing decisions and chunking provided by enhanced intonational contours. One of the most prominent functions of prosody is its involvement in the listener's ability to properly parse sentences. Sanderman and Collier (1997) found that well-phrased utterances, with

proper pitch accents and prosodic boundaries, were more easily comprehended than poorly phrased utterances. Further, we know that four-to six-year-old children are capable of utilizing prosodic information for parsing decisions (Snedeker & Yuan, 2008), particularly when it is obvious and consistent. The improvement in parsing that expressive readings supply may be seen as one of the psycholinguistic contributors to the improved comprehension found in the present study. Making the recognition of prosodic boundaries one factor that is very likely to have contributed prosody's benefits to comprehension in the current study.

By making parsing decisions easier, well-phrased sentences should have the effect of decreasing cognitive load associated with parsing (Sanderman & Collier, 1997). This effect should improve comprehension by freeing up working memory resources for semantic processing. Further, when you combine these cognitive savings with the chunking effect described by Frazier et al. (2006), it is plausible that the resulting boost to working memory could account for significant gains in comprehension. Plot questions in this study, which relied on straightforward recall of story events, might be improved by any improvements related to the packaging of information in working memory.

Prosody has been shown to relate to discourse-level impacts that should help children's listening comprehension. Discourse level prosodic effects generally relate to prosody's ability to highlight important information and connect ideas in working memory. Expressive readings should have enabled participants to better focus on new information, identify important concepts in the discourse structure, and accurately identify topic shifts (Carlson, Dickey, Frazier, & Clifton, 2009; den Ouden, Noordman, & Terken, 2009; Ito & Speer, 2008; Noordman, Dassen,

Swerts & Terken, 1999). Any of these impacts would have allowed children to perform better on questions targeted at the story's main ideas.

We also found a positive impact of reading expressiveness on the acquisition of difficult story vocabulary. It is possible that gains in vocabulary scores were an outcome of better understanding of plot that facilitated the development of partial knowledge of vocabulary words. Most of our words were mentioned only once in the story, but we deliberately chose vocabulary words that were chosen for this study would have been emphasized based on the discourse and lexical effects of prosody. For instance, our vocabulary words were nouns, which have been shown to carry additional stress because they are content words (Temperley, 2009). Further, many of these words appeared at higher levels of story discourse (in a story grammar sense, Mandler & Johnson, 1977), making them more integral to the action of the story. Finally, in situations where vocabulary questions constitute new information, and especially when they are the focus of the sentence, we can expect that intonational cues might make new vocabulary more salient (Carlson et al., 2009; Vallduvi & Engdahl, 1996).

In sum, our findings when combined with the larger research on speaking prosody, indicate that expressiveness is a key aspect of reading aloud that will assist young listeners in basic story comprehension. We argue that it can and should be part of any training opportunity provided for teachers and parents learning to carry out storybook read-alouds to young children.

**Limitations and future research**

As a preliminary investigation into the global effects of prosody on the comprehension of storybooks in preschool children, the present study has some limitations. Despite a moderate sample size, demographic variation in our sample was limited. Homogeneity in race and socioeconomic status, measured by mother's education, makes generalizability of our findings to

other populations limited. Future studies should include a more heterogeneous sample in order to determine possible within-group effects. In particular, it is well known that not all children have had the same opportunity to listen to adults reading storybooks aloud (Aikens & Barbarin, 2008; Orr, 2003). It is unclear how reading expressiveness might affect the comprehension of children with more limited experience with storybooks.

Future research should also seek to localize the effects of prosody on cognitive processing in young children. Prosody influences our perception of an auditory signal in a myriad of ways, many of which may contribute to an increase in comprehension. As noted earlier, prosody's effects on comprehension may come from a variety of linguistic sources and this study was not designed to ferret out the particular source of its impact. Instead, our goal was a more limited one – to simply discern whether an expressive reading had a direct impact on children's comprehension. In this regard, our findings were affirmative. However, future studies should include additional measures that would serve to more accurately determine the most significant pathway, or pathways, by which prosody influences comprehension. For instance, if the primary benefit of expressiveness is to support children's working memory during active listening, then we might discern that the effect was mostly to support the comprehension of children with more limited working memory spans (Daneman & Blennerhasset, 1984). It is important to note that expressiveness did not operate by merely providing extra processing time for young children for the stories nor were children simply more attentive to because of it. In sum, the present study represents an early step towards a more complete understanding of the role of prosody in the listening comprehension of stories. This study supports common recommendations that teachers and parents read expressively to young children.

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APPENDIX A

CUED RECALL QUESTIONS

***Forget Me Not* Assessment**

**Vocabulary questions.**

1) What does “mounds” mean?

2) What’s “trunk” mean?

3) What’s “memory”?

4) What’s “plains” mean?

**Plot questions.**

5) What did Monty, the little elephant, find on the ground at the beginning of the story?

6) Who did Monty see when he was looking for his mother?

7) When did Monty, the little elephant, find his mother?

8) What happened the next day when the rain stopped?

**Inference questions.**

9) How did Monty, the little elephant, get separated from his mother?

10) Why did Monty, the little elephant, think that the bucket was a forget-me-not?

11) Why did Monty, the little elephant, want to find his mother before the rain came?

12) Why did the termites disappear inside their mounds?

## *The Magic Rabbit* Assessment

**Vocabulary questions.**

1) What does the word “traffic” mean?

2) What’s “path”?

3) What’s “pug”?

4) What’s “platform” mean?

**Plot questions.**

5) What happened at Ray and Bunny’s magic show downtown?

6) How did Bunny find his friend Ray after he got lost?

7) What was Bunny’s favorite food?

8) Where did Bunny find his friend Ray at the end of the story?

**Inference questions.**

9) Why was there an accident at the magic show downtown?

10) Why did Bunny run away after the accident at the magic show?

11) Why did Bunny follow the glittering stars that he found after he got lost?

12) Why did Bunny decide to leave the park?