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Factors Affecting the Development of Character Referentiality in Preschoolers' Narratives

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Abstract

This study examines the development of character referentiality in children's narratives during the preschool years, providing insight into the emergence of listener's perspective-taking by the teller. We asked 72 3½, 4½, and 5½-year-olds along with 24 adults to tell four stories each, elicited by picture sequences varying in the number and types of characters used (one main character and one minor character vs. two main characters), type of problem the characters are involved in (external vs. internal), and the mode of stimuli presentation (pictures presented on a single page or in a booklet). To determine whether children were able to take on the listener's perspective, the narratives were first analyzed for the linguistic forms they used (e.g. pronoun, definite or indefinite noun phrase) in terms of three referential functions: introduction, maintenance, and reintroduction. Additionally, we assessed narratives for the type of global strategy used. Results showed a developmental progression both in terms of linguistic referents and global strategies, with 4½- and 5½-year-olds doing better than 3½-year-olds but not as well as the adults. We also found that stories with one main character elicited better overall referentiality than stories with two main characters. Likewise, stories with an external problem resulted in better overall referentiality than stories with an internal problem. Finally, pictures presented in a booklet rather than altogether on a single page elicited higher referential forms across some linguistic functions, as well as more advanced global strategies. Overall, this study reveals that character referentiality is developing throughout the preschool years, although it is not complete by 5½ years of age. Also, there are a number of factors within the stimuli used to elicit narratives that contribute to both children and adults' expression of character referentiality.

Introduction

Narrative abilities in preschool children provide insight into their developing cognitive, linguistic, and social capabilities. Studying their emerging narratives provides us with a deeper understanding of how children begin to form connected discourse, use proper linguistic devices, and are able to successfully communicate this type of discourse to a listener. Narratives are also a complex form of extended discourse, one that goes beyond words and sentences, in that sentences are linked together through a particular structure unique to narratives. At the very least, one expects narratives to cohere in a sequential manner, made up of a beginning, middle, and end (Toolan, 2009). More often, one expects the inclusion of a number of structural elements (i.e. initiating event, attempts, problem, and resolution). While narrative coherence is achieved in various ways, one way is through character referentiality. Creating and maintaining clear reference to story characters is a crucial aspect of forming a successful narrative, but it is a difficult task for young children to accomplish. The current study attempts to understand the development of children's character referentiality and what aspects of narratives affect their referent use.

To see the demands that character referentiality places on children, we must first consider that narratives are always directed to an audience. Studying character referentiality in children's narratives allows us to see at what age children are able to take the listener's perspective into account, thereby meeting the social demands of the narrative. According to Kintsch (1988), as we listen to a narrative text, we create a mental representation of the world portrayed through the text, or what he calls a "discourse model." Kintsch further argues that as the reader continues reading a story,

there is a need to update our discourse model as the story unfolds. Wong and Johnston (2004) argue that this is not only true of adults, but also of children. In order that they competently refer to characters, children must adequately signal the status of characters (old or new) as well as update this status that they present to the listener. This includes specifying new information so that the listener is aware he/she has no prior knowledge of this character, as well as maintaining old information shared by both the speaker and the listener. This requires that the speaker presupposes mutual knowledge between themselves and the listener. The speaker must also track changes in the listener's knowledge throughout the discourse. This includes knowing who is currently being foregrounded or backgrounded in the story as well as how to bring a backgrounded character back into the foreground in a way that is clear to the listener who is being referred to. Ultimately, character referentiality shows whether children are able to take on the perspectives of others, thus making this ability an important index of school readiness (Fisher, 1992; Hanline, Milton, & Phelps, 2008).

To determine children's referential abilities, we must focus on their use of referential expressions (i.e. pronoun, noun phrase); that is, the way in which a speaker refers to different characters when telling a story. The status of a character, whether new or given, determines which referential expressions are appropriate. By updating the discourse model through use of referential expressions, the speaker is able to portray these status shifts to the listener, using a pronoun to communicate that the same character is still in focus, or a noun phrase to introduce a character for the first time, or to bring a character back into focus (Wong & Johnston, 2004). In English, an indefinite noun phrase signals to the listener that this is a new character; a definite noun phrase cues the

listener that a previous character is being brought back into focus; and a pronoun tells the listener that the character currently in focus is still in the foreground (Levelt, 1989).

Based on the assumptions just reviewed, an important question is at what age are children developing the referential abilities required to successfully take on the listener's perspective when creating a narrative. In particular, when are children able to master the use of correct referential forms needed to express three different referential functions: introduction, maintenance, and reintroduction of a character?

The Development of Referentiality

Berman (2008) tells us that referentiality can be looked at from two different levels: local and global. Referentiality at a local level involves the type of linguistic forms (e.g. pronoun, noun phrase) used to integrate two sequential pieces of the narrative discourse, such as cohesion between a clause and the one preceding it. Referentiality on a global level concerns the character coherence of the overall structure and content of the narrative taken as a whole.

Local character coherence. Numerous studies have attempted to identify the development of referentiality in children's narratives and have used different story character structures to do so (Wigglesworth, 1990; Hickmann, Hendricks, Roland, & Liang, 1996). These studies focus on the local coherence of narratives, paying attention to the connection between one sentence and the following one, rather than the overall coherence provided by character references on the narrative as a whole. In addition, these studies focus on the different referential functions (introduction, maintenance, and reintroduction) in isolation from one another.

Introduction of a character. One particular referential function examined in past research is the introduction of a character. It has been argued by Toolan (2009) that when introducing a character for the first time, one should use an indefinite noun phrase ("A boy," "One boy") in order to establish local newness to the listener. Both a definite noun phrase ("The boy") and pronoun ("he") would presuppose information that the listener has not yet been given. Rather, the intended referent must be explicitly identified (Levelt, 1989). Several studies have attempted to examine at what age children are able to successfully introduce a character to the listener using the appropriate linguistic expression for their language. Overall, young children (around age 4) seem to rely heavily on the use of pronouns to introduce characters. This decreases with age, with 6-year-olds using noun phrases about half of the time (Wigglesworth, 1990; Hickmann et al., 1996).

Wigglesworth (1990) examined what specific linguistic forms children used at certain ages when introducing a first character, as well as the course of this development. Narratives were elicited from 4, 6, and 8-year-olds as well as adults with the use of two wordless picture books, one containing eight pictures and the other ten pictures. The first book had no specific main character while the second had a clear protagonist.

Wigglesworth found that for stories with no clear protagonist, 4-year-olds rarely used a noun phrase to introduce the first character, but showed a clear preference for pronouns, followed by omitted ones. It is important to note that a noun phrase is critical in identifying that the characters are new to the listener. Using a pronoun does not accomplish this, because the use of a pronoun assumes that the listener already knows the character(s). The use of a noun phrase increased with age while the use of pronouns

subsequently decreased, with 6 and 8-year-olds using a noun phrase about half of the time, while using a pronoun the other half. In contrast, adults showed a distinct preference for introducing the characters (here "children") on the first page with a noun phrase, as Toolan (2009) tells us we should expect from a successful narrative. A very similar pattern was found when they looked at stories with a clear protagonist, which only half the participants received: 4-year-olds primarily used a pronoun when introducing the protagonist, illustrating that they do not yet have a complete understanding of referentiality. They presupposed shared information with the listener about the character, leaving the listener with an unclear referent. Again, the use of a noun phrase to introduce a character increased with age, with 6 and 8-year-olds and adults using it the majority of the time. The increase of noun phrase use for Book 2 from Book 1 could possibly be due to having a clear protagonist to refer to, whereas before in Book 1, there was no clear protagonist. However, these results may be taken with caution because only half of the participants received Book 2, whereas all participants received Book 1, and Book 1 always came before Book 2.

Perhaps a comparison across the two stories should not be made because of the difference in character structure. Since there is only one story per structure (no clear protagonist vs. single protagonist), we cannot say for sure whether these referential choices are a result of character structure, or because of another component of the stories. Still, we see that while 4-year-olds refer to a new character with a pronoun regardless of story type, 6-year-olds are able to signal the new character, but only when the story contains a clear protagonist. Six-year olds are able to mark this local newness required by the introduction of a new character, while 4-year-olds are not yet able to do so.

Hickman et al. (1996) found similar results indicating younger children's inability to properly introduce a character, thereby signaling it as new. She compared children's use of definite or indefinite noun phrases when referring to a newly introduced versus old referent. She studied four age groups: preschoolers (grouping 3 and 4-year-olds together), 7-year-olds, 10-year-olds, and adults. She also studied participants from four different languages: English, French, German, and Chinese. For this review, we focus only on the English-speaking participants. Participants were instructed to produce narratives using two picture sequences as prompts, one which had a clear protagonist and two secondary characters (Horse story), and another with no clear protagonist (Cat story), that is, stories similar in structure to those used by Wigglesworth (1990). Participants were instructed to tell the story to an experimenter who could not view the pictures, thereby establishing that there is no mutual knowledge between the speaker and the listener.

When introducing a new referent, preschoolers used a definite noun phrase (the horse) far more often than an indefinite one (a horse), which would have been the proper choice in order to communicate to the listener that this is a new character (Toolan, 2009). All three older groups used an indefinite noun phrase the majority of the time. Overall, this local newness marked by the indefinite noun phrase is rare in preschoolers, and increases with age, reaching maturity around 10 years as shown in this study. These findings are similar to those of Wigglesworth (1990), which suggests this referential skill of introduction is positively correlated with age and is not quite yet consistent in younger preschool children (3-4 years). However, an important difference between the two studies involves overall use of the noun phrase. Hickmann et al. found that preschoolers

often use a definite noun phrase, while Wigglesworth found that preschoolers rarely used a noun phrase, whether definite or indefinite. After reviewing these studies, we find a need to take a closer look at this preschool group, further separating the different ages in order to study the actual course of development which referentiality follows. Additionally, there is a need to further test character structure, for both Wigglesworth and Hickmann only used one story per structure. This limits one's ability to draw conclusions about the effects of story structure on children's character referentiality. An important distinction between these two studies involves the type of stimuli: Wigglesworth used wordless picture books while Hickmann et al. used picture sequences. Could type of stimuli affect children's narratives? Another distinction involves the "listener's" access to the pictures. While Hickmann et al. made it apparent to participants that the listener cannot see the pictures, Wigglesworth's experimenters sat next to the child, in full view of the pictures. We would expect that when the experimenter can see the pictures, children will rely more heavily on pronouns, for they may assume mutual knowledge with the listener.

Overall, it appears that introducing a character with the proper linguistic referents is difficult for children 4 years and younger. However, 6-year-olds are beginning to show success when introducing a character. Despite these findings, we still do not know how children are introducing characters between 4 and 6 years of age.

Maintenance of a character. Beyond character introduction, it is also important to maintain known characters in a narrative. The maintenance of a known character is critical, because it illustrates whether or not a child is able to assume that the listener knows the intended referent (Arnold, 2008). When maintaining reference to a character

that is currently in focus, the speaker can use a pronoun, because the referent has already been provided to the listener. Therefore, there is no other referent that should be mistaken for the target referent (Levelt, 1989). The use of pronouns allows the speaker to connect clauses in the discourse, thereby updating their model to include presupposed information. There are only a few studies which have focused on the maintenance of characters in a narrative (Arnold, Bennetto, and Diehl, 2009; Wong & Johnston, 2004), and they have found evidence that the ability to maintain a character develops earlier than the ability to introduce a character.

Wong and Johnston (2004) looked not only at children's ability to maintain a known character, but their introduction and reintroduction of characters as well. They tested Cantonese-speaking children at ages 3, 5, 7, and 12. Children each told 16 different narratives elicited by wordless picture books. Wong and Johnston coded for instances where children completed each of the three referential functions: introduction, maintenance, and reintroduction. 'Experts' rated whether or not they could infer which character was being referred to in each of the circumstances. They found that children at all ages performed best when maintaining a character that is currently in focus, rather than introduction and reintroduction. Additionally, even the youngest group (3-year-olds) could successfully maintain a character some of the time. Results thus suggest that maintenance may be the easiest and first referential function to develop.

Arnold et al. (2009) also looked at referentiality through the maintenance function, and found evidence concluding that in normally-developing children, the ability to maintain a character has already developed in full by 9-10 years of age. They focused on each singular reference to three different characters. Arnold et al. studied older

children, ages 9-17, comparing normally-developing children/adolescents to children/adolescents with autism. Narratives were elicited through a retelling of a cartoon which participants watched immediately before. Each singular reference to one of the three characters (Tweety, Sylvester, and Granny) was coded as pronominal, zero, name, definite NP, indefinite NP, or bare NP. References were also coded as being either a subject or non-subject, and for the number of clauses since last reference to that character (1, 2, or 3 or more clauses back).

For normally-developing children, pronouns and omitted pronouns were most frequent when the referent was prominently mentioned (recently or in a prominent syntactic position), which represents the typical maintenance of a character. Additionally, as the number of clauses since last mention increased, the use of pronouns/zeros decreased, exemplifying the need to reintroduce characters who are currently out of focus with a more explicit expression (i.e. noun phrase). The most important finding is that no developmental trend was found among the normally-developing children. This suggests that referential abilities required of maintaining a character have matured by the time a child reaches 9-10 years of age, similar to what Hickmann et al. (1996) concluded about introduction. As a result, more evidence points towards the significance of early childhood for developmental growth in understanding of referentiality.

Overall, evidence from Wong and Johnston (2004) and Arnold et al. (2009) suggests that maintenance is the first function to start developing, and is fully mastered by 9-10 years of age. While there is evidence that even very young children are able to

maintain a character, the question that remains to be answered is how often are they maintaining a character.

Reintroduction of a character. In addition to introduction and maintenance, reintroduction of characters also gives insight into children's ability to address the listener's needs. When reintroducing a character, the speaker must take into account that the listener has prior knowledge of this character, but must be reminded of this information because the character is no longer in focus. The speaker must pull that character from the background, back into the foreground, signaling to the listener which character is being referenced (Levelt, 1989; Arnold 2008). A definite noun phrase ("The boy") is often the correct choice when reintroducing a character, for it re-establishes the mutual knowledge between the speaker and the listener about this 'given' character (Toolan, 2009), yet does not require one to mark local newness like the initial introduction of a character would. There has been little research on reintroduction, but evidence reveals that it may be the most difficult function to complete (Wong & Johnston, 2004).

As mentioned previously, Wong and Johnston (2004) have been the only researchers to look at all three referential functions: Introduction, Maintenance, and Reintroduction. They found that overall, 3-year-olds rarely made clear reference while 12-year-olds almost always did. Across all of the age groups, children provided the clearest references for Maintenance, followed by Introduction, and lastly, Reintroduction. Three-year-olds performed very poorly when introducing and reintroducing characters. Five-year-olds performed better than 3-year-olds across all three categories, but did not reach the success of the older groups; however, 5-year-olds used comparable referents to

the older children. Therefore, referential success in all three functions (maintenance, introduction, and reintroduction) seems to begin around 5 years of age. Like introduction, reintroduction of a character seems to still be developing in the preschool years, and as these results suggest, may be the most difficult referential function to acquire. This raises the question: at what age are these referential skills developing? Past research has targeted the preschool years as being a critical period for the growth in referential ability; however, if we are to determine at what age these skills shift, we must look at narrower age groups.

Conclusion about local character coherence. Past research on character referentiality for local coherence has found that maintenance is the easiest function to master and that children as young as 3 are capable of doing so; however, we do not know how long children tend to maintain a character and subsequently, whether children are able to alternate reference between characters. Introduction and reintroduction, conversely, do not develop until later and children are less successful at adequately completing these two functions. Despite the various studies on children's narrative referentiality, there are still a number of important questions left to be answered. While there is evidence illustrating a shift in referential abilities somewhere between 4 and 6 years of age, we do not really know the exact age when this shift occurs. Most studies have clustered together preschoolers (3, 4, and 5-year-olds). However, there is some evidence that referentiality is beginning to develop starting as early as three years (Bamberg, 1986), so we cannot simply collapse across these age groups. For this reason, the current study looks at character referentiality in 3½, 4½, and 5½-year-olds in order to determine the age at which children develop these linguistic abilities. Additionally, past

research has not yet looked at all three referential functions in the same study (introduction, maintenance, and reintroduction) with English-speaking children.

Global Character Coherence. In addition to establishing local coherence, character referentiality can also contribute to the global coherence of a narrative: that is, whether and how children use characters to organize the narrative as a whole. Most of the research has focused on local character referentiality, but a few studies have attempted to determine whether children use referential strategies and whether these strategies change with age. These strategies have not been conceptualized as fully global, because they only focus on the particular linguistic referents used in small pieces of the text. Therefore, they are not telling us enough about children's overall referential strategies. The picture that emerges from these studies is mixed. Karmiloff-Smith (1981) found evidence in favor of clear referential strategies developing after preschool (6 years of age), while Bamberg (1986) found this earlier.

Karmiloff-Smith tested English and French-speaking children, ages 4 to 9 years. Children were asked to tell stories with the aid of four wordless picture books, each containing six pictures. The wordless picture books differed in character structure: Story 1: one central character; Story 2: three characters switching between active and passive roles; Story 3: two main characters; Story 4: no link between the pictures. Karmiloff-Smith primarily focused on the results from Story 1 with one main character, for the most clear-cut strategies emerged here. She found that 4-5-year-olds had not yet developed an accurate referential strategy, in that they could not successfully attend to the listener's needs when creating the narrative. Instead, they used deictic pronouns [*this that*] when referring to characters, making the intended referent unclear. This deictic strategy does

not fulfill the social demand of communicating the story clearly to the listener, nor does it fulfill the cognitive demands of updating the narrative so that they are linking one utterance to the next. In addition, the deictic strategy does not fulfill the linguistic demands required because the child is unable to properly use pronouns and noun phrases when needed. Interestingly, the 4-5-year-olds used the deictic strategy for Story 4 as well, in which the pictures were not connected as a story. This suggests that even 4-5-year-olds are unable to create a coherent story, but describe pictures individually whether they were meant to be connected or not.

It is not until 6 years and older that the children were able to use a *thematic subject strategy*, as Karmiloff-Smith called it. This strategy is characterized by the child viewing one character as the protagonist who gets pronominalized (or in ambiguous cases they choose one protagonist), while referring to all other secondary characters with a noun phrase throughout, regardless if another character is brought into focus in the story or not. The use of the thematic subject strategy, while linguistically incorrect, shows that the child has some grasp of when to use pronouns or noun phrases. Choosing only one character to pronominalize may allow the child to better keep track of the characters in their narrative. Thus, the use of the thematic subject strategy also illustrates the child's ability to signal who is the protagonist in the story.

In contrast to this study, Bamberg (1986) found that children's referential abilities develop much earlier than 6 years of age. He elicited narratives from German-speaking children at three age groups: 3½-4 years, 5-6 years, and 9-10 years. Narratives were elicited using a 24-page wordless picture book, "Frog, Where Are You?" which had first been read to the children several times by their parents. The story involves a boy and his

dog looking for their lost frog. The boy and the dog often act in parallel throughout the story. Bamberg analyzed children's references when introducing or switching reference to a character versus children's references when maintaining a character. The youngest group, 3½-4-year-olds, showed a thematic subject strategy when referencing the boy (the main protagonist), using pronominals especially when switching reference to him, even when a secondary character had just been referred to through a noun phrase. Likewise, these children primarily used nominals when referring to the dog. Bamberg found that this thematic subject strategy was still dominant among 5-6-year-olds, but rarely appeared among 9-10-year-olds who now used the correct *anaphoric strategy*, in which they properly introduce new characters with a noun phrase, maintain old characters with a pronoun, and reintroduce known characters with a noun phrase. These findings seem to contradict Karmiloff-Smith's results that reveal the thematic subject strategy as emerging after 6 years. However, when looking at the anaphoric strategy, the children in the youngest group are not yet capable of using it. Some of the 5-6-year-olds chose the anaphoric strategy, although it was only in the oldest group that it is the preferred strategy. This reveals that children as young as 3½ are able to make some coherent references, but full referentiality is not mastered until after 5-6 years.

However, there are some significant differences between Karmiloff-Smith and Bamberg's studies. Karmiloff-Smith elicited narratives from children using a smaller set of 6 pictures, while Bamberg used a much larger set of 24 pictures. It may well be that Bamberg found such clear strategies from the younger children because of the length of the narratives that provided the child with more opportunities to reference the different characters. Children were also scaffolded by their parents, influencing the children's

potential narrative abilities. Conversely, because Karmiloff-Smith's materials were much shorter and children produced narratives without any scaffolding, they may elicit narratives that are more representative of children's independent abilities. The differences between the two studies could also be due to the structure of the characters in the story. In "Frog, Where Are You?" the boy and dog often act in similar ways, and are not really interacting with each other. Karmiloff-Smith looked at a story with one central character that can easily be identified as the protagonist. Because of these differing structures, it seems reasonable that they would elicit different types of strategies from children. This illustrates the need to find the best way to elicit narratives from children.

Thus, overall, the development of global character referentiality is still unclear. Because Karmiloff-Smith (1981) and Bamberg (1986) found discrepancies in their results, we are interested in finding when strategies first emerge using more controlled stories; that is, using stories of the same length, and multiple stories per structure. We are interested to see if stable patterns emerge within a type of character structure (i.e. one protagonist and one secondary character), and how these patterns will differ across age and across story structure. In the current study, we move beyond the levels used by previous studies, because we feel that the strategies used by Bamberg and Karmiloff-Smith were more local, rather than global. That is, they only pertain to a small amount of text, and only take into account the specific referents being used. Karmiloff-Smith and Bamberg both focused on referents used for each single character, but this tells us nothing of how the speaker is presenting the relationship between the characters. By looking beyond just the specific linguistic referents, we may find that children are using more global strategies that are dependent upon factors embedded within the story.

Factors Affecting the Use of Character Referentiality

The discussion of local and global character coherence should have made clear that there are a number of factors that may be affecting children's use of character referentiality. Here we considered three key factors: character structure, the type of problem in the story, and the mode of presentation of the stimuli. We expect that each of these three factors will contribute independently to children's character referentiality.

Character Structure. A factor that may affect children's character referentiality is the type of character structure embedded in the pictures used to elicit the narrative. By character structure we mean not only the number of characters, but the types of characters as well (i.e. protagonist, secondary character). Although a few studies used varying character structures (Karmiloff-Smith, 1981; Wigglesworth, 1990; Hickmann et al, 1996), they did not systematically explore this because only one story per structure was used. Therefore, no conclusions can be reached regarding the effects of character structure on character referentiality from these studies. There is still a need to look across multiple stories of the same structure in order to determine the effects that different character structures have on children's use of referentiality.

Independent evidence suggests that character structure affects the use of linguistic referents (Arnold & Griffin, 2007). Arnold and Griffin found that adults use more explicit expressions when referring to a main character if there is a secondary character present in the story. Participants were presented with two pictures depicting a simple story. The experimenter began the story and asked the participants to finish it. The pictures either contained one main character or one main character and one minor character. The actions carried out by the main character were the same in both versions.

It is important to note that in the two-character stories, the characters were always of different genders. Arnold and Griffin coded whether participants mentioned the main character in the subject position. They found that when there was no secondary character, participants used almost 50% more pronouns than in the two-character stories. Because the main character was already presented in the foreground by the experimenter, there was no need for the participant to use a noun phrase when continuing the story. Therefore, it seems as though the presence of another character places more difficulty on the participant, resulting in less efficient referent use, even in adults.

Because adults had more difficulty with the two-character stories, it is highly likely that children will be even more negatively affected by having multiple characters. Additionally, no one has tested the effects of having one main character and one secondary character vs. having two main characters. We are interested to see the demands that two protagonists who switch between more or less active roles have on children's use of referential expression. In a story with one main character and one secondary character, children could simply ignore the secondary character to alleviate some of the cognitive demands required of referentiality. However, in a two-character story where both characters' actions are crucial to understanding the narrative, they may not be able to simplify their strategy. We predict that children will have more difficulty when referencing story characters in the stories with two protagonists. Also, children's overall global strategies should differ for the one main character/one secondary character stories and the two main character stories.

Problem Type. Another factor that may affect children's referential abilities is the type of problem that the characters are involved in; that is, a problem either external

or internal to the protagonist(s). For example, dropping an ice cream cone would be considered an external problem, whereas being afraid of the dark would be considered an internal problem. This factor has not been examined in children's development of referentiality, but we believe it may be relevant. If children have a better understanding of one type of causality over the other, it is probable that their character referentiality will be better in the former rather than the latter.

Some evidence comes from Shapiro and Hudson (1991) who found that the mere presence of a problem and resolution in the pictures used to elicit the narrative resulted in better narratives from young children. They elicited narratives from preschoolers and first-graders using two different 6-page wordless picture books. Two versions were created for each book: one containing an embedded problem and resolution (problem-based) and one without a problem and resolution that merely shows a sequence of events being carried out (event-based). Shapiro and Hudson found that children's stories for stimuli that had a problem and resolution showed greater narrative organization than event-based stories without a problem for both age groups. Whereas children provided more obstacles and repairs for problem-based stories, they gave more actions in the event-based stories. Overall, they found that the presence of a problem and resolution was helpful for children when organizing a narrative, ultimately resulting in stories with higher coherence. However, it is not clear whether the type of problem depicted, whether internal or external, will have an effect on character referentiality, whether local or global.

Several researchers have attempted to find which problem type young children understand better: physical or psychological. That is, do children understand external

motivation for a problem earlier than they do for internal motives, or is it the opposite? Miller and Aloise (1989) reviewed past literature concerning children's understanding of causality and concluded that older children understand psychological causality better than younger children and that this knowledge increases with age. They also deduced that, although young children may have some grasp on psychological causality, this can be inhibited when explicit information about the problem is not provided. That is, when children are forced to make inferences about the problem, they may no longer be able to identify the psychological cause.

Thompson and Myers (1985) also found support for the claim that young children have a better understanding for physical causes in narratives rather than for psychological causes. They tested 4 and 7-year-olds' understanding of both types of causes. A physical cause involved the character's actions causing the problem, while the psychological cause involved the character's emotions causing the problem. Children were instructed to retell a story that they first heard from the experimenter. Questions were asked either during or after the story to test the children's comprehension. Four-year-olds performed better on the comprehension measures for the physical version of the story than the psychological version of the same story. Thompson and Myers argued that this difference may be due to problems with causal reasoning/inference making in the psychological version, similar to what Miller and Aloise (1989) suspected. Recall of story components was also higher for the physical version in both age groups. From these results, it appears that preschool children may have a better understanding of physical causality than psychological causality.

In contrast, Kendeou, van den Broek, White, and Lynch (2009) have argued that children have a greater understanding of internal causality than was previously believed, "but focus much of their attention on observable, concrete actions rather than internal causes such as characters' goals." They also argue that while preschoolers focus on local inferences, older children are able to abstract, thereby making global inferences. When does this shift towards understanding psychological causality occur?

There is a need to test the effect of problem type on children's character referentiality across multiple stories. If it is in fact more difficult for children to create a narrative with a psychological/internal problem as past research suggests (Miller & Aloise, 1989; Thompson & Myers, 1985; Kendeou et al., 2009), will children's ability to reference characters suffer in these stories as opposed to the stories with a physical/external problem? We predict that children's character referentiality will be more successful in stories with an external problem. This difference should decrease with age with 5-year-olds performing comparably across both problem types.

Mode of Presentation. As previously argued, another factor that may be affecting character referentiality is the mode of picture presentation. While past researchers have used different modes of presentation than others to address the same question, such as Bamberg (1986) and Karmiloff-Smith (1981), no one has determined what effect this presentation has on children's narratives. There has only been one study to directly compare single page to booklet prompts. Vion and Colas (1999) looked at the difference between online production (booklet condition) versus pre-planned production (single-page). To ensure that the single-page condition was actually preplanned, participants were encouraged to spend as much time as desired previewing the pictures

before narrative production. No such previewing was allowed in the booklet condition. Vion and Colas tested 7, 9, and 11-year-olds as well as adults, all whom spoke French as their first language. They elicited narratives through either a single page prompt or a wordless picture book, each containing the same eight pictures. The results showed that the booklet condition resulted in 7-year-olds describing each picture individually, rather than connecting them into a story. Conversely, in the single-page condition, both 7 and 9-year olds used more referential givenness to connect the pictures. That is, they used pronouns and definite noun phrases more efficiently, identifying that the characters are the same throughout the entirety of the narrative, and not simply existing in a single picture.

It is important to note that Vion and Colas were more interested in the participants' *processing* of the pictures, and not necessarily the mode of presentation itself. Therefore, this study is not a direct comparison of the single-page and booklet conditions. We still do not know which type of stimuli promotes better narrative production in terms of both local and global character referentiality.

We hypothesize that children's character referentiality should be closer to the adult model in the single-page condition than in the booklet condition because children should be better able to keep track of the characters when all of the pictures are in view. That is, during production children can refer forwards or backwards through the pictures, which we believe should result in more appropriate referent use. We also expect that this difference between conditions will decrease with age, with 3-year-olds showing the biggest discrepancy.

The Current Study

The current study examines some factors that may affect the expression of character referentiality in preschoolers' narratives, and the age by which appropriate forms for three critical referential functions are acquired. While it seems that character referentiality develops during the preschool years, we are unsure at which age this happens. In addition, we have yet to understand whether and how the structure of the stimuli and mode of presentation may be affecting children's ability to refer to characters when taking the perspective of others. Past research has not paid enough attention to the type of stimuli being used to elicit narratives from children, and this may explain the divergent findings that have emerged from different studies. By systematically controlling for character structure, problem type, and mode of presentation, we may be able to better understand whether and how these factors are affecting the expression of character referentiality.

As the review indicated, there are a number of unanswered questions that this study attempts to address. First, at what age are children showing sensitivity to the listener's needs with regards to creating a referentially cohesive narrative? That is, when are children first able to consider the listener's knowledge of the characters when presenting the story? Past research illustrates that a shift is happening somewhere between 3 and 5 years, but because these studies tend to group preschoolers together, we are unable to tell exactly when this development is occurring. Specifically, what is the developmental course of acquiring the three referential functions: introduction, maintenance, and reintroduction?

We are also interested in how the structure of the stimuli and mode of presentation influenced children's character referentiality. To determine what effect the number/type of characters in a story has on children's use of character referentiality, in our stimuli we included picture sequences with one main character and one secondary as well as picture sequences with two main characters. We hypothesized that keeping track of two main characters is more difficult; hence, character referentiality may suffer in these stories. In addition, regarding character structure and global character coherence, we asked whether children use stable strategies across multiple stories with the same structure or treat each story individually. In other words, are children actually developing global strategies, in the sense that they use that same strategy to approach stories with the same character structure (i.e. two protagonists)? We predict that more advanced strategies will emerge in the one character stories than in the two character stories because of the higher demands placed on the child by having an additional protagonist.

In addition to character structure, we also varied the problem type within our stimuli, with two stories containing an external problem and two containing an internal problem. We are interested in what effect problem type will have on children's character referentiality, and whether this will change with age. Past research suggests that children should obtain knowledge of physical causality first. As a result, we predict that overall children will perform better on stories with an external problem, but that this difference will decrease with age.

Finally, we included two modes of presentation in our study, with participants receiving each of the four pictures included in each picture sequence either next to each other on a single page or bound together in a booklet. This will help us answer the

question: what is the best method of eliciting narratives from preschool children? If narrative development is in fact promoting school readiness, than finding the best way to elicit narratives from preschool children is crucial for their later academic development. We predict that the single-page prompts will result in narratives with better use of character referentiality, for it will allow children to see connections between the pictures easier than a booklet would.

Overall, we have four hypotheses. First, we expect to find a developmental pattern whereby older children are using more appropriate referential forms than younger children. Second, we expect one main character stories to elicit more appropriate referential use than two main character stories. Third, we predict that stories with an external problem will elicit more appropriate referent use than stories with an internal problem. Lastly, we predict that presenting pictures on a single page will result in more appropriate referential use than presenting pictures in a booklet.

Method

Participants

Participants were 72 middle-class children, 24 at three age groups: 3½ (*M* = 3;6; range = 3;2-3;9; female = 12), 4½ (*M* = 4;6; range = 4;3-4;10; female = 13), and 5½-year-olds (*M* = 5;5; range = 5;2-5;10; female = 11). Additionally, we tested 24 adults (*M* = 19;11; range = 18;1-21;5; female = 12) who were undergraduates at Lehigh University, and received course credit for their participation. Participants were randomly assigned to one of two conditions (single-page or booklet). All participants spoke English as their primary language. Children were recruited from numerous preschools in the northeast

U.S. area. Demographic information was elicited from the children's parents and collected prior to testing.

Narrative Tasks

The narrative training task consisted of four picture cards depicting a simple scene of a little boy sliding down a slide.

Our narrative task consisted of 4 picture sequences, each containing 4 pictures. Four canonical stories were used each with an initiating event, problem, attempt to solve the problem, and resolution. Two of the stories contained one main character that appeared in every picture, as well as a secondary character that only appeared in the third picture, but acts upon the main character. As a result, acknowledging the secondary character is essential when inferring the resolution to the problem that the main character is experiencing. Two stories contained two main characters that appear in every picture, and alternate between active and passive roles. Because of this, there is a need to address both characters, thereby switching reference. In the two character stories, characters are of the opposite genders.

In addition to the number of characters, the type of problem in the story was also counterbalanced. Two stories involved an external problem and two stories involved an internal problem. The external problems require children to infer physical causality, while the internal problems require that children infer psychological causality. For example, one external problem involves a boy losing his balloon (physical causality), while an internal problem involves a girl having a nightmare (psychological causality).

Narratives were elicited through two different modes of presentation: single-page and booklet. Participants were randomly assigned to a mode of presentation, with half of

the participants from each age group receiving either condition. The single-page condition consisted of a sequence of four colored pictures on a single page (one for each story). The booklet condition consisted of the same four sets of pictures; however, the pictures were bounded into a booklet format (one for each story).

Overall, there were four different combinations of character structure and problem type: one main character-external problem; one main character-internal problem; two main characters-external problem, two main characters-internal problem (See Appendix).

Procedure

Participants were tested individually in a quiet room adjacent to their classroom. Children were seated at a table across from the experimenter. All tasks were audio-recorded using a digital recorder for later transcription. Participants were first given a narrative training task. During this task, the experimenter placed four square cards on the table in front of the child. The cards depicted a scene of a little boy climbing up a slide, sitting down, sliding, and standing up. The experimenter told the children that the pictures made a story and asked them to tell the story that the pictures made.

After the training task, the narrative task was administered. Each child was asked to tell four different stories. The experimenter began each session with the same instructions: "My friend gave me these pictures and told me that they make a story. But I don't know what that story is, so I need you to help me. I need you to look at each of the pictures first and then tell me the story that they make." Little to no prompts were used, so as not to influence the children's stories. Four different orders were used. Although there were 16 different possible orders between the 4 stories, we restricted the number of orders used to 4. This was due to our restrictions on the pairing of stimuli, ensuring that

character structure and problem type varied accordingly within the order. In other words, a one character story was always followed by a two character story and vice versa. The order that the children received the different stories in was counterbalanced within age groups and gender.

After the child finished telling their story for each picture sequence, the experimenter asked them a series of predetermined comprehension questions, asking "What is happening?" in pictures 2, 3, and 4. Follow-up "why" questions were asked when relevant. These comprehension questions were included to further examine children's understanding of the structure of narratives presented to them (e.g. problem, attempts, and resolution), but these responses were not included in the current study.

Adults were tested on the four narrative tasks only, as no training task was given to them. Adult participants were given the following instructions: "Look at each of the pictures first. Then tell me the story that the pictures make as if telling it to someone who does not know the story." No comprehension questions were administered to the adults.

Coding

Stories were transcribed verbatim using Express Scribe transcription software, which allows for the audio-recording to be slowed down. Next, stories were coded for the different linguistic referent forms used when completing the referential functions of introduction, maintenance, and reintroduction of the characters.

Referential Functions and their Forms.

Single main character stories. We coded for 4 different referential functions: Introduction of MC (main character), Introduction of SC (secondary character), Reintroduction of MC, and Maintenance of MC. Introduction occurs at the initial mention

of the character. Reintroduction of MC occurs after the child introduces the SC and switches reference back to the MC. Maintenance of MC occurs when a child continues to refer to the MC in a subsequent clause. All animate referents in the subject position of the sentence were coded.

The first three referential functions (introduction of MC and SC and reintroduction of MC) were coded for the type of linguistic referent used: Indefinite NP (noun phrase), Definite NP, Possessive NP, Demonstrative NP, Bare NP, Pronoun, Pronoun Zero (pronoun is omitted) and Absence in which the child does not mention that referential function.

Maintenance was coded for the number of consecutive times a participant maintained the MC in the subject position. This is because maintenance typically occurred more than once, and participants often used multiple referential forms to do so.

Example 1: "*A boy* **(Intro MC- Indefinite NP)** was walking with a balloon. Then *he* **(Maintain MC- Pronoun 1x)** was screaming. Then it went up the tree. Then *the old man* **(Intro SC- Definite NP)** helped it get off the tree. Then *he* **(Reintro MC- Pronoun)** walked back home with the balloon." – girl 4;7

Two main character stories. We coded for 6 different referential functions: Introduction of the 1st MC, Introduction of the 2nd MC, Reintroduction of the 1st MC, Reintroduction of the 2nd MC, Maintenance of the 1st MC, and Maintenance of the 2nd MC. Reintroduction and Maintenance of the 2nd MC were dropped from the analyses, as they could not be compared directly to the single main character stories. The 1st MC is whichever character the child referred to first, regardless of whether it is the boy or the girl. Introduction occurs at the initial mention of the character. Reintroduction occurs

when the child switched reference back to that character after referencing the other protagonist. Maintenance occurs when the child refers to the same character in subsequent clauses. Like the one-character stories, Introduction and Reintroduction were coded for the type of linguistic referent being used: Indefinite NP, Definite NP, Possessive NP, Demonstrative NP, Bare NP, Pronoun, Pronoun Zero, and Absence. Maintenance was coded for the number of consecutive times the child maintained the 1st MC in the subject position.

Children often used the pronoun "they" to refer to both characters in the two character stories. "They" can be used to introduce both characters in the beginning of the story, as well as to maintain both characters (see Example 2). A character is only reintroduced with "they" if they have not been mentioned in the previous clause, or a clause coordinating with the previous clause (see Example 3).

> Example 2: "*That girl* **(Intro 1st MC- Demonstrative NP)** was playing with the basketball. And *that boy* **(Intro 2nd MC- Demonstrative NP)** was trying to catch it. And then *he* **(Maintain 2nd MC- Pronoun 1x)** fell in the pond with the basketball. And then *the girl* **(Reintro 1st MC- Definite NP)** got him out. And then they **(Maintain 1st and 2nd MC- Pronoun 1x)** went for a walk." (Boy 5;4)
>
> Example 3: "*She's* **(Intro 1st MC- Pronoun)** playing with her truck. Then *she* **(Maintain 1st MC-Pronoun 1x)** was shoveling her castle. Then *he* **(Intro 2nd MC-Pronoun)** take the truck. And *he* **(Maintain 2nd MC-Pronoun 1x)** ran. And *they* **(Maintain 2nd MC 2x, Reintro 1st MC- Pronoun)** both played with the truck. And poured sand in it."

Character Strategies for Single and Two Main Character Stories. We next coded individual stories for the types of global strategies children used. We allowed one error per story when identifying the strategy being used. For both the one-character and two-character stories, we looked for 7 distinct strategies. These strategies reveal whether the narrator mentions both characters, whether the characters are differentiated from one another, whether the focus of the narrative is on both characters equally, whether the characters are made explicit to the listener, and finally whether the characters are coordinated throughout the narrative.

1. ***No Strategy:*** Children are unable to construct a coherent narrative. Children label or do not connect the pictures in a coherent way.
2. ***No Differentiation:*** Characters are not differentiated from one another. Children may mix up gender pronouns rendering the referent unclear. Also, children may use the same pronoun to refer to both characters, making it unknown to the listener who the intended referent is.
3. ***Single Character/Group:*** Children only mention one character. The other character is never mentioned. Alternatively, children only mention characters grouped together through the pronoun "they," thereby never referring to either character individually (in two character stories only).
4. ***Simple Differentiation:*** Children refer to both characters in a general (less specific) way. Correct use of pronouns to refer to both characters throughout entire story.
5. ***Single Central Character:*** While children refer to both characters, tend to focus on one throughout the narrative. Children maintain one character as the

central character that runs throughout the entire story (about two thirds of the narrative).

6. ***Differentiation & Specificity:*** Characters are becoming more specific in the way children refer to them. Children are thus starting to show some flexibility in the use of references.
7. ***Differentiation, Specificity & Coordination:*** Children refer to characters in a more specific way, thereby showing greater cognitive flexibility. Introduce both characters with NP, and then continue to use NP and pronouns when switching reference back and forth between the two characters.

These strategies are in ascending order in terms of difficulty, with No Strategy as the most remedial and Differentiation, Specificity, & Coordination as the most advanced strategy. The one difference between the single main character and two main character stories regards the No Differentiation and Single Character strategies. In the one character stories, the No Differentiation strategy is more advanced than Single Character, while the reverse is true for the two character strategies. This is because not differentiating between a main character and a secondary character only affects a small portion of the narrative; conversely, not differentiating between two main characters comprises the listener's understanding of the entire narrative.

In addition to global strategies, we coded narratives for the number of alternations made between the two story characters in the subject position. This would allow us to get a better idea of how these narratives are being organized around the characters, and why children are using certain strategies.

Results

For each research question, we were interested in two types of character referentiality: local and global. Local character referentiality focuses on what specific linguistic referents (e.g. pronoun, definite or indefinite noun phrase) children used when introducing, reintroducing, and maintaining story characters. Global character referentiality focuses on the overall strategies children use and specifically whether and how they used story characters to create a coherent narrative. In analyzing the data, we first calculated the percentage of participants at each age who used which particular referent form for each function, as well as the percentage of participants at each age using which particular strategy. These results give us a descriptive picture about what each age group is doing, and can be found in Figures 1-48. We then translated the data into ANOVAs based on ordering of the referential forms used per referential function from least appropriate (low numbers) to most appropriate (higher numbers). These analyses allow us to test whether the differences in age, character structure, problem type, and mode of presentation are significant or not. We will first discuss local and then global character coherence. Within each of these sections, we will present the data in terms of each of our four hypotheses.

Local Character Coherence

To test our hypotheses regarding local character coherence, we conducted a series of repeated measures ANOVAs for each of the referential functions: Introduction of MC, Introduction of SC, Reintroduction of MC, and Maintenance of MC. Each ANOVA was a 4 (Age: 3½-, 4½-, 5½-year-olds, and adults) X 2 (Mode of Presentation: Single-Page and Booklet) X 2 (Character Structure: 1 vs. 2 MCs) X 2 (Problem: external and internal)

design with age and mode of presentation as between subjects variables and character structure and problem type as within subjects variables. A preliminary analysis indicated that gender was not significant and was thus dropped as a variable from all subsequent analyses. Follow-up tests of simple main effects were also conducted using Bonferroni adjustments to ensure that the family-wise error rate remained at .05.

To conduct repeated measures ANOVAs with our data, we converted the different referential forms obtained per function into numbers, taking into consideration the order of functions from the least appropriate (low numbers) to the most appropriate (higher numbers) as hypothesized for an ideal speaker. We collapsed across subdivisions of Definite and Indefinite noun phrases, leaving us with five different categories: Absence of function=0, Pronoun Zero=1, Pronoun=2, Definite NP=3, Indefinite NP=4 for introduction of main or secondary character. For reintroduction of main character, the only difference was that definite was now the highest with a score of 4 while indefinite received the score of 3. Because the forms were coded in ascending order, higher numbers indicate more appropriate uses of referential forms. The descriptive statistics for all these analyses are presented in Tables 1-6. The main character in the single main character stories was compared to the first main character in the two character stories. Likewise, the secondary character in the single main character stories was compared to the second MC in the two main character stories.

Age. Our first hypothesis predicted that there would be a developmental progression in the children's groups, with older children using more appropriate referent forms than younger children. We found support of this hypothesis in the introduction of the secondary character and the reintroduction of the main character, while introduction

of the main character and maintenance of the main character did not fully support our predictions.

Introduction of Main Character (MC). When analyzing the introduction of the MC, we found a main effect of age, $F(3,88) = 44.71$, $p < .001$, indicating significant differences across the four age groups Follow-up tests revealed that adults ($M = 3.63$) were significantly higher in their use of appropriate forms for character introduction than all three children's groups ($p < .001$). Looking at the relevant percentage figures (Figures 1-8), we see that adults almost always used a noun phrase to introduce the MC, and in fact more often than not they used the correct indefinite form than the partially correct definite form. Three and a half ($M = 1.99$), 4½- ($M = 2.20$), and 5½-year-olds ($M = 2.32$) did not differ in the form they used which seemed to be a pronoun. This was especially true for the 3½-year-olds, while 4½- and 5½-year-olds began to use definite and indefinite noun phrases. Despite finding a trend across the children's groups, these results do not fully support our age hypothesis, for we do not see a significant developmental effect.

Introduction of Secondary Character (SC). For introduction of the SC, we found a significant main effect of age, $F(3,88) = 30.451$, $p < .001$, indicating that the ability to properly introduce the SC increases with age. Follow-up tests revealed that adults ($M = 3.46$) used significantly higher referential forms than 3½- ($M = 1.71$), 4½- ($M = 2.38$), and 5½-year-olds ($M = 2.50$), $p < .001$ for all comparisons. Likewise, 4½- and 5½-year-olds used significantly higher referential forms than 3½-year-olds, $p < .001$, but did not differ from each other. Four and a half and 5½-year-olds are beginning to use definite noun phrases more frequently, while 3½-year-olds are still primarily relying on

the pronoun to introduce the SC, if they introduce the character at all (see Figures 9-16). Still, the 4½- and 5½-year-olds have not reached the level of referential adequacy of that of the adults.

Reintroduction of MC. For reintroduction of the MC, we found a significant main effect of age $F(3,88) = 25.948$, $p < .001$), indicating that once again, adults (M = 2.64) used significantly higher referential forms than 3½- (M = .75), 4½- (M = 1.37), and 5½-year-olds (M = 1.59). Follow-up tests revealed that these differences between adults and each of the children's groups were significant, $p < .001$ for all comparisons. Despite adults reaching higher levels of overall correctness for this function, the majority of them used a pronoun to reintroduce the MC, which is incorrect. Narrators are supposed to reintroduce the MC with a definite noun phrase to remind the listener of the character. The 4½- and 5½-year-olds used significantly higher referential forms than the 3½-year-olds when reintroducing the MC, $p = .036$ and $p = .001$ respectively. This is because the majority of the 3½-year-olds did not reintroduce the MC at all. The 4½- and 5½-year-olds did not differ from each other. While a number of 4½- and 5½-year-olds did not reintroduce the MC, those who did primarily used a pronoun (see Figures 17-24). While reintroduction seems to be a more difficult function to master, with a large number of children not completing this function, it nevertheless follows the same developmental progression as the introduction of the SC, thereby supporting our age hypothesis.

Maintenance of the MC. The next referential function we analyzed was maintenance. We measured consecutive maintenance of the MC by calculating how long children and adults maintained the MC in the subject position. We used four different classifications of frequency of maintenance: 0, 1, 2, and 3 or more times.

When looking at how many consecutive times the MC was maintained, we found a significant main effect of age $F(3,88) = 3.510$, $p = .019$, indicating that the length of maintenance differed across age groups. Follow-up tests found that adults ($M = 1.85$) maintained the MC significantly more than the 5½-year-olds ($M = 1.32$) and marginally more than the 3½-year-olds ($M = 1.41$), $p = .02$ and $p = .077$ respectively. Four and a half year olds ($M = 1.50$) did not differ from any other age group. At a glance, these results seem different from the developmental pattern we have found in the results of the previous functions; however, the 5½-year-olds may be maintaining less due to a higher number of alternations between the two characters (see Figures 25-32).

Character Structure. Our second hypothesis predicted that single main character stories would elicit more appropriate referent use than two main character stories. Our results for introduction of the SC and reintroduction of the MC supported this hypothesis.

Introduction of MC. No effect of character structure was found for the introduction of MC. While we expected to find a difference between character structure, it could be that because the introduction of the MC only addresses the first picture, this function is not affected by character structure. Because introduction of the SC and reintroduction of the MC are more embedded within the context of the narrative, we would expect find differences of character structure in these latter functions.

Introduction of SC. For the introduction of the SC, we found a significant main effect of character structure $F(1,88) = 8.05$, $p < .01$, with participants introducing the SC more correctly overall in the single main character stories ($M = 2.65$) than the two main character stories ($M = 2.37$). Because the SC is in fact a secondary character in the single

main character stories, participants may have an easier time distinguishing the SC apart from the protagonist by using a more explicit reference. When the second character is essentially another main character like in the two main character stories, participants may treat them equally and be more likely to rely on less explicit forms (such as pronouns) to differentiate between the two because of the extra demands of having a second protagonist.

In addition to the main effect of character structure for introduction of SC, we found an interaction between age and character structure $F(3,88) = 4.456$, $p = .006$, which indicated that 4½- and 5½-year-olds used significantly higher referential forms for the one character stories (4½ $M = 2.73$; 5½ $M = 2.75$) than for the two character stories (4½ $M = 2.02$; 5½ $M = 2.25$) when introducing the SC. Follow-up tests showed that these differences in referent use within the 4½- and 5½-year-olds were significant, $p = .001$ and $p = .013$ respectively. Thus, we see that 4½- and 5½-year-olds are benefitting from simpler character structure, while 3½-year-olds and adults do not differ between one main character (3½ $M = 1.79$; Adult $M = 3.33$) and two main character stories (3½ $M = 1.63$; Adult $M = 3.58$).

Reintroduction of MC. For reintroduction of the MC, we again found a significant main effect of character structure $F(1,88) = 7.001$, $p = .01$, with children and adults more appropriately reintroducing the MC in the single main character stories ($M = 1.73$) than the two main character stories ($M = 1.44$). Similar to introduction of the SC, minimizing demands in the narrative by having only one protagonist allows both children and adults to more correctly reintroduce the MC after switching reference to the SC.

Because the SC is only a small part of the narrative, it is more likely that the narrator will switch reference away from them and back to the MC.

Maintenance of MC. For Maintenance of the MC we found the reverse effect of the other functions. There was a main effect of character structure $F(1,88) = 28.270$, $p < .001$, revealing that participants maintained the MC for more consecutive times in the two main character stories ($M = 1.77$) than in the single main character stories ($M = 1.27$). This is an interesting finding, since participants were found to be completing the other functions better in the single main character stories. It is important to note that longer maintenance does not equate better referentiality. It may well be that because the two main character stories are more difficult, participants maintain the MC for longer instead of switching reference between the two characters. This would be a solution to coping with the difficulty of having two main characters.

Additionally, we found an interaction between age and character structure $F(3,88) = 5.783$, $p = .001$, revealing that 3½- and 4½-year-olds were maintaining significantly more in the two main character stories (3½ $M = 1.92$; 4½ $M = 1.83$) than the single main character stories (3½ $M = .90$; 4½ $M = 1.17$). Follow-up tests found that these differences between character structures in 3½- and 4½-year-olds were significant, $p < .001$ and $p = .001$ respectively. Also, the 5½-year-olds maintained marginally more in the two main character stories ($M = 1.50$) than the single main character stories ($M = 1.15$), $p = .063$. While there does not appear to be a difference in adults ($M = 1.87$ for one character; $M = 1.83$ for two characters), having two main characters increases the likelihood that the 1st MC will be maintained for a longer period of time by children.

Problem Type. Our third hypothesis predicted that stories with an external problem would elicit more appropriate referent use than stories with an internal problem. We found support of this hypothesis in the introduction of the SC and reintroduction of the MC.

Introduction of MC. There was no main effect of problem type for the introduction of the MC. Like character structure, it could be that because the introduction of the MC is addressed in the beginning of the story is not affected by the type of problem which occurs later in the story.

Introduction of SC. For introduction of the SC, a significant main effect of problem type was found $F(1,88) = 22.765$, $p < .001$, revealing that participants used significantly higher referential forms with an external problem ($M = 2.70$) rather than stories with an internal problem ($M = 2.32$) when introducing the SC. This finding, taken with the main effect of character structure for introduction of the SC, illustrates that for the function of introducing the SC (or 2nd MC), children and adults are able to make more appropriate references when the story elements are easier; that is, one main character and an external problem. By limiting the demands of the contextual features of the story, narrators have more resources to focus on clearly portraying the characters to the listener.

There was also an interaction between age and problem type, $F(3,88) = 4.983$, $p = .003$, revealing that 3½-year-olds as well as adults used significantly higher referential forms when introducing the SC in the external stories (3½ $M = 2.10$; adult $M = 3.75$) than in the internal stories (3½ $M = 1.313$; adult $M = 3.167$). Follow-up tests found that these differences in referent use for problem type within the 3½-year-olds and adults were significant, $p < .001$ and $p = .001$ respectively. Four and a half and 5½-year-olds

did not differ in referent use between external (4½ $M = 2.73$; 5½ $M = 2.75$) and internal stories (4½ $M = 2.02$; 5½ $M = 2.25$). This interaction, taken with the interaction found between age and character structure for this same function, gives us better insight into the main effects of character structure and problem type. While 4½- and 5½-year-olds benefit more from an easier character structure (single main character) as shown by the interaction between age and character structure for the introduction of the SC, the 3½-year-olds benefit more from an easier problem type (external) when introducing the SC, as do adults. This illustrates what different age groups may focus on when constructing a story. Four and a half and 5½-year-olds may understand both external and internal problems enough to create a simple story, whereas 3½-year-olds may not understand the abstractness of internal problems, resulting in impaired narratives. Four and a half and 5½-year-olds seem to be more character-driven. The addition of another MC in the two main character stories forces them to divide their attention between the two. Unlike the children in this study, adults do not seem to have a problem constructing a narrative about multiple characters. Their stories may be more focused on the problem and resolution, which if internal, may make a story more difficult to create, thereby resulting in less adequate referent use.

Additionally, there was a significant interaction between character structure and problem type $F(1,88) = 24.815$, $p < .001$, indicating that in the single main character stories, participants introduced the SC with higher referential forms when there was an external problem ($M = 3.031$) rather than an internal problem ($M = 2.27$). Follow-up tests revealed this difference to be significant, $p < .001$. No differences were found in the two main character stories between the external ($M = 2.38$) and internal ($M = 2.37$)

problems. Therefore, the advantages that the single main character stories provide when introducing the SC seem to be wiped out if there is an internal problem present. Perhaps when there is an internal problem, constructing the story elements poses a greater challenge, thereby resulting in less attention paid to referring to the story characters correctly. Furthermore, we see that the combination of two easy elements (single main character and external problem) results in more appropriate referent use.

Reintroduction of MC. While there was no main effect of problem type for reintroduction of the MC, there was a significant interaction between character structure and problem type $F(1,88) = 5.809$, $p = .018$, revealing that in the single main character stories, participants used higher referential forms on the stories with an external problem ($M = 1.87$) than the stories with an internal problem ($M = 1.59$). Follow-up tests found that this difference was significant, $p = .018$. There was no significant difference found between two main character stories with an external problem ($M = 1.35$) and an internal problem ($M = 1.53$). Similar to the introduction of the SC, it appears that when reintroducing the MC participants especially benefit from the smaller demands of the single main character stories when paired with the easier problem type.

Maintenance of MC. When analyzing the consecutive maintenance of the MC, we found a main effect of problem type $F(1,88) = 12.592$, $p = .001$), with participants maintaining the MC more in the stories with an internal problem ($M = 1.68$) than the stories with an external problem ($M = 1.36$). Similar to the main effect of character structure, this effect is in the opposite direction compared to the previous functions that were better aided by the stories with an external problem. Again, it could be that because

the internal problems do pose more difficulty, participants maintain the MC more to avoid having to alternate between the two characters.

There was also a marginal interaction between character structure and problem type $F(1,88) = 3.262$, $p = .074$, which indicated that in the single main character stories, participants maintained the MC more when there was an internal problem ($M = 1.52$) than when there was an external problem ($M = 1.02$). Follow-up tests found this difference to be significant, $p < .001$. No differences were found within the two main character stories between the external ($M = 1.70$) and internal problems ($M = 1.84$) in which the MC was maintained quite frequently. Again, this is the opposite effect of what was found in our other functions, for which having an external problem within a single main character story resulted in higher use of the function. The internal problem, being more difficult, may force children to continuously reference the MC rather than switching reference to the SC, as is also found in the two main character stories.

Mode of Presentation. Our fourth hypothesis stated that having pictures presented on a single page would elicit more appropriate referent use than if pictures are presented in a booklet. This is the only hypothesis for which we did not find support. Instead, we found the opposite effect for the introduction of the SC.

Introduction of MC. No main effect of mode of presentation was found for the introduction of the MC. A marginal interaction effect was found for character structure and mode of presentation, $F(1,88) = 3.195$, $p = .078$, indicating that in the booklet condition participants used higher referential forms for the two main character stories ($M = 2.56$) than for the single main character stories ($M = 2.44$), while in the single page condition there was no difference for the means for the one ($M = 2.59$) vs. two character

(M = 2.54) stories. Follow-up tests found this difference to be marginally significant, p = .077. It appears that the booklet condition is at a disadvantage when there is one main character to introduce rather than two, whereas in the single-page condition the number of characters does not make a difference when introducing the MC. It is possible that knowing one will have to introduce the other character in the 1st picture results in the booklet condition using more explicit referents when introducing the 1st MC. In the single-page condition in the two main character stories, the narrators can visually see at all times that the 2nd MC is constant throughout the story, and therefore immediately establish a more explicit difference between the two characters, resulting in more general/less correct referent use.

Introduction of SC. For introduction of the SC, we found a significant main effect of mode of presentation $F(1,88) = 5.343$, $p = .023$, revealing that participants used significantly higher referential forms when introducing the SC in the booklet condition (M = 2.66) rather than the single-page condition (M = 2.36). That is, presenting pictures in a booklet results in children and adults introducing the SC more explicitly than those who view the pictures on a single page. Perhaps the booklet form is a better way to elicit certain story aspects from the narrator, whether it be because of its familiar form, or because seeing the pictures one by one forces the narrator to be more explicit for their own understanding and tracking of the characters.

There was a marginally significant interaction between mode of presentation and character structure $F(1,88) = 3.577$, $p = .062$, which indicates that participants in the booklet condition used significantly higher referential forms in the single main character stories (M = 2.896) than the two main character stories (M = 2.43). Follow-up tests

revealed that this difference was significant, $p = .001$. There was no difference within the single-page condition between one character ($M = 2.41$) and two character ($M = 2.31$) stories. This sheds light on the main effect of mode of presentation. Participants in the booklet condition are introducing more appropriately than those in the single-page condition, but only when it is a single main character story. Perhaps the narrative is made more difficult with the addition of another MC, and as a result, the positive consequences of viewing the pictures in the form of a booklet disappear for the introduction of the SC. There were no effects of mode of presentation for the reintroduction of MC and consecutive maintenance.

Local Coherence Conclusion. Overall, we found the results of our local referentiality measures to largely support 3 of our 4 hypotheses: age, character structure, and problem type. This was especially true in introduction of SC and reintroduction of MC. While introduction of MC did not reveal the expected effects, it may be due to its early appearance in the narrative, and thus is not dependent on character structure or problem type. Furthermore, consecutive maintenance revealed the opposite effect of the other functions, with two main characters and internal problems resulting in a larger number of maintenance. This finding does not challenge our hypothesis, for longer maintenance may be a way of coping with larger cognitive demands. Finally, although we found the reverse effect of what we had predicted for mode of presentation, this effect was only present in one local function (introduction of SC).

Global Character Coherence

In addition to analyzing the specific linguistic referents used for each function, we also analyzed the use of overall strategies within the stories. We ran a repeated measures

ANOVA to further examine these differences. Before running the analysis, each strategy was coded using a scale of 0-6. For the single main character strategies, the codes are as follows: No Strategy=0; Single Character/Group=1; No Differentiation=2, Simple Differentiation=3; Single Central Character=4; Differentiation & Specificity=5; Differentiation, Specificity, & Coordination=6. These strategies are in ascending order, with No Strategy being the lowest level, in which the child is unable to connect the pictures in a coherent narrative, and Differentiation, Specificity, & Coordination being the highest level, in which the narrator clearly distinguishes the two characters from one another and is able to coordinate their actions throughout the story. Therefore, the higher the number, the more advanced the strategy being used. The only difference in the coding of the two main character stories is that we reversed the order of Single Character/Group and No Differentiation. Because both characters in the two main character stories appear on every page, not differentiating between the two heavily impacts the coherence of the narrative. In the single main character stories where the secondary character only appears in one picture, not clearly differentiating between the two characters will only impact a small section of the narrative. All other codes remained the same.

To test for global referential strategy use across our four hypotheses, we again conducted a repeated measures design which included a 4 (Age: 3½-, 4½-, 5½-year-olds, and adults) X 2 (Mode of Presentation: Single-Page and Booklet) X 2 (Character Structure: Single vs. 2 MC) X 2 (Problem: external and internal) design with age and mode of presentation as between subjects variables and character structure and problem as within subjects variables. A preliminary analysis indicated that gender was

nonsignificant and was dropped from all subsequent analyses. Follow-up tests of simple effects were once again conducted with Bonferroni adjustments to ensure that the family-wise error rate was .05. Additionally, we coded narratives for the number of alternations made between the two characters in the subject position to gain further understanding of how the narratives were being organized.

Age. Both the results for strategies and number of alternations supported our age hypothesis.

Strategies. Analyzing the overall strategies used, we found a main effect of age, $F(3,88) = 51.186$, $p < .001$, indicating that different ages used different strategies. Follow-up tests revealed that adults ($M = 5.09$) used more sophisticated strategies than 3½- ($M = 1.49$), 4½- ($M = 3.24$), and 5½-year-olds ($M = 3.45$), $p < .001$. Four and a half and 5½-year-olds used more sophisticated strategies than 3½-year-olds, $p < .001$ for both comparisons. Again, 4½- and 5½-year-olds did not differ from one another. Most adults were found to use the two highest strategies: Differentiation & Specificity and Differentiation, Specificity, & Coordination. Four and a half and 5½-year-olds typically used lower to mid level strategies, such as No Differentiation, Simple Differentiation, and Single Central Character. Lastly, 3½-year-olds typically did not use a strategy, and those who did used low level strategies (see Figures 33-40). This was the same developmental pattern we had found in almost all of the linguistic functions, suggesting that local and global referentiality develop together. Participants' choice of linguistic referents to refer to characters is compatible with their overall organization of the characters throughout the narrative.

Number of Alternations. Like the consecutive maintenance measure, we used four classifications of alternations: 0, 1, 2, and 3 or more times (see Figures 41-48).

When calculating the number of alternations, we found a significant main effect of age $F(3,88) = 24.508$, $p < .001$, indicating that adults ($M = 2.22$) alternated significantly more than 3½- ($M = .94$), 4½- ($M = 1.53$), and 5½-year-olds ($M = 1.73$). Follow-up tests revealed all three differences to be significant, $p < .001$ for all comparisons. Additionally, 4½- and 5½-year-olds were found to alternate between characters significantly more than 3½-year-olds, $p = .001$ and $p < .001$ respectively. Four and a half and 5½-year-olds did not differ in number of alternations. This is the developmental progression we would expect with 3½-year-olds having more difficulty alternating, while 4½- and 5½-year-olds are able to do so, but not yet as frequently as the adults. These results compliment our findings of strategy use, in which we see the more the narrator is able to alternate between the two characters, the more advanced strategies they are able to use.

Character Structure. Our global referentiality results provided partial support for our character structure hypothesis.

Strategies. When analyzing strategies, no main effect was found for character structure; however, there was a significant interaction between age and character structure $F(3,88) = 5.013$, $p = .003$), indicating that 4½-year-olds and adults performed differently across character structures. Follow-up tests showed that 4½-year-olds used marginally more sophisticated strategies in the single main character stories ($M = 3.44$) than in the two main character stories ($M = 3.04$), $p = .085$. Conversely, adults used significantly more sophisticated strategies in the two main character stories ($M = 5.50$)

than in the single main character stories (M = 4.69), p = .001. Three and a half and 5½-year-olds did not differ in their strategy use between one main character (3½ M = 1.48; 5½ M = 3.29) and two main character stories (3½ M = 1.50; 5½ M = 3.60). Having two protagonists in the story allowed adults to take advantage of the upper level strategies, while it may have limited the 4½-year-olds to using more basic strategies to lessen the cognitive load of having two characters.

Number of Alternations. Similar to strategy use, no main effect of character structure was found for number of alternations. However, there was a significant interaction effect between age and character structure $F(3,88) = 4.674$, p = .004, indicating the 3½- and 4½-year-olds and adults differed in their number of alternations across character structures. Follow-up tests found that 3½-year-olds alternated significantly more in the single main character stories (M = 1.13) than in the two main character stories (M = .75), p = .024. Likewise, 4½-year-olds alternated marginally more in the single main character stories (M = 1.69) than in the two main character stories (M = 1.38), p = .059. Conversely, adults were found to alternate significantly more in the two main character stories (M = 2.42) than in the single main character stories (M = 2.02), p = .017. These results reflect the main effect of age for strategy use. While coordinating the actions of two protagonists seems to hinder the younger children, it allows adults to alternate even more between the two main characters. Interestingly, there was no difference found within 5½-year-olds number of alternations between one main character (M = 1.73) and two main character stories (M = 1.73), which indicates that they are alternating equally as often in both types of character structures. The

addition of a protagonist in the two main character stories does not appear to negatively impact their ability to switch reference between characters.

Problem Type. We found partial support for our problem type hypothesis in strategy use and number of alternations.

Strategies. When analyzing strategies, we found a marginally significant main effect of problem type, $F(1,88) = 3.912$, $p = .051$, whereby participants were constructing narratives with more advanced strategies in stories with an external problem ($M = 3.43$) than with an internal problem ($M = 3.21$). This finding is in support of our predictions, and is no surprise since most of the referential functions were better aided by stories with an external problem than an internal one.

Additionally, we found a significant interaction between age and problem type $F(3,88) = 2.777$, $p = .046$, indicating that 3½- and 4½-year-olds differed in their strategy use across problem types. Follow-up tests found that 3½- and 4½-year-olds used significantly more sophisticated strategies in stories with an external problem (3½ $M = 1.75$; 4½ $M = 3.50$) than an internal problem (3½ $M = 1.23$; 4½ $M = 2.98$), $p = .021$, while 5½-year-olds and adults did not differ in strategy use between external (5½ $M = 3.33$; Adult $M = 5.13$) and internal problems (5½ $M = 3.56$; Adult $M = 5.06$). Much like the linguistic referents in local character coherence, global character coherence is easier for younger children when the story involves an external problem.

There was also a significant interaction between character structure and problem type $F(1,88) = 7.652$, $p = .007$, revealing that in the single main character stories, participants used more sophisticated strategies when there was an external problem ($M = 3.48$) rather than an internal problem ($M = 2.97$). Follow-up tests found this difference to

be significant, $p = .003$. There was no difference within the two main character stories between external ($M = 3.38$) and internal ($M = 3.45$) problems. It could be that the combination of the two easier elements (single main character and external problem) made narration more manageable for the participants, resulting in more advanced strategy use.

Number of Alternations. While there was no main effect of problem type for number of alternations, there was a significant interaction between character structure and problem type $F(1,88) = 24.355$, $p < .001$. Follow-up tests found that for single main character stories, participants alternated more when the problem was external ($M = 1.78$) than internal ($M = 1.47$), $p = .001$. This is the same effect found in both local functions and global strategies, whereby the two easier story elements result in better overall referentiality. However, in the two main character stories, participants alternated more when there was an internal problem ($M = 1.76$) than when there was an external problem ($M = 1.38$), $p = .002$. In the single main character story, the internal problem only involves the MC. The SC may be seen as resolving the problem, but the problem still only directly affects the MC. Conversely, in the two main character story, both characters are experiencing this internal problem, requiring that they both be mentioned.

Mode of Presentation. We found the reverse effect of our mode of presentation hypothesis for strategy use but not for number of alternations.

Strategies. For strategy use, we found a main effect of Mode of presentation, $F(1,88) = 7.179$, $p = .009$, indicating that overall, participants used more sophisticated strategies in the booklet condition ($M = 3.59$) than in the single-page condition ($M = 3.04$). From this result, we can conclude that having pictures presented in a booklet

format when constructing a narrative seems to result in the narrator using more sophisticated strategies to organize the narrative than if the pictures had been presented on a single page. When having pictures presented in a booklet, narrators may feel the need to be more careful when constructing the narrative, not only to convey clear characters to their listener, but to themselves as well, for they are unable to view the pictures simultaneously.

Number of Alternations. We did not find a main effect of mode of presentation for number of alternations. However, we did find a significant interaction between mode of presentation and problem type $F(1,88) = 4.256$, $p = .042$, revealing that in the booklet condition, participants alternated between characters more when there was an internal problem ($M = 1.76$) rather than an external problem ($M = 1.38$). Follow-up tests found this difference to be significant, $p = .031$. No difference was found within the single-page condition between external ($M = 1.57$) and internal problems ($M = 1.47$). Interestingly, when pictures are presented in a booklet form, narrators are more likely to alternate more frequently between characters if the story involves an internal problem. Perhaps because an internal problem requires the interaction of the two characters more so than the external problem, participants tend to alternate more in attempt to establish a resolution involving both characters. However, this seems to only happen if the narrator views the pictures one at a time in the booklet condition. This effect diminishes if pictures are presented all at once on a single page.

Global Coherence Conclusion. The results of our global character coherence measure are mostly in support of our research hypotheses. First, we found a clear developmental pattern, with adults using the most advanced strategies (Differentiation,

Specificity, & Coordination strategy and Differentiation & Specificity strategy), followed by 5½- and 4½-year-olds (Single Central Character strategy and Simple Differentiation strategy), and lastly 3½-year-olds (typically No Strategy). Second, stories with an external problem resulted in higher overall strategies than those with an internal problem, which is consistent with our prediction. Although character structure did not have a main effect on strategy use, we did find that in the single main character stories, external problems lead to higher strategy use than internal problems. Lastly, while we had predicted that the single-page condition would use higher overall strategies, the opposite was found. Having pictures presented in a booklet lead to higher overall strategies than if presented on a single page. These strategies were further explained by the number of alternations made between the story characters. In most instances, more advanced strategy use was associated with higher numbers of alternations in those same conditions, thereby revealing that the more the narrator is able to alternate between characters the more advanced strategies they are able to use.

Discussion

In this study, we examined two types of character referentiality: local and global. For each type of referentiality, we tested four different hypotheses. Our results provided a great deal of evidence in support of our hypotheses as well as some interesting unexpected findings.

Age

Our first hypothesis stated that we would find a development of character referentiality across age groups, giving us insight into when these abilities emerge, consistent with past findings on referential functions (Wigglesworth, 1990; Hickmann et

al., 1996; Wong & Johnston, 2004). For both local and global measures of referentiality, we found support of this.

Regarding local character referentiality, we found a clear developmental effect for introduction of the SC and reintroduction of the MC. In both of these functions, adults performed significantly better than all other groups. Adults typically used the correct referential form, illustrating that they are in fact ascribing to the adult discourse model when narrating a story to an outside listener. The one referential function that adults did not perform adequately was the reintroduction of the MC, for which they incorrectly used a pronoun. One reason for this could be adults' reliance on gendered pronouns to differentiate between the characters in the two character stories. However, this does not explain adults' reintroduction of the MC with a pronoun in the single main character stories. In the single main character stories, it is likely that the adults were differentiating the MC from the SC by exclusively referring to the MC with a pronoun. Evidence of this stems from the heavy use of the Single Central Character strategy by adults in the single main character stories.

Three and a half year olds performed significantly worse than all other groups, almost never adequately referring to story characters. Four and a half and 5½-year-olds did not differ in referential performance. Because this was a consistent finding across multiple functions, it appears that while there is a clear advancement of character referentiality between 3½ and 4½ years of age, the development between 4½ and 5½ years is not as pronounced. We also consistently found a large gap between the 5½-year-olds and adults, revealing that this development is far from complete at the end of preschool.

Our measure of global referentiality also revealed support for our developmental hypothesis. Overall, strategy use revealed that 3½-year-olds still have difficulty organizing a coherent narrative, suggesting that they are not yet able to successfully reference story characters, a result that is complimented by their linguistic reference use in the referential functions. Three and a half year olds who are capable of using a strategy must ease the cognitive demands placed on them by the narrative by either ignoring the second character or by referring to the characters generally with a pronoun, thereby not differentiating between the two. Four and a half and 5½-year-olds used significantly more sophisticated strategies than 3½-year-olds. Most 4½- and 5½-year-olds appeared to use lower and mid-level strategies, such as No Differentiation, Simple Differentiation, and Single Central Character. Because they were split across a number of different strategies, there was no real preferred strategy used across all stories. Once again, there was no significant difference found between 4½- and 5½-year-olds. From these results, we see that 4½- and 5½-year-olds are able to construct a coherent narrative around story characters, despite not reaching the sophistication of the adult participants. Adults used significantly more sophisticated strategies than all of the children's groups, primarily using the most advanced strategies. Despite the older children's ability to successfully use strategies, we see that their narratives are still far below that of adults.

Similar to strategy use, we found that adults alternate significantly more between the story characters than all three children's groups. Moreover, 4½- and 5½-year-olds alternate significantly more between characters than 3½-year-olds. This finding further illuminates the use of strategies, for we see when participants are able to alternate more

between the characters, thereby coordinating them, they are able to use more advanced global strategies.

Thus, we found that both local and global character referentiality are beginning to develop during the preschool years. While 3½-year-olds are not yet capable of adequate referentiality, 4½- and 5½-year-olds are showing these emerging abilities. These findings support past research on local referentiality (Wigglesworth, 1990; Hickmann et al., 1996; Wong & Johnston, 2004). Moreover, our study also provides additional evidence for the development of global referentiality in preschoolers, a narrative ability that has not been previously examined in such a comprehensive way.

Character Structure

Our second hypothesis stated that single main character stories would elicit better overall reference to story characters than the two main character stories. Previous research found that the inclusion of a second character resulted in less adequate character referentiality in adults (Arnold & Griffin 2007). In accordance with this, we expected that if the second character is another protagonist who appears in all four pictures, less adequate referent use will result as compared to if the character only appears in one picture. This was supported by our results of the introduction of the SC and reintroduction of the MC. By having only one MC to refer to throughout the story, the demands of the narrative are lessened, thereby allowing the narrator to more successfully refer to both the MC and SC. The added strain of having two MCs requires that the narrator's attention be split between the characters, resulting in less adequate referent use.

The maintenance of the MC resulted in different findings, with longer consecutive maintenance being associated with two main character stories; however, a higher number

of maintenance does not mean better referentiality. Most likely, the two main character stories resulted in a higher level of maintenance because participants were less likely to introduce the SC (2nd MC) and reintroduce the MC in these stories, as evidenced by the main effects of character structure in these two functions. As a result, there is extended reference of the first MC in the two main character stories.

Our global referentiality results partially supported our hypothesis, with 4½-year-olds using higher level strategies when narrating a story with a single main character. In the single main character stories, 4½-year-olds used the Single Central Character strategy the majority of the time. This illustrates that when there is only one main character, 4½-year-olds are able to differentiate the MC from the SC. Conversely, in the two main character stories they were more likely to use the Simple Differentiation strategy. Having a second MC resulted in 4½-year-olds relying on gendered pronouns to differentiate between the characters in a less explicit way than in the single main character stories. Character structure did not affect 3½- and 5½-year-olds as well as adults' use of strategies.

Overall, having an additional protagonist to reference leads to less adequate character referentiality. Although this is apparent in most local referential functions, global referentiality is only negatively affected by having two main characters in the 4½-year-old group. These findings go beyond those of Arnold & Griffin (2007), in that we now have evidence suggesting that not only the number of characters, but the type of characters affect the way adults as well as children reference them.

Problem Type

Our third hypothesis stated that stories with an external problem will elicit better overall character referentiality than stories with an internal problem. Although no prior research has examined the effect of problem type on character referentiality, there is some evidence that understanding of external problems emerges before that of internal problems (Thompson & Myers, 1985; Miller & Aloise, 1989). Because of this, we predicted that internal problems would elicit less adequate character referentiality due to the higher cognitive demand required to understand the problem in the story.

Evidence supporting this hypothesis can be found in the results for introduction of the SC and reintroduction of the MC (for single main character stories). It is likely that external problems are easier for children to understand, resulting in more adequate character referentiality in these stories. A concrete problem allows the narrator to easily relate the characters to the problem and to one another. Conversely, internal problems are likely more challenging for young children to interpret. This may cause children to use less explicit (and less correct) referential forms to compensate for the added difficulty.

Intriguingly, maintenance revealed the opposite effect: internal problems elicited longer consecutive maintenance of the MC. Note, however, that more instances of maintenance does not equate to better referential use. It is probable that this increase in maintenance is the result of less overall introduction of the SC and reintroduction of the MC in stories with an internal problem.

Our global referentiality results also supported our hypothesis of problem type, illustrating that from stories with an external problem emerged more advanced strategy

use, especially in 3½- and 4½-year-olds. In stories with an external problem, more 3½-year-olds used a strategy, although low-level, than in the stories with an internal problem. Likewise, 4½-year-olds typically used higher strategies for stories with an external problem than stories with an internal problem.

For the number of alternations, the picture was mixed, with external problems eliciting a higher number of alternations in single main character stories while internal problems elicited a higher number of alternations in two main character stories. In the Balloon story (single main character, external problem), we expected a large number of alternations due to the combination of two easy elements: single main character and external problem. These fewer cognitive demands free the narrator to focus more attention on referencing the story characters and alternating between the two. The Beach (two main characters, internal problem) story reveals a different picture. With the inclusion of two difficult elements (two main characters and an internal problem) we had expected to find fewer alternations between characters; however, we found the opposite. It may well be that because both characters are involved in the internal problem, both are necessary for its resolution, whereas in the two character story with an external problem (Stream story), it is easier to ignore the 2nd MC when resolving the problem ("He got out of the water" instead of "She helped him get out").

Overall, in both local and global character referentiality, external problems lead to more advanced referential use. We believe that this is due to internal problems being more difficult to comprehend, especially for young children. Therefore, the type of problem not only impacts the way in which the narrator refers to the characters through the different functions, but also the strategy he/she enacts. Past findings on children's

difficulty of understanding internal problems lend support for this explanation (Thompson & Myers, 1985; Miller & Aloise, 1989). This is an interesting finding, for it highlights how the ability to produce a narrative is heavily dependent on one's comprehension of that narrative.

Mode of Presentation

Our last hypothesis stated that better use of character referentiality would result if pictures were presented on a single page versus in a booklet. We expected the single-page condition to be at an advantage because the narrator is viewing all four pictures simultaneously. Therefore, they can refer forwards or backwards when narrating the story. We thought that this would result in more adequate referential use and higher overall global strategies in the single-page condition. This was our only hypothesis for which we did not find support. In fact, we found the opposite pattern of results. Having pictures presented in a booklet resulted in better character referentiality than if pictures were presented on a single-page. As both conditions previewed the pictures before production, the advantage must have occurred during on-line production. It could be that by only viewing one picture at a time while narrating, participants in the booklet condition were more explicit, and subsequently more adequate, when referencing story characters as a way to better keep track of the characters themselves. It could also be that the booklet provides a familiar context from which to create a story. Although the booklet condition only appears to benefit from the mode of presentation on one particular linguistic function (introduction of the SC), they also use more advanced global strategies overall.

Overall, we found that mode of presentation does matter when narrating a story from pictures, just not in the manner we had predicted. This finding is important for interpreting past research, for it suggests that studies using different methods of elicitation of narratives cannot be directly compared to one another.

Implications

This study should have made clear that there are a number of factors that are affecting children's reference to story characters through narratives. Past research talks generally about children's use of character referentiality, not taking into account differences in stimuli or elicitation method. Our study provides clear evidence that differences in stimuli are critical for determining children's ability to correctly reference story characters. One of our findings is that character structure is crucial and must be considered when developing stimuli from which to elicit narratives. Additionally, we have found that the type of problem the story characters are involved in, a factor that has not been previously tested when examining referentiality, also affects the way children reference story characters. Finally, the way in which pictures are presented to the narrator influences his/her ability to reference story characters. These findings are important for future studies that plan on assessing character referentiality, for our results suggest that children's use of character referentiality does not generalize across variations in stimuli. Therefore, future studies should either systematically compare differences in stimuli, or make more specific arguments about their findings of character referentiality. Future research should also be hesitant to compare their findings to past research if different types of stimuli and elicitation methods are used.

Our study also provides insight into the conditions under which children are able to take on the perspective of the listener when narrating a story. Four and a half and 5½-year-olds are beginning to show capabilities of structuring a coherent narrative around story characters, especially when characteristics of the stimuli are less difficult. That is, children are able to better meet the social and linguistic demands required to portray characters clearly to a listener by selecting the appropriate referents when the cognitive demands are decreased. This occurs when there is only one main character as well as when there is an external problem.

Another implication of this study is the support for global strategy use among children as young as 4½. Unlike past researchers (Karmiloff-Smith, 1981; Bamberg, 1986), we devised strategies that considered the way in which a narrator constructs a story around the characters, rather than focusing only on specific linguistic referent use. By doing so, we found that both children and adults use strategies that tend to vary due to changes in character structure and problem type. This is important for future research to consider, as it provides a more complete description of how children develop these narrative abilities aside from focusing only on specific referential functions.

The present work also has implications for the way in which perspective taking abilities in children are evaluated. By assessing children's ability to clearly reference story characters to an outside listener, we have thus employed a distinct measure of perspective taking. While more traditional measures of this ability involve theory of mind tasks, our study provides another window into this developmental progression, offering insight into a different side of perspective taking.

In addition to implications for future research, our study also provides practical applications in the classroom setting. Several past studies have found perspective taking abilities to be an important index of school readiness (Fisher, 1992; Hanline, Milton, & Phelps, 2008). As a result, our study provides not only a way to assess these particular abilities in children, but also affords a way to scaffold these abilities within the classroom. We now know under what conditions children are best able to take on the listener's perspective (one character and external problem); therefore, we also know what aspects of character referentiality are more challenging to children, and can help guide them accordingly. By focusing first on mastering perspective taking using stories that possess those qualities that seem least difficult for young children and then moving towards those with more difficult dimensions of narratives (multiple characters and internal problems), teachers can thus help train children on these particular skills.

Limitations

There are several limitations of this study. The first involves our restriction of the analysis to references of characters in the subject position. In the narratives collected, characters were sometimes mentioned in the object position, although infrequently in our children's groups. Adults referenced characters in the object position quite often, coordinating the characters' actions throughout the story. Such coordination is extremely sophisticated, and is not typically reflected in the children's stories. We had initially coded all of these instances, despite never running analyses on them. Follow-up analyses could compare references in the subject position with references in the object position, and whether the same factors affect these references. It would be interesting to see

whether the same character is always mentioned as the subject or the object, or whether the narrator switches the positions of the characters throughout the narrative.

Another limitation of the study is the fact that the experimenter was in view of the pictures while the participant was narrating. The experimenter sat across the table from the participant, and therefore could see the pictures as the participant was telling the story. Because of this, participants could have relied on joint attention when referring to characters, resulting in less explicit expressions. We think this is unlikely to be the case. First, adults were instructed to "tell a story as if telling it to someone who does not know the story." Even though the experimenter was in view of the pictures, these instructions hopefully prevented participants from relying on joint attention to refer to story characters. Secondly, our adults performed adequately across all but one function: reintroduction of the MC. We believe that this less adequate referential use for reintroduction was due to the narrators' strategies, rather than to the adults' reliance on joint attention to specify the character to the listener. Still, the experimenter's visual access to the pictures could have potentially affected children's referential choices. Future research should consider this issue by blindfolding the experimenter or having the experimenter sit out of view of the pictures.

Future Directions

From this study emerges numerous possibilities for future research. Although this study provided a clear picture of how character referentiality is developing over the preschool years, we know that this development does not end with 5½-year-olds. While 5½-year-olds showed they were capable of referencing story characters, they were still significantly less correct than the adult participants. Therefore, to fully understand the

development of character referentiality, it would be essential to test slightly older children (6½ and 7½-year-olds) as well as an intermediate age group (12-year-olds). This would allow us to see when this development is complete.

There is also a need to further examine the relationship between the two main characters in the two character stories. We coded for two extra functions in the two main character stories: maintenance of the second MC and reintroduction of the second MC. Because we compared the second MC to the secondary character in the single main character stories, these two functions were never analyzed. However, they were used to calculate how many alternations were being made between the two MCs, as well as to help determine which global strategy was being used to create the narrative. Future analyses could compare the introduction, reintroduction, and maintenance of the first MC to the second MC in the two character stories to see if these characters were treated differently. As found by our results, participants had more difficulty completing most referential functions in the two main character stories. If attention is spread evenly between the two main characters, thereby referencing the 1st and 2nd MC the same, this would illustrate why they have a more difficult time referencing the characters. We also might expect younger children to treat the 2nd MC as if he/she were a secondary character rather than another protagonist, as a way of reducing the cognitive load of two main characters.

While this study examines the factors that affect the expression of character referentiality in children's narratives, we do not explore the individual factors that affect the overall development of character referentiality. Future research should explore what factors in the individual child predict character referentiality abilities. Such factors may

include measures of language as well as theory of mind. While our study explicated the effects that different cognitive demands placed on character referentiality, these measures may reveal more about the linguistic and social demands. Language abilities may predict the child's knowledge of different linguistic referents. This would assess the linguistic demands of clearly identifying characters to a listener. Additionally, theory of mind abilities may help predict the child's capacity to meet the social demands of referentiality when taking on the listener's perspective. Both language and theory of mind are rapidly developing during the preschool years, and thus could help explain why these referential abilities are also emerging at this time.

Another future direction involves children's comprehension of the different narratives. Comprehension questions were included after the production of each narrative but were not assessed in this study. We intend on analyzing children's comprehension of each of the stories to determine whether character structure, problem type, and mode of presentation have an effect on children's understanding of the story in addition to their referencing of characters. We would expect that children better comprehend narratives with a single main character than narratives with two main characters, and better comprehend narratives with an external problem than an internal problem. We do not know whether mode of presentation would affect comprehension. This comparison between children's production of narratives and comprehension will allow us to better understand the difficulties found in children's use of character referentiality.

Concluding Remarks

Overall, our study provides insight into the development of character referentiality. We found that while 3½-year-olds have difficulty taking on the listener's perspective, 4½- and 5½-year-olds are sufficient at doing so, both in terms of local and global character coherence. From this, we see that they are in fact capable of taking on the listener's perspective to a certain extent. Despite this growth in referential abilities, 4½- and 5½-year-olds are still far from the referential abilities of adults. As constructing a narrative is a complex task, we know that the development of referentiality continues beyond the preschool years. In addition to this developmental advancement, we also found that a number of factors within the stimuli affect this ability to correctly reference story characters. Simpler character structure and problem type embedded in the narratives results in better overall character referentiality, as does presenting pictures in a booklet rather than on a single page. These findings have important implications for future research, as we now know that differences in the stimuli can have a significant impact on how both children and adults refer to characters and construct a narrative as a whole. Moreover, these findings reveal that by lessening the cognitive demands of the narrative itself, children and adults alike may be able to better address both the linguistic and social demands required to convey the story clearly to an outside listener.

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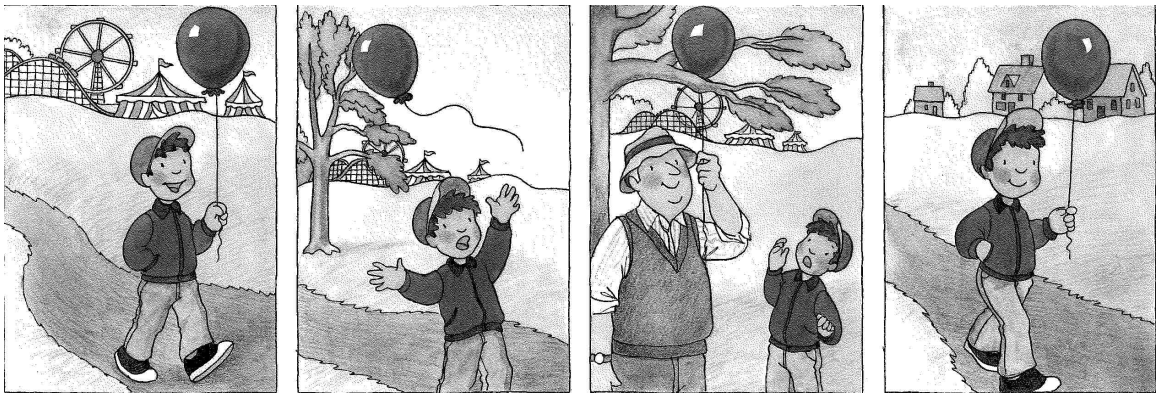
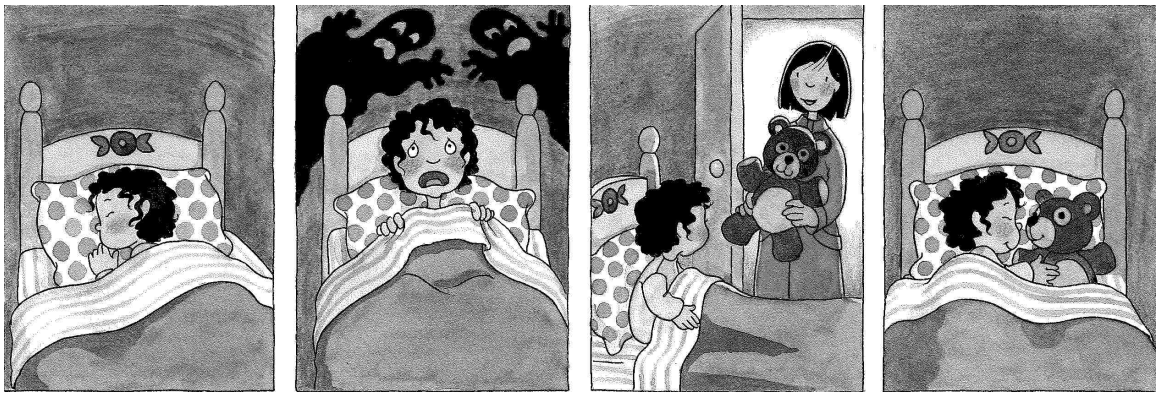
Appendix A

Balloon story: Single main character; external problem



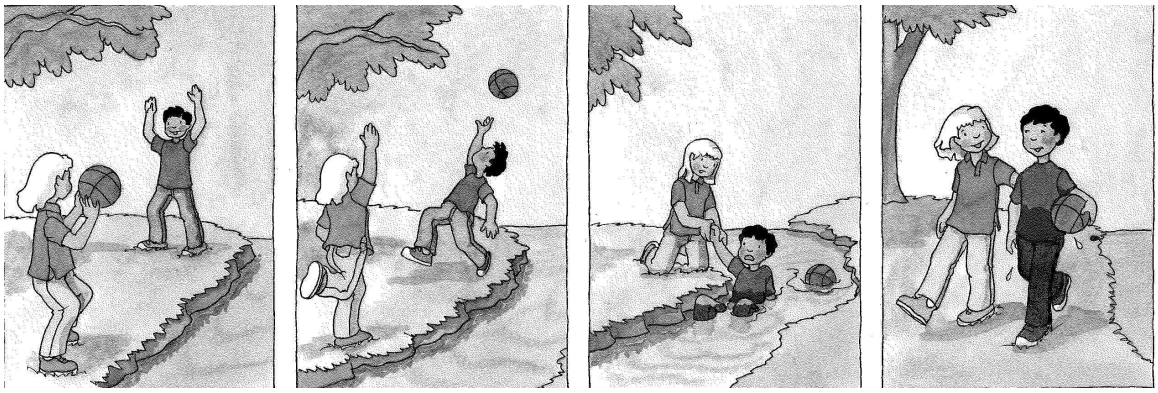
Appendix B

Nightmare story: Single main character; internal problem



Appendix C

Stream story: Two main characters; external problem



Appendix D

Beach story: Two main characters; internal problem

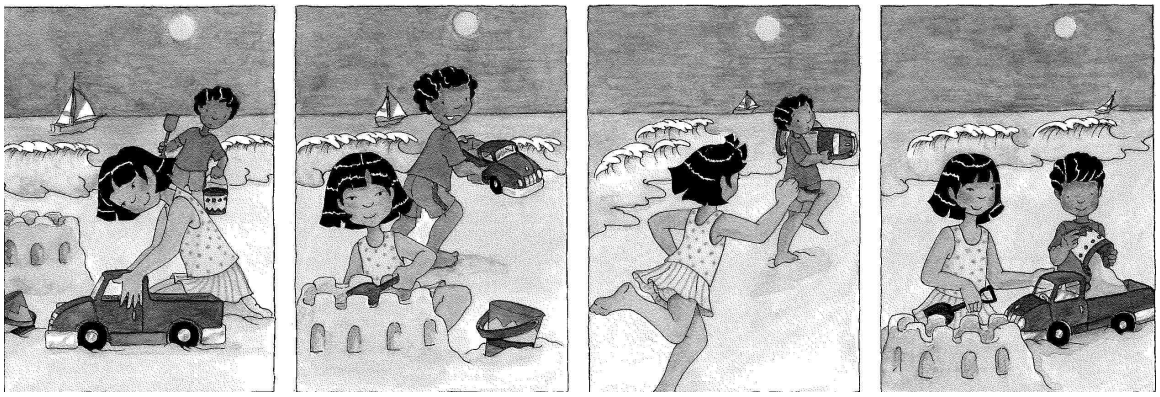


Table 1. Mean Ordering of Referential Forms (and standard deviations) used for the Introduction of the Main Character by Age, Story Type, and Mode of Presentation

One Main Character Stories				
	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	2.17 (.39)	1.92 (.90)	2.08 (.52)	1.75 (.97)
4½	2.17 (.83)	2.33 (.78)	2.25 (.97)	2.08 (.29)
5½	2.67 (.89)	2.08 (.79)	2.33 (.65)	2.25 (.62)
Adults	3.50 (.52)	3.58 (.52)	3.58 (.52)	3.50 (.52)
Two Main Characters Stories				
	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.92 (.52)	2.17 (.72)	1.83 (.58)	2.08 (.67)
4½	2.17 (.94)	2.17 (.39)	2.17 (.84)	2.25 (.45)
5½	2.33 (.49)	2.08 (.52)	2.58 (.67)	2.25 (.75)
Adults	3.75 (.62)	3.83 (.39)	3.58 (.67)	3.67 (.49)

Table 2. Mean Ordering of Referential Forms (and standard deviations) used for the Introduction of the Secondary Character by Age, Story Type, and Mode of Presentation

One Main Character Stories

	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	2.25 (.87)	2.58 (1.38)	.83 (1.53)	1.50 (1.51)
4½	2.75 (1.06)	3.25 (.75)	2.00 (1.54)	2.92 (1.00)
5½	2.67 (1.16)	3.25 (.87)	2.25 (1.49)	2.83 (1.03)
Adults	3.67 (.49)	3.83 (.58)	2.83 (.72)	3.00 (.00)

Two Main Characters Stories

	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	2.08 (1.31)	1.50 (1.00)	1.33 (1.07)	1.58 (1.17)
4½	1.50 (.91)	2.25 (.45)	2.08 (1.00)	2.25 (.45)
5½	2.17 (.39)	2.00 (.43)	2.17 (1.19)	2.67 (.78)
Adults	3.75 (.62)	3.75 (.45)	3.42 (.79)	3.42 (.52)

Table 3. Mean Ordering of Referential From (and standard deviations) used for the Reintroduction of the Main Character by Age, Story Type, and Mode of Presentation

One Main Character Stories				
	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.08 (1.00)	1.17 (1.03)	.42 (1.00)	1.00 (1.13)
4½	1.83 (1.34)	1.67 (.78)	1.25 (.97)	1.83 (.58)
5½	1.83 (.58)	1.83 (.58)	1.42 (.90)	1.83 (.58)
Adults	2.50 (.91)	3.00 (1.04)	2.50 (.91)	2.50 (.91)
Two Main Characters Stories				
	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	.17 (.58)	.67 (1.56)	.67 (1.30)	.83 (1.34)
4½	.83 (1.59)	1.17 (1.34)	1.00 (1.04)	1.33 (1.30)
5½	1.50 (1.51)	1.00 (1.35)	1.83 (1.34)	1.50 (1.24)
Adults	2.50 (1.51)	3.00 (1.35)	2.33 (1.44)	2.75 (1.42)

Table 4. Mean Length (and standard deviations) of Consecutive Maintenance of the Main Character by Age, Story Type, and Mode of Presentation

One Main Character Stories				
	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	.42 (.67)	.50 (.91)	1.50 (1.09)	1.17 (1.27)
4½	.83 (.84)	1.00 (.74)	1.25 (1.06)	1.58 (1.00)
5½	1.00 (1.04)	.83 (.72)	1.42 (1.24)	1.33 (.78)
Adults	1.67 (.99)	1.92 (1.08)	1.75 (.87)	2.17 (.84)
Two Main Characters Stories				
	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.67 (1.07)	2.42 (1.17)	1.75 (1.29)	1.83 (1.34)
4½	2.08 (1.24)	1.58 (1.24)	1.75 (.75)	1.92 (1.17)
5½	1.17 (1.27)	1.58 (.90)	1.83 (.94)	1.42 (.90)
Adults	1.58 (.67)	1.50 (.80)	1.92 (.90)	2.33 (.89)

Table 5. Mean Ordering (and standard deviations) used for Global Strategies by Age, Story Type, and Mode of Presentation

One Main Character Stories

	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.50 (1.51)	2.50 (1.93)	.75 (1.22)	1.17 (1.53)
4½	3.67 (2.02)	4.08 (1.24)	2.42 (1.78)	3.58 (1.51)
5½	3.08 (1.17)	3.50 (1.24)	2.92 (1.51)	3.67 (1.23)
Adults	4.50 (.91)	5.00 (1.04)	4.50 (.91)	4.75 (.87)

Two Main Characters Stories

	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.25 (1.55)	1.75 (1.49)	1.25 (1.49)	1.75 (1.60)
4½	2.83 (2.08)	3.42 (1.08)	2.42 (1.88)	3.50 (1.57)
5½	3.33 (1.07)	3.42 (1.44)	3.58 (1.38)	4.08 (1.17)
Adults	5.33 (.89)	5.67 (.65)	5.33 (.78)	5.67 (.49)

Table 6. Mean Ordering (and standard deviations) used for Number of Alternations by Age, Story Type, and Mode of Presentation

One Main Character Stories				
	External Problem (Balloon)		**Internal Problem (Nightmare)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	1.50 (.67)	1.42 (.79)	.42 (.79)	1.17 (1.12)
4½	1.67 (.65)	1.92 (.52)	1.33 (.99)	1.83 (.58)
5½	1.83 (.58)	1.92 (.67)	1.33 (.99)	1.83 (.58)
Adults	2.00 (.00)	2.00 (.00)	2.08 (.29)	2.00 (.00)
Two Main Characters Stories				
	External Problem (Stream)		**Internal Problem (Beach)**	
Age	*Single-page*	*Booklet*	*Single-page*	*Booklet*
3½	.75 (.62)	.50 (.80)	.58 (.90)	1.17 (1.34)
4½	.83 (1.19)	1.25 (.97)	1.75 (1.42)	1.67 (1.23)
5½	1.67 (.89)	1.42 (.52)	1.92 (1.17)	1.92 (.90)
Adults	2.33 (.78)	2.25 (.62)	2.33 (.78)	2.75 (.62)

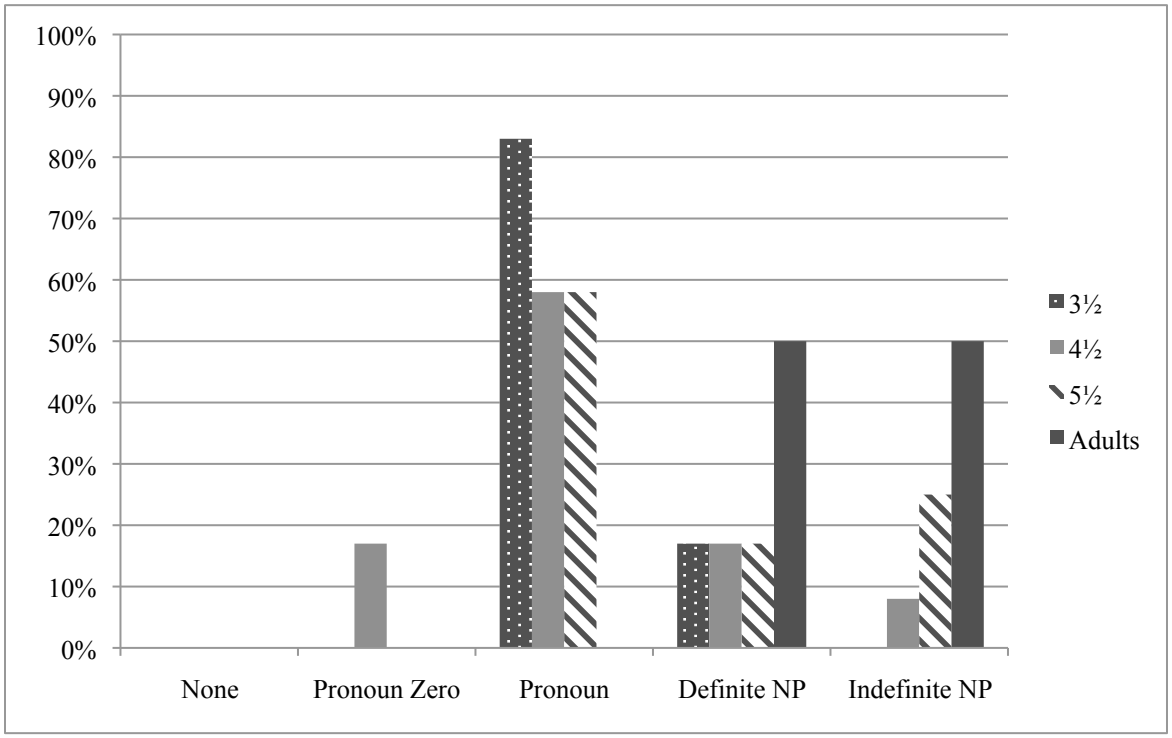


Figure 1. Percentage of participants at each age who used which particular referent: Introduction of the main character in the single main character story with an external problem (Balloon story) in the single-page condition.

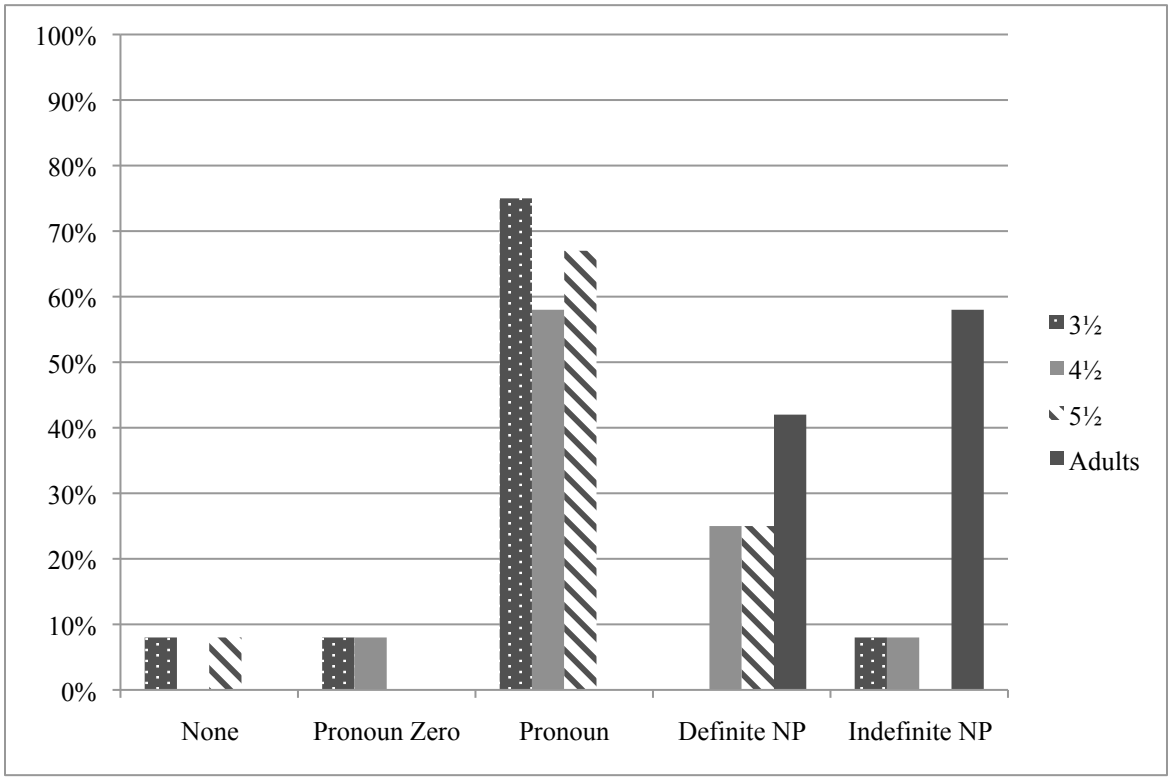


Figure 2. Percentage of participants at each age who used which particular referent: Introduction of the main character in the single main character story with an external problem (Balloon story) in the booklet condition.

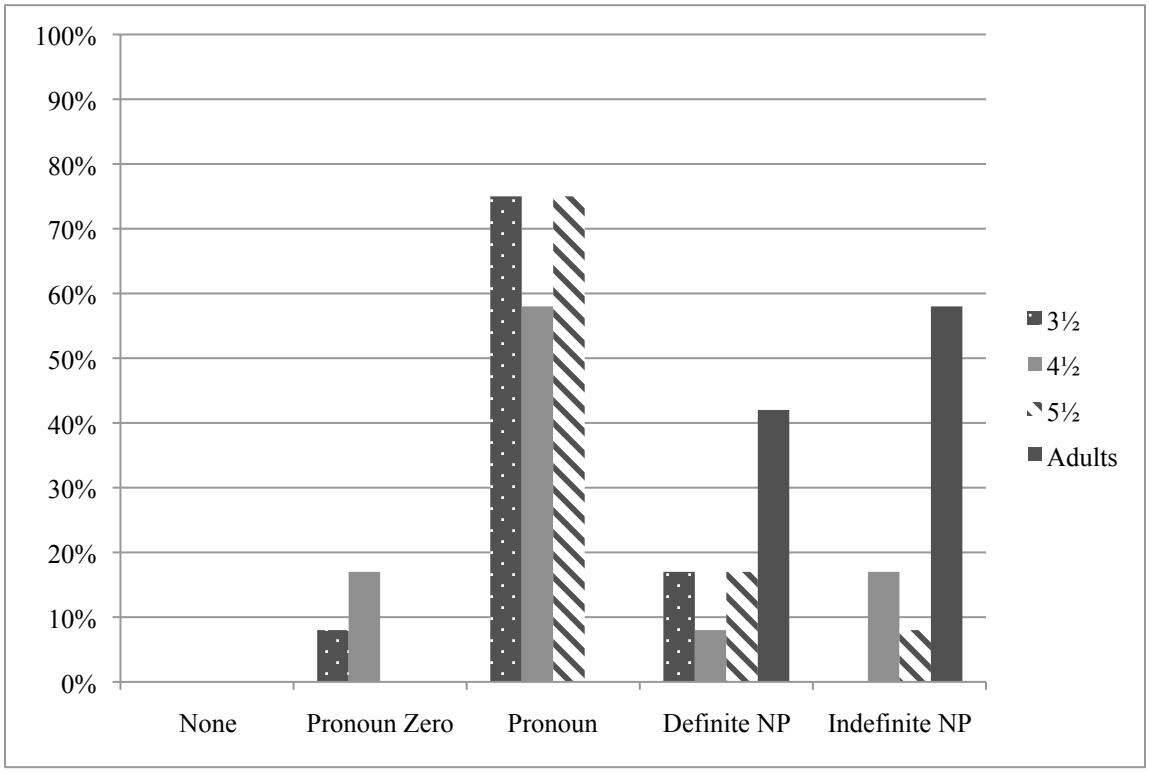


Figure 3. Percentage of participants at each age who used which particular referent: Introduction of the main character in the single main character story with an internal problem (Nightmare story) in the single-page condition.

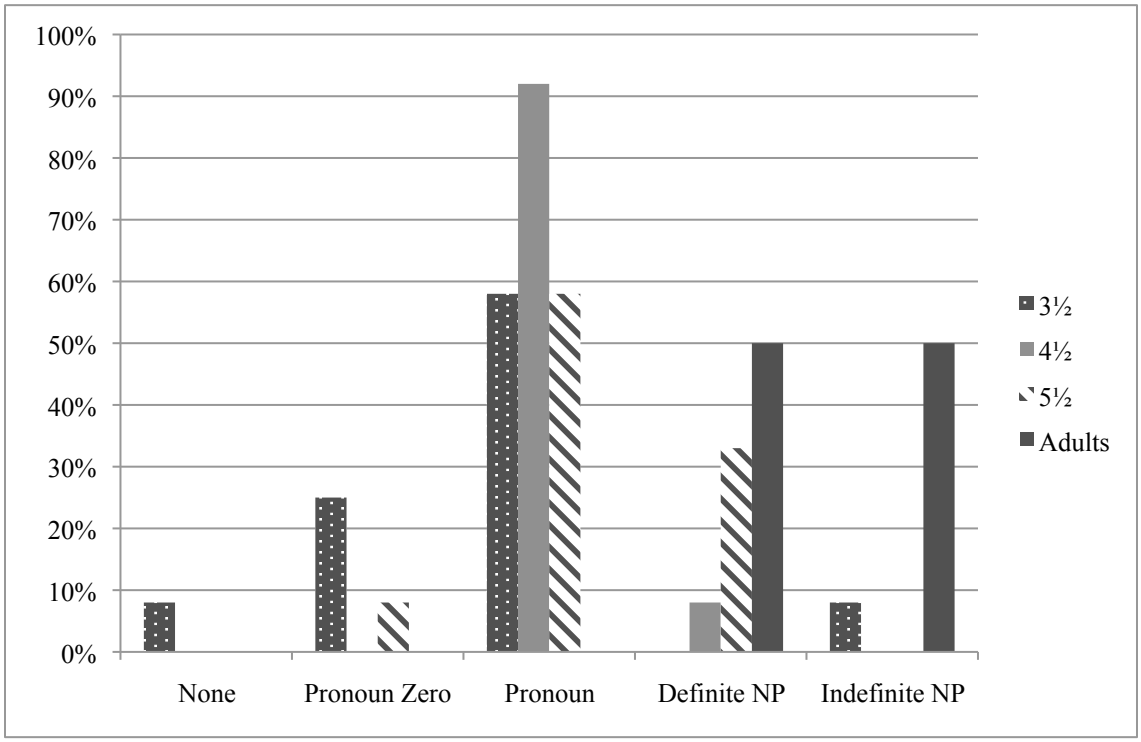


Figure 4. Percentage of participants at each age who used which particular referent: Introduction of the main character in the single main character story with an internal problem (Nightmare story) in the booklet condition.

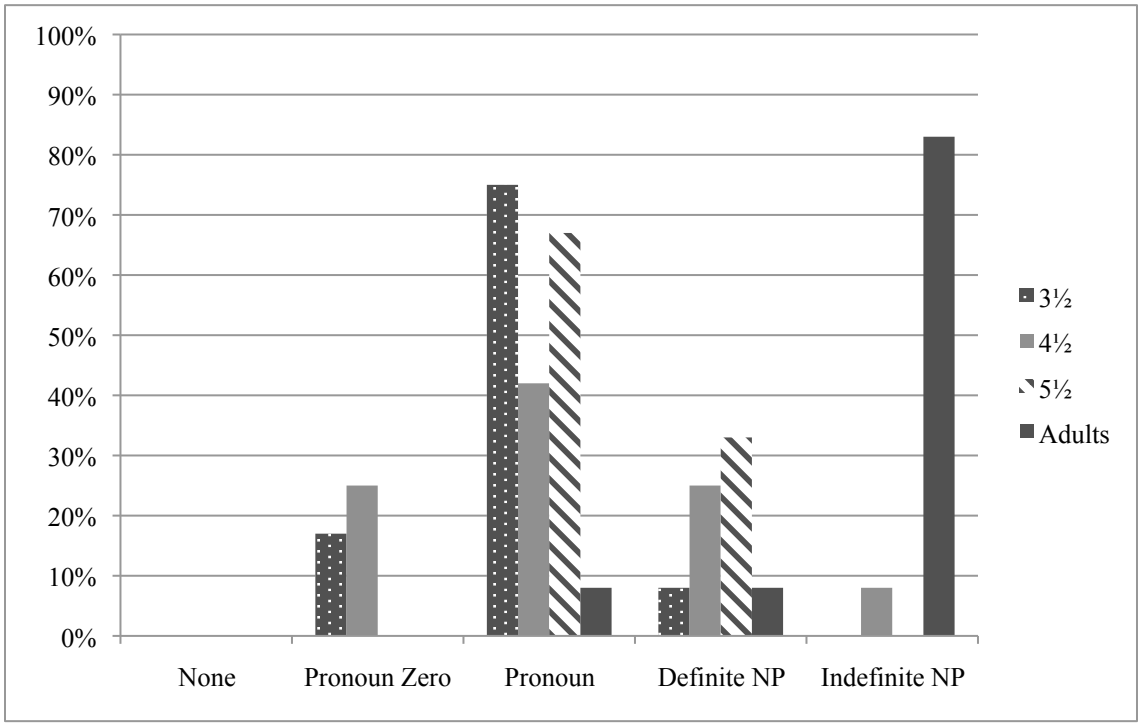


Figure 5. Percentage of participants at each age who used which particular referent: Introduction of the first main character in the two main character story with an external problem (Stream story) in the single-page condition.

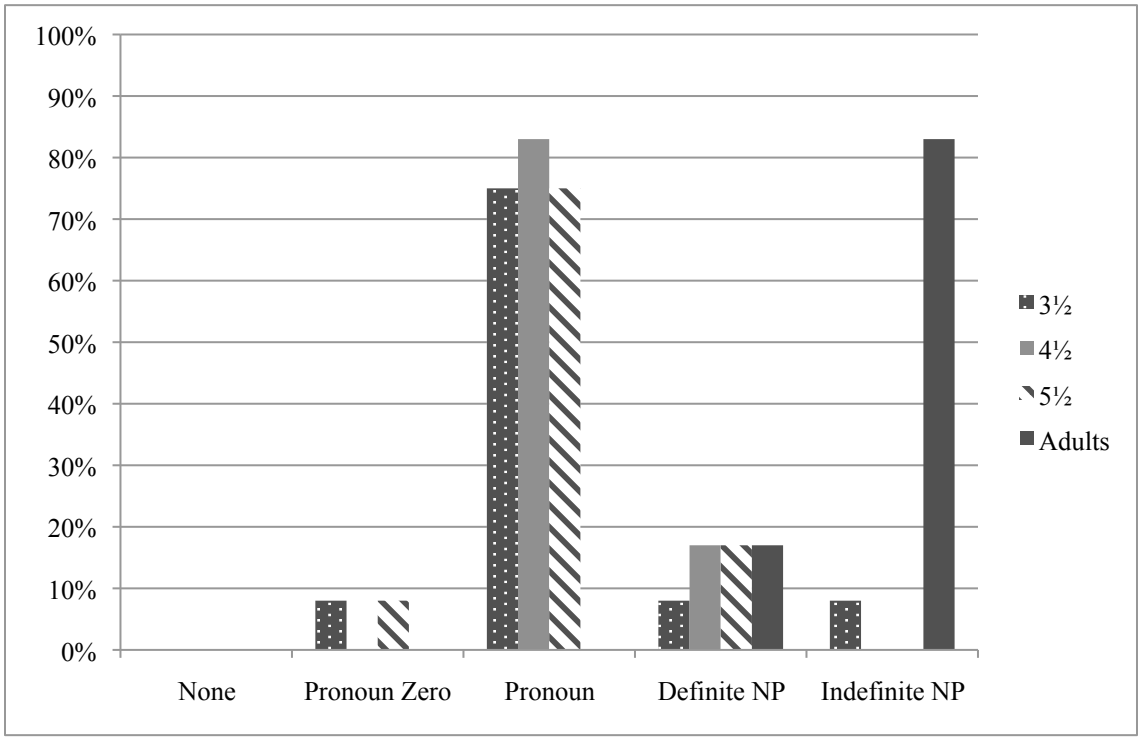


Figure 6. Percentage of participants at each age who used which particular referent: Introduction of the first main character in the two main character story with an external problem (Stream story) in the booklet condition.

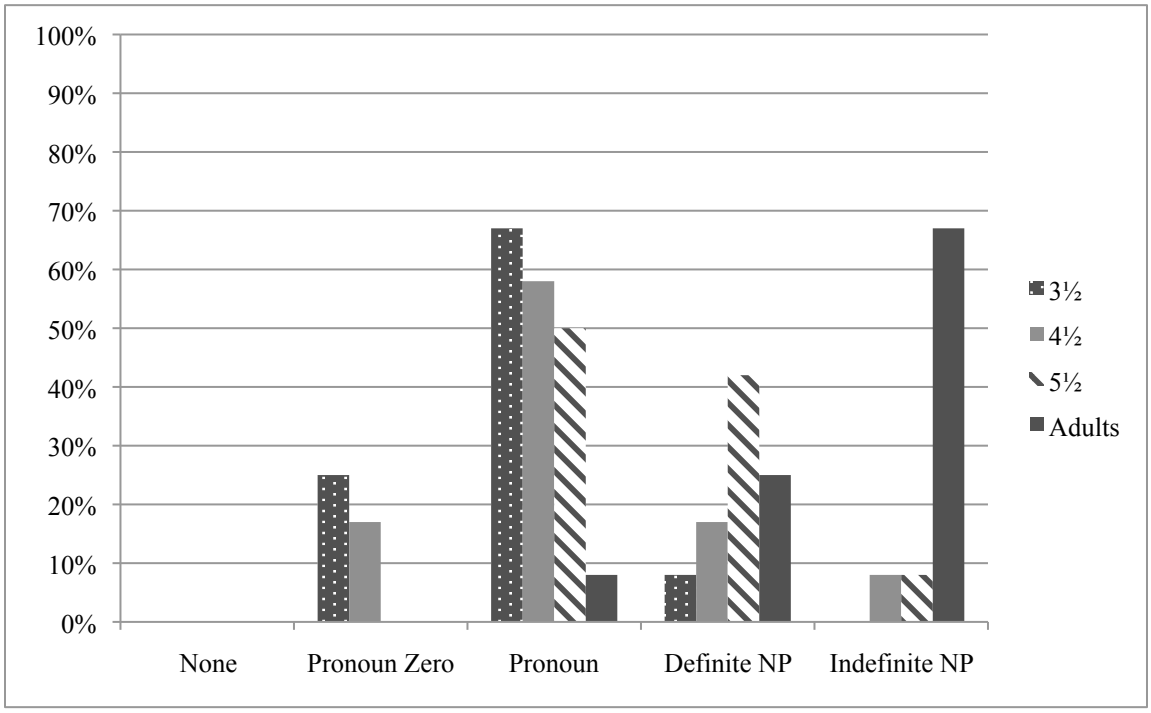


Figure 7. Percentage of participants at each age who used which particular referent: Introduction of the first main character in the two main character story with an internal problem (Beach story) in the single-page condition.

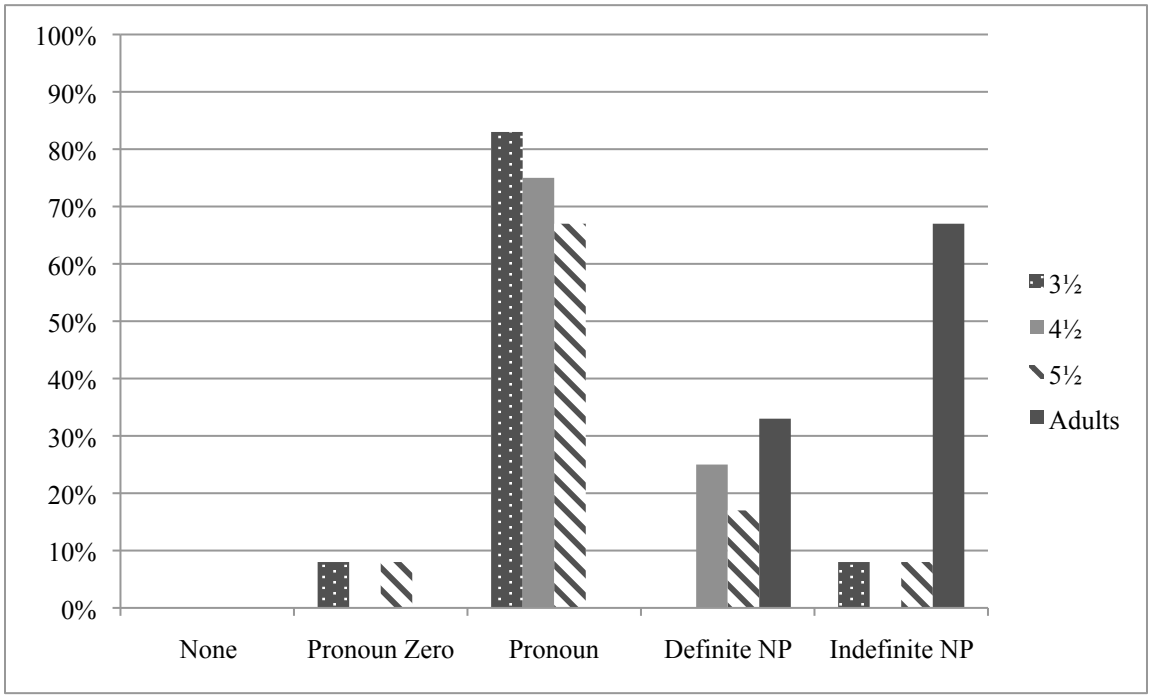


Figure 8. Percentage of participants at each age who used which particular referent: Introduction of the first main character in the two main character story with an internal problem (Beach story) in the booklet condition.

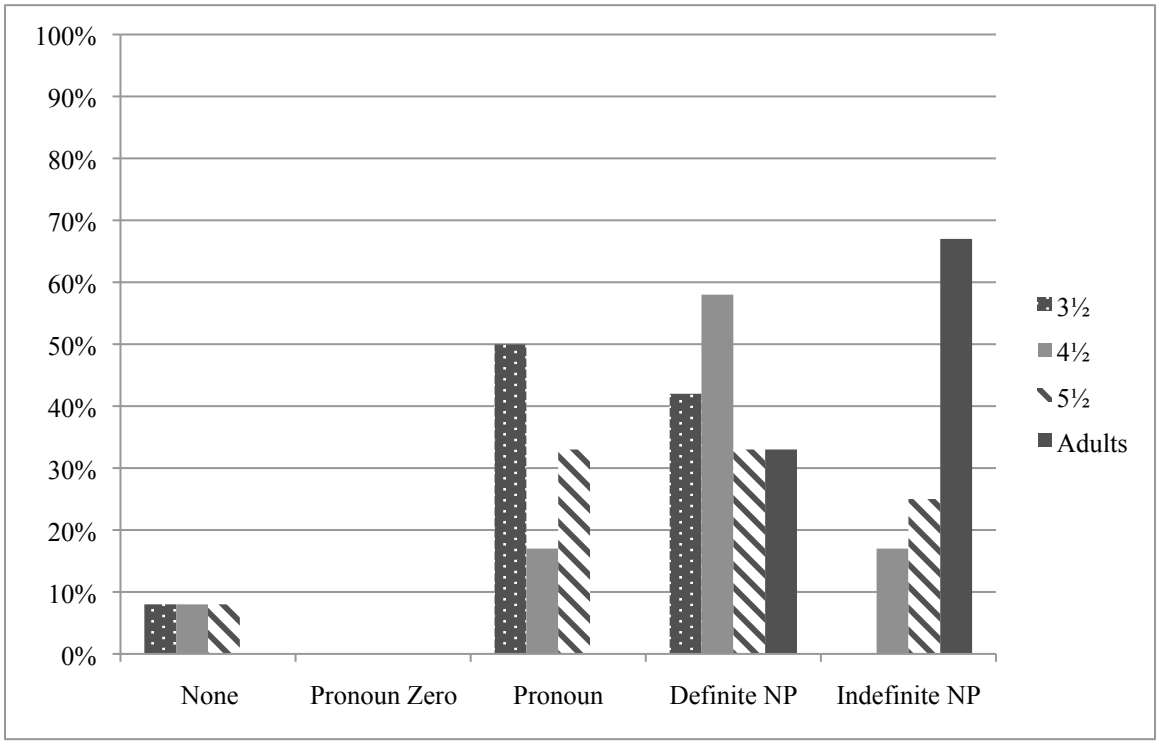


Figure 9. Percentage of participants at each age who used which particular referent: Introduction of the secondary character in the single main character story with an external problem (Balloon story) in the single-page condition.

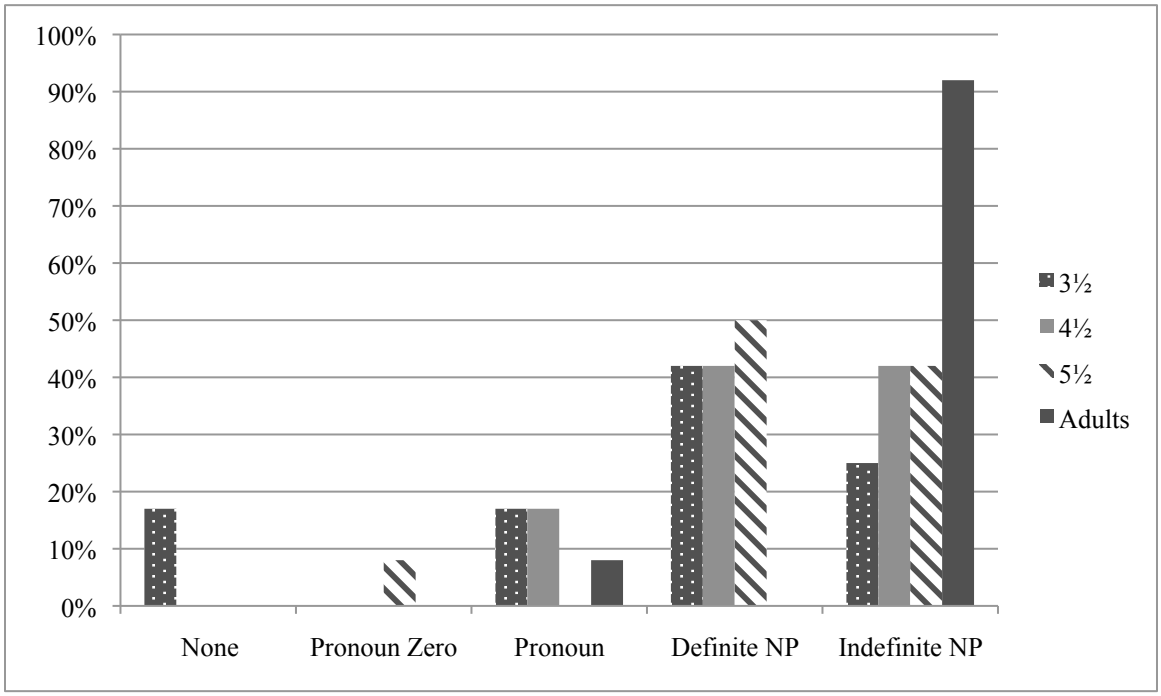


Figure 10. Percentage of participants at each age who used which particular referent: Introduction of the secondary character in the single main character story with an external problem (Balloon story) in the booklet condition.

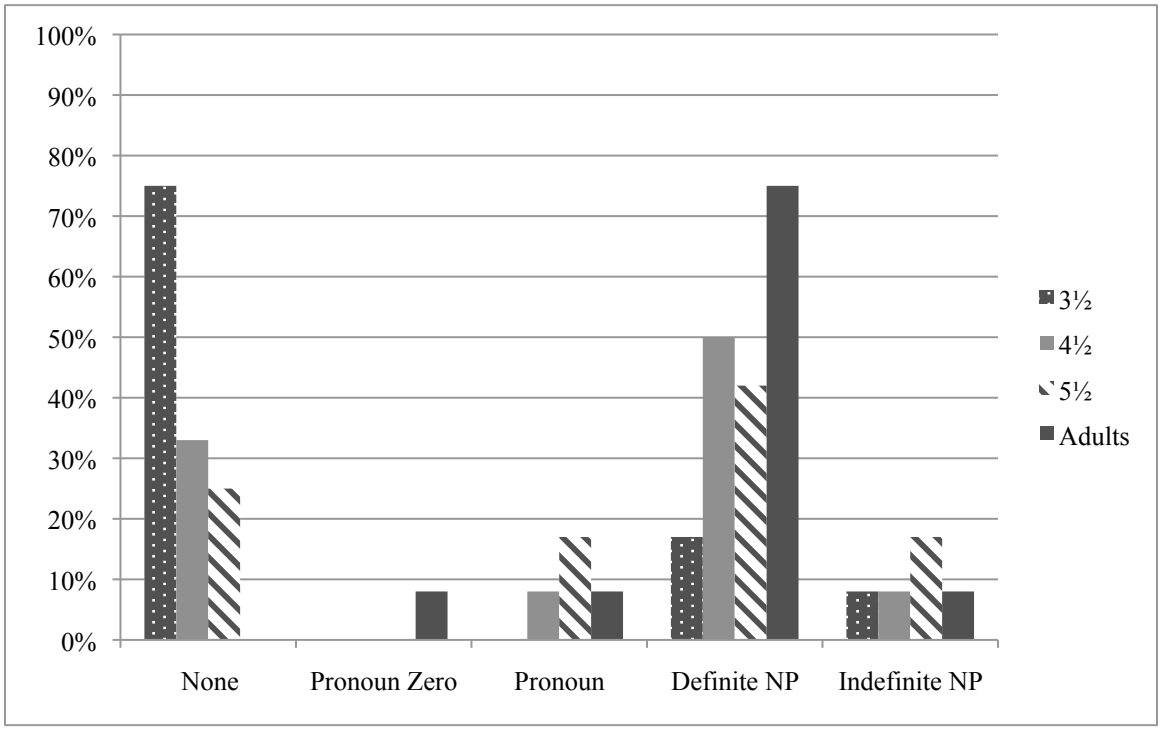


Figure 11. Percentage of participants at each age who used which particular referent: Introduction of the secondary character in the single main character story with an internal problem (Nightmare story) in the single-page condition.

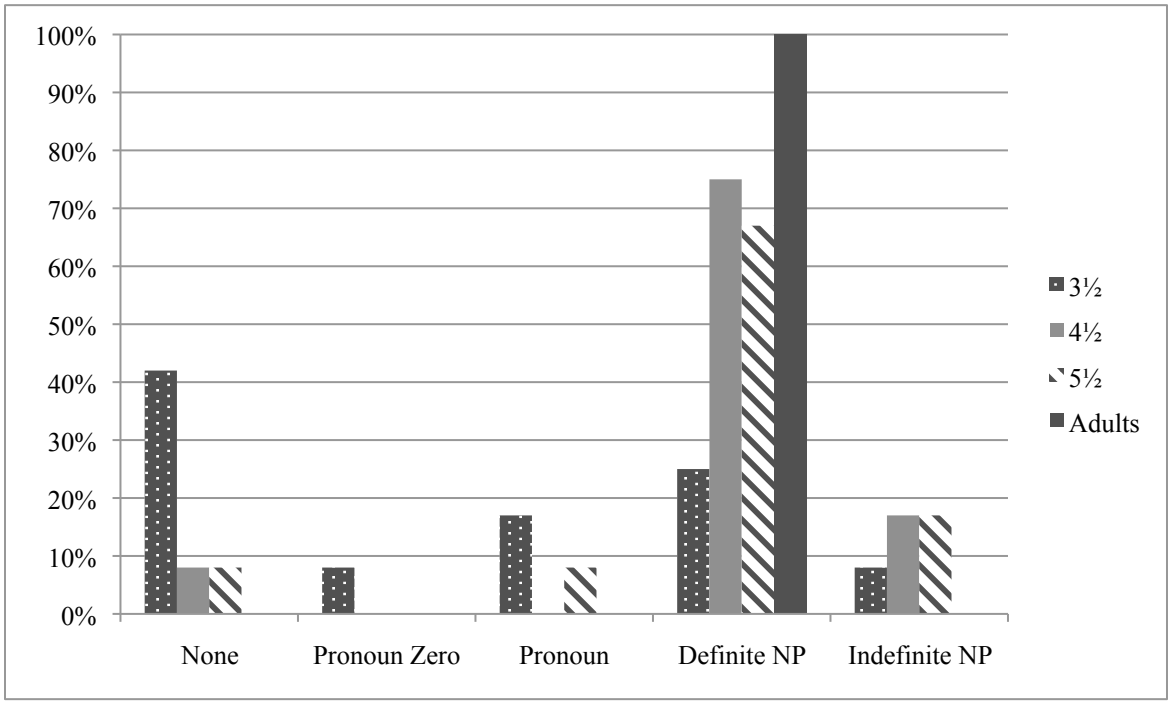


Figure 12. Percentage of participants at each age who used which particular referent: Introduction of the secondary character in the single main character story with an internal problem (Nightmare story) in the booklet condition.

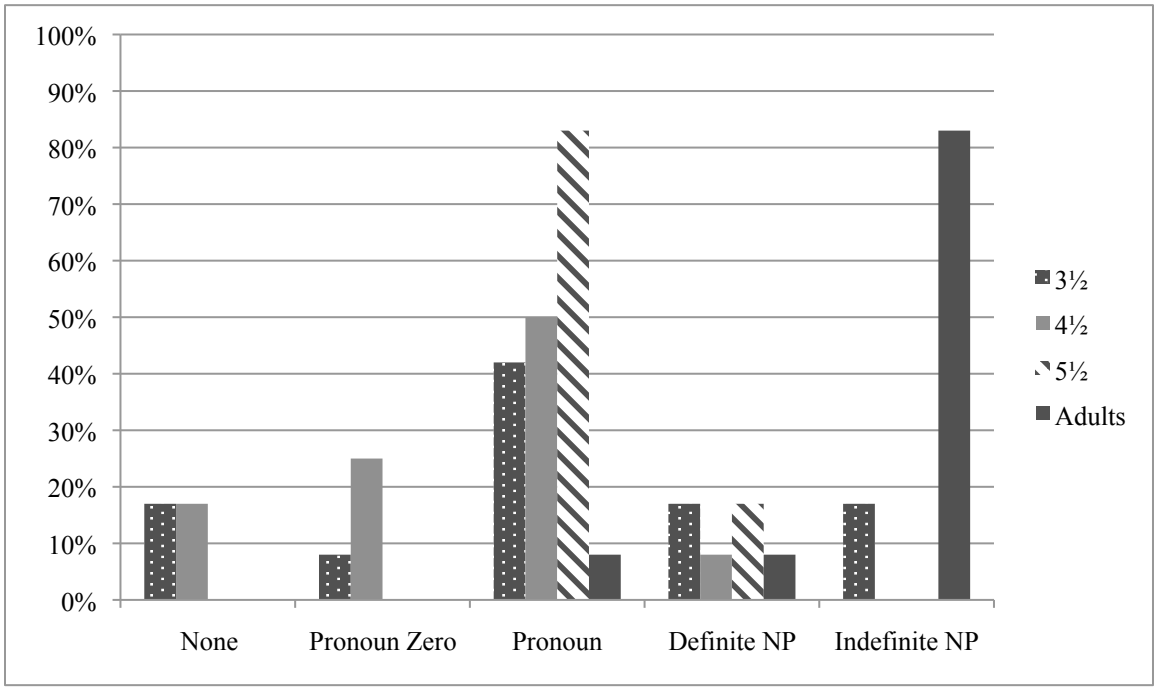


Figure 13. Percentage of participants at each age who used which particular referent: Introduction of the second main character in the two main character story with an external problem (Stream story) in the single-page condition.

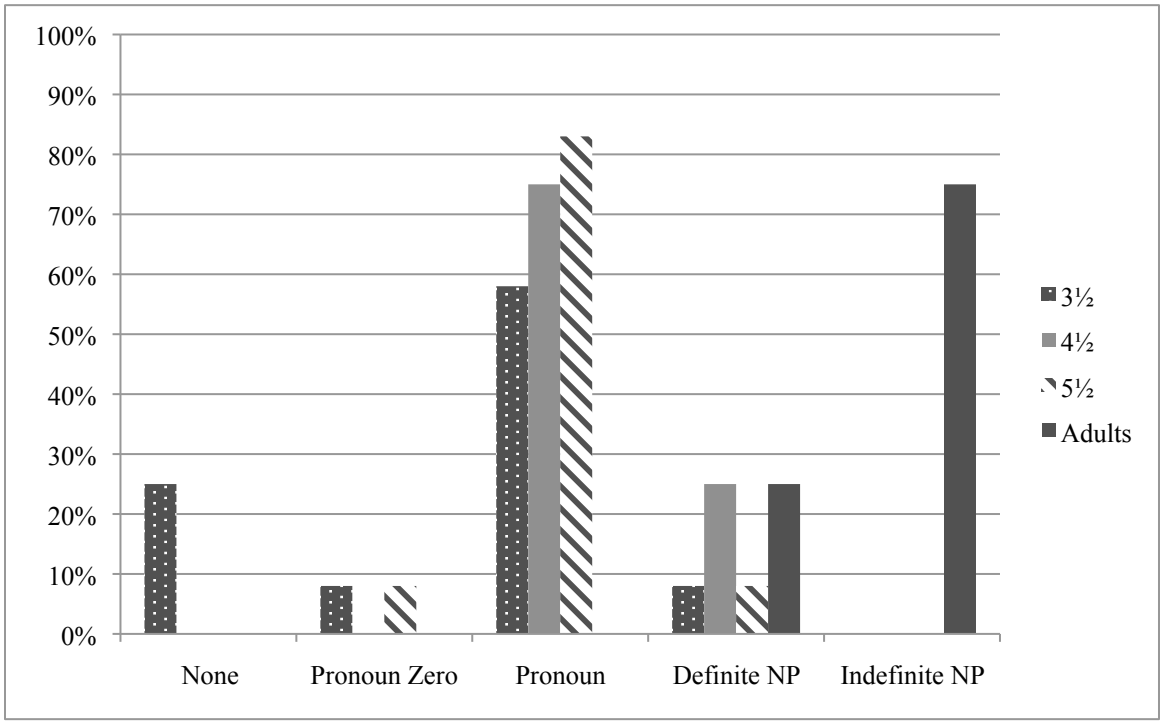


Figure 14. Percentage of participants at each age who used which particular referent: Introduction of the second main character in the two main character story with an external problem (Stream story) in the booklet condition.

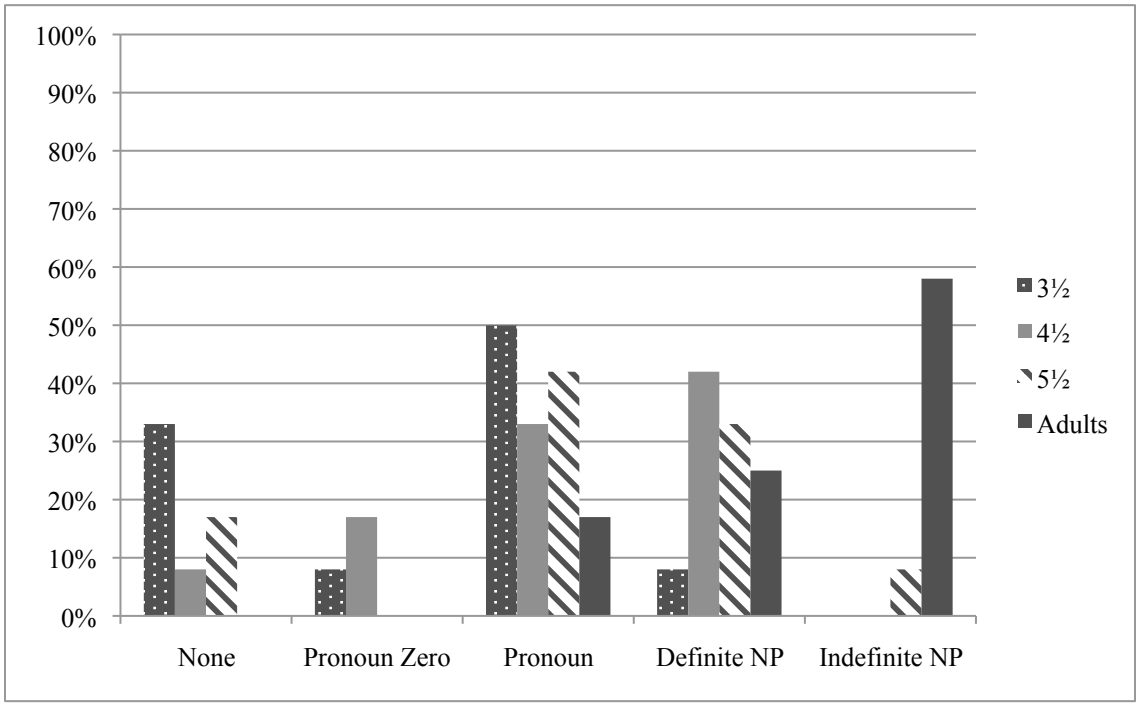


Figure 15. Percentage of participants at each age who used which particular referent: Introduction of the second main character in the two main character story with an internal problem (Beach story) in the single-page condition.

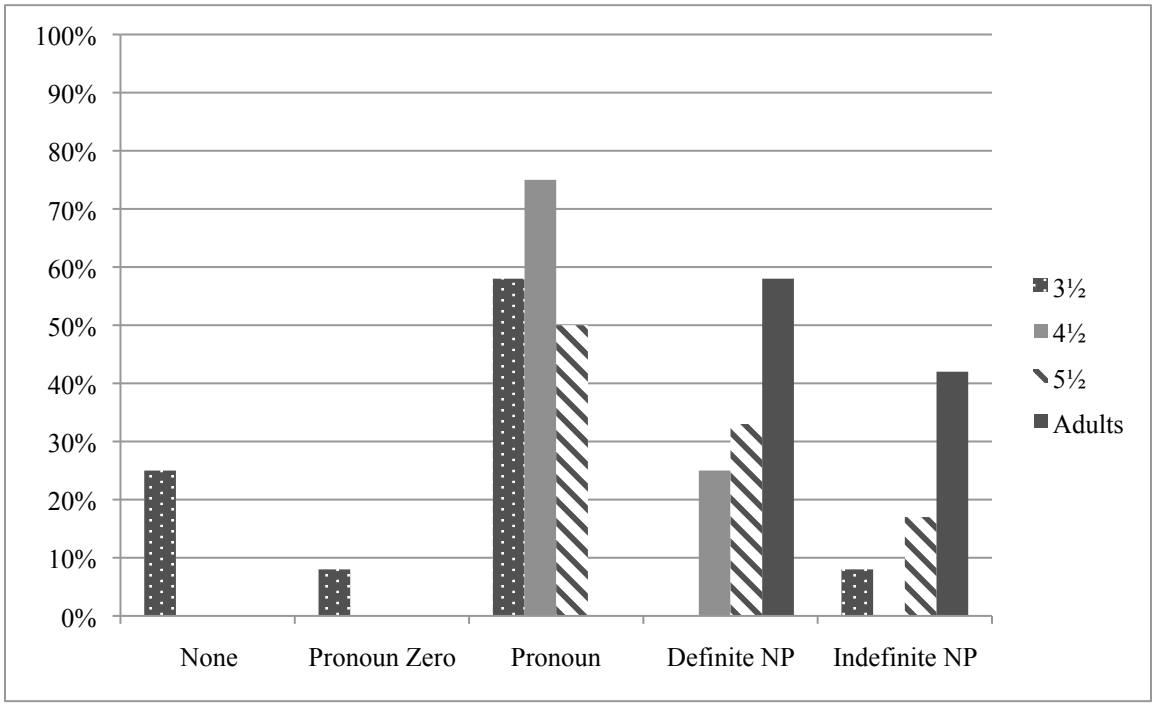


Figure 16. Percentage of participants at each age who used which particular referent: Introduction of the second main character in the two main character story with an internal problem (Beach story) in the booklet condition.

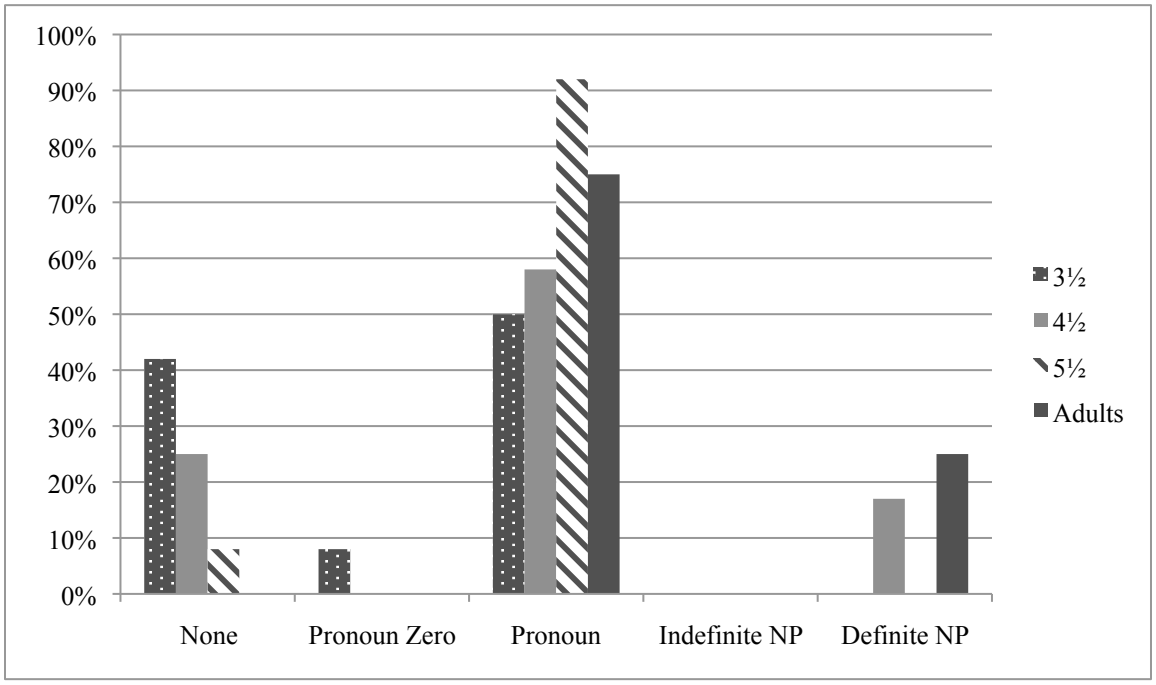


Figure 17. Percentage of participants at each age who used which particular referent: Reintroduction of the main character in the single main character story with an external problem (Balloon story) in the single-page condition.

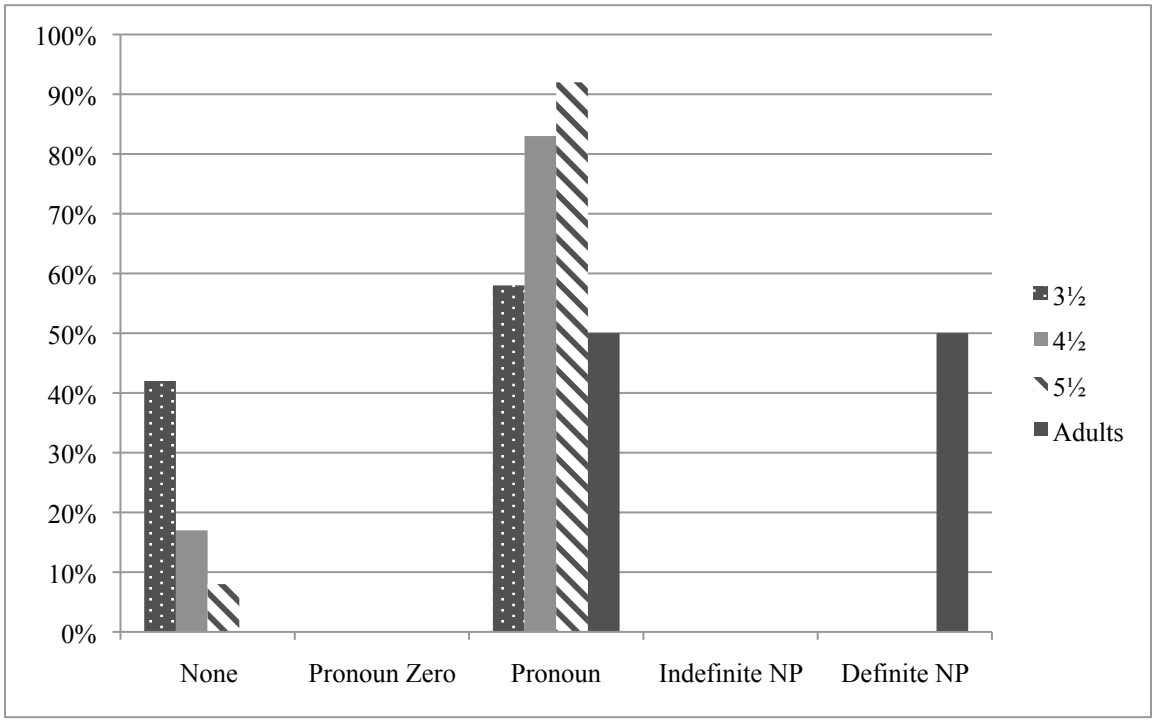


Figure 18. Percentage of participants at each age who used which particular referent: Reintroduction of the main character in the single main character story with an external problem (Balloon story) in the booklet condition.

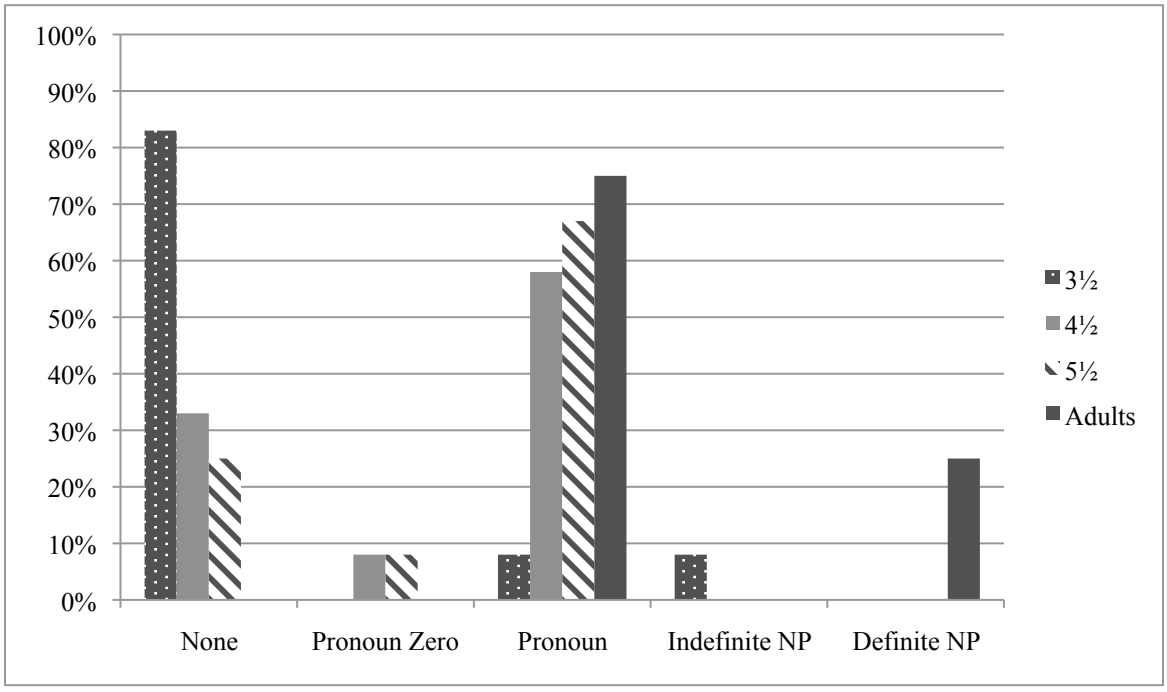


Figure 19. Percentage of participants at each age who used which particular referent: Reintroduction of the main character in the single main character story with an internal problem (Nightmare story) in the single-page condition.

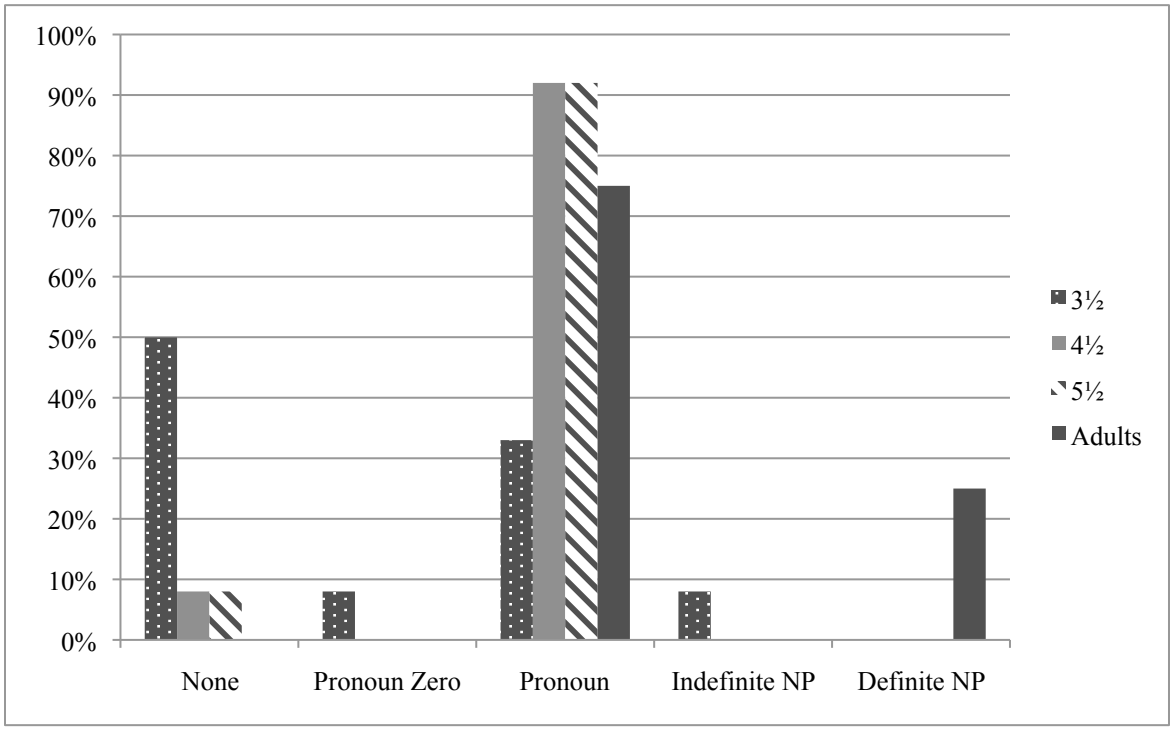


Figure 20. Percentage of participants at each age who used which particular referent: Reintroduction of the main character in the single main character story with an internal problem (Nightmare story) in the booklet condition.

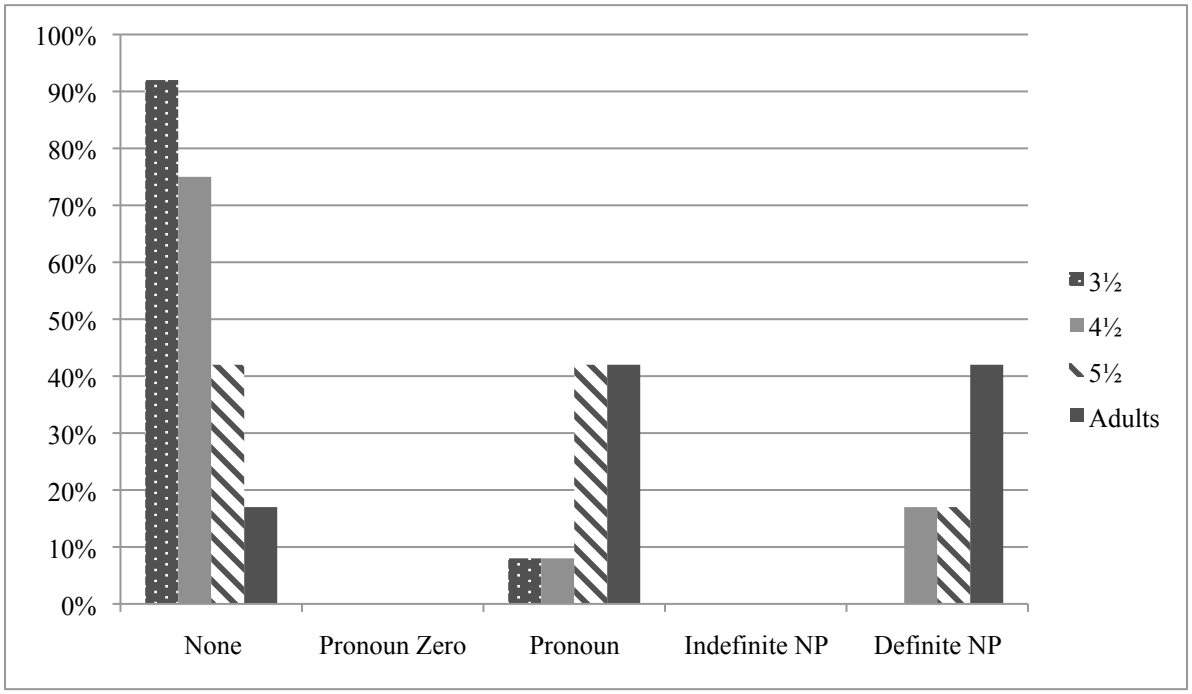


Figure 21. Percentage of participants at each age who used which particular referent: Reintroduction of the first main character in the two main character story with an external problem (Stream story) in the single-page condition.

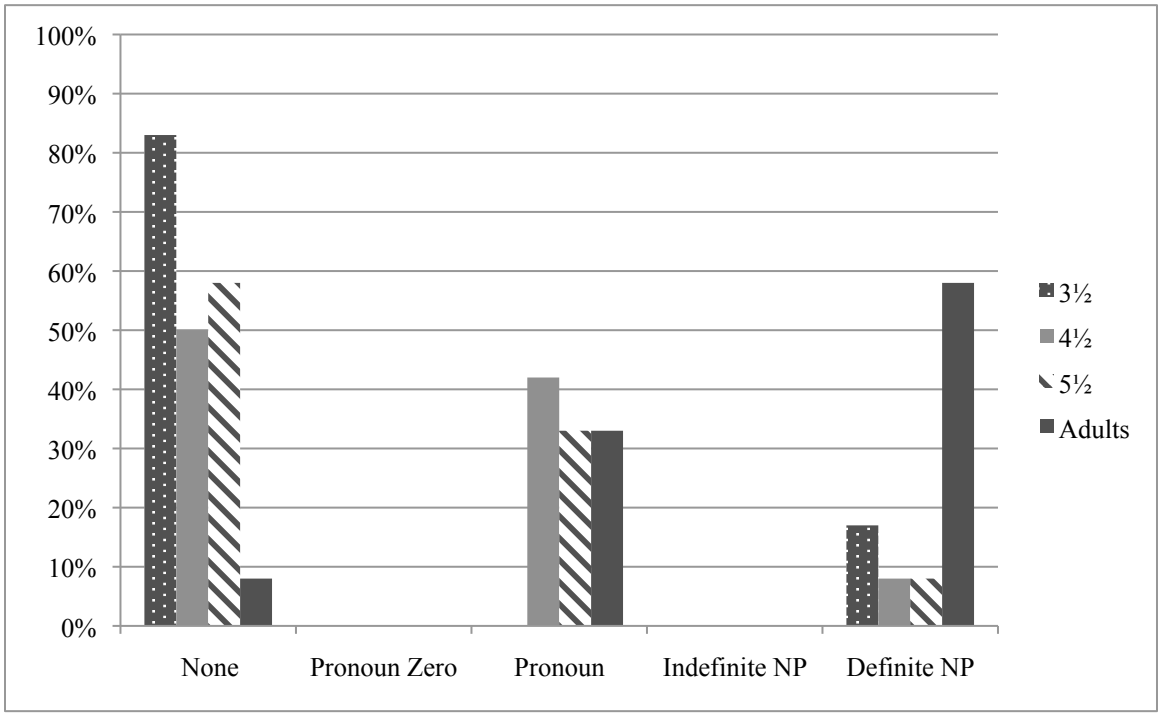


Figure 22. Percentage of participants at each age who used which particular referent: Reintroduction of the first main character in the two main character story with an external problem (Stream story) in the booklet condition.

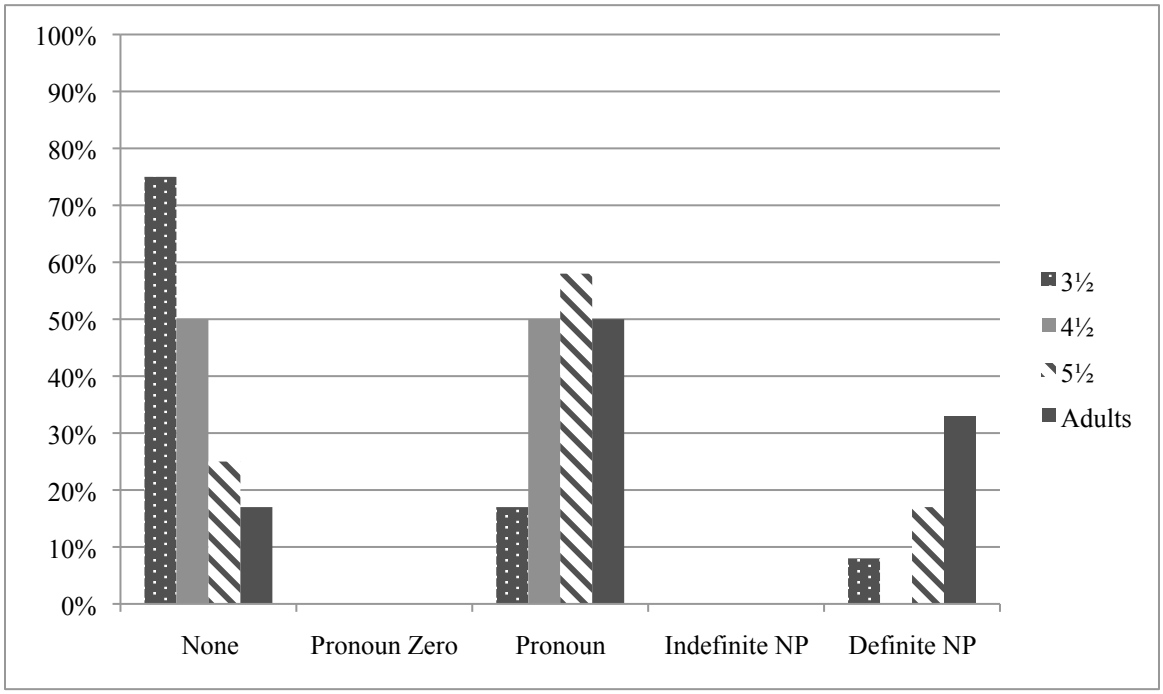


Figure 23. Percentage of participants at each age who used which particular referent: Reintroduction of the first main character in the two main character story with an internal problem (Beach story) in the single-page condition.

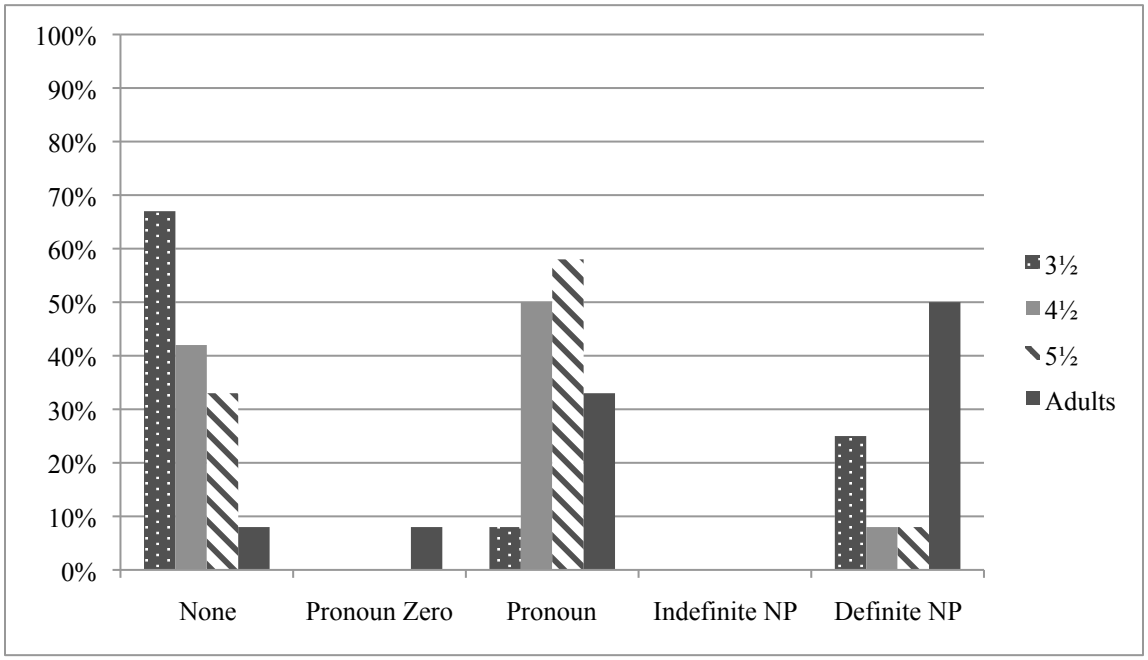


Figure 24. Percentage of participants at each age who used which particular referent: Reintroduction of the first main character in the two main character story with an internal problem (Beach story) in the booklet condition.

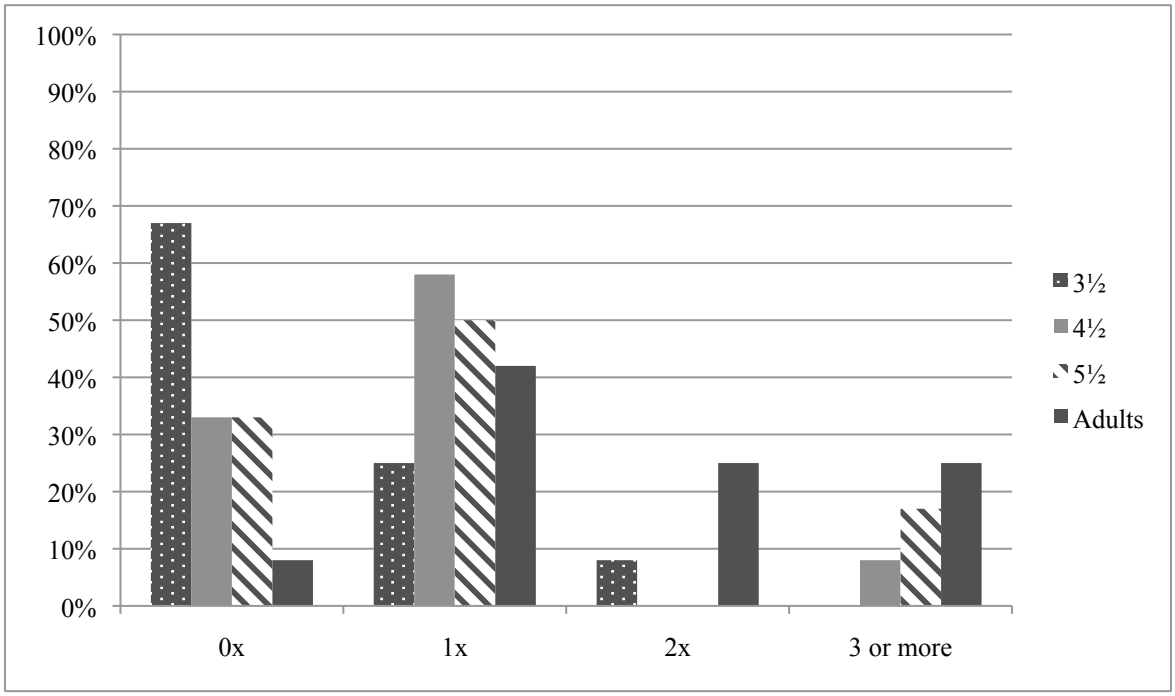


Figure 25. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the main character in the single main character story with an external problem (Balloon story) in the single-page condition.

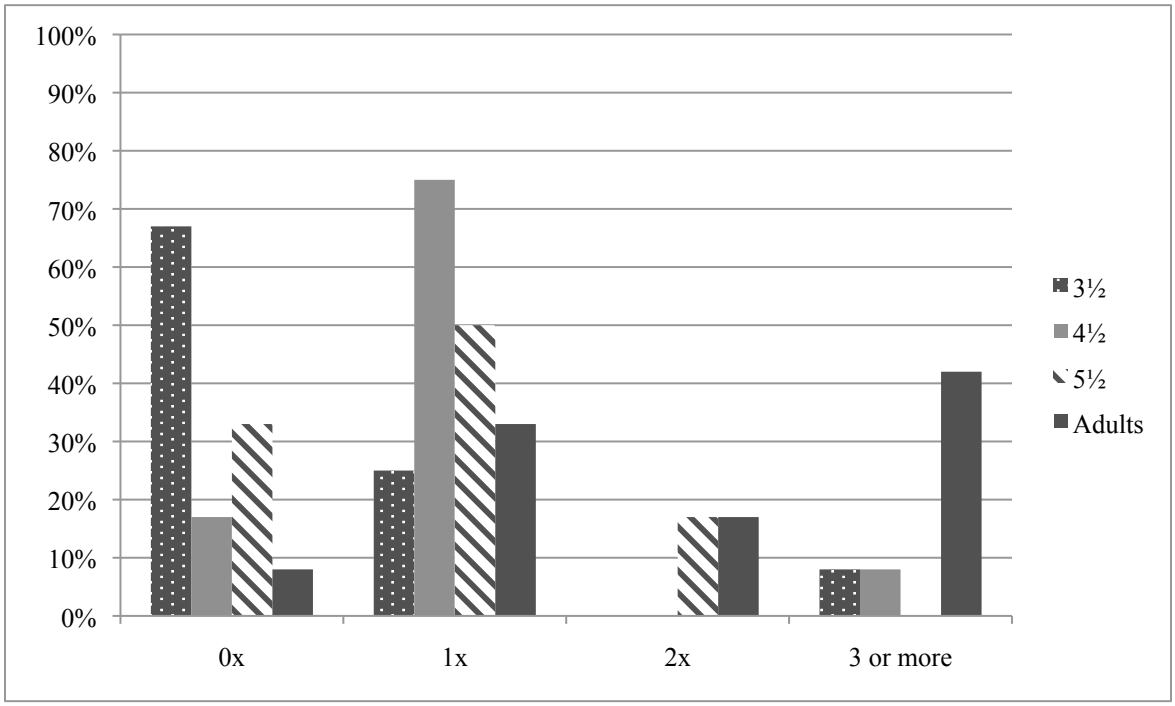


Figure 26. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the main character in the single main character story with an external problem (Balloon story) in the booklet condition.

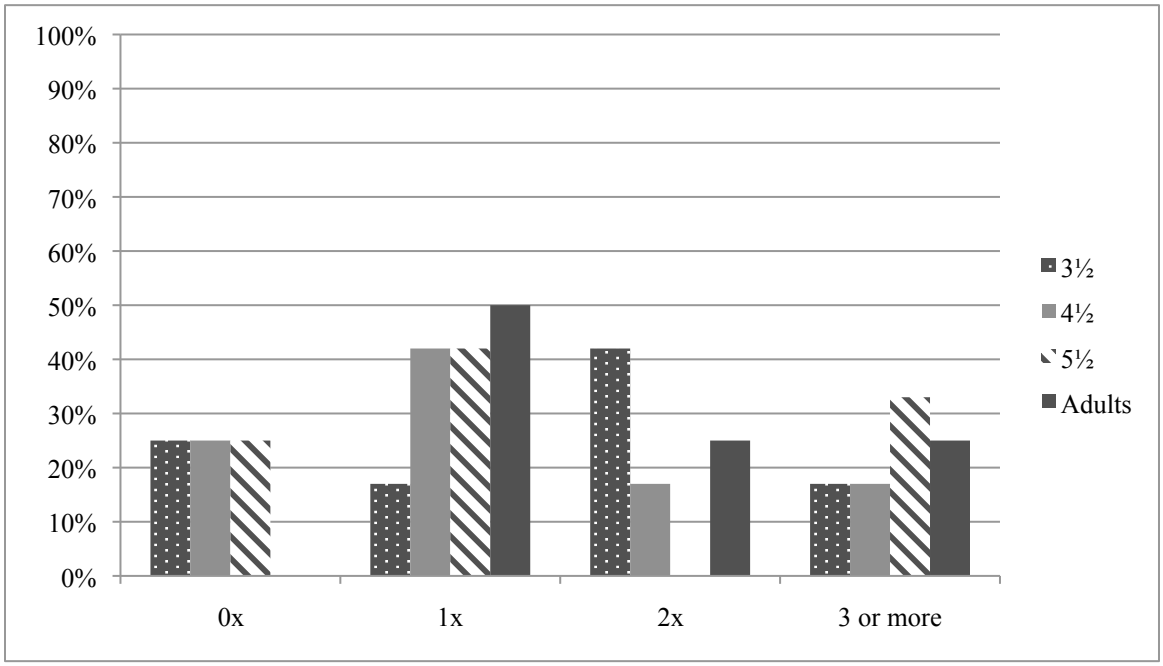


Figure 27. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the main character in the single main character story with an internal problem (Nightmare story) in the single-page condition.

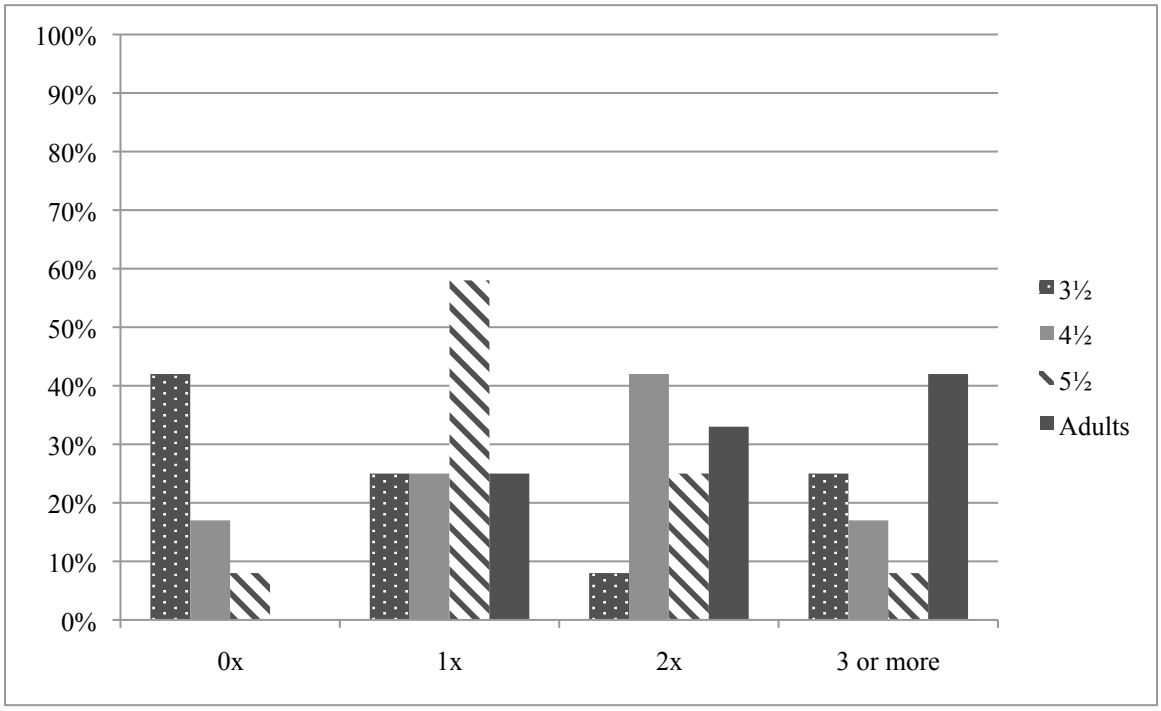


Figure 28. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the main character in the single main character story with an internal problem (Nightmare story) in the booklet condition.

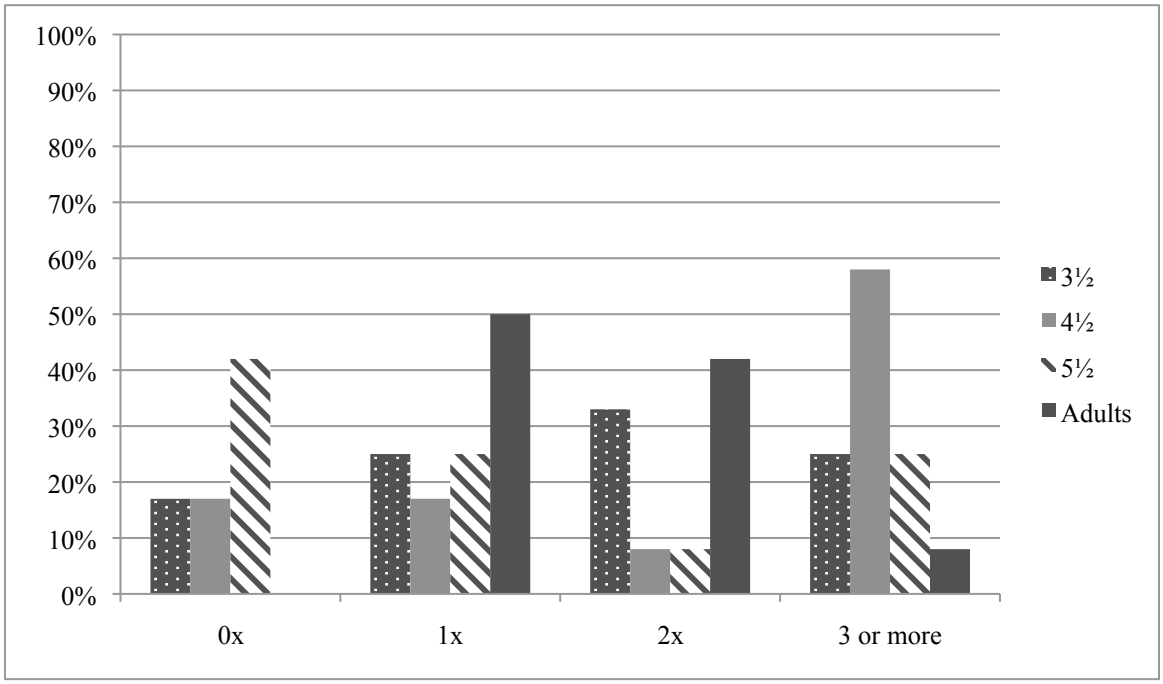


Figure 29. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the first main character in the two main character story with an external problem (Stream story) in the single-page condition.

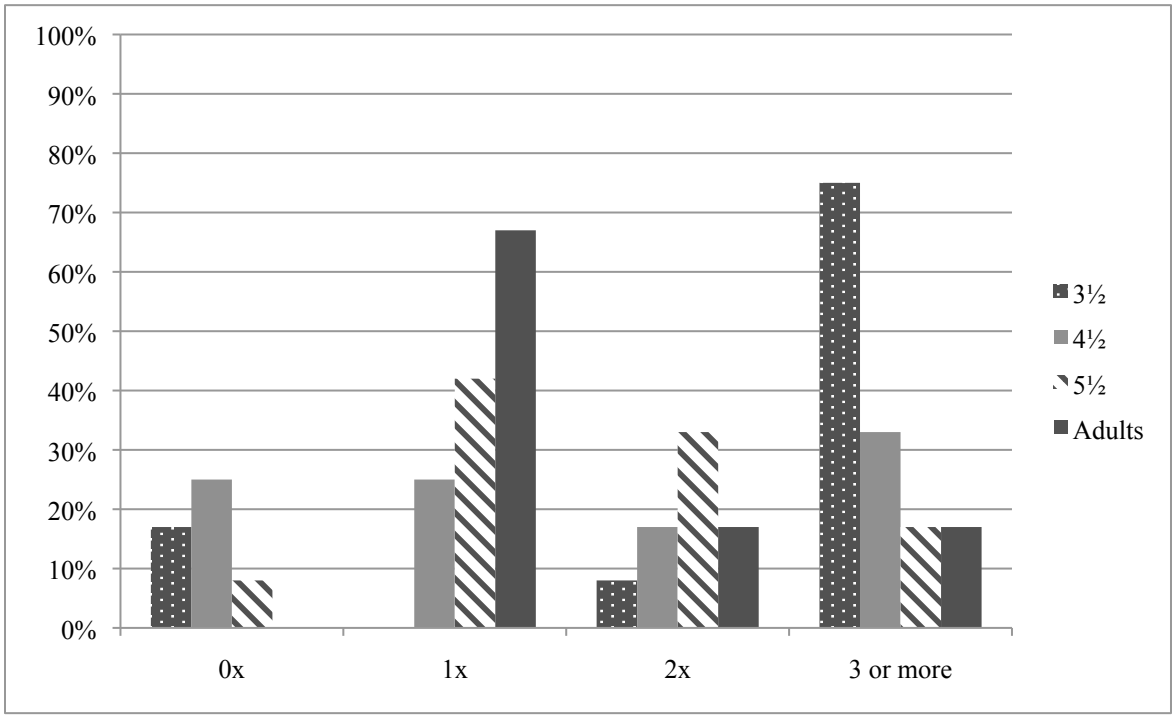


Figure 30. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the first main character in the two main character story with an external problem (Stream story) in the booklet condition.

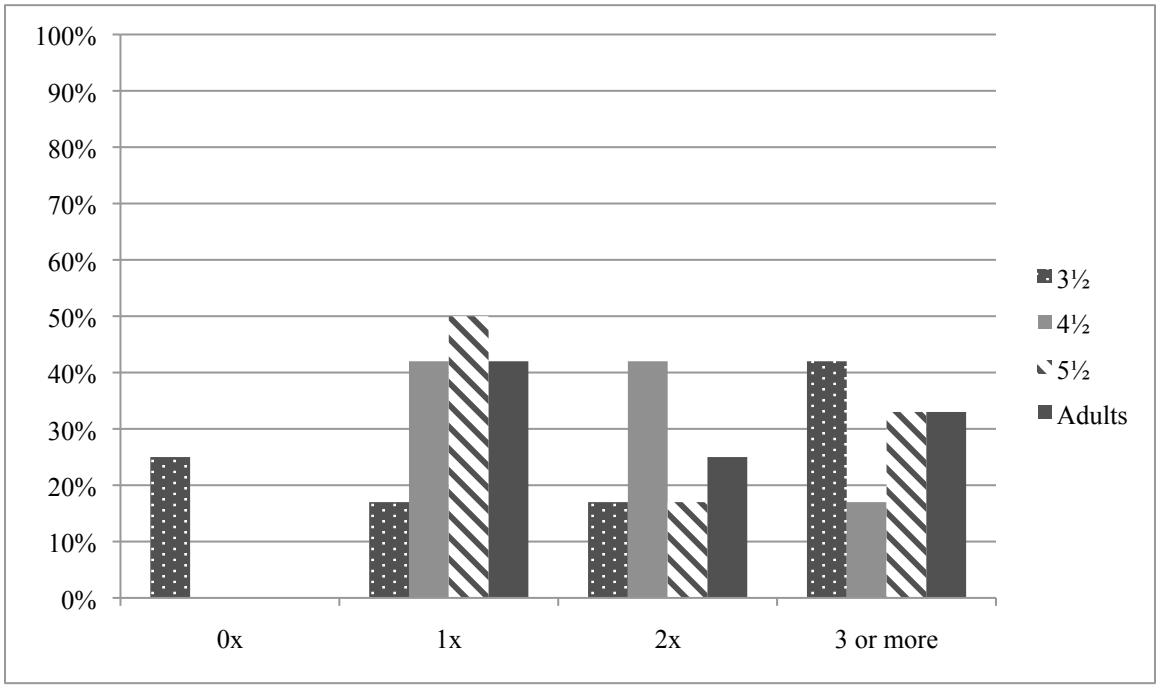


Figure 31. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the first main character in the two main character story with an internal problem (Beach story) in the single-page condition.

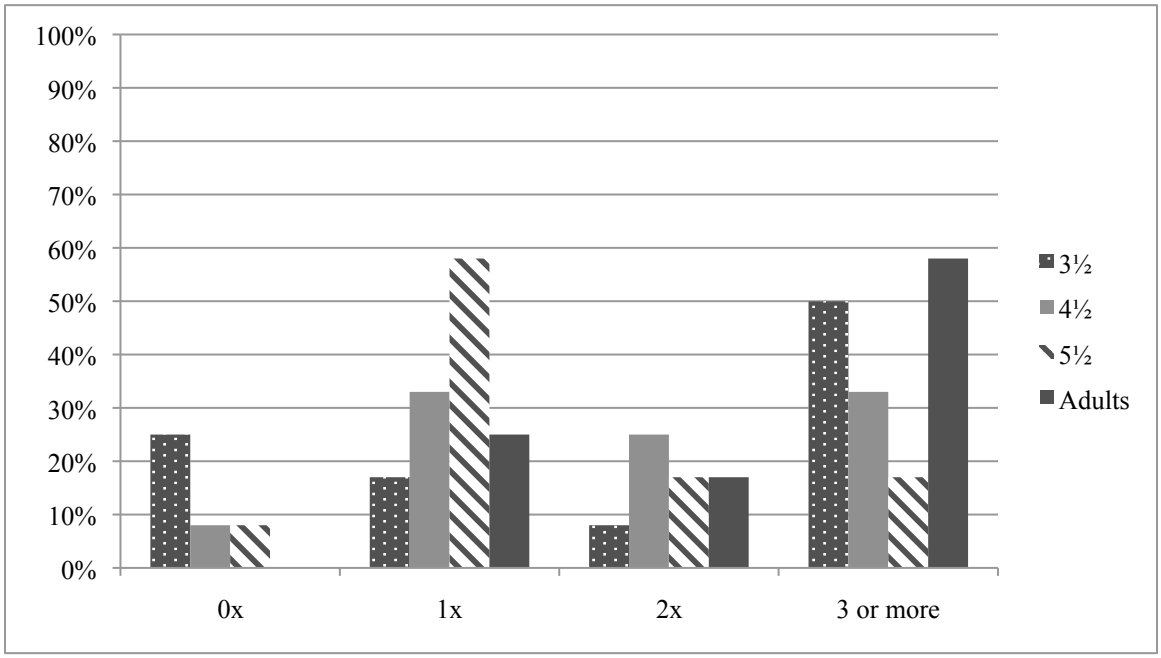


Figure 32. Percentage of participants at each age who maintained the main character for a certain length of time: Consecutive maintenance of the first main character in the two main character story with an internal problem (Beach story) in the booklet condition.

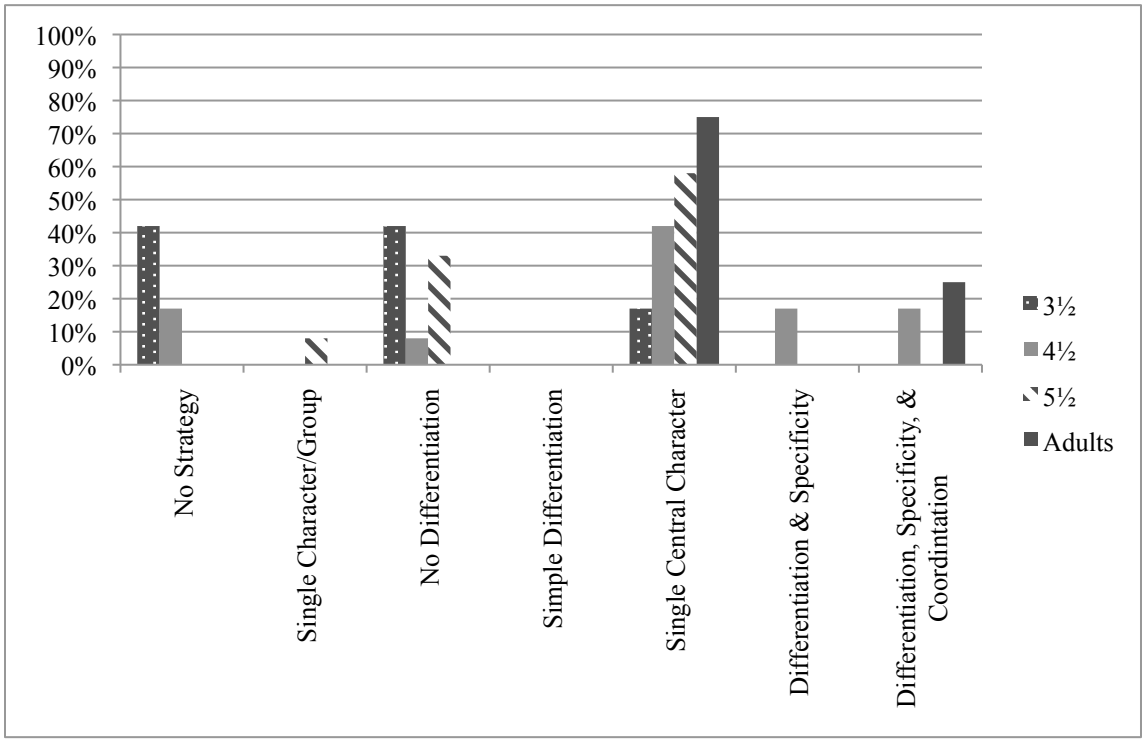


Figure 33. Percentage of participants at each age using a given strategy: Single main character story with an external problem (Balloon story) in the single-page condition.

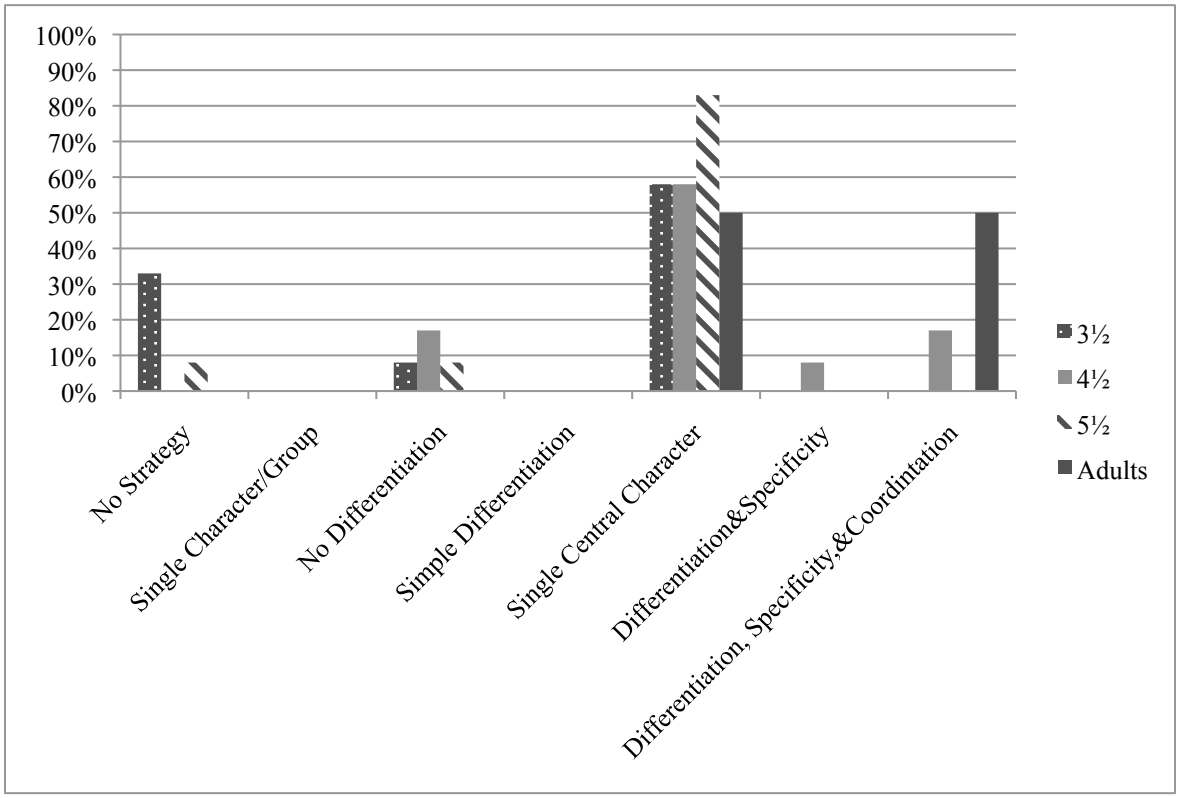


Figure 34. Percentage of participants at each age using a given strategy: Single main character story with an external problem (Balloon story) in the booklet condition.

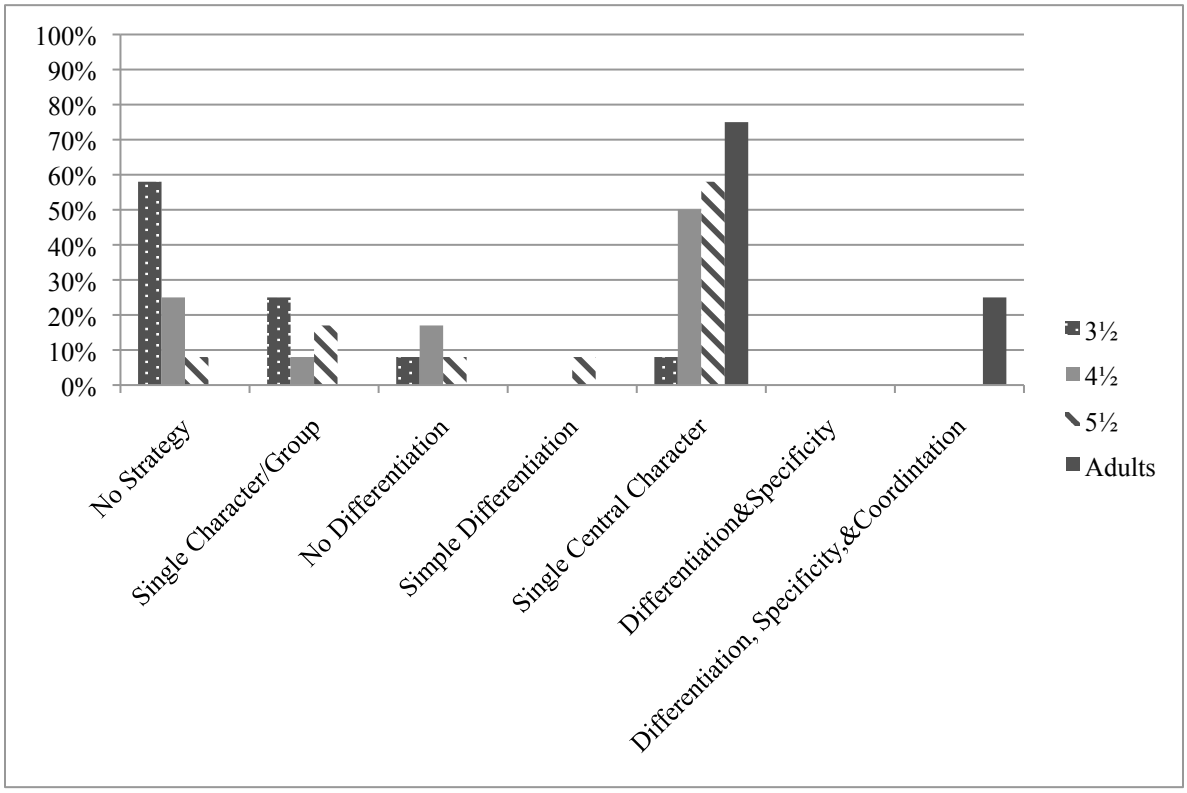


Figure 35. Percentage of participants at each age using a given strategy: Single main character story with an internal problem (Nightmare story) in the single-page condition.

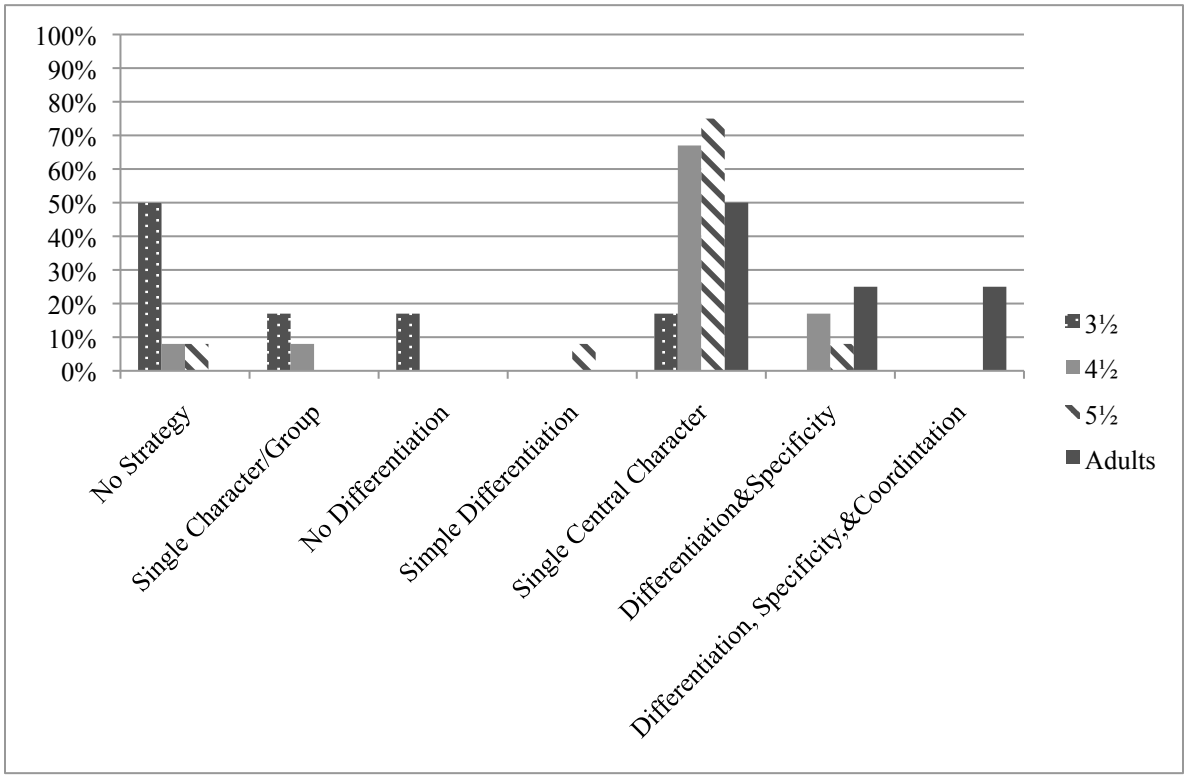


Figure 36. Percentage of participants at each age using a given strategy: Single main character story with an internal problem (Nightmare story) in the booklet condition.

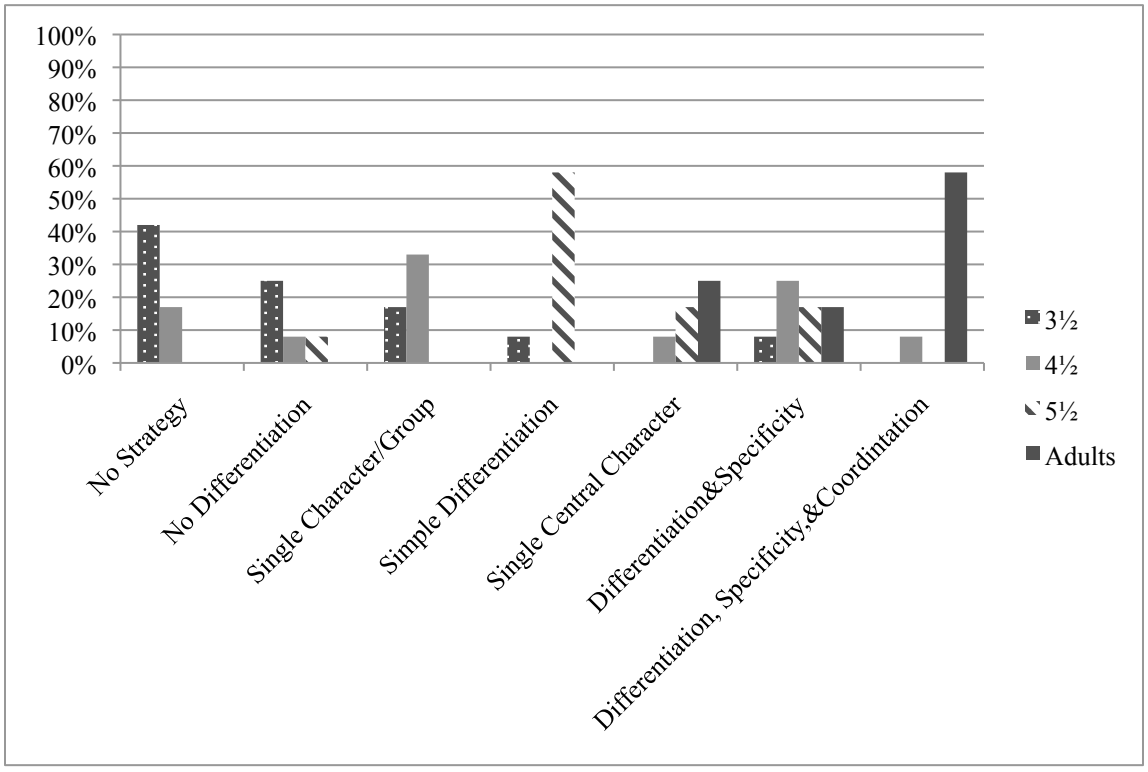


Figure 37. Percentage of participants at each age using a given strategy: Two main character story with an external problem (Stream story) in the single-page condition.

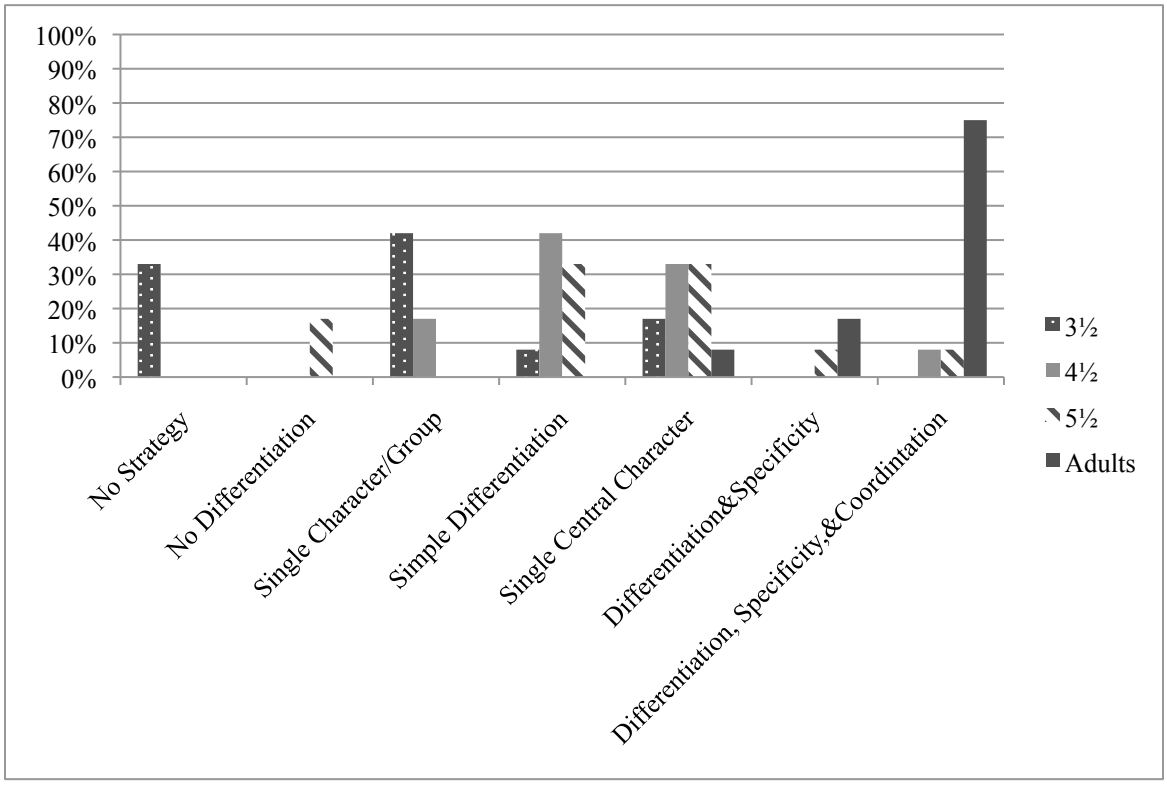


Figure 38. Percentage of participants at each age using a given strategy: Two main character story with an external problem (Stream story) in the booklet condition.

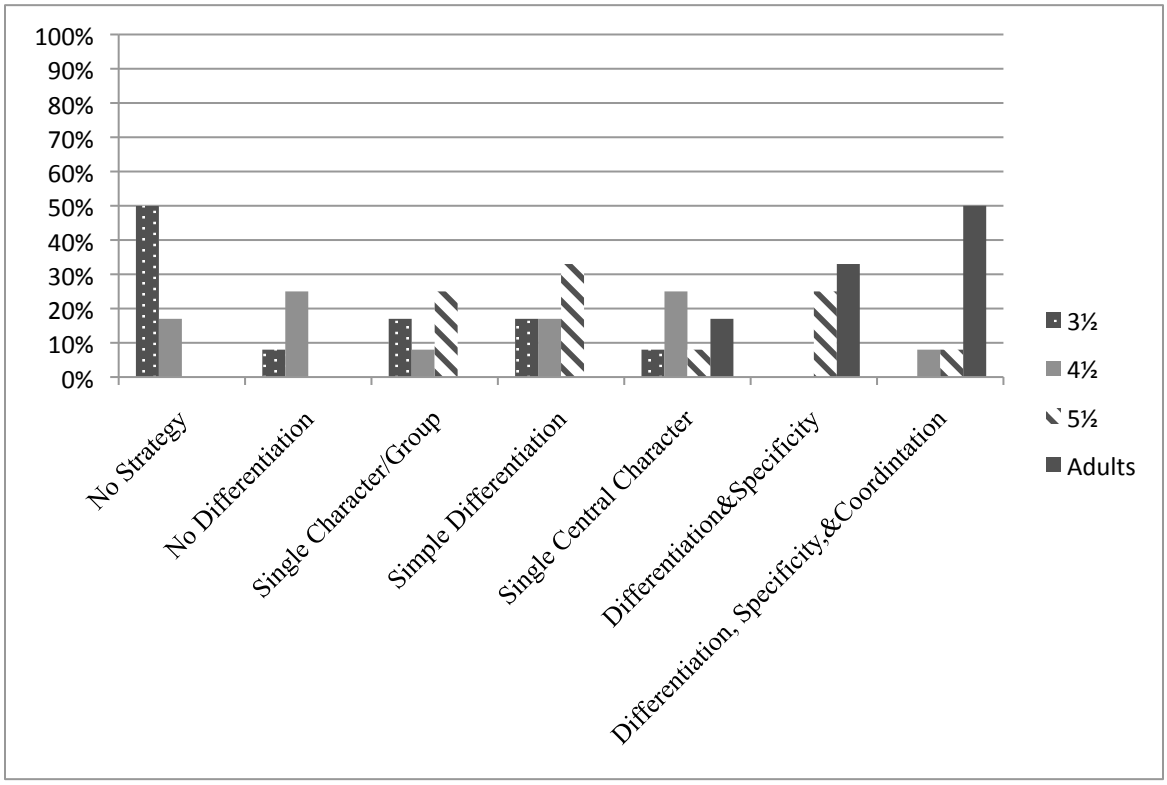


Figure 39. Percentage of participants at each age using a given strategy: Two main character story with an internal problem (Beach story) in the single-page condition.

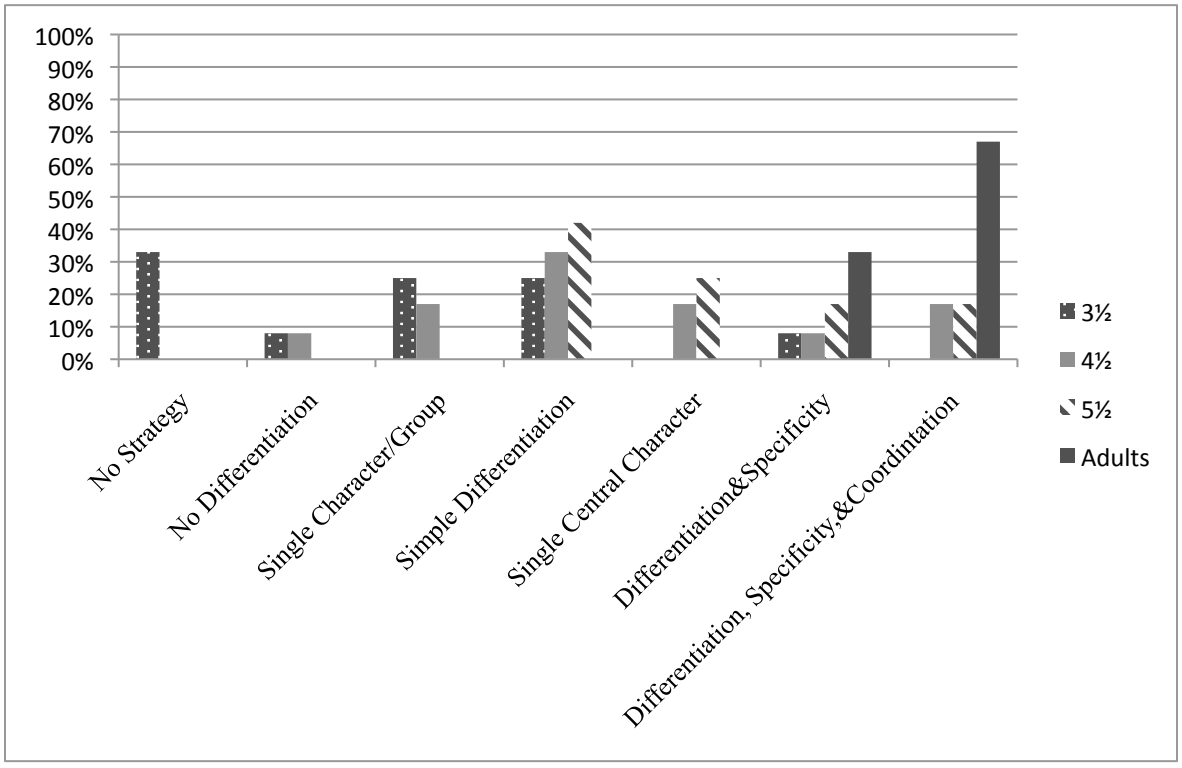


Figure 40. Percentage of participants at each age using a given strategy: Two main character story with an internal problem (Beach story) in the booklet condition.

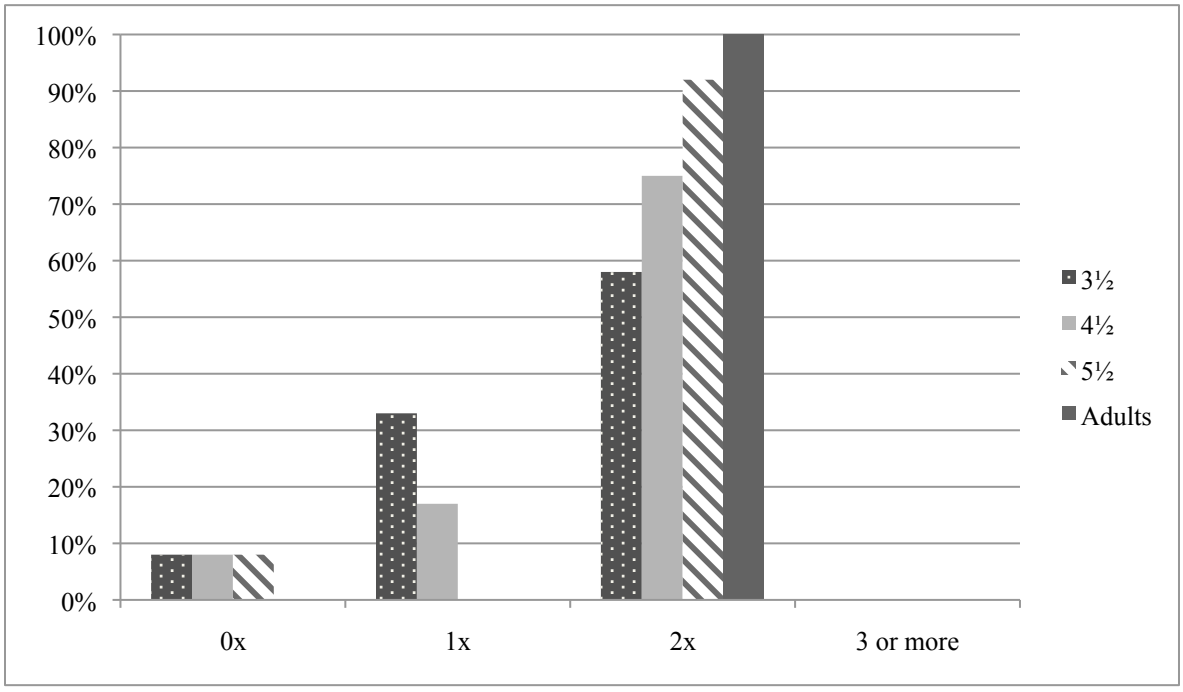


Figure 41. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the main character and secondary character in the single main character story with an external problem (Balloon story) in the single-page condition.

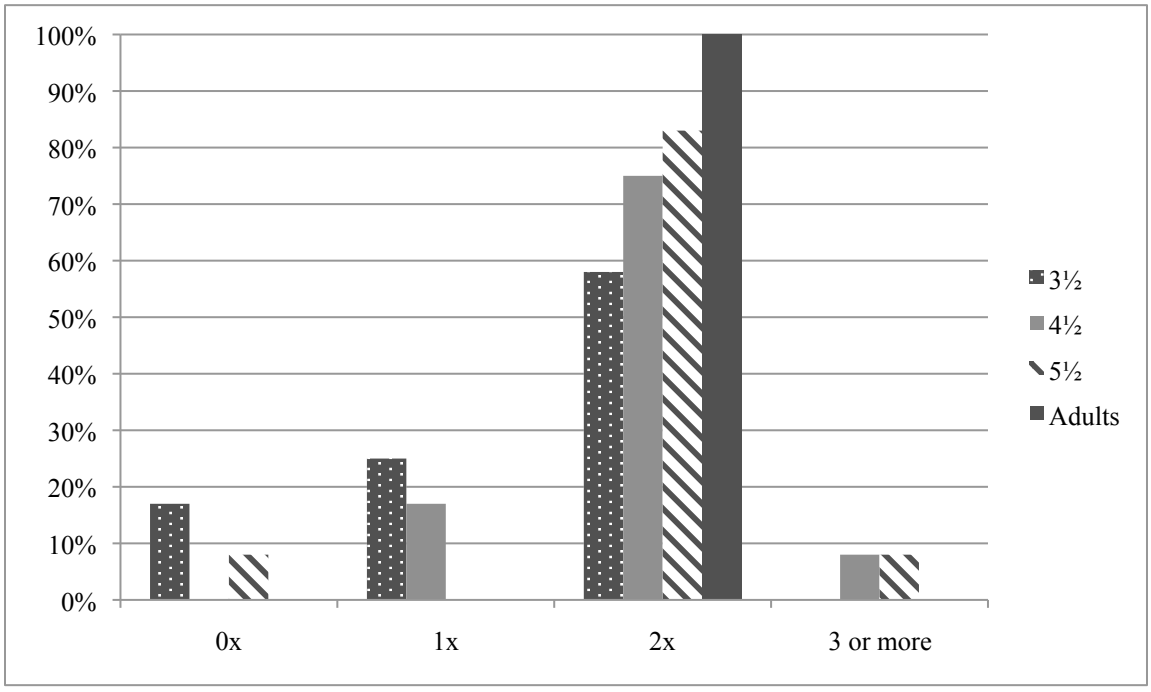


Figure 42. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the main character and secondary character in the single main character story with an external problem (Balloon story) in the booklet condition.

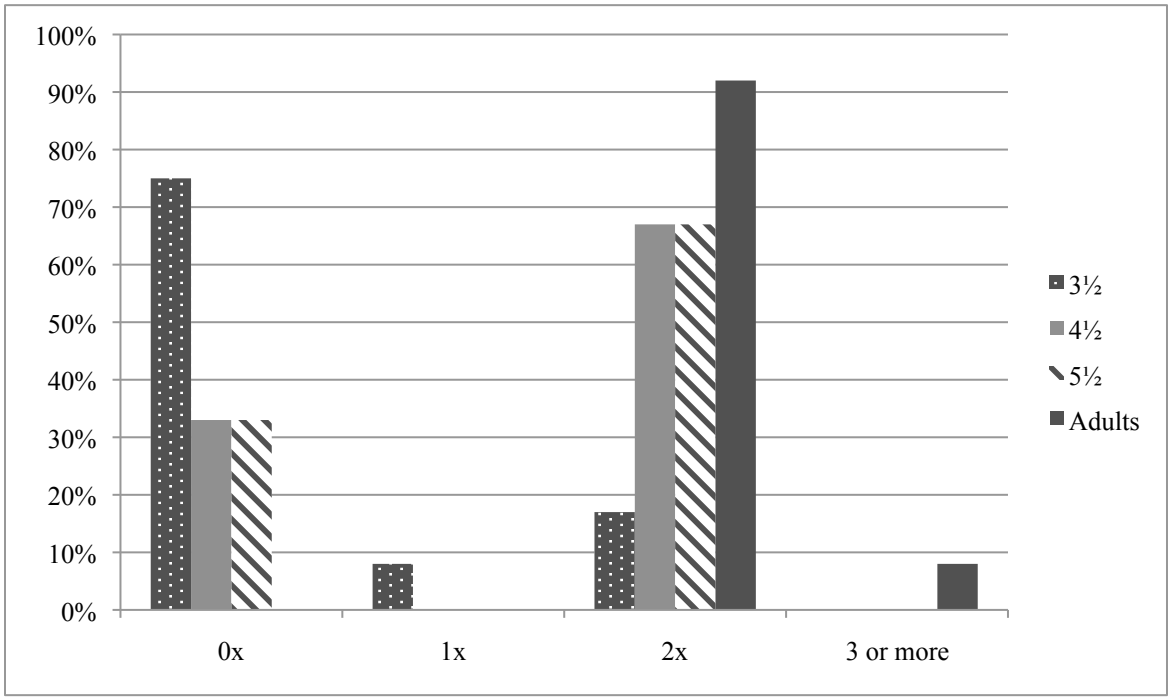


Figure 43. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the main character and secondary character in the single main character story with an internal problem (Nightmare story) in the single-page condition.

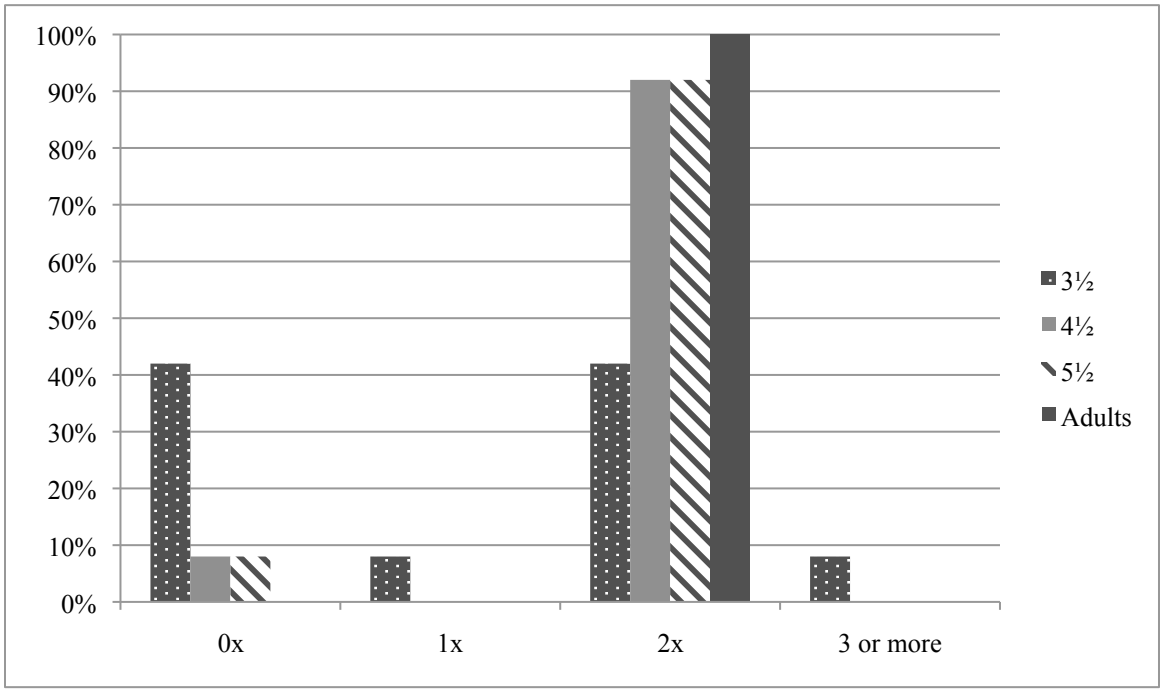


Figure 44. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the main character and secondary character in the single main character story with an internal problem (Nightmare story) in the booklet condition.

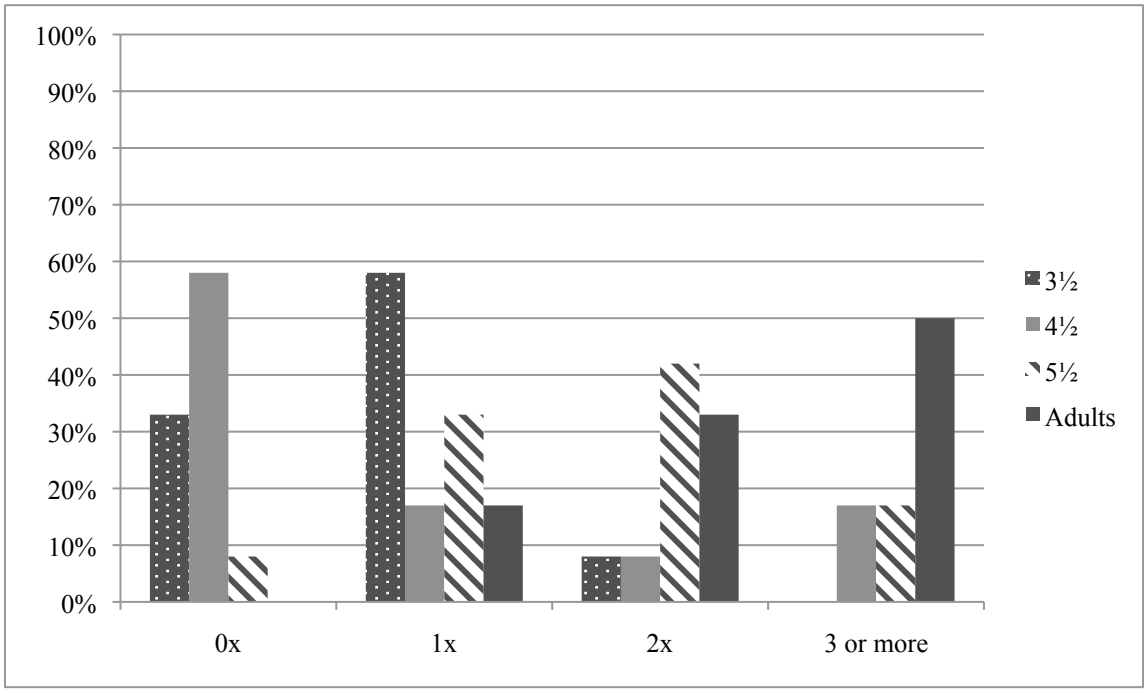


Figure 45. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the first main character and second main character in the two main character story with an external problem (Stream story) in the single-page condition.

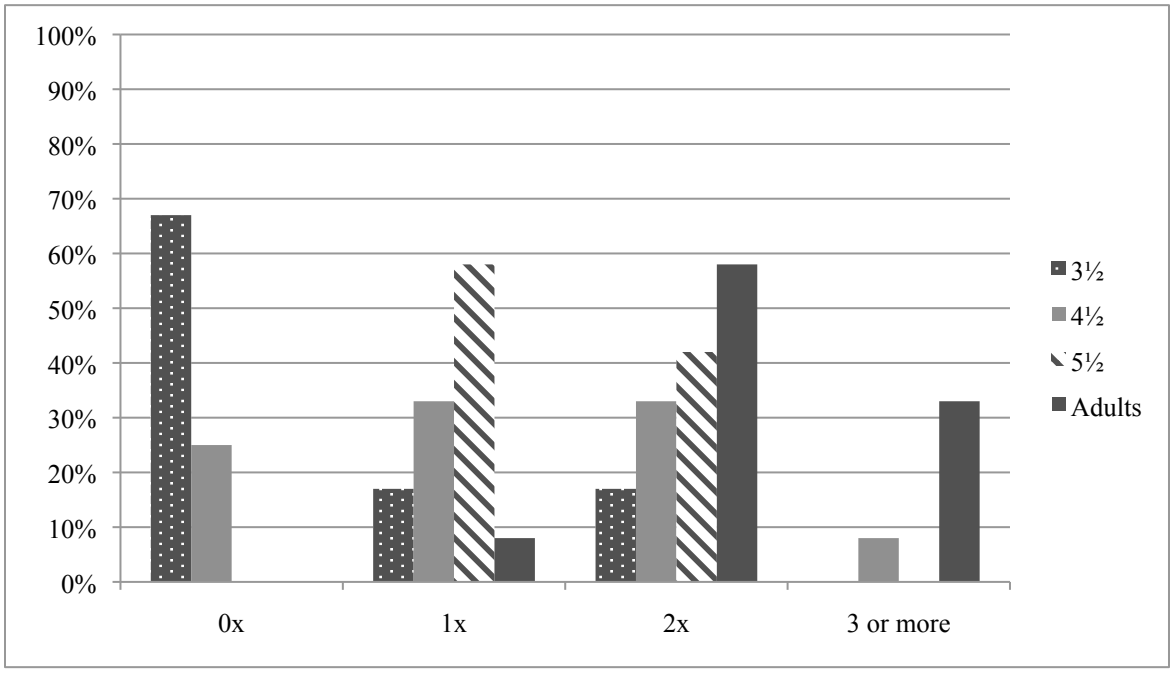


Figure 46. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the first main character and second main character in the two main character story with an external problem (Stream story) in the booklet condition.

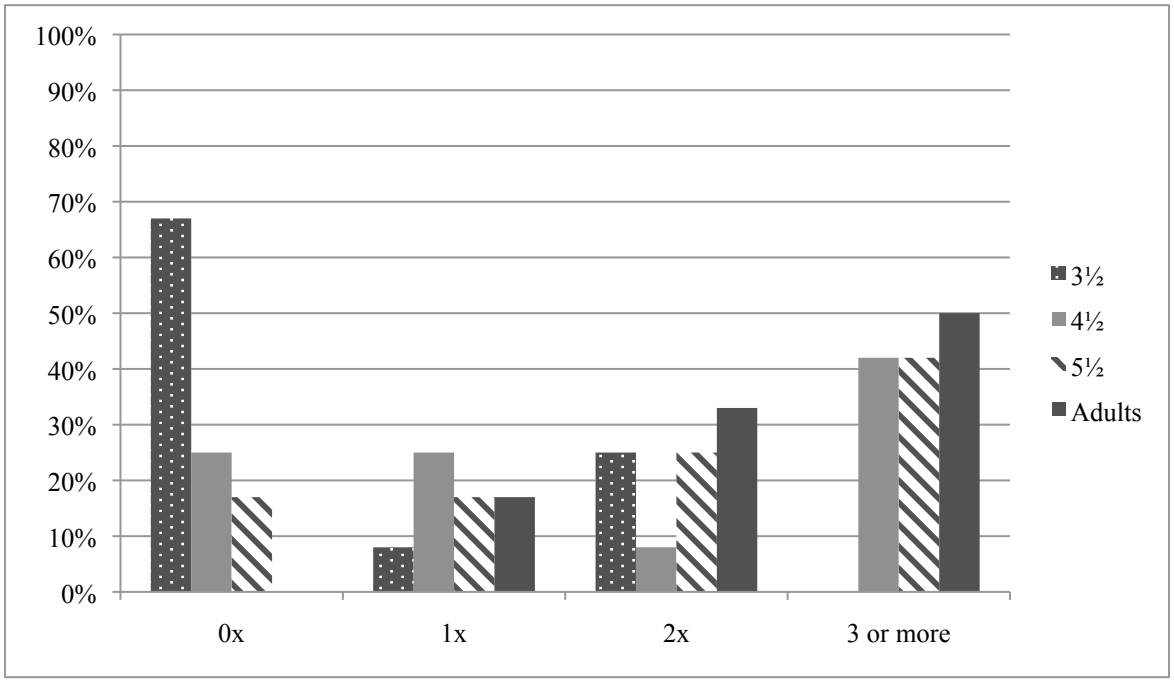


Figure 47. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the first main character and second main character in the two main character story with an internal problem (Beach story) in the single-page condition.

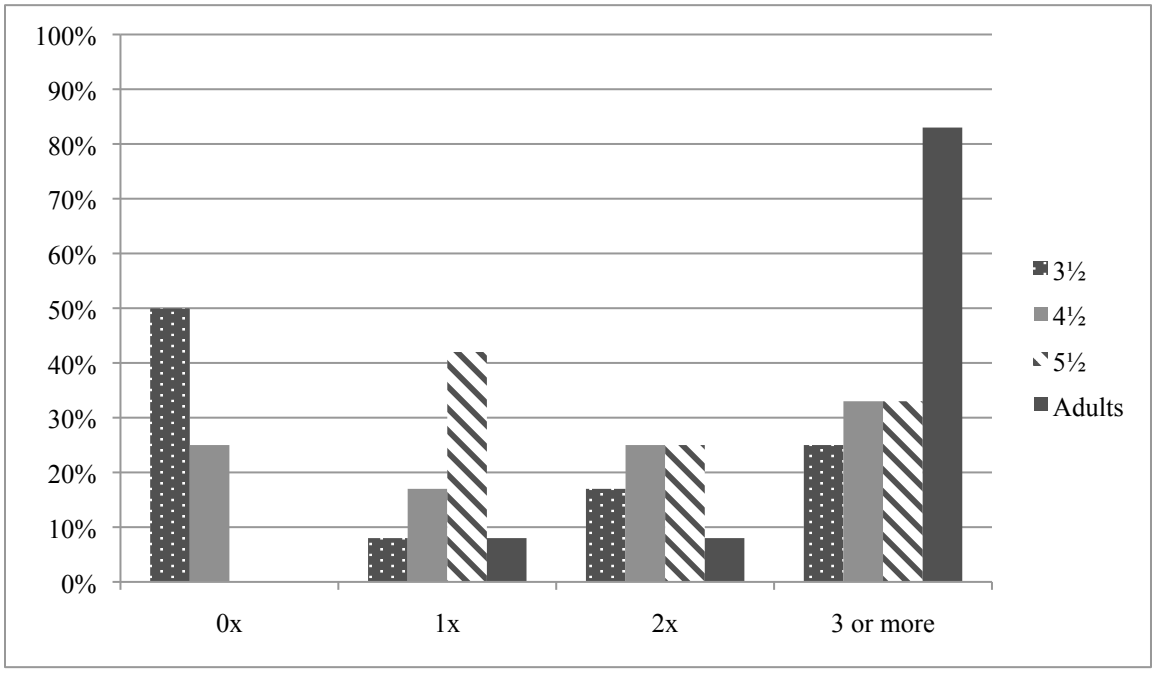


Figure 48. Percentage participants at each age who alternated between characters a certain number of times: Number of alternations between the first main character and second main character in the two main character story with an internal problem (Beach story) in the booklet condition.

Curriculum Vitae

Lisa A. Connor

Education

August 2012-
University of Tennessee, Child and Family Studies

- PhD student

August 2010 – May 2012
Lehigh University, College of Arts & Sciences, Department of Psychology

- Developmental psychology Master's student

August 2006 – May 2010
Lehigh University, College of Arts & Sciences, Department of Psychology

- B.A. in psychology with a minor in political science and creative writing, Summa Cum Laude

Research Experience

August 2010 – May 2012
Lehigh University Narrative Lab

- Master's degree with Ageliki Nicolopoulou
- Besides First Year Project and Master's project on character referentiality, has studied narrative production vs. comprehension in children's narratives and is helping to develop a coding scheme for children's books with Ageliki Nicolopoulou

May 2010- August 2010
-Worked on children's book coding project with Ageliki Nicolopoulou

January 2010 – August 2010
Lehigh University Narrative Lab

- Undergrad research assistant for Professor Ageliki Nicolopoulou

January 2008 – December 2009
Lehigh University Language Production Lab

- Undergrad research assistant for Professor Padraig O'Seaghdha

Teaching Experience

Fall 2011
-TA for Child Development for Professor Amanda Brandone at Lehigh University
Spring 2012
- TA for Statistics for Professor Gordon Moskowitz at Lehigh University

Presentations

May 2012
Planning to present at JPS conference
-"Preschoolers' narrative production and comprehension: How much do they really know?"
May 2012
Lehigh University- Will present Master's at Psychology Department meeting

November 2011
-Lehigh University- Presented at Developmental faculty and graduate student meeting
April 2011
-Lehigh University- Presented at Psychology Department meeting
April 2011
-Lehigh University- Presented at Developmental faculty and graduate student meeting