Wide-scope Indefinites in English Child Language[1]

Karen Miller and Cristina Schmitt
Michigan State University

1. Introduction

There have been various systematic attempts to account for the well-known linguistic ability of indefinites to allow more than one interpretation, at least since the work by Fodor & Sag (1982). In (1) and (2), for example, the indefinite and numeral can be interpreted outside the scope of the negation (wide-scope) or within the scope of negation (narrow-scope), as shown in (a) and (b) respectively.

(1) Ben didn't kiss a girl
   a. There was a girl that Ben didn't kiss (a > neg)
   b. Ben didn't kiss any girls (neg > a)

(2) The detective didn't find two guys
   a. There were two guys that the detective didn't find (a > neg)
   b. The detective didn't find two guys (i.e. he found only one) (neg > a)

Both (1) and (2) are ambiguous in that they both allow a wide-scope and narrow-scope reading of the indefinites. The wide-scope interpretation is sometimes called 'specific' and the narrow-scope interpretation is called 'non-specific'. The explanations for the behavior of indefinites is still under debate and range from syntactic accounts (movement of the indefinite to escape negation) to purely semantic and/or pragmatic accounts.

More recently, several studies have focused on the ability of children to interpret indefinites in negative sentences. These studies have asked whether children can access the wide-scope interpretation of indefinites when they occur under negation, as in (1) and (2) above. Several studies have reported significant differences between child and adult interpretations (Kramer, 2000; Su, 2001; Lidz & Musolino, 2002), while other studies have found children and adults patterning together (Su, 2001; Miller and Schmitt, 2003). This paper presents three experiments that examine both child and adult abilities to access wide-scope readings of indefinites and provides an alternative account for some of the findings of previous studies. We argue that some of the results are to be associated to children's inability

[1] This research was supported by NSF grant BCS-0126502 and has IRB approval at Michigan State University 02-036. Special thanks to the children, faculty and parents of the Capital Area Academy in Lansing, Michigan, Eastminster Child Development Center, Michigan Head Start Programs, and Michigan State University Child Development Laboratories. We also thank Jennifer Buss, Pamela Bingcang, and Alison Austin for their help with running subjects. Finally, we thank Alan Munn, Barbara Abbott, Grover Hudson and the Michigan State University language acquisition group for their insightful discussion and very helpful suggestions.

to identify sets in the experimental stories and use these sets to interpret the indefinite objects specifically.

This paper is divided as follows: in section 2 we review the acquisition literature and point out a commonality among all of the experiments discussed, namely the fact that they all are trying to access covert partitive readings of the indefinite objects. Section 3 presents an experiment with adults showing that the type of object used in target sentences may influence whether adults are able to access the partitive reading. Based on the findings of this experiment, section 3 presents two experiments on the acquisition of indefinites by children.

2. Acquisition of the Scopal Properties of Indefinites

There are several studies on child and adult interpretation of indefinite objects in negated sentences. Kramer (2000) examined the interaction of indefinites and negation in Dutch, where indefinites have a wide-scope reading when they are scrambled (occur higher than negation) and a narrow-scope reading when they are unscrambled. She tested children ages 4 to 7 and found that Dutch children treated both the unscrambled and scrambled indefinites identically, assigning them both a narrow-scope interpretation.

Su (2001, 2003) examined child interpretation of indefinites and numerals under negation in English- and Chinese-speaking children ages 3 to 6 and found that Chinese children pattern with adults on their interpretation of indefinites while English-speaking children, behaving significantly different from adults, prefer a narrow-scope reading of the indefinite. Both English- and Chinese-speaking adults access the wide-scope reading about 50% of the time.

Lidz and Musolino (2002) tested 3-4 year old English- and Kannada-speaking children on their interpretation of ambiguous sentences involving numerals under negation and found that while adults readily access either scope interpretation for the numeral, children from both language groups preferred the narrow-scope reading of the numeral.

Miller and Schmitt (2003) tested Spanish-speaking children ages 4 to 5 on their interpretation of indefinites and bare singulars under negation and found that, just like Spanish-speaking adults, Spanish children distinguish between bare singulars (obligatory narrow-scope) and singular indefinites (ambiguous).

Two proposals that have been put forth to account for previous findings on child interpretation of indefinites are the Non-Integration Hypothesis (Kramer, 2000) and the Isomorphism account (Musolino, 1998). The Non-Integration Hypothesis proposes that children acquire the predicative interpretation of indefinites early and the specific interpretation later (after age 7). The specific interpretation is acquired later because it requires discourse integration and children are unable to integrate discourse at this age. The Isomorphism account proposes that children depend strongly on syntactic scope when assigning meaning to sentences involving scope interactions. When there is a mismatch between syntactic and semantic scope, child interpretations correlate with the interpretations determined by syntactic scope. Although the Isomorphism proposal is able to account for the results found in a series of experiments on quantification across languages, it cannot account for Kramer's (2000), Su's (2001; 2003) and Miller and Schmitt's (2003) results where

Dutch, Chinese and Spanish children appear to prefer readings that do not correspond to the surface structure.

The Non-integration Hypothesis can account for the above studies as well as Kramer's findings for Dutch children. In all of these studies, children prefer the narrow-scope reading of indefinites under negation. However, it is not clear whether the Non-integration Hypothesis can account for Su (2001, 2003) and Miller and Schmitt (2003) where results showed that Chinese and Spanish children patterned with adults on their interpretation of wide-scope indefinites. The idea that children are unable to form discourse connections has recently been challenged by Wijnen et al. (2003), where they showed that 4-5 year old English-speaking children were able to integrate prior discourse in order to interpret ellipsis. Although Kramer's hypothesis may be ultimately right, it is unclear why children have difficulty integrating discourse to interpret specific indefinites but have no problems in other contexts. The following experiments take a closer look at the components involved in the interpretation of indefinites and aims to explain why discourse integration breaks down for children when confronted with specific indefinites.

One characteristic common to all the above experiments is that the specific reading always involved partitivity. Under the wide-scope interpretation, sentences like *Mickey Mouse didn't ride a dog* and *The detective didn't find two guys* in the contexts provided meant "Mickey Mouse didn't ride one of the dogs" and "The detective didn't find two of the guys". Enç (1991) notes that indefinites become specific when linked to discourse; one way of linking a variable to prior discourse is through a subset relation (a relation of inclusion), as in partitive constructions. Geurts (2002) argues that indefinites always denote properties and if an indefinite occurs as an argument it may be construed as specific or non-specific depending on whether it is backgrounded or not. Backgrounding with respect to partitives is shown in (3).

(3) Partitives and Backgrounding (taken from Geurts, 2002)
-given an expression of the form 'det α of β'
-β's job is to help identify the intended α
-hence β is backgrounded

Hence, indefinites that occur in partitive constructions are backgrounded and indefinites that are backgrounded are interpreted specifically. Applying Geurt's backgrounding proposal to the examples in (4), we show α and β for both an overt partitive and covert partitive, respectively.

(4) a. Mary didn't eat a slice of her pizza
α = a slice
β = her pizza

b. Mary didn't kiss a boy
α = a boy
β = a certain set of boys

In the overt partitive (4a) α = *a slice* and β = *her pizza.* β (*her pizza*) is backgrounded allowing α (*a slice*) to be interpreted specifically. In the covert partitive in (4b) α = *a boy* and β = *a set of boys* that was mentioned previously in the discourse. If this set of boys is apparent to the person listening to the sentence then this set is backgrounded and used to interpret *a boy* specifically. In other words, the

sentence *Mary didn't kiss a boy* would mean "Mary didn't kiss one of the boys"*;* it has a partitive reading.

Because previous experiments all deal with covert partitives and β is not overtly mentioned in the target sentences, we hypothesized that children may have difficulty recognizing β and hence backgrounding it. We call this the *Backgrounding Hypothesis*. What this means is that, whereas the experimenter and adult subjects may form a set out of the three or four objects being affected in the experimental stories, children are unable to or at least have difficulty doing this. If they do not form a set out of the objects in the experimental stories (i.e. the four guys the detective is searching for, the four dogs being ridden by Mickey Mouse) they cannot background this set and use it to interpret the indefinite or numeral specifically (i.e. assign it a partitive reading). The Backgrounding Hypothesis is stated in (5).

(5) Backgrounding Hypothesis: Children have difficulty backgrounding β in covert partitives because β is not overtly expressed. If β is not backgrounded then α cannot be interpreted specifically.

The present study asks whether making the sets more natural (providing an entity that connects all the members of the set together) will help children background the relevant set against which they can subsequently interpret the indefinite specifically. In other words, would indefinite objects in sentences like *John didn't blow out a candle* where the set of candles becomes obvious because they are all located on one entity (a birthday cake) make it easier for children to background β (the set of candles on the birthday cake) and hence interpret α (a candle) specifically? The goal of the following experiments is to test whether English-speaking children will allow the wide-scope reading of indefinites under negation when presented with indefinite objects that form natural sets. Before running any tests with children, it is essential that we first look at wide-scope indefinites in the adult behavior.

3. Experiments

3.1 Experiment 1: Variability in Adult Judgments

The ability of indefinites to take wide-scope depends a lot on the context in which they occur and the indefinite objects involved. Consider sentences (6), (7), and (8) for example.

(6) Mary didn't eat a hamburger

(7) Mary didn't eat a french fry

(8) Mary didn't eat a piece (i.e. of her cookie)

Although all three sentences are ambiguous, sentence (6) seems to favor a narrow-scope reading of the indefinite while sentences (7) and (8) favor a wide-scope reading of the indefinite. This simply is due to the nature of the entities that the indefinite objects represent; we usually only eat one hamburger but lots of french

fries or pieces (i.e. of a cookie) at one meal. For this reason, we are more likely to assume that there is a pre-established set of french fries or pieces (i.e. of cookie) and use that set to assign a partitive (wide-scope) reading to (7) and (8).

The first study we will discuss examined whether and to what extent adults vary on their interpretation of indefinite objects under negation. This experiment tested adults on experimental stories previously used in a study presented in Su (2001). We chose to replicate this particular study because it is the only one that we are aware of that has focused specifically on English singular indefinites under negation and also because adult subjects in this study performed at chance level (accepting the wide-scope reading of indefinites 50% of the time).

Participants and Procedure. Twenty-nine undergraduates from Michigan State University participated in the study. The task was a truth value judgment task (Crain and Thornton, 1998). Stories were presented with pictures and after each story participants were asked to read a sentence and decide whether it adequately described the story or not. Story scenarios were identical to those used in Su (2001). These stories provided a neutral context; both a wide-scope and narrow-scope reading of the target sentence was plausible. There were four target stories that were randomly mixed in between 70 fillers[2]. All four target stories followed the same scenario and involved a main character (i.e. girl named Angie) who was thinking about doing something (i.e. riding animals). At first the main character didn't want to do anything to the first type of objects (i.e. dogs) she encountered. The possible outcome was thus considered at some point in the story and so the condition of plausible dissent was satisfied. Although the main character preferred the other type of objects (i.e. horses), for some reason (i.e. the horses were wild and kept jumping) the character couldn't do what she wanted to. Therefore, the character went back to the first type of objects and did the action on two of the three objects (because one of them was not qualified).

Results. Table 1 shows the four target sentences along with the percentage of wide-scope interpretations accessed for each sentence. Note that for all studies discussed in this paper, an answer of TRUE equals a wide-scope reading and an answer of FALSE equals a narrow-scope reading.

	Target Sentence	**Adults**
1.	Angie didn't ride a dog	65.5% (19/29)
2.	Denny didn't eat a cookie	86.2% (25/29)
3.	Troy didn't buy a hat	34.5% (10/29)
4.	Julie didn't feed a cat	75.9% (22/29)
	Total	**65.5% (76/116)**

Table 1. Experiment 1: Adult wide-scope readings

Looking at the total percentage of wide-scope readings for all participants on all sentences combined reveals that, similar to what was reported in Su (2001), adults perform at about chance level (65.5%), which at first glance seems to imply that

[2] Because adults are better than children at figuring out exactly what experimental tasks are measuring, studies of this sort that involve various fillers are essential for discovering exactly how adult participants actually interpret the sentences under investigation.

adults in general treat all of these sentences as ambiguous. However, the percentage of wide-scope readings for each individual sentence shows that this is not the case. The acceptance of wide-scope readings for indefinites varies considerably from sentence to sentence, with indefinites in sentences such as *Denny didn't eat a cookie* getting a wide-scope reading 86% of the time and indefinites in sentences such as *Troy didn't buy a hat* getting a wide-scope reading only 34% of the time. Out of the four sentences tested, only sentence (2) in Table 1 had an indefinite wide-scope reading over 80% of the time, and wide-scope readings of indefinites were significantly higher than chance (chance being equal to 50%) only in sentences (2) and (4). The findings from Experiment 1 confirm the variability that does indeed exist in adult judgments of wide-scope indefinites depending on the objects chosen.

3.2 Experiment 2a: Partitivity in Child Language

In order to verify whether children allow specific readings of indefinites under negation we modified our target stories in two ways: (i) the indefinite objects involved belonged to pre-specified sets that were connected together by a larger object (eggs in a basket, letters on a chalkboard) (to make backgrounding of β easier for children); (ii) the protagonist in the story was required to carryout an action on all of the objects in that set before beginning another activity (Wason's "Contexts of Plausible Denial", 1965) with only one item out of four being left unaffected (Wason's "Exceptionality Hypothesis", 1965)[3].

Before working with children we tested adult subjects on twelve different target sentences involving indefinite objects of this type in order to verify that adults actually prefer the wide-scope reading of these indefinites. These 12 sentences were mixed in between 70 fillers. Of these twelve target sentences, we chose the four target sentences in Table 3 to use in our study. For all four sentences the wide-scope reading of the indefinite object was preferred at least 83% of the time by adults.

Participants. Twenty children aged 3;10 – 5;8 (mean 4;7) from daycare centers and kindergartens in Lansing, Michigan were recruited for the study. Additionally, ten undergraduate students from Michigan State University were recruited as controls.

---

[3] All previous studies discussed in this paper as well as the present experiments deal with the interpretation of negated sentences. Studies have shown that processing of negation is harder for both children and adult subjects (see Horn, 1989 for a review of studies dealing with the acquisition and processing of negation). Horn cites Wason (1961) as showing that adults subjects are much faster and more accurate at verifying *false* negatives than at verifying *true* negatives. Given this finding, we should expect children to have a "false" bias instead of a "true" bias on the studies discussed in the present paper.

To make sure experimental sentences were felicitous, we incorporated Wason's (1965) (cited in Horn, 1989) Exceptionality Hypothesis which proposes that negation is most natural when it is associated with a dissimilar item set off against the rest of a class of similar items (the ground). We also incorporated Wason's (1965) (cited in Horn, 1989) Contexts of Plausible Denial, which says that the function of negative sentences is generally to emphasize that a fact is contrary to an expectation (Cornish and Wason, 1970) (cited in Horn, 1989).

Procedure. A truth value judgment task was used. Note that although the target stories favored a partitive reading, a narrow-scope interpretation is also felicitous and hence is not incorrect. All children were tested individually in a quiet room. We used computer picture slides to present experimental stories to children. All experimental sentences were pre-recorded by a person who was unaware of the experimental objectives. After each experimental story, a computer-animated puppet appeared on the screen and read the pre-recorded experimental sentence to the child. Children were instructed to feed the monster grapes, if he guessed right, and bananas, if he guessed wrong by clicking on the grape or banana icon. The computer-animated monster would then eat the fruit the child chose. All children were given a pretest to make sure they could use the computer mouse and they understood the task. We found that children did extremely well and most children also provided their answers orally in addition to using the mouse. Adult participants were tested in groups and experimental stories were presented with the same computer images. Adult subjects read experimental sentences after each story and were asked to decide whether the sentence accurately described the story or not. A sample target story is shown in Table 2. All target stories followed the same format. There were four target sentences mixed in randomly between 19 fillers and controls.

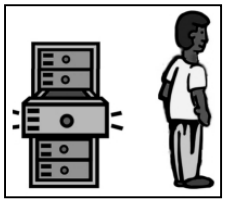
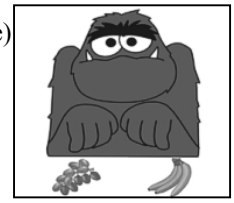
Researcher:	"This is Peter and these are drawers that are all in his dresser and he's closing them. Peter's dad told him to close all of the drawers before going outside to play. Let's see what happens."	
Researcher:	"Look. Now Peter is going outside to play. But wait! What about this one? He didn't close this one. Let's see if the monster can say what happened."	
Monster: "Peter didn't close a drawer." (recorded voice) a. Peter didn't close one of the drawers (a > neg) b. Peter didn't close any drawers (neg > a)		

Table 2. Experiment 2a and 2b: Sample target story

Results. Table 3 shows the four target sentences used in Experiment 2a along with the percentage of wide-scope interpretations for children and adults for each sentence.

	Target Sentence	**Adults**	**Children**
1.	Mary didn't paint an egg	100% (10/10)	90% (18/20)
2.	Susan didn't erase a letter	100% (10/10)	95% (19/20)
3.	Peter didn't close a drawer	100% (10/10)	85% (17/20)
4.	Timothy didn't blow out a candle	100% (10/10)	95% (19/20)
	TOTAL	**100%**	**91%**

Table 3. Experiment 2a: Percentage of wide-scope readings

The results show children and adults patterning together on their interpretation of target sentences. Overall children accept the wide-scope reading of indefinites 91% of the time while adults accept this reading 100% of the time. There was not a significant difference between these scores and children performed significantly higher than chance ($t(19) = 11.000$, $P < 0.05$), chance equals 50%. 75% of all children accessed the wide-scope reading 100% of the time.

Because children did so well on Experiment 2a, we decided to run two follow-up experiments to test whether altering the experimental stories would change children's interpretation. Experiment 2b omits part of the text used in Experiment 2a and Experiment 3 presents experimental stories by acting them out with toys rather than presenting them on computer picture slides.

3.3 Experiment 2b: Partitivity in Child Language Follow-up

This experiment was identical to Experiment 2a except that the sentence *He didn't close this one* was omitted from the experimental story text. We decided to omit this sentence to see whether children would still allow the wide-scope reading of the indefinite even though we never explicitly stated that the character (in this case Peter) didn't carry out the intended action on one of the items in the set (didn't close one of the drawers).

Thirteen English-speaking children aged 4;2 – 5;8 (mean age = 4;9) from daycare centers and kindergartens in Lansing, Michigan and fourteen undergraduate students from Michigan State University were recruited for this experiment.

Results. Table 4 shows the four target sentences used in Experiment 2b along with the percentage of wide-scope interpretations for children and adults for each sentence.

	Target Sentence	**Adults**	**Children**
1.	Mary didn't paint an egg	93% (13/14)	100% (13/13)
2.	Susan didn't erase a letter	93% (13/14)	100% (13/13)
3.	Peter didn't close a drawer	100% (14/14)	85% (11/13)
4.	Timothy didn't blow out a candle	100% (14/14)	85% (11/13)
	TOTAL	**96%**	**92%**

Table 4. Experiment 2b: Percentage of wide-scope readings

The results show children and adults patterning together on their interpretation of target sentences. Overall children accept the wide-scope reading of indefinites 92% of the time while adults accept this reading 96% of the time. There was not a significant difference between these scores and children performed significantly higher than chance ($t(12) = 8.124$, $P < 0.05$), chance equals 50%. 85% of all children accessed the wide-scope reading 100% of the time.

3.4 Experiment 3. Partitivity in Child Language: Stories Acted Out

Almost all of the previous experiments on indefinites under negation tested children by acting out the experimental stories with toys. In order to verify that our results in Experiments 2a and 2b are not merely the result of the materials we used to present the experimental stories, Experiment 3 tests children by acting the stories out with toys.

Participants. Eleven English-speaking children aged 4;7 – 7;5 (mean age = 6;0) were recruited from daycare centers and kindergartens in Lansing, Michigan. Twenty undergraduate students from Michigan State University served as controls.

Procedure. As in previous studies, a truth value judgment task was used. Although the experimental stories favored a partitive reading, a narrow-scope interpretation is also felicitous and hence is not incorrect. All children were tested individually in a quiet room. All experimental stories were acted out with toys and experimental sentences were read by a puppet. Children were instructed to feed the puppet grapes, if he guessed right, and bananas, if he guessed wrong. Adult participants were tested in groups and the experimental stories were presented in a video. Adult subjects read experimental sentences after each story and were asked to decide whether the sentence accurately described the story or not. The experimental target sentences were identical to those used in Experiments 2a and 2b. A sample target story is shown in (9). All target stories followed the same format. The four target sentences were mixed in between 4 controls.

(9) This is Timothy and these are letters that are all written on the chalkboard and he's erasing them. His teacher told him to erase all of the letters before going out to recess. Let's see what happens! (Timothy erases three of the four letters, one-by-one then says, "I'm tired, I'm going out to recess"). But wait he's not finished! Let's see if Petey can say what happened.

Results. Table 5 shows the four target sentences used in Experiment 3 along with the percentage of wide-scope interpretations for children and adults for each sentence.

	Target Sentence	**Adults**	**Children**
1.	Mary didn't paint an egg	85% (17/20)	73% (8/11)
2.	Susan didn't erase a letter	90% (18/20)	73% (8/11)
3.	Peter didn't close a drawer	90% (18/20)	81% (9/11)
4.	Timothy didn't blow out a candle	90% (18/20)	73% (8/11)
	TOTAL	**89%**	**77%**

Table 5. Experiment 3: Percentage of wide-scope readings

The results show children and adults patterning together on their interpretation of target sentences. Overall children accept the wide-scope reading of indefinites 77% of the time while adults accept this reading 89% of the time. There was not a significant difference between these scores and children performed significantly higher than chance $t(10) = 2.292$, $P < 0$ .05, chance = 50%. 64% of all children accessed the wide-scope reading 100% of the time.

It is interesting to note that even though children and adults patterned together on this task, the percentage of wide-scope readings for both groups decreased as a result of acting the tasks out with toys rather than presenting them with computer picture slides. Interestingly, the children in Experiment 3 were also older than those in Experiments 2a and 2b. This decrease in wide-scope readings is most likely due to the fact that the majority of the target story focused on the main character carrying out the activity (i.e. erasing letters) and less time on the left-over object (the one letter that was not erased). Given this fact about the experimental stories in Experiment 3 and the fact that children still preferred the wide-scope reading of the indefinites demonstrates very clearly that this reading of indefinites is available to children early on.

4. Results and Discussion

The experimental studies discussed in this paper provide insight into child and adult interpretation of wide-scope indefinites. Experiment 1 shows that adult judgments on indefinites under negation are not uniform across all sentences; instead, judgments vary according to the type of object used in the sentence. While adults preferred the wide-scope reading over 86% of the time in a sentence like *Denny didn't eat a cookie* they only allowed this reading 34% of the time in a sentence like *Troy didn't buy a hat*. It should not be surprising then if we find children also avoiding wide-scope readings of some indefinite objects.

Based on the results of Experiment 1, Experiments 2a, 2b and 3 retest English-speaking children on their interpretation of wide-scope indefinites by using experimental sentences with indefinite objects that favored a wide-scope (partitive) reading in the adult grammar. In all three studies, we found that children, like adults, overwhelmingly assigned a wide-scope interpretation to the indefinite objects.

The experimental studies discussed in this paper provide strong evidence against the Isomorphism account (Musolino, 1998), which predicts that child interpretation of indefinites under negation should correlate with surface syntactic scope. Our results show clearly that as long as discourse conditions are met, English-speaking children have no difficulty accessing the wide-scope interpretation of indefinites under negation. The fact that our results provide evidence against the Isomorphism account is not surprising since evidence of this sort has been reported in several studies (Kramer, 2000; Su, 2001, 2003; Miller and Schmitt, 2003).

The Non-integration Hypothesis proposes that children acquire the predicative interpretation of indefinites early and that the wide-scope reading of the indefinite is acquired later (at about 7 years of age) because it requires discourse integration. However, as noted earlier, studies are showing that children are sensitive to discourse by this age. If children are sensitive to discourse, why did they have difficulty accessing the wide-scope reading of indefinites in previous studies? What is it about wide-scope indefinites that cause them so much trouble? We believe that the answer to this question has to do with the ability of children to identify and *background* the set against which the indefinite is to be interpreted specifically.

Geurts (2002) points out that indefinites are non-specific by default because they tend to carry new information and that it is only under special circumstances that new information is backgrounded (as in partitive constructions) and in this case the indefinite in question is interpreted specifically. Therefore, even for adults, there should be a preference for accessing the narrow-scope reading of the indefinite. For the experiments presented in this paper as well as for several previous studies on indefinites, the wide-scope reading of the target sentence was partitive. In other words, all target sentences were ambiguous between a non-specific reading (i.e. the detective didn't find two guys, he found only one) and a partitive reading (the detective didn't find two of the guys). This is not to say that all specific indefinites are partitive; instead, it just happens to be the case that the experimental stories in several of these previous studies were set up in a way that favored a partitive reading of the indefinite or numeral. Moreover, since target sentences were covert partitive constructions (β is not overtly mentioned), children had to infer β from the context. For a sentence like, *The detective didn't find two guys*, subjects must background the *set of guys* against which the indefinite *a guy* is interpreted specifically. We believe that in previous studies indefinites were interpreted non-specifically because children did not make a set out of the objects (i.e. the four guys) against which they could subsequently interpret the indefinite or numeral specifically. In other words, as predicted by the Non-integration Hypothesis, children were unable to use prior discourse to interpret the indefinite specifically. The present study helped children identify β by providing a context where the objects were all linked together by a larger entity (i.e. drawers in a dresser, candles on a cake). This allowed children to recognize these objects as forming a set and use this set to interpret the indefinite specifically.

5. Conclusion

This paper has provided two important facts about child and adult interpretation of wide-scope indefinites. First, we have shown that even though the sentences involving indefinites under negation are ambiguous, adult interpretations vary greatly from one sentence to the next, a finding which may explain why children often avoid the wide-scope reading of indefinites as well. Secondly, we have shown that when children can background the relevant set against which to interpret the indefinite, English-speaking children as young as 4 years of age have no trouble accessing the wide-scope reading of indefinites under negation.

References

Cornish, E. and P.C. Wason (1970) 'The recall of affirmative and negative sentences in an incidental reasoning: a second reply'. *Psychological Review* 79, 428-432.

Crain, Stephen and Rosalind Thornton (1998) 'The truth value judgment task: Fundamentals of design'. *University of Maryland Working Papers in Linguistics* 6, 61-70.

Enç, Mürvet (1991) 'The semantics of specificity'. *Linguistics Inquiry* 22, 1-25.

Farkas, Donka (1994) 'Specificity and scope', in: L. Nash and G. Tsoulas (eds.) *Langues et Grammaires* 1, 119-137.

Fodor, J. and I. Sag (1982) 'Referential and quantificational indefinites'. *Linguistics and Philosophy* 5, 355–398.

Geurts, Bart (to appear) 'Specific indefinites, presupposition, and scope', in: R. Bäuerle, U. Reyle, and T.E. Zimmermann (eds.) *Presuppositions and Discours*e. Elsevier: Oxford.

Horn**,** Laurence (1989) *A Natural History of Negation*. Chicago: University of Chicago Press.

Krämer, Irene (2000) *Interpreting Indefinites: An Experimental Study of Children's Language Comprehension*, Ph.D. University of Utrecht.

Lidz, Jeffrey and Julian Musolino (2002) 'Children's command of quantification'. *Cognition* 84, 113-154.

Miller, Karen and Cristina Schmitt (2003) 'The interpretation of indefinites and bare singulars in Spanish child language'. Paper presented at the *6th Conference on the Acquisition of Spanish and Portuguese as First and Second Languages*, University of New Mexico, Albuquerque, October 16.

Musolino, Julian (1998) *Universal Grammar and the Acquisition of Semantic Knowledge: An Experimental Investigation into the Acquisition of Quantifier Negation Interaction in English,* Ph.D. University of Maryland.

Su, Yi-ching (2001) 'Scope and specificity in child language', in: Anna H.-J. Do et al. (eds.) *BUCLD 25 Proceedings*, Somerville, MA: Cascadilla Press, 744-755.

Su, Yi-ching (2003) 'Children don't always follow c-command as a scope principle'. Paper presented at *GLOW*, Lund, April 12.

Wason, P. C. (1965) 'The contexts of plausible denial'. *Journal of Verbal Learning and Verbal Behavior* 4, 7-11.

Wason, P. C. (1961) 'Responses to affirmative and negative binary statements'. *British Journal of Psychology* 52, 133-142.

Wijnen, Frank, Tom Roeper and Hiske van der Meulen (2003) 'Discourse binding: Does it begin with nominal ellipsis?'. Paper presented at the *Generative Approaches to Language Acquisition* Conference, Utrecht, September 6.