1-1-1996

A step in the development of a language screening device for three-year-olds

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A Step in the Development of a Language Screening Device for Th ree- Year-Olds

A Thesis Submitted to the University Honors Program In Partial Fulfillment of the Requirements of the Baccalaureate Degree With Upper Division Honors

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May 1996

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HONORS THESIS ABSTRACT
THESIS SUBMISSION FORM

AUTHOR: Tricia N. Sabathne

THESIS TITLE: A Step in the Development of a Language Screening Device for Three- Year-Olds

ADVISOR: M. Irene Stephens ADVISOR'S DEPT: ComO

DISCIPLINE: Child Language YEAR: 1996

PAGE LENGTH: 25 BIBLIOGRAPHY: 20-21 ILLUSTRATED: No

PUBLISHED: No

COPIES AVAILABLE: Hard Copy

ABSTRACT:

The purpose of the current study was to extend previous work in the development of an elicited sentence imitation screening device for three-year-olds' language abilities. The nine sentences developed for presentation to the children formed a brief story and had supporting illustrations. The task was given to six children with ages ranging from two years, nine months to three years, ten months, who displayed typically developing language abilities in order to determine if the task was age-appropriate. Two different scoring systems were used to quantitatively evaluate performance on the task; in addition, qualitative descriptions of the children's efforts were also provided.

It was found that five of the six children in the study were able to respond to the examiner's instructions. The early threes obtained higher scores than the later threes, which with the scoring systems used indicates less linguistic control.. The children appeared to find the task interesting and engaging, and required little prompting to participate, evidence for the task being age-appropriate. Further work needs to be done in the development of the task, including testing a large number of three-year-olds with a wide range of language abilities and continued efforts to establish test reliability and validity.

INTRODUCTION:

Elicited sentence imitation tasks have been used to investigate language use and control in a variety of ways. Quick and easy to administer and score, these tasks can provide insight into the language of the child being tested. Since sentence imitation tasks have low task demands, children with a wide range of language abilities can be tested. This format has been used to probe syntactic and phonological control as a screening measure, for example in the Stephens Oral Language Screening Test (SOLST) (Stephens, 1977). It has also been used as an assessment device, for example in the Carrow Elicited Language Inventory (CEll) (Carrow, 1974). Refined analyses of a child's responses have been used as a guide to determine specific language structures or speech sounds the child has mastered, those that are emerging, and those which *s/he* has not yet developed.

If used to make treatment and specific target decisions, sentence imitation tasks need to reflect that particular child's specific strengths and weaknesses in expressive syntax, morphology, and phonology. Research on sentence imitation tasks have produced mixed results on the validity of using this format (Connell & Myles-Zitzer, 1982; Fujiki & Brinton, 1987). If used as a screening device, however, sentence imitation tasks only need to separate children with typical language abilities from those with atypical language development and to include a borderline group for rescreening. Because of their efficiency, sentence imitation tasks

can be utilized for valuable screening tools for the speech-language pathologist.

Chaney (1992) has indicated that a surprising degree of language growth occurs in the fourth year of life (with the first year of life being infants from birth to one year, and therefore the fourth year of life being three-year-olds). She indicated that metalinguistic performance of three-year-olds improved with age, and this improvement could be seen in some children even as age increased by the month. She concluded that the years from age two to four are a very active period of metalinguistic learning. It seems reasonable to assume that this growing ability to think about language in a structural sense apart from its meaning and use would be reflected in a parallel increase in other language domains. Thus, it should be possible to compile normative data on what typical three-year-olds can do on a specific linguistic task. These normative data can then be used as a guide for targeting children who are not developing language within the expected range based on the performance of their peers.

A screening device that separates three-year-olds who appear to be developing selected language skills at a normal rate and those who appear to be having some difficulty would be a useful tool.. By identifying th ree-year-olds who warrant fu rther attention, subsequent assessment procedures can lead to proper treatment and services. Research has shown that the earlier a language delay or disorder is identified, the more cost-effective treatment can be (Rossetti; 1990). An efficient screening device is an important step in providing these earlier services.

Some attention has been given to developing a screening device that assesses selected aspects of three-year-olds' language abilities, using a sentence imitation format.. As a basis for developing such a task, the SOLST was initially chosen. The SOLST is designed for use with four, five, and six-year-olds, and uses a sentence imitation format to screen for potential syntax and/or articulation problems (Stephens, 1977). By systematically probing a child's sentence imitation abilities, decisions can be made about whether the child warrants further attention in these domains of language.

The child is given instructions that "We're going to play a talking game. You say just what I say. Let's practice-". The practice phrases that are given before the set of sentences include "Hello", "I'm fine, thank-you", and "Is it raining?". Special instructions are given to the examiner if the child responds with a comment or an answer to one of the practice phrases instead of imitating it. The SOLST consists of fifteen unrelated sentences representing a variety of syntactic structures and morphological markers which are presented to the child one at a time. The child is to be tested individually in a quiet environment; audiotaping is optional.. Any changes made from the original sentence are recorded, and then the responses are scored. The scoring system for the SOLST is an error category type. Each elicited response receives a score ranging from a 0 for an exact imitation to a 7 for an unintelligible or no response. The lower the score, the greater the child's ability to imitate unrelated sentences and, theoretically, the greater syntactic

control.. Articulation is scored separately, and again, the lower the score the greater the assumed phonological control..

In order to develop the SOLST downward so that a separate test could be developed which would screen for three-year-olds' syntactic ability, a pilot study was completed (Sabathne, 1995). In the study, a set of twenty-five unrelated sentences that had been used as a clinical probe for three-year-olds (Stephens, 1980) was administered to a small group of three-year-olds with normally developing language and another group of three-year-olds with known language delays. It was discovered that a substantial number of the children with language development judged to be within the normal range by their experienced preschool teachers had difficulty in responding in the expected manner. This was predicted for the children identified as having language delays, but not for those identified as having normally developing language abilities. Consequently, the task was deemed not appropriate for the intended population.

Simply modifying the existing SOLST downward for use with three-year-olds was not an effective way of distinguishing between children with normally developing language and those with delayed or disordered language ability (Sabathne, 1995). Sabathne concluded that special methods are necessary when developing an appropriate elicited sentence imitation screening device for three-year-olds.

Sabathne offered recommendations on ways to modify the task so it would be more appropriate for three-year-olds' development level while maintaining the sentence imitation task as the method

for eliciting responses and comparing performances. These included the following:

a) modifying the instructions given to the child
b) allowing a child, who is reluctant to participate, observe a particularly talkative peer complete the task
c) having a familiar adult help with the administration
d) creating a sentence list which forms a story
e) adding illustrations
f) reducing the range of scores used in the scoring system

These suggestions include two which add context to the sentence imitation task: using a story format and adding illustrations. Various research has been conducted attempting to assess differences in performance by children when context is added to sentence imitation tasks in the form of pictures, re-enactment, and having the sentences form a story. Some authors have concluded that adding visual or story context results in improved sentence imitation responses from various children (Haniff & Siegel, 1981; Nelson & Weber-Olsen, 1980, Bloom; 1974). These results support the findings of Sabathne and her colleagues that children may have trouble imitating unrelated sentences in the absence of context.

Other authors have found that adding visual or story context does not result in an improvement in children's ability to imitate sentences (Madison et ai, 1989; Haynes & Haynes, 1979; Connell & Myles Zitzer, 1982). All of these authors who did not find improved sentence imitation abilities with additional context did, however, support the use of context for theoretical reasons or for younger children than the ones included in their studies. Theoretical reasons

for including context include the benefits of a task that is more interesting and therefore makes the children more attentive and less distractible (Haynes & Haynes, 1979), and the lack of communicative intent inherent in presenting unrelated sentences without context (Connell & Myles-Zitzer, 1982).

It is also important to note that while these two different groups of authors exhibit apparently conflicting conclusions on the actual improvements that mayor may not be exhibited by children when context is added to sentence imitation tasks, the subjects used varied both by age and by language abilities. Some studies were conducted with older children, who may not need the additional context because of their more sophisticated processing abilities. Others were conducted with only children who demonstrated atypical language development or only children with typical language development. . Others utilized both groups of children. Consequently, it is necessary to look more closely at the findings before accepting generalizations about the variations in sentence imitation abilities of children when given contextual cues.

The purpose of the current study was to extend the previous development of a screening device for three-year-olds in which the sentences to be imitated formed a brief story with supporting illustrations. The number of sentences used was also greatly reduced, from the twenty-five used in the initial study to nine used in the current work. The task was administered to six children, ranging in age from two years, nine months to three years, ten months, with known normally developing language skills as part of a plan to determine if the task was age-appropriate. The one child who

was not yet three years old yet (the two year, nine month old) was included in a classroom for three-year-olds and the examiner did not discover until after the sessions that he was not three years old. This child's language skills appeared similar to the three-year-olds and was therefore included in this study. Two different scoring systems were used, and the children's performance on the task as a whole as well as on specific items were explored.

METHOD:

"The Cat Story #2" (Stephens, 1993) and accompanying pictures were used as stimuli for the development of the sentence imitation task (see Appendix A). The story was revised slightly in order to increase the variety of grammatical structures included. The nine sentences were accompanied by four black and white line drawings which were developed to go along with the story. They were drawn with very little detail to avoid distraction and also to make the eat's owner's house ambiguous as to socioeconomic status.

An attempt was made to include a variety of Brown's fourteen morphemes (Brown, 1977) when constructing the sentences, and both early developing morphemes as well as later developing morphemes were included. The following morphemes were included in the sentence constructions for the story: *present progressive, on, irregular past, regular past, regular third person, contractible copula, and contractible auxiliary.*. Each of these morphemes has varying age ranges of mastery with most covering the relevant age range of 3-0 to 3-11.

The length of utterance for each sentence was calculated by counting the number of morphemes that would be credited if the sentence had been spontaneously produced. The range of the sentences' length of utterance was from three to eight morphemes. The mean length of utterance (MLU) was 5.6 for the nine sentences. Children in Brown's (1973) fourth stage of development range in age from 35 to 40 months, and the expected MLU has a range of 3.0-3.75. Children in the Brown's fifth stage of development range in age from 40-46 months, and their expected MLU range is 3.75-4.5. The MLU for this sentence set therefore slightly exceeds the MLU that would be expected to be observed in spontaneous speech samples of the population of interest.. However, the author of the Cat Story #2 was assuming that the children would be able to imitate better than they could generate (Stephens, personal communication).

Two separate scoring systems were used. The first is the one developed and used in the SOLST discussed earlier (see Appendix B). The second was developed specifically for this task, and consisted of only six discrete possible scores per sentence (see Appendix C) as compared to the eight possible scores for the SOLST scoring system. The same general scoring procedure was used, with the difference being a smaller range of possible scores for each imitated sentence. With nine sentences and a possible score of 0-5 for each sentence, the possible range of scores was 0-45 for each child with 0 representing an exact imitation of all nine sentences and 45 representing no response or unintelligible responses to all of the sentences. For the purposes of this discussion, the original scoring system used with the SOLST will be called "Stephens' Categories"

and the scoring system designed specifically for this test administration will be called "Sabathne's Categories".

At this stage of task development, articulatory control is not being researched. Syntactic control is the main focus for scoring, although phonological errors could be noted.

PROCEDURE:

All six children attended a local preschool and were identified as having typical language abilities for their age by their teacher. They were considered neither below average nor above average in terms of language ability and development.. Parental consent was obtained (see Appendix D). Three children were in one classroom, and the other three were in another classroom. Prior to data collection, one and a half hours of observation in each of the two classrooms was completed as a form of familiarizing the children with the examiner.

After the initial observation in which interaction with the children was unstructured and unplanned, the examiner returned on three separate dates to administer the sentence imitation task with the story and picture support.. Each child was presented with the task individually in a part of the classroom that was not being used by the other children at that time. For one classroom this was a table with preschool-sized chairs, and in one classroom this was the floor. In both instances, the examiner sat adjacent to the child so that both the examiner and the child could see the accompanying pictures. Tape-recording of the administration was not obtained as the test setting was noisy and not conducive to recording.

Instructions given to the children were as follows: "We are going to tell a story together. You say just what I say, just like 'Monkey See Monkey Do'. Let's Practice. 'Hello' (child repeats). 'Okay, we'll start' (child repeats)." If a child did not understand the task or did not participate, additional instruction was given to "do what I do". Gross motor movements were used (clapping hands) and, if the child would not imitate, physical guidance was given. After this gross motor imitation was obtained, verbal imitation of vowel phonemes was presented. If successful imitation of vowels occurred, the examiner then proceeded with the story.

RESULTS:

AGE (years-months)	STEPHENS SCORE (8 point range)	SABATHNE SCORE (6 point range)
2-9	12	7
3-0	11	8
3-2	63	45
3-3	23	20
3-7	2	2
3-10	6	4

The mean age was 38.8 months, or approximately 3 years, 3 months. The range of ages was 2 years, 9 months to 3 years, 10 months. There were three males and three females. The mean score for Stephens' Categories was 19.5 with a range from 2-63. The mean score for Sabathne's Categories was 14.3, with a range from 2-45. The mean score for the four early three-year olds (3-0 to 3-5, including 2-9 in this study) was 27.3 for Stephens' Categories and

20.0 for Sabathne's Categories. The mean score for the two late three-year olds (3-6 to 3-11) was 4.0 for Stephens' Categories and 3.0 for Sabathne's Categories.

DISCUSSION:

Of course, the most obvious limitation of the current study is the small number of subjects . However, it is a starting point.. The shorter sentence list used in the current study that formed a story with supporting illustrations was clearly more easily imitated than the longer list of twenty-five unrelated sentences used in the earlier pilot study. Only one of the children did not respond to the test instructions, and all of the others responded with little prompting.

The children exhibited three types of errors when imitating the sentences. These included the deletion of morphological markers, the omission of cohesive devices, and the omission or changes of pronouns, articles, and verbs. The cohesive devices, like "and" and "now", are not necessary for understanding the content of the sentences, as they do not contribute to the pertinent information in the individual sentences. For this set of sentences, leaving them out does not result in agrammatical sentences. What they do provide is some cohesiveness to the story. Perhaps these are commonly left out by children when imitating the sentences because they are too busy remembering the pertinent details and actions. It could be considered a memory overload strategy that they use to preserve the substantive words.

There is an observed difference in scores obtained by the early three-years-olds versus the late three-year-olds. The data suggest that fewer errors can be expected from the older three-year olds than from the younger three-year-olds. This further supports the idea of rapid development across the fourth year of life. It also supports the possible need for two separate norms for scores once the test is fully developed: one for early threes and one for later threes.

A distinct limitation of the current exploratory study is the uneven number in the two groups. There were four children under three and a half years old, and only two children older than three and a half years old. This is promising in that all but one of the children performed the task, but it is possible from the slight age bias towards the younger children that the task may prove to be too easy for the older three-year-olds. It is possible that there is such a difference in typical abilities between early threes and late threes that even late threes who have atypical language development can imitate these sentences easily.

A modification which was made midway through test administration that seemed beneficial was to share the illustrations with the child prior to instructing the child that they were going to tell a story together with the examiner. The child could then look at each picture and see what happened in the story. Interaction with the examiner would be natural, as it would center around discussing a story and its pictures, and then the imitation instructions could be given. This seemed helpful because it captured the children's attention and offered a context without immediately demanding a

set of responses. It also prevented the children from being too anxious to see the rest of the pictures and as a result trying to skip ahead before all of the sentences could be presented. Five of the nine sentences correspond to the first picture, and the children's natural instinct after the first one or two sentences was to look at the second picture which interrupted the task administration.

The time spent observing the classrooms prior to test administration seemed helpful.. One child was not present for any of these initial classroom observations and was the only child who did not respond to the examiner's instructions when she was presented with the test format.. She was also the only child who required special arrangements in that the examiner had to come on one particular day in order to interact with her. She only attended the preschool two times a week, and it is possible that if she had had the benefit of seeing the examiner before and of seeing the other children participate as well, she would have participated herself.

It is also possible that the fact that she had not seen the examiner before had little to do with her reluctance to participate on that particular day. One of the talkative children that had already completed the task on a different day came up during the session and modeled the task for her but this did not seem to help. Even after she saw a peer interact positively with the examiner and follow the instructions, she could not be engaged. Therefore, it is also possible that other factors caused this child to be reluctant to participate in the task on that day. In a formal screening situation, this child would be rescreened at a later date.

It is also helpful to keep in mind that all of the children participating in this study were identified by their teachers as children with average, normally developing language skills. Objective measures for measuring language abilities were not obtained. Therefore, more detailed information of where these children might fall within the range of language abilities as compared to their peers is unknown. In order to help validate the experienced teachers' subjective opinions, measures could be obtained regarding each child's language abilities as demonstrated on standardized, norm-referenced assessment tests for language and from language sample analysis. However, basing these children's classification on teachers" judgements that they have average language abilities for their age yielded a useful range of performances.

One drawback that is encountered when constructing sentences which form a story is that there is a limit to the type of constructions that can be created. The sentences need to follow a story line and the variety that can be composed is, therefore, limited. One suggestion for modifying the sentences would be to include a sentence construction with an embedded clause, as this is considered one of the hallmarks of a child in the fourth stage of Brown's developmental stages. Since this fourth stage typically includes children ranging in ages from 35-40 months (2-11 to 3-4) this may be an important construction to include when screening three-year-olds. Another suggestion would be to include a simple compound sentence. Compound sentences mark the fifth stage of Brown's developmental stages (41-46 months or 3-5 to 3-10). These

two constructions may add to potentially differentiating between language normal three-year-olds and those who exhibit language delay.

More research needs to be done to determine if the sentences created are sufficient for the purposes of the screening device. It is unclear whether they effectively target grammatical constructions that three-year olds may have difficulty producing if they are delayed in their syntactic development. . In a review of the Basic Language Concepts Test (BLCT) (Engelmann, Ross & Bingham 1982), Finch-Williams (1989) pointed out that the sentences to be imitated in the BLCT were only declarative with limited morphological markers. While measures were taken to try to ensure a variety of morphological markers in The Cat Story #2, this same criticism could be applied. Steps to include other sentence types, for instance interrogatives and the imbedded sentences previously suggested, may be justified.

It is also recommended that the children's performances be audiorecorded for later and repeated analyses. The benefits of audio-taping include the ability to provide maximum attention to the child while keeping him or her engaged without having to concentrate fully on scoring the sample. It is then possible to go back and score questionable utterances with the aid of the tape recordings. It would also provide the opportunity for other examiners to listen and score the children's responses. For this to be possible, the preschool setting needs to have a quiet place available for the examiner and child to engage in the testing procedures. This could also increase

the reliability of the children's responses since distractibility would be kept to a minimum.

As further testing with larger numbers of children is done in the development of this screening device, the scoring system needs to be continuously evaluated. The categorical scoring procedures employed with Stephens' Categories has the benefit of research support for its effectiveness when compared to other scoring methods (Montgomery, Montgomery, and Stephens, 1978). Stephens' Categories were shown to be most sensitive to children's range of performance responses on imitation tasks, which range from unintelligible to exact repetition, when compared to two other scoring measures. Designed specifically for scoring imitated responses, this method has proven to be adequate and efficient.. Sabathne's Categories were based on the Stephens' Categories, so it is possible that they will prove to be accurate and efficient as a larger number of children's performances are examined.

The current work did not assess phonological and articulatory control.. While the words were chosen to be both representative of a three-year-olds phonemic inventory and vocabulary level, only further research can determine the appropriateness of the choices.

CONCLUSION:

Further development of the "Cat Story #2" and its use as a potential screening device for three-year-olds language abilities is recommended. Extensive investigations need to be undertaken and the specific recommendations arising from the present study should receive serious consideration.

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Appendix A

THE CAT STORY #2- REVISED·

"We're going to tell a story together. You say just what I say, just like 'Monkey See Monkey Do'. Let's Practice. 'Hello' (child repeats). 'Okay, we'll start' (child repeats).

Picture 1:

1. There's Chris.
2. He just woke up.
3. He is eating cereal..
4. His cat is on the table.
5. She is watching a bug.

Picture 2:

6. Oh! She jumps at the bug.

Picture 3:

7. She missed the bug.
8. And she knocked over the cereal bowl..

Picture 4:

9. Now she licks up the milk.

Appendix B

Category Score	Description		Examples
0	AN EXACT SYNTACTIC REPETITION		
1	MINOR CHANGES AND SPECIAL CASE: 2. He wants to wash hisself..	contractions	14. Joe should've bought three oranges. 10. Let him go to the store 'cause we need some milk.
		expansions	12. If you eat too much candy, you will be sick. 9. My aunt who fell down can't walk. 13. We thought that the baby could say thank you.
		SUbstitutions	3. Somebody burned a hole in the rug. 1. Robert found the shiny penny: S. She put a lid on the jar very tightly. 13. We thought that baby could say thank you.
2	GRAMMATICAL PARAPHRASE WHICH RETAINS BASIC FORM & BASIC MEANING OR NAME CHANGES OR PHONETICALL Y SIMILAR MODIFICATIONS	transpositions	12. You'll be sick if you eat too much candy. 10. We need some milk so let him go to the store.
		substitutions	12. When you eat so much candy, you get sick. 6. There's no reason to fight with him. 15. It's not mine, but I'd like to look at it.
			1. Bobby found a shiny penny. 7. Is Robert playing a different game? 8. Alter Mac fixed my bike, I rode around a lot..
			2. He wants to watch himself. 8. After Jack fixed my bike, I rode around the block. 14. Joe should have brought three oranges.
3	GRAMMATICAL, BUT CHANGED IN SIGNIFICANT WAYS	reductions	12. If you eat a lot, you get sick. 4. Didn't they tell another story? 1. Robert found a penny. 6. There's no reason for fighting. 14. Joe should buy three oranges.
		expansions	10. Let him go to the store because we need milk and cookies. 9. My aunt fell down and she can't walk.
		substitutions	4. Why didn't they tell other stories? 15. It's not for me but I would like to look for it.
		omissions with substitutions	10. Let him go to the store; we'd like milk. 15. It's not for me; I want to look .at it.
		colloquialisms	5. She put the cover on the jar real tight.. 6. There's no reason for fighting him.
4	AGRAMMATICAL, BUT RETAINS MOST ELEMENTS		14. Joe have should bought three oranges. 1. Robert finded a penny. 5. Her put the cover on the jar real tight. 4. Why didn't they not tell no other story?
5	AGRAMMATICAL OR GRAMMATICAL, AND GREA TL Y REDUCED: BUT SOME MAJOR ELEMENTS ARE PRESENT	aqramrnatical	14. Joe buyed oranges. 7. Ralph playing game. 13. We say baby say thank you. 4. Why Ihem tellin story?
		grammatical	13. The baby said thank you. 6. Don't fight him. 14. Joe bought oranges.
6	A FEW RECOGNIZABLE WORDS AND/OR PROSODIC FEATURE PATTERN PRESENT		6. . . . reason ... fight him. 10. . . . need some milk. 15. It not ... (mmm) me ... llook alit. 8. Alter Jack. . .
7	UNINTELLIGIBLE OR NO RESPONSE		

Appendix C

SABATHNE'S SCORING CATEGORIES

0 Exact imitation

1 Cohesive unit omitted
i.e. She knocked over the cereal bowl.
for And she knocked over the cereal bowl.

2 Verb form error
i.e. He just waked up.
for He just woke up.

3 Article omitted
i.e. His cat is on table.
for His cat is on the table.

4 Verb, noun, pronoun omitted
i.e. Just woke up.
for He just woke up.

5 No Response or unintelligible

Appendix 0

Northern Illinois University a

March 1996

Dear Parent:

This letter is an invitation for your child to-participate in a language development study. As we discover more about how young children learn to talk, we also learn how to better identify and help those youngsters having difficulties with listening and speaking. We are interested in obtaining sentence imitations from a wide range of three-year-olds.

Your three-year-old would be asked to repeat a set of sentences they are presented, one at a time. Your child's repetitions would be tape recorded for later analysis. Most children find this an easy and fun task and it only takes about 4 minutes to do. The people at your child's preschool believe that this study is worthwhile and have given permission for this letter to be sent to you. As a sign of appreciation, we have made a contribution to the preschool's books and materials resources.

If you are willing to permit your child to participate in this study, please sign below and return by March 8. If not, just sign in the boxed area or simply do not return this form. In any case, thank you for your attention to this matter and if you have any questions about the study, please call me, Professor Stephens, at (815) 753-6517 or leave a message on my machine at (815) 758-3387 and I will be happy to speak with you.

Sincerely,
7n.~S~
M. Irene Stephens, PhD
Professor

Tricia Sabathne
Student

My child _____ may participate in the study.
(child's name)

_____
(parent's signature) (date)

NO: WE DO NOT WISH TO PARTICIPATE

_____
(parent's signature) (date)

OR DO NOT RETURN THIS FORM