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A Comparison Study of Children's Cognitive Understanding of Conception and Birth: England, Sweden and the United States

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**A COMPARISON STUDY OF CHILDREN'S COGNITIVE UNDERSTANDING
OF CONCEPTION AND BIRTH:
ENGLAND, SWEDEN, THE NETHERLANDS, AND UNITED STATES**

By

Carie jo Ahlgrim

B.S. University of South Dakota, 2001

A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

(in Human Development)

The Graduate School

The University of Maine

December, 2003

Advisory Committee:

Sandra L. Caron, Professor of Family Relations, Advisor

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This study explores the extent to which early childhood understanding of conception and birth is increased by early sexuality education. The present study compares conception and birth understanding of primary-aged children in America with children in other countries. Specifically, this study compared prompted drawings done by 6 year-old children from England, Sweden, The Netherlands, and the United States. Prompts used to elicit these drawing were: "Where do babies come from?" and "How are babies made?" Controlled comparison data of the children's knowledge of conception and birth, were obtained through the application of the "Children's Sexuality Awareness Scale" (Koch 1974) and the "Origin of Babies Scale" (Goldman and Goldman (1982). The results of this study provide new information about how children think and process information about conception and birth. Findings support the importance of parents and

educators providing children with comprehensive, age appropriate information about conception and birth. Implications for future research are discussed.

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Chapter 1

REVIEW OF THE LITERATURE

Human sexuality is part of our everyday lives and experiences, beginning with where we come from, to needing basic human touch to thrive. As a concept, “human sexuality” encompasses the sexual knowledge, beliefs, attitudes, values, and behaviors of individuals. Full consideration of human sexuality includes 1) the anatomy, physiology, and the biochemistry of the sexual response system; 2) roles, identity, and personality; and 3) thoughts, feelings, behaviors, and relationships (www.siecus.org).

The importance of education in human sexuality has always been controversial. Virtually all aspects of sexuality education are debated, from questions about who should do the educating, to the question of whether such education is appropriate at all. For those who do support education in human sexuality, the appropriate age at which to begin education is an especially important issue, and has been discussed quite differently across cultures. Thus, in assessing the effects of sex education provided at different ages, cross-cultural comparisons can offer evidence of how children of different ages respond to sexuality education.

Worldwide, many countries that have progressive sexuality education programs beginning in schools with children as young as four years old. Contrary to many beliefs here in the United States, research suggests that this early education surrounding human sexuality does not increase promiscuity, rather, early education is correlated with lower birth rates and greater acts of overall personal protection surrounding sexual behavior. Most importantly, these children who are educated in sexuality early are more

knowledgeable about the subject of human sexuality, with regard to sexual knowledge, beliefs, attitudes, values, relationships and behaviors of individuals.

Theories of Children's Understanding of Conception and Birth

Two of the best-known human development theorists, Sigmund Freud and Jean Piaget, were among the first to hypothesize about children's concepts of reproduction. In the late 19th and early 20th centuries, Freud began to contemplate and publish his theory on infantile sexuality that included "infantile sexual theories" (Brill, 1995). Based on his interviews with adult patients, Freud concluded that young children imagine intercourse as a sadistic act, and the intimacies of sex or marriage are "carried on through the functions of urination and defecation" (Brill, 1995). Therefore, according to Freud's cloaca theory, children believe that babies are the result of the mother eating something special and born through the anus as in the cloaca of birds, reptiles, amphibians and fishes.

In due course, Piaget's examinations of children's questions lead him to more fully investigate Freud's cloaca theory. Piaget theorized that children first believe that babies have always existed; questions children ask concern where they come from rather than how they are made. Piaget noted that young children are temporarily satisfied with whimsical responses that answer the where question – such as storks, pumpkin patches, or baby factories. However, children eventually begin to suspect that their parents' roles in having a baby are more involved than simply receiving the new infant. In this new phase of awareness, children come to grasp the notion that babies somehow come from their parents' bodies – primarily the mother's. In this phase, known as artificialism,

children believe that babies are produced piece by piece (Piaget, 1929). Thus begins the young child's ponderings of how the mother makes a baby.

While both Piaget and Freud found that preoperational children, defined as children between the ages of 2 through 7, do imagine that babies begin with the mother eating something and are born into the world via the anus, Piaget concluded that preoperational children are mostly artificialist's. They believe that what the mother eats helps her to make the baby and, consequently, the baby comes into the world through the anus. As children move from preoperational thought to concrete operations and, finally, formal operations, their understanding of human reproduction becomes increasingly more sophisticated.

Children's Understanding of Conception and Birth

Few research studies have investigated children's cognitive understanding and perception of conception and birth. This aspect of child development is largely untapped and under researched. However, between 1974 and 1982 three major studies were published which examined children's understanding of birth and conception, two of which focused on Piaget's theories.

Koch (1974) looked at where children thought babies came from and how babies are born. Koch's study was unique in that she compared the answers of two groups of seven-year-old children from the United States and Sweden utilizing drawings as a tool to evoke children's comments in regard to the questions. Koch developed the "Children's Sexuality Awareness Scale," a four point scale used to rate and compare the children's drawings (See Appendix A). After analyzing and comparing the children's drawings,

Koch found that the children from Sweden were significantly far more advanced and technically correct in their responses. The majority of children from Sweden indicated that sexual intercourse needed to take place and that the man needed to be involved, whereas, not one of the children from the United States indicated the act of intercourse or a mans' involvement. Overall, Koch concluded that sex education integrated into the curriculum prevents misinformation. Koch concludes by stating that, when sex education begins in the earliest years, children gain a lot of accurate information, which encourages positive attitudes towards sexuality (Koch, 1974).

While Koch's research compared understanding and knowledge of conception and birth, other researchers have looked at how a child's thinking changes as they grow older. In a landmark study, Bernstein (1978) explored children's thinking about the birth process. She interviewed over one hundred children between the ages of 3 and 12. Bernstein utilized an open-ended interview schedule to obtain the data by asking children "How do people get babies?" "How do mommies get to be mommies?" and "How do daddies get to be daddies?"

Bernstein used her data to devise a six level philosophy of children's thinking about birth and conception, which is based on Piaget's theory of cognitive development. The six levels are: Geographers (ages 3-7), Manufacturers (ages 4-8), In-Betweens (age 5-10), Reporters (ages 7-12), Theoreticians (ages 10-13) and Putting It All Together (from 11 or 12 on). In her book, The flight of the stork (1978), Bernstein describes her study and gives advice to parents on how to effectively talk with their children. She recommends talking to the child in language that is one level above the level the child is responding or questioning.

Another study focusing on children's thinking was Goldman and Goldman's (1982a) extensive study of children ages 5 to 15 from Australia, Britain, North America and Sweden, examining children's beliefs on conception and birth. They based their study on the assumption that nothing is more basic to life than sex. They believe that sex and sexuality are clearly evident in children today perhaps more than ever before.

Using their philosophy and data, Goldman and Goldman developed a system for categorizing the children's responses. Their results were very similar to Bernstein's and paralleled Piaget's theory of cognitive development. Using their own scale, "Origin of Babies Scale" (see Appendix B), Goldman and Goldman identified six levels of children's responses. The six levels are The Geographers (age 5), The Manufacturers (age 7), The Agriculturalists (age 9), The Reporters (age 11), The Miniaturists (age 13), and The Realists (age 15).

An overall review of the research shows three notable studies that have looked at what children think about the origins of babies (Koch, 1974; Bernstein, 1976, 1978; & Goldman & Goldman, 1982a). However, there has been no new research in this area in over two decades. During this time dramatic changes have taken place in society which may influence children's thinking and understanding of this issue including an increased awareness and education about sexuality, the AIDS epidemic, growing support safer sex education, and increase in father involvement.

Children's Questions about Conception and Birth

Hattendorf (1932) and Strain (1948) in their early studies on children's sexuality noted that young children more than any other age group asked questions about sex-

related issues. They contended that even though many people associate the topic of sex education with adolescence, by that time, adolescents are less likely to spontaneously ask questions about sexuality issues. Hattendorf (1932) and Strain (1948) encourage parents and teachers to begin early in talking to children about sexuality topics. If adults responded straightforwardly to sex-related questions that children ask, it will provide a foundation for healthy and open communication about sexuality later on (Koblinsky, Atkinson, & Davis, 1980).

Those who doubt the need for sexuality education in early childhood settings should listen to questions children commonly ask, for example, “How does the baby get into the mommy’s stomach”, and “Why can’t boys have babies?” (Brick, 1985). These questions are profoundly consciousness raising and demonstrate that children are constantly exposed to sexual concepts. Hearing these questions provides parents, teachers and caregivers a new understanding of children’s need to learn about sexuality, as it is apart of their everyday lives. Being a parent, teacher or caregiver means constantly being in the role of educator to one’s children. Parents remain the primary sexuality educators of their children, but teachers and caregivers help facilitate children’s sexuality learning and provide support for parents (Koblinsky, Atkinson & Davis, 1980). Additional research, conducted by Koblinsky, Atkinson and Davis (1980), showed that children who have been provided some information and education by their parents had more accurate knowledge and understanding about the origin of babies.

For parents to be effective sex educators they should support their children’s sexual development by helping them acquire confidence in their sexual identity, promote positive feelings for their bodies, and help them be comfortable in communicating about

sexual feelings (Valentich & Gripton, 1989). In terms of sex education, the challenge for parents and sex educators is to teach children to respect differences, accept of others, and acknowledge oneself as a sexual being (Valentich & Gripton, 1989). One barrier parents may face in this challenging endeavor is that they overestimate the quality of knowledge held by their children. Parents are not always aware that children have different levels of cognitive processes and need to attain a certain level to comprehend the complexities of events that cannot be seen (Walters & Walters, 1983). It's important to examine children's knowledge and understanding of birth and conception of birth and conception in terms of their cognitive development, because children view things differently at different stages of development (Bernstein, 1978). And by knowing how it is a child understands a concept allows adults to speak with children in ways that make sense to them.

Sexuality Education in Other Countries

England. Some primary schools have been doing sex education for years in England, but for many it is a relatively new area of work. The sexuality policies of England are focused and based on four laws in addition to guidance policies that back up the laws and clarify government expectations (Dixon, 2001). There are guidance documents that are essential to sex and relationship education in primary schools in England that are available to every school. The policies along with guidance adherence indicate that all schools must have a sex education policy for parents to see which includes parent's right to withdraw their child from all or part of a sex education program except for the parts that fall within the countries National Curriculum. The laws and

policies greatly encourage all educators to involve and consult with parents on the curriculum they develop for their classrooms. It is stated that within their laws that sex education must be placed in the context of moral values and family life. The guidance that goes with this particular law states that pupils should learn the significance of marriage and stable relationships as key building blocks of community and society, while care is taken to ensure that there is no stigmatization of children based on their home circumstances (Dixon, 2001).

While it appears that England is all encompassing regarding family differences it is not clear what exactly is taught in the area of sex education outside of relationships.

Sweden. Sex education was introduced in 1942 and made compulsory in 1956 (Martinson, 1994). After studying its program in the late 1970's Sweden reduced the age at which each topic was offered. Between the ages of six and ten, Swedish pupils learn the difference between the sexes, where babies come from, the father's role in conception, developments before birth, and many other topics regarding human sexuality (Martinson, 1994). Still not satisfied, the Swedes introduced a more difficult subject of sexuality education, teaching children the art of loving. They reason that sexuality is not a bad habit to be discarded. Swedes believe that sexuality education is important for a happy life, and should not be a secret. Sexuality education in Sweden is an open program based on faith in young people. This faith in young people has provided the educational tools for promoting understanding about sexuality at an early age.

As compared with other developed countries, Sweden has one of the lowest teenage pregnancy rates and birthrates (Singh & Darroch, 2000). Also, societal

acceptance of sexual activity allows for easy access to contraceptives and other reproductive health services.

The Netherlands. Education is highly valued in The Netherlands, in which school sexuality education plays a “matter of fact” role in young people’s psychosexual development. The Netherlands has no sexuality education curriculum and no single national textbook for student instruction. Until 1993, sexuality education was not an obligatory part of the school curricula, yet research shows that 9 out of 10 Dutch youth receive school sexuality education, regardless of the school they attend, and approximately half of the primary schools and most all of the secondary schools address a wide range of sexuality related issues (Berne & Huberman, 1999).

The general philosophy of sexuality education in The Netherlands is not to teach but to talk about sex. Dutch teachers approach sexuality issues with their students, no matter what age or subject they teach, therefore, it is integrated into many school courses. All teachers have the freedom to teach anything the students want to learn about sexuality.

Similar to Sweden, The Netherlands also has remarkably low teenage pregnancies, birthrates and abortion rates as compared to other developed countries, including the United States (Singh & Darroch, 2000).

United States. Within the United States only nineteen states require schools to provide sexuality education. Many states have policies that preclude teaching about such subjects as intercourse, abortion, masturbation, homosexuality, condoms and safer sex (SEICUS, 1990). Thirty-six states require schools to provide STD/HIV and/or AIDS education. Many of these same states require that sexuality education programs teach

abstinence-only until marriage and not information on safer sex or condom use. While the federal government does not have a policy about sexuality education and has never taken an official position on the subject, a number of federal programs have been instituted in recent years that provide funding for strict abstinence-only-until-marriage education (SEICUS, 1990).

Compared to other developed countries such as Sweden, Canada, France and Great Britain, the United States has the highest rates of teen pregnancies, births, and abortions. Teens within the United States, who are more likely to have sexual intercourse before the age of 15, have shorter and more sporadic relationships than teens in other countries. As a result they are more likely to have more than one partner in a given year (Darroch, J., Singh, S., & Frost, J., 2000).

Purpose of Study and Research Questions

The present study explored what primary-aged children in America know about birth and conception as compared with children in other countries. While several studies have looked at this issue (Bernstein, 1978; Goldman & Goldman, 1982; Koch, 1974), these studies were conducted nearly 25 years ago. More specifically, this study compared drawings by 6 year-old children from England, Sweden, The Netherlands, and the United States in response to, “Where do babies come from?” and “How are babies made?” Using the “Children’s Sexuality Awareness Scale” developed by Koch (1974) and the “Origin of Babies Scale” developed by Goldman and Goldman (1982) measurements regarding knowledge of conception and birth, as well as stage of cognitive development, were determined and compared. This study investigates if beginning

sexuality education during early childhood increases understanding of conception and birth, even at such an early age. The following research questions were investigated:

Research Question #1: Do 6 year-olds, regardless of country of origin, have a similar understanding of conception and birth? According to Piaget, preoperational children are mostly artificialists. They believe that what the mother eats helps her to make the baby and, consequently, the baby comes into the world through the anus. Will all 6 year old children in this study score low on the “Children’s Sexuality Awareness Scale” and “Origin of Babies Scale”?

Research Question #2: Do 6 year-old girls have a similar understanding of conception and birth compared to 6 year-old boys? Specifically, will both 6 year-old girls and 6 year-old boys score similarly on the “Children’s Sexuality Awareness Scale” and “Origin of Babies Scale”?

Research Question #3: Do children from countries with more comprehensive sexuality education programs have a more advanced, comprehensive, and developmentally appropriate understanding of conception and birth? Specifically, do those children from Sweden and The Netherlands have higher scores on the “Children’s Sexuality Awareness Scale” and “Origin of Babies Scale”?

Chapter 2

METHODOLOGY

Sample

The research study compared drawings by twelve 6 year-old children (six boys and six girls) from England, Sweden, the Netherlands, and the United States. Drawings by children in England, Sweden, and The Netherlands were obtained in the spring 2003 and are archived in Dr. Caron's office. These drawings were compared to those of 6-year-olds in the United States.

In order to obtain a sample of children to be interviewed from the United States, a combined method of convenience sampling and snowball sampling. Local nursery schools, child care centers, and YMCAs in the Bangor-Orono region were contacted. A letter to parents provided an overview of the study (See Appendix C).

The only information that was obtained from the 6 year old children was their gender and in which country they live. No child was identified with his/her drawings, and parental consent was obtained before any interview. In order to link the child's information with his/her drawing a number was assigned with the needed information.

Procedure

The procedure for how the sample was collected from England, the Netherlands and Sweden is not clear. These drawings were collected in the same year from classrooms but it is unclear how they were selected. For the United States sample, individual parents were approached versus classroom settings and were interviewed by the researcher. All United States parents who showed an interest in the study were

contacted by phone or email to arrange a time to meet with each parent and child individually, either at the child's home or a convenient location, in which both the parent and child were comfortable. Parents were asked to talk with and ask their child, prior to the meeting, if they would be willing to participate. Upon meeting for the interview, parents were asked to read and sign a written parental consent form (see Appendix D). Once consent is received, the primary researcher introduced herself and explained to the child that s/he was to help the researcher with a special project (see Appendix E). The child was then told that the researcher is interested in their ideas about how babies are made and born. All children were reassured that they are not being tested and there is no right or wrong answers; the researcher is only interested in their ideas. In addition, the children were reassured that their parents have given permission for them to talk with the researcher about where babies are made and how they are born. The children were also told that they can discontinue the interview at any time and that it is their choice whether or not a parent remains in the room during the drawing and interviewing.

Once the child's assent was obtained, s/he were asked to first draw a picture about how babies are made and encouraged to talk about the picture during and after. The subject number, gender, and the country in which they live was noted on the back of the drawing. Notes were taken regarding the child's responses, and, when necessary, the researcher repeated what was said for clarification using the language the child introduced. Responses were not corrected, and the researcher gave no type of sexuality education. Each child was then asked where s/he learned about how babies are made, and the procedure was repeated for the drawing of how babies are born. Permission to keep the drawings was asked of all children. If denied, the researcher asked if a copy

could be made. Once the interview was concluded the children and their parent(s) were thanked for their participation.

Measures

Children's Sexuality Awareness Scale

For the Children's Sexuality Awareness Scale (CSAS), developed by Koch (1974), a child could receive a score ranging from 0 – 4 for each of the four items that comprise this scale (Appendix A). Points were assessed according to the type of information provided by the child in response to “Where do babies come from?” and “How are babies made?” This is not a progressive scale. A drawing can earn a maximum of 4 points (1 point per item) if it depicts, or the child makes verbal reference to, any one of the 4 items.

A score of 0 would mean the child did not give a response to any of the 4 items. To receive more than one point a child is not necessarily giving progressively more complicated answers, but is providing different types of information. For example, a child may say that an egg meets a sperm and that a baby grows in the mother and needs food to grow. For these answers a child would receive 2 points on this scale (Item 1 and 3). Koch's original four point system rating drawings and explanations for accuracy according was slightly modified/expanded by the researcher. Those modifications and changes appear in italics below for the 4 point scale:

1. Human Reproduction occurring through sexual intercourse; *understanding that an egg combines with something to make a baby.*

2. Involvement of both a male and female in conception/ birth; *males can't have babies.*
3. Understanding of aspects regarding prenatal development/care; *understanding that babies grow bigger inside the mother and need food to grow.*
4. Accurate knowledge of birthing; *there is a special place where the baby comes out; understanding caesarian section.*

Origin of Babies Scale

A second measurement tool, the Origin of Babies Scale (OBS) (Appendix B), is a seven point Likert-type scale developed by Goldman and Goldman (1982), was used to rate the children's response on a Piagetian scale of cognitive development. Scores on the OBS are dependent upon the complexity of the child's response to the question "How are babies made?" Scores ranging from 0 – 6 with higher scores, theoretically, indicating a higher level of thinking. A response of "no answer" received a score of 0; a response that was "complete and accurate" received a score of 6. The seven point system looks at the child's cognitive thought perception and scores accordingly:

1. The Geographer (age 5) – Children believe that babies have always pre-existed, and the relevant question is where babies were before they came to live with the family.
2. The Manufacturers (age 7) – Children believe that God, Jesus, doctor, or father manually or mechanically manufactures babies. Children also believe the digestive fallacy.
3. The Agriculturists (age 9) Children's ideas are technically feasible but unrealistic. Children at this level are vulnerable to the "agricultural fallacy"

4. The Reporters (age 11) Children's explanations are technically realistic and they show an awareness of a biological process.

5. The Miniaturists (age 13) Children at this level believe that babies are pre-formed in miniature. They can believe either as ovists, where the egg is activated by the sperm, or as animalcultists where the sperm uses the ovum as an incubator.

6. The Realists (age 15) Children now understand that two discrete entities, ovum and sperm, combine to become another unique human being. The concept of physical causality is now comprehensible to them.

Data Analysis

Because this study used a relatively small number of children, a major portion of the analysis is descriptive statistics. Descriptive variables (gender, country in which they live) were examined, as well as total scores on the "Children's Sexuality Awareness Scale" (CSAS) and "Origin of Babies Scale" (OBS). Children's drawing and quotes were scored on the CSAS and OBS by the researcher and her advisor. These scores were compared for an inter-rater reliability of 84%.

Chapter 3

RESULTS

The present study explored what 6 year old children in America know about birth and conception as compared with children in England, Sweden, The Netherlands, and the United States in response to, “Where do babies come from?” and “How are babies made?” Using the “Children’s Sexuality Awareness Scale” developed by Koch (1974) and the “Origin of Babies Scale” developed by Goldman and Goldman (1982) measurements regarding knowledge of conception and birth, as well as stage of cognitive development, were determined and compared. The results for the three research questions are discussed below.

Research Question #1

Do 6 year-olds, regardless of country of origin, have a similar understanding of conception and birth? Will all 6 year old children in this study score low on the “Children’s Sexuality Awareness Scale” (CSAS) and “Origin of Babies Scale” (OBS)?

Overall, the scores on the CSAS of the 48 children sampled were low. In fact, 44% (n=21) received a score of 0 indicating that their responses to the questions, “How are babies made?” and “Where do babies come from?” did not refer to any of the information on the CSAS (Table 1). Thirty-three percent (n=16) of the responses referred to only one of the content areas receiving a score of 1; seventeen percent (n=2) referred to two of the content areas receiving a score of 2; and six percent (n=3) referred to three of the content areas receiving a score of 3. None of the children’s responses earned a score of 4. When looking at Table 2 for which of the four items were answered correctly, Item 4 on birthing was mentioned most often (34%; n=14), followed by Item 2 on male and

Table 1

Scores on Children's Sexual Awareness Scale (n = 48)

# of points	0	1	2	3	4
England					
Boys	4	1	1	-	-
Girls	5	1	-	-	-
England Totals	9	2	1	0	0
Netherlands					
Boys	3	2	1	-	-
Girls	1	4	-	1	-
Netherlands Totals	4	6	1	1	0
Sweden					
Boys	1	1	3	1	-
Girls	2	2	1	1	-
Sweden Totals	3	3	4	2	0
United States					
Boys	1	4	1	-	-
Girls	4	1	1	-	-
United States Totals	5	5	2	0	0
Totals					
Boys	9	8	6	1	0
Girls	12	8	2	2	0
Grand Total	21	16	8	3	0

Table 2

Items answered correct on Children's Sexuality Awareness Scale (n = 27)

Individual Items Scored	Item 1 Intercourse	Item 2 Male/Female Involvement	Item 3 Prenatal Development	Item 4 Understanding of Birth
England				
Boys	1	1	1	-
Girls	-	-	-	1
England Totals	1	1	1	1
Netherlands				
Boys	-	1	1	2
Girls	1	3	-	3
Netherlands Totals	2	4	1	5
Sweden				
Boys	2	1	4	3
Girls	-	1	2	4
Sweden Totals	2	2	6	7
United States				
Boys	-	4	2	-
Girls	-	1	1	1
United States Totals	0	5	3	1
Totals				
Boys	3	7	8	5
Girls	1	5	3	9
Grand Totals	4	12	11	14

female involvement (29%; n=12), Item 3 on prenatal development (27%; n=11), and finally Item 1 related to intercourse (10%; n=4). Examples include:

Item 1: “Mummy and Daddy have a special cuddle; special stuff goes into mummy which makes mummy pregnant.” (Boy, England)

Item 2: “Daddy cuts the umbilical cord.” (Girl, the Netherlands)

Item 3: “Mummy had to eat lots of good healthy food to have a baby.” (Boy, England)

Item 4: “Babies come from mother’s stomach. I think they come out a hole near her bottom.” (Girl, United States)

On the OBS, eight percent (n=4) gave responses that made no sense giving them a score of 0. Forty percent (n=19) responded as Geographers; 31% (n=15) responded as Manufacturers; 19% (n=9) responded as Agriculturists; and one child (2%) responded as a Reporter. No child responded beyond level 4 (Table 3). Overall the children sampled appear to be in the lower end of cognitive development in this area. Examples of responses include:

Geographer: “Babies grow from mommy’s belly.” (Boy, England)

Manufactures: “Babies come out the hole in mommy.” (Girl, United States)

Agriculturists: “An egg and a seed come together; it goes through a hole. My father cuts the umbilical cord.” (Girl, the Netherlands).

Reporter: “There was an egg and one of the small things stuck touches the egg. The egg then closes and the baby starts to grow.” (Boy, Sweden)

Table 3
Scores on Origin of Babies Scale (n=48)

	Non- Answer 0	Geographer 1	Manufacturer 2	Agriculturalist 3	Reporter 4
England					
Boys	-	2	3	1	-
Girls	3	3	-	-	-
England Totals	3	5	3	1	0
Netherlands					
Boys	-	5	-	1	-
Girls	-	3	2	1	-
Netherlands Totals	0	8	2	2	0
Sweden					
Boys	1	-	1	3	1
Girls	-	3	2	1	-
Sweden Totals	1	3	3	4	1
United States					
Boys	-	1	3	2	-
Girls	-	2	4	-	-
United States Totals	0	3	7	2	0
Totals					
Boys	1	8	7	7	1
Girls	3	11	8	2	0
Grand Totals	4	19	15	9	1

Research Question #2

Do 6 year-old girls have a similar understanding of conception and birth as compared to 6 year-old boys? Specifically, will both 6 year-old girls and 6 year-old boys score similarly on the “Children’s Sexuality Awareness Scale” (CSAS) and “Origin of Babies Scale” (OBS)?

On the CSAS, boys scored higher than girls (Table 1). Half of the girls (n=12) failed to identify any of the four items compared to 38% (n=9) of the boys. For those who identified items on the CSAS, 33% of boys (n=8) and 33% of girls (n=8) both identified one item. Whereas 25% (n=6) of boys identified two items, only 8% (n=2) of girls identified two items. However, only 4% (n=1) of boys identified three items whereas 8% (n=2) of the girls identified three items. In terms of what items were answered correctly by boys versus girls (Table 2), boys were more likely to mention Item 3 on prenatal development (35%; n=8) and Item 2 on male and female involvement (30%; n=7), whereas girls were more likely to mention Item 4 birthing (50%; n=9) and also Item 2 on male and female involvement (27%; n=5). Very few boys (13%; n=3) or girls (6%; n=1) mentioned Item 1 on intercourse. Examples of boys and girls responses:

Item 1: “A lot of small things come out looking the same as tadpoles. All the tadpoles enter the egg.” (Boy, Sweden)

Item 2: “My father cut the umbilical cord when I was born.” (Girl, the Netherlands)

Item 3: “I only know that a baby is thinny and then grow and grow until it is huge.” (Boy, Sweden)

Item 4: “This girl’s mum had a caesarian.” (Girl, England)

On the OBS, boys tended to score higher than girls in their understanding of “Where do babies come from?” (Table 3). Girls tended to be Geographers (46%; n=11) and Manufacturers (33%; n=8), whereas boys were more evenly spread between Geographers (34%; n=8), Manufacturers (29%; n=7) and Agriculturists (29%; n=7). One boy’s response met the criteria for level four: Reporter (4%; n=1).

Scoring was measured by looking at the children’s pictures and quotes in order to identify cognitive understanding. On both the CSAS and OBS boys tended to score higher and difference in quotes are listed below.

Quotes from boys:

“The drops of a man come together with the egg of the mother. The baby grows, and grows and becomes bigger and bigger and then when it is big enough he comes out of the mother.” (The Netherlands)

“Mummy and Daddy have a special cuddle; special stuff goes into mummy which makes mummy pregnant.” (England)

“Babies are made by a mom and dad and doctors help them out when they are ready to push out.” (United States)

Quotes from girls:

“The doctor takes the baby out” (England)

“Babies are like presents; you can ask for one and hopefully get it.” (United States)

“God makes the eggs that are in all mommies” (United States)

“At first it is a stone (like a fruit). I don’t know how they come to existence. What do you think? I don’t know. They come out at the hospital by a doctor.” (Sweden)

“In the hospital the baby is born. Daddy cuts the umbilical cord. But the doctor is there because the baby has blood on the skin. I don’t know from where the baby comes out of the belly.” (The Netherlands)

Research Question #3

Do children from countries with more comprehensive sexuality education programs have a more advanced, comprehensive, and developmentally appropriate understanding of conception and birth? Specifically, do those children from Sweden and The Netherlands have higher scores on the “Children’s Sexuality Awareness Scale” (CSAS) and “Origin of Babies Scale” (OBS)?

On the CSAS, more children from England (43%; n=9) and the United States (24%; n=5) as compared to the Netherlands (19%; n=4) and Sweden (14%; n=3) received a 0 for their responses (or their lack thereof) to the questions, “How are babies made?” and “Where do babies come from?” (Table 1). When looking at the 27 six year olds who identified at least one of the four items on the CSAS, children from Sweden (33%; n=9) and the Netherlands (30%; n=8) identified more items than children in the United States (26%; n=7) and England (11%; n=3). In fact one child from Sweden and two children from the Netherlands identified three of the four items on the CSAS. In terms of which items the 27 children from the various countries identified correctly (Table 2), children from Sweden were more likely to mention Item 4 on birthing (50%; n=7) and Item 3 on prenatal development (54%; n=6) and children from the Netherlands were more likely to mention Item 4 on birthing (36%; n=5) and Item 2 on male and female involvement (33%; n=4). Children from the United States who identified an item correctly were more likely to mention Item 2 on male and female involvement (42%; n=5) and Item 3 on

prenatal development (27%; n=3). Of the children from England each item was identified once. It should be noted that Item 1 on intercourse was identified by at least one child from England, the Netherlands, and Sweden, but not from the United States.

Item 1: “An egg and a seed come together; it goes through a hole. I know there are three holes.” (Girl, the Netherlands)

Item 2: “I think they are made by a mom and dad, but I am not sure how; maybe during special time when they are alone.” (Boy, United States)

Item 3: “In the beginning it is small and then it grows and becomes big.” (Girl, Sweden)

Item 4: “I think the babies lie in the stomach for 9 months. Then it comes out from the bottom; head first – sometimes the feet.” (Girl, Sweden)

On the OBS, four children (three from England and one from Sweden) gave responses that made no sense giving them a score of 0 in their understanding of “Where do babies come from?” (Table 3). Most children’s understanding could be categorized as Geographers and Manufactures indicating a preoperational level of cognitive development. More children’s responses from England (25%; n=5) and the Netherlands (40%; n=8) could be categorized as Geographers, whereas more children’s responses from the United States (47%; n=7) could be categorized as Manufactures. More children from Sweden showed a higher level of cognitive understanding with four being categorized as Agriculturists (44%) and one as a Reporter (100%).

Geographer: “Mummy knows she is having a baby when she gets a fat tummy.” (Girl, England)

Manufacturers: “Babies are made by a mom and a dad and doctors help them out

when they are ready to push out.” (Boy, United States)

Agriculturist: “The baby is in mummies stomach. When the aches begin then it is time to go and it hurts for sure. Babies stay for a long time in mummies stomach.” (Boy, Sweden)

Chapter 4

DISCUSSION

The present study examines what primary-aged children in America know about birth and conception as compared with children in other countries. The results from the three research questions will be discussed below.

The first research question asked if six year olds have a similar understanding of conception and birth. This research question was supported by the research in this study. It was found that all of the children, regardless of country, tended to score low on both the Children's Sexual Awareness Scale (CSAS) and the Origin of Babies Scale (OBS). These results support previous research by Piaget (1929) and Goldman & Goldman (1982) who indicate that children at this age are preoperational and fall into the categories of Manufacturers and Agriculturists. It is interesting to note that 50% of the children did fall into these two categories 48% fell below into the categories of no answer/response and Geographer. Although, the research does support previous research it also indicates that almost half the children sampled have a lower cognitive understanding than previously indicated.

Research question two examined if there is a difference in understanding conception and birth between six year old boys and girls, specifically looking at their scores on the CASA and OBS. Research indicates that there is a difference in their understanding and knowledge finding overall boys scored higher on the CSAS with 63% (n=24) scoring a 1 or higher compared to the girls at 50% (n=24) scoring a 1 or higher. Same with the OBS with 63% (n=24) of boys being Manufacturers or higher as compared with girls at only 42% (n=24) being Manufacturers or higher. Looking at the CSAS it is

interesting to see the differences in areas of understanding and knowledge with boys scoring higher in the areas of prenatal development/care, while the girls tended to know more in the area of birthing and both the boys and girls knew almost equally about male and female involvement, and only one boy made any indication about intercourse. Looking at the areas of knowledge and understanding according to gender is interesting as one could conclude that what little they do know may be due to their gender, and/or which parent is providing the information.

Research question three was supported by the results indicating that there is a difference in countries regarding what children know and understand about conception and birth on the Children's Sexuality Awareness Scale (CSAS) and the Origin of Babies Scale (OBS). The research found on the CASA was supported by previous studies comparing countries with unequal comprehensive sexuality education (Koch, 1974). On the CSAS the children from Sweden and the Netherlands scored higher than the children from England and the United States in which 48% received a score of 0. On the OBS the children from Sweden scored the highest with 44% being Agriculturists and one child being a Reporter. These findings indicate that the children from Sweden showed a higher level of cognitive understanding than the children from England and the United States.

All of the results indicated that it is important that parents and educators discuss the issues of conception and birth with their children regardless of their country of origin. Although both Sweden and the Netherlands have higher standards and more progressive sexuality education than England or the United States; this research, and past research, shows that children need to have more education and age appropriate materials that promote understanding and awareness about sexuality.

Limitations

Limitations to this study in many ways impact the results and the ability to make stronger conclusions from the results. The study included a skewed population since the children from the United States were obtained outside classroom settings as the children from England, the Netherlands and Sweden all were obtained within classroom settings. Therefore, generalization is not possible to most settings. The small number of children sampled makes it difficult to get a true idea of whether or not children's understanding and knowledge of conception and birth is truly a developmental phenomenon. Additionally, since the researcher did not conduct all of the interviews it was difficult to understand and translate some of the materials from the other countries.

Interestingly, the difficulty in obtaining parental permission may say more about the true state of sexuality education in this country than anything else. The researcher expected that those parents consenting to allow their children to be interviewed would probably be the most open regarding sexual matters. Therefore, it was believed that the children interviewed were probably better informed than most children. So it is interesting to look at the results and see that children from the United States in fact do not have what would be considered a "higher" understanding of conception and birth as compare to England, the Netherlands and Sweden

Another area of impact that may have affected the study was the interview process. Not only was the researcher unable to conduct all of the interviews, specifically the ones in England, the Netherlands and Sweden, but it was apparent that some of the children were uncomfortable with the questions and drawing pictures for a stranger. The level of discomfort was noticeable by the quite voices and their somewhat reluctance to

answer the questions asked. Also, some children became frustrated when drawing their pictures and would many times ask to start over or that the researcher not takes the picture home. When this reluctance was shown the children were always told that they did not have to give the researcher the drawing and/or that they did not need to finish if they did not want to.

In addition to the children's discomfort of drawing pictures and answering questions may have had to do with the fact that the children were only six years old. The fact that such young children were chosen to interview may have made this process more difficult than other studies done in the past. Children at this age are less likely to open up to strangers and more insecure about their drawings.

Implications

This study provides additional information about how children think and process information about conception and birth. This study suggests that research of early education in sexuality increases young children's knowledge and understanding of some aspects of sexuality. It is additionally important to consider the impact of what parents and educators are teaching to children, as shown, children do incorporate what they learn and are told with what they think. Cultural surroundings that support education about the facts of sexuality are associated with increased understanding of sexuality among young children. However, there may be limitations in how much understanding children can acquire, due to the nature of cognitive development. Further studies can provide a more solid basis for assessing the type and quantity of sexuality education appropriate for educating diverse children. As stated by Goldman & Goldman (1982), in the absence of

adequate and systematic sexuality education, children will invent their own explanations, combined with what they are told, which can be seen in many of the drawings included in this study.

Suggestions for future research include: 1) replication with a larger sample size to improve generalizability and allow more powerful statistical testing; 2) Consistency in interviewers and interview protocol, to increase reliability; 3) re-evaluate what interview questions can be asked to elicit answers that more clearly reflect how children process sexual information cognitively.

Finally, it is important that researchers, as well as educators and parents continue to examine what children know and understand about conception and birth, as well as other sexuality issues. Solid empirical research will help educators in the development of appropriate curricula for young children.

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Appendix A: Children's Sexuality Awareness Scale
With Modifications in Italics

Code Number _____

Score _____

A drawing can earn 4 points (1 point per item) if it depicts or the child makes reference to:

_____ 1) Human reproduction occurring through sexual intercourse;

understanding that an egg combines with something to make a baby.

_____ 2) Involvement of both a male and a female in conception/birth;

males can't have babies.

_____ 3) Accurate account of prenatal development/care;

that babies grow bigger inside the mother and need food to grow.

_____ 4) Accurate knowledge of birthing: through the female birth canal or vagina;

there is a special place where babies come out; understanding caesarian sections.

Comments:

Appendix B: Origin of Babies Scale

Code Number _____

Score _____

Score	Piagetian Level	Goldman & Goldman	Category and Description
0	Non-answer		Lack of comprehension. No answer, don't know, or nonsense answer.
1	Preoperations	Geographers - babies have always existed	Spatial causality. Perceived only as "where" not "how". Babies have always preexisted.
2	Preoperations	Manufactures – sent by god; digestive fallacy	Artificialism. Sent by Jesus, God, doctor, or father "manufactures" from materials. The digestive fallacy babies formed by food. Father's role manual and mechanical, not biological.
3	Transitional	Agriculturists – technically feasible, "seed planting"	Technically feasible, but unrealistic semi-physical, semi-artificial, includes the agricultural fallacy – seed planting, animistic distortions, and zooisms – where organs decide. Several factors voiced but no coordinated system.
4	Concrete Operations	Reporters – Know "facts of life" aware of process	Physical explanations, technically realistic. Reveals awareness of biological processes, but cannot explain why they occur. Coordinates variables with system but not genetic transmissions. Ovum's and sperm recognized but not fertilizations.
5	Transitional	Miniaturists – pre-formed in ovum or sperm, fertilization not seen as fusion	Miniaturisms. Babies are pre-formed in miniature, either as ovists (egg activated by sperm) or animalcultists (sperm uses ovum as incubator). Fertilization not seen as fusion. Genetic transmission is additive, not interactive. Original substance invariable except in size.

6	Formal Operations	Realists – physiological process understood, origin of baby from both parents	Physicalisms freed from precausality. Physiological process understood. Fertilization involves exchange and fusion of genetic substances. Origin of new being from both parents. Provision of a reasonably sophisticated and coordinated scientific theory.
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Appendix C: Information letter for Interested Parents

Dear Parents:

Thank you for your interest in this research project. I know that the issue of human reproduction is a very personal and sensitive issue. By providing you with some information about this study, and myself I hope you will be reassured about permitting your child to participate in this research.

I have a Bachelor's Degree in Liberal Studies, with an emphasis in Early Childhood, and am a Masters' student in the Department of Human Development and Family Studies at the University of Maine in Orono. Throughout college, and since, I have had extensive experience with children ranging in ages from infancy through adolescence. I also have experience as a community parent educator, and have trained as a human sexuality educator in a program for young adolescents and their parents. As a result of these years of experience, I am interested in helping parents communicate more effectively with their young children about sensitive issues related to human sexuality.

The purpose of this research is to learn what young children know about human reproduction. Previous research had confirmed that children's artwork is an effective way to appraise their ideas about how babies are made and born. If your child should participate in this study, he/she will be asked to draw to separate pictures: one depicting how babies are made and the other depicting how babies are born. Your child will then be asked to tell me about their pictures and where they learned about how babies are made and born. Your child will be reassured that there are no right or wrong answers; I am only interested in their ideas. No child will be given any type of sex education during my contact with the child. I will be listening to your child's responses, and, if necessary, repeating what they say for clarification. Responses will not be corrected.

Once the data for this study has been collected and analyzed, it will be made available to you upon your request. You may request a summary of your child's results that will include his/her score on both instrument tools used in this research and a summarized explanation of these scores. You may also request a brief summary of the results of the study. This will include a brief description of the research questions and a summarization of the pertinent findings. Individuals will not be identifiable in this summary. A third option is to have both summaries.

If you are interested in participating in this study please call the numbers listed below to set up a time and location for the interview. If you have any other questions about this study, please do not hesitate to contact me in any of the following ways:

Office phone – (207) 581-3126

Home phone – (207) 659-2693

Email – Carie_Ahlgrim@umit.maine.edu

Sincerely,

Carie jo Ahlgrim

Appendix D: Parental Consent Form

Children's Understanding of Conception and Birth

Purpose of Study: You have been invited to participate in a research project by Carie jo Ahlgrim, Master's candidate, to include your child, _____, in this research project investigating children's understanding and knowledge. The purpose of this research project is to study how children process information, specifically about conception and birth, and will be examined from a developmental perspective. Your child will be participating in an interview with Carie jo Ahlgrim. This interview should last no longer than one-half hour.

Procedure: Each child is being asked to participate because s/he is 6 years old. If your child participates s/he will be asked to draw two pictures about babies: Drawing #1: "Where do babies come from?" and Drawing #2: "How are babies born?" Your child will then be asked to explain the pictures to the interviewer. It is understood that the researcher will keep my child's drawings, or copies will be made. The only identifying information that will be put on my child's drawings are age and gender.

Risks and Benefits: Being in this study is no more risky than what my child might experience in his/her daily life. By participating in this study my child has the opportunity to help this investigator learn how children think, specifically related to birth and pregnancy. This information might be useful to other parents of young children. The parent/guardian will be able to ask the investigator questions they might have about how children think about conception and birth. At the end of the interview the child's parent/guardian can obtain a resource list of books from the researcher that cover this topic.

Safeguards: Any information that my child gives will be presented in my research report such a way that s/he will not be identified. My child has the right to refuse to participate in or to withdraw from this research at any point during the interview. My participation and my child's are entirely voluntary.

For further Information: If there are further questions, comments, or concerns about this study or the informed consent process, parents/guardians may write or call the office of: Carie jo Ahlgrim, 119 Merrill Hall, University of Maine, Orono, ME 04469, (207) 581-3136 or Dr. Sandra Caron, 112 Merrill Hall, University of Maine, Orono, ME 04469, (207) 581-3138.

Appendix D: Parental Consent Form
(Cont.)

Please check:

- You have my permission for my child to participate in the project; and
 You have my permission to keep my child's drawings for analysis and possible presentations. No identifying information will link my child to their drawings.

Parent/Guardian

Date

Results of this research will be made available to parents. If you wish to receive these results please check below.

Please check one:

- I would like a summary of my child's results. This will include his/her score on both instrument tools used in this research and a summarized explanation of these scores.
- I would like a summary of the results of this study. This will include a brief description of the research questions and a summarization of the pertinent findings. Individuals will not be identifiable in this summary.
- I would like a summary of both my child's results and of the pertinent findings of this study.

Please provide your name and address below:

Appendix E: Child's Assent

Introduction to child and obtaining child's assent:

- Hi, my name is Carie, and I'm here today to work on a project for school. I would like you to draw a couple of pictures for me and then for you to tell me about your pictures. Would you be interested in drawing some pictures and telling me about them? Great, the first picture I would like you to draw and talk about is of how babies are made and the other is of how babies are born. I have asked your Mom and Dad, and they have said that it is okay for you to draw the pictures and to talk to me about what is happening in the pictures. Do you think you can do this? Would you like to help me with my school project? Great, I am very happy that you will be helping me.

If in a classroom setting:

- Could we go over there (pointing to the interview area) where you can draw and we can talk about your pictures? I want you to know that you can quit and return to the group whenever you want to or if you get tired. So, are you ready to draw some pictures? Gook. (Follow the child to the interview area in a classroom). Okay, I'd like you to draw a picture of where babies come from for me. Would you like me to stay with you or would you like me to go sit on the other side of the room while you draw?

If in the child's home:

- I want you to know that you can quit whenever you want to or if you get tired. So, are you ready to draw some pictures? Good, I'd like you to draw a picture of where babies come from. Would you like me to stay with you or would you like me to go sit on the other side of the room while you draw?

If in the child development observation room:

- We'll stay in here to work, but your mother/father will be right next door. I want you to know that you can quit whenever you want to or if you get tired. So, are you ready to draw some pictures? Good, I'd like you to draw a picture of where babies come from. Would you like me to stay with you or would you like me to go sit on the other side of the room while you draw?

When child has finished the first picture:

- Are you ready to draw the second picture? Good, I'd like you to draw a picture of how babies are born. Would you like me to stay with you or would you like me to go sit on the other side of the room while you draw?

After child has drawn both pictures:

- I see you have drawn pictures of how babies are made and how babies are born.

Pointing to one of the pictures:

- I'd like you to tell me about this picture.
- Would you like to tell me anything else about your picture?

- So, _____, (reiterate what the child has said for clarification) is that how babies are made? Or is that how babies are born?
 - Where did you learn about how babies are made? Or about how babies are born?
 - That's a very good job. You did great telling me all about your picture!
- (I will be taking notes of what the child says about his/her picture)

Pointing to the other picture:

- Now, I'd like you to tell me about the other picture?
 - Is there anything else I should know about your picture?
 - So, _____, (reiterate what the child has said for clarification) is that how babies are made? Or is that how babies are born?
 - Where did you learn about how babies are made? Or about how babies are born?
 - How old are you? Is it all right if I write you age on the back of you picture?
- (I will be taking notes of what the child says about his/her picture)

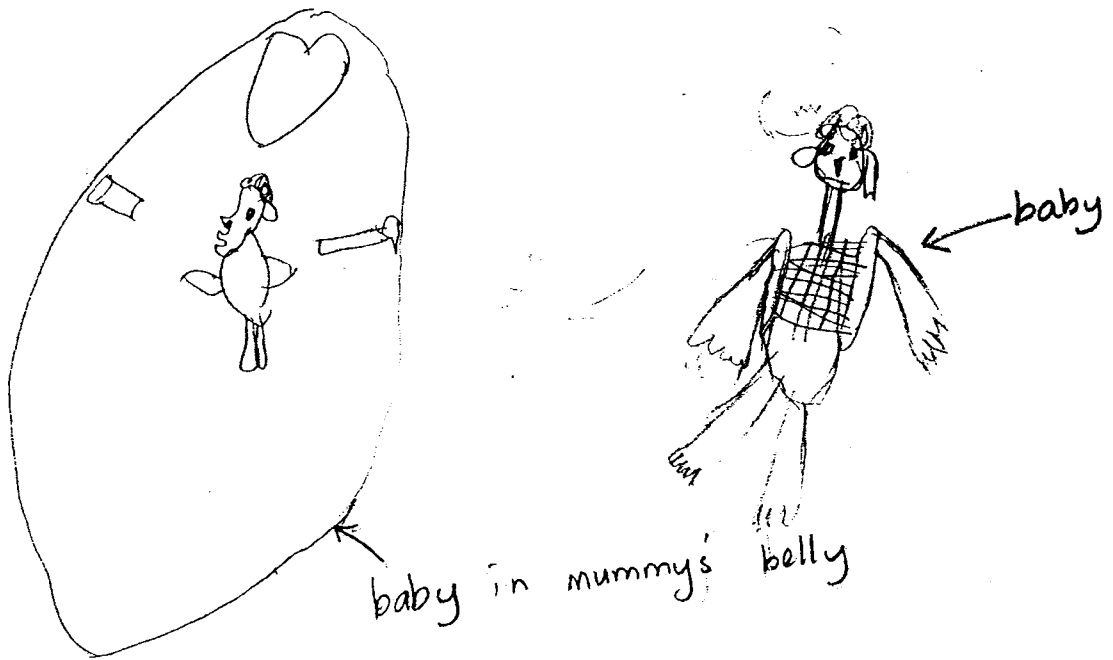
If the parents have granted permission to keep the child's drawings:

- You did such a great job with these pictures I would really like to keep them so that I can show my teacher and other people your wonderful drawings. May I keep them so I can do this?
- Thank you very much for helping me today with my special project. You did a great job of explaining your pictures to me.

If the child refuses to let me keep the drawings:

- Would you mind if I made copies and returned the originals to you?
- Thank you very much for helping me today with my special project. You did a great job of explaining your pictures to me.

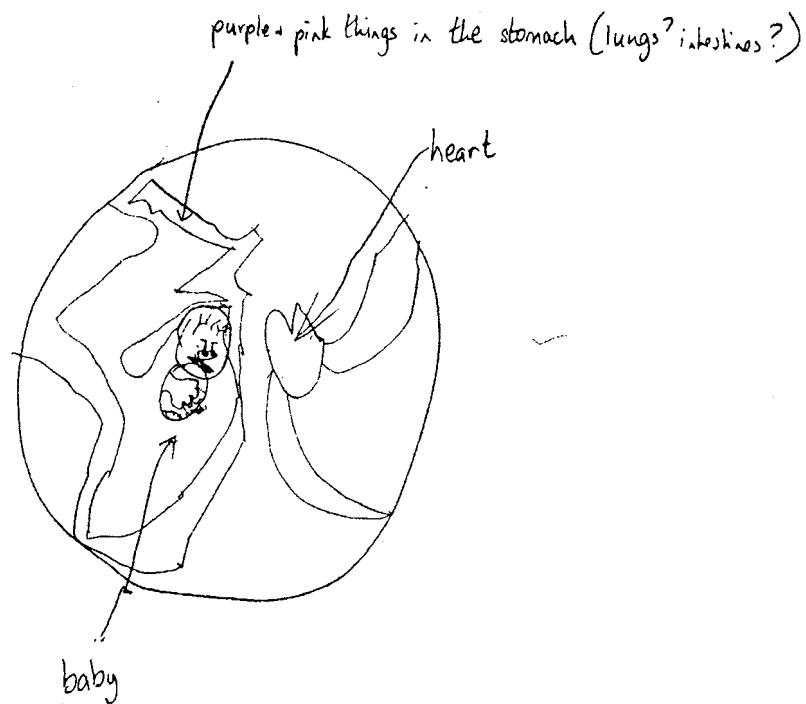
Appendix F: Drawings and Quotes by 6-year-old boys from England
Responses to “Where do babies come from?” and “How are babies made?”



“Jesus made the body, first the bones to see how it would look like, then he stuck on the skin”

CSAS: 0 Items
OBS: Manufacturers

Appendix F: Drawings and quotes by 6-year-old boys from England
Responses to “Where do babies come from?” and “How are babies made?”



“Doctor tells mummy to breathe in and out”

“Mummy had to eat lots of good healthy food to have a baby”

CSAS: Item 3
OBS: Manufacturer

Appendix F: Drawings and quotes by 6-year-old boys from England
Responses to “Where do babies come from?” and “How are babies made?”

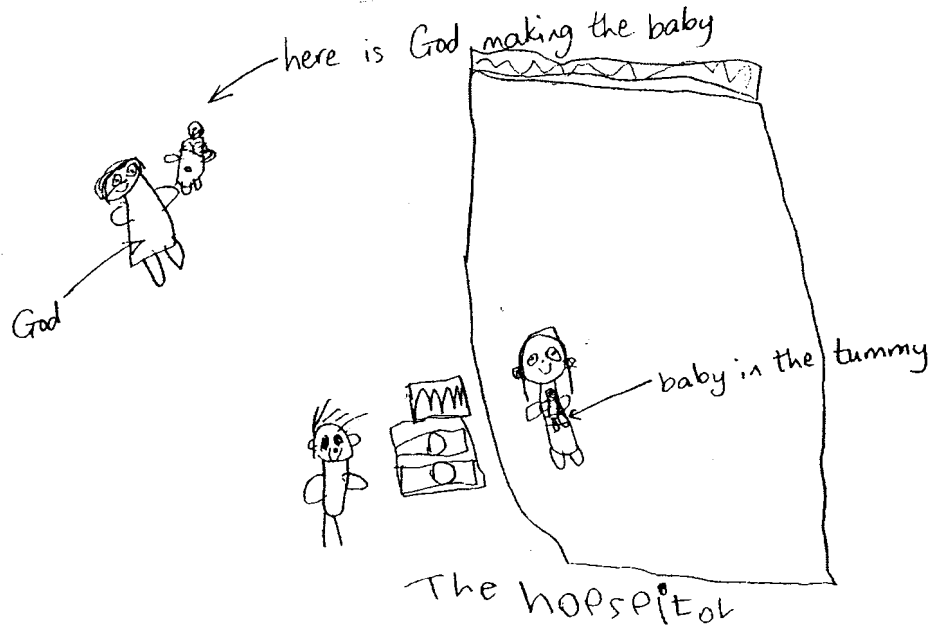


“Mummy and Daddy have a special cuddle, special stuff goes into mummy which makes mummy pregnant”

“Babies come out of mummy’s ...”

CSAS: Items 1 and 2
OBS: Agriculturist

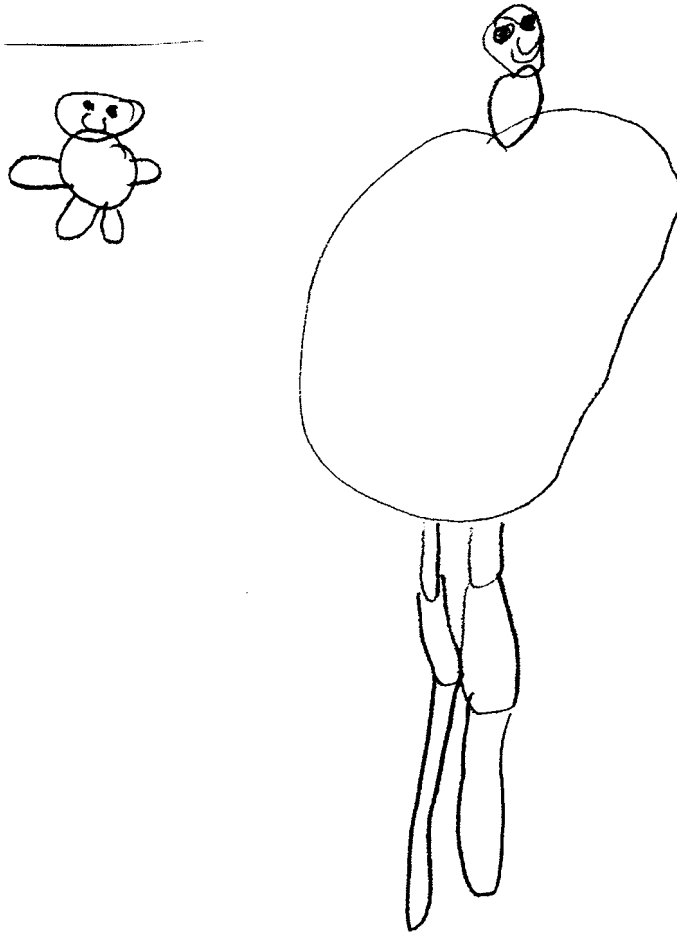
Appendix F: Drawings and quotes by 6-year-old boys from England
Responses to "Where do babies come from?" and "How are babies made?"



"No quotes"

CSAS: 0 Items
OBS: Manufacturer

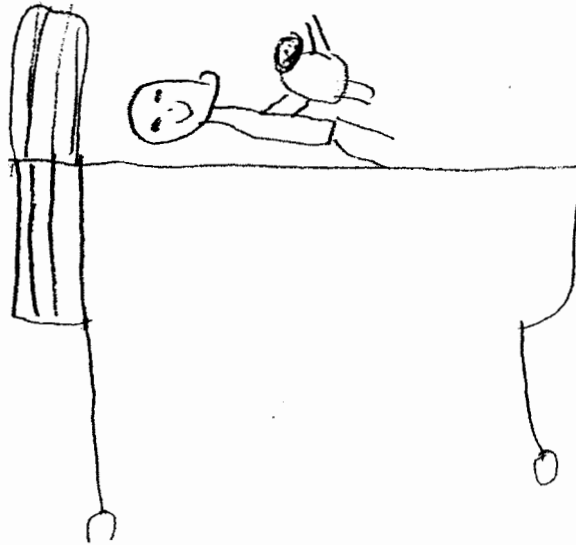
Appendix F: Drawings and quotes by 6-year-old boys from England
Responses to "Where do babies come from?" and "How are babies made?"



"Babies grow from her belly"

CSAS: 0 Items
OBS: Geographer

Appendix F: Drawings and quotes by 6-year-old boys from England
Responses to “Where do babies come from?” and “How are babies made?”

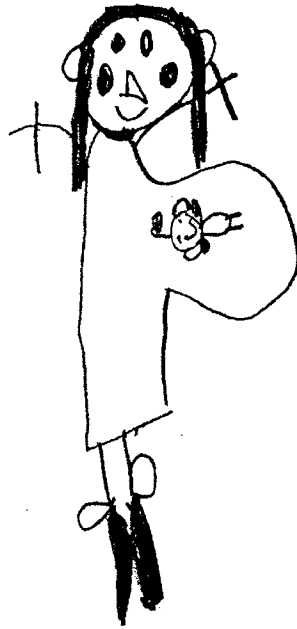
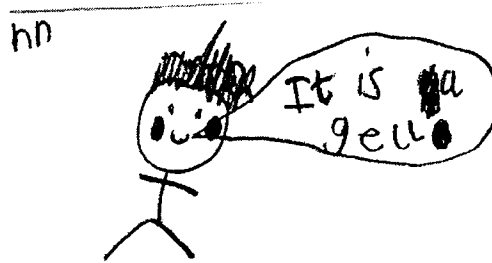


“I don’t know”

“The baby is coming out of her belly, the doctor had a special needle to get it out”

CSAS: 0 Items
OBS: Geographer

Appendix G: Drawings and Quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”

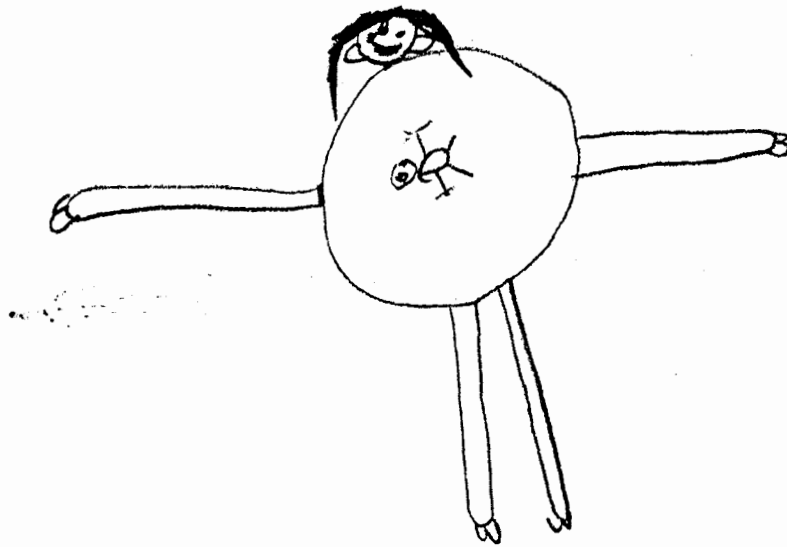


“The doctor takes the baby out”

“Mummy knows she is having a baby when she gets a fat tummy”

CSAS: 0 Items
OBS: Geographers

Appendix G: Drawings and quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”

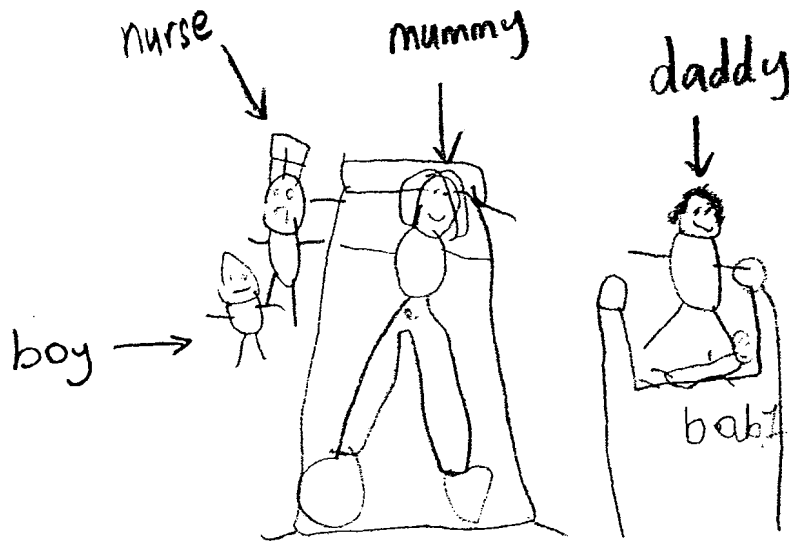


“Daddy takes mummy to the hospital”

“The hospital gets the baby out – mummy doesn’t have to do anything”

CSAS: 0 Items
OBS: Geographer

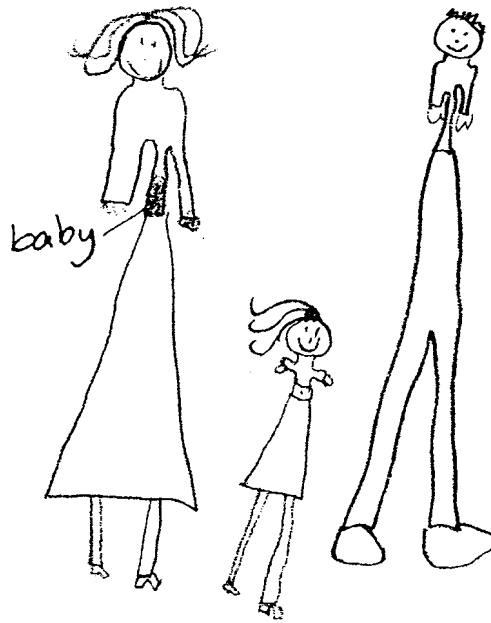
Appendix G: Drawings and quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”



“This girls mum had a caesarian”

CSAS: Item 4
OBS: Non-Answer

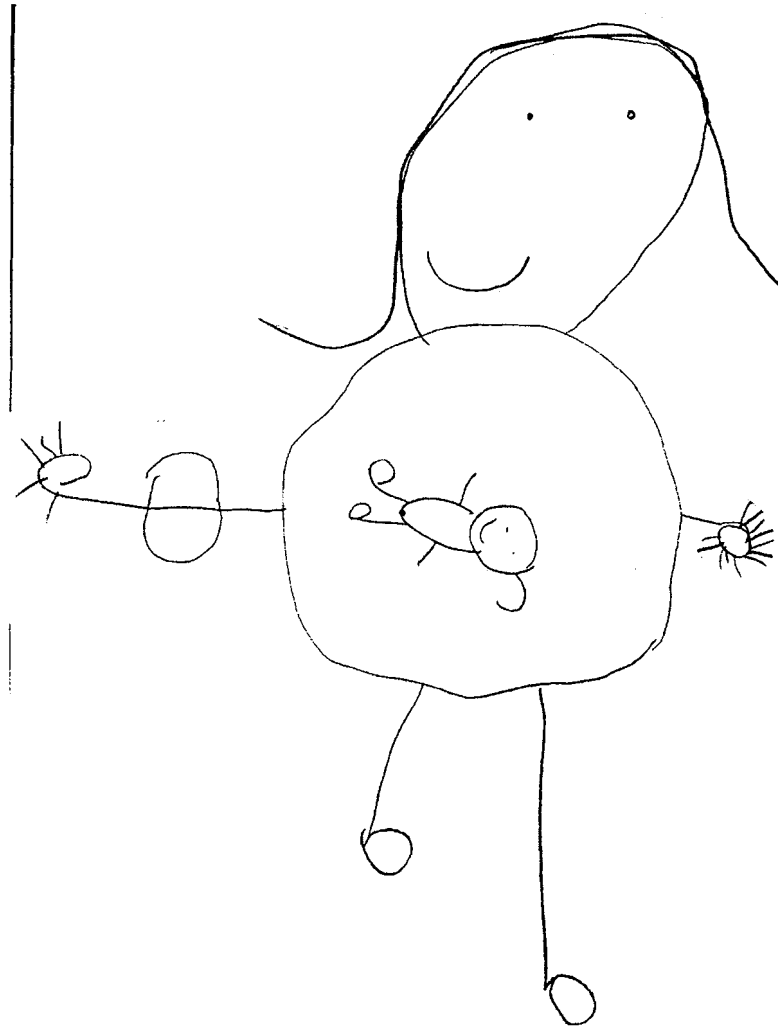
Appendix G: Drawings and quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”



“No quotes”

CSAS: 0 Items
OBS: Non-Answer

Appendix G: Drawings and quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”

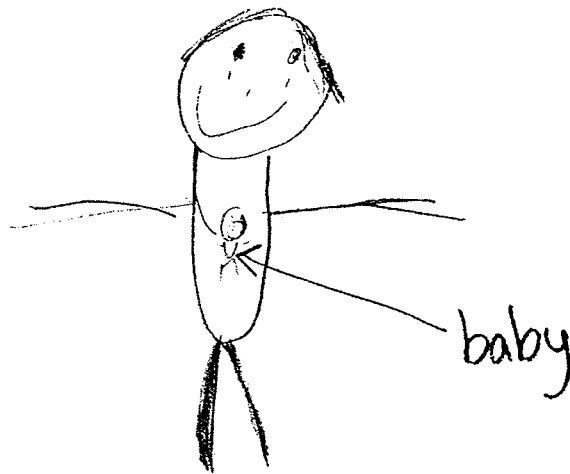


“The baby is in mummy’s belly”

“The doctor tells mummy when the baby is ready to come out”

CSAS: 0 Items
OBS: Geographer

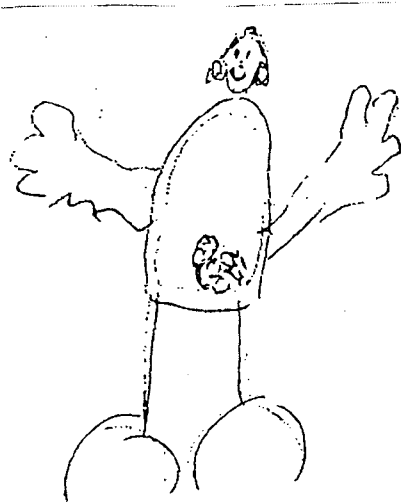
Appendix G: Drawings and quotes by 6-year-old girls from England
Responses to “Where do babies come from?” and “How are babies made?”



“No quotes”

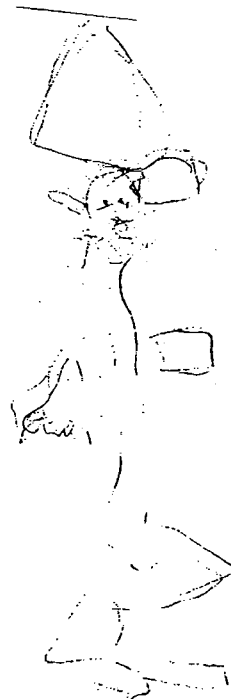
CSAS: 0 Items
OBS: Non-Answer

Appendix H: Drawings and Quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“From the belly in the hospital or at home”

“Babies are born through the belly button”



CSAS: 0 Items
OBS: Geographer

Appendix H: Drawings and quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



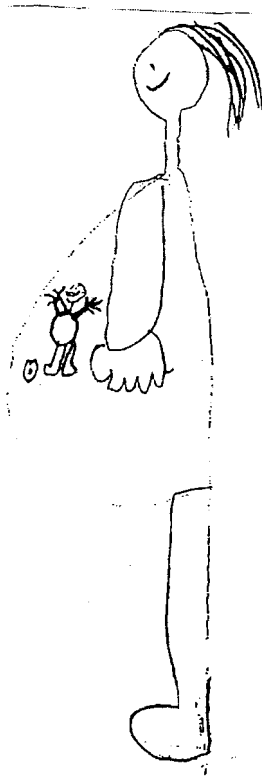
“From the belly”

“It is 12 o’clock and then my brother was born. My mother is in the hospital. There is a doctor and a nurse. They help the baby to be delivered. But in my family I was born at home”



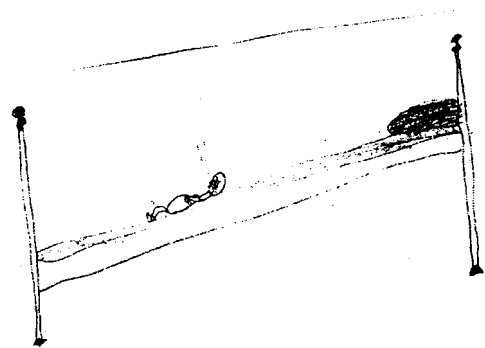
CSAS: 0 Items
OBS: Geographer

Appendix H: Drawings and quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



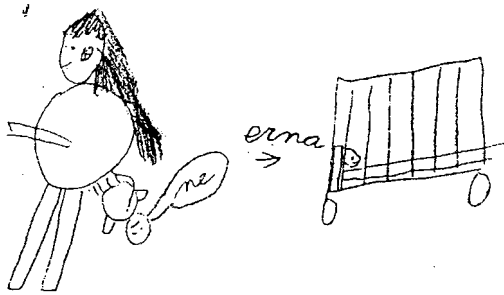
“Babies come from the belly and through the belly button”

“Babies are delivered through the bell of the mother”



CSAS: 0 Items
OBS: Geographer

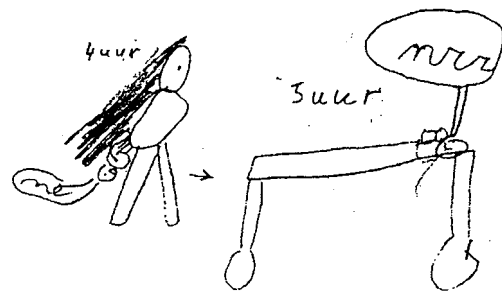
Appendix H: Drawings and quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“Babies come through a hole of my mother. The baby cries a little bit. After that the baby will be put to bed”

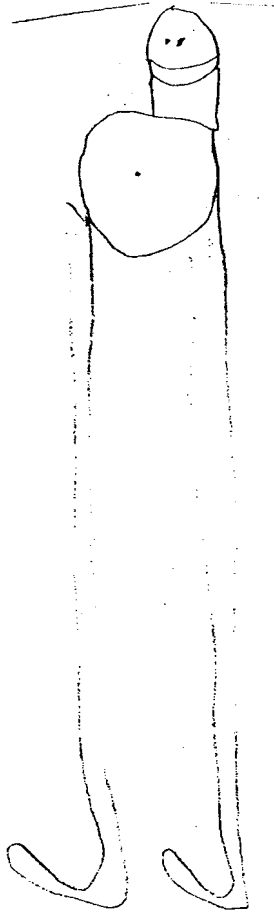
jonis brigger

“I came from a hole and it took about an hour till I was in my bed. I don’t say the name from where a baby comes from, otherwise maybe the kids are going to laugh. In the bed the mother and the baby are going to sleep together”



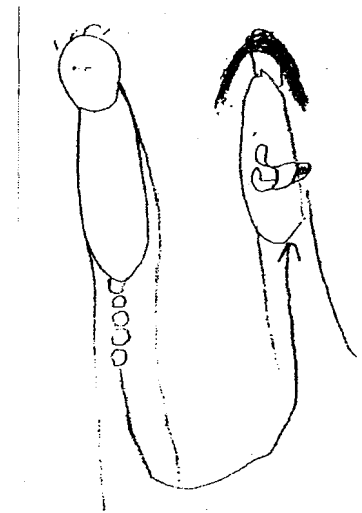
CSAS: Item 4
OBS: Geographer

Appendix H: Drawings and quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



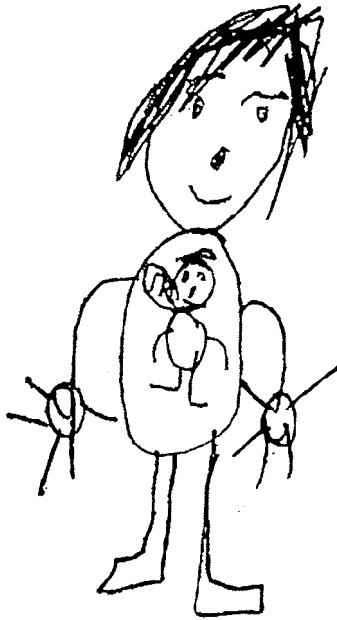
“Babies come from the belly”

“I don’t understand it well. But the drops of a man come together with the egg of the mother. The baby grows, and grows and becomes bigger and bigger and then when it is big enough he comes out of the mother”



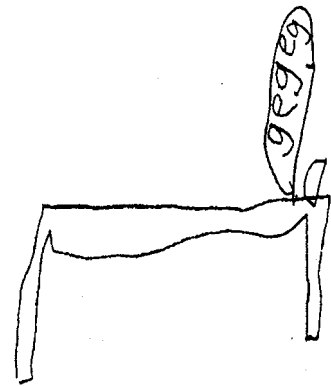
CSAS: Items 2 and 3
OBS: Agriculturist

Appendix H: Drawings and quotes by 6-year-old boys from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



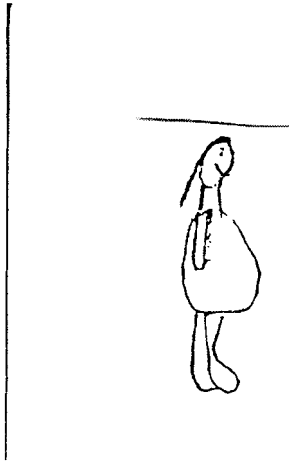
“The baby is in the belly of the mother and comes from the belly”

“Baby is delivered through the belly – at the end; first the head. Then it will cry”



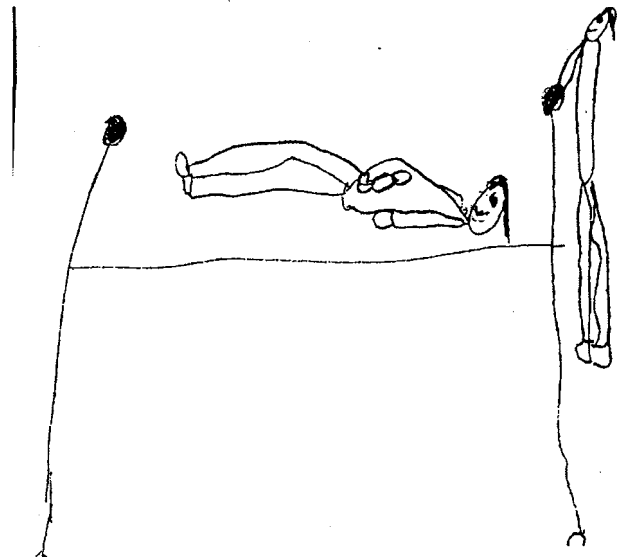
CSAS: Item 4
OBS: Geographer

Appendix I: Drawings and Quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“The baby comes from the belly”

“When the baby is big enough, she might be taken to a hospital to be delivered or at home. There she comes out from the belly button. You should lie down when the baby comes out”



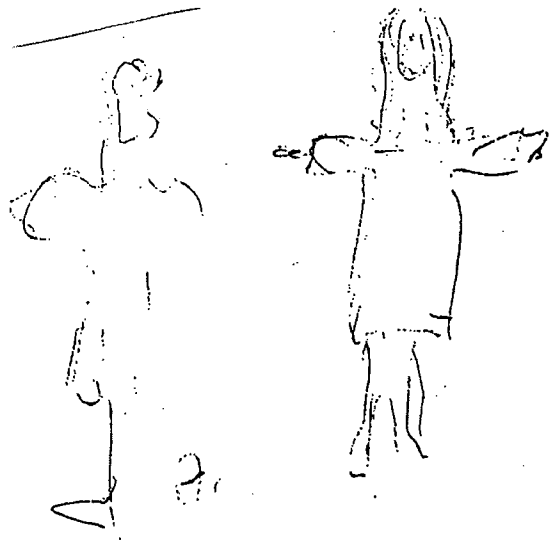
CSAS: 0 Items
OBS: Geographer

Appendix I: Drawings and quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



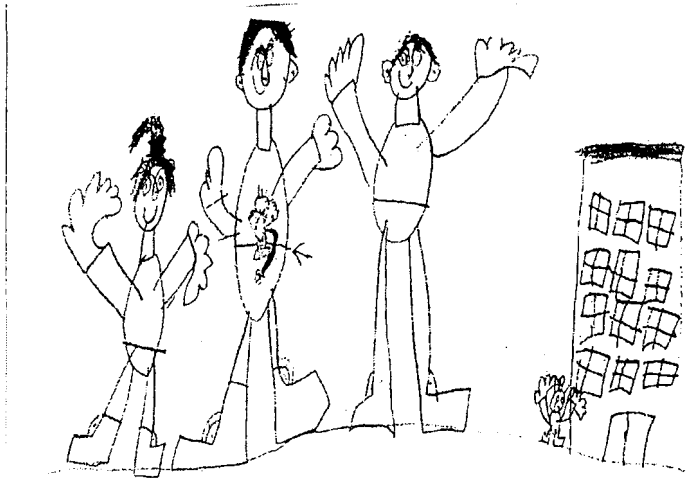
“The baby comes from the belly”

“An egg and a seed come together; it goes through a home. I know there are 3 holes: a slit, bottom and may be it is called... a baby hole... because the mother wears a nightgown. I haven't drawn a nightgown. My father cuts the umbilical cord when I was born”



CSAS: Items 1, 2 and 4
OBS: Agriculturist

Appendix I: Drawings and quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“Babies come from the belly; and it happens often in the hospital”

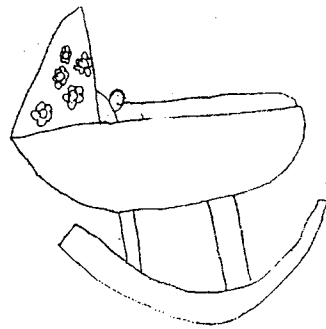
“The father or the doctor cuts the umbilical cord. The mother is sleeping and then the doctor collects the child. The baby should turn then, otherwise the mother will get caesarean section. I do not know what that exactly means. It happened to my sister. She enjoyed her cozy place. My father cut the umbilical cord when I was born.



CSAS: Item 2
OBS: Manufacturer

Appendix I: Drawings and quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”

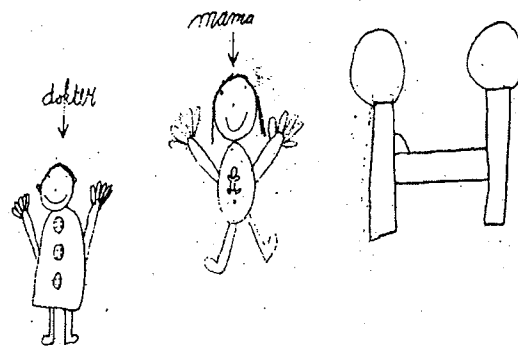
PUCK



‘The doctor collects the baby. The baby comes from the belly in the cradle’

PUCK

“In the hospital the baby is born. Daddy cuts the umbilical cord. But the doctor is there because the baby has blood on the skin. I don’t know from where the baby comes out of the belly”



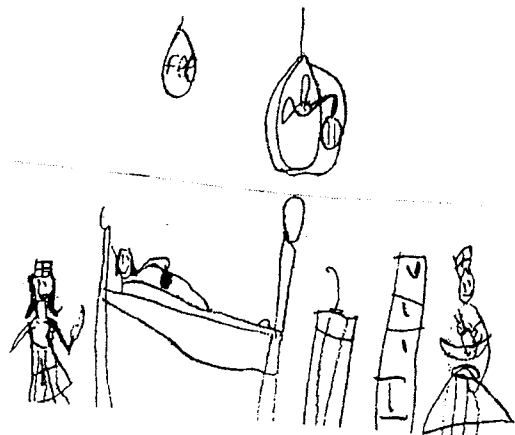
CSAS: Item 2
OBS: Manufacturer

Appendix I: Drawings and quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“This is a girl with a baby in her belly; you cannot see the baby, because I draw a t-shirt over her belly”

“When you are a bit small; they cut open the stomach with a kind of knife. Then they search for a sack, in which the baby is. Then they take the baby out. It is still totally red. Babies come from the air I think”



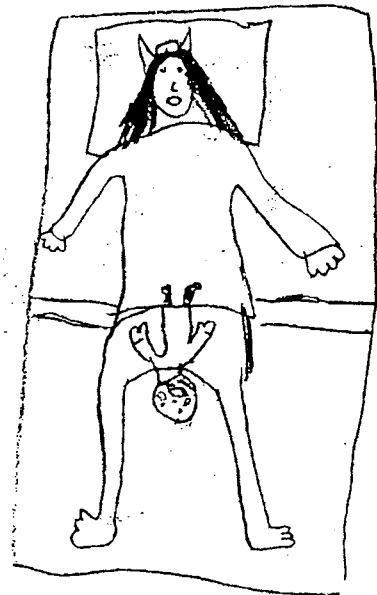
CSAS: Item 4
OBS: Geographer

Appendix I: Drawings and quotes by 6-year-old girls from The Netherlands
Responses to “Where do babies come from?” and “How are babies made?”



“From the belly”

“A mother is in the hospital and the baby will be delivered. The mother is in bed. The baby cries”



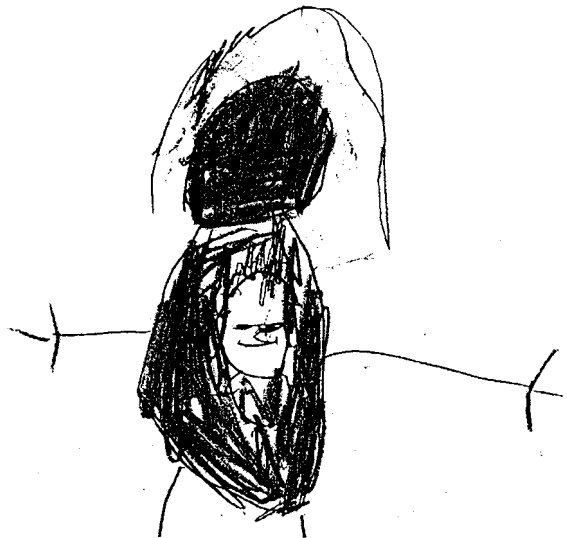
CSAS: Item 4
OBS: Geographer

Appendix J: Drawings and Quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



“The baby is in the Mummies stomach. It comes out down below where you make a wee wee. When the baby is coming Mummy goes to the hospital because the only they know how to bring the baby. Probably it hurts”

“I do not know how a baby is made. I only know that a baby is thinny and then grow and grow until it huge”



CSAS: Items 3 and 4
OBS: Non-Answer

Appendix J: Drawings and quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



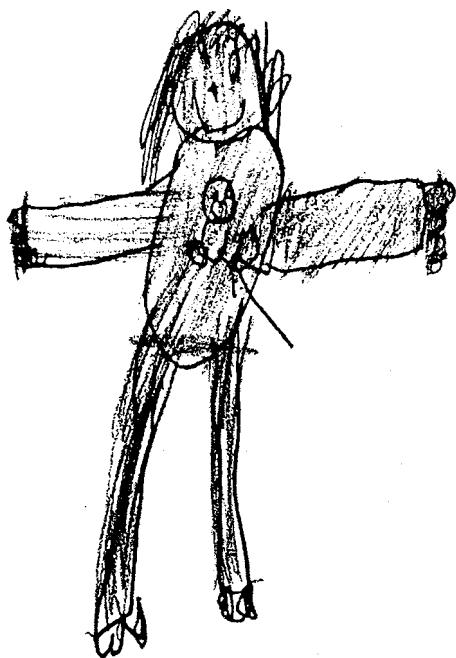
“A small thing starts to grow in Mummies stomach. It doesn't need any food. Mummy feels her baby grow inside her stomach. Then she gets pain”

“The baby is in Mummies stomach. When you do the wee wee the baby come out. You have to go to the hospital to get the kid out. When the aches begins then its time to go and it hurts for sure. Babies stay for a long time in Mummies stomach.”



CSAS: Items 3 and 4
OBS: Agriculturist

Appendix J: Drawings and quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



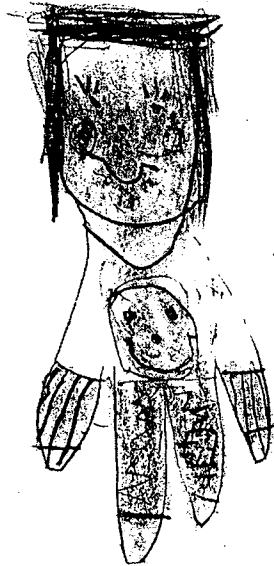
“The baby is in Mummies stomach. The baby stays for a long time in the stomach so it will grow. You will go to a doctor to get it out because he is the one that does it. He will cut up the stomach and pull out the baby. Some does like this but I do no know. When it aches in the stomach it is time to go. You are able to look at the baby in a computer and the baby gets mild and food from the food Mummy eats.”

“There are tubes inside Mummies stomach and the baby start to grow between the tubes. Men can’t bear babies because they have other kinds of tubes.”



CSAS: Items 2, 3 and 4
OBS: Agriculturist

Appendix J: Drawings and quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



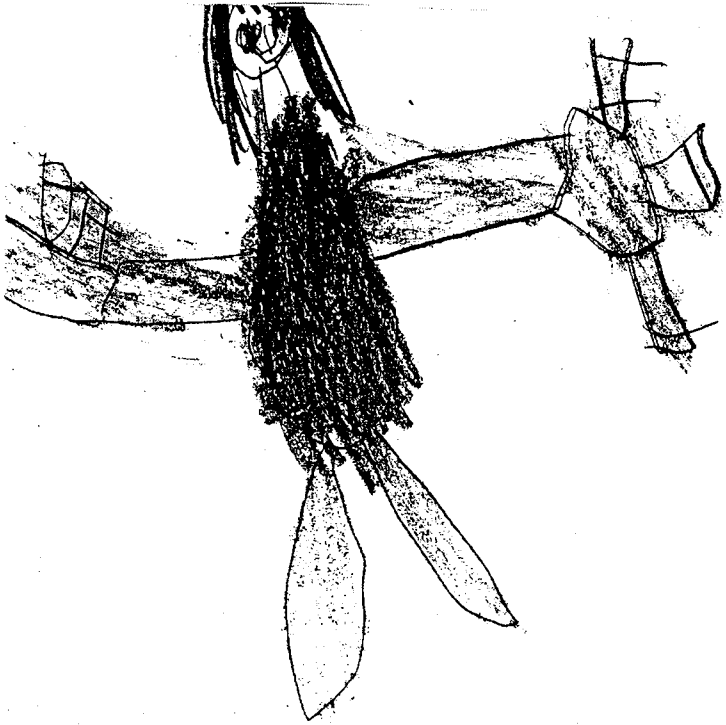
“The baby comes from Mummies stomach. I think you are at home when the baby comes out. Surely it hurts very (giant) much. I do not know how a baby comes out from Mummies stomach.”

“I saw a movie where a lot of small things moved around inside a Mummies stomach. Then there was an egg and one of the small things touches the egg and they were stuck together. The egg and closes the baby and starts to grow.”



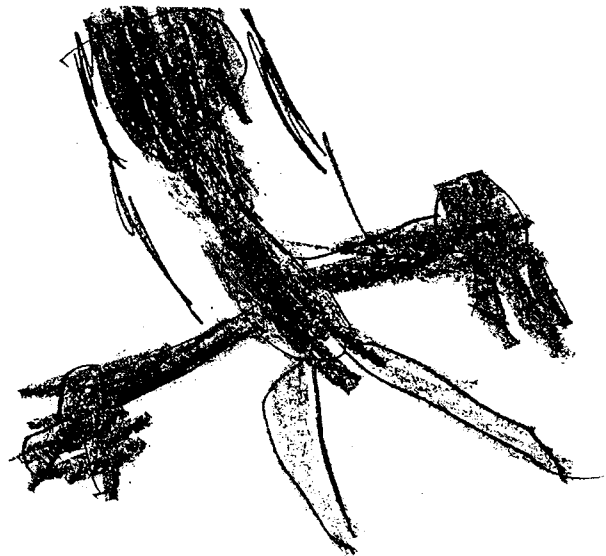
CSAS: Item 1
OBS: Reporter

Appendix J: Drawings and quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



“The baby comes from Mummies stomach. You can't see the baby in the stomach – not really.”

“There will be a baby in the egg that hatches in the stomach. If you want an egg in your stomach you say so. Then you must go to the hospital. They will do an operation and put an egg in. You must go to the hospital when the baby comes from a new operation and pull out the baby.”



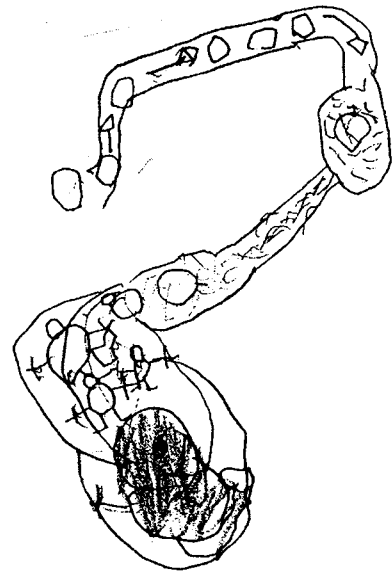
CSAS: 0 Items
OBS: Manufacturer

Appendix J: Drawings and quotes by 6-year-old boys from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



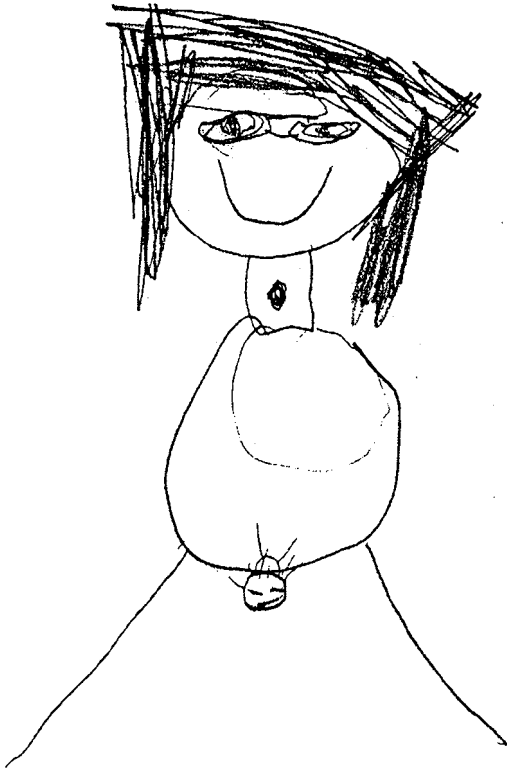
“Babies comes from Mummies stomach.”

“I know where babies come from. An egg goes down in a tube and at the end it comes to a cave. There it hatches and a lot of small things come out looking the same as tadpoles. All the tadpoles enters the egg. The first tadpole is the one that enters the egg. The egg goes further to a place where it will grow and becomes bigger. The baby is nude when born.”



CSAS: Items 1 and 3
OBS: Agriculturist

Appendix K: Drawings and Quotes by 6-year-old girls from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



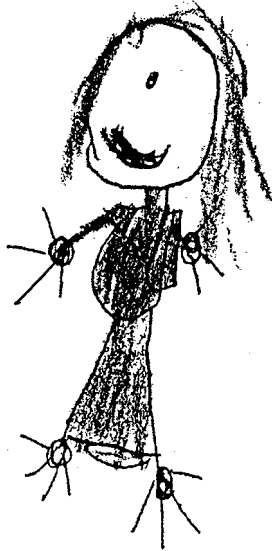
“The child lies in the mother’s stomach. In mothers book I have seen that it comes upside down. You go to the doctor when the child comes and it probably hurts a little. The child comes out down in the bottom and I think it is where you wee.”

“Mother thinks that she wants a child then she becomes fatter and fatter.”



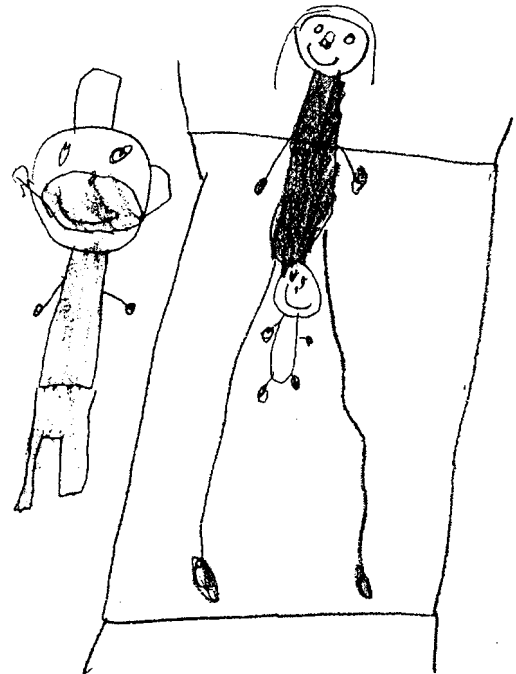
CSAS: Item 4
OBS: Geographer

Appendix K: Drawings and quotes by 6-year-old girls from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



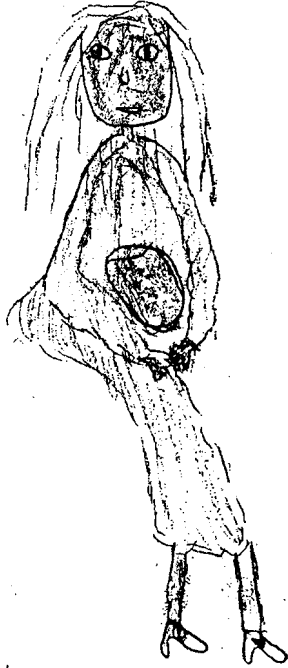
“The child comes from the mother’s.”

“It is an egg in the stomach. I don’t know how it comes into the stomach. The doctor at the hospital helps the mother to take the child out from the backside. It was a baby girl. Boys have a snopp (a common childish word for boy’s genitals) and girls have a kisse (a common childish word for girl’s genitals).”



CSAS: Item 4
OBS: Manufacturer

Appendix K: Drawings and quotes by 6-year-old girls from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



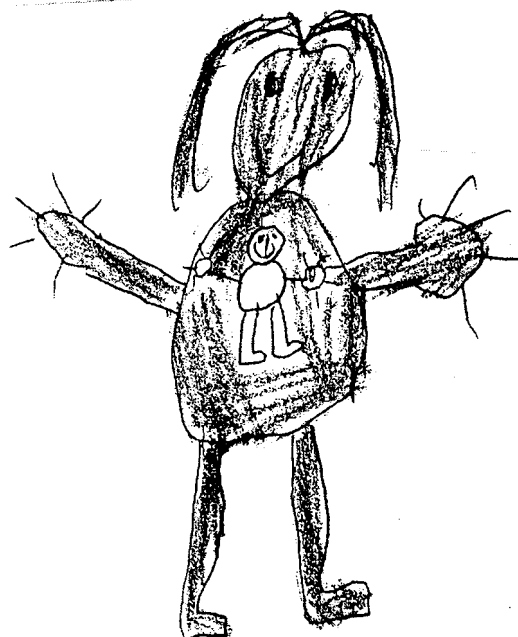
“I don’t know... from mother’s stomach. My mother has given birth to Sofia, Anna and me.”

“I don’t know how babies come into existence. They just grow in the stomach. Then they come out. At the doctor’s they come out. I have forgotten where the child comes out.”



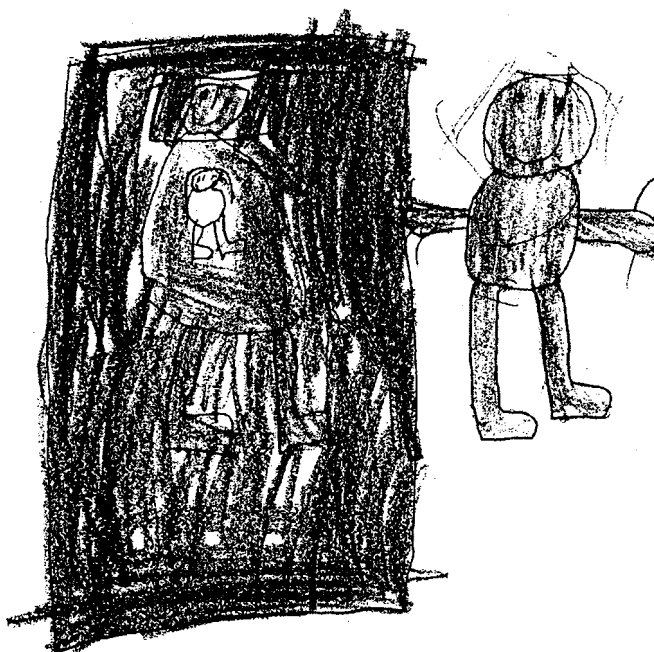
CSAS: 0 Items
OBS: Geographer

Appendix K: Drawings and quotes by 6-year-old girls from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



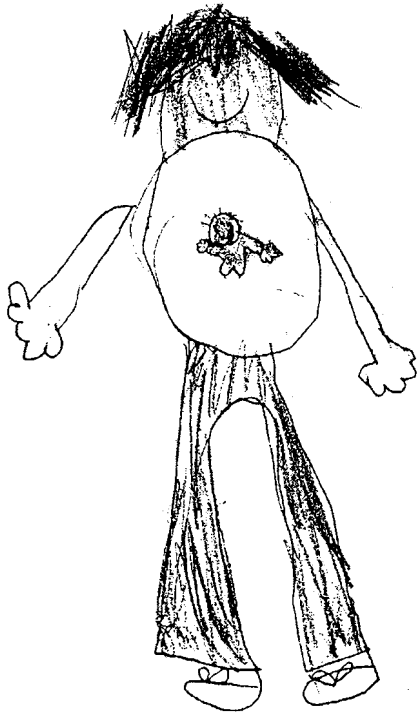
“Small children come from the stomach of the mother. Mother was a little fat.”

“The child grows in the stomach. Mum and Dad decide that they want to have a child and that’s how it is. I don’t know how the child gets into the stomach. In the beginning it is small and then it grows and becomes big. You have to operate at the hospital to get it out. Open the stomach and cut. I don’t know how it comes out if you don’t operate.”



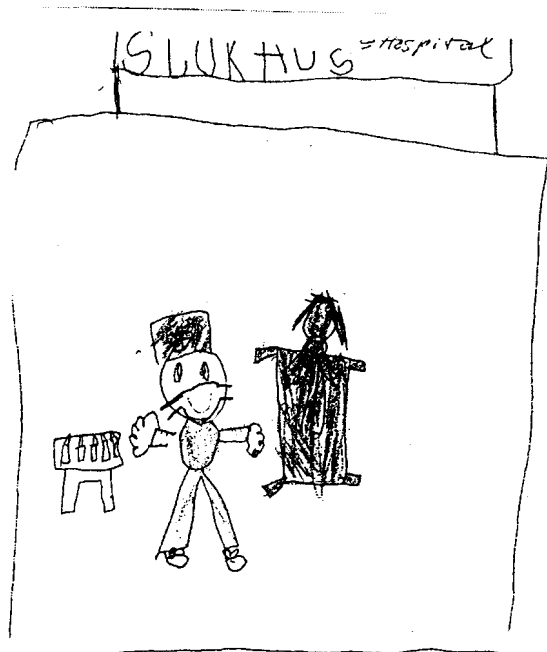
CSAS: Items 2, 3 and 4
OBS: Manufacturer

Appendix K: Drawings and quotes by 6-year-old girls from Sweden
Responses to "Where do babies come from?" and "How are babies made?"



"From mother's stomach."

"At first it is a stone (like a fruit). I don't know how they come to existence. What do you think? I don't know. They come out at the hospital by a doctor."



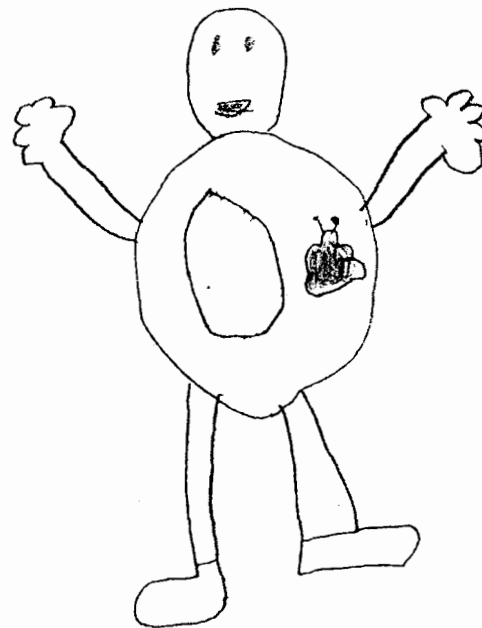
CSAS: 0 Items
OBS: Geographer

Appendix K: Drawings and quotes by 6-year-old girls from Sweden
Responses to “Where do babies come from?” and “How are babies made?”



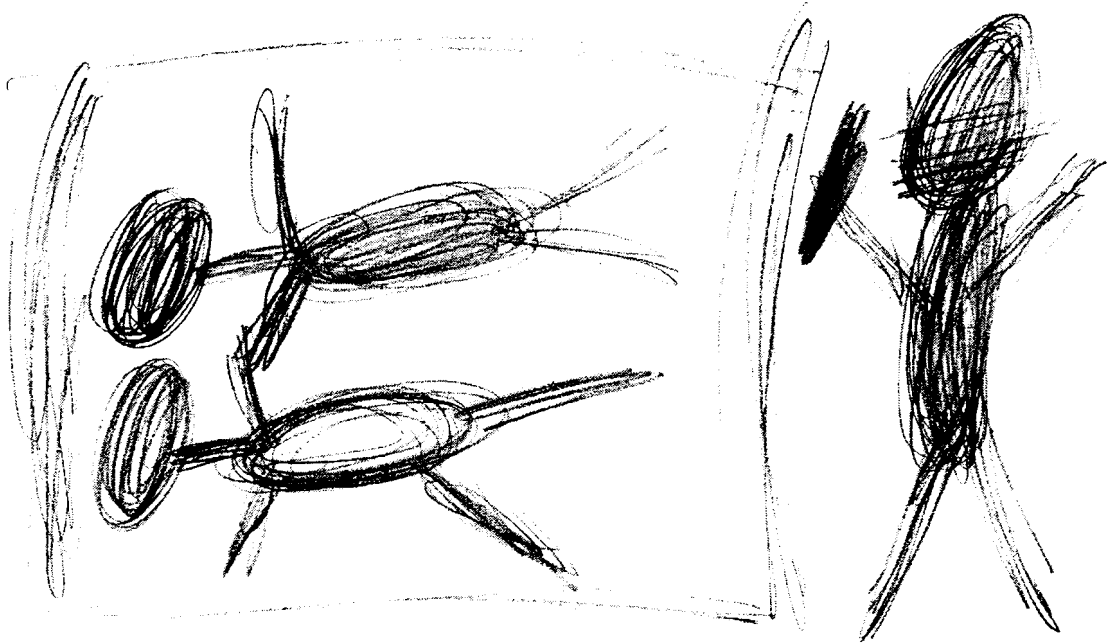
“Small children come from mother’s stomach. I have seen my mother when she was fat (in a film). At first she had my big brother in the stomach and then me.”

“In the beginning there is an egg (two eggs twins) which lies in an egg hole. The egg hatches and becomes a child. A butterfly come with the egg when they have married. The butterfly tickles a little on the neck and so the egg gets in. I think the babies lies in the stomach for 9 months. Then it comes out from the bottom. The head first – sometimes the feet. The child can hurt its head in bed.”



CSAS: Items 3 and 4
OBS: Agriculturist

Appendix L: Drawings and Quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

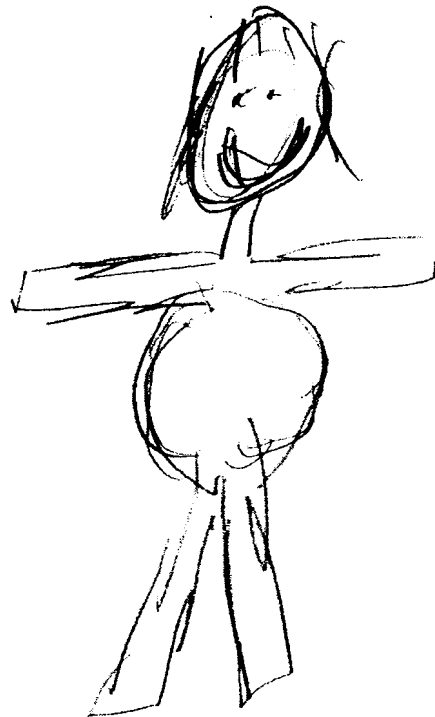


“Babies come from inside a mom. And they come out with a doctors help”

“How are babies made? Hum... I think they are made by a mom and dad, but I am not sure how; maybe during special time when they are alone.”

CSAS: Item 2
OBS: Manufacturer

Appendix L: Drawings and quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

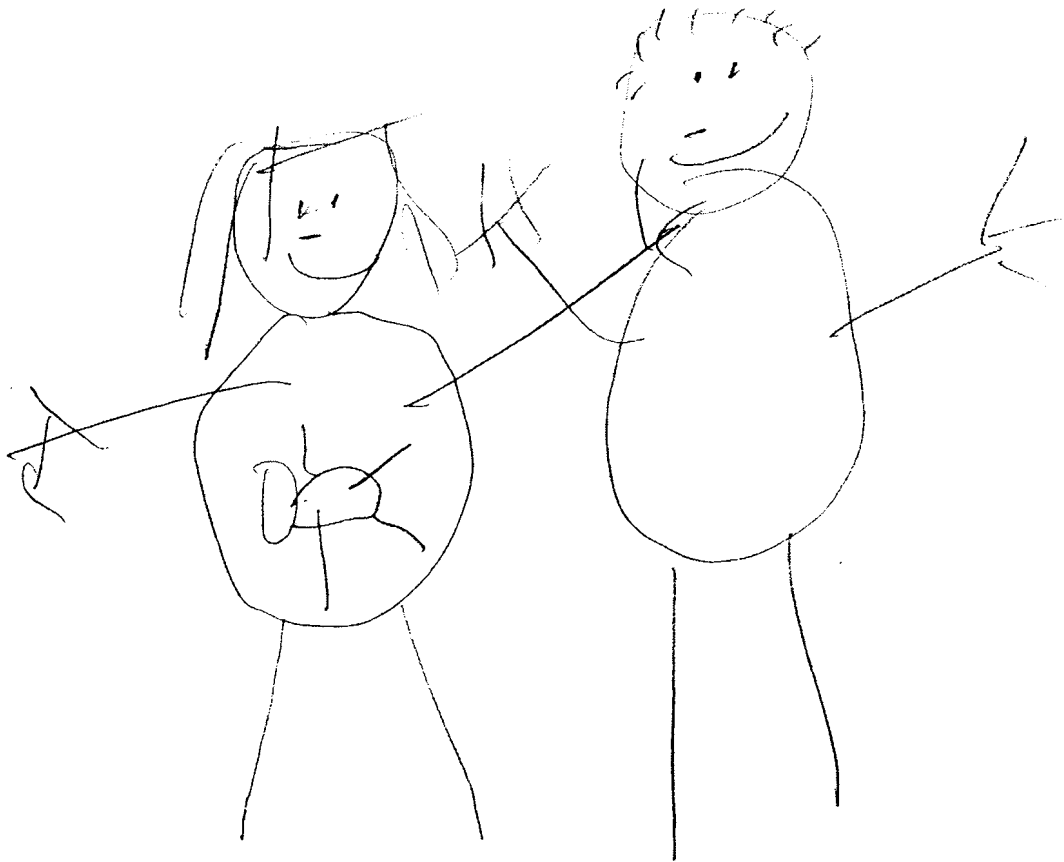


“God puts an egg in the mother’s stomach. The egg is where the baby is at, it lives and grows in the stomach until it is ready to come out.”

“Babies are made by god and given to families.”

CSAS: Item 3
OBS: Manufacturer

Appendix L: Drawings and quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

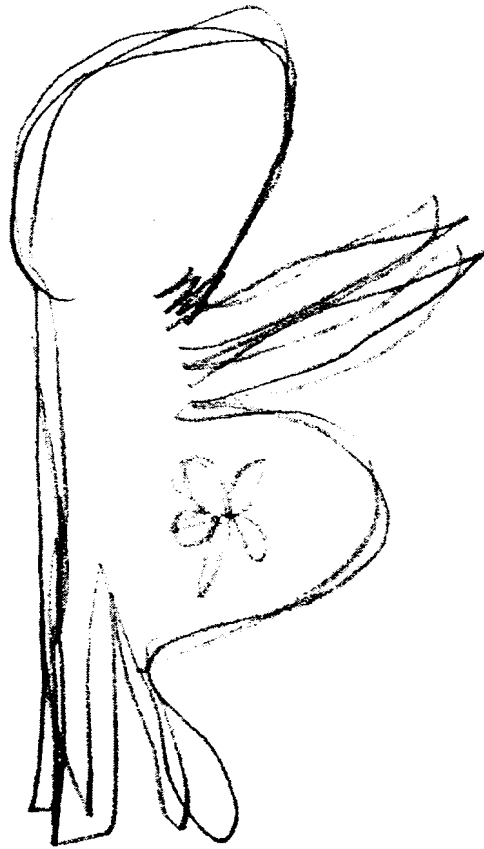


“Babies come from inside a mom where they grow until they are ready to push out. I am not sure where they come out... a hole somewhere... maybe the bellybutton.”

“Babies are made by a mom and a dad and doctors help them out when they are ready to push out.”

CSAS: Item 2
OBS: Manufacturer

Appendix L: Drawings and quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

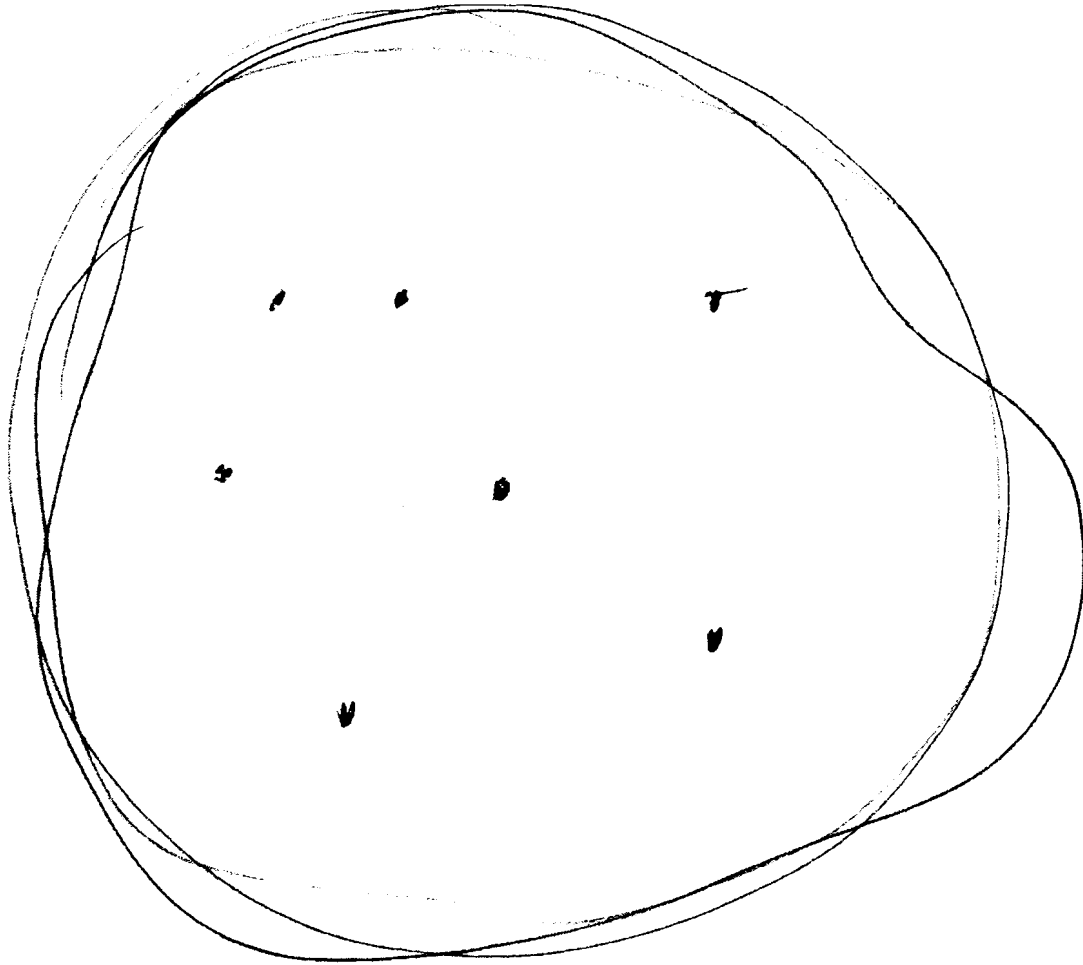


“Babies come from inside moms.”

“Babies are like presents; you can ask for one and hopefully get it.”

CSAS: 0 Items
OBS: Geographer

Appendix L: Drawings and quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

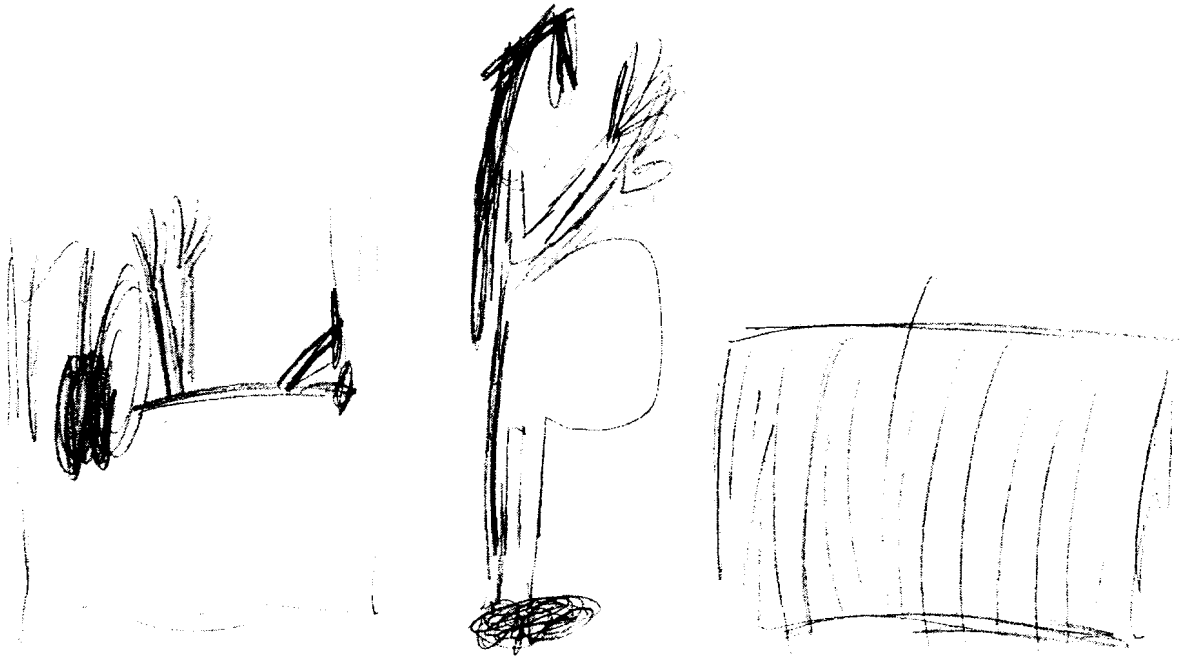


“This is a mom’s stomach with eggs that make babies.”

“Babies are made from these eggs. Dad does not have eggs like this that is why he cannot have any babies.”

CSAS: Item 2
OBS: Agriculturist

Appendix L: Drawings and quotes by 6-year-old boys from the United States
Responses to “Where do babies come from?” and “How are babies made?”

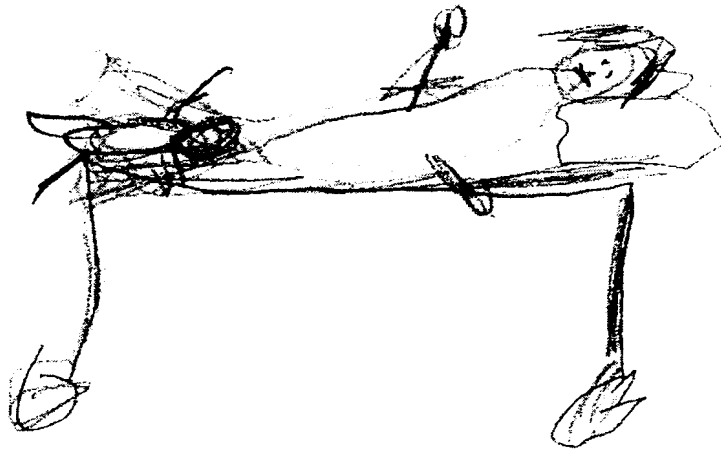


“Mommies and Daddies have babies together. Babies sleep in cribs and mom and dad sleep in their own bed.”

“Babies are made from eggs in mommy’s stomach. Then they grow in mom’s stomach and she gets fat until the baby wants to come out.”

CSAS: Items 2 and 3
OBS: Agriculturist

Appendix M: Drawings and Quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”

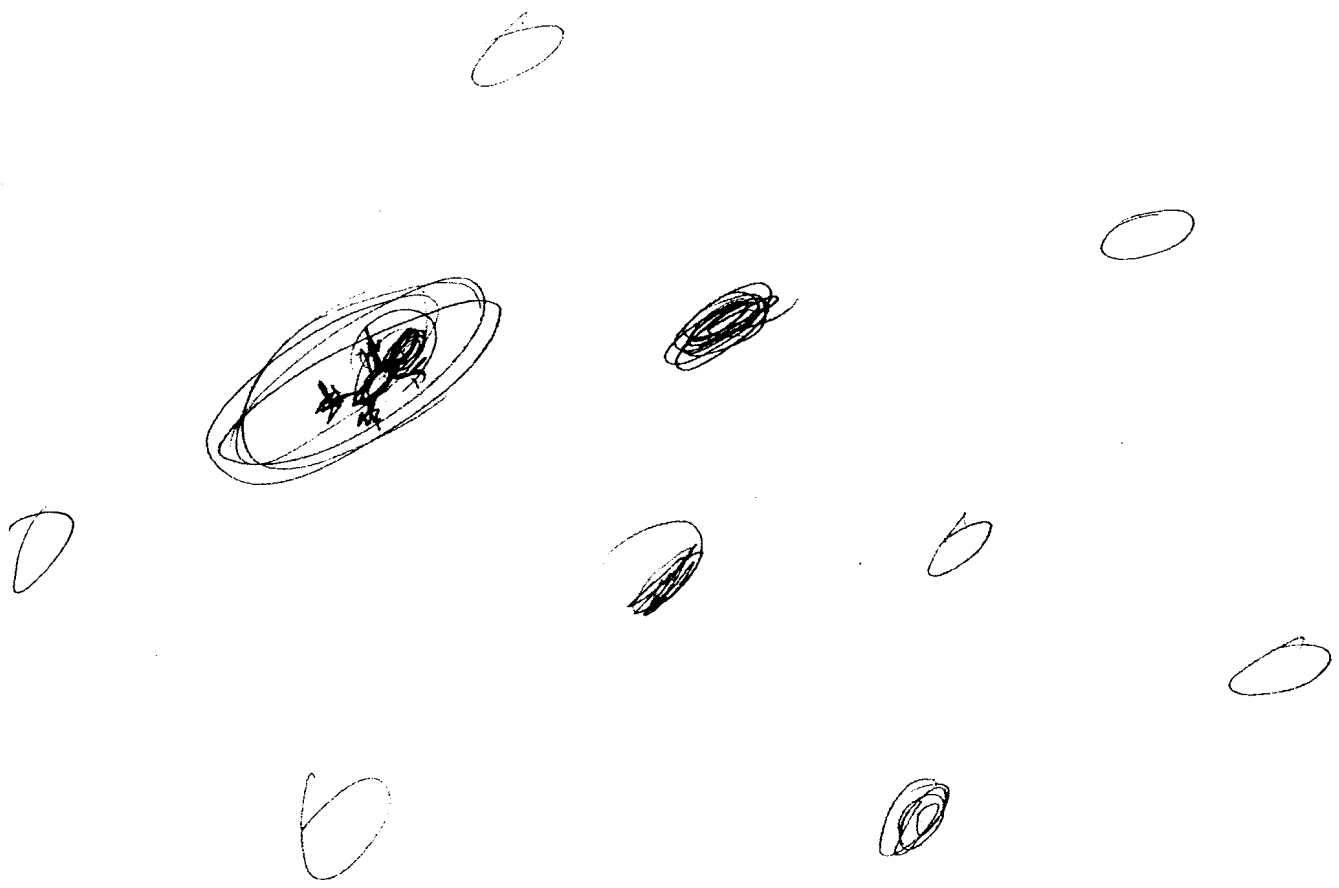


“Babies come from mommies tummies.”

“Babies are put in mommies tummies when she wants to have a baby.”

CSAS: 0 Items
OBS: Geographer

Appendix M: Drawings and quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”

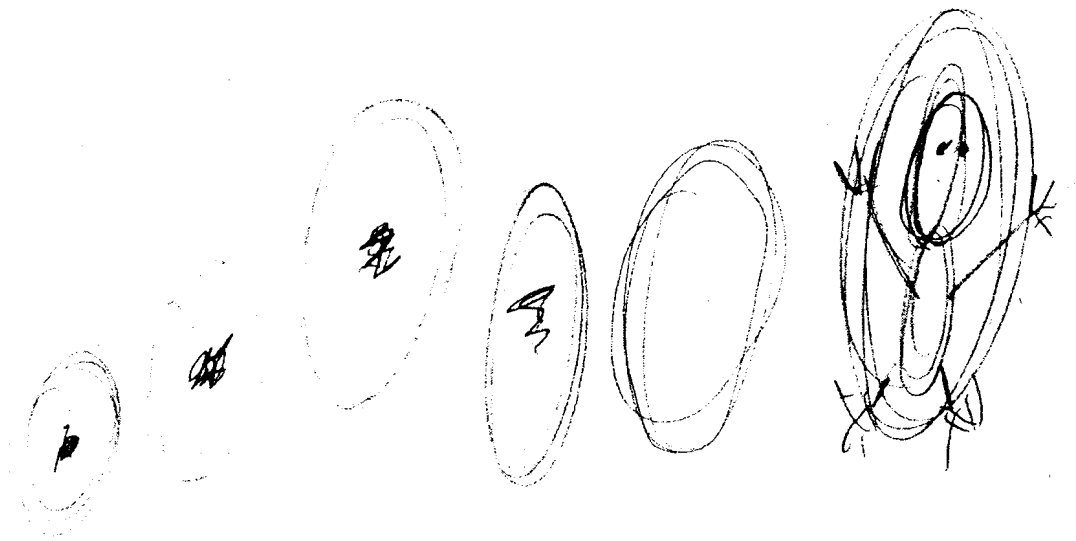


“Babies start as eggs in mommies’ stomach.”

“Eggs live in mommies stomach and eat whatever she eats to live.”

CSAS: Item 3
OBS: Geographer

Appendix M: Drawings and quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”

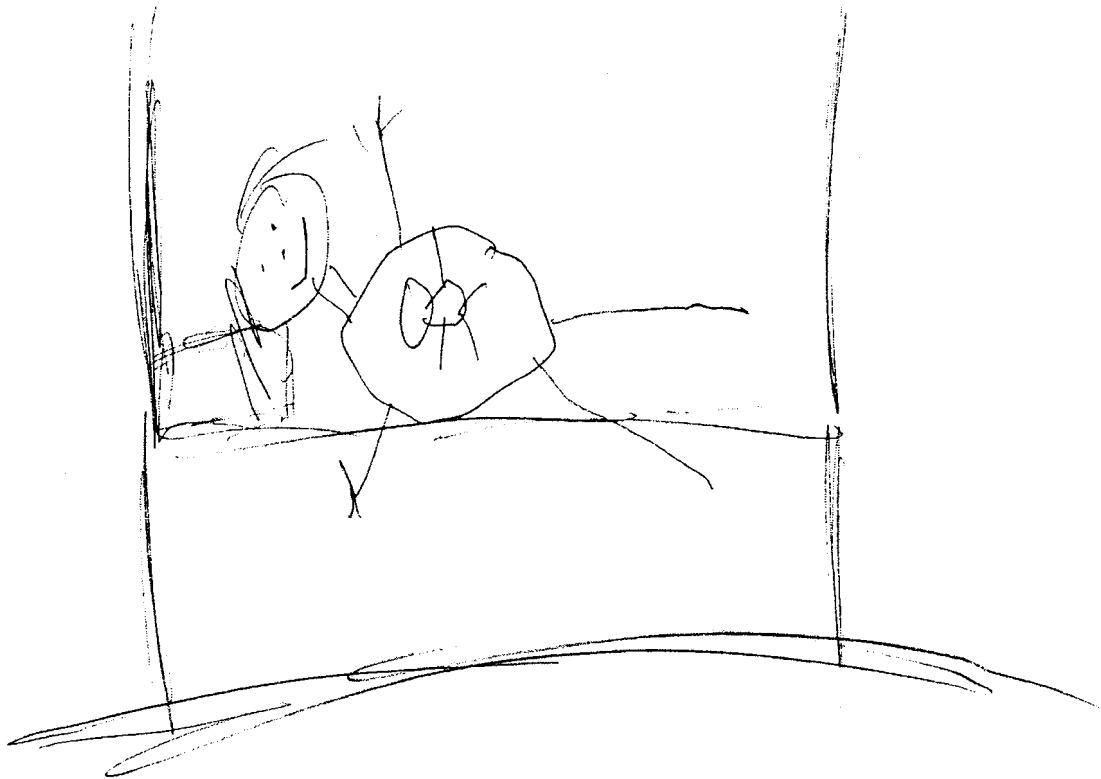


“Babies come from eggs and out mommies belly button.”

“God makes that eggs that are in all mommies.”

CSAS: 0 Items
OBS: Manufacturer

Appendix M: Drawings and quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”

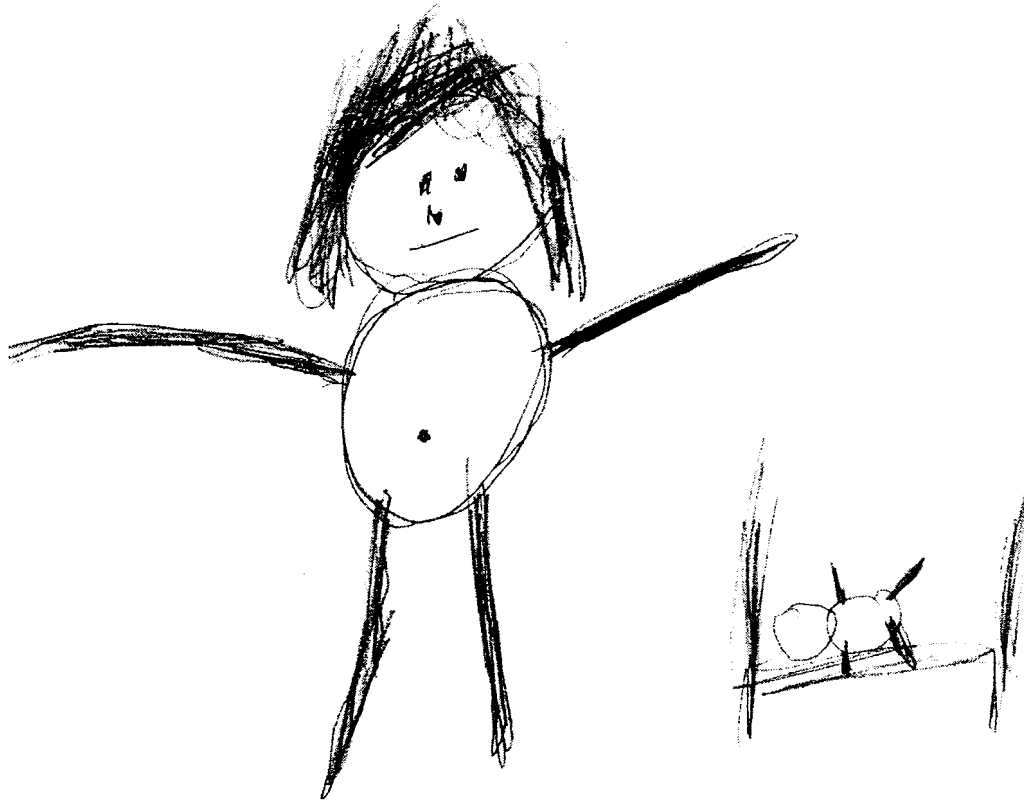


“Babies come out the hole in mommy.”

“Babies are made by mommy with help from God and doctors help get them out.”

CSAS: 0 Items
OBS: Manufacturer

Appendix M: Drawings and quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”



“It hurts for mommy to have a baby. Mommies take care of babies and sometimes
Daddy’s too. They come from mommy’s stomach.”

“I don’t know how babies are made. They must be made inside mommies stomach, or
maybe from God.”

CSAS: 0 Items
OBS: Manufacturer

Appendix M: Drawings and quotes by 6-year-old girls from the United States
Responses to “Where do babies come from?” and “How are babies made?”



“Babies come from mother’s stomach. I think they come out a hole near her bottom.”

“Babies are made by God and put into mom’s stomach. Daddies can not have babies like my Mom.”

CSAS: Items 2 and 4
OBS: Manufacturer

BIOGRAPHY OF THE AUTHOR

Carie jo Ahlgrim was born on May 22, 1976 in Yankton, South Dakota to Cheryl and Walter Ahlgrim. In Vermillion, SD, she attended St. Agnes elementary school, Vermillion Middle school and graduated from Vermillion High School in 1994. Carie attended Southwest State University, in Marshall, MN, South Dakota State University, in Brookings, SD, and University of South Dakota, in Vermillion, SD where she received her Bachelor of Arts in Liberal Studies in August 2001. In September 2001, she enrolled in the graduate degree program in Human Development at the University of Maine. While working towards her degree, she served as a preschool/kindergarten teacher for the Child Development Learning Center under Jodelle Austin for two years. Carie is a candidate for the Master of Science degree in Human Development from The University of Maine in December, 2003