

AN ABSTRACT OF THE THESIS OF

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MORPHISM AMONG FOUR- AND FIVE-YEAR-OLD CHILDREN

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Mary Massey

The purpose of this study was to extend Klingensmith's (1948) research, which investigated the child's meaning of "life," as well as the relationship between animism and anthropomorphism, by employing a younger group and analyzing for sex differences.

The subjects were 36 Caucasian children, 18 boys and 18 girls, attending the Oregon State University laboratory nursery schools. Their ages ranged from 4 years 0 months to 5 years 5 months. The subjects' families were of the upper socioeconomic levels as determined by Hollingshead's (1957) "Two Factor Index of Social Position."

The research instrument employed was Klingensmith's (1948) test of animism which centered around six common, inanimate objects, such as a clock, comb, and broken dish, and two animate ones, a fish and a flower, as the control objects. The children were asked ten questions concerning each of the objects. The first and last questions were, "Is \_\_\_\_\_ alive?" Intervening between these questions

were eight allied questions focusing on such sensory and functional (anthropomorphic) traits as seeing, feeling, knowing, and thinking. Question one was repeated as question ten to determine whether the intervening questions had an effect on the subjects' concepts of "alive."

To compare this study with Klingensmith's (1948) the following were calculated: (1) total positive responses for each question for each object; (2) total positive responses for allied questions for the inanimate objects and the control objects; (3) mean number of positive responses to question one for four non-activity-evincing, inanimate objects and two activity-evincing, inanimate objects; and the corresponding means of the average number of positive responses to allied questions; and (5) t-scores for significant correspondence between questions one and ten.

In addition to the data provided for comparison, four hypotheses were tested: Hypothesis I: More than 50% of the subjects will attribute life to two or more of the inanimate objects; Hypothesis II: When granting life to inanimate objects, over 50% of these subjects will not grant a majority of the anthropomorphic traits to the objects; Hypothesis III: There will be no significant correspondence between responses on question one and question ten; and Hypothesis IV: There will be no significant differences between male and female responses.

Testing of Hypotheses I and II consisted of calculating percentages based on the number of subjects and their responses. Chi square values were computed for testing Hypotheses III and IV. In addition,

Fisher Exact Probabilities were computed for Hypothesis III.

Results of the analyses indicated the trends found in Klingensmith's (1948) study were present in this investigation. Both studies found evidence of animism, but not a preponderance; therefore hypothesis I was rejected. Both studies found a decrease in the number who gave animistic responses to question ten as compared to question one. Low means of the number of positive responses to questions one and ten for the inanimate objects were evidenced, as were low means of the average number of positive responses to the allied questions.

Hypothesis II was rejected as there were few subjects who attributed anthropomorphic traits after granting life to the inanimate objects. This trend was also evident in Klingensmith's (1948) study.

Test results of Hypothesis III showed a close correspondence between responses on question one and those on question ten for all the objects, except the candle and comb.

Testing Hypothesis IV indicated there were no significant sex differences among the responses for all questions. However, more girls granted life to the inanimate objects on question one, but more boys responded positively to question ten. The latter was due to the fact that more girls who had answered positively to question one reversed their answers on question ten.

In general, the results of this study produced the same trends as

Klingensmith's (1948) study. In addition, there were no significant sex differences among the subjects' responses.

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Traits Among Four- and Five-Year-Old Children

by

Sherrie Lahti Stephenson

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# THE RELATIONSHIP BETWEEN ANIMISM AND ANTHROPOMORPHIC TRAITS AMONG FOUR- AND FIVE-YEAR-OLD CHILDREN

## INTRODUCTION

Piaget's developmental theory has been concerned with the nature and development of the child's thinking, of his conceptions of the world, and the reasons for qualitative differences at various ages. Emanating from his research have been many straight-forward concepts of intellectual development as well as some ambiguous ones. One might assume that the amount of completed research reflects the relative ambiguity of those concepts, and on that basis such concepts as conservation of mass and number, and spatial and geometric concepts would be judged as straight-forward. Representative of studies in these areas are those by Gellerman (1933), Carpenter (1955), and Lovell and Ogilvie (1961).

Less attention has been directed towards those concepts which have presented more difficulty in interpretation and measurement. One such topic is that of animism, which Piaget defined loosely as ". . . the tendency among children to consider things as living or conscious" (1933, p. 537). In explaining this phenomenon, he further stated that,

Since the child does not distinguish the psychical from the physical world, since in the early stages of his development he does not even recognize any definite limits between his self and the external world, it is to be expected that he will regard as living and conscious a large number of objects which are for us inert (1929, p. 169).

In the first two decades following Piaget's findings on the existence of animism, there were a number of attempts to replicate his research, but since that time very few investigations have been concerned with this concept. Several researchers produced evidence which seems to refute the existence of animism (Isaacs, 1930; Johnson and Josey, 1931-32; Mead, 1930; Huang, 1943; Oakes, 1947). However, other investigators have maintained its existence (Grigsby, 1932; Dennis, 1938; Russell, 1940 and 1942; Bruce, 1941; Klingensmith, 1948; Havighurst and Neugarten, 1955; Laurendeau and Pinard, 1962).

Of particular concern to the concept of animism is Piaget's assertion that children endow inanimate objects with certain "characteristics of life," described as anthropomorphic traits by later researchers. He did not, however, clarify what he meant by this term. At one point he stated, ". . . it is not strictly either knowing or feeling that the child attributes to things but a sort of . . . awareness and will. . . ." (1929, p. 231). He maintained here that "will" is the most persistent form that animism takes, but later spoke of the major role introjection plays in animistic thinking. Accordingly he stated that through introjection an individual ". . . endows objects with feelings equivalent to those he experiences in like circumstances. . . ." (1929, p. 236). This lack of clarity on whether anthropomorphic traits or "will" is more common to animistic thinking, and the meaning of "characteristics of life" has led to a controversy

in research. However, only a few studies have been conducted in this area, and of these, few used very young subjects as Piaget did. On one hand are the researchers who argued that anthropomorphic traits are not common to animistic thinking, and on the other are those who believed the traits are linked with animism.

One example in which traits were linked to animism was Russell's (1940) study in which he asked 355 elementary-school children who had previously taken a standardized test of animism (Russell and Dennis, 1939) whether twenty objects, some inanimate and some animate, were capable of "feeling" and "knowing." For these concepts, Russell asked the children the following questions:

1. Does the \_\_\_\_\_ know where it is? Why?
2. Does the \_\_\_\_\_ feel when I touch it? Why?
3. Does the \_\_\_\_\_ feel when it touches something? Why?

He concluded that the data revealed the relationship between the development of animistic concepts and these allied concepts was substantially high. Laurendeau and Pinard (1962) also found a majority of their subjects assigned anthropomorphic traits to inanimate objects which they claimed were alive.

Some investigators have tried to refute Piaget's idea that certain "characteristics of life" are linked to animism (Johnson and Josey, 1931-32; Granich, 1940; Huang and Lee, 1945). Klingensmith (1948) developed another questionnaire of animism, because he felt that

Russell's test did not cover a wide enough sample of anthropomorphic traits. He administered it, individually, to 150 subjects ranging in age from 5 years to 13 years 11 months. The questionnaire included six inanimate objects and two animate objects. His ten questions were answerable by "yes" or "no" and covered, besides the concept "living," such anthropomorphic traits as feeling, knowing, seeing, hearing, and thinking. His results indicated that little animistic thinking was found within the age groups investigated, and that where animistic thinking was present few sensory and functional traits were attributed. These findings would seem to verify the lack of a positive relationship between animism and anthropomorphism.

However, even here clarification seems to be necessary. For example, Strauss (1951) reexamined the data of Huang and Lee (1945) and showed that they did not support the authors' conclusion that life was attributed to inanimate objects in only a small percentage of cases; also their hypothesis that anthropomorphic traits are not attributed could be refuted. He thus maintained that their data could be analyzed to support Piaget's theory.

In view of the conflicting results from these early studies concerning the relationship of animism and anthropomorphism, it appears that further research is needed.

### Purpose

The present study will extend Klingensmith's (1948) research to a younger group of children to determine if those trends Klingensmith (1948) found for kindergarten children are present in preschool children and if those trends differ from what Piaget maintained for this age group, according to his developmental stages present in animistic thinking. Klingensmith's (1948) questionnaire and method will be utilized to determine if, when a preschool child attributes life to an inanimate object, he also assigns sensory and functional (anthropomorphic) traits to the object which adults assign only to animate objects, especially humans and/or animals.

### Hypotheses

Specifically the hypotheses to be investigated are:

- Hypothesis I: More than 50% of the subjects will attribute life to two or more of the inanimate objects;
- Hypothesis II: When granting life to the inanimate objects, over 50% of these subjects will not grant a majority of the anthropomorphic traits to the objects;
- Hypothesis III: There will be no significant correspondence between responses on question one and responses on question ten;

Hypothesis IV: There will be no significant differences between male and female responses.

## REVIEW OF THE LITERATURE

### History

The first explicit mention of the animistic tendency observed in children was given by Tiedemann in 1787. According to Dennis (1938), Tiedemann was the first person to write detailed observations on child development. He recorded several instances of animism exhibited by his son. For example, Tiedemann held a watch to his two-year-old son's ear and after the child had listened a few moments to the ticking, he claimed their dog was imprisoned in it. Tiedemann stated,

Thus he presupposed that the movement and sound must originate in a living creature, a proposition which almost all uncivilized races accept and which is based on that same anthropomorphism which lets us conceive all moving objects as like to us or to the animals, that is to say, as endowed with life (1927, p. 229).

Another time, he recorded his child saying in the evening, "The sun has gone to bed; tomorrow he will get up again, drink his tea and eat his bread and butter" (1927, p. 229). Tiedemann stated that these and other ideas originated purely in his child's own deliberations; no one had told him such things. By way of explanation, he conjectured that animism

. . . is certainly due to the fact that one always envisages an unknown thing through one that is known. . . . Now there is nothing nearer and more familiar to us than ourselves, wherefore images of our own reactions, our own way of doing things, are constantly mingled with our ideas of

external objects; therefore, we conceive all things as being like to us, alive as ourselves, and acting by the same powers and motives as we do (1927, p. 229).

These same notions were expressed by Froebel (1896) when he named animism as a natural part of the child's nature. He argued that the child, after acquiring speech, imparts the faculties of life, speech, and feeling to all things. The child imputes his own activity to everything about him, because he is beginning to represent his inner being outwardly.

A mentality similar to that described by Froebel played a basic part in Comte's (1830-1842) theory of religion. Comte proposed that the earliest forms of religion were based upon ". . . that tendency of our nature by which Man conceives all external bodies as animated by a life analogous to his own" (1853, p. 186). He conjectured that this trend might be characteristic of the child.

The beginnings of modern child psychology came shortly after 1875 in the form of biographical studies of infants. Further evidence of animism was noted in many of these detailed observations of children (Dennis, 1938). For instance, Taine, as cited in Dennis (1938), noted that his daughter treated all inanimate objects as persons and wanted to know about their thoughts and words.

Preyer (1888), although he had little to say about thought tendencies, did recognize animism in his book The Senses and the Will. While he did not comment extensively on the concept, he did record the

observation that many young children regarded a locomotive as tired when it stood still and as thirsty when its tank was being filled.

According to Dennis (1938), nearly all the other writers of the child biographies, numbering more than 50, recorded some observations of this type.

In 1883, G. Stanley Hall introduced a form of survey questionnaire. This method was not too different from Piaget's clinical method. In his publication "The Contents of Children's Minds," Hall, as cited by Dennis (1938), described certain tendencies in children's thought. He did not employ the term animism, but he showed that many young children believed that it hurt flowers to tear or burn them; that dolls could feel cold; and that the sky, clouds, stars, lightning, and thunder had human motives. He questioned 48 children and discovered that 20 believed the sun, moon, or stars were alive.

Another child psychologist who studied child thought was Sully (1895). His book, Studies of Childhood, was a collection of his essays in which he expounded at length on the characteristics of children's thought processes. Within these essays, he presented many observations depicting the nature of the child's mind, and one of the tendencies which he maintained was predominant among child thought was that of animism. He stated that it is the child's disposition

. . . to vivify nature, to personify things and so to assimilate

their behavior to the child's own. . . . All apparently spontaneous or self-caused movements are . . . taken by children . . . to be the sign of life. . . . Next to movement apparently spontaneous sound appears to be a common reason for attributing life to inanimate objects. . . . Children's ideas of natural objects are anthropomorphic, not merely as reflecting their own life, but as modelled after the analogy of the effects of their action (1895, pp. 93-98).

Following Sully, child psychologists continued to maintain interest in child thought, and they accumulated additional observations. Animism and personification were discussed by Brown (1892-93), Whiting (1892-93), Ellis (1902), and Slaughter (1902). Barnes (1892-93), in his investigation on children's concepts of heaven and hell, came to the conclusion,

If young children are to be taught a theology, it must have an anthropomorphic and realistic form. We may teach that God is a spirit, but, the child's mind at once invests him with a human form and human attributes (p. 448).

Soon after 1902, the testing movement on intelligence began and subsequently, the interest in thought tendencies in young children lessened until Piaget's research in 1927 centered on the child's intellectual development.

### Theory

According to Piaget (1929), intellectual development can be perceived as going from an initial state of egocentrism to a state of total objectivity. The child, at first, has no self-image or image of the

external world as such. These two are included in one single reality, each adding to the other. The child's two worlds take shape through a process of differentiation. By age four, this process is well under-way. The child can be seen to cling to fewer and fewer subjective notions; however, there is never complete objectivity, for

... at every stage there remain in the conception of nature what we might call 'adherences, ' fragments of internal experience which still cling to the external world (Piaget, 1929, p. 244).

The adherences, or cognitive structures, pervade all the child's notions of reality, and are many and varied for the young child. Their importance and intensity gradually fade away with the evolution of intelligence.

Piaget's analysis of the concepts of reality and causality establish five major forms of realistic adherences. He places these under the term of precausality, or precausal thinking. Precausality includes all forms of explanations occurring before ones depending on physical and objective connotations. The five adherences are:

1. Phenomenism: the establishment of a causal explanation between phenomena contiguous in space or time or between facts bearing some resemblance or relation;
2. Finalism: reality is seen as a well-organized and planned world centering always upon human activity;
3. Artificialism: God or man is credited as being responsible

for the existence of all objects in the external world;

4. Animism: objects are granted life, will, and consciousness;
5. Dynamism: energy, similar to man's muscular strength, is granted objects, making the objects capable of all sorts of motions and efforts (Laurendeau and Pinard, 1962, pp. 10-13).

Within the cognitive structure of animism, Piaget delineated four stages of development. In the first stage, the child attributes life to usefulness or activity in general; in the second stage, life is attributed only to moving objects; in the third state, life is restricted to objects which move spontaneously; and in the fourth stage, life is confined to plants and animals. Piaget found that Stage One corresponded roughly to ages 4-6 years, Stage Two: 6-7 years, Stage Three: 8-10 years, and Stage Four: 11 years and over.

Piaget's theory of precausality has met with both agreement and disagreement among the researchers. A number of investigators have denied the existence of precausality, while others have shown evidence supporting it.

### Controversial Evidence

Piaget investigated precausality, including the concept of animism, by interviewing children and attempting to pursue their lines of reasoning. His findings on the existence of precausal thinking

encouraged research by many other investigators, however, this research did not always substantiate Piaget's results.

#### Non-supportive Evidence

One of the earliest attempts to replicate his findings was that of Johnson and Josey (1931-32). They found no finalism, animism, or artificialism among 6-year-old children when they utilized Piaget's procedure.

Similarly, observing 30 children from 2 years 8 months to 10 years 5 months, Isaacs (1930) made records of their mental development. She maintained that precausality was the exception with these children.

At another age level, Oakes (1947) analyzed answers given by four groups of elementary-school children to direct questions regarding various natural phenomena. He also conducted 17 experiments and, in individual interviews, asked 153 children in grades kindergarten, two, four and six to explain them. All socioeconomic levels were represented in the sample and the mean I. Q. was 109.

His data seemed to refute the notion of animism. Few animistic explanations were found in each grade. In fact, animistic explanations occurred the least frequently. Answers to the questions and explanations of the experiments were largely naturalistic. Physical types clearly dominated.

Among the 77 kindergarten children, where animism would have most likely been found, there was still a preponderance of physical explanations. The non-physical responses to the questions constituted 18.6%, while the non-physical responses to the experiments constituted only 5.6%. Animistic responses, again, were the least frequent.

In the total sample, there were no significant differences with respect to types of explanations given between responses of subjects with the highest I. Q. 's and those of the subjects with the lowest I. Q. 's. However, he did indicate that there was a greater tendency among the less-bright subjects than the bright subjects to invoke non-materialistic and mysterious causes to account for the phenomena.

Huang's (1943) results of a study employing 40 children from 5 years to 12 years supported Oakes. He asked for explanations of some simple physical problems or natural phenomena and received responses which were of a physical character rather than precausal. He stated that instances of animism were rare, in fact, almost nonexistent.

Using some of Piaget's questions, Deutsche (1937) designed ten simple physical experiments and asked a group of 700 school children in grades three through eight to explain them. The sample consisted of all socioeconomic levels. His results revealed that, again, most explanations involved naturalistic and physical concepts. Some types of precausal thinking never occurred, and others appeared so seldom

it was impossible to validly subject them to any kind of statistical analysis. Between upper and lower socioeconomic groups, there was but slight difference in types of responses.

For comparative purposes, he gave the same tests to 13 kindergarten children. Only 1.5% of the responses involved animism. Two-thirds of the answers appealed to some materialistic cause. Using Deutsche's (1937) problems with Negro and white children ranging in age from 8 years to 16 years, Jones and Arrington (1945) achieved similar results but they did not control for socioeconomic status.

Some investigations in other cultures also refute animistic thinking. Margaret Mead's (1930) observations of children of the Manus tribe of the Admiralty Islands revealed that they manifested no natural tendency to animism. The fact was even emphasized that some children readily rejected explanations suggested in animistic terms. Jahoda (1958b), too, found few animistic expressions in the explanations a group of South African school children gave when questioned about the workings of a gramophone. Two groups of 40 Chinese children were employed in a study by Huang and Lee (1945). The first group's ages ranged from 3 years 5 months to 5 years 11 months; the second group's ages ranged from 6 years to 8 years 7 months. Huang and Lee (1945) noted that in only a small proportion of cases were inanimate objects granted life. However, evidence to support animism was found by

Klingberg (1957), who employed Huang's experimental method with a group of 7- to 10-year-old Swedish children.

The above studies centered on children's explanations of physical experiments, or cultural differences. On the basis of these findings, the existence of animistic thinking would appear to be in doubt.

### Supportive Evidence

The ultimate rejection of precausal thinking appears to be debatable since a number of investigations, besides Piaget's, seem to establish its existence. Russell and Dennis (1939) devised a standardized procedure to test animism, and employed it in their several subsequent studies. Their research unfailingly supported precausality and the various stages of animism. Applying their standardized procedure to the responses of 385 elementary-school children, they obtained results in general agreement with those of Piaget. They were able to classify and place students in the various stages of animism. Three other independent judges were used, and they showed 87% agreement with Russell and Dennis' assignment to the various stages. Test-retest reliability was 0.81 for the test itself.

In further research, using this procedure, Russell (1940a) revealed that 98.5% of 774 school children were easily classified into Piaget's stages of animism. He found the development of the concept

was constant over geographic locations and socioeconomic status. Also noted were the same stages and sequential development at every level of intelligence, as well as no significant differences between the sexes. In still another investigation, Russell (1942) was able to place 98 % of all older children, between the ages of 8 years and 20 years, into one of the stages of animism. Dennis' (1942) results also agree with the earlier studies conducted both by and with Russell. Other investigators who substantiate the existence of precausality and animism are Bruce (1941), Grigsby (1932), and Klingensmith (1948).

The stages of animism have also been observed among mentally deficient adults and children (Granich, 1940; Russell, Dennis, and Ash, 1940; Werner and Carrison, 1944). These investigations agree in their conclusions that a high incidence of animistic thinking exists in the mentally deficient population. Russell et al. (1940) additionally found that a comparison between retarded adults and normal children of corresponding mental age showed the adults to be more advanced with regard to the conception of life. However, the retarded adults' conceptions were closer to those of the children than to normal adults of the same chronological age.

A few investigations with American Indian children have supported animism. Animistic thinking was found among Zuni children (Dennis and Russell, 1940) and Hopi children (Dennis, 1943).

Havighurst and Neugarten (1955) in a more recent study obtained a high

prevalence of animistic responses among the children of ten different tribes. In nine of the ten tribal groups, the percentage decreased with age increases.

In recent years, there has been little apparent research interest in animistic thought. Since 1960, however, two related studies and one major research effort have been reported. King (1961) noted in a sample of 1811 school children a considerable number of animistic responses in the series of studies he conducted on children's scientific concepts and interests. In another study not concerned with animism per se, the characteristic decrease in animism with increase in age was found in three age groupings of boys (Safier, 1964).

Laurendeau and Pinard (1962) underwent a major effort to replicate Piaget's early experiments on precausality under vigorous methodological requirements. They constructed and administered their own standardized questionnaires to 500 children ranging in age from four to 12 years. Laurendeau and Pinard's (1962) results confirmed the existence of precausality; the data pointed to the preponderance of precausal thinking in the child. Their results would appear to leave no doubt on the existence of animistic thinking among children. Of their subjects, 43.7% attributed life to some inanimate object. The percentage reached 58.1 if those children who were unclassifiable, due to inability to understand questions or inability to

give valid answers for their affirmations or denials, are excluded from the sample.

### Animism Among Adults

One perplexing problem of interest is the nature and meaning of animism that has been reported in the normal adult populations. Piaget considered animism as basically a characteristic of pre-causal thinking among children, and therefore did not investigate the phenomenon in adults.

A concept-of-life questionnaire was administered by Dennis and Mallinger (1949) to a group of people 70 years and older. Seventy-five percent of the group gave animistic responses, of which many were similar to responses given by children. The investigators suggested the results might be due to a regression to infantile modes of thought due to neurological deterioration or senility.

Subsequent research has revealed too high an incidence of animism among adults for it to be attributable to pathological conditions alone. For example, Dennis (1953) discovered that about one-third of the students he tested in various American colleges and universities attributed life to one or more inanimate objects. Later, Dennis (1957) found a higher percentage (79%) of college students in Beirut, Lebanon, giving one or more animistic responses. Further evidence may be generated from other studies conducted with college students,

such as those by Bell (1954), Lowrie (1954), Voeks (1954), Crowell and Dole (1957), and Simmons and Goss (1957). In these studies large percentages of subjects gave at least a few animistic responses.

Within his results, Dennis (1953) revealed that college students with courses in biology gave fewer animistic responses than those students lacking this background. He later suggested that the high incidence of animism among college students in the Near East could possibly be accounted for in terms of weak scientific background (Dennis, 1957). Other research, however, such as that of Bell (1954), Crannell (1954), Crowell and Dole (1957), and Simmons and Goss (1957), has failed to confirm these results in that their data revealed high frequencies of students with courses in biology giving animistic responses.

In a review of the literature Looft and Bartz (1969) analyzed the research and intimated that adult animism does not have the same meaning that it does in children. According to these researchers, it appeared that the animism was induced by the experimental setup in many cases. They proposed that some of the factors contributing to this might have been: (1) questions were different from those given to children; (2) some items appeared to be excessively difficult and perhaps gave rise to philosophical issues; (3) some questions were given in a suggestive manner; and (4) subjects were not usually informed that they were to make a distinction between scientific and

metaphoric language. Further factors possibly contributing to the conflicting findings were studies by Bell (1954), Voeks (1954), and Simmons and Goss (1957). Bell (1954) has maintained that a smaller number of animistic answers can be obtained from paper-and-pencil questionnaires of multiple choice form, than the tests which give a simple alternative. Simmons and Goss (1957) pointed out that the frequency of precausal responses on written tests could also be modified according to the instructions given. Voeks (1954) reported that "living" simply meant "real" or "existing" to many of her college-age subjects. She maintained the label "living" arose mainly from errors in reasoning and logic. When asking for a definition of "life," 90% of her "animistic" labelers did not include the capacity for reproduction and/or metabolism. She concluded that with such a definition, students can label inorganic things as "living" without any underlying animism.

#### Animism and Anthropomorphic Traits

It would appear that an integral part of the animism concept is the research concerned with the relationship of animism and anthropomorphic traits. According to Piaget (1929), when children claim inanimate objects are alive, they endow the objects with certain "characteristics of life." Nevertheless, he did not define this term. He did state that the child does not strictly grant "knowing" or

"feeling" to the objects, but rather a kind of awareness and will. He argued that "will" is the most persistent form of animistic responses. However, he also generated the idea of "introjection" playing a major role in animism. He defined this as a process in which the child ". . . endows objects with feelings equivalent to those he experiences in like circumstances. . . ." (1929, p. 236). This complete lack of clarification on whether "will" or anthropomorphic traits are more common to animism, and the lack of a definition of "characteristics of life" has led to the controversy in research. Some investigations argued that anthropomorphic traits are not linked to animistic thinking, while others demonstrated the existence of a positive relationship.

The two investigations which supported the positive relationship between animism and anthropomorphic traits are Russell (1940b) and Laurendeau and Pinard (1962). A few others have revealed that Piaget's "characteristics of life" are not associated with animism (Johnson and Josey, 1931-32; Granich, 1940; Huang and Lee, 1945; and Klingensmith, 1948). Clarification of this issue would also seem to be needed. Although Huang and Lee (1945) reported that animism was evidenced in only a small percentage of cases, and even where it did occur, anthropomorphic traits were not granted to the objects. Strauss (1951) re-examined their data and maintained the data do not support either of these conclusions. He utilized the data to support Piaget's conclusions on animism.

From this search of the literature, it would seem that insufficient research has been conducted on this relationship between animism and anthropomorphic traits, and also, that a lack of agreement exists among the studies that have been conducted. It may be as Looft and Bartz (1969) have pointed out that the lack of agreement in studies concerning animism among children stems from: (1) differing techniques of data analyses, (2) difference existing between the words "living" and "life, " (3) use of instruments eliciting different responses, and (4) presence of response bias in young children.

## METHOD

### Subjects

For this study, 36 subjects, 18 boys and 18 girls, were selected from the children enrolled in the four preschool programs established by the Family Life Department at Oregon State University. The subjects were chosen on the basis of the following criteria:

1. in families of the upper socioeconomic classes,
2. of Caucasian race,
3. between the ages of 4 years 0 months and 5 years 6 months,
4. have no physical defects, since such infirmities may affect performance in an unpredictable way.

Originally, 50 subjects were selected but 14 were eliminated due to the following: (1) four cases of perseveration, (2) one who refused to participate, (3) eight of incompatible socioeconomic status, and (4) one eliminated to maintain an equal sex distribution.

A questionnaire was filled out by the parents at the beginning of the study in order to obtain information regarding the subject's age, and educational and occupational level of the parents. A copy of the questionnaire appears in Appendix A.

### Age Characteristics

The range and mean for the ages represented in the sample are presented in Table 1. It should be noted that the range differed for boys and girls but that the mean age was the same in each instance.

Table 1. Age Characteristics of the Sample.

	Range	Mean
Boys	4 years 2 months - 5 years 2 months	4.8 years
Girls	4 years 0 months - 5 years 5 months	4.8 years
Total Sample	4 years 0 months - 5 years 5 months	4.8 years

### Socioeconomic Status

The subjects were drawn from families of specific socioeconomic status in order to control for this factor. To determine this status, Hollingshead's (1957) "Two Factor Index of Social Position" was utilized. When Hollingshead (1957) developed his index, he assumed: (1) the existence of a status structure in society, (2) that positions within the social structure are determined by two characteristics, and (3) that characteristics symbolic of status may be scaled. Hollingshead's (1957) two factors were education and occupation. He gave levels of occupation and education a scale score which ranged from one to seven. These were multiplied by factor weights of seven and four for occupation and education, respectively. Then the two

products are added together to yield a socioeconomic status score, ranging from a low of 11 to a high of 77. His five groups of socioeconomic status are (Hollingshead, 1957, p. 10)

Socioeconomic Class	Range of Computed Scores
I (Upper)	11-17
II	18-27
III	28-43
IV	44-60
V (Lower)	61-77

According to this schema, the subjects in the present study were distributed in the upper two levels; 32 were in Level I and four were in Level II.

### Instrument

#### Klingensmith's Test of Animism

The test of animism utilized in this study was designed by S. W. Klingensmith (1948) to be employed with ages 5 years 10 months to 12 years 10 months. The test consisted of eight objects, of which six were inanimate and two were animate. They were as follows:

1. a knife with one blade open,
2. a comb,
3. a burnt kitchen match,
4. a loud-ticking alarm clock,
5. a burning candle,
6. a broken dish,

7. a goldfish in a bowl,
8. a petunia in a flowerpot.

The animate objects, the fish and flower, were included as control objects (1) as a basis for comparing the responses to the inanimate objects and (2) in order to reduce the likelihood of, and as a measure of perseveration. With animate objects included, some correct responses are "no" while others are "yes." Perseveration is the tendency to answer all questions in the same manner as the first was answered. If a child exhibited perseveration over the first three questions, 30 responses, he was eliminated from the sample.

Klingensmith (1948) grouped the inanimate objects according to those evincing activity and those not evincing activity. The objects evincing activity were the clock and the candle and those not evincing activity were the knife, comb, match and dish.

The following ten questions, regarding each object, comprise Klingensmith's (1948) test:

1. Is \_\_\_\_\_ alive?
2. Would \_\_\_\_\_ feel pain if I stick a pin in it?
3. Does a \_\_\_\_\_ grow?
4. Can \_\_\_\_\_ hear us talking?
5. Does \_\_\_\_\_ breathe?
6. Does \_\_\_\_\_ think?
7. Does \_\_\_\_\_ see?

8. When \_\_\_\_\_ moves, does it know that it moves?
9. Can \_\_\_\_\_ make a wish?
10. Is \_\_\_\_\_ alive?

Question one was repeated as question ten to obtain a measure of the degree to which the child's usage of the term "alive" might change as a result of the intervening allied questions. Questions two through nine represented a sample of anthropomorphic traits, hereafter referred to as allied questions. According to Klingensmith (1948), the subject's responses to the allied questions provided a basis for making inferences regarding the subject's concepts of the inanimate objects and what the subject means by the term "alive."

Each of the questions was asked about all the objects prior to proceeding to the next question. This procedure was employed to reduce perseveration. Perseveration is believed to be more likely to occur if all questions are asked regarding one object before proceeding to the next object (Piaget, 1929, p. 172).

After a brief preliminary introduction to the situation in which the subject was told the test was a "kind of game," each subject was given the following instructions; "I'm going to ask you some questions about the things on the table. Some will be easy and some not so easy. If you don't know the answer, just say, 'I don't know.'" During questioning, if the researcher felt the subject's attention was not directed toward the object, the researcher then pointed to the object

in order to redirect the subject's attention.

### Validity of the Test

Klingensmith (1948) failed to report a measure of validity for his questionnaire; therefore, in order to determine whether his instrument was valid for subjects in the age range 4 years 0 months to 5 years 5 months, ten graduate students and child development specialists in the Department of Family Life were asked to examine the questionnaire to determine its face validity; that is, whether the instrument would actually measure the kind of behavior that the researcher assumed it would, and whether it would provide an adequate sample of that kind of behavior.

The graduate students and the specialists agreed that the questionnaire was valid for use with the sample with which it was to be employed. One student questioned the use of the word "pain." She felt that the children would be unfamiliar with this term.

### Reliability of the Test

Indices of reliability were not reported by Klingensmith (1948). To determine an indication of reliability of the instrument, a Percentage of Agreement (Wert, Neidt, and Ahmann, 1954) was calculated for each question and for the test itself. This is accomplished by noting if identical responses are given to identical questions a week

apart by using the following formula: (Walters, 1965, p. 1)

$$\text{Percentage of Agreement} = \frac{2 \times \text{Number of Like Responses}}{\text{Total Number of Mentions}}$$

The total number of mentions represents the number of respondents answering the question twice, once at the initial administration and once at the time of the second administration. Thus, it is the total number of subjects times two.

The researcher retested 20 of the subjects one week after they had taken the test. All of the identical responses of the 20 subjects were recorded for the first question for each object, and then a Percentage of Agreement was calculated for that question. This was repeated for the other nine questions. The advantage of this technique is that it is possible to obtain a percentage of agreement for each item. Therefore it is possible to raise the reliability of the instrument by eliminating those items yielding poor measures of agreement. A Percentage of Agreement was also computed for the test itself.

The results for each question for each object may be found in Appendix B. The range of the Percentage of Agreement measure for the questions was 75% to 100%. The Percentage of Agreement for the entire test was 95.5%.

## Procedure

### The Establishment of Rapport

Time was spent to establish rapport with the subjects in order to facilitate presentation of the test and cooperation of the subjects. It was planned to spend one week in each laboratory. In actuality, only three days were spent in each laboratory due to the eagerness of the children to begin the testing. All but one of the subjects were willing to participate, and each seemed to enjoy the individual adult attention.

### The Testing Rooms

In each of the two laboratories, Orchard Street Nursery School and Park Terrace Nursery School, a small, quiet room adjacent to the main play area was employed for the testing. The room contained a child-sized table and two chairs. In one room there were desks and shelves containing books. The shelves were covered with plain butcher paper, folding screens were erected around the table and chairs, and shades were pulled down on the windows to eliminate distraction.

### Presentation of the Test

The testing was accomplished whenever the children were not involved in a structured activity. In addition, the children were not selected in any particular order. The selection for testing took place during the free-play period when the children were at a stopping place in their activity. If a subject requested a turn, he was tested next. The data were collected during the last two weeks of May, 1970.

When approaching a subject, the researcher said, "(Child's name), I'm back to play a game with the children. Would you like your turn now?" If a child refused to participate, the researcher said, "You don't want your turn yet, maybe later or tomorrow." Only subjects who were willing were used in the study. Often children approached the researcher and requested their turn.

The researcher and one subject were in the room during testing. The subject was seated to the right of the researcher with the eight objects randomly scattered on the table in front of the subject. Three random placements were utilized, from left to right: (1) flower, candle, match, knife, clock, comb, fish, dish; (2) clock, knife, candle, comb, flower, match, dish, fish; and (3) dish, knife, comb, fish, match, candle, clock, flower. The first placement was used with the first child. After all three placements had been employed once each, the researcher started over with the first placement.

After asking each subject a question, the researcher recorded the answer in a notebook visible to the subject. If a subject asked what the researcher was writing he was told, "I'm writing down your answers so I will remember them. I'm keeping the answers of all the children." The testing took approximately ten minutes with each subject. No subject was in the testing room longer than 15 minutes.

### Analyses of Data

The data collected for this study were analyzed in several ways. Corresponding to Klingensmith's (1948) research design, the following were computed:

1. Total number of positive responses for each question for each object;
2. Total number of positive responses for questions two through nine for the inanimate objects and the control objects;
3. Mean number of positive responses to question one for four non-activity-evincing objects and for two activity-evincing objects; and corresponding means for these objects of the average number of positive responses to the allied questions;
4. Mean number of positive responses to question ten for four non-activity-evincing and two activity-evincing objects; and the corresponding means for these objects of the average number of positive responses to the allied questions;

5. t-scores for correspondence between questions one and ten. In addition, the mean number of positive responses to questions one and ten for the control objects were calculated in order to compare them with the means for the inanimate objects. The data in the present study were compared only with Klingensmith's (1948) kindergarten group, unless otherwise stated.

An explanation seems to be necessary to understand means of the average number of responses (computation #3) and t-scores (computation #5). Concerning the means of the average number of responses, the match will serve as an example. A total of the positive responses to question two was figured for the match. Then a total was calculated for each of the other allied questions for this object. As there were eight questions, a sum of the totals was taken and then divided by eight to arrive at a mean number of positive responses to the allied questions for the match. This procedure was repeated for the dish, the knife, and the comb. In order to achieve a mean of the averages, the means of these four objects were added together and divided by four, since there were four objects. This figure represented the mean of the average number of positive allied responses for the four non-activity-evincing objects.

Klingensmith (1948) referred to t-scores in his analyses of data. It is assumed that this analysis represented the application of chi square to difference of proportions (Downie and Heath, 1965, pp.

160-176) converted to t-scores. Therefore this particular procedure was applied. In order to test the hypotheses of this study, the following were computed:

Hypothesis I: the total number of subjects attributing animism to two or more of the inanimate objects for both questions one and ten, and the percentage of the total subjects which the preceding represents;

Hypothesis II: the total number of the above subjects who attributed one or more anthropomorphic traits to the objects (questions two through nine); comparison of the number of traits granted with the total possible number, and the percentage this represents;

Hypothesis III: chi square values (Downie and Heath, 1965, p. 171) for correspondence between questions one and ten; Fisher Exact Probability Test (Blalock, 1960, pp. 221-225) for correspondence between questions one and ten;

Hypothesis IV: chi square values for difference between sexes.

## RESULTS

The data collected in this study were analyzed in several ways. To directly compare the results of this study with those of Klingensmith's (1948) the following indices were calculated: (1) total positive responses to each of the questions; (2) means of the positive responses to questions one and ten; (3) means of the average number of positive allied responses; and (4) t-scores for correspondence between questions one and ten.

The second purpose of the study was to investigate several hypotheses by calculation of the following: (1) percentages of the total number attributing animism to two or more inanimate objects; (2) percentages of the total number attributing anthropomorphic traits after granting life; (3) chi square values for correspondence between questions one and ten, and sex differences; and (4) Fisher Exact Probability Test for correspondence between questions one and ten.

### Comparative Data

#### Total Positive Responses

Table 2 presents the total number of positive responses for each question for each object. In order to compare the total number of positive responses for each question, Klingensmith's (1948) data

Table 2. Total Positive Responses to Questions One through Ten for Inanimate Objects and Control Objects

	Questions									
	1 Alive	2 Feel	3 Grow	4 Hear	5 Breathe	6 Think	7 See	8 Know	9 Wish	10 Alive
Inanimate Objects										
Candle	11	8	3	1	2	1	1	8	1	5
Clock	14	10	1	5	1	1	2	8	0	6
Knife	10	8	0	0	0	1	0	4	1	3
Comb	8	5	1	0	0	0	0	6	0	4
Match	7	4	1	0	0	0	0	8	0	1
Dish	7	7	2	1	1	2	1	5	1	2
Control Objects										
Flower	25	13	33	3	5	1	1	8	1	25
Fish	34	29	30	21	29	22	34	33	15	34
Inanimate Objects										
Total	57	42	8	7	4	5	4	39	3	21
Control Objects										
Total	59	42	63	24	34	23	35	41	16	59

were prorated by multiplying each figure by 36/23; 23 represents the number of subjects in Klingensmith's (1948) study and 36 represents the number in the present study. Inspection of the data for each object revealed only slight variation, therefore only total positive responses for each question were compared.

The trends found in this study were, essentially, those found in Klingensmith's (1948) research. Although there were different age ranges in the two studies, 4 years 0 months to 5 years 5 months in the present study and 5 years 0 months to 5 years 11 months in Klingensmith's (1948), there was little variation in the results as far as the trends Klingensmith (1948) reported. Since the subjects were younger in the present study, it was expected that there would be more evidence of animism. This, however, was not found.

Question One. As far as animistic responses, the two objects evincing activity, the clock and candle, produced more positive responses to questions one and ten than the other inanimate objects; while the control objects achieved the most positive responses to these two questions. This was as expected. Nevertheless, as in Klingensmith's (1948) study, there were few, instead of a preponderance, who attributed life to the inanimate objects. From a total of 216 possible positive responses to question one for the six inanimate objects, there were only 57 in the present study compared to 81.76 (prorated) such responses in Klingensmith's (1948) study. Therefore,

less animistic responses were found in the younger group to the query, "Is \_\_\_\_\_ alive?" The 57 positive responses in the present study represent only 26% of the total possible responses.

For the control objects, there were many more positive responses to question one. In Klingensmith's (1948) study, there were 60.60 (prorated) positive responses, and in the present study there were 59 positive responses from the total responses of 72. This represents 81.93% of the total responses to question one for the flower and fish. In the present study, all but two subjects granted life to the fish, and 25 claimed the flower was alive. It seems the subjects had fairly well-defined ideas concerning "aliveness," from an adult's viewpoint.

Question Ten. For question ten, there were 21 positive responses, representing 9.7% of the total, in this study for the inanimate objects, while 32.85 (prorated) positive responses were found in Klingensmith's (1948) study. Again, fewer responses were seen in this study, but a similar trend was found. After the intervention of the eight allied questions, there was a decrease in the number of positive responses to the question, "Is \_\_\_\_\_ alive?" Thus, as in Klingensmith's (1948) research, there were few subjects who attributed life to the inanimate objects, and even fewer who gave a positive response after answering the allied questions. However, this decrease is not statistically significant.

The results for the control objects, fish and flower, followed the trend found for question one. There were 59 positive responses to question ten for these objects in this study, and 56.34 (prorated) such responses in Klingensmith's (1948) investigation. These 59 do not represent the same 59 subjects who gave positive responses to question one. There was little change, however, as only six subjects shifted their responses. Three subjects said "no" to question one for the flower and then said "yes" to question ten. Three subjects replied positively to question one for the flower and negatively to question ten. There appeared to have been little doubt that the fish was alive. The 34 who answered "yes" to question one did not alter their responses on question ten.

Allied Questions (Two through Nine). As evidenced by Table 2, there were few positive responses to the allied questions for the inanimate objects. In Klingensmith's (1948) study there were 120.39 (prorated) positive responses, and in the present study there were 112 positive responses from a total of 1728 for questions two through nine. The total positive responses for these intervening questions represented only 6.48% of the total responses for the eight questions in the present study. As in Klingensmith's (1948) study, few inanimate objects were granted anthropomorphic traits.

### Mean Number of Positive Responses to Question One

Table 3 presents the mean number of positive responses to question one for the non-activity-evincing objects and the activity-evincing objects; as well as the means of the average number of positive responses to the allied questions.

Table 3. Mean Number of Positive Responses to Question One for Non-Activity-Evincing Objects and Activity-Evincing Objects, and Corresponding Means of Average Number of Positive Responses to Allied Questions

	<u>Question One</u>		<u>Allied Questions</u>	
	Match, Dish Knife, Comb	Clock, Candle	Match, Dish Knife, Comb	Clock, Candle
Present Study				
Mean for boys	3.75	4.00	1.09	1.44
Mean for girls	4.25	8.50	.76	1.87
Mean for Total Sample	8.00	12.50	1.84	3.31
Klingensmith's Study				
Mean for Kindergarten Group	10.95*	18.78*	3.44*	4.22*

\*prorated

As can be seen from Table 3, the present study achieved lower means and lower means of averages than did Klingensmith's (1948) study. The trend was similar to Klingensmith's (1948) findings; a low mean was found for total positive responses to question one and a low mean of average number of positive allied responses was found.

As was expected, the means for the control objects (fish and flower) were substantially larger than those for the inanimate objects. The mean number of positive responses to question one for the flower

and fish was 29.5. The corresponding mean of the average number of positive responses to the allied questions was 34.75. Again it appears as if the subjects were fairly certain which objects were alive and which traits applied to them.

Klingensmith (1948) utilized these means as a comparison between the different grade levels represented in his total sample. They were computed in this study for use as a direct comparison with Klingensmith's (1948) data.

#### Mean Number of Positive Responses to Question Ten

Table 4 presents the mean number of positive responses to question ten for the non-activity-evincing objects and the activity-evincing objects, as well as the means of the average number of positive responses to the allied questions.

Table 4. Mean Number of Positive Responses to Question Ten for Non-Activity-Evincing Objects and Activity-Evincing Objects and Corresponding Means of Average Number of Positive Responses to Allied Questions

	<u>Question Ten</u>		<u>Allied Questions</u>	
	Match, Dish Knife, Comb	Clock Candle	Match, Dish Knife, Comb	Clock, Candle
Present Study				
Mean for Boys	2.00	3.00	1.09	1.44
Mean for Girls	.50	2.50	.75	1.87
Mean for Total Sample	2.50	5.50	1.84	3.31
Klingensmith's Study				
Mean for Kindergarten Group	3.11*	9.15*	3.44*	4.22*

\*prorated

As with Question one the results of the present study were lower than Klingensmith's (1948) results. Comparing Table 2 and Table 3, the mean number of positive responses to question ten was less than the results for question one. The means for the control objects, the fish and the flower, were again greater than those for the inanimate objects. The mean number of positive responses to question ten for the fish and the flower was 29.5. The mean of the average number of positive responses to the allied questions was 34.75.

#### t-Scores

Utilizing t-scores, Klingensmith (1948) reported no correspondence between questions one and ten for his total sample for the knife, comb, clock, and candle. No t-scores were computed for the group of kindergarten children due to the smallness of the frequencies.

Table 5 presents the t-scores for the correspondence between questions one and ten for each of the objects in the present study.

As can be seen from Table 5, all the t-scores are significant in the present study; therefore, a correspondence exists between the subjects' responses on questions one and ten.

Table 5. t-Scores for Correspondence between Questions One and Ten for Each of the Objects

Objects	DF	t-Scores	Level of Significance
Flower	35	2.78	.01
Fish	35	5.33	.001
Candle	35	3.80	.001
Clock	35	3.00	.01
Knife	35	4.28	.001
Comb	35	4.28	.001
Match	35	5.12	.001
Dish	35	4.85	.001

### Tests of Hypotheses

#### Hypothesis I

Hypothesis I: More than 50% of the subjects will attribute life to two or more of the inanimate objects.

Fifteen of the 36 subjects in the sample granted life to two or more of the inanimate objects on question one, while only six gave positive responses to two or more of the inanimate objects on question ten. The subjects represented 41.67% and 16.67% respectively; therefore, the hypothesis must be rejected. These findings suggest that animism was present in this age group, but that it did not dominate the children's thinking.

## Hypothesis II

Hypothesis II: When granting life to inanimate objects, over 50% of these subjects will not grant a majority of the anthropomorphic traits to the objects.

Table 6 presents the number of subjects who attributed one or more anthropomorphic traits to an inanimate object after answering positively to question one.

Table 6. Number of Subjects Who Attributed One or More Anthropomorphic Traits to the Inanimate Objects After Answering Positively to Question One.

Object	Number of Subjects Granting Life	Number of Subjects Granting Life and One or More Traits	Positive Responses to Allied Questions							
			2	3	4	5	6	7	8	9
Candle	11	5	4	1	1	1	0	1	3	1
Clock	14	8	7	1	3	1	1	2	5	0
Comb	8	2	0	0	0	0	0	0	2	0
Knife	10	4	3	0	0	0	1	0	2	0
Match	7	4	2	1	0	0	0	0	2	0
Dish	7	3	2	1	1	1	1	1	2	1

As can be seen, less than half of the subjects who answered positively to question one attributed one or more traits to the inanimate objects with the exception of the clock and the match. In these cases slightly over half of the subjects attributed one or more traits. However, a preponderance of traits were not granted to the inanimate objects. From eight subjects who had answered question one affirmatively, the clock received 20 positive responses to the allied questions from a possible total of 64; while, from four subjects

who granted life to the match, they gave only five positive responses to the allied questions from a possible total of 32. The hypothesis may be rejected for each object except the clock and the match.

In order to be more stringent in maintaining that anthropomorphic traits were not linked with granting life to inanimate objects, a further data analysis was conducted on the basis of those subjects who granted four or more anthropomorphic traits to each inanimate object. Table 7 presents the number of subjects who attributed four or more anthropomorphic traits to an object after answering positively to question one.

Table 7. Number of Subjects Granting Life Who Then Attributed Four or More Traits to an Object

Object	Number of Subjects Granting Life	Number of Subjects Granting Life and Four or More Traits	Positive Responses to Allied Questions							
			2	3	4	5	6	7	8	9
Candle	11	1	1	1	1	1	0	1	0	0
Clock	14	2	2	1	2	1	1	1	2	1
Comb	8	0	0	0	0	0	0	0	0	0
Knife	10	0	0	0	0	0	0	0	0	0
Match	7	0	0	0	0	0	0	0	0	0
Dish	7	0	0	0	0	0	0	0	0	0

This table indicates that only three subjects granted four or more traits to an object. Only two objects, the clock and candle, received four or more anthropomorphic traits. This indicated that

although some subjects did attribute life to the inanimate objects, few went on to grant them anthropomorphic traits.

The tenability of the null hypothesis is further supported by comparing the total number of anthropomorphic traits granted to the objects with the total possible number. There were 112 positive responses to the allied questions for the inanimate objects compared with 1722 possible positive responses. These 112 responses represent only 6.5% of the total possible.

### Hypothesis III

Hypothesis III: There will be no significant correspondence between the responses on question one and the responses on question ten.

Table 8 presents values for chi square and the Fisher Exact Probability Test for the correspondence between the responses given on question one and those given on question ten.

Table 8. Chi Square Values and Fisher Exact Probabilities for Correspondence Between Responses on Question One and Ten

Object	Df	Chi Square Value	Level of Significance	Fisher Exact Probabilities
Candle	1	14.44	.001	.5000
Clock	1	9.00	.01	.1615
Knife	1	18.24	.001	.0976
Comb	1	18.24	.001	.2144
Match	1	26.13	.001	.0270
Dish	1	23.52	.001	.0511
Flower	1	7.76	.01	.0000
Fish	1	28.44	.001	.0203

The chi square test for correlated proportions, as described by Downie and Heath (1965, p. 171), was utilized for this analysis as well as the Fisher Exact Probability Test (Blalock, 1960, pp. 221-225) since some of the observed frequencies were less than five. According to the chi square values the null hypothesis should be rejected in all cases. Probabilities derived through use of the Fisher Exact Probability Test prevent the rejection of the hypothesis in two cases, the candle and the comb. However, with the case of the candle the probability falls in such a manner that it was questionable as to rejection of the null hypothesis.

This would seem to indicate that in most cases there is a close correspondence between what the subjects replied to question one and what they replied to question ten. Furthermore the intervention of the allied questions had little or no effect on the subjects altering their responses to the second question of "Is \_\_\_\_\_ alive?", except in the cases of the candle and comb.

#### Hypothesis IV

Hypothesis IV: There will be no significant differences between male and female responses.

The total positive and negative responses for all questions was computed for both boys and girls in order to investigate sex differences. A chi square value with 35 degrees of freedom was then calculated to

analyze sex differences. The value for chi square was 0.08 which failed to reach significance. Therefore the null hypothesis must be held tenable. In order to view the similarity between boys' and girls' responses Table 9 presents the positive responses for all the questions for males and females.

Although no significant sex differences were found, it can be seen that there were more girls who responded positively to question one for the inanimate objects. In fact, for the clock and candle there were twice as many positive responses for the girls than for the boys. However, on question ten for the inanimate objects there were twice as many positive responses for the boys as for the girls.

Upon examination, the data reveal that more of the girls reversed their answers, thus accounting for the predominance of positive responses for the boys on question ten. For one or more of the inanimate objects on question one, ten girls responded positively, but on question ten only two girls gave positive responses. Seven boys gave positive responses to one or more inanimate objects on question one, and six of these responded positively to objects on question ten. This would seem to indicate that the intervention of the allied traits affected the girls more than the boys.

Table 9. Total Positive Responses for Questions One through Ten for All Objects for Boys and for Girls

	Questions									
	1 Alive	2 Feel	3 Grow	4 Hear	5 Breathe	6 Think	7 See	8 Know	9 Wish	10 Alive
<b>Boys</b>										
Inanimate Objects										
Candle	4	4	1	1	1	0	1	4	0	3
Clock	4	5	0	3	0	0	1	2	0	3
Knife	3	4	0	0	0	0	0	3	1	2
Comb	3	4	0	0	0	0	0	4	0	3
Match	5	3	1	0	0	0	0	3	0	1
Dish	4	4	1	1	1	1	1	2	1	2
Control Objects										
Flower	13	7	16	2	3	0	1	3	0	12
Fish	16	14	14	11	15	12	17	17	7	16
Total for Inanimate Objects	23	24	3	5	2	1	3	18	2	14
Total for Control Objects	29	21	30	13	18	12	18	20	7	28
<b>Girls</b>										
Inanimate Objects										
Candle	7	4	2	0	1	1	0	4	1	2
Clock	10	5	1	2	1	1	1	6	0	3
Knife	7	4	0	0	0	1	0	1	0	1
Comb	5	1	1	0	0	0	0	2	0	1
Match	2	1	0	0	0	0	0	5	0	0
Dish	3	3	1	0	0	1	0	3	0	0
Control Objects										
Flower	12	6	17	1	2	1	0	5	1	13
Fish	18	15	16	10	14	10	17	16	8	18
Total for Inanimate Objects	34	18	5	2	2	4	1	21	1	7
Total for Control Objects	30	21	33	11	16	11	17	21	9	31

## SUMMARY AND DISCUSSION

### Summary

As indicated in the review of literature, there is disagreement among researchers regarding either existence of animistic thinking or the relationship of animism and anthropomorphism. The latter especially seems to suffer from lack of extensive research.

The primary focus of this study was to extend Klingensmith's (1948) research which investigated the child's meaning of "life," as well as the relationship between animism and anthropomorphism. The present investigation was conducted with a younger group of subjects and did not include several groups with different age ranges. The hypotheses investigated were:

Hypothesis I: More than 50% of the subjects will attribute life to two or more of the inanimate objects;

Hypothesis II: When granting life to inanimate objects, over 50% of these subjects will not grant a majority of the anthropomorphic traits to the objects;

Hypothesis III: There will be no significant correspondence between responses on Question one and responses on Question ten;

Hypothesis IV: There will be no significant differences between male and female responses.

Thirty-six Caucasian subjects, 18 boys and 18 girls, with an age range of 4 years 0 months to 5 years 5 months, comprised the sample of this study. All the subjects were enrolled in the Oregon State University laboratory nursery schools. The subjects' families were of the upper socioeconomic levels as determined by Hollingshead's (1957) "Two Factor Index of Social Position."

The research instrument employed was the test of animism designed by Klingensmith (1948) for his study. The test consisted of eight objects, including six inanimate objects, and two animate ones as the control objects:

1. a pocket knife with one blade open,
2. a comb,
3. a burnt kitchen match,
4. a loud-ticking alarm clock,
5. a burning candle,
6. a broken dish,
7. a goldfish in a bowl,
8. a petunia in a flowerpot.

Concerning these objects, the children were asked the following questions:

1. Is \_\_\_\_\_ alive?
2. Would \_\_\_\_\_ feel pain if I stick a pin in it?
3. Does a \_\_\_\_\_ grow?

4. Can \_\_\_\_\_ hear us talking?
5. Does \_\_\_\_\_ breathe?
6. Does \_\_\_\_\_ think?
7. Can \_\_\_\_\_ see?
8. When \_\_\_\_\_ moves, does it know that it moves?
9. Can \_\_\_\_\_ make a wish?
10. Is \_\_\_\_\_ alive?

Question one was repeated as question ten to obtain a measure of the degree to which the child's usage of the term "alive" might change as a result of the intervening allied questions.

The test was administered individually; only the researcher and subject were in the testing room. The test objects were randomly scattered on the table in one of three placements. After all three placements had been utilized once each, the researcher proceeded again with the first.

Results of the analyses indicated the trends found in Klingensmith's (1948) study were present in this investigation. Both studies found evidence of animism, but not a preponderance. In both investigations, more subjects granted life to the control objects than they did to the inanimate objects. Results of Hypothesis I indicated 41.67% of the 36 subjects attributed life to inanimate objects on question one, and only 16.67% attributed life when responding to question ten. Both studies found a decrease in the number who gave animistic responses to

question ten as compared to question one.

The present study agreed with Klingensmith (1948) in that few subjects attributed anthropomorphic traits after replying positively to question one. Low means of the number of positive responses to questions one and ten for the inanimate objects were evidenced, as were low means of the average number of positive allied responses for the inanimate objects. The test results of Hypothesis II showed, for each inanimate object, less than half of the subjects who granted life to the objects on question one went on to attribute one or more anthropomorphic traits to them. Only three of the 36 subjects, 8.33%, attributed four or more traits to inanimate objects which they claimed were living. Concurring with Klingensmith (1948), this appears to indicate that when a child claims an object is living, he does not usually mean that the object has sensory and functional traits which adults grant to living things, especially humans.

The test results of Hypothesis III showed a close correspondence between responses on question one and those on question ten for all the objects, except the candle and comb. For his total sample, Klingensmith (1948) reported no correspondence between questions one and ten for the knife, the comb, the clock, and the candle. He was, however, unable to analyze by most grade levels due to a small sample size. Viewing the data regarding responses of the kindergarten children to questions one and ten, Klingensmith (1948) found decreases in

positive responses for the candle and comb. From his data, the decrease for the candle went from 18 (prorated) positive responses to question one to seven and eight-tenths (prorated) positive responses to question ten. For the comb, the decrease went from 17.2 (prorated) responses to question one to three and one-tenth (prorated) positive responses to question ten. The decreases for these two objects were similar in the present study. Therefore, since there was not a close correspondence between questions one and ten for these two objects, it would seem that the intervention of the allied questions might have had an effect on the shifting of the responses on question ten for the candle and the comb.

The test results of Hypothesis IV indicated there were no sex differences in the responses. However, there were more girls who responded positively to question one for the inanimate objects. For the clock and candle, there were twice as many positive responses from the girls than from the boys. On question ten, more boys than girls responded positively for the inanimate objects. The latter was accounted for by the fact that more of the girls reversed their answers. Klingensmith (1948) did not consider sex differences, so comparison in this area was not possible.

In general, the results of this study produced the same trends as Klingensmith's (1948) study. In addition, there were no significant sex differences.

## Discussion

Implications of the results of the present study add further to the controversy in research on animistic thinking, but support, in part, Piaget's theory. The discussion of the results will be presented in the following sections: non-supportive evidence, supportive evidence, relationship of anthropomorphism and animism, and sex differences.

### Non-supportive Evidence

Among those who found no animism were Isaacs (1930), Mead (1930), and Johnson and Josey (1931-1932). Other researchers, such as Deutsche (1937), Huang and Lee (1945), Jones and Arrington (1945), Oakes (1947), and Jahoda (1958b) reported traces of animism in their studies. In particular, Huang (1943) found that instances of animism were rare. These researchers are not supported by the results of this study. The present investigation found evidence of animism which appears to be too great to deny this type of thinking among children. It did not account for the preponderance of the thinking, however, as less than half of the 36 subjects attributed life to some inanimate object.

### Supportive Evidence

Besides Piaget, many researchers reported the existence of animism among children. Among those who substantiate its existence

are Grigsby (1932), Russell and Dennis (1939), Dennis and Russell (1940), Russell (1940a, 1942), Bruce (1941), Dennis (1942, 1943), and Klingensmith (1948). In more recent years, animism was supported by King (1961), Laurendeau and Pinard (1962), and Safier (1964).

The present study also substantiated the existence of animism among younger children, although the animism did not account for the preponderance of thinking. Less than half, 47%, of the 36 subjects attributed life to some inanimate object. The evidence of animism becomes more questionable when it is recognized that although 47% attributed life to some inanimate objects, when asked again after the intervention of the allied questions, only 22.22% maintained some inanimate objects were alive. Nevertheless, this percentage is too large to negate the existence of animism; both the percentages merely suggest animism might not dominate the children's thinking. This is supportive of Piaget's theory, for, concerning animism Piaget is somewhat conservative about his findings. According to Flavell (1963), Piaget emphasized that children's thoughts on animism indicate only a general direction of thought, not an inclusive system of beliefs.

Stages. Russell and Dennis (1939), Russell (1940a), and Bruce (1941) were in agreement with Piaget's four stages in the development of animism. Furthermore, Russell and Dennis (1939) were able to place their subjects in one or another of Piaget's stages. However, Russell (1940a) revealed the impossibility of limiting the age ranges

of the stages as Piaget did. This study would tend to support Russell's (1940a) conclusion, as the subjects in this investigation did not all fall into the stage Piaget set for their age group, which would be Stage One. In Stage One, life is granted to all objects which evince activity and/or are useful. Over half of the 36 subjects, 53%, fell into Stage Four, Piaget's adult stage in which only humans, plants, and animals are granted life. Only nine of the 36 subjects fell into the first stage. This was based on responses to question one. If the responses for question ten are used as the basis, 28 of the 36 subjects would be in Stage Four.

Laurendeau and Pinard (1962) also maintained the age limits Piaget set for the stages are too binding. In addition, they reached the conclusion that his stages are too restrictive to include all children's responses. The present study agreed with these conclusions since the children did fall into different stages and since certain responses made it impossible to place some subjects in Piaget's stages.

Propositions. There are, indeed, speculations as to why more than half of the subjects evidenced no animism. Although Russell and Dennis (1939) found no differences in responses according to I. Q., Russell (1942) discovered definite increase in percentages of subjects in Stage Four accompanying progressive increases in mental age. Grigsby (1932) noted mental age played a noticeable part in the maturity of concepts. The I. Q. scores were not known in the present study, but

most of the subjects come from families in which the father holds a graduate degree; 22 Ph.D. 's are represented and four M. S. degrees. The possibility that the subjects hold higher than average I. Q. 's might account for the advanced concept of life found in the present study. Support for this may be found in Dennis' (1943) speculation that I. Q. might be a factor in those young children who have attained the adult stage of animism.

Since the data were not collected until the end of May, many of the subjects had therefore experienced nine months of a preschool experience. This might have affected their concepts of alive-not alive, especially if these concepts had been discussed as part of the planned learning experiences for the children.

Speculation might also be made on the basis of the effect of television. Since the majority of the studies were conducted in the 1930's and 1940's, television was either not present in the homes or not extremely common. It is assumed that today it is extremely common for children to watch television. There is especially speculation as to what effect programs such as "Sesame Street" and "Mister Rogers" might have on children's concepts. The concept of life may or may not have been dealt with on either of these programs, but they might be a contributing factor in explaining the highly-developed concept of life the majority of these children hold.

Although ordinal position was not controlled in their sample,

Laurendeau and Pinard (1962) concluded that it could be quite possible for the presence or absence of siblings, especially older ones, to influence the rhythm of mental development. In the present study, the majority of subjects had siblings, and 15 of them had older siblings. This factor could possibly be operating in the advanced concept of animism seen in this sample, even though half of these 15 did exhibit some animism.

#### Relationship of Anthropomorphism and Animism

The results of this study add to the controversy on the relationship of anthropomorphism to animism, although Klingensmith's (1948) results were, basically, supported. Klingensmith (1948) found little evidence of subjects attributing anthropomorphic traits to objects which they claimed were living. In the present study, there was a possible total of 1722 anthropomorphic responses for the inanimate objects for the total sample, but only 112 positive responses to the allied questions were evidenced. This represented only 6.5% of the total responses for the allied questions for the inanimate objects. Piaget (1929) noted the occurrence of anthropomorphic answers in some children, but he regarded them as individual and accessory. This study appeared to support this concept, but would not agree with the findings of Russell (1940b) and Laurendeau and Pinard (1962) who supported the existence of a positive relationship between animism

and anthropomorphism.

The lack of a positive relationship between anthropomorphic traits and animism was also found by Johnson and Josey (1931-32), Granich (1940), and Huang and Lee (1945). They, along with Klingensmith (1948), disagreed with Piaget's assertion that when a child grants life to an inanimate object he also gives it certain "characteristics of life." Because of the few traits attributed to inanimate objects, the present results would tend to support this.

Although Klingensmith (1948) reported no correspondence between questions one and ten for the knife, comb, clock, and candle for his total sample, the present study found a close correspondence between these questions for all the objects except the candle and comb. However, Klingensmith (1948) was unable to statistically analyze the data from the kindergarten group due to the smallness of the frequencies. For this group and the present sample, the decreases from question one to question ten were similar for the candle and the comb. Therefore, it would seem that the intervention of the allied questions might have had an effect on the shifting of the responses on question ten for the candle and comb.

In general, the results of the present study tend to support the existence of animism but not the existence of a positive relationship between anthropomorphism and animism. It appears that when a young child claims an inanimate object is alive, he does not mean it

has sensory and functional characteristics.

### Sex Differences

Only two studies, Russell (1940a) and Laurendeau and Pinard (1962) considered sex differences in their research. Neither study reported any differences in their results. The present study tends to support this. Although significant sex differences were not found, it was discovered that for the two inanimate objects given the most animistic answers on question one, there were twice as many positive responses from the girls than from the boys. For all the inanimate objects, there were more positive responses from the girls on question one. However, this was reversed on question ten; there were more positive responses for the inanimate objects from the boys. It was seen from the data that this was due to more girls than boys reversing their answers when answering question ten.

### Limitations Encountered in Study

#### Limitations in Sample

The major limitations encountered relative to the sample were: (1) representation of only one race; (2) representation of only the upper socioeconomic levels; (3) lack of control for variables within the home, such as ordinal position and number of siblings; (4) representation of

just the urban area; (5) lack of I. Q. scores; (6) lack of control for previous preschool experiences; and (7) possibility of response bias among young children.

Restrictions are placed on the generalizations possible from this study due to these limitations. The results are generalizable to only upper-socioeconomic Caucasians living in a small, urban area. Since the I. Q. scores are not known, it is difficult to generalize these results to all levels of I. Q. All these limitations must be considered regarding the results of this study.

#### Limitations in the Test of Animism

The major limitation of Klingensmith's (1948) test appears to be its lack of depth. Answers of merely "yes" or "no" make it difficult to know exactly what the child means.

A second limitation, although probably less serious, is the traits it covers. It is Klingensmith's (1948) judgment that these are a wide sample of sensory and functional traits. Possibly others exist which children might be more apt to grant to inanimate objects which they claim are alive.

#### Suggestions for Further Research

Several recommendations for further research have emerged from the present study. The limitations provide the focal point for

these.

The results could be generalizable to a larger group if all levels of socioeconomic status were employed. A check for differences between these levels could be included in the analysis. It also might be more meaningful if groups from a rural area and a large, metropolitan area could be included and any differences analyzed. If I. Q. scores could be provided, significant differences could be checked in this area.

Control of such variables as ordinal position, number of siblings, and previous preschool experience might be included in a future study. This could possibly add to the present body of knowledge as well as define contributory factors in the development of animistic thinking.

Klingensmith's (1948) test of animism might be improved by (1) adding other allied traits; (2) including the question, "Does \_\_\_\_\_ have life?"; and (3) adding other objects or modifying the present ones. Possibly objects evincing more obvious activity or movement, such as an electric fan, might be more advantageous.

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## APPENDICES

## APPENDIX A

Dear Parents:

Mrs. Sherrie Stephenson, graduate assistant at Orchard Street Nursery School, is currently working on a Master's degree. She will be testing the children in both nursery schools regarding perception of animate and inanimate objects. Additional family background information is necessary and we would appreciate your supplying the following information and return to the head teacher of your child's group:

1. Parents' name:
2. Child's name (attending nursery school):
3. Number of children in family:
4. Ages and sex of children:
5. Educational level of father:
 

High School	9	10	11	12	(circle one)
College	13	14	15	16	
Graduate degree:			field:		
Master's			Doctorate		
6. Educational level of mother:
 

High School	9	10	11	12	(circle one)
College	13	14	15	16	
Graduate degree:			field:		
Master's			Doctorate		
7. Occupation of father:
8. Occupation of mother:

Thank you for your cooperation.

Sincerely,

(Mrs.) Sherrie Stephenson

J. P. O'Neill, Head  
Family Life Department

## APPENDIX B

Percentages of Agreement for Each Question on Test-Retest for 20 Subjects

	Questions									
	1 Alive	2 Feel	3 Grow	4 Hear	5 Breathe	6 Think	7 See	8 Know	9 Wish	10 Alive
Objects										
Flower	.85	.75	1.00	.95	.95	.95	1.00	.90	1.00	.90
Fish	1.00	.90	.95	.95	.95	.80	1.00	.95	.85	1.00
Candle	.90	.90	1.00	1.00	1.00	.90	1.00	.95	1.00	1.00
Clock	.90	.85	.90	.95	.95	.85	1.00	.95	1.00	1.00
Knife	.90	.90	1.00	1.00	1.00	1.00	1.00	.85	1.00	1.00
Comb	.90	.85	1.00	1.00	1.00	1.00	1.00	.90	1.00	.95
Match	1.00	.85	1.00	1.00	1.00	1.00	1.00	.95	1.00	1.00
Dish	.95	.90	1.00	1.00	1.00	1.00	1.00	.95	.95	1.00